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DEVOTED TO

THE INTERESTS OF THE PROFESSION.

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THE DENTAL REGISTER.

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COMMUNICATIONS.

The Present and Future Status of the Dental Practitioner.

Read in the Section on Dental and Oral Surgery, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY JOS. D. HODGEN, D.D.S., SAN FRANCISCO, CAL.

The dentist of to-day is the doctor of dental surgery, educated and licensed as such. As a practitioner his province embraces the science and art of diagnosing and treating diseased conditions of the organs and contiguous tissues of the oral cavity, operating surgically for deformed, injured and wasted conditions, and supplying artificial substitutes in the place of organs and tissues lost in that region.

From such it is to be inferred that the truly proficient practitioner should have, at least, a partial if not a finished medical education; that he is to no slight extent an oral surgeon, and that he is a skilful and scientific mechanic. He is thus at once a physician, a surgeon and a handicraftsman—a dentist. His parallel, to a partial extent, might appear in the oculist who linked with his own specialty the skill of the manufacturing optician.

In holding that a dentist should have the advantages of a medical education we are well aware that we meet with no inconsiderable opposition. But, while the opponents to such are strong in numbers, they are weak in point of argument to sustain their holding. It is argued that the time and expense necessary to such a course are its greatest hindrances. It is perhaps true that many men who are now enabled to pursue a course in dentistry would

be deprived of that privilege if our colleges prolonged their term of pupilage to that extent necessary to embody a medical curriculum. However, we are led to doubt this as a fact, when we recognize that only three years ago the course in dentistry was lengthened from two years to three, and that by actual statistics there are more colleges and more students to-day than there has ever been at any time previous. Young men are crowding the colleges and the profession, who would do well to stay with the plough and farm. Are we, then, to lower the standard of the profession in order to receive these men to our already overflowing ranks? Is dentistry a refuge for those who are seeking what appears to them an easy and respectable means of gaining a respectable livelihood? It is also said that dental practitioners burdened with medical education "view their dental work through medical spectacles." What detriment this may be to their judgment as dentists is not clearly explained. Further, it is argued that the majority of dentists who attain a medical education "subsequently abandon dentistry for the practice of medicine." Such a condition does not interest us, or fall within our province to consider.

No; the status of the dentist of to-day is—change, preeminently above all else. He has reached that point at which he must declare himself a handicraftsman, a mechanic, a skilled laborer, or a scientific specialist of the great healing art. He has occupied the disputed position as long as progress will permit. Which shall it be? Back to mechanics and back to charlatanism, empiricism and closed laboratories, or a step towards medicine, a move towards occupying what has been termed the *terra incognita*, that territory of practice which has heretofore been partially claimed by both medicine and dentistry, and preempted by neither? It means that we must now decide whether we are to practice tooth restoration or tooth conservation; whether we are henceforth to be satisfied with the slaughter of natural organs and tissues, in order to restore and supply, or by scientific investigation aim at the conservation of what remains, and prevent the inroads of further destruction.

It has been lately remarked that "dentists are wonderful patch-

ers-up of things half gone, but they do not show how to prevent the going." This is the key-note. And what is the cause of this condition? Is it because our mechanical skill has been neglected? Should we have had more infirmary and laboratory practice and training at college? Are our metallurgy and physics defective? No; more science and more medical education.

We feel safe in the assurance that conservative dentistry must necessarily be based on an appreciation of the anatomic, physiologic and pathologic relation of the mouth in disease and health, and that until the importance of this kind of knowledge is fully appreciated, a community will fail to receive at the hands of its dentists the benefit which they have a right to expect.

"To be impressed" says one, "with the necessity which these propositions indicate, one has only to remember the various important anatomic and physiologic functions of the mouth; its physical, organic and mental associations, and the corresponding extent of its pathologic relations.

"Anatomically, no portion of the human economy offers a more complex association of structures; physiologically, none whose functions are so diversified, and yet so essential; pathologically, none whose systemic relations are more significant.

"A consideration of the pathologic relations of the mouth includes radiated, reflex or sympathetic disturbances of harmony, or interference with function in contiguous or remote organs, originating in the mouth, as the expression in the oral cavity of lesions or interruption of harmony in other organs. Morbid systemic or constitutional conditions, whether the result of some intermediate primary affection, or of inherited tendency, or perversion, find usually a more or less strongly pronounced expression in the mouth.

"It is supposed that the dentist is entirely unacquainted with the systemic condition of his patient. Indeed, he is not presumed to have any right to meddle with such; while the physician rather complacently ignores the importance of the local lesions which is esteemed the province of the dentist to correct.

"Meanwhile, the patient chafes at the incompetency of the dentist who fails to arrest by mechanical skill the ravages of

caries, and perhaps the operator himself fails to recognize in the lesions the expression of the systemic mischief. On the other hand, the physician, ignoring the local causes, tries in vain pills, and plasters, blisters, and purgatives; tries in vain the whole round of narcotics, sedatives, stimulants, tonics, anti-spasmodics, and anti-periodics; talking learnedly of neuroses and cachexia until pharmacopœia, patience and patients are alike exhausted."

These undeniable facts are illustrative in the necessity that a wider range of knowledge by the dentist is imperatively demanded.

During the year 1881 a considerable agitation of the subject, the status of the dentist; was evoked by the publication of a paper written by Dr. Truman W. Brophy, and read before the New York Odontological Society, in which that gentleman advocated the establishment of a Section of Dentistry in the AMERICAN MEDICAL ASSOCIATION. And notwithstanding the somewhat considerable opposition on the part of the physicians and dentists, that Section was organized at the thirty-second annual meeting of the ASSOCIATION. The principal objection to the movement at the time was, as many may remember, the condition upon which dentists were to become members. Since only those practitioners of dentistry who were graduates of regular medical colleges and members of local county societies were held eligible, the opposing members of the dental profession held that dentistry was being represented by representatives who had no constituency.

In the same year the first meeting of the Section on Diseases of the Teeth—a compromise in name—was held at the International Medical Congress in London.

At the thirty-eighth annual meeting of the AMERICAN MEDICAL ASSOCIATION, in 1887, to relieve the embarrassment that existed between the regular profession of medicine and the dental profession, it was argued that the Department of Dental and Oral Surgery was as much a part of the profession of medicine as ophthalmology or otology, or any other 'ology, "because," said our friend, "our teeth are parts of our system, and are used more than any other part," and that since dentistry has owned with humiliation the soil from which it sprang and has since

steadily advanced presumably to a decent respectability, that it was only just and proper that the arms of the AMERICAN MEDICAL ASSOCIATION be more widely extended to receive the foster child.

At this meeting the line of demarcation was drawn as per the following resolution :

"*Resolved*, That the regular graduates of such dental and oral schools and colleges as require of their students a standard of preliminary or general education and a term of professional study equal to the best class of medical colleges in this country, and embrace in their curriculum all the fundamental branches of medicine, differing chiefly by substituting practical and clinical instruction in dental and oral medicine and surgery, instead of clinical medicine and surgery, be recognized as members of the regular profession of medicine, and eligible to membership in this ASSOCIATION on the same conditions and subject to the same regulations as other members."

This is as far as the recognition of dentistry as a medical specialty by medicine has gone. Since 1887 no particular advancement has been made, certainly, on the part of medicine. Thus far we have defined the position of dentistry and shown what has been done on the part of those most active in the advocacy of its being a specialty of medicine.

Medicine, in its broadest sense, is the science and theory of disease and of remedies, the art of preventing, curing or alleviating diseases and lesions of the human body, and its highest form to-day is found in its specialism ; in other words, the medical art breaks away at once from the unity of the theory of disease, and while there is but one body of pathologic doctrine for either sex, for every period of life, and for every region and part of the organism, the practical art divides itself into departments and subdepartments, such as surgery, obstetrics, dermatology, ophthalmology, otology, etc. Dentistry, or more properly at this juncture, odontology, being the science or art of preventing, curing, or alleviating the diseases of the teeth, which form an important part of the human body, is therefore a department of the healing art.

Such a deduction is but a natural one, and true in the confines

of its premises. Why, then, are we still clamoring without the gates for admission? Because to the doctor of medicine this is not strictly true. He is not so liberal. Medicine to him is only medicine when the art of preventing, curing or alleviating diseases of the human body is practiced by medical graduates of medical colleges. When teeth are conserved from disease or extracted when useless, it is dentistry.

So the status of dentistry to-day, as far as our medical brothers are concerned, is not that of a specialty of medicine, principally because we are not graduates in medicine. Are they right? To those who may believe that they are not, it is comforting to feel that though their maternal acknowledgment is so dear and their association so keenly desired, they shall not be permitted to sit sole judges of our relationship.

Other influences, both external and internal, are doing much to drag us from this fireside of art and science. The first, we are led to believe, is the necessary amount of mechanics our profession is obliged to teach and practice; 2, the distinctive degree and curriculum we are attempting to maintain and enforce; 3, the percentage of our profession who are not graduates—many of whom, though, are our brightest lights; 4, our determination to be recognized.

The forces and influences which are tending to draw us beneath the maternal roof are, however, such that they will eventually overcome all opposing ones. They are:

1. The addition of medical chairs to dental faculties, and the division of dentistry into the operative and the mechanical dentist.

In all large communities men who make a business of doing mechanical work for one or more practitioners are fast becoming a special department of dentistry. These mechanical dentists in many cities do a very large percentage of all the mechanical work, and in some States the law is inclined to wink at the infractions of these unlicensed.

2. The patent dissatisfaction in which the degree is held, and the disinclination of colleges and universities to settle upon the not unusually adopted degree of doctor of dental surgery, together with the tendency to establish a variety of post-graduate degrees

for the purpose of advertising those decorated and the college conferring it.

3. The rapid percentage decrease of the body of non-graduates and the tendency of dental and medical graduates who intend to practice dentistry to acquire both medical and dental degrees.

4. The establishment of the Oral Section of the AMERICAN MEDICAL ASSOCIATION.

The elevation of any particular class of men is, however, dependent upon a demand on the part of their constituents: the people. The greatest advancement of any profession or body: the pulpit, the bar, the medical fraternity, or what not, is the result of enlarged conception on the part of their representatives, and that conception has its stimulus in the public demand.

The forces, then, of successful issue lie in the education of our patients, in the establishment of recognition from them, occasioned by scientific efficiency, and an elevated qualification in the average practitioner.

No amount of recognition from a National, State or local medical association given a body of men undeserving, can be made to stand the test of popular opinion.

We therefore believe the future course of those who are so ably leading, to be not only through the channels of education as it may present itself in the education of dentists in the specialty of medicine, but that theirs is a plea for text-books and for education of the people.

Complete recognition can only, and will result, in the displacement of the dental degree by the medical for all, with special training for special practice.

Local Anæsthesia.

A mixture of ten parts of chloroform, fifteen parts of ether and one part of menthol, used as a spray, is recommended (*Med. Age*) as an excellent and prompt means for obtaining local anæsthesia lasting for about five minutes.

Random Thoughts on our Specialty.

Read in the Section on Dental and Oral Surgery, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY A. E. BALDWIN, M.D., D.D.S., CHICAGO, ILLS.

Under this heading the writer feels free to wield a free lance, and he also feels that there are many things that may be properly grouped under such a title, thus giving a writer an opportunity to suggest varied lines of thought with possibly not a very logical grouping of them. In taking a retrospective view of our professional work and advancement during the last score of years, one can not help a strong feeling of disappointment, in spite of the very extravagant claims of the average dentist. In such a retrospective glance we must keep in mind that the effort of all truly scientific minds is toward that which is strictly scientific—and all will concede that the nearer we approach that exact position, the more incumbent it becomes us to make our so-called scientific work truly so, by making it clearly demonstrable. To place our specialty in such a position requires us to develop a class of people in our branch of professional work who will ever and always *think for themselves* on any and all subjects. We can not mix to any extent with our fellows in our society meetings without being impressed with what seems to be a fact, that at least 95 per cent. of our fellow workers allow themselves to simply swallow any honeyed or less daintily arranged bolus prepared for them by the other 5 per cent., and presented to them in the name of science in a grandiloquent way by one to whom, perhaps, had not yet been born a single original idea—or who knew not the difference between a "premise" and a "conclusion."

There just now occurs to the mind of the writer an illustration which he asks pardon for narrating. This occurred at a meeting of the American Dental Association a few years ago. One of our brethren, who *assumes* great dignity and profound knowledge, read a paper on "Carbolic Acid." The paper was lengthy and verbose, and was by many of the hearers hailed as a wonderful production;

they almost made themselves appear as sycophants in their loudly expressed remarks in adoration of the wonderful ability displayed by the writer in his profound experimental research, as demonstrated by the paper; and doubtless many a young man hearing this paper and the comments of others upon it, went away from the meeting prepared to gulp down anything they might hereafter see emanating from his or his secretary's pen—when to strip this paper from its "ego" and husks you will find it simply a *compilation* from old authors, good and bad, and containing absolutely nothing of any practical or scientific importance but what was from some work direct; not a thought original with the author. The writer went away humiliated that among the many able men there gathered, there were so few who realized the imposition. Again, at another time, at a meeting of the Chicago Dental Society, the writer heard a so-called leader in our ranks—and this only a few years ago—say that he could always diagnose uterine diseases (presumably of women, though he did not say so) by the condition of the mouth of the patient, and the statement went almost unchallenged. What weight could be put upon anything said by such a "pseudo" scientific physician.

These illustrations are made, not for the purpose of casting slurs, but to call attention to the lack of exercise of discriminating power. What is uppermost in the writer's heart, is that the very small number of our brethren who will think for themselves, and not say "amen" to anything simply because some professor says so—but will weigh with physiologic, anatomic, histologic, pathologic or etiologic scales these so-called facts and then indorse or condemn as the scales may determine, that the number of these may increase and multiply until it will be very dangerous for one to stand up before them, in public or private, and feed them chaff, calling it wheat, with the hope that the statement will pass unquestioned.

Why should we be blind leaders of the blind, or allow the blind to lead us, though they may *claim* they see. We should be awake and learn to think for ourselves. Probably we, in our busy lives, may not have the time or opportunity for as much original investigation as we would wish, but this does not neces-

sarily imply that we may arrive at the same conclusions that an original investigator does, for we (if he lucidly explains all the processes of the experiments) are in possession of all the "premises" from which he draws his "conclusions," and may view them far differently than he does.

In glancing over our journals the same thing is noticed—the immature thought is stated often as a certain conclusion and accepted as such. Many a specialty journal if put into the retort and subjected to the fire of scientific reasoning would come out wholly ashes, and many more would leave only the microscopic atom of truth.

If we might have some power given us to secure a journal that would contain, in each issue, nothing but demonstrable truths or plain, honest premises, from which to form our own conclusions, how small and choice such a work would be. Our shelves would never get overloaded, neither our minds overburdened in separating the gold from the dross. Then again we think all observing persons are aware that there are many in our ranks who are oftentimes satisfied to do, under certain circumstances, less than the best they can do. This is a matter that vitally concerns us all, for to slight an operation is to bring reproach upon ourselves as a whole. There is, of necessity, a great deal of difference in the various methods as practiced by different operators, but the rule that should govern in these matters is that we should not vary from well-established rules of operation unless we have well grounded physiologic reasons for believing the experimental method is an advance upon the old.

How few among us know the reason each time for what they do, or even try to solve the problem. How hard we have to drum the idea into the head of the average person, that growth or development of the part is induced by systematic exercise of the part, and if we as specialists expect a healthy and generous growth in mental and physical ability, it must come very largely, at least, not only by systematic thought and close study of books, but by training our powers of discrimination, so as to be able to determine the true from the false. Only a few days ago the writer had occasion to extract a tooth for a patient, in which he found that

the pulp-chamber had been filled with, apparently, no attempt to clean the *debris* from the root canals or to fill them. Upon learning who the operator was and thinking it was a mistake on his part, he took occasion in the kindest way possible to call upon the dentist and show him the work and call attention to the history of the case; when, surprising as it may seem, the dentist said he knew he did not fill the root canals, and as an excuse said, for what he charged he could not afford to do any more work than he did.

Is it any wonder that when such things are done the people are distrustful of the ability or the honor of our workers? No one can afford to do less than the very best that lies in his power, regardless as to whether he gets a large price or does the work for nothing. The rule is called "Golden," that we should follow in this and in all matters; then the world, as well as our profession, would always be the better for our having lived.

Hygiene of the Mouth.

BY M. H. CRYER, M.D., D.D.S.,

Lecturer on Oral Surgery in the Medico-Chirurgical Philadelphia Hospital.

The hygiene of the mouth is a department of stomatology, the importance of which is not sufficiently appreciated. As the mouth is the portal to the alimentary canal, and one of the avenues to the lungs, it is necessary for the general welfare of the whole body that it should be kept in as healthy a condition as possible. It has been demonstrated beyond all doubt that infectious materials from an unhealthy or septic mouth find their way into the general system by being carried to the stomach or the lungs, thus causing a variety of local and general disturbances. The mouth also being concerned in taste, vocalization and mastication, it is necessary in order to properly perform all these functions, that it shall be free from foul matter, whether in the shape of retained food between the teeth, discharges from diseased gums, and alveo-

lar processes or decayed teeth. The teeth should occupy their normal position, and be free from soreness. An unsanitary condition of the mouth is not one incompatible with normal function and sound teeth, but it is absolutely disquieting and unpardonable from an æsthetic standpoint. It stands to reason then that hygienic treatment of the mouth should begin at birth and extend throughout life. Other things being equal, the teeth should be as durable as any other tissue of the body, but the artificial methods of modern life materially lessen the resistance of these important organs. Every one, however, must recognize the importance of having them as strong and perfect as possible. The mother, by intelligent forethought, can to a great extent by eating such foods as tend to nourish and make bone and muscular tissue, give to the child before birth such nourishment as will conduce to the stronger development of the teeth and to a vigorous, healthy body. After birth, if the child receive its nourishment from the mother, she should still give the same attention to her diet. Fermentation of residual portions of milk remaining in the mouth of the infant after feeding is a prolific source of gastric curd, intestinal irritation, giving rise to colic and diarrhœa. The mouth of the child should, therefore, be kept carefully cleansed, and before each feeding be washed out with a solution of boracic acid in distilled water applied on a soft linen rag. The breast of the mother should also be carefully washed with soap and water, and also with boracic acid solution to sterilize it of fermenting films of milk which ordinarily exude from the nipple when the chest is full, as it is just before feeding time. If the child is a "bottle baby" no one but the mother or a reliable nurse should have the supervision of the bottles. The use of the long tube is unadvisable, as it requires more suction to draw the milk to the mouth, and unless a new tube were used every day cannot be kept aseptic. The black rubber nipple is the best. The bottles and nipples should be several in number—the bottle of a shape that can be easily cleaned; it is well after washing the nipples to place them in water and let them remain until they are wanted. The bottle and nipple should be removed immediately after the child has taken all it desires, as the detrimental

habit of sucking a foreign substance is soon acquired and should not be allowed. The sucking power of the child is to a great extent produced by the muscles at the posterior portion of the mouth; if this action is carried on to a great extent it has a tendency to contract the width of the mouth and cause protrusion of the teeth. During the eruption of the first teeth the mouth should be frequently examined, particularly when the child shows any signs of indigestion or febrile symptoms. After fifteen years of dispensary and clinical services in the Hospital of Oral Surgery and Oral Department of the Medico-Chirurgical Hospital, it is my experience that one-half the disorders in infants from five to thirty months are caused by the abnormal eruption of the temporary teeth, and that a liberal use of the lancet, by an experienced dentist or doctor, thoroughly dividing the inflamed gum over the tooth or teeth next in order of eruption is the only rational and certain means of relief. The popular belief that the scar tissue, formed by the healing of the gum after lancing is tougher and more difficult for the tooth to penetrate, is altogether erroneous; cicatricial tissue is always more easily broken through than the normal. If the gum should heal and the same symptoms present themselves, the lancet should be used again, and the operation continued at proper intervals until the tooth is fully erupted. It is not the pressure of the tooth against the surface of the gum which causes the disturbances; the seat of the trouble is in the developing ends of the roots impinging the dental branches of the fifth pair of nerves, so that when the lancet cuts the gum until the crown of the tooth is liberated, as should always be done, the pressure upon the nerves is removed. Mothers are strangely neglectful of the teeth of their children; they will give attention to dirty hands or face and bathe the body daily, but how few keep the mouth as clean. The teeth should be gently and thoroughly brushed with a small soft tooth brush, as soon as they make their appearance, and by commencing early the child will become accustomed to its use, and even object to an omission. If better care were taken of the first set of teeth, the second would present fewer irregularities. It is a great mistake to remove deciduous teeth too soon, they should be filled if necessary and everything

done to preserve them until the others are ready to take their places. By using discretion in filling the teeth with some temporary material or one that the child will bear, children need seldom be hurt. It is advisable to make the operations as simple as possible in order to avoid the dread of pain and so preventing frequent consultation with the dentist.

As the permanent teeth are erupted they should be carefully watched for irregularities, malposition, etc., as the direction of the crowns can then be changed if necessary before the teeth become thoroughly fixed in the jaw. This is an important factor in the hygienic care of the mouth. If the teeth do not articulate correctly, it will be impossible to properly masticate food, and the slighting of this important step in the great function of digestion often entails much suffering and disorder of the entire system. Perfect cleanliness, enunciation, and vocalization are also dependent upon correct position and articulation of the teeth. Decay should be prevented as far as possible, but when it occurs should receive immediate attention; the cavities should be filled in a judicious manner, with consideration for the appearance, as well as with the view of making the dental arch as perfect and self-cleaning as possible. In a great majority of cases gold should be the filling material used, as it presents a more pleasing appearance; it is cleaner, and in general it is the most durable material for the purpose. When the teeth are lost they should be replaced by artificial dentures. This again, requires good judgment on the part of the dentist, with a view of obtaining good vocalization, proper mastication, and preserving the perfect contour on the face. In using either plate or bridge for supplying the deficiencies, care must be exercised that no undue injury is done to the other teeth, and that the mouth may be as easily cleaned as before. As a rule all artificial appliances, except the simple pivot tooth and crowns, should be so made that they can be removed from the mouth and cleaned. Gold should form the basis of all such dentures. Where mouths have not had proper care in childhood, it is a somewhat difficult task to put them in a true hygienic condition. All decayed roots that cannot be made useful for attaching artificial crowns should be extracted, pulpless teeth should be

treated and filled, all other cavities filled, tartar removed, and the teeth thoroughly cleaned by a competent dentist. The gums and alveolar processes should have attention either by local or systemic treatment. Instrumentation can do a great deal toward a cure, but many diseased gums and processes are caused by gouty tendencies or other systemic disorders, and they must be treated accordingly. Abscesses of the alveolar process must be cured. The bacterial condition of the mouth must be carefully considered. All of these matters should receive attention before vacant places are supplied by artificial appliances. After the mouth has been put in good condition the patient should be instructed how to keep it so. The kind of tooth brushes, as well as tooth powders and washes, should vary according to the character of the mouth and general health of the system.

Tooth brushes should be of medium size, the bristles of even length and not too stiff. In using the brush it should be carried along the cutting edges and grinding faces of the teeth with a backward and forward movement; then over the outer and inner surfaces, brushing away from the gums as much as possible. This will usually remove any particles of food, debris, etc., which have lodged between the teeth. All that cannot be removed by the brush should be taken away with a quill toothpick and by passing floss silk between the teeth. Care should be taken not to wound the margins of the gums with the brush or other appliances. The principal cleaning should be in the morning after the mouth has been in comparative rest. A slight brushing after meals and before retiring is also beneficial.

Powders which contain sharp, gritty substances should be avoided. Precipitated chalk should form the basis of all tooth powders, slightly flavored to suit the patient; other ingredients should be added according to the conditions of the secretions of the mouth.

If the mucous secretions are viscid or fetid, a wash of which lime water forms the basis will be of great service.

Fiftieth Anniversary of the Discovery of Anæsthesia by Horace Wells.

Held in Philadelphia, December 11th, 1894.

(ABSTRACT).

Nearly one hundred visiting dentists, a large contingent of the local profession, and the students from the Dental Department, University of Pennsylvania, Philadelphia College of Dental Surgery, and from the Medico-Chirurgical College, to the number of eight hundred, assembled in Association Hall, at 2 P. M.

DR. J. D. THOMAS, Chairman of the Executive Committee, called the meeting to order, and introduced Dr. J. Y. Crawford, of Nashville, Tenn., President of the American Dental Association.

DR. CRAWFORD: Mr. Chairman, Fellows of the Dental Profession, Ladies and Gentlemen. At the meeting of the American Dental Association at Old Point Comfort, Virginia, on the second Tuesday of August last, a resolution to organize this memorial occasion was introduced by Dr. J. D. Thomas. This magnificent assemblage is the culmination of that resolution, and this is the gathering to celebrate the emancipation of the human family from pain by the discovery of anæsthesia. Fifty years ago to-day, Horace Wells made the first legitimate exhibition of anæsthesia, under proper restrictions, in a surgical way, which will entitle him to as much recognition at the hands of a just and liberal profession as was accorded to Jenner, Harvey, and Pasteur. The incident of the bruised knee was to Wells, what the inadvertant remark of the milk-maid was to Jenner. They were both pivotal contributions to the healing art!

DR. THOS. FILLEBROWN, of Boston, was introduced, and read an exhaustive paper on "The History of Anæsthesia." He said: Great discoveries and events do not burst forth with Promethian suddenness, but wait long periods of hope and may be despair. So it was with the discovery by Horace Wells, which robbed pain of its victory, and the knife of its horrors. The ancient nations

hunted for anæsthesia. Homer mentions the inhalation of hemp for that purpose. Pliny and Apuleius refer to the mandragora wine; the Chinese used hemp in the third century; Theodoric described the *spongia somniferum* in the thirteenth century. Ether was also known at that time. In 1800, Sir Humphrey Davy said nitrous oxide might probably be used to advantage in surgical operations where there was no great effusion of blood. But the suggestion bore no fruit for nearly half a century. Of the two anæsthetic agents, Protoxide of Nitrogen and Sulphuric Ether, the former was discovered by Priestly, described by Davy, and applied by Wells; the latter was discovered in the thirteenth century, named in the eighteenth, and applied in the nineteenth.

In 1846, its use was made known by Dr. Wm. T. G. Morton at the Massachusetts General Hospital. The anæsthetic properties of nitrous oxide were long known and applied for the entertainment it afforded, but the chasm separating that from its true utility was unbridged until fifty years ago to-day, the man whose honor we celebrate, by inhaling the gas and having a tooth extracted without pain, fulfilled Davy's prophecy, and made practical anæsthesia a discovered and demonstrated reality. That event, the birth of Pain's Victor, was the source of our knowledge of anæsthesia, and made the name of Horace Wells echo around the world. In the following winter, Dr. Wells made a visit to Boston, and through the kindly offices of his former pupil and partner Dr. Morton, who afterwards introduced Ether, and was a claimant to the discovery of anæsthesia, made an exhibition to the Harvard medical class, by permission of Dr. J. C. Warren. The attenpt was an apparent failure. The patient was incompletely anæsthetized and cried out, as they frequently do, and Wells was greeted with hisses of derision. The patient afterwards said he experienced no pain. This failure so disheartened Wells, that he shortly abandoned the practice of dentistry and committed suicide by severing a jugular vein. With the unparalleled honor of the discovery by Horace Wells, the names of Dr. G. Q. Colton, Col. Samuel Cooley, Dr. J. M. Riggs, E. E. Marcy, W. T. G. Morton, Oliver Wendell Holmes, Jackson and Bigelow are indissolubly connected. Marcy suggested ether to Wells in-

stead of nitrous oxide; Morton made the first public application of ether for surgical anæsthesia; Jackson claimed to have suggested ether to Morton, and Oliver Wendell Holmes suggested the name anæsthesia which is "repeated by the tongues of every civilized nation." Dr. Crawford W. Long, of Athens, Ga., claimed to have given ether three times in 1842–3. It was not printed until 1849. How could he resist flying with joyous wings to proclaim to a waiting world the great boon to humanity? The honor of the discovery is not accorded to Long, on account of its inauthenticity, and its tardy publication. If he used it, nobody knew it, and nobody used it because Long did. Then came the long list of pretenders, denominated generically "jump-up-behinders." In 1846, Sept. 30, Dr. Wm. T. G. Morton administered sulphuric ether for the first time. He made a public demonstration at the clinic of Dr. John C. Warren, at the Massachusetts General Hospital on Oct. 16, 1846. Morton and Jackson made a joint oath to the discovery of ether as an anæsthetic and applied for a patent: the next year each claimed to be the individual discoverer. The application was discarded and declared not patentable. In 1847, the Paris Academy proclaimed Morton and Jackson the joint discoverers, but after a full hearing, they decided that the honor belonged to Horace Wells, as the first to use gases and vapors to perform surgical operations without pain. In 1847, Sir James Y. Simpson of Edinburgh made experiments which gave chloroform as an anæsthetic to the world. Whom, then, shall the honor of anæsthesia's discovery make immortal? To each and all of the glorious names who made their individual contributions; but the noble, generous mind, that conceived the grand idea, and conferred the greatest boon of science on humanity belonged to the immortal spirit of Horace Wells. The facts maintain the truth of his priority; disputation but weakens the evident conclusion. In honoring his memory, we should regret his sad and tragic end. It is a peculiar fact that his rival claimants both met violent deaths. Morton died suddenly of apoplexy, while Jackson was insane the last seven years of his life. Thus did the Shears of Fate cut the tent-ropes of their lives. Let us lay the chaplet of honor on

his memory. Would we might with it crown his head. The everlasting epitaph of this martyr and hero will be,

"TO THE DISCOVERER OF ANÆSTHESIA—HORACE WELLS!"

Prof. James E. Garretson, of Philadelphia, was introduced. After thanking the audience for their ovation, he said there was in the audience one whose shoe-latchets he was unworthy to tie—Dr. G. Q. Colton. We are here to honor Wells. Without a Colton, there could be no Wells. We are going to erect a statue to Wells. Let us begin by erecting a human monument—Dr. G. Q. Colton. Dr. Colton was presented and seated upon the stage. Prof. Garretson made an address on "The Benefits of Anæsthesia to Mankind." He said he was overwhelmed at the contrast of the occasion and the speaker. It is not profanation to compare the reverence of a priest, when he uncovers the Host, in the profundity of holiness, to his own feelings when he speaks of this greatest of God's gifts to humanity "Silence is Golden." Anæsthesia is the gold of silence. The silence of pitying lips in the presence of torture, shorn of its horrors. The ring of a bell is in its metal; the ring of a man is in his work. Horace Wells! It does not nor will not still. It rings and rings and rings in distinctness, albeit accordant and discordant sounds are everywhere around. He was a vessel capable of holding and was filled. In him the river of Lethe found a channel. Everywhere over the land flows the stream of Nepenthe. The melody of music is not a note; the inspiration of a poet is not grammer. The ghost of anæsthesia was in the camel droppings on the desert, in the fields red with poppy. Ether was known to Frobenius. But who dreamed of the wonderland of Ruthenasia, contained in the bottle on the chemist's shelf? Cadmius saw letters. Shakespeare saw the fulness of expression. Horace Wells saw in the room at Hartford, what had ne'er been seen before—Anæsthesia. Some had seen the filmy halo that meant anæsthesia, but it was forgotten. Sir Humphrey Davy saw the outskirts of Elysium; but it was only in thought. The seership of Horace Wells was practical. While pain is painful, his name will be upon the lips of men. Apples ripened and fell before Davy guessed their

secret; kettles boiled and hissed without telling their story; electricity flashed athwart the firmament long before it was harnessed; the sun's rays made perfect pictures; but there were no takers of these gifts. Alexander told the story of steam; Pipon invented the cylinder; Fulton launched a steamboat, and Stevenson a train of cars; Daguerre made beautiful counterfeits of nature by the aid of the sun; and Mozart told by note what the flowers were doing. Was anæsthesia as anæsthesia known to surgery before 1844, as it became known in that year and has been known since? Not nitrous oxide, or ether, or chloroform; not rapid breathing but anæsthesia? The man of that year was Horace Wells. Anæsthesia! What would the world do without it! What could it do! What did it do! Think of an operation without it. A mother with tear bedimmed eyes, in despair and misery follows with trembling steps, the nurse who bears her first born to the operating table. The cries of the innocent babe mingle with the agonizing shrieks of its mother. It is held by force; she is torn from its side, and as she hears the heart-rending moan, falls down in a heap and is borne from the room screaming and crazed, cursing God as a being without mercy. Now, a child who has a deformity to be corrected, is cuddled while he crowingly inhales the subtle fumes of chloroform, and dreams of babyland embowered in roses while the operation is quickly accomplished. The name of the maker of this picture? Horace Wells! Hail to the Poets, Musicians, Seers, whose statues of enduring brass mark our working places! Hail to all the Seers! Immortals! Hail to Horace Wells!

The Chairman announced that the consideration of a plan for a permanent memorial to the discovery by Horace Wells would be entertained.

Dr. L. D. Sheppard offered some resolutions drafted by the Executive Committee, in reference to the discovery of Anæsthesia, which were approved with unanimity.

Dr. R. Huey of New York moved that a Committee be appointed by the President of the American Dental Association, to secure funds for the erection of a Memorial in Washington City.

Approved. (Committee to be announced).

The chairman introduced Dr. G. Q. Colton, of New York, who gave the following historical reminiscence:

In the words of Anthony at the funeral of Cæsar, I can say:

"I am no orator, as Brutus is;
But, as you know me all, a plain blunt man,
For I have neither wit, nor words, nor worth,
Action, nor utterance, nor the power of speech
To stir men's blood: I only speak right on;
I tell you that which you yourselves do know."

On the 10th of December, 1844, I gave an exhibition of the amusing effects of the nitrous oxide gas, in the city of Hartford, Conn. After a brief lecture on the properties and effects of the gas, I invited a dozen or fifteen gentlemen to come upon the stage who would like to inhale it. Among those who came forward was Dr. Horace Wells, and a gentleman by the name of Cooley. Among those who inhaled the gas was Mr. Cooley. When under its influence, he began to dance and jump about. He ran against some wooden settees on the stage and bruised his shins badly. When recovering from the effects of the gas, he went to his seat, next to Dr. Wells. Dr. Wells said to him: "You must have hurt yourself." "No," said Cooley, but at the same time he began to feel some pain in his legs. He was astonished to find his legs all bloody, said he felt no pain till the effects of the gas had passed off. At the close of the exhibition, and while the audience was retiring, Dr. Wells came to me and said: "Why cannot a man have a tooth extracted when under the influence of the gas, and not feel it?" I replied that I did not know, as the thought had never entered my head. Dr. Wells said he believed it could be done; and that if I would bring a bag of the gas to his office the next day, he would try it himself. The next day I took a bag of the gas to his office, and Dr. Wells called in Dr. Riggs, a neighboring dentist, to perform the operation. I administered the gas to Dr. Wells, and Dr. Riggs extracted a decayed molar tooth. On recovering and finding his tooth out, Dr. Wells slapped his hands upon his knee and exclaimed, very excitedly, "*It is the greatest discovery ever made. I didn't feel it so much as the prick of a pin!*" That was

the first tooth ever drawn without pain, and was the birth of anæsthesia. This operation took place just fifty years ago today. The discovery of anæsthesia and its practical demonstration belongs entirely to Dr. Wells.

Mr. Charles T. Wells, of Hartford, Conn., the only son of the great discoverer was presented to the audience.

Dr. Donnelly, of Washington, moved that the committee be instructed to take into consideration the feasibility of establishing a National Memorial Hall in connection with the Wells' monument.

BANQUET.

A magnificent banquet was held at the Union League, at 6:30 p. m.

Dr. E. T. Darby, of Philadelphia, presided as Toast-Master. General Joseph B. Hawley, U. S. Senator from Connecticut, responded to the toast, "The Horace Wells' Discovery—Its National Significance." He asked: How many thousand years were added to human life by the result of the great discovery? How many years of agony were thrown into the bottomless pit of oblivion? He knew the office in which this discovery was made. He knew the gay and frisky Col. Sam Cooley who danced about and barked his shins, and was the innocent cause of the brilliant discovery. He exhibited the book of Wells. Truman Smith, the venerable lawyer of Connecticut, and scores of Hartford's great men testified to the validity of Well's claim. He had been present the day before at the anniversary celebration in Hartford. It took those eighty-year old enthusiasts until midnight to erect the bronze tablet. He felt honored at being present at both celebrations.

Prof. James Truman, of the University of Pennsylvania, responded to the toast: "Anæsthesia as a Dental Discovery." Prof. Truman was reminded of the story of the Ugly Duckling that came out late, was picked at, and loved by no one. But it was able to swim and fly, and was adopted by a tribe of wild ducks, and afterwards became a beautiful swallow. Dentistry came in late—the last half century; but to-day her representatives

have assembled here from fourteen states, in a high professional spirit, to do honor to one of her greatest men. Horace Wells lived in the period of transition in dentistry, when every man's hand was against his neighbor in professional matters. He was broader. He reached out after the great world that Goethe loved. He went to the centre of medical education—Boston—and was hooted out of the medical presence in disgrace. But every age has stoned her prophets, as every age will continue to do. Dr. B. W. Richardson, of London, in the last few weeks, in Longman's Magazine has tried to tear the laurel from Horace Wells and place it on Sir Humphrey Davy. The parable of the sower is applicable. Priestly was the stony ground; Sir Humphrey Davy was the poor soil—he was a dreamer. The receptive brain of Horace Wells was the good soil that bore fruit in the amelioration of pain. When for the first time modern anæsthesia was exhibited, amid the anxiety of the surgeon, the excitement of the students, when for the first time they beheld a patient passive under the surgeon's knife, did anybody think of Sir Humphrey Davy? When we look back over the great battles, the terrors of hospitals and the accidents of life, who can aggregate the benefits of anæsthesia? It was in the humble home of the Hartford Dentist that the still small voice whispered in the wilderness of suffering. And that whisper will echo and re-echo until the cry of agony shall be silenced forever. O Dentistry! though not the first born of this our nineteenth century, in our heart of hearts we enshrine thee. Thou hast given anæsthesia to the world.

Prof. J. William White, of the University of Pennsylvania, responded to the toast, "Anæsthesia as a Factor in the Evolution of Surgery." The discovery of anæsthesia is a priceless gift to surgery. Like an enchanted Genii of the Arabian nights it transports one from conscious suffering to the dreamy slumber of oblivion. If it had contributed nothing more to the victories of surgery than the transformation of a screaming sufferer into a plastic, unconscious patient for the surgeon's knife, it had added incalculably to its efficiency. But that is the least of its blessings. It brought possibilities of an incredulous ad-

vance. Hundreds of operations undreamt of in 1844 have saved the lives of countless thousands. The processes of disease and trauma in regions uninvaded in pre-anæsthetic days, were helpless and hopeless before the inspiration of Wells fifty years ago. The advance of this period has outstripped that of eight hundred years. In it, aseptic and antiseptic surgery has developed, and almost wiped out certain forms of suffering, disease and death. Surgery has not reached its culmination. Investigation, research and experiment are advancing rapidly. The prizes are still great; tubercle and cancer remain to be conquered, and though we may not live to see it, it will ultimately be accomplished. The age is full of glorious men vigorously anticipating the splendid hopes of the future. All glory to Horace Wells, the builder of the foundation and the layer of the corner stone.

Prof. Horatio C. Wood, of the University of Pennsylvania, responded to the toast: "The Debt of Medicine to Anæsthesia." Once there were twins. One was lusty and eager, always shouting its own praises; at the fore front of battle, revelling in blood, accident and death. The other was modest and retiring, thinking much but speaking little. And one was Surgery and the other Medicine. To the twin Surgery, anæsthesia came as a great gift. To Medicine, it did'nt at first appear to be such a great boon. But there are now many diseases that attack the mortal frame, that could not be relieved without the great gift from Hartford. Were it not for anæsthesia, few would have the courage for vivisection; and were it not for vivisection, there were no modern medicine. Anæsthesia has made modern physiology, antiseptic surgery and advanced medicine the great wonderful structure that we stand off and contemplate with such reverential awe. That is what anæsthesia has done. Not simply to quell pain momentarily, but made possible modern medicine. He hoped the dental profession would erect a monument to one of their guild who was such a benefactor to mankind. He did not know of a single statue erected to a medical man in the United States. When Leidy died, the greatest man Philadelphia ever produced, the one man who was ever crowned by the immortal leaf of the French Academy, the newspapers only had five or six lines about him.

Col. Alexander McClure, Editor of *The Times*, Philadelphia, responded to the toast, "The Mastery of Pain from the Standpoint of the Layman." Col. McClure remembers the transition of dentistry from a critical condition to its present position of wonderful achievement. He remembered when the blacksmith of the village pulled teeth with a gimlet having a screw in its end, and the itinerant dentist "stood" one day at one place and the next at another. He recollected the introduction of anæsthesia into the faculty forty-five years ago. He was then publishing a country newspaper—the only time in his life when he thoroughly understood the newspaper business. He and his apprentice instituted a series of experiments. The apprentice proposed to have a young physician give him chloroform, the Colonel was quite willing that it should be. It was administered with great success. Every case of type being upset. He claimed some credit for its advance. About thirty years ago he was suffering with an aching wisdom tooth. He had read of the gas. He came to Dr. Thomas, saw the list of some eighteen hundred persons who had taken it successfully; but he saw no instruments. He took a deep inhalation—then another—then . . . . ! Suddenly he woke up, and asked if the tooth had been pulled. He was assured by seeing the offending member. Since then, when he has a tooth to be extracted, he quits work at midday, walks quietly to the dentists' office, takes a whiff of gas, and all is over. Dr. White tried to cut him to pieces seven times, but he was ignorant of the pain. He was satisfied that his life had been saved by the operation, and but for anæsthesia, he would not have been present.

Prof. Wilbur F. Litch, of the Pennsylvania College of Dental Surgery, responded to the toast, "The Development of our Knowledge of Anæsthesia." He said the discoverer of anæsthesia had done more to promote the happiness of mankind than all the philosophers from Sophocles to Mill. In 1832, Velpeau declared painless operations in surgery a chimera; but. later, he performed an amputation under ether. The ancients sought for some analgesic in mendragora, hyoscyamus, opium and hemp. The stupefying effects of alcohol were more safe and effective. The

marvel is why alcohol to its full intoxicating effect was not systematically employed. "Years teach much which days never know." (Emerson). Ether was known five hundred years; nitrous oxide seventy years before Wells' time. Anæsthesia is a flower that has blossomed slowly on the cross of suffering. It is recorded that the Romans offered a lethal draft to Him who bore the typification of human suffering. Humanity today drinks of subtler influences. He referred to the report of the Hyderabad commission on chloroform, and mentioned the use of cocaine in the production of local anæsthesia. Ideal anæsthesia, one that was perfectly free from danger, remained to be discovered. At present, nitrous oxide with oxygen is the best, but for mechanical difficulties.

District Attorney Geo. S. Graham, of Philadelphia, responded to the toast, "The Medico-legal Aspect of Anæsthesia." The toast reminded him of Daniel O'Connell calling a man a nefarious ruffian because the phrase was high-sounding. The story of a man knocking a hole in a cellar wall to let the dark out was applicable to it. Anæsthesia in its broad sense including alcohol, made many subjects for the legal surgeon's knife. When Dr. Thomas gave him gas for the extraction of a tooth, he heard a seraphic symphony from the heavenly spheres, but when he awoke, he found the music came from a music-box, and was administered with malice aforethought. That was the first connection of anæsthesia with the law. He said law was not in sympathy with vivisection. He once lost a dog himself. The highest tribute from a sister profession is the reiteration of the praise bestowed by one's own profession. If a man lives in their memory, and is honored as the discoverer of a great good to suffering humanity, that is the loftiest pedestal on the footstool of God. Esteem and honor to pioneers in discovery and advancement. The whole world joins in sweet acclaim of praise to the memory of Horace Wells.

Rev. S. D. McConnell, of Philadelphia, responded to the toast, "The Humanitarian Aspect of Anæsthesia." Most parsons have learned the ability to escape from the text; but he would rather be the discoverer of anæsthesia than to be any man

that ever lived. When all the achievements of this century shall be forgotten, this one great controlling event that happened once in the history of humanity will remain. The old books on theology, discussed at interminable length the meaning and use of pain, claiming that it was eternal, insoluble, the result of evil, and the punishment therefor. The measure of sensibility to pain is the measure of civilization. Low civilization is comparatively indifferent to pain. This is an age of physical anæsthesia; of moral and mental æsthetics. All the philosophizing about pain cannot make us bear with equanimity some other fellow's pain. Pain is demoralizing, and its relief is elevating. It begets gentling of manners and thought, tenderness and compassion. The man who has done this, has taken out part of the unspeakable anguish of parturition, has saved innumerable lives, has enabled timid souls to look serenely upon suffering, and walk triumphantly to the end.

Dr. G. Q. Colton related some amusing experiences in connection with the administration of nitrous oxide and tooth pulling, and concluded with the masterly advice of Polonius to his son Laertes.

Mr. Charles Wells, the only son of the immortal dentist, gave some personal recollections of his father.

Adjournment.

Shedding the Temporary Teeth.

BY J. TAFT.

Read before the Ohio State Dental Society, December 7th, 1894.

In attempting to present some thoughts on this subject it is not with the same confidence that many others would be approached.

It has always been regarded by physiologists, and indeed by all who have made it a subject of study, as one of nature's obscure processes, one that in its full elucidation has escaped the investigations of not only the physician, but the dentist as well,

and this, notwithstanding it is his special province to investigate all questions pertaining to odontology.

To all questions pertaining to the teeth the dentist is expected to give special attention, and go farther into the mysteries pertaining to them than others whose studies and investigations necessarily have a broader scope.

The dentist should have as thorough knowledge of all that pertains to the teeth—their development, growth, use, diseases, affections and susceptibilities as possible, in order that he may best secure the welfare of those committed to his care.

This subject of shedding the temporary teeth, is one that in no small degree influences the development and arrangement of the permanent teeth.

It may be well before going further, to note the condition of the child at the time of the development of the teeth, and the purposes they are intended to serve.

The rudiments of the deciduous teeth are formed at an early period of intra-uterine life, and progress on to the perfected state, complete within from three to four years. The teeth unlike other parts of the body are formed complete in a comparatively brief period, and neither increase nor diminish in size. They are then in condition to perform their functions fully.

When the conditions are normal this is the time of life when a change is required in the form of food, from the fluid to the more solid condition; a condition requiring mastication and insalivation. This is a necessary process preliminary to proper digestion.

The jaws as a whole, and especially the parts occupied by the temporary teeth, grow rapidly after the completion—full eruption—of the deciduous teeth, and especially if their work of mastication is well performed. If, however, there is deficiency in this respect, there will be a corresponding slowness in the growth of the jaws.

Where the teeth during infancy and childhood are properly used in mastication, the jaws will have a normal growth, which will usually be shown by the separation of the teeth, especially the six anterior teeth. This separation is far less frequent with

the teeth that have been little or not at all used in mastication. The proper use of these teeth is a stimulus to the process of nutrition in the parts about them.

In those cases only, in which the teeth are rightly used, will there be a good, vigorous, nutrient action. Under such circumstances it is not only the jaw, the living structure in which they stand, that receives the benefit, but the teeth that are thus used are better nourished, stronger, and better resist disease.

But, perhaps, of more importance than this, is the active, nutrient supply thus given to the growing permanent teeth, that are as yet enclosed in appropriate cavities in the jaws.

The periosteum of the temporary teeth and of the permanent, so far as their roots may be formed, partake of the same beneficent supply.

The tissue or organ that is to be the active agent in the removal of the roots of the temporary teeth, is also better formed or developed, and will be in better condition for its appropriate function, when the time arrives for its operation.

The temporary teeth are designed in the human organization to have but a brief existence, having an active service of from five to seven years, upon an average.

At the end of this period, they are by a beneficent and *purely* physiological process removed, this is accomplished by the removal of the roots of these teeth. When the process is without interruption or interference the roots are wholly removed, or sufficiently so to permit of the removal of the crown by the ordinary movements of the jaws, the cheeks, lips and tongue.

The manner in which, and the agency by which, the roots of the temporary teeth are moved have afforded ground for various opinions.

The subject has not been much discussed in recent years. The writers of a quarter of a century ago and more gave much more attention to it than those of recent times. Whether this state of affairs has existed because of the difficulties attending its investigation, or because it was supposed or assumed that it had been exhausted, I will not venture to assert. Perhaps it was because subjects more inviting were presented.

It may, however, be said that the process of shedding the teeth is not generally understood, it is therefore a subject that should be further considered.

Various theories have been put forth in the past, as to the manner in which this removal is accomplished.

In the early periods of medical science many supposed that the temporary teeth had no roots. Others advanced the theory that the crowns separated from their roots in the same manner as the horns of a stag fall off, and that from the root the new tooth sprang. Fouchard and Bourdet suggested that the roots of the temporary teeth were removed by the action of a solvent fluid.

Bullow advanced the theory that they were worn away by the advancing (rising), tooth.

Lecluse suggested that when the process of their removal begins their vessels cease to supply the nourishing juices, and that they are broken up by a species of maceration; and Jordan believed it is accomplished by both abrasion and corrosion.

Fox attributes it to the pressure of the crown of the permanent tooth upon the root or roots of the temporary; but he afterwards admits that it frequently occurs without such pressure, and further remarks: "These circumstances seem to prove that the absorption of the fangs of the temporary teeth is an action of nature sometimes independent of pressure; and it is a very singular circumstance, that at a time of life when so great a quantity of ossific matter is poured forth from all the arteries concerned in the formation of bone, in one particular, there should thus be an absorption of this substance taking place."

Bell, rejects the theory of pressure, and attributes the removal to the action of absorbent vessels.

Laforgue observing a fungiform or fleshy substance behind the roots of the temporary tooth, supposed this to be the agent actively engaged in the removal of the temporary teeth.

Bourdet observing essentially the same thing, came to the same conclusion, namely, that a fluid was exhaled from this substance which possessed solvent properties, he gave it the name of the "Absorbing Apparel," and regarded it as the active agent in removing the roots of the temporary teeth.

Delabarre investigated very fully this subject. He corroborates the views of Laforgue, and gives the following description of the manner of the formation and function of this absorbing organ:

"While the crown of the tooth of replacement is in process of formation the exterior membrane of the matrix is simply crossed by blood vessels, but as soon as it is completed the capillaries are then developed in a very peculiar manner, and form a fine tissue. From this tissue the internal membrane instead of continuing to be very delicate, and of a pale red color, increases in thickness and assumes a redder hue. As has been said, it is at the instant in which commences the reaction of the coats of the matrix, that are conveyed from the gum to the neck of the teeth, that the fine vessels enter the tissue, thus composing a body of carneous, flesh-like appearance. It is therefore the dental matrix itself, that without being dilated to serve as a protecting envelope, is contracted to form not only its bud-like body, which we find below the temporary tooth when it is shed, but also a carneous mass by which the whole is surrounded."

He then asks, "Is there an absorbing fluid that acts chemically on the surrounding parts, or do the absorbents, without any intermedial, destroy everything that would obstruct the advance of the permanent tooth?"

In reply to this he says, "Not possessing positive truth to guide me in the decision of this question, and finding those of others of little importance, I shall not attempt to give answer."

These views would seem to approximate more nearly a correct solution of this process than those before referred to, though there are some features of this process which all writers state have not been clearly understood. And while there are questions not now fully comprehended, there are certain points, we think, which may be regarded as settled.

And first we have no hesitancy in stating that the process of shedding the temporary teeth is a purely physiological one; though it has been suggested by some writers, of later date than those referred to, that inflammation in a more or less marked degree, is present during the accomplishment of this work. This

we cannot accept as yet proven ; and may state that in a great majority of cases there is no indication whatever of inflammation, or even special irritation. It is true that oftentimes local disease of more or less marked character is concurrent with shedding the teeth ; but that it occurs as a necessary result of the removal of the roots of the temporary teeth, we think, there is no evidence.

In the plan of the human organism the temporary teeth are to be displaced to make way for the permanent; and, it would seem to be unreasonable that diseased action, even in the mildest form, should be called in to aid in the accomplishment of this work. Disease never occurs without some violation of physiological law.

Again, it is admitted by all intelligent observers that this work is accomplished by the solution of the material to be removed ; and this cannot be accomplished without the intervention of a solvent. The debris from the wasting structure is absorbed and carried away through the proper eliminating channels. In order to be absorbed, and thus disposed of, the material operated upon must be in absolute solution.

Third, the fact that is clearly shown by intelligent observation is, that both the organic and inorganic constituents of the cement and dentine are simultaneously removed. An examination of the wasting surface does not present a softened condition, as is shown in decay of the teeth, and as would be shown here if the inorganic material was first removed ; nor is there a chalky condition of the wasting surface, as would be shown if the organic constituents were first removed.

We are, therefore, forced to the conclusion that the agent concerned in the removal is one having an equal action, so far as its solvent power is concerned, upon both the organic and inorganic constituents.

There are certain uniform features in the accomplishment of this process that indicate quite clearly the fact that it is governed by true physiological law. This is shown by its operation at about a uniformly given time, and by its operation upon certain pairs of teeth.

This manifest law rules out inflammation or any diseased action as a necessary factor in the process.

The removal of the roots of the temporary teeth has definite periods for its accomplishment; which is always carried out according to the plan, when there is no diseased or abnormal condition present. Neither inflammation nor disease of any kind is uniform in its attack or mode of operation.

The removal of the roots of these teeth is accomplished in nearly all cases without any indication of disease, either in appearance or sensibility. Hence the conclusion is well nigh forced upon us, that the removal of the roots of the temporary teeth is by a purely physiological law; and that disease in none of its manifestations is a factor, even in the slightest degree, in its accomplishment.

A fourth point, recognized by all close observers, is that the surface of the root being acted on is always in opposition to the corresponding and approaching permanent tooth.

Fifth, there is always found an intervening soft, highly vascular tissue between the permanent crown and the temporary root during the time of the removal of the latter.

Sixth, these hard surfaces are never found in contact when in a normal condition.

Seventh, the root of the temporary tooth is not removed when the crown of the permanent is absent, or its growth arrested, or is situated at considerable distance from the root.

Eighth, the root is not removed by this absorbing process, in the absence, from whatever cause, of this intervening vascular body or absorbent organ.

This organ is in some cases, though rare, never developed. In other cases it is destroyed by disease. In either case the root is not absorbed; and this even though the permanent tooth may grow and be erupted, when usually the permanent tooth is made to take a wrong position.

[Discussion of the above paper will appear in a subsequent number of The Dental Register.—Ed.]

Some Experimental Tests with Sterilizing Agents.

BY L. P. BETHEL, D.D.S., M.D., KENT, OHIO.

Read before the Ohio State Dental Society, December, 1894.

The object of these experiments has been to find, if possible, some chemical agent that, for the sterilization of dental instruments, would prove as efficient as boiling water.

A chemical disinfectant always at hand and ready for use would be, in many ways, an advantage.

The agents used in these tests, were electrozone, formalin, kerosene oil and peroxid of sodium.

The latter was used in two ways: As a saturated solution, made in the manner described by Dr. Van Woert, and by putting a small quantity, about as much as can be placed on a silver dime, into a glass containing infected instruments and filled about one-third full with water. The gases, liberated by the chemical action, acting in their nascent state on the infectious material.

METHOD OF PROCEDURE.

In order to have the tests conform as nearly as possible to actual practice, a number of decayed teeth were taken immediately after extraction and placed in a test tube containing sterilized meat boullion.

The teeth used presented various stages of decay and suppuration of the pulps. Previous to inserting the teeth in the boullion, however, the decay was well loosened, by means of a sterilized excavator, to insure a distribution of many bacteria in the solution. The contents of the test tube were well mixed and trial cultures made on gelatin and boullion to determine whether the bacteria, in the solution, would grow on these media.

The result was that the germs developed on gelatin, liquefying it quite rapidly at room temperature, but thrived better in boullion kept a little below blood temperature in an incubator.

The instruments used for the experiments were a barbed broach, a large bur, and an excavator. These were dipped in the tooth mixture, allowed to dry in air and then immersed in the disinfecting fluid. A stab culture was then made in gelatin tube No. 1, the instrument carried to tube No. 2, and both smear and stab cultures made, then carried to still another tube and this repeated.

Three tubes were used for the reason that enough of the disinfectant might be carried into tube No. 1 to prevent the growth of germs, should any remain alive, as most of the sterilizing agent would remain in this tube after a stab culture had been made, and yet there would still remain some germs on the instrument to be carried to one or both of the other tubes, yet not enough of the disinfectant to prevent growth.

Where boullion was used two tubes only were employed, for the disinfectant would be rinsed off in tube No. 1 and any remaining germs carried to tube No. 2 would not be prevented from multiplying. It is probable that the small amount of disinfecting fluid carried into tube No. 1 would become so diluted with the boullion that it would have no further action than to somewhat retard the growth, yet, to be certain, a second tube was used.

The time of immersion in the disinfectants was three minutes, except in a few instances, for, to meet the demands of the dentist, an agent should completely sterilize an instrument in a few minutes at the most.

Aside from tooth bacteria the *subtilis bacilli*, containing very resistant spores, and the *staphylococcus pyogenes*, were used in some of the experiments. Both of these bacteria grow rapidly and being so resistant further tested the value of these chemical agents as sterilizers.

The results of the experiments were as follows:

DISINFECTANT.	CULTURE MEDIA.	CULTURE.	Time of exposure, minutes.	Number of Cultures.	Sterile.	Non-sterile.
Formalin	Gelatin	Tooth bacteria	3	3	3	
do	Boullion	do	3	6	6	
do	do	Subtilis	3	2	2	
do	Gelatin	Staph. pyogenes	3	6	4	2
Formalin (washing infected inst. before sterilizing.)	do	Suppurating pulp	3	2	2	
Electrozone	Gelatin	Tooth bacteria	3	3	3	
do	Boullion	do	3	6	4	2
do	do	do	1	1		1
do	Gelatin	Subtilis	3	3	3	
do	Boullion	do	3	4	4	
do	Gelatin	Staph. pyogenes	3	5	3	2
do	do	do	5	3	3	
do	Boullion	do	3	2	2	
Electrozone (washing infected inst. before sterilizing.)	Gelatin	Suppurating pulp	3	2	2	
Sodium peroxid (saturated solution.)	Gelatin	Tooth bacteria	3	6	6	
do	Boullion	do	3	2		2
do	Gelatin	Staph. pyogenes	3	6	6	
do	Boullion	do	3	2		2
Sodium peroxide (saturated solution—washing infected inst. before sterilizing.)	Gelatin	Suppurating pulp	3	2	2	
Sodium peroxid placed in water containing inst.	Boullion	Tooth bacteria	3	2		2
do	Gelatin	Staph. pyogenes	3	2	2	
Kerosene	Gelatin	Tooth bacteria	3	6		6
Kerosene (washing infected inst. before sterilizing.)	do	Suppurating pulp	3	2	2	

It will be observed that in the use of kerosene in six cultures all were non-sterile, while in two other tests with this agent, precaution being taken to wash the infected instrument in hot water before immersing in kerosene, both cultures remained sterile.

This suggests the advantage derived from the thorough washing of infected instruments prior to immersing in the disinfecting fluid, for it takes away the accumulated mass of infectious material so that those bacteria remaining are more separated and therefore more readily acted upon by the sterilizing agent.

In two of the tests with formalin, and two with electrozone where staphylococcus pyogenes was used, the non-sterility was due, doubtless, to having taken the bacteria directly from potato culture where the growth was abundant and the amount taken so

massed that the disinfectants could not penetrate to all the germs in the short time of exposure allowed.

From these tests it will be seen that formalin, electrozone and sodium peroxid all have a high disinfecting power and may be employed with advantage in dentistry for other purposes than the sterilizing of instruments.

You are probably all familiar with peroxid of sodium from what Dr. E. C. Kirk and others have written about its use in dentistry as a tooth bleacher, pulp canal cleanser, etc.

The attention of the dental profession was called to the use of formalin in dentistry by Dr. J. S. Cassidy, in an article on Formaldehyd in the October issue of *The Ohio Dental Journal.* The characteristics and action of formalin are fully described in this contribution and it will bear careful perusal. Dr. Cassidy has found much satisfaction in the use of this drug in the treatment of pulpless teeth, etc.

Formalin is acid in reaction, but only a very slight coagulator of egg albumen. Its odor, while not unpleasant, is somewhat irritating to the membranes of the nose and throat.

Dr. C. F. W. Bodecker has called attention to the use of electrozone, in an article published in the October number of *The Dental Practitioner and Advertiser.* He highly recommends it for the treatment of pulpless teeth, pyorrhœa alveolaris, as a mouth wash, etc.

It is neutral in reaction, a non-coagulator of albumen, and has marked bleaching qualities. It has a chlorin odor but instruments immersed for days in the liquid show but slight action of the drug.

Electrozone is prepared by treating sea water with electricity. It contains $3\frac{1}{2}$ per cent. of chlorids, sodium, potassium, magnesium, calcium in solution, and iodin and bromin. Sea water being an unknown quantity the preparation may contain some other ingredients. It is non poisonous and may be used internally as well as externally. When not in use it should be kept well corked and in a cool place. Its efficacy as a disinfectant, its wide range of use and cheapness of the preparation, 50 cents per quart bottle, make it a valuable addition to the list of useful dental medicines.

DISCUSSION.

Dr. H. A. Smith, Cincinnati: I think it must be very gratifying to all of us to have a paper like this presented to a body such as we are members of. Knowledge first hand I think is very scarce with us. I feel like bowing very low indeed to a man like this who will make original investigations in this direction, that are interesting and exceedingly valuable. The one thing that concerns us most in the practice of dentistry to-day is the need of an efficient, rapid method of sterilization. Do we ever think how difficult it is to produce cleanliness? It is almost impossible to obtain surgical cleanliness. When we have washed our hands thoroughly and applied the rubber dam, in the act the fingers have come in contact with parts of the mouth, and they are no longer clean. The moment you take up the sterilized cotton with the fingers that have come in contact with the mouth, you have infected the cotton, and putting it in the tooth you infect that tooth. There is nothing about the dental office perhaps, that has not organisms.

Only as we are clean do we succeed as dentists. The crying need is a sterilizing agent that will sterilize instruments quickly. The dentist is a busy practitioner and can't afford to wait for anything. Three minutes is a long enough time and it should not exceed ten minutes to produce perfect sterilization. I don't mean the cleanliness that stands next to Godliness. We have some experiments in this direction, notably of Dr. Miller where he has formulated a method for us. I believe he experimented some time in sterilizing remains of devitalized pulps in root canals. In treating the remains of pulp tissue with a disinfectant we make a filling and it would take six months or a year to know whether it was a success or not. I would not like to make such experiments without knowing whether it was going to be successful.

Here we have something tangible. Think of the cases that could be treated for the poor if we had an agent of this sort. Nothing consumes so much time as the treatment of root canals. Don't you feel like bowing low to a man who will make these experiments for us—original research.

I am not competent to discuss the paper thoroughly. I think those three agents he discusses command our attention, and we should test them, making a note of each case we try.

Dr. J. R. Callahan, Cincinnati: I have been on the floor so often that I am ashamed of myself. I am greatly pleased with the paper and also obliged for the work Dr. Bethel has done, and when the paper appears in print I shall study it closely.

Dr. C. R. Butler, Cleveland: I am something like Dr. Smith; I certainly will bow to the compliment that has been paid us here this morning by Dr. Bethel. He has gone into this subject to a considerable extent, and it is of an original character, and we congratulate ourselves as a society on such work done by one of its members. I could say much in a general way, but it has been presented in such a manner that we will all be profited by it. The paper ought to be published largely in the State, and we ought to be able to apply it in every-day practice, for when the sterilization of our instruments can be done so rapidly, the necessity of it we can see more and more.

Dr. W. B. Ames, Chicago, asked Dr. Bethel the degree of heat that is required to thoroughly sterilize instruments.

Dr. L. P. Bethel, Kent: That depends largely upon the bacteria with which the instrument is infected. There are some bacteria that are very resistant and some that are not so much so. In the mouth we find almost everything at times, though perhaps not constantly. The bacteria are taken in with the breath from the air, dust, etc. In that way we find many kinds of bacteria in the mouth, not normally there, and it is hard to tell the exact degree of heat that would destroy all of them, but a temperature 300° to 500° F. would probably do so.

Dr. Ames: Do you not find that disinfecting agents are more potent when they are warm?

Dr. Bethel: Yes sir.

Dr. W. B. Ames, Chicago: I have thought a little and experimented on the subject, but not in the way Dr. Bethel has. I have a sterilizing agent that I have employed to some extent and that is glycerine heated to about 300° F. An apparatus can be made by taking a porcelain dish of some sort and placing

in it the glycerine and into this a tall glass beaker containing water. As the glycerine is heated to the point that will cause water to boil, the glycerine will be found to be very much hotter, will have almost reached the boiling point, yet will have no disagreeable odor, as the boiling water keeps down the temperature of the glycerine. I have immersed the instruments in this glycerine, and about 300° will thoroughly sterilize them.

I have done considerable sterilizing in root canals of putrescent pulp tissue which has been only partially removed, it being impossible to thoroughly remove all. The fact of iodine being as potent as it is, it being a germicide and undisputed deodorant, the efficacy of oil of cassia and the fact of iodine being soluble in oil of cassia, led me to make my experiments with them, and I find that the solution of iodine and oil of cassia seems to have certain peculiarities. The hydro-carbon combinations give various compounds, and I believe from what I have seen from making a solution of iodine in oil of cassia a new compound is formed to which your attention has never been called. You can dissolve two grains of iodine in a dram of oil of cassia and get a syrupy solution. Use more than two grains of iodine and in a few days you will have a hard mass. If you use five grains or ten grains you will have a mass like so much anthracite coal, insoluble, and that fact leads me to believe a thoroughly new compound has been formed. From six or eight minutes use of this, I have obtained results in the disinfection of canals that would lead me to think it is the most efficient combination I have used for that purpose. It is very convenient to use, as you can use any kind of point. I want to speak of its being soluble and yet so slightly soluble in water that we can place it in the root and leave it for a long time without being dissolved.

Dr. C. R. Butler, Cleveland: I am glad Dr. Ames has spoken of his experiment. A certain amount of iodine to a dram gives this undesirable mixture. I have been using it and experimenting with it and flattered myself it was doing good work, as Dr. Ames has said, and he has been working in the same direction. I am not particular about the small quantity of the iodine, but I don't carry it to the soluble point.

Dr. Henry Barnes, Cleveland: I have found the same results from the use of iodine and oil of cassia. It resulted in this solid mass, but I have not found that it deteriorated in that condition. I have used it in children's teeth.

So far as Dr. Bethel's paper is concerned, I want to voice what the others say in regard to it. If there was no other paper before this society, if we could go home and take the thoughts brought out in this, and use them, it would more than pay us for the trouble and time expended here.

Dr. F. E. Battershell: I was very much pleased with the Doctor's paper. I suppose none of us could have an adequate idea of the pains-taking and care of these researches. I think that these contributions are of great benefit. We cannot all of us experiment in every line, and when they are laid before us in that way they are very valuable.

We sterilize the point or ball of an instrument and then we handle the instrument and transfer our hands from the mouth to the instrument, which in handling becomes more or less contaminated, but we only disinfect a portion of this. By making a box in which we could lay our instruments and having them constantly at a heat that will sterilize, we will completely obliterate all germs that are deposited on instruments and then we have an ideal sterilizer. Wouldn't it be well to lay these things in the sweat boxes and our clothing, or coat, because we are not only responsible for what we put into the mouth but we are responsible for what we place in close contact with patients. If we have been operating upon a patient who may have disease germs about the clothing and we transfer ourselves to another person who, being very susceptible to the disease, may become infected by a transportation of the disease germs, we can avoid the infection by taking the outer robe or coat and placing it in a sweat box and sterilizing it before going to the other patient. Wouldn't it be a good thing?

Dr. ———: Wouldn't it be a good idea to put the patient in that sweat box?

Dr. G. E. Hunt, Indianapolis: I consider this one of the most valuable papers on the subject that has ever been presented.

The experiments show the greatest care and the results arrived at are very important. The subject of sterilizing our instruments should receive a great deal of attention. The results that Dr. Bethel has reached are results that should be retained in the practice of all of us. There is no doubt heat is the best sterilizing instrument we have. If we heat anything hot enough it will kill all the bacteria in it. It will be impracticable to heat everything, and many bacteria even half an hour's steaming will not kill. We don't want to spare the instrument for half an hour or twenty minutes even. In heating, it would require such cumbersome apparatus as to be impracticable, and if we could avoid it we would be better off. The ideal sterilizer will be something in the line the Doctor has been experimenting in that will thoroughly sterilize in a short time.

Electrozone promises great things. I think it was first used to sterilize a large mass of putrid matter in Ricker's Island Extension, East River, N. Y. The place had been used for a dumping ground for all Manhattan. After a long time it was discovered that the hot sun made it a mass of corruption and the wind blew it over New York City. Somebody conceived the idea of making electrozone out of sea water and then sterilizing this putrid mass with the electrozone.

From the experiments that have been made I would judge that formalin was also a formidable drug.

I think that this matter of sterilizing can be carried further than is necessary. The gentleman who preceded me spoke about sterilizing our coats. I don't thing that is necessary. We may come to it after a while, We are in danger of carrying certain lines of practice to excess. To sterilize the napkin after it comes from the wash may be necessary, but I don't believe it. I believe a napkin, after it has been washed, is sterilized enough for common use. It is different from instruments. They are put into the human mouth and they require sterilizing.

Dr. J. Taft, Cincinnati: As heat is conceded by all to be the best sterilizing agent, the only question being to make it practicable, it seems to me that Dr. Custer might make some arrangement for sterilizing by electrical heat that will be practicable and better, I think, than anything else.

Dr. C. H. Harroun, Toledo: I would like to suggest in regard to the napkins, if Dr. Hunt would go into a laundry and notice the way in which our napkins are washed, he would think it was necessary to sterilize them. The Chinaman takes a pail of water, takes some in his mouth and squirts it out on the napkins before ironing, and then what have you got?

Dr. Hunt: I have my washing done at home and I know what I get.

Dr. Bethel: I appreciate the remarks that have been made and thank the speakers for them. In regard to these experiments I wish to say a few words. They were made under the most unfavorable circumstances. The instruments were infected and the infectious material was left on them; they were not washed before putting in the sterilizing fluid. The cultures were placed in bouillon instead of sterilized water. When placed in sterilized water the growth is hindered and the bacteria are less resistant. For example, take anthrax bacilli and the spores are so much more resistant in bouillon than sterilized water that it requires twenty times as much bichloride of mercury to destroy them as when used in sterilized water.

This was done to possibly offset the resistance of the bacteria as they are found in their natural habitat, and where they feed upon natural food. They are more resistant there than when cultivated on any artificial media. I have little doubt but that had the instruments been thoroughly washed we would have found them to have been sterilized with three minutes exposure.

I am glad to hear of Dr. Ames' solution. The only objection I would raise to the use of oil as a sterilizing agent would be that the instrument or surface should be thoroughly dried before using the disinfectant fluid, because oil and water are incompatible. If there was much moisture present it would not permit it to be as effectually acted upon, as it would if the water was gotten rid of.

In regard to the electrical apparatus, it would undoubtedly be one of the finest, but unfortunately all dentists do not have the advantages of the electric current, particularly in the small towns, and it would not be practical there, unless however, it

could be used with a storage battery or something of that sort. Yet these are, in themselves, hard to keep in order.

In regard to wiping the instruments after sterilizing, I have been in the habit of using cottonoid instead of napkins. I think there can be no germs in cottonoid to do any harm, as it must be thoroughly sterilized when made, and then there would be no nourishment left in the cotton, to make the growth effectual, because all the oils and fats have been taken out of it. Perhaps a better way to dry instruments would be by hot air.

Monthly Digest.

BY MRS. J. M. WALKER.

DENTAL EDUCATION.

PROF. L. L. SKELTON, in the opening address before the Chicago College of Dental Surgery,* discusses the question: "What Constitutes a Practical Dental Education?" In refutation of a general misconception on this point, arising from a confusion of the terms *practical* with *manual* or *technical* (*theory*, seeming to imply something to be classed among the adornments of the scholar,) he states, as a general proposition, that a practical dental education is necessarily composed of two parts, *first*, the theory; *second*, the manual in its broadest sense; neither can do without the other.

Quoting the universal complaint of the student, that so much time is spent on subjects, the connection of which, with practical dentistry, he is wholly unable to appreciate, Prof. Skelton proceeds to show that a knowledge of the normal furnishes the only landmark by which to recognize the abnormal; that a knowledge of the physiological is necessary for an appreciation of the pathological. To understand the working of a vital machine there must be a knowledge of its construction; hence the study of anatomy, histology, chemistry, etc. The physician and the

* Dental Review, November 15, 1894.

dentist have common ground in the fundamental branches, in which the dentist must be well grounded while in college, in order to make the intelligent application necessary for the success of the practical dentist.

Dr. Louis J. Stephan, in a paper read before the Wisconsin State Dental Society,* urged the importance of the "Dental Education of the Public." He spoke of the work of the medical profession in their endeavors to enlighten the public in regard to sanitary science, hygiene and prophylaxis, and of the necessity of renewed efforts on the part of the dental profession in disseminating a knowledge of the mouth and teeth and their functions, and awakening a general interest in the prevention and arrest of decay and loss of the teeth.

How to disseminate such knowledge is a problem which may well engage the attention of dental organizations.

To forward this object, Dr. Stephan suggests that the relations of the oral cavity to the alimentary canal should be taught in the public schools; that chapters on the teeth and their conditions, and the methods for their protection, should be inserted in the current school text-books on physiology; that at the annual meetings of the State Dental Societies, lectures on these subjects should be given to the public, that Educational Committees should be appointed to confer with School Boards with regard to the attainment of these objects, and last, but not least, that members of the profession should contribute towards defraying the cost of carrying out these measures.

In the President's Address before the Minnesota State Dental Association,† Dr. C. H. Stearns discussed the work of State Societies as a factor in elevating the standard of "Dental Education," suggesting the plan of some special work, to which the attention of the profession throughout the State should be devoted during the ensuing year, the idea being to have issued a syllabus, list of books, points to be looked up, material to be used, etc., as a guide to those wishing to improve themselves in that particular branch; at the next annual meeting the selected

* Dental Review, November 15, 1894.

† Dental Review, November 15, 1894.

subject could be intelligently discussed, and all be prepared to take an active part in the work of the Society. This would constitute a sort of Chautauqua course, taking the place of a Post Graduate course for the many to whom the latter is an impossibility. In the discussion of the address this suggestion was most favorably received, and a committee was appointed to work up the plan. As the result the subject of Pyorrhœa Alveolaris was chosen, and a sum, (not to exceed twenty-five dollars,) allotted to defray the expense of preparing and sending out the syllabus, etc.

Dr. E. C. Kirk, in a paper read before the American Academy of Dental Science (Boston,)* entitled "The Laboratory Method in Dental Education," endorses the increasing adoption of laboratory and individual teaching, in lieu of the didactic and class methods.

By the latter method, he says, the scholar acquires his knowledge second-hand, from mental impressions conveyed orally by the teacher. By the laboratory method he receives his knowledge by direct sense impressions derived from material objects or phenomena.

This has, heretofore, been accomplished in a measure, through the mechanical and operative clinics, but as carried out was inherently bad and little short of malpractice, as the green student was forced to acquire his training upon patients of the dental clinic, and subsequently upon the unfortunates who consulted him during the first years of his practice. These objectionable methods are now being supplanted by "Technic Courses," based wholly upon the laboratory method, in both mechanical and operative dentistry. The fundamental principles upon which this system or method is founded are self-evident truths, and when clearly understood criticism will be disarmed, and the method recognized as holding the highest possibilities for good in its application to dental education.

The discussion of this paper ran largely upon the value of manual training. Dr. Kirk, in closing the discussion, said that he did not emphasize the "laboratory method" solely as a means

* International Dental Journal, December, 1894.

of acquiring manual dexterity and skill, but rather as a means of enabling the student to acquire, at first-hand and for himself, a knowledge of facts from which, to reason scientifically, and therefore correctly; a method of instruction based upon a practical knowledge of objects and phenomena, presented to the mind of the student through the medium of his own perceptive faculties.

Dr. H. A. Palmer, in a paper on the "First Permanent Molar,"* emphasizes its importance, the general ignorance of the public concerning it, its usually poor structure and the causes of this inferiority, the disastrous results following its loss, and urges the duty of the profession in "Educating the Public" on these points, that the men and women of the future may rise up and call us blessed.

STOMATOLOGY.

The propriety of the adoption of the title "Academy of Stomatology" by a Society of Dental Practitioners is discussed editorially in the Dental Cosmos.†

The necessity of a more comprehensive term, in view of the immensely broadened field of operations opened to the intelligent dentist in consequence of his increasing knowledge of the systemic relationships of the teeth; the etymological fitness of the word to express all that is now included in the present knowledge of the mouth, its functions, its care in health and its treatment when diseased; the uniformity of the term with the designation of analogous departments of medical practice *e. g.* laryngology, ophthalmology, gynæcology, rhinology, otology, are the principal arguments advanced in favor of the acceptance of the term "Stomatology" to describe the conditions now existing, its adoption being regarded by the editor as a mark of distinct professional advancement.

At the October meeting of the Wistar Biological Association, University of Pennsylvania,‡ Prof. W. D. Miller delivered a lecture on the "Bacterio Pathology of the Human Mouth and its Significance in Relation to Systemic Diseases," illustrated by a

* Dental Review, November 15, 1894.
† Dental Cosmos, December, 1894.
‡ Dental Cosmos, December, 1894,

series of photo-micrographs, showing in detail the morphology of the several groups of pathogenic bacteria which inhabit the human mouth. In his introductory remarks, Prof. Miller dwelt upon the toxic character of the human saliva, due to the presence of the micrococci of the sputum of septicæmia.

The most common results of bacteritic action, in the mouth, are caries of the teeth, pulpitis, alveolar abscesses with, not infrequently, secondary complications of most serious nature—as periostitis, osteomyelitis, caries and necrosis of the bones—many cases terminating fatally through the intervention of septicæmia, meningitis, pneumonia, etc.

From abscesses of the teeth pathogenic bacteria may also find their way into the circulation, proliferating anew at perhaps some remote point of diminished resistance. The pernicious results of swallowing pus and bacteria from abscessed roots and suppurating gums—as in pyorrhœa alveolaris; the causal relation of diseased teeth to glandular swellings; infection from pathogenic germs harbored in the tonsils; the relation of mouth germs to diseases of the middle ear, the germ origin of croupous pneumonia, meningitis, tuberculosis, diphtheria—all show the influence the condition the mouth exerts in determining the general state of health and, in the opinion of Prof. Miller, justify the statement that stomatology is entitled to stand on an equal level with otology, ophthalmology, and the other specialties of medicine.

SYSTEMIC TREATMENT.

Dr. L. A. Faught read a paper before the New Jersey State Dental Society* urging the duty of the dental practitioner to practice "Systemic Dental Medicine."

The dental organs being a portion of a complicated organism, the very condition which primarily requires manipulative treatment is produced largely by the influences of the general system, and to repair the local organs without treating the system is to invite recurrence of the disease; it is simply effacing effects while ignoring the cause, and a failure to discharge our whole duty. Dr. Faught then classifies dental diseases according to

* Dental Cosmos, December, 1894.

their possibilities of systemic treatment, and gives a short list of medicaments most available, bearing in mind that medicines act on the body at large by one of these methods—either by control of tissue waste and repair; by their direct effects on the various organs; or by their effect on the secretions and excretions. He asks an earnest consideration of the subject, and the prompt and general introduction into dental practice of systemic dental medicine.

EROSION.

Dr. A. P. Brubaker, in a paper read before the Odontological Society of Pennsylvania,* on the "Causation of Dental Erosion," describes the abnormal appearance of the labial glands, in cases of erosion, gives a brief resume of the anatomy and physiology of the structures involved, and a summary of the normal process of secretion. In cases of erosion, the change from physiological to pathological, in the labial glands, is evidenced by persistent hyperæmia, and a secretion altered in viscidity, and changed from alkaline to an acid reaction. He then investigates the nature of the acid present, its origin, and its capacity for decalcifying the enamel. He dissents completely from the uric acid theory for four reasons:

1st. The excretion of uric acid is not a function of the mucous glands.

2d. The insufficient fluid secretion of the labial glands for the solution of uric acid.

3d. That uric acid is amphoteric in character, and not always an acid product.

4th. That both from its small amount and its feeble combining power, it is incapable of decalcifying enamel.

He then discusses the normal constituents of the secretions of these glands and their possible chemical combinations under abnormal conditions, reaching the conclusion that the acid in question is probably the sodic phosphate, and shows both theoretically and by actual tests, the possibility of the decalcification of enamel in the presence of this acid through the gradual disintegration of the molecules of the calcium phosphate of the tooth. As a method of treatment he suggests the destruction of the diseased glands by electrolysis. At the conclusion of the reading

* International Dental Journal, December, 1894.

Dr. Brubaker passed around for inspection, teeth which had been immersed in a weak solution of the acid sodium phosphate, and which showed small eroded spots and a number of transverse fissures produced by daily friction with the tooth brush.

In the discussion of this paper Dr. C. N. Pierce stated that he had examined the teeth previous to this treatment, and that they had been entirely free from any abrasion.

Dr. Faught thought that the investigations of Dr. Brubaker touched upon the process at one end of the line only, and that uric acid might still be the systemic irritant producing the pathological conditions.

Dr Gaskill thought the same results to the teeth might follow the use of acids in systemic treatment, and reported several cases of marked effects upon the teeth from the use of "microbe killer."

ANÆSTHESIA.

Dr. E. C. Kirk, at the Academy of Stomatology, at Philadelphia,* read a paper on and demonstrated Dr. Hewitt's method of using "Nitrous Oxide and Oxygen" as an anæsthetic mixture, by means of which true anæsthesia is induced and maintained without asphyxial symptoms. Dr. Hewitt's apparatus consists of a double bag, a mixing chamber and three steel cylinders, of uniform size and appearance, one of which contains oxygen; the other two, which are yoked together with a tube coupling, contain compressed nitrous oxide, considerably more than twice as much nitrous oxide as oxygen being used during the inhalation. The relative proportions of the gases are under perfect control of the operator by means of a dial and movable indicator on the mixing chamber, the valve admitting a constant stream of nitrous oxide and as many proportionate parts of oxygen, through numbered perforations, as the case may require. The valve of the apparatus is operated by a foot-key, leaving both hands free.

Following the reading of the paper a demonstration of Dr. Hewitt's method was given, the patients being anæsthetized with none of the usual symptoms of asphyxia but all the appearance of normal deep sleep.

* Cosmos, December, 1894.

EDITORIAL.

Bibliographical.

The Anatomy and Pathology of the Teeth, by C. F. W. Bodecker, D. D. S., M. D. S., with three hundred and twenty-five illustrations. Adopted by the National Association of Dental Faculties as a text-book for dental students. From the press of The S. S. White Dental Manufacturing Company, Philadelphia.

The preparation of this work has occupied a large share of the spare time of the author during the past eighteen years. About ten years have been industriously given to the preparation of the matter which composes the volume.

The line of work embraced in the volume is one for which Dr. Bodecker has always entertained a very great love, and in which he has engaged with great earnestness and industry; and in addition to this he has made available the attainments of men eminent in the same line, such as: Dr. Carl Heitzmann, Dr. Wm. H. Atkinson, Dr. Frank Abbott and others.

The work consists of forty-eight chapters, embracing the anatomy of the teeth and adjacent parts, their histology, growth and development, also the abnormal and diseased conditions to which the teeth and surrounding parts are subject.

The work is prepared with special reference to the needs of the dental student, and will be an invaluable addition to his resources in his study and investigation on these various subjects. This work is a valuable one for the practitioner as well as the student, and should be in the library of every dentist.

To Dr. Bodecker the profession is under an obligation in this matter, which they can in part at least repay by conscientious study and thorough understanding of all the subjects that are embraced in the work.

The work is obtainable through any bookseller, or of any of the dental depots. Price $5.00.

NOTICES.

Tri-State Meeting.

The joint meeting of the Dental Societies of Ohio, Michigan and Indiana will occur June 18-19-20, 1895, at Detroit, Michigan. The dental department of the Detroit College of Medicine and Surgery has been secured for the sessions. Michigan has generously invited her sister States to share her hospitality and be her guests on this occasion. The program contemplates four literary sessions, two half days of clinics, and one half day of "hurrah." This latter will come in form of an excursion thirty-two miles up the Detroit River to the St. Clair Flats, where we will dine at one of the club houses built on piles in the middle of Lake St. Clair. Special hotel and railroad rates are assured and will be announced later. The railroad fare will be at least as low as one and one-third fare. All reputable dentists in the three States are cordially invited to attend.

EXECUTIVE COMMITTEE.

THE DENTAL REGISTER.

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COMMUNICATIONS.

Harmony.

BY H. L. AMBLER, D.D.S., M D., CLEVELAND, O.

Read before the Ohio State Dental Society, December, 1894.

The poet says: "There is a bond which holds each cord in harmony." Can we find that bond? The practice of dentistry can never be separated from the human anatomy, thus the connection between dentistry and medicine must always be an intimate one, and both callings only exist in consequence of the ills to which the flesh is heir. "The true professional spirit is one of generosity," and if applied in co-operation and interchange of professional thought between M.D. and D.D.S., advancement for each will certainly result. Neither should try to be completely independent of the other, for all things being equal, the M.D. and D.D.S., who agree to rely upon and assist each other, will be successful in curing many cases, where, alone, either one would have failed. One result of consultation will be to alter their ideas and relations to each other, and also greatly aid in relieving suffering humanity. Co-operation, working together, and exchange of knowledge should be in private practice and before medical and dental societies. In the writings of Hippocrates, Galen, and Celsus, medicine, surgery and dentistry were all included, and history informs us that the ancient Egyptian surgeons, physicians and dentists worked in harmony. Their united efforts have furnished such an accumulation of knowledge that the work has

been to a great extent classified and apportioned to each one, but this does not furnish sufficient and proper grounds for them to ignore each other. Harmony and mutal interest can be attained by closer association, for we are dependent upon the physician, and he is dependent upon us. Medicine or dentistry cannot be productive of as much good as when reasonably combined. If a dentist has no medical education, cases will occur in his practice which could sooner and easier be cured by consulting with an M.D. When a patient comes to you with a syphilitic, or any other lesion of the mouth which you fail to diagnose, it is much better for the patient and more to your credit to consult with an M.D. and have the proper treatment administered, than for you to prescribe a remedy or operation, the result of which you could only imagine. Here the M.D. might be able to give a correct prognosis, foreseeing what results would follow from a certain course of treatment. The M.D. should act in the same manner with his patients, for he comes to the dentist very quickly when he cannot cure his *own* toothache. As a general thing, when dental diseases—so-called—are discussed by physicians, or medical diseases—so-called—are discussed by dentists, it is shown that there is lack of knowledge by each party. There are M.D.'s who have given attention to some dental lesions, and there are dentists who have devoted study to some medical lesions, but they would be an exception to the foregoing statement. Only seven or eight medical colleges in the U. S. give any special attention to the teeth and their diseases, so that lack of technical knowledge makes the physician sometimes mistake effects for causes when the disease is of dental origin, thus suffering is prolonged and occasionally death results. The *Lancet* reports a case, viz: A patient was brought to a London hospital, in a weakened condition with an abscess on the neck, and after being treated a very short time died. At the post-mortem the surgeon testified that death resulted from gangrene of the lungs and exhaustion from the effects of extending alveolar abscess, followed by pyæmia, which was produced by an ulcerated tooth.

The M.D. who can contribute to the fund of dental knowledge, is the one who should be heartily welcomed at all times, and

it is a duty we owe to ourselves and patients to learn all the good things we can from everybody, as our profession is one in which no scientific attainment is too great to be made use of. "By joining hands with the M.D. we can hope for better things, which will raise us from the age of selfishness, and place us upon an eminence which will enable us to derive light from all the bright luminaries which adorn the profession."

Some of the publications of the International Medical Congress and the American Medical Association are read with pleasure and profit by dentists, and some essays in dental journals we trust would be of assistance to the busy practitioner or surgeon. M.D.'s read essays before dental societies; we had the pleasure of listening to one at our last meeting, and dentists do the same before medical societies; still there is not enough of this kind of interchange, much more of it would bring about a better understanding. Neither individuals nor societies should place any barriers between the M.D. and D.D.S., for the time has come when neither can afford to disparage the other, and the sooner they come to this conclusion, the better for both. "Many times surgeons and dentists have to seek the assistance of each other in order to effect cures. Sometimes the dentist has to prepare the way for the surgeon's knife, and in other cases the dentist has to aid the surgeon by a mechanical appliance. It is no reflection upon the most skillful and distinguished surgeons to say that they ought in many cases to seek the aid of the dentist and his mechanisms to supplement their services in the interests of patients." The gratifying results which have been thus accomplished, have been well demonstrated in numerous cases. In the restoration of lost portions of either maxilla, whether from disease or surgical operation, the surgeon is quite ready to call in the skill of the dentist to construct some appliance which will remedy the deficiency, restore symmetry and usefulness. E. H. Angle, D.D.S., of Minneapolis, has been appointed surgeon to the Great Northern R. R. to treat all cases of fractured maxillæ. If, for any reason, staphylography is a failure, the dentist can give relief and comfort to the patient, by making them an obturator.

Infantile dentition is more or less a factor in fever, diarrhœa,

enteritis, obstinate vomiting, spasmodic coughing and convulsions; in such cases we suggest that consultation might be of advantage, for sometimes tumefaction of the gums and local disturbances are not very well marked. The teeth and the mucous membrane of the mouth are so closely related to the pharynx, œsophagus, and intestines, that there is no reason why they should not cause disease. Those who have not made it a study cannot be expected to fully understand about the changes which are taking place during dentition, but from a scientific knowledge of the tissues with which the professional man comes in contact, he derives the art of producing them in health or disease. All will be ready enough to admit that the more one knows of any and all organs of the human subject, the easier it will be for them to meet the formidable array of complicated diseases which may be presented.

Those who are too erudite to ever find anything new in the unlimited field of medicine or dentistry should soon be called to a higher sphere where they *may* have room for boundless expansion. Sometimes we find otalgia produced by reflex irritation of the dental nerves.

The important vascular and nervous ties binding together teeth and eyes show clearly enough that a certain pathological relationship between those organs is no more than might be expected, while the knowledge we possess concerning reflex affections in other parts of the body must incline us to a belief in the reality of such a connection. Examination of the teeth should never be neglected in treatment of diseases of the eye, and the removal of any morbid dental condition should always be aimed at. Gazelowsky claims that the following diseases stand in casual connection with carious teeth: reflex asthenopia, closely related to caries of the anterior molars, inflammation of the cornea, iris, and of the inner membranes, through the transmission of a "kind of ascending neuritis" by the ciliary nerves, iridio choroiditis, reflex dilatation of the pupil, blepharospasmus and cramp of the ocular muscles, exophthalmus from transmission of inflammation through the maxillary sinus. The symptoms of keratitis, or conjunctivitis, that appear suddenly in childhood, are often due to difficult dentition. Dr. Williams reported the following case in

the *Dental Cosmos*: An alveolar asbcess from a superior molar discharged on the lower margin of the orbit, under the outer commissure of the eyelid. The pus had burrowed under the zygomatic process and temporal muscle and was prevented from pointing in the temple not only by those structures, but also by the strong temporal fascia. It had then passed through the spheno-maxillary fissure into the outer and lower part of the orbit, to discharge by means of a fistulous opening in the location described. Distinctly marked exophthalmus of the eye was present along with serous chemosis of the conjunctiva. After the pus had been evacuated by means of an incision in the temporal region, improvement immediately followed.

Some forms of nasal disease have been traced to diseased teeth, and, as regards antral disease, it is only necessary to mention the fact, admitted by all, that many serious cases have been cured by the removal of one or more diseased teeth or roots. Chorea, hysteria, epilepsy, paraplegia and insanity have been caused by dental irritation and disease. "The fact has long been established that there is great sympathy between the eyes, stomach, brain, teeth and the nervous system, and the pathological reactions, when the teeth and oral cavity are in a diseased conditions calls loudly to the understanding of these conditions by any who attempt to treat them." It has been said that every inspiration of a person with a diseased mouth carries septic matter to the lungs and in time might cause death. "The symptoms and treatment of the morbid conditions of the teeth themselves, and of the parts immediately in connection with them, are not satisfactorily managed by the M.D., and seldom does the D.D.S. properly treat remote nervous affections in various parts of the body, or constitutional derangements arising from these local causes; diagnosis is often difficult, but often possible between those affections which *are* and other very similar ones which can not be traced. Both dentistry and medicine are needed for the relief of physical suffering and the prevention of disease, and such results can be best reached in certain cases in proportion as dentist and physician are willing to consult and co-operate, for their work certainly overlaps." The minimum time required to

graduate a physician is three years, and the same time is required of the dentist, so there must be considerable to dentistry after all. There can be no doubt if medical colleges would have their students study dental anatomy, pathology, etc., they would be able to diagnose and cure many cases in which they now fail. Some times an ulcerated tooth is diagnosed by physicians as a tumor, and is treated systemically, and, perhaps, locally until it points externally on the face or neck. "That living and dead tissue can be made to exist in the same organ in the system, without presenting to the patient or practitioner any special pathological condition, is an achievement in medical and surgical practice of which the dentists have a right to be proud."

Conservatism says that "a diseased part which can be restored to a healthy condition must not be sacrificed; thus, if the exposed or putrid pulp of a tooth is a disturbing element, the tooth need not be extracted." Small things, because of their size, are often unrecognized and their proper treatment overlooked, but they sometimes lead to the most confusing complications. A large tumor, readily detected by any one, requires far less learning to understand as a cause of suffering than does an apparently causeless pain which is finally shown to have been reflected by the sympathetic nervous system from a distant point of irritation.

Prof. G. L. Curtiss, the oral surgeon, says: "Among the causes of affections of the antrum, the teeth and their diseases stand first. The root of a tooth may merely penetrate, or it may extend into the antrum half of its length with only the mucous membrane intervening; if the pulp of such a tooth becomes putrid, the poisonous influence soon extends to the surrounding tissue. There is no resistance as when the root is enveloped in bone, consequently soreness of the tooth, one of the first symptoms of pericemental inflammation, may not be present. The nervous system is under a continuous strain where a purulent condition of the antrum exists.

"In two cases recently observed, one of the patients had shown marked symptoms of insanity, and the other was insane for three months of the twelve for several years prior to operation. Fistulous openings under the chin, on the neck, back and breast have been caused by teeth containing dead putrid pulps.

After two years' treatment for rheumatism of the left shoulder, the cause was found in an abscessed molar, which was treated and filled, when the pain subsided. By extracting the diseased root of a superior third molar, paralysis of that side of the face was cured.

"In a case of epilepsy which had been treated by different ones, it was found that the primary cause was four *badly* decayed teeth, two of them ulcerated and two with exposed pulps, for this reason there was a great drain upon the system and a continual nervous strain, and the food not being properly masticated indigestion brought on the attack of epilepsy. These cases show in what diverse directions reflexes from the teeth may ramify."

The medical profession has justly been jealous of their good repute, and are trying to live up to a higher standard of scientific attainment. If we are honest and possess good professional ability, the medical profession will be glad to clasp hands with us, as any calling which makes itself worthy of recognition is sure to be recognized. If a dentist wishes to succeed well, he must understand to a reasonable extent the workings of the whole human system, and the more he knows of its different functions the better he will be able to diagnose correctly the diseases with which he comes in contact; thus, from the supposition that he is learned in his professional specialty, it becomes his duty to himself and patients to study and develop his powers in the general branches of medicine; without these acquirements, he has not done "his highest" in developing by brain and hand-work those powers which give him the strength to withstand the test of time. Ought not the M.D. to have a fair comprehension of the teeth and their diseases? They are vitalized structures, supplied with arteries, veins and nerves, and through these nerves are connected in sympathy with all parts of the body. He should be able to relieve an aching tooth without resorting to extraction, but in saving the precious organ add to his fame by preserving the health, beauty and comfort of those who seek his counsel. Do not extract any tooth which causes pain, whether decayed or not, but remember where the permanent teeth are removed they do not appear again; nature does not, as in many parts of the body,

supply the chasm which has been made. The temporary teeth are often extracted too soon, and they are sometimes mistaken for permanent ones by those who have had no training in dental anatomy; there is a duty and responsibility in these matters which ought not to be misunderstood. It is our belief that the most successful physicians are those who have made the teeth somewhat of a study, and when called to a case examine them carefully should there be the least cause to suspect their implication. At the September meeting of the Odontological Society of London, England, the point was raised as to the advisability of the medical council making it compulsory that every medical man should know something about the anatomy, physiology and pathology of the teeth. They also recommended consultation between physician and dentist, and suggested an interchange by reading papers before medical and dental societies. One gentleman present, an assistant surgeon to a general hospital, said he often found it desirable to consult with a dentist in regard to cases under his care. When a patient who is wearing the ordinary rubber plate complains to the physician of continual sore mouth, throat or indigestion, it would be well for him to have a consultation with the dentist. Take a case of neuralgia of the fifth pair of nerves, and generally the pain is located in the temple, cheek, mouth, jaws and teeth. Now point out the M.D. who diagnoses these cases properly and cures the greatest number, and we can tell to a certainty that he is one who does not fail to examine closely the mouth and teeth; he knows that pericementitis, arising from whatever cause, produces a very painful type of this disease; also that carious teeth are among the most prominent causes, and should receive his first attention, and he will almost invariably find them or their surrounding tissues in a diseased condition. The ideas we have given are practical and should tend to bring the M.D. and D.D.S. into a closer relationship of harmony. Let each be ready to assist the other in consultation or operation, and not regard any with jealousy or as rivals, but work together for the good of all humanity, for with such friendly feelings in your heart, success will in time surely crown your efforts.

DISCUSSION.

Dr. C. R. Butler, Cleveland: It is hardly necessary to add any more about the necessity or the advantage, in the practice of dentistry, of having a knowledge so that when we come in contact with other members of the general profession, we will be able to discuss physiologically and pathologically the question of therapeutics in an intelligent manner, especially in consultation, where it is deemed advisable and advantagous.

One of the difficulties that has presented itself to my mind has been the lack, perhaps, of self assertion on the part of those who engage in the practice of dentistry when they come in contact or association with those in the practice of general medicine, and they are disposed, perhaps, to take a back seat, or rather feel that they are not entitled to an opinion that is of just as much value as the men engaged in the general practice of medicine or any other specialty of the profession. There is no good reason why there should be any discrimination or recrimination between the two professions. We are all dependent upon one another, and the part that is engaged in the practice of medicine or any other specialty, if they get into trouble, they go to the dentist the same as we go to the general surgeon. If we are in trouble we seek the assistance of those who can help us out. If the physician has a pain in face or teeth he is not able to fathom, he will come to the dentist just as quick as the layman, and in this way there is the very best reason why there should be a degree of harmony and no disharmony with one who is carrying on practice in a different field from the one in which we are engaged. I think there is more of this disposition being shown all the way around—that is my experience and observation, and I think many here can voice the same thing.

Dr. H. A. Smith, Cincinnati: I am very glad to commend the paper for it is a very interesting one. The tenor of the paper indicates that there is disharmony between the medicine man and the tooth carpenter. I don't think it obtains very much between intelligent physicians and intelligent dentists. I think they are getting nearer together. Almost weekly we have patients referred to us by intelligent, bright physicians. It is no indication that

they know nothing about dentistry themselves. On the other hand, we get cases we know nothing about and refer them to the physician. I have no degree of M.D., which qualifies a man to practice medicine, and I am not going to raise the question whether it is necessary to have the M.D. degree, but I would rather be a qualified man as a D.D.S. than to be a cross between them ; one of those double breasted fellows. Does the degree of M.D. stand for anything? There are many dentists who have the degree who don't deserve it very much. We should settle these questions among ourselves. M.D. means, from the medical standpoint, doctor of medicine. Long ago, in a discussion, Dr. ——, of Chicago, said the degree M.D. would be sufficient to stand for all. I advocate that we should have both degrees and have harmony between the dentists and the medical men.

I do not quite agree that there is this remarkable degree of want of harmony between the intelligent physician and the intelligent dentist.

Dr. Henry Barnes, Cleveland: I agree that there is not so much want of harmony as formerly between the two professions. I frequently meet medical gentlemen in consultation in relation to certain cases, neuralgia, and others of a similar kind.

The other day I saw a case and it is worth while to describe it, because we hear so much about painless dentistry. I had heard from time to time of a certain lady, who said she went to a distant city to have her dentistry done because it was painless. The case fell into the hands of a physician. She was troubled with severe neuralgia and he referred her to me to see if anything was wrong with her teeth. The mouth presented one of the worst cases I had ever seen. It certainly was not painless when I saw her. The trouble arose from an exposed nerve of the third superior molar which was extracted. I have not seen the patient since, but am sure the pain was lessened very materially, although there was enough other trouble in the mouth to have caused neuralgia. The teeth had evidently been scooped out saucer-shape and a great deal of cement put in. I will give you an illustration of how it had been done :

The second superior bicuspid was broken down on its mesial, distal and lingual surfaces and much of the root was lost. The cement was so placed as to impinge upon the disto-lingual angle of the first bicuspid and the mesia-lingual angle of the first molar, thus bridging over the interproximate space. This is a fair sample of the painless dentistry which had been done for her. Quite a few cases of antral disease have been treated for catarrh, which, when referred to the dentist, have been correctly diagnosed.

Dr. Grant Molyneaux, Cincinnati: I don't see that there is any lack of harmony between the dental and the medical profession. I don't see why we should be eternally running to doctors to tell us what is the matter when we can tell it ourselves. The paper had reference to a condition following the use of rubber dentures. If a dentist knows that the trouble is from the use of a rubber denture, why go to a doctor to consult about it. When he knows how to relieve it he doesn't need to go to the doctor. Suppose he does go to the physician for the sake of harmony, what can the doctor know about it? He can only diagnose it. He would say, there is a plate in the mouth, you had better see if it is not the plate that produces this condition. In the end he would go to the dentist to see if it was not the plate in the first instance, and if he found there was a local lesion, the dentist would refer the case to a doctor to take care of the lesion.

I think the paper was excellent, but I don't like to run after doctors.

About three weeks ago a lady met with a street car accident and had her face and lips cut. She called in an excellent surgeon and he didn't know what to do. He did not say he wanted a consultation with a dentist, but he said "you get a dentist." The lips were split and the teeth driven up into the nose and into the side of the mouth. The doctor had faith that the dental profession could take care of it. He didn't even sew up the lip, which was necessary, and the dentist had to stitch the lip, and she came to me, an every day dentist—not a double breasted one either—single breasted. A physician was not called in and she progressed rapidly, but, if he had attempted to operate there, the very

certain result would have been the removal of every one of those teeth, and a great destruction, not only in the deformity of the mouth, but in the deformity of the face as well. There are many possibilities there. Possibility of necrosis following; possibility of sequestrum resulting from that, or, if there had been a consultation, in case of carelessness of the dentist treating the case. When called to my attention it took a couple of hours to find out the exact state of things. The teeth were pushed up clear out of sight. Most any surgeon would have amputated the whole thing, but this surgeon had faith in the D.D.S. profession. He did not say "go to a medical dentist," but he said, "get a dentist to fix that."

Dr. W. D. Snyder, Sidney: In my opinion, if any one feels that he is ignored or not treated right by his town physicians, it is largely his own fault. I have known a case or two of simple abscessed teeth being referred directly from the dentist to the physician. Perhaps to treat an abscessed tooth, he would fill a canal or fill up the tooth, and it would afterwards recur and bring a good deal of pain, and he would say, "you had better see your physician about that." Certainly the physician could not have very much faith in the dentist, and wouldn't very likely refer any one else back to him who could not see plain enough that the trouble had all come from that tooth.

There have been several little cases that have come under my observation. Cases of spasmodic closure of the jaws, coming from erupting wisdom teeth, and lesions of the mouth have been referred to me. Patients would go to a doctor before they consulted any dentist, and I have known them to be referred to some of my other dentists or friends and colleagues. I think the dentist that will try to educate himself in his line, will have no trouble with his physicians. I don't believe the dentist should try to cover the ground of dentistry and everything else. I think it is all right if he knows it, but to try to be both physician and dentist, I don't think it is hardly the right thing to do, but if anybody else gets along well with it it is no business of mine. So far as lesions of the mouth are concerned, he should be as well posted as possible, and try to take care of his business as well as he can.

Dr. H. A. Smith, Cincinnati: I was reminded during this discussion of a very remarkable book published lately by a dentist with only the degree of D.D.S. I mean Dr. Bodecker's work, "The Anatomy and Pathology of the Teeth." I think it is the greatest work of the last decade in dentistry. You know who Dr. Bodecker is? For the last ten years he has given his spare time to the making of this book, and would you say that he was not competent to take care of these cases? This shows that a thoroughly intelligent dentist is capable of producing a work that would be a credit to any department of the whole art. In the book is the celebrated case of Dr. Mahon, a millionaire dentist, the only millionaire dentist I think I know of. Young men, make a note of that. This is called the $10,000 case. The Doctor does not give the amount of money spent in it, for I suppose it would not be professional to mention the fee in a case like that. It is a case where a lady who had facial neuralgia involving the inferior nerve had spent a good deal of money with physicians and failing to get relief went to Paris and London for further treatment, and these treatments had cost $10,000. She applied to Dr. Mahon, (I don't know whether her common sense or some harmonious doctor sent her) he extracted the third molar and she got well immediately, and the Doctor added to his million by the operation, or ought to, at least in cases of that kind.

We could go on and tell case after case where doctors had made a mistake, but do you ever think dentists make mistakes? I think they do, I have, a good many of them. We must not charge everything to the doctor. The intelligent dentist, and especially the ignorant dentist, is always making mistakes.

I saw in the clinics the other day, in Cincinnati, a case of an abscessed tooth with an ulcer. This ulcer was the result of an abscess of the lower molar tooth. It was put into the hands of a woman studying dentistry and in a day or two she had a nice case of healing, and saved the tooth, showing what a woman of average intelligence in dentistry can do. This case had been treated for months by a prominent doctor.

Dr. F. E. Battershell, New Philadelphia: I can say that I was unexpectedly called to reply to a toast on a subject some-

what similar to this. I was attending a medical society in our town, and what little I had to say was about in this line: that when a physician finds a case of cleft palate it will be, perhaps, just as well for him to turn it right over to a dental surgeon and let him make an obturator for that case. It may save making an operation and lacerating those parts and having a failure on account of it. On the other hand, the dentist, after having filled the teeth and treated the pain to the best of his ability, perhaps finds that the patient needs other treatment, then I think it would be courteous to turn the patient over into the hands of the physician, and in that general way of exchange I think this harmony between physicians and dental surgeons should be kept up.

Dr. J. Taft, Cincinnati: It seems to me there ought to be no discord or disharmony between the dentist and physician any more than there would be disharmony between the oculist and aurist or any other specialist and the general practitioner. They are all engaged in the same line in the general way of practice, making remedies and preventing disease. There is no objection to any getting all the knowledge he can that will bear upon his practice. It is commendable to do whatever, can be made contributory to success in the treatment of these cases. He ought to get everything that is pertinent to, and could be subservient to the best ends in his practice, no difference whether practicing on the teeth or eye or skin or any other part of the human body.

What attainment is necessary to the practice of dentistry? Simply that a man shall have a knowledge of the foundation principles of medicine. The dental schools embrace the foundation principles of medical practice in their curriculum—anatomy, physiology, pathology. A state of inflammation in the gum is of the same nature as in the foot, stomach, uterus or anywhere else.

Some of our profession claim that each dentist ought to be a medical graduate—that is, possessed of medical attainments up to about the point of a medical practitioner. When a dentist does that, he makes his attainments equal to that of a medical man.

A great deal of stress is laid on M.D. and D.D.S., and such things. That is simply a certificate that A or B has done such and such work, and it is not worth making half so much of as many people make of it. It is the knowledge that ought to be attained. To know how and what to do in cases is the great point.

If you are very sick, in great danger, and call upon somebody to help you, do you call upon a man simply because he is a D.D. S. or an M.D.? No, because you know a many have this degree whom you would not trust in a dangerous case. A great many graduates from our medical colleges are no more fit for the general practice, though they have an M.D. degree, than an ordinary dentist—than many dentists that have no degree at all.

In this matter of consultation, what is the object? A has a case, a bad case, and wishes he knew more about it than he does. He confesses he don't know about the case and wishes to know what Dr. B says about it, and he asks for a consultation. He says: "I want to consult Dr. B and get his opinion about the case, and I want his suggestions about what ought to be done;" and he is called into consultation. The man is in the dark and wants some one to help him. Is there anything wrong in that? The patient would not object. I have gone to another dentist frequently to get help in a case in which I felt myself helpless. Many times I have been helped. If it is a case where one feels that a physician would help him, it is right and due to the patient that he secure such consultation. Wherever you have confidence you can receive aid, ask for it.

An intelligent dentist will never be repulsed by a physician in asking aid in the way of a consultation about a case. On the other hand, the physician often goes to the dentist for consultation. Dentists are more and more being called to occupy positions more closely allied to the physician than heretofore. Why? Because they are making advancement all the time—all the time knowing more and more by thorough study—by bringing to their aid everything that can be made contributory to their advancement. This ought and will be recognized. Dentists are occupying positions

they formerly did not occupy. They frequently occupy positions in medical colleges and lecture in these colleges. Dentists are admitted into medical societies, even the highest medical societies in our country. In the local societies they are invited to membership and to read papers. It shows a closer and closer alliance and harmony and we ought to be gratified to see the day when we will not quibble and talk about M.D.'s, and D.D.S.'s.

Dr. H. L. Ambler, Cleveland: I have only a word to say and I don't wish to occupy any time in the discussion of this matter. I have heard the remarks of the gentlemen who preceded me and they agree with me exactly. I have no complaint to make of the treatment I have received from physicians or surgeons. I did not write the paper with the idea that there was a very large amount of disharmony, but there certainly is some, and it was with the idea of encouraging consultations and a working together of the two branches. One gentleman misunderstood the idea I wished to convey in speaking about rubber dentures. The remark was that where a patient had been wearing a rubber denture, and if a physician was called to treat some ailment that was induced by wearing rubber dentures, it would be his duty to consult a dentist.

Eat Slowly.—The importance of eating slowly is so great that children should be trained to this; no matter how hungry they are, insist upon the food being thoroughly masticated. A small quantity of food well ground will prove much more wholesome and nourishing than a hearty meal hastily swallowed. Cold food is more difficult to digest than hot, if eaten in too great haste. Before digestion takes place the food has to be raised to the normal temperature of the stomach, which is about ninety-eight degrees.

Moscow will be the meeting place of the Twelfth International Medical Congress in August, 1896.

Electrical Fusion of Porcelain.

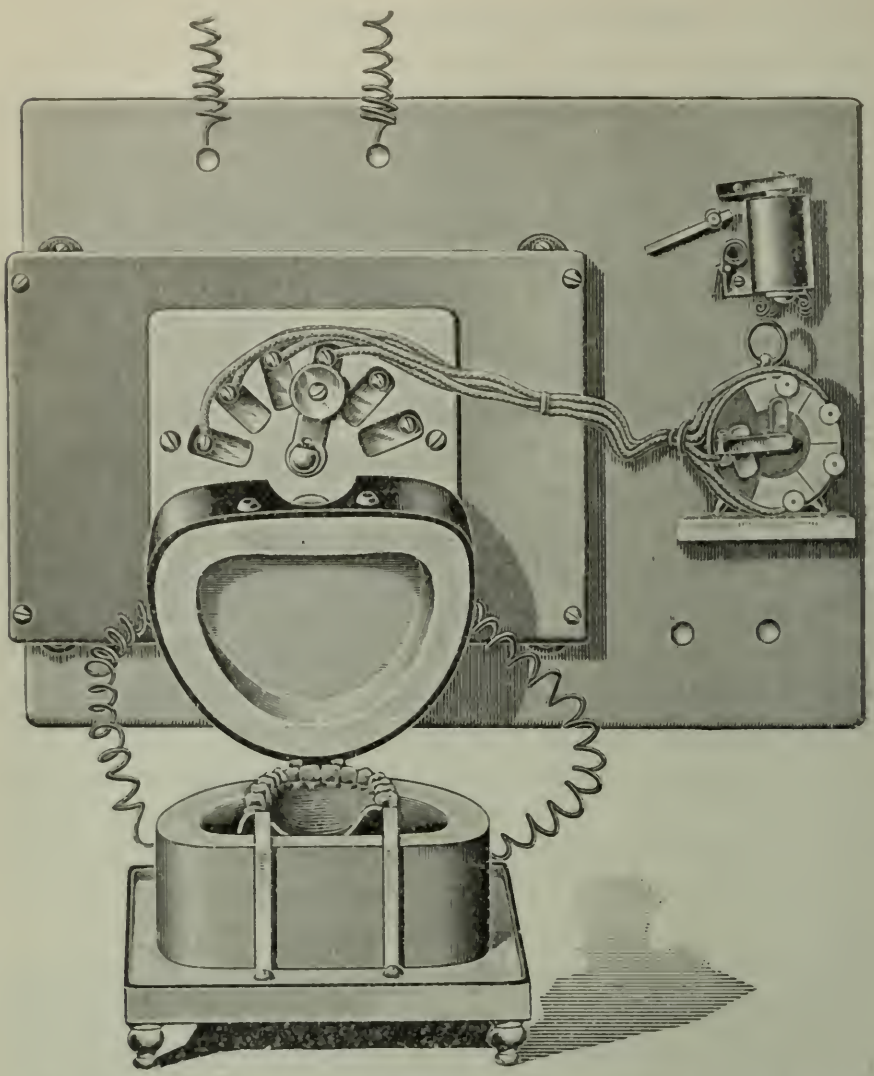
BY L. E. CUSTER, B.S., D.D.S., DAYTON, O.

Read before the Ohio State Dental Society, December, 1894.

At the last meeting of this society I explained the law of electrical heat and demonstrated its use for fusing platinum. I have now to explain the application of electrical heat to the fusing of porcelain and its practical application in dental practice. When electricity is conducted by a metal it produces heat according to the resistance of the conductor. When the current leaps across a break in the conductor it meets with so great a resistance as to develope the highest heat. In other words, the heat is proportional to the resistance of the conductor, the voltage and quantity being equal. While the arc gives sufficient heat the difficulty of managing it precludes it from use in fusing porcelain. The other form of heat is that produced by electrically heating a wire and we have simply to use a metal for the conductor whose fusing point is above that of porcelain. For this purpose platinum first suggests itself, but the margin between the melting point of high fusing porcelain and platinum itself is so narrow that it is necessary to support the wire while it is so highly heated. It is also important, for economy, to enclose the heat in a sort of oven.

Since the source of heat is different from that which is the product of combustion I have departed from the old-fashioned form of muffle, to a form which, I think, more in keeping with this new agent. The small muffle for crown and bridge-work is made essentially of a plain base upon which rests a removable cup-shaped cover. In the upper part of the cover is a small opening for observing the fusing process. The advantage of this form is that the most delicate crown and band can be placed in position upon the base for fusing without disturbing their arangement. In most muffles it is necessary to slide the piece in on a tray, during which there is danger of jarring the parts.

The cover being hinged it is easily guided to its proper position where the electrical connection with the base is automatically made.



The amount of current for operating the small oven is equal to about a hundred candle lamp. While the 110-volt current furnishes an abundant current for the small oven so that the current passes through the cover and base as a single current, this arrangement will not give sufficient heat for a large muffle. It requires so large an amount of wire that the resistance is too great. This electrical problem governs the form of the oven for a full case. The large oven is constructed very much in the form of an ordinary vulcanite flask, the upper section being a duplicate

of the lower. In the upper section of this also is a small opening for observation. By the new mode of wiring the large oven another advantage is gained, the upper section may be removed and its current broken without cutting off the current from the lower. So that a case can only be dried out as if it were in an open tray, but the heat raised to that point where flaking occurs, so that this can be repaired and the baking proceeded with without any interruption. It might be noticed incidentally that the arrangement furnishes as well a most perfect appliance for heating up and soldering cases of all kinds.

The operation of the electric oven is quite simple. It is furnished with a rheostat so that the heat may be as gradually and accurately raised as a vulcanizer; not only so but the heat can be cut off instantly.

If it is desired to raise the heat without the hand lever it may be done absolutely by clock work. Let one wire of the rheostat connect with a lever attached to the minute hand stem of a clock and place contact plates at such intervals on an insulated dial plate as you may wish the current increased. The last plate is to be placed at that point where it is desired to turn the current off. I find that in spite of varying currents this gives results that are quite accurate.

One inexperienced in porcelain work will find difficulty in telling the exact fusing heat. To meet this I have also devised an automatic cut-off. A plug of fire-clay which fits the hole for observation has running through it two platinum terminals which are connected with a magnet operating a cut-off. A button of the same body, or gum as that used in the case, is laid upon the lower terminal of the plug. When the fusing point is reached and the button melts the upper terminal, by its weight, is allowed to come in contact with the lower whereupon the circuit is closed and the magnet releases the contact spring at which the current is cut off from the whole instrument.

The time regulator and thermostatic cut-off are not essential to the oven, however, in fact it is such a pleasure to operate it that the best practitioners, I think, will prefer the more certain method of operating it by hand. When an operator has an

instrument which instead of confining himself to a hot room and all the disagreeable things connected with it known to you all, when instead he can place upon his operating table and with his finger upon the button and at will produce a clean heat up to the melting point of platinum, a disagreeable task becomes a fascinating pleasure. I have time and again fused a case at the same time I was making a gold filling. While a case may be fused with this appliance in from five to ten minutes starting from a cold muffle, for reasons known to every dentist, it is better to raise the heat gradually. In the time attachment I have fixed the time of fusing at thirty minutes, but this may be changed at pleasure.

Since the case is enclosed and the light is the same from all directions, the glaze cannot be detected as in an old fashioned muffle. But there is another and, I think, a more accurate method of telling the fusing point. The eye being but a few inches from the piece, it is able to accurately observe the different stages of the fusing. He can see the different molecules as they coalesce. During the first stage the body will appear like snow. As the heat is increased it undergoes contraction, during which time fissures form. The difference in color between the body and the teeth is still well marked. It is due to the loose texture of the unfused body, but after a few moments the white and granular appearance of the body begins to deaden and becomes like the teeth. The particles are coalescing. If the current be now turned off it will be to a "biscuit," but by continuing the heat a little longer, till nothing but the outlines of the teeth are distinguishable, the case is fused. The current should be immediately cut off and the stopper inserted. If you have only brought to a "biscuit" the stopper may be left out when the case may be removed in thirty to forty minutes, but if it is for a full fuse the stopper should be inserted and the case allowed to become perfectly cool, which requires about two hours. If it is desired to cool less rapidly, a glass globe placed over the oven will prolong the time to three hours and a half.

The advantages of the electric oven for porcelain work may be summed up as follows:

The heat is high enough to fuse any porcelain used in dentistry.

The heat being derived from an electrically heated platinum wire, itself a noble metal, invested in an infusible material, is perfectly free from any gas so common with most furnaces.

The ease with which the heat can be controlled with a rheostat.

The perfection with which the heat can be cut off, so that there is no danger of over-heating.

Instead of removing the case from the heat, the heat is removed from the case, which prevents a change of position of the teeth as well as checking.

The freedom from noise, dirt and heat of the room as well as the comparatively small cost of operating it.

DISCUSSION.

DR. GRANT MOLYNEAUX: I see I am down to discuss this paper, I can't see that I can discuss it very much, but the method seems to me to be the way we long have sought, something that can be thoroughly controlled and easy of manipulation. It don't seem to me that it makes any difference in the case as to the character of the heat or that the different kinds of heat would make any special difference. The heat from a coke furnace would probably not be different from the heat of this electric furnace up to the point of incandescence. The coke furnace or gas furnace requires an undivided attention during the entire process of firing. The danger that arises out of what is called gasing, is the discoloration that occurs and gives the continuous gum its dead appearance that is done so frequently with a gas furnace. Our gas generated must necessarily come from the gas generated during the combustion of the gas or coke. This discoloration must be produced before the piece reaches the point of incandescence, and I think in this furnace it would require almost as much time to burn a piece as it would in the coke furnace, that is, after raising the heat to a certain point. In the ordinary coke furnace we must start from the outside of the muffle and heat the whole inside of the furnace, everything must be

incandescent. In making continuous gum work we have our piece ready and set it near the heat to dry out gradually, and as the muffles begin to redden we introduce the work. The dangers are from introducing it into the furnace before it is hot.

The advantage of this furnace is, there is no possibility of gas. The heat is so far under control it requires no attention from the dentist. It can get gradually warm, that is, kept up a sufficient time to dry every bit of moisture out of the body and after that moisture is out the heat can can be raised as rapidly as possible until the point of fusion is reached.

The succes of continuous gum work lies in two points : first, in taking it out at the proper temperature to maintain an adaptation of the platinum, and the compensation for the effect the shrinkage would have on the palate, in hard points upon which there was any shrinkage the adaptation must be altered a little. This can be done without injury to the plate. Aside from this trouble and the trouble of repairing, that is, with the old furnace and the labor connected with making the fire, continuous gum work is a more certain work than any other we have. It is certainly the highest type of mechanical denture. It is more cleanly, and it is durable. The tissues retain their health and the ridge retains its form under a platinum denture longer than any other plate.

With the furnace Dr. Custer has introduced to this society, repairing would be a matter of little consideration. If a plate happened to fall and something broke off it would be easily restored. From the fact that there is no gas about it, there is no danger of free gas attacking the body. There need be no apprehension of that. I think the introduction of this into the laboratory of the dentist will revolutionize that department. It decreases the trouble arising from accidents—if you break a tooth it does not have to go through the big coke furnace when you haven't time for it, and don't get paid for it, for you can do it without loss of time. I think it is one of the grandest achievements that has been made in the profession recently, and I think Dr. Custer deserves a great deal of credit for having solved this problem.

Aside from the continuous gum work there are many features

that might be spoken of as a recommendation of the furnace; in considering bridge-work and crown, in gold plate, platinum plate and porcelain, which we can do without loss of time.

I have had a good deal of experience with the different kinds of furnaces used. I have not had experience with the recent furnace of Dr. Land's, but the coke furnace in nearly every form, and and the gas furnace I have had experience with and I have never seen the same color or strength obtained through gas furnaces or from patent coke furnaces. The color is different. I don't believe there is any difference in the heat up to the point of incandescence.

Porcelain work depends for its strength on the perfect union of every molecule of that body, and the perfect union of that body to the platinum plate.

These pieces are glazed throughout and it requires a considerable amount of strength to break them. Those made by the old process are not solid throughout. The heat seems to be the best heat you could possibly have, because it is under control. We can raise the temperature gradually at will. You can shut off the current and the heat stops and it cools down. I expect great things from this furnace.

Dr. Frank Hunter, Cincinnati: I have been in the profession for a few years and I consider myself quite a young man, in fact, quite a boy. I have had, in former years, considerable experience in this, and up to the time I practically stopped mechanical dentistry I had my share of experience in it, but seeing what I have seen here and hearing what I have heard, I have come to the conclusion I must be a back number. Dr. Custer is one of those electrical cranks that there is no telling what he is going to do next. If he keeps on at this thing I don't know where he is going to land, but it is perfectly rational. It is certainly the greatest advance I have ever seen.

Dr. Ames: Dr. Custer was at my office a couple of months ago and told me what he had, and I would not let him leave town until he came to my office and hitched it up to the electric light and I rubbed his fur down then and there. It is a greater step in advance than anything that has been brought out in a

long time. It accomplishes more at one sweep you might say. It applies not only to continuous gum work but to crown-work and bridge-work. We can do more artistic work than we could before. There is no question but this is better than the porcelain and gold work we have been putting into our mouths, and I think great credit is due Dr. Custer for what he has done in this work, and I can say nothing except to commend Dr. Custer's work. The positive freedom from gas is a very great point. All I can say is, I would take off my hat to Dr. Custer.

Dr. C. H. Harroun, Toledo: I have been in the business since 1858, when I purchased an old muffle furnace from Cincinnati. I have gone through all the processes, spoiling things. I think now the time has come when I can begin again as a boy. I think any man who has made a piece of continuous gum work will say that a good thing has been accomplished. There may be something arrived at that will make it more sure of success, but it seems to me we have come to the point where perfection is very near.

I had the pleasure a number of years ago, as one of the board of examiners of this state, to inquire into the qualifications of a gentleman that came down from Westerville up here. He had a family of children going to school and worked hard trying to support them and give them an education. His name was Custer. I voted to give him a certificate to practice dentistry. That is a little history of the Custer family. If I am not mistaken this Dr. Custer is one of the boys that was going to school them. His father was a workman in those days—rough and uncouth when he first went to work. He was giving his family an education so they could be something in life, and I am very much pleased with the results coming from that work, and I feel proud that we have got a man in our State capable of bringing out such an appliance. Ohio has taken the lead in many things, and we have taken the lead in this thing to-day.

Dr. H. A. Smith, Cincinnati: I suppose stories about the Custer family are in order. I was very much amused a few days ago by the estimate of one Custer about the other. I

asked, "how is Levitt getting on?" He says, "I don't know that there is much good in him, he has gone daft on electricity. I am afraid he is going to be a failure."

I could tell another story about the Custer family. You know Professor Wright. He tells the story that all our students take their notes in Greek. He boasted of this. One day in his lecture in physiology he left his text-book at home and asked Custer, a brother of this Dr. Custer, for his text-book, and he had taken all his notes in Greek.

Dr. Geo. L. Field, Detroit: I am glad I came down here. I have done a great deal of porcelain work. I have a furnace that weights 500 pounds, and I have worked from the time I started out at night until broad day light in the morning. I first began with Dr. Spaulding in 1861, when a patent was obtained for making continuous gum, and Dr. Spaulding wrote Dr. Allen telling him to send the furnace and if he liked it he would buy the patent. I was one of the boys that helped make fires in the furnace. The first work was done in St. Louis in 1862. Since then I have done a great deal of the work and have taken a great deal of interest in it. The labor of making continuous gum work has probably prevented many men from doing it who would otherwise do it. It required a good deal of labor and time and money to do this thing, and they thought it wouldn't pay them, especially when living in a community where people couldn't afford to pay for their work so much money. I saw this running down from a large furnace weighing 400 pounds gradually getting down to a small furnace until we got the Ambler Tees furnace that we thought a good thing. From that it has gone down to a still smaller thing in the way of a little furnace that works admirably, but when I see this little toy furnace I haven't a word to say. This is beautiful. You won't see one case in five hundred that will come it out that way without any cracks in it. You can't do that with the old furnaces we use to-day. There was always more or less danger of over-heating, but you don't get as good work as if you bring it to what we call a biscuit heat; so that the bodies will show granules as the dew on the grass in the

morning. That seems to be done very beautifully so that this gum can be beautifully put on. I am very glad I came to Ohio.

Dr. Taft: I can conceive a great many purposes for which that can be used in addition to porcelain work. I don't see why it wouldn't be a good furnace for melting gold and making alloys and many kinds of work. The difficulty many times in melting and alloying gold is the foreign substances in the fire that get in the gold and which interfere with and mar the results. Nothing of that kind could occur here.

Dr. Otto Arnold, Columbus: I don't know anything that could be said just now that would enhance the value of this valuable invention.

Dr. Arnold moved that a committee of three be appointed to procure a suitable medal to be presented to Dr. Custer as a testimonial from the society, of appreciation for the valuable appliances invented by him. The President appointed Drs. O. Arnold, J. Taft and C. R. Butler on this committee.

Some Thoughts on the Teaching of Histology and Anatomy in Dental Colleges.

BY C. M. WRIGHT, D.D.S. CINCINNATI, O.

Read before the Ohio State Dental Society, December, 1894.

"Some thoughts" on a subject, does not imply that the writer is offering *opinions*. Thoughts may be but the shimmering vaporings of scintillating nerve cells reflexly stimulated by a commingling of present and past impressions. The present, or near sensation may arise from a bit of Roquefort at a late dinner—a *cafe noir*,—or, a lack of the usual slumber inviting night cap—and this, mixed up with stale impressions on some old memory cells, may incite imaginations or fancies, and we call these *thoughts*. Of this character are "Some thoughts on the Teaching of Histology and Anatomy in Dental Colleges."

Let us then *fancy* that knowledge can be divided into two classes: 1st. A knowledge of *facts*. 2d. A knowledge of theories (or philosophical explanations of facts—or phenomena). Patient investigators have often been fact hunters, and have contributed largely to the first division of knowledge. Logically educated scientists have explained philosophically these facts, gathered by the other workers, without ever having themselves observed a single phenomenon, and have contributed largely to our second division of knowledge. Facts sufficient to establish a theory; or facts and theories are necessary to complete knowledge.

The study of anatomy in the dissecting room, and of histology in a laboratory, has for its object two things. One is to let the student *see* the structure and structures of the human body macroscopically and microscopically. The other is to train the student in the manual art of cutting up bodies and tissues, so that they *may be seen to the best advantage.* The general surgeon also, begins the manual training of his art at the dissecting table. The dentist on the other hand begins his special manipulative training in the mechanical and operative *infirmaries* of the college.

Just here, the fancy becomes vivid, and we exclaim—What is the use to the dental student, of his course in practical dissections with the scalpel or with the microtome?

Can he not acquire morphology—all the facts that he needs, from *seeing* the dissections made, by a skilful and competent prosector or teacher. Then the qualities of textures or tissue, the minute structures are certainly much more distinctly visible in finely prepared and well mounted specimens made by experts in this art, than in the crude cuttings of the students, in a two months course.

The writer spent some time in watching the methods of a queer old teacher of medicine, some thirty years ago. His class in anatomy, consisting of twelve or thirteen disciples—men and women, sat around the "subject," with text books and diagrams in their hands, following intently the old professor, who skilfully dissected the body; explaining, lecturing and answering pertinent questions. He called the attention of the class to facts displayed by his knives and forceps, and at the same time gave philosoph-

ical explanations of the same. It was intensely interesting to the class. Three or four "subjects" dissected in this way before the class was all the "*practical anatomy*" taught in his college. The writer having studied dentistry, wondered if these students did not get more general and particular knowledge from this more Socratic method, than he himself had, by his careful dissections of the leg of a man, the arm and chest of a woman, and the foot of a negro baby. The writer as a practitioner of dentistry has been trying for thirty years to *apply* this special knowledge gained in the dissecting room to his special art-dentistry. One of the colleges in the Association of Dental Faculties is said to have no "*dissecting*," and yet teaches anatomy, and all the other colleges which have dissecting rooms and can get subjects, shrug their shoulders at the inferior (?) method of teaching anatomy. Just now the histological laboratory is the fashion in medical and dental schools, and students gather about fragments of already stained, and softened, or hardened, and imbedded tissues, and cut them into thin slices, or if they have been already cut, simply mount them on their own slides and cover them. They learn to handle bits of tissue with needles, and to put cover glasses over Canada balsam, and to paint around the edges with some protecting varnish. This is skilfully done by some students in a five or six weeks course. Just here again Fancy asks, "Would it not be as well for these students to be set down to microscopes with already mounted specimens, and with their text books, and the descriptions and explanations of the teacher, learn to *see* all that can be seen of these tissues, with various powers, low and high—these tissues prepared by those who have made a specialty of this difficult art? The time so spent by dental students would be in a line with their future work. It would be a training of the eye, a training in the art of illuminating and seeing minute objects. The technique of the laboratory for the preparation of tissues for observation can only be acquired as any other art is acquired, by tedious practice, and a few weeks spent in tinkering at a high art will not advance a student in that art. Must a man get a chisel and a mallet and chip at a block of marble for a few weeks in order that he may cultivate his taste and knowledge of

sculpture? Must a man grind up paint with a pestle and mortar to become a connisseur of paintings? And, must a student cut up sections of bone, cartilage, muscle and nerve, for two months, to be an histologist? Is not the way suggested, the better one? The writer does not wish to imitate Bob Ingersoll—as an iconoclast—without offering another idol to take the place of the broken ones.

NOTE.—If this paper is deemed worthy of discussion by the members of the Ohio State Dental Society, I hope sincerely that I shall not be suspected of depreciating in the least degree the importance to us of these studies in morphology. I deem them of the utmost *use* in medical science, and the art of the dentist is but a one-sided affair, if not built up on the solid foundation of *medical science.* Physiology and pathology are as important to the dentist as to the general practitioner or any special practitioner of medicine or surgery. And these sciences are so intimately allied to morphology (or anatomy and histology) that a separation would be impossible.

Separators.

BY HERNY BARNES, D.D.S., CLEVELAND, O.

Read before the Ohio State Dental Society, December, 1894.

Nature, in infinite wisdom, has so shaped and moulded the teeth as to best serve the purpose for which they were intended. Commencing with the cuspids and including the molars, a solid phalanx is presented, which is well calculated to stand the strain of violent mastication, while preserving to each tooth an individual motion, we have, as a general shape, a convex distal surface and a flattened, or concave and convex mesial surface.

The ideal filling, as to form, has been and is the aim of the conscientious operator. The methods employed have been varied; the materials used have been many; but whatever the method employed or material used, all have agreed that, to restore

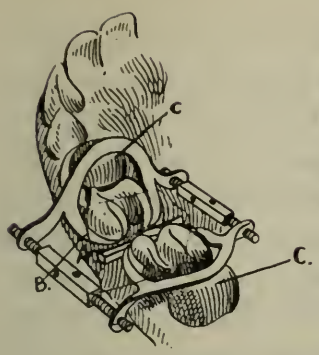
nature's contour sufficient space must be had to enable the work to be carried on without hindrance and also to afford space for final finishing.

We shall confine our discussion of this subject to the methods in use during the last twenty-five years, and, whatever condemnation we may find, it is not of that which is past, but is confined to the practice of the past, made obsolete by the better of the present.

Previous to the use of cohesive gold and the rubber-dam, the Arthur method was much used. It consisted of grinding or filing the proximate surfaces and leaving V-shaped spaces with a shoulder at the cervix. So unscientific was this procedure that when cohesive gold came into use, it was speedily abandoned. Next came the wedge of wood, which served a long and cruel apprenticeship, we say cruel, because as used by many of the best operators it was merciless, often driven far below the gingiva, it entirely obliterated the gum septum and furnished a nucleus for many chronic diseases. The objections urged against the wooden wedge may also be urged against the rubber, when used as a wedge. Many teeth were operated upon while yet inflamed from the pressure of the rubber, and the nervous condition of the patient under such treatment was such as to preclude the doing of good work. That many good operations were performed is not denied, but that more failures were not noted is the wonder.

Cotton as a separator was then introduced, and while not open to the same objection as wood or rubber, is still quite objectionable on the ground of destroying gum tissue, which should be preserved if the best results are expected.

Dr. Bonwill has explained his method of separating by the use of gutta-percha, by preparing all the cavities in the mouth and then filling from tooth to tooth with gutta-percha and the same left for a number of months. This method may answer in a few cases, but when urged as a practice, is open to serious objections. We must not forget that all practitioners have not the full control of patients as has Dr. Bonwill, so that, while the practice in his hands may produce good results, and no doubt does, it might prove disastrous if generally practiced.



A—Old method of wedging. Wedge below the gingiva.
B Position of lugs of Perry separator.
C C—Gutta-percha under the bows and resting on occlusal surfaces which prevents rocking.

A new thought has crystallized and we have what are known as the mechanical separators, invented by Perry and others. We are quite well aware that they are not perfect, but they are far in advance of anything hitherto produced when considered in the light of results. In this light we propose to discuss them.

Many there are who can see no good in them, but we shall try, as best we may, to bring out their good points and endeavor to promote their use among this class of dentists. The objection usually raised, is that the lugs, so press upon the tooth tissue as to mar or check it. This is the strongest objection yet raised and is worthy of consideration.

No instrument will work itself. There must be a controlling mind behind it, and if we expect it to fit equally well any and all cases, we shall find ourselves mistaken. All teeth are not made in the same mold, for we have them long, short, broad and narrow and of complex form. This being true, it must follow that no instrument, however well devised, can be considered universal in use. We must, therefore, resort to expedients and may use any one or a combination of methods in any given case. For example: The Perry separator may be used to obtain immediate space, but the teeth being of such shape as to cause the separator to be dislodged during the operation of filling, may necessitate the use of a wedge of wood to maintain the separation after the removal of the mechanical separator, or, the teeth having been separated by the use of cotton, the mechanical separator may be applied to preserve space and to distribute the force of the mallet blow during the operation. The models here presented will explain the uses of the Perry separator which has given the best results in our hands.

As previously stated, all teeth are not of the same size or shape, so that the lugs of a separator would encroach upon the

gingiva more in the case of a short crowned tooth than in that of a longer. This difficulty is obviated by the use of gutta-percha or modelling compound, placed on the occlusal surface of the teeth, underneath the bow of the separator and extending to it, more or less material being used as demanded by the case. This serves a double purpose; it prevents the separator impinging upon the gum and also steadies it in position, thus removing the objection previously raised, in that it prevents rocking, which is the prime cause of the checking of enamel. Some cases present in which a tooth, mesial or distal to the ones operated upon, has been lost, if gutta-percha is placed in this space, much of the pain will be avoided.

We find the lugs of the separator too thick at their ends and our first care is to grind the surface which grips the tooth until it is rather sharp, which permits of a better adaptation and an easier application.

Advantages of the mechanical separator: First, immediate separation may be had in a majority of cases presented. Second, the gum septum is not injured by the pressure of a foreign substance upon it. Third, after an operation has been finished to the point of filling, a few turns of the screw will afford sufficient space for final finishing, which preserves the natural contour so much to be desired, upon its removal the teeth fall back to their points of contact. Fourth, the full matrix may be done away with and in its place a narrow band may be inserted at the cervix and held in place by the lugs of the separator, thus affording the best possible provision for the restoration of full contour. We have now used the Perry separator for a number of years and the results produced warrant its continuance.

We cannot close this paper without a protest against what is known as "The Universal Separator," for this reason, that it is open to very serious objections when used on bicuspids and molars, especially as the lugs on one side are drawn into the proximate space and thus impinge upon the gum tissue, and, in the case of cavities extending to or beyond the cervix, they are in the way and may check frail walls and margins.

The model which I here present will show the Perry separator

adjusted. It is the separator designed for the bicuspids and molars. I have also placed in the proximate space the peg of wood to show the relative position of the separators and peg. The peg so placed will destroy the gum tissue. The separator used without a peg will preserve it so that a cavity may be prepared and a filling finished and polished with the loss of little blood and scarcely any injury to the gum tissue. You notice there has been cut out a second molar and gutta-percha has been put in its place, allowing distribution of the mallet blow.

DISCUSSION.

Dr. J. R. Callahan, Cincinnati: Dr. Barnes wrote me a few days ago that he would like me to open the discussion on his paper and I thought I had an easy task, for I thought I had something to say about separators, but when I saw the paper I found that he had said all that I wanted to say and perhaps put it in better language than I could. There is nothing to say except about the slight inflammation that follows the use of cotton or wooden wedges, or anything of that kind. I advocated them for some time and I know I ruined some front teeth by the use of hard wood wedges.

The rubber also causes as much irritation as the wooden wedge and perhaps the cotton is best. So far as filling the teeth with gutta-percha and allowing it to remain for months, I question whether that is good treatment.

He says, too, that no instrument will work itself. How true that is. An instrument is set aside because we don't generally study it up. Many of my friends in the dental profession say they don't like the Perry separator. I don't understand how it is other than because they haven't studied them, or have used inferior separators and have laid them aside as not good. I think no dentist who becomes familiar with them would do without them. You know how difficult it is if you get started to making a particular finish; if you get started in and have a small space it is more than likely you will spoil the contour, whereas if you have a separator, another turn will make the finish.

As to the universal separator, I will say I prefer the Perry.

I have some separators which I would like to give away to somebody I have some spite against. If any one who has not tried this method of separating teeth would take one or two of these separators and use that one or two in a few cases until they get the hang of it and learn the superiority to the use of gutta-percha and such other methods, they would soon have a full set of the instruments.

Dr. Frank Hunter, Cincinnati, stated that he had no experience in mechanical separation, but said that Dr. Heise had a varied fund of knowledge on the subject—it was difficult to extract, and stated that he would like to introduce and hear from him.

Dr. Heise, stated that the subject was covered so thoroughly by the paper that he had nothing to say about it; that he had used the separator for a number of years in the same manner as Dr. Barnes and he could only add his word of recommendation in the use of it.

Dr. Grant Mitchell, Canton: I use the Perry separators and could't keep house without them. The manner in which they keep the rubber out of the way and the facility with which one can get at his work make them remarkable instruments. When here last winter I was talking with Dr. Sillito in reference to separators, and where one has time to separate the teeth he showed a simple device that struck me forcibly and I have used it frequently. I don't know that I can illustrate it perfectly, but I will try. (The doctor then illustrated from the blackboard.)

That represents the set of teeth. Dr. Sillito uses a very fine linen tape. He takes a piece of the tape and passes it between the teeth. Suppose I want to separate those central incisors. I pass the tape between the teeth and tie the knot around and drive it in between them and the force of the knot being drawn between will exercise a mechanical influence there—the swelling of the fiber will make a separation. If there is a large cavity it is difficult to tie that knot. In cases of that kind I pass the knot between the teeth and put a piece of cotton in to fill the cavity and then pull the knot. The credit of that is all due to Dr. Sillito. There is no separator like the Perry.

Dr. C. R. Butler, Cleveland: I have nothing special unless to add something in the way of referring to this tape. It is a very nice thing I know from experience. There is another mode which was suggested a little time ago by Dr. Palmer, of Syracuse. It is a peculiar kind of fiber, very fine, that is used by anglers as a fish line and it has great strength. You can draw it between the teeth and it is surprising how the stiffest tooth will be moved by that fine twine. I was surprised when he presented it and looking at the size of it I could't see how it could have such power, so that the stiffest tooth can be separated a considerable space with very little soreness. I think Dr. Mitchell stated the tying in of this tape and putting in cotton if there was a large cavity was an idea presented by Dr. Sillito. That may be true, but there are a great many that profess to have used the same mode as well as Dr. Sillito. This twine—you can put it between the incisors, bicuspids and even molars and string it through by the gum and tie special knots in it. It won't slip out because the knots prevent it and there is so little bulk it won't interfere with closing the teeth. If there is a cavity between them, put a little cotton in before tying it tight. You can move your teeth apart pretty readily, within a day or two, and excite very little soreness and it dosen't slip down as the rubber does on those stiff cases where you want to open them without an immediate wedging.

I will say a little in regard to the advantage of gaining space. It is imperceptible to the patient. While packing gold there is a good deal said about the use of the band matrix, but should you slip a little piece of steel through, and you could put a little piece of wood there to keep it from slipping down, and if it is a wide space you can put a piece of wood down here or you can bring the steel up to the cavity, or the adjustable crib, by driving the gold in packing out against the steel (indicating) in using it not as a means to hold the gold in the cavity but to pack the gold as if there was no crib there, it will enable you to let it expand against it. You extend the space so you can get a contour in your gold enabling you to do the polishing and to finish right away, and you can finish it whether you have the Perry separator or not.

Dr. Grant Mitchell, Canton: In difficult cases where we want a good deal of space and the cavity is inaccessible, it is difficult to use a Perry separator to gain space. After I have gained space by the tape I will frequently use the Perry separator to hold it, but if it is a case that won't take very long I don't hesitate to put in a piece of wood.

Dr. Grant Mollyneaux, Cincinnati, says that he don't know anything about separators; that he remembered when Dr. Sillito mentioned the method suggested by Dr. Mitchell but did not know that Dr. Sillito claimed it was original; that Dr. Austin Dunn, of Chicago, presented it to the American Dental Association some six or seven years ago. That he never heard anybody dispute his originality in that direction.

Dr. W. B. Ames, Chicago: It gives mé a great deal of pleasure to meet with the dentists of my native State, and while I don't have as much occasion to separate teeth as a great many, I make use of the Perry separator. I also have a separator made by Ivory, of Philadelphia, and I use it in as many cases as the Perry.

I want to speak of the method that Dr. Bonwill has spoken of. I don't know whether you have seen the results of such a case. I happened to treat a case directly from Dr. Bonwill's hand. A young girl from Philadelphia had some work done by me. In going down to Pliladelphia and getting into some trouble she was taken by the principal of the school to Dr. Bonwill and he adopted this method, and for some reason she didn't return to him. He began the filling with gutta-percha he had put there for a temporary purpose. As a young child she had a slight defect in the arrangement of the anterior teeth above and below. This gutta-percha had expanded and forced apart the bicuspids and molars so that there was more space than anyone cared for, to make an operation, and there was a marked protrusion of the front teeth above and below which will remain for life. After various operations the space is still there. The separation was very effectual but very disastrous.

Dr. H. A. Smith, Cincinnati: I am very much interested in the subject of separating teeth. I have heard this discussed

by such men as Dr. Crouse, of Chicago, and other dentists, and they differ in their method. Dr. Crouse insists he must get a large space between the molars. Another will insist he should get little space. There must be a happy medium. It is important that we should have space sufficient to make a good operation and give a proper contour to the tooth. That depends upon the characteristics both of the patient and the tooth. If we have good teeth and not a very permanent foundation, we might resort to the mediate, and if short teeth it would be better to resort to the immediate method. What method you should use depends on the dentine. I don't separate teeth as much as many persons. Perhaps I don't do as much good to my patients. So far as the gutta-percha method is concerned, I think it is admissible. I think the large spaces that have been spoken of show that, judiciously used, it is a good method.

A disaster that comes from undue separation is the result produced upon the periosteum. We attribute this to other causes frequently. In that admirable book that is issued from the press by Dr. Bodecker, he calls particular attention in his allusions to periodontitis, to its being caused by inflammation made by the use of wedges, especially by mechanical separators. I think many times periodontitis is produced by these forcible methods that we trace to other causes.

I suppose that I have gone through all the methods. I don't know that I have tried this particular one. It is simply a method for retaining it in position. The cotton fiber expands immensely. It is a very gradual and very excellent way. My one experience has been I would rather trust a gradual separation than a forcible separation. You who have had experience in colleges, know how heroically students use separators. They want a large space and they are instructed they must have a large space before they can do well. They use the Perry separator or the universal.

I like one point of the paper, that we must have caution behind it, as to what we shall use and how long we shall use it.

I was very much pleased with the latter part of the paper which I had the pleasure of reading.

Dr. A. F. Emminger, Columbus: It would seem that Dr.

Perry had set things up in this society for his separator. I have not been touched by Dr. Perry, but I think his separators are good things if judiciously used. They can be applied so easily that they have been abused many times. We don't need as much space as we sometimes make. I have used them in the anterior teeth and also in the bicuspids for getting a slight separation, enough to allow for finishing. I have an appliance that is a small straight steel instrument or inverted wedge, very thin, about an inch and a half from the end of the instrument, as thin as these ribbon polishing strips, German silver. I slip that between the teeth and drawing it instead of pushing, it draws the teeth apart as much as necessary without much pain, and after putting a plug between the teeth, drawing the separator back, remove it, and you can gain space very quickly and without any irritation. I don't know whose instrument it is or who invented it. I think these rapid mechanical separators are good in their place if properly used, but they are abused many times, and the separators are not at fault, it is the power behind.

Dr. L. E. Custer, Dayton: I think Dr. Emminger has called attention to one good point that ought to be made use of, and that is that pulling the wedge through serves better than pushing one in.

Dr. Arnold, Columbus: I have used this instrument. It is very useful inasmuch as you don't need to separate your teeth before you begin the operation. We can do a great deal of the work without separation. You only need space for finishing. If you use the instrument described by Dr. Emminger, it is all you need. It is a tapering instrument. Pass in the thin portion and gradually pull through.

Dr. J. Taft: This is a subject interesting to every dentist in performing his operations upon the natural tooth, especially in filling. It is one the principal of which should be well understood by every one. You often hear of rapid separation and again others speak of gradual separation. Some advocate one and some the other. Some use both, discriminating, applying them to the cases they think best adapted to the mode of separation. I think the latter is the proper method. It is not

best in all cases to occupy several days in making the separation ; not best to make a gradual separation in many cases. In many instances teeth separated in this way become fixed in their new position and either do not return to their former position or become diseased or affected in some way. Both of these results have followed from an indiscriminate gradual separation. I think there is less likelihood of danger from an immediate and prompt separation.

Why do they remain in their new position? When pressure is exerted on a tooth to remove it from its position, a double action is set up—a process of removing from one side and filling in on the other, and if there is nothing to bring the back tooth it is likely to retain the man position. I used to feel a good deal of chargin at these things occurring when I used the gradual separation, as I did formerly.

The prompt separation made by the separators is, in a great many cases, the very best—better on many occounts. In the first place the operation can be accomplished perhaps at one sitting, whereas if pressure were applied, a number of days elapse before it would be accomplished, and in many cases where gradual pressure is applied, soreness would be the result to a considerable degree, inflammation set up, and that sometimes would not pass away for considerable time. I have seen that soreness remain for days after the separation was accomplished before the operation could be well tolerated for the pain. That, of course, is an objectionable state of things.

A prompt separation operates upon the expansive tissue about the tooth. Separated gradually, these would perfectly adapt themselves to the change without bruising the tooth or rupturing the vessels, and the gum tissues are enabled to sustain the pressure. If rapid pressure is used there may be a bruising of the periosteum to such an extent that injury will result afterwards. If separation was made gradually, injury of that sort would not occur.

Then again, in applying the mechanical separators, in many cases the teeth may be separated rapidly and thus be injured by the rapid separation, and moving the separator slowly the blood will flow out of the capillaries and vessels when the pressure is made

and the tissue yield without the laceration of any tissue. If the separators are moved rapidly, injury may result by bruising or rupturing the small vessels.

In regard to the appliance used, it doesn't make very much difference except as a matter of convenience, as the principle is the same. It is to bring the pressure to bear between the two teeth to give the desired space for the operation and the separator serves its purpose very well—either the Perry or the Ivory separator, which I believe is called the Universal. I use the Ivory separator perhaps more than the Perry. I have used the Perry separator since it was introduced, but I have used the Ivory perhaps quite as often used the Perry. It is operated by a screw which can be turned slowly to make the pressure gradual so it will not be objectionable to the patient, and he can move it gradually as the operation proceeds. It seems to me that one will make the separation more gradual with that instrument than with most other. The danger with most mechanical separators is too rapid movement.

There are some teeth so firmly fixed that much force is necessary to move them, and it sometimes seems difficult to move them with any force. In such a case I make a space by cutting the tooth—not by cutting off the whole side of the tooth.

The age of the patient ought to be taken into account, as well as the susceptibility of the teeth and parts about them. You find some persons that offer firm, solid bony tissue that will not yield under any reasonable pressure. Sometimes the soft tissues are more resistant than in other cases. Sometimes the tissues will yield to the pressure readily. There need be no excuse for ignorance on these points. If one has his patient in hands for a number of years he should know the susceptibility of the patient —how much can be endured by the patient, and how much can be borne without injuring the tissue.

In regard to tape and things of that kind put between the teeth, they may be used in many cases advantageously. A gradual separation can be accomplished in a little while. Place and draw it between the teeth, putting it so it will make the pressure before

tying the knot, tying it between the teeth, and you make a separation very well, but it takes more time than by the Perry or Ivory separator.

I can heartily recommend the Ivory separator. I have no interest in it except an interest in using it. I have used the Perry separators and like them. They are more likely to get cranky than the Ivory, and I have had the screw to become turned more than it ought to be, and it becomes rigid, and is hard to move. I have occasionally had that difficulty, and I know others have, but nothing of the kind could occur with the Ivory separator. I make separation enough to begin work in the cavity, turning this a little at a time so that the patient hardly knows it.

Dr. F. E. Battershell, New Philadelphia: I have used several of the mechanical separators, and when the teeth were closely packed together, in using mechanical separators, there is danger of absorption of the process and a rupture of the vessels at the apex of root. The teeth may become twisted by too rapid separation. Now in such cases it should be done by a slow process, by means of tapes or some other means of that kind. Some slight absorption must take place, but these teeth can be separated without harm, and it has been my observation that the only thing that is safe in such cases is a slow process.

Dr. H. A. Smith: Just a word with reference to the principle of all this. If we separate the anterior teeth—those of a single root, how is it accomplished? It must be by the elongation of both teeth, and a very slight elongation will give you space. If it is persistent, it will give you a larger separation. If you have the double root teeth, then immediate separation is not necessary, and if you get separation it must be by a process of absorption.

Dr. W. H. Todd, Columbus: I have been using the Perry separators for some time, and since using them I find that I separate the teeth less than I did before. In preparing a cavity you often find it is not necessary to separate the teeth as much as you need in the first place. After excavating it we put the rubber dam on, we find we have room to fill the cavity and we still have room to finish the filling.

Dr. Henry Barnes, Cleveland: I rise to apologize. I didn't know there was such unanimity of sentiment in respect to the Perry separator. I thought I would encounter considerable opposition, but most of the men who object to the Perry separator are outside of the Ohio Dental Society. Agrees with all Dr. Taft said up to the point where he speaks of the Perry separator and in favor of the Ivory. In the Ivory separator you have two points of contact, and so far as the separator getting cranky is concerned, there is no separator that will get quite so cranky as the Ivory separator, due to the unequal shape of the teeth on the lingual and labial surfaces. With the Ivory separator you bring your points together and the separator is liable to a movement back and forth, and by that movement you produce pain. In the Perry separator, as illustrated on model, there are three points of contact on each tooth. The lugs grip the tooth at the buccal and lingual angles, which the gutta-percha placed under the bow on the occlusal surface makes the third contact — thus affording steadiness during separation. When you mallet upon them you are not driving the teeth against the cushion, and yon are not getting up an irritation as you are under the old method.

I realize there is more than one way of killing a pig. You may stick him in the neck and he is dead. You may hit him in the head and break his leg and otherwise maltreat him, you don't deny the pig is dead, but it is not the kind of a dead pig you have in the other case. The value of a Perry separator or any other is in the use and not in its abuse.

In regard to the instrument spoken of by Dr. Emminger, in my hands, it is the most painful instrument I have ever used for the separation of teeth.

If I understand Dr. Taft rightly in regard to the Perry separator getting cranky, it it where he has turned one of the bars a little more than he should have done, without turning the other side. If you turn it gradually and don't take it as you would a crow-bar to lift a house, but take hold of it, turn it very gently and bring it around to the points of contact on each side, it is drawn up easily and you have no impinging upon the gum. Every turn of the Ivory separator brings a single point against

the tooth and upon the gum tissue. and more than that, it is in the way.

I have used about everything that has been spoken of except the method of Dr. Butler. I don't know anything about that.

The Teeth of Our School Children; What Can Be Done To Save Them?

BY J. C. MCCOY, M.D., SANTA ANA, CAL.

Read in the Section on Dental and Oral Surgery, at the Forty-Fifth Annual Meeting of the American Medical Association held at San Francisco, June 5-8, 1894.

No doubt this question has been asked by every intelligent practitioner, as day by day he looks into the oral cavities of Young America, seeing there the almost universal dissolution of the masticatory organs. Those who live in small cities or towns and practice for all classes of society, have a better opportunity to know the condition of the teeth of the masses than does our city brother with his aristocratic patients.

A large majority of the people can not pay for skilful operations, and their teeth must be saved in an inexpensive manner or be gradually lost before middle age, to be replaced by miserably fitting rubber dentures, with the accompanying shrunken alveola and uvula-like appendages called gums, condemned to worry through the remainder of their earthly existence feeling that nature did a poor job on their masticatory organs, or they would have lasted till old age, irrespective of ignorance and neglect from their earliest childhood. Ignorance and neglect go hand in hand, and are the cause of more diseases and of the loss of more teeth than all other causes combined.

For the past ten years my practice has been in a community that numbers among its citizens many persons of culture and refinement. Others whose exterior apportionments of life are all that could be desired, and whose children are being trained in

all the arts and sciences of the day except that of cleanliness of the mouth. We have thousands of this class. I have examined and worked for hundreds of them in the past ten years. The ignorance on the part of the parents, and neglect on the part of the children who know better, is one of the wonders of the nineteenth century.

In one school of 700 pupils, 500 from 10 to 18 years of age, I distributed printed slips with the following questions: Do you cleanse your teeth with a brush every day? Do you cleanse your teeth with a brush twice a day? The teachers requested the pupils to answer the questions by writing the word, yes or no, to each question. The slips were immediately gathered up. On summing up, it was ascertained that out of 500 pupils, 50 cleaned their teeth twice a day; 275 used the brush sometimes; while 175 did not own a brush. Notice, the ages were from 10 to 18. In the primary department of 200 pupils, from 6 to 10 years of age, the teachers said they did not think there were 10 children in the department who used a toothbrush.

This school is not an exceptional one in this matter, as further inquiry and investigation demonstrated. In fact its graduates take high rank at our universities, and if there is any difference, it is in advance of most schools in percentage of those who have clean mouths, as well as neat clothes and bright faces.

When there is so much neglect, and so little real care of the mouth, it is not at all strange that the sixth year molars have to be sacrificed daily, because the parents can not go to the expense of treatment to have them preserved, thinking all the time that this most valuable tooth is deciduous, and soon to be replaced by one that is bacteria proof and will last forever, in a mouth that has never been properly cleaned.

The school of 700 pupils mentioned, where only 50 made any pretence to regularly care for the teeth, shows what a field for instruction and training every teacher has. What an opportunity for philanthropy and missionary work!

Our children's teeth must be saved. Experience has taught us that it is impossible to repair the ravages of decay, except in a limited degree. Prevention through cleanliness and proper care

of the teeth is the only way possible and practicable to limit the wholesale destruction. Yes, I say limit, for even when ordinary care is used there is still room for the work of the skilful dentist.

The question before us is: What can we do to save the teeth of our school children?

American dentistry leads the world to-day, and the world justly honors us for the great advances we have made in the preservation of teeth but the fact still confronts us that millions of teeth are annually lost in America, that need not have been sacrificed if proper care and cleanliness of the mouth had been begun in childhood and continued to manhood and womanhood.

The dentists of America, a noble and philanthropic band of 20,000, have done much to educate and train our citizens in the care of their teeth. We must do more. And at the same time in order to multiply our usefulness, we must solicit the aid of our public school teachers. With their co-operation we can reach and train millions of children.

A majority of the children of our land are in our public schools. They are under the teachers' instructions from 5 to 17 years of age. If the teachers were required to instruct and train the children in the proper care of their teeth, and to insist upon their carrying out such instructions practically at home, we would have accomplished—or at least begun—a great work. If such pupils could be trained from infancy up through all the grades to the high school, I am very sure we would see men and women with better teeth than the average American of to-day. The teachers are the only ones who can do this work. The parents of a large per cent. of the pupils are ignorant and careless almost beyond belief, and their children will follow their footsteps, unless we dentists of America come to the rescue.

How can we bring this matter prominently before the educators of our land and secure their hearty co-operation?

I hope this Association will pass resolutions on the subject, indorsing the plan, and by its sanction give prominence to its importance.

Let the dental and medical press advocate it. Let each State Dental Association not only pass resolutions on the subject, but

appoint a competent committee to arrange a manual on the subject of the care of the teeth. Let the same committee induce the State Board of Education to adopt such manual as a text-book to be used by teachers, and taught in our normal schools, requiring teachers to be able to pass an examination upon the contents of such manual, and then require them to carry out such instructions in their respective schools. May each one of us constitute himself into a special committee, to see that the spirit of this paper is carried out practically in the schools of our neighborhood.

It is not necessary for me to give more than a few hints on the subject to this body of intelligent dentists before whom I have the honor to speak. I hope to gain not only your hearty approval to this plan, but your enthusiastic co-operation, so that inside of twelve months every public school in our broad land will have begun the much needed reform of cleanliness of the teeth and mouth. So that in the future examinations of schools on the subject of oral hygiene, instead of there being only 50 out of 700 who clean their teeth regularly, we will not find 50 careless ones in 1,000.

This is a great work. We alone can do it. Let each one of us resolve to do our full share and prove ourselves philanthropists to the rising generation.

SELECTIONS.

New Method of Staining Micro-Organisms in the Blood.

A communication on this subject was made by M. H. Vincent at the last meeting of the Societe de Biologie.

The process is applicable to every variety of micro-organism occurring in the blood, but is particularly serviceable in microscopical examination of bacteria which do not take coloration by the method of Gram, and of various parasites, such as hematozoa of paludism.

The process is based upon the following principle, viz., coloring matters fix themselves not to the protoplasm but to the hemoglobin itself. If, therefore, the latter color-taking constituent be made artificially to disappear and the coloring agent be then brought to bear, the blood globules which mask the bacteria become invisible and the microbes alone remain colored and stand out under the microscope with great clearness.

Among the different dissolvents tried; M. Vincent has selected the following liquid which does not alter the form of the globules and leaves no deposit and no striæ:

Aqueous solution carbolic acid, 5 p. c.,	6 centim. cubes.
Water Saturated with Na Cl.,	30 " "
Glycerine,	30 " "
Filter.	

The blood spread in a thin layer (or in a thick layer when microbes rare in number, are being sought) is slowly dried either at ordinary temperature or a feeble heat. It is then treated with the fluid above described, which dissolves entirely the hemoglobin. At the end of from half a minute to two minutes the fluid is drained off, the blood washed with distilled water, and coloration is effected with carbolized methylene blue with the addition of from 1 to 20 per cent. of aqueous solution of methyl violet.—*Paris Cor. Med. Press and Circular.*

Grief, Emotion, and Infection.

That grief prostrates, often causing physical disease and sometimes death, has long been a matter of every-day knowledge. The way in which such effects are brought about has been the subject of careful study by an investigator named Bassi, who has recorded observation on animals which apparently died in consequence of capture. Birds, moles, and a dog, finally succumbed to conditions that correspond in the human animal to acute nostalgia and a "broken heart." These humble cousins of the human race were examined post-mortem.

Generally there was hyperemia, says *The Lancet*, sometimes associated with capillary hemorrhages of the abdominal organs, more especially of the liver, with fatty and granular degeneration of their elements, and sometimes bile was found in the stomach with or without a catarrhal condition. The clinical symptoms were at first those of excitement, especially in the birds, and followed by depression and persistent anorexia. The theory suggested by Dr. Bassi is that the nervous disturbance interferes with the proper nutrition of the tissues in such a way as to give rise to poisonous substances—ptomaines—which set up acute degeneration of the parenchymatous elements similar to that which occurs in consequence of the action of certain poisonous substances, as phosphorus, or to that met with in some infectious disease. In support of this view, it may be remembered that Shule earlier found parenchymatous degeneration in persons dead from acute delirium, and that Zenker found hemorrhages into the pancreas in persons who had died suddenly.—*N. Y. Medical Record.*

The American Medical Association.

With the close of the session at San Francisco the following officers were elected for the ensuing year: President, Doctor Donald Maclean, of Michigan; Vice-President, T. C. Loveling, of Ohio; Treasurer, Doctor Newman, of Illinois; Secretary, William B. Atkinson, of Pennsylvania; Assistant Secretary, H. B. Ellis, of California; Librarian, G. E. Webster, of Illinois; Editor of the Association *Journal*, J. B. Hamilton, of Illinois.—*The Medical Age.*

MEDICAL PHARMACEUTICAL AND DENTAL DIRECTORY.—Geo. Keil, publisher and editor, Philadelphia.

This Directory is for the States of Pennsylvania, New York, New Jersey, Maryland, Delaware and District of Columbia; and for these States it is very complete, and will be of much value to those within them, and to a goodly number outside. It also contains much valuable information, in addition to the list of names of these three departments. It can be obtained through any dental depot.

Notice.

The chairman of the executive committee of the Horace Wells' 50th anniversary celebration, announces that the papers read by Professors Fillebrowne and Garrettson, at the meeting, and the speeches delivered at the banquet, have been prepared for publication in the proposed souvenir volume, and will be issued upon the receipt of a sufficient number of subscriptions to cover the expense. Price, $1.50. The undersigned will receive subscriptions, receipt for same, and deliver the book upon completion.

J. D. THOMAS,
Chairman.

EDITORIAL.

The Academy of Stomatology.

A new society with a new name, has recently been organized in Philadelphia, the objects of which, as stated in a circular issued a short time ago, is for the purpose of investigating and studying all matters connected with the mouth, its functions in health and their aberrations in disease. A prerequisite condition for the acceptance of all papers and communications read before it is that they shall be based upon original research, at least in some degree. The enforcement of this condition assures the selection of only papers possessing decided merit and which will add something to the total of our knowledge.

The academy already numbers among its members a majority of the most active and advanced practitioners of Philadelphia. They are men who have the best interests of dentistry at heart, and who energetically forward the work of dental professional progress to the best of their ability and means.

A commodious suite of rooms has been secured for the exclusive use of the academy. In connection with these a dental library and museum is being established together with a reading

room where it is proposed to keep on file all of the leading dental periodicals of the world. The reading-room and museum will be open to members at all times during the day and evening. . . . The ultimate purpose of the academy is to establish a library and museum related to stomatology which will be consulted by dental practitioners throughout the entire country.

There has been for some time an idea entertained by quite a respectable number in the profession that a distinctive name, of broader significance than dentistry ought to be adopted. The word from which dentistry is derived simply means a tooth, and the words dentist and dentistry have about the same circumscribed meaning, while the word stoma, from which the word stomatology is derived, is mouth and all that immediately relates to it. This change, if adopted at all, will be slow. The word dentistry has been so long in use and so generally understood by every body that time will be required for the change.

In respect to euphony the word dentistry, perhaps, has a little the advantage but in most respects the new word, we think, is to be preferred.

The Louisiana State Dental Society.

The regular meet of the Louisiana State Dental Society will meet at Tulane Hall, New Orleans, February 26th, the day following Mardi Gras. The profession throughout the country is invited to attend."

W. S. Truxille, D.D.S.,
Cor. Sec'y La. State D. Society.

Obituary.

Died, January 12th, 1895, of diabetes, at his home in Davenport, Iowa, Dr. William O. Kulp, in the fifty-ninth year of his age. He was not thought to be seriously ill till two or three days before his death.

This is a great shock to all who knew him, and his acquaintance was extensive. A sketch of his life will appear in the next number of the REGISTER.

In Memory of Dr. Kulp.

At a call meeting of the Des Moines Dental Society held in the office of Dr. G. W. Miller, January 14, 1895, at which Drs. S. L. Edwards, A. R. Begun, G. W. Miller, C. Thomas, T. A. Hallet, G. W. Fuller, J. B. Entrikin, Jessie M. Ritchey and H. N. Edwards were present, Dr. C. Thomas reported the receipt of a telegram announcing the death of Dr. W. O. Kulp, of Davenport, Iowa. A floral pillow was ordered for the funeral and a committee appointed to prepare appropriate resolutions.

Dr. Jesssie M. Ritchey read a poem in memory of Dr. W. O. Kulp, which on request was granted for publication.

At the adjourned meeting held in the office of Dr. Begun on Tuesday, January 22, the report of Committee on Resolutions was adopted as follows:

As it has pleased our Heavenly Father to call from labor to rest our esteemed brother, Dr. W. O. Kulp, we, the members of the Des Moines Dental Society, desire to express our sorrow for the loss of one whose life was ever devoted to the welfare of his profession and extend to the bereaved family our sincere sympathy in their deep affliction.

Resolved, That in his death the profession has lost a most worthy member and the Dental Department of our State University an earnest and faithful instructor.

THOS. A. HALLETT,
SURRY L. EDWARDS,
JESSIE M. RITCHEY,
Committee.
HORACE N. EDWARDS,
Secretary.

Lines written by Dr. Jessie M. Ritchey in memory of Dr. W. O. Kulp:

Death thrust the sickle in
The ripened grain doth fall;
We are awed and stilled by the thought
Thus will He garner us all.

We know that our friend was noble,
Great-hearted and true and brave;
O, why in the prime of manhood,
Has he left us now for the grave?

Did not life with all its lessons
Have missions for him to do?
Was it that in skill and cunning
His hands were palsied, untrue?

No, like the oak in the forest
With its branches that herald the sun,
Which, in its strength and its power
Is stricken and lieth dumb.

So our brother in nature majestic
At the time of life's high tide,
At the crown of manhood's rich glory,
Has passed to the other side.

O! Death where is thy sting
O! where will thy victory be
If from life's fullest fruition
He is brought to eternity?

If from striving and yearning
For truth, for supremest skill,
He has closed earth's eyes to enter
The revealments of the invisible?

For on earth with vision so feeble,
We falter from day to day
In the mists and shadows surrounding
That darken and dim our way.

Till with life we are a wearied
And with care our souls are done,
Then earth will close to the spirit
As the day doth close with the sun.

But the morn will rise resplendent
And the clouds which covered the night
Will be burst and cast asunder
By the dawn of eternal night.

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COMMUNICATIONS.

Odontalgia.

BY N. S. HOFF, D.D.S., ANN ARBOR, MICH.

Read before the Ohio State Dental Society, December, 1894.

Several years ago, when I was younger in professional life, an older practitioner proposed as a subject for consideration by our local dental society, "What would you do with a case of toothache?" I was surprised and somewhat indignant that he should refer to this malady in such indefinite and unscientific terms, and especially to invite a society of professional gentlemen to discuss it.

During the past two months I have apparently lived in an atmosphere of toothache. It has seemed to me there was no disease so common, or one which presents so many vexing problems, or brought me so many patients. Living in a college town, I have had toothaches from almost every State and territory in the Union, Canada, Germany and England, presenting almost as many varieties as patients, and when your executive committee invited me to write a paper for the meeting and refused to assign me to a subject, I could not get away from toothache, and shall take pleasure in unburdening my mind even if I do bore you.

It is exceedingly difficult to define odontalgia satisfactorily and comprehensively, without qualifications. In the mind of the laymen it covers all diseases of the teeth and associated parts, especially when painful. But the dental practitioner will associate the disease with numerous functional disturbances of the

dental organs and tissues. The word toothache to him is comprehensive but not definite.

In the *American Journal of Dental Science* for July, 1853, I find an article on odontalgia by J. P. Fogg, M.D., from which I shall quote the opening paragraph for the graphic and forcible way in which it describes the malady, and for its historic interest and as an introductory to my theme.

"The simple definition of the technical term odontalgia is to be found in our vernacular word toothache. No theory whatever is implied in it. It simply means what it emphaticaly is, *a pain in a tooth.* The character of this pain is protean. It may be a slight uneasiness, it may be an intolerable anguish. It may be dull, heavy, constant like rheumatism, acute and lancinating, paroxysmal, darting, boring, throbbing. Any term of the frightful vocabulary of human suffering may be applicable to this torture. It may be cumulative, beginning moderately and increasing to intense severity, or it may at once attack the sufferer, armed in all its terrors. Yet toothache is, after all, only a symptom of some lesion, either in the pulp, the tooth, the jaw, the nerve, the brain, or the system at large."

No authoritative classification of the different phases of odontalgia will admit of a brief and comprehensive consideration, such as may be necessary to properly present the subject at this time, and I take the liberty of condensing the accepted classification and considering it under five headings simply for convenience.

First: Exposure of the dentine by accident or caries.

Second: Exposure and disease of the pulp.

Third: Disease of the peridental tissues.

Fourth: New growths in the pulp tissue or upon the roots.

Fifth: Reflex irritation.

Just why exposed dentine causes pain in the tooth we do not at present so clearly understand, as that it does. Clinical experience has practically established the fact of a wide difference in the susceptibility of dentine, when exposed in different patients, to pain. Very slight exposures will cause pain in some persons, while extensive exposures in others will cause little or no pain. It is also true that at different periods exposed dentine is more

likely to cause pain in the same persons, and accidentally different teeth in the same mouth may manifest differences in the degree of sensibility. The old writers accounted for pain or sensation in the dentine on the theroy that it was subject to inflammatory processes. But on account of the absence of the essential elements of inflammation this theory is not now believed. Some authors think the dentine is endowed with sensory nerve fibers, although they confess their inability to demonstrate their existence, or to trace any connection between the nerves of the pulp and the dental fiber or organic tissue of the dentine. Bodecker, in his recent work, Anatomy and Pathology of the Teeth, page 272, says: "It is impossible to admit of the existence of a connective tissue holding nerves alone in its constiuent soft parts. Neither have we, nor has Retzius in his recent investigations, been able to trace a direct inosculation of the dentinal fibrillæ with the axis fibrillæ of the nerves so abundantly distributed throughout the pulp tissue. As soon, however, as we admit that the dentinal fibrillæ are formations of living matter, the same as are the nerves, all difficulties vanish in explaining the transmission of sensation from the periphery of the dentine to the nerves of the pulp tissue. Living matter is contractile. Nerves are made up of living matter, and owing to their reticulated or beaded structure are fittest for that transmission of contractions from the periphery to the nervous centers which we call sensation. Contraction of the dentinal fibers transmitted into the reticulum of protoplasm at the periphery of the pulp, and thence into the ultimate nerve fibrillæ—all of which formations are proved to be continuous—is sufficient to explain the transmission of sensation, or speaking bluntly, of pain."

This theory, whether we can accept it entirely or not, is as satisfactory as any other and has much to cause us to accept it. It is plausible and harmonizes with clinical experience and manifestations. The application of agents capable of producing contraction in protoplasm and organized tissue elsewhere, we find produce pain when applied to exposed dentine, such as cold, excessive heat, escharotics, caustics, and other chemical and mechanical irritants. All successful treatment of exposed den-

tine depends upon its being protected mechanically or by narcotic and anæsthetic drugs, from the irritation of these agents, or upon the disorganization of the organic tissue in the dentine so that irritants produce no impression when applied. It, therefore, seems clear that the theory is worthy of confidence, and all principles for treatment of sensative dentine and from the relief of pain from exposure of the dentine should be based upon it until some one demonstrates its error or gives us a more plausible one. The technical resources for the cure of toothache from this cause are so various that any attempt to detail them here would be a burden. We rest our practice on the acceptance of the contractile theory, leaving to individual cases the selection of procedure and remedy.

The second division of our subject, Exposure and diseases of the pulp, presents a different and more complicated series of conditions, requiring prompt and definite treatment, as the symptoms are frequently manifested with great energy, because of the peculiar environment of the pulp and its sensative nature. The pulp is richly endowed with blood vessels and nerves contained in a matrix of connective tissue. There are lymphatic canals and possibly lymphatic glands. There are few arteries and veins, and these are near the center of the pulp, but the entire organ is richly supplied with blood capillaries, especially toward the periphery. The odontoblast layer on the periphery of the pulp is not highly sensative, but the granular layer immediately beneath contain the nerve endings of the pulp nerves and is highly sensitive. Irritation of the exposed pulp is followed by pain, depending on the character of the irritant as to its penetrating power and the severity of its action. Mechanical and galvanic shocks cause prompt and severe pain ; and because of the favorable structure of the pulp the shock is quickly experienced, not only in the pulp, but in the general sensorium as well. Chemical irritants act more slowly, depending on their relative solubility. The power of their impression will depend upon their characteristic physiological or chemical affinities. The pain produced in each case will correspond with the time and intensity of the irritation. Irritation of the pulp is always followed by disturbance of its nor-

mal circulation. The first effect is to produce contraction of the tissues and more or less anemia, which is quickly followed by relaxation and a determination of blood to the part, congestion and incipient inflammation. This condition is scarcely pathological, and yet it requires very nice manipulation, and the proper selection of remedies to prevent serious inflammatory conditions following. Prompt removal of all irritants and provision for complete seclusion, accompanied by the application of local vascular and nerve sedatives. Disinfection with non-cauterant germicide, the application of an antiseptic dressing and the careful adaptation of a protecting filling, are indicated for the relief of the pain and its subsequent recurrence.

Inflammation of the pulp, results from inoculation under conditions of general systemic infirmity, or because of excessive exposure, and irritation in consequence of mechanical, chemical or physical excitants. There are the usual symptoms of irritation and in addition the entire pulp takes on a persistent congested condition which in a measure suspends the normal function of the pulp. There is pain, not only of the acute variety, but the tissues themselves take on a kind of lameness or hypersensitive condition, so that every pulsation of the heart is distinctly felt, causing intense and prolonged suffering. This condition is not amenable to treatment with the ordinary local remedies used for pulp irritation, at least not for curative results. The results of this affection are somewhat varied and the prognosis is uncertain. Usually it means the utter annihilation of the pulp as a vital organ. In favorable cases: good systemic health, youth and the absence of destructive infection, the chances of successful conservative treatment are correspondingly better. In many cases it is practicable to save the pulp even after extensive inflammation. It is of the utmost importance that the actual condition present should be carefully determined, in order that needed and useful pulps be not sacrificed indiscriminately on principle. And also to prevent needless suffering for the patient in a futile attempt to save pulps which ought to be subject to radical treatment at once.

The treatment of this condition for the relief from pain

temporarily, can in almost every case be successfully accomplished by the removal, as far as practicable, of all local irritants; the application of astringent, non-irritating sedative; an antiseptic dressing to be covered with such material as the case will indicate, to prevent further irritation and the dissipation of the dressing by solution in the saliva. Counter stimulation of some of the systemic eliminating organs to withdraw the excess of fluid from the pulp, such as a saline cathartic. If this is not advisable a heart sedative will give temporary relief and enable the tissues of the pulp to recuperate and secure a more normal circulation and function. After the inflammatory condition has subsided, the pulp may be covered with a suitable non-irritant filling material and the carious cavity filled with a more resistant material, one that may be removed without applying excessive force in case of a reappearance of the difficulty. The conservative treatment of pulps so diseased will necessarily depend so largely upon individual conditions, that it would be inpracticable to even suggest a treatment for the varied conditions which must be met. The condition of the pulp itself, as to the character and extent of the disease; the personal idosyncrasies of the patient as to general health; the difficulties of exact technical manipulation; the importance of the individual tooth and the subsequent service required of it, are to be taken into consideration. Placing crowns, bridge attachments, regulating appliances, or requiring constant and heavy service in any way, will be likely to thwart all efforts for the conservative treatment of teeth having had inflamed pulps. If any such service is to be required of a tooth soon after treatment, it will be better to destroy the pulp at once and avoid almost certain secondary inflammation. If the indications are that there is extensive inflammation of the pulp and it is desirable to insert cement or amalgam fillings, or even gold fillings, it will save much inconvenience and suffering to destroy and remove the pulp at once.

The third stage in-exposed and diseased pulp is what is sometimes called gangrene of the pulp. We may have gangrene of the entire pulp or only of the exposed surface. Where the exposed portion of the pulp only is involved, it takes the form of a

slough, with little or no pain except when irritated. This condition is not always the cause of severe toothache, but is sufficiently troublesome to require attention. The indications usually are for entire destruction of the pulp, but a few conservative practitioners recommend excising the diseased portion, and by palliative treatment save the remaining portion. In my own hands this procedure has never been successful in permanent results. The most painful form of pulp gangrene occurs when the pulp is inclosed in the pulp chambers by fillings or debris of caries. The generation of gas in the putrefactive process creates pressure and consequent irritation of the nerves of the pulp and may extend to the periosteum. The pain is continued, severe and somewhat vascillating, owing to the thermal changes experienced through the tooth. The pulp is highly congested and if the cause of the irritation be not removed inanition and dissolution follow. Conservative treatment of such pulps is not advisable, but the excessive pain can be reduced by making an opening directly into the pulp chamber to allow the gas generated in the putrefactive process to escape. After which the pulp can be anæsthetized and removed entirely. The root canal should then be sterilized and filled and also the carious cavity of the tooth. It is sometimes difficult to locate the affected tooth as there may be no complication with the peridental membrane, and because of reflex irritation the pain will be manifested in another tooth, or in associated organs, the eye, ear and face. Testing suspected teeth with extreme heat or cold will result in exaggerated symptoms when the affected tooth is tested. The heat serving to expand the gas which results from putrefaction and as it can not escape from the pulp chamber it makes pressure on the inflamed tissues and consequently pain. In the same tooth the application of cold will cause pain at first by shock, but immediately relief will come because of condensation of gas and relief of pressure, and also because of the fact that contraction of the tissues by shock forces the fluid out of the pulp chamber, and restores the tone to the blood vessels. If suppuration has not yet set in, and still there is excessive inflammation, the application of cold will produce pain, not only by shock, but by its stimulating effect through

the vasso-motor system upon the collateral blood circulation, throwing more blood into an already congested pulp which has no room for expansion. The use of heat in such cases will relieve by lowering the blood pressure in the collateral circulation and consequently depleting the pulp. It is evident to everybody, especially one who has tried these agents for this purpose, that great care should be exercised in their use, especially to confine them as much as practicable to a single tooth at a time. But careful use of them will result in the most accurate information. Percussion may aid some, but has no special value unless there be peridental inflammation. Putrefactive changes may be determined by difference in resonance. Reflected light will often be of service in noting the difference in opacity. The history of the case will frequently suggest much that will be of value. An accurate diagnosis will suggest the treatment without great difficulty. As an expedient extracting the offending tooth, this would be a radical measure indeed. Conservative treatment would in such cases be along the line of saving the tooth without the pulp as this organ in this condition is entirely beyond any medical treatment. The first step will be to gain access to the pulp in order to effect its removal. Sometimes it is impracticable to do this because of circumstances; proper instruments are not available, or the patient's health will not admit of so painful an operation as drilling into the canal through a dense tooth or hard filling. General or systemic remedies will be indicated in such emergencies, systemic narcotics, combined with drugs which will depress the heart's action directly, or lower the blood pressure by acting upon the vascular system, or depleting the blood with diaphoretics, cathartics or diuretics. Dover's powder as a narcotic and diaphoretic will answer generally together with a warm foot bath, a reclining position, and in aggravated cases a heart sedative, such as aconite. A warm poultice applied over the region of the affected tooth will relieve congestion and prevent pericemental irritation. If it is possible to secure free access to the pulp at once, the treatment is much simplified. The disorganized tissue should be thoroughly cleared away by syringing the cavity with warm water, the rubber dam put in place to isolate the tooth,

and pulp injected with a solution of cocaine and thoroughly removed. If there has been no suppuration to infect the dentine or peridental membrane, the tooth may be sterilized and filled at once. If gangrene has taken place it is better to make a dressing of a disinfectant and defer filling the canal to a subsequent sitting.

The fourth condition of exposed and diseased pulps is a somewhat rare one. *Tumefaction*, except in rare instances, is merely hyperplesia, an excessive growth of the basis substance, or the growth of the basis substance of the pulp until it protrudes from the exposed orifice of the pulp chamber. This condition is not painful except when specially irritated, and the season of pain is not prolonged. The nerve supply is scant but the blood supply is abundant. It is simply a pathological tissue and is incapable of being restored to its normal condition and function. Its destruction is always indicated. This can best be done by anæsthetizing it with cocaine and removing by an operation. Cauterizing chemicals produce intense pain in it and can not be used. Actual and galvanic cautery may be employed, but they are more or less painful and the manipulation of such cauterants is difficult.

Toothache from disease of the peridental membrane is not uncommon. It frequently has an intimate relation to diseases of the pulp, already considered. In fact the majority of diseases of the peridental membrane which cause toothache are the result of destructive inflammation of the pulp. This organ is easily inoculated from a diseased pulp, because of the intimate relationship of the two organs. Its environment is similar to that of the pulp, its nerve supply is not so rich, but it has a very liberal blood supply. When congested by inflammation it thickens and lifts the tooth in its socket, so that unusual pressure and percussion from the occlusion of the teeth serve to exaggerate the already irritated tissue and consequently it becomes exceedingly painful. If the affection is mild in type and acute, it may not cause great inconvenience, but is exceedingly painful when struck. It is sometimes produced by mechanical and external irritants, such as blows, over-malleting, regulating, wedging, application of clamps, etc. In such cases recovery will be prompt after the re-

moval of the cause of irritation. If the cause be infection from an inflamed or suppurating pulp, or the forcing of the debris of a putrid pulp through the apical foramen of the root, or the continued action of irritant or caustic chemicals, a serious inflammatory result may appear, varying in all degrees from irritation to suppuration and infection of the contiguous tissues of the jaw and face and is correspondingly painful. In the beginning of inflammation of the peridental membrane the tooth elongates because of congestion, pressure on the tooth produces pain, as the inflammatory process succeeds the pain increases and changes from tenderness to acute pain and then to a throbbing or jumping character. There seems to be a more powerful heart beat, and if the patient exert himself the rapidity of the action is increased. If suppuration takes place there is general pyrexia and nervousness, and the patient is exceedingly uncomfortable.

The treatment of incipient and acute pericementitis due to inflammatory action set up because of its association with an inflamed pulp, would of course depend upon the treatment of the pulp. The removal of the irritated pulp and the local application of counter irritation will be sufficient to cause it to subside. But when the peridental membrane itself has become affected by inoculation and a destructive inflammatory process has been set up in it a more difficult disease for treatment is encountered. Sometimes its course may be aborted by the continuous local application of counter-irritating blisters, and systemic depletion, disinfection, saline cathartics and antipyretics. Too often the disease must run its course to suppuration. When this is the case all possible means for hastening the process should be employed. The most effective being poultices of various substance to keep the parts warm and moist, thus assisting in the production of putrefactive agencies and the relaxation of the resistance power of the tissues molecularly. So that the pus shall be formed quickly in sufficient quantity to burrow its way through the tissues toward the surface, when by the use of the lance it may be drawn off and with it much of the active agency causing the inflammatory condition. The releasing of the pus will usually give immediate relief. Little further medication is

indicated, except to keep the sinus made by the pus open and clean. This should be done with warm water containing some active germicide in solution, until resolution has taken place. If the abscess has been of long standing and there be necrosis of the bone, its removal is indicated as is also the use of local stimulating remedies.

Calcific growths in the pulp chamber and on the roots of the teeth are a more frequent cause of pain than we realize. The symptoms are not so markedly manifested as in inflammation of the pulp or peridental membrane. The pain is not severe nor acute, but is more continuous. Calcific deposits in the maxtrix of the tooth pulp are due to the irritation of the pulp through exposed dentine or cementum from caries, abrasion or recession of the gums. No inflammatory process takes place in the pulp, but an abnormal functional excitement, due to this external irritation through the denuded dentine. When these deposits form in the connective tissue of the pulp or on the walls of the dentine, no excessive pain is experienced. But it frequently happens that owing to a hyperæmic condition of the pulp, these formations take place in the capillaries or in the nerve tissues, producing considerable pain. The pain in such cases may be slight in the tooth itself, but by irritation of the reflexes pain is manifested in other, even somewhat remotely situated tissues, such as the eye, ear, the shoulder, the sides of the body, etc., but generally facial neuralgia, which is difficult to locate, as the teeth and muscles of the face and throat are all more or less implicated. The diagnosis is difficult, as there are no apparent local symptoms. Teeth with large cement or amalgam fillings should be carefully inspected, also teeth largely denuded of enamel, dentine or cementum. Heat and cold will reveal hypersensitiveness, and may, by exaggerating the paroxysms of pain disclose the affected tooth. The treatment is radical, either the removal of the pulp or extraction of the tooth. Secondary deposits on the roots of teeth are not frequent causes of pain. They are common in advanced age, especially where there has been considerable disease of the peridental membrane. The exact cause of the disease is not well made out, and it is much a question whether the process in itself

is a disease at all. It is not painful, but has by some authorities been supposed to have much to do with those obscure facial neuralgias which can not or have not been traced to other sources. The treatment must be preventive, in relieving all irritable condition of the peridental membrane, or radical extraction of the teeth.

Reflex irritations are important factors in medical practice, and more or less attention has been given to these affections by dental practitioners. They are exceedingly difficult to diagnose by the dental practitioner, because an irritation in a very remote part of the body may manifest itself prominently in a dental organ with no evident cause. Diseases of the eye, ear, nose, throat, brain, cord, the thoracic, abdominal and pelvic viscera, to say nothing of many constitutional diseases such as malaria, gout, syphilis, etc., are liable to be the cause of localized pain in and about the dental organs. These reflex irritations of the teeth frequently show themselves in perfectly sound teeth, but more frequently a tooth structurally weak from some cause will be the one selected. The treatment of the affected tooth may give relief, but many reported cases seem to indicate that extraction of the tooth is the only adequate cure. The treatment of these conditions are one of the points at which the dentist and physician should act together. Many serious mistakes have been made because of too much specialization. There is no question but that diseases of the dental organs cause and continue many serious nervous and organic systemic affections in spite of the best medical treatment. But this is not our subject.

There is one cause of toothache that I have been unable to classify, because I do not understand it, and can't find any authority on the subject. As near as I can state it, it is acute irritation.. without destructive inflammation of the peridental membrane. It generally follows the removal of the pulp by either operative procedures or chemical corrosion and the immediate filling of the root. Especially is it present when irritating chemical germicides or antiseptics have been used to sterilize the root canal. It sometimes follows the treatment and capping of exposed pulps and insertion of fillings. I am not able to briefly outline the symp-

toms, except to say that there is pain usually without soreness, although soreness may be present. The pain is more or less constant. If from a capped pulp it is sometimes neuralgic. It certainly is irritation of the nerves of the dental tissue surrounding the tooth, but of what nature I am unable to determine.' It is exceedingly practical in its bearing on this subject, and is becoming more prominent as the use of rapid destruction and antiseptic treatment of pulp increases. My notion is that it is a secondary effect of the use of irritant anæsthetic or germicidal drugs.

Characteristics.

Read before the Ohio State Dental Society, December, 1894.

BY F. E. BATTERSHELL, D.D.S., NEW PHILADELPHIA, OHIO.

It is commonly believed that the brute deprived of the soul accompanied by power of reason, is endowed with the subtle faculty of instinct, as a recompense. This mental counterpoise of instinct for reason, according to the superficial observer, must needs give to the soulless and subjected animal the entire stock of instinct to render the life balance even. By this its own sensate faculty, it is enabled to grasp instantly and automatically the various circumstances of its environment for advantage in its existence. The fact that man is blessed with the more excellent gift, seems to overshadow the possibility—the truth—that the nobler creature is furnished with both elements of intellect, either of which may serve, as occasion calls for the better.

Assuming, therefore, that the inferior creature is no monopolist in the singular quality—instinct,—it may be allowed, that, in sharing, the greater degree is retained because of the greater need.

Man's reason towers so above the faculty of instinct that he is oblivious of its influence upon his actions. Oft what he attributes to his own volition, is but the co-ordination of those sets of reflexes, by which certain movements correspond to particular irritants, through vision, smell, hearing, and the like.

These correspondences are wrought by established associations. We see an ambling biped enter our front gate. His visage is unkempt and his wilted garments droop upon his person. We do not stop to question, or enter upon a process of reasoning, but jump at the conclusion that the object focused on our retina is a tramp. Our family dog by his instantaneous process, jumps at the same conclusion with results more effective and much more disastrous to the aforesaid biped.

Habit and instinct are near akin. What one has done many times is done with thoughtless perfection. The garrulous female unmindful of "the base degrees by which she did ascend," becomes a Mother Grundy. How the uncouth plebeian becomes the honored patrician, is as much a consequence of habit betrayed, as of successful adventure in politics. "Thou hast been faithful over a few things, I will make thee ruler over many," is more often the *fiat* of the commonweal, than political bosses admit, or the fortunate themselves suspect.

If the savage animal recognizes in the *genus homo* his foe and master, how much more do the kindred, that are qualified with reason *and* with intuition, discern the variations in *their* kinds? That the occult faculty has more to do in discriminating conditions among men than is ordinarily recognized, we presume is now brought within view. Seeing, then, the consort of reason, the swift interpretor of our ways, is instinct. Therefore let us make our professional call and election sure, by rendering the peculiar homage the dame requires for recognition.

The ecclesiastic is known by his cloth and long face; the family doctor by his pre-occupied air, hurried step, and apothecary odor; the merchant by his alert and accommodating address, mercenary smile, and a pencil stuck aslant his ear; the soldier by his commanding carriage and clock-like movements; the lawyer by the midnight air of mystery in his eye, the ultra respectability of his features, and the great depths to which his hands and thoughts seem to descend, betimes, into his trousers pockets; and the dentist by his dyspeptic countenance and the charm of his watch-chain: "Hold!" cries the lawyer, "I object. These outward circumstances are not competent evidence in a court of

equity. They oft mislead. There is an indefinable sense within the average mind which enables it to identify the occupation of the person separated from his work and away from the field of labor. Like some strange dream which startles the wakeful senses by the accuracy of the circumstances, past or near approaching; or like a fit of abstraction, when the mental activities are not co-ordinated with the physical reflexes, and an absurd act is committed by the individual, because the faculties cast out of this "star chamber" council of the mind, have acted independently according to habit, but out of correspondence with the superior court. So the nimble mind, with formulas acquired from habit, is constantly engaged with tests, and is even submitting reports for the guidance of the understanding."

That this process, translated intuition, produces a correct formula for the identification of a dentist, may be discovered by learning what intelligent mind owners count the essential ingredients for the dental compound. The equation should evenly balance, opinion for merit, reputation for achievements. If the formula is imperfect, it is because the ideals, *i. e.* typical dentists, are insufficiently numerous, and a prevailing accurate impression is yet uncreated.

There are counterfeits and imitations; as well of worthy men, as of money and merchandise. A gentlemanly bearing more than a miniature set of false teeth, or a naked three pronged molar, pendulating from the vest pocket; a cheerful, assuring voice more than an exhibition of much gold in the front teeth and a readiness to explain its presence; quiet culture and trim keeping rather than extravagance, lead to a correct conclusion in an inquiry. A warm soul in a healthy body is a good token, but not a sure sign; for, like "the shadow of a rock in a weary land," it may not always be present. The horny hand of the farmer, the strong hand of the laborer, the mobile hand of the mechanic, the deft and careful hand of a dentist, unlike the untrained hands of men in other professions, soft and blue veined though they be.

A fair countenance will abridge the test. Abstainence from tea and coffee will clear the complexion, steady the nerves, and brighten the eye.

Tobacco, like alcohol, is an incompatible; either one would precipitate any good solution, or give it in as a vulgar associate of "men only." The doe takes the scent of the stealthy hunter, yet out of sight, and is away; so the gentle lady sniffs the vile smell of tobacco, or an intoxicant, and with the hauteur of offense, stops not to consider.

There is that ever nearness or presence of pain, that close observance of its results, that control of the subject and of self, which must beget one of the elements of this formula—sympathy. There is that knowledge of peculiar facts regarding the substitutes and realities of the patient's mouth, eccentricities of disposition, and delicate experiences developed by necessarily close relations of the chair which will supply another quality, the most needful and patent in the perscription; it may well be defined the antiseptic, viz: circumspection. Without this ingredient no compound is genuine, it can not be kept pure, will not exhibit the true color, and is liable to effervesce and lose strength after the removal of the stopper.

In some compositions there is found a small proportion—a few minims perhaps—of a bitter tincture—hypersensitiveness—which, though of little consequence in the general effect, renders the particular mixture somewhat disagreeable. The person bearing this aptitude gags at the familiar "doc" or "mister" unmindful that friends often substitute or abbreviate titles to lengthen their affection or respect for those whom they wish to honor most. Is it a *haute nouveaute* of form. This title of Doctor? If it be uttered in a calling voice, on the thoroughfare of any considerable town, a goodly dozen of heads may turn to reply—M.D.'s, D.D.'s, Ph. D.'s, V.S.'s, LL.D.'s, and possibly some Doctors of Dental Surgery. The title letters of the renowned Agassiz were L. J. R., these preceded his cognomen; the word "teacher" followed to define his vocation. Thus his name, in full, ran Lewis John Randolph Agassiz, teacher. Even this, his own modest choice of name, is abridged by a worshipful and affectionate world. "Agassiz," alone, stands out in bold relief over all titles and acquirements of honor. "What's in a name? that which we call a rose, by any other name would smell as sweet."

Let us therefore fill the bottle. Pour in patience, carefulness, cheerfulness, temperance, skill, invention, conscience, culture, prudence. Fill it until it overflows—it will stretch and widen—keep filling; the overflow is what the world gets, the outflow is our garment of beauty or our covering of rags, according to the contents. What is within is ever circulating outward. A shallow vessel is soon exhausted by evaporation. From a deep vessel the overflow is more abundant, is cool, is quiet, and is exhausted last. Do not pump in from beneath; pour in from above—from books, experience, words of the elders. The good men and superiors in the profession, and from the higher inspiration which descends upon every one who is not slothful in business.

The Use of Sulphuric Acid in the Treatment of Roots for Immediate Filling.

BY CHAS. WELCH, D.D.S., WILMINGTON, O.

Read before the Ohio State Dental Society, December, 1894.

Last year I was accused of bathing in sulphuric acid, which I deny, but every nerve canal that is treated by me, is bathed in it.

You want to know of my success? Under what conditions to expect a failure? How many I have treated? Manner of treatment? What teeth they were? Age of patients? What is accomplished in the way of cleansing, and in the stopping of hemorrhage? Is there any danger in allowing the acid to go through the apical foramen?

You remember Dr. Callahan's most able paper on this subject at our last meeting. He recommended the use of sulphuric acid in the opening of difficult root canals, but for straight and unobstructed ones used "Gates-Glidden drill." We now, after a year's successful experience, use the sulphuric acid in every case, thanking Dr. Callahan for the first thought or suggestion of this most useful aid to the profession.

Since December 11th, 1893, I have treated one hundred and

three cases, and strange though it may seem, have been successful in every one of them. I filled every tooth immediately after using the acid fifty per cent. aqueous solution, excepting in cases of blind abscess with pus in the root canal. In those cases, after having cleansed the canal with acid, fill it with glycerine and iodoform made into a thick paste, leave it a week, then remove and fill permanently. That is the only condition I have found that you can not fill immediately. I have used this treatment upon every tooth in the mouth, without an exception, as a matter of experiment. Ages of patients ranging from fourteen to seventy-five years. Under every condition from a recently extracted live pulp to a chronic abscessed tooth.

In cases of hemorrhage in root canals sulphuric acid will always check it so you can fill immediately.

My manner of treatment is: First, apply the rubber dam. Open the pulp-chamber freely, take with pliers, a pledget of cotton soaked in sulphuric acid, and place it into the chamber. With a No 5 Donaldson Canal Cleanser pump the acid into the canal to the apex of the root. You may know when you have reached the apex by the patient complaining of pain. No trouble will arise by the acid going through the foramen. You know how dangerous it is to force a nerve broach through the foramen of any devitalized tooth, how soon you will have an alveolar abscess, but by using sulphuric acid, first on a pledget of cotton, it precedes the canal cleanser and kills the bacteria, preventing this trouble.

Second. With a drop tube flood the chamber with a saturated solution of bicarbonate of soda, which by the formation of carbonic acid gas throws out the debris, neutralizing the acid, at the same time cleanses and apparently whitens the tooth. Then dry thoroughly with a five per cent. solution of pyrozone followed with hot air.

Third. With a minim syringe flood the canal with carbolic acid and iodine, equal parts, followed with iodoform and gycerine which I force through the root. Then use chlora-percha with a gutta-percha point, which finishes the treatment, and the tooth is ready for a permanent filling.

DISCUSSION.

DR. J. R. CALLAHAN: Dr. Welch goes a little beyond anything I have written on this subject when he gives details of after-treatment. That the treatment he announces has been successful in his hands is abundantly proven by the number of successful cases he reports. Although he does not mention the fact, I know that he has an accurate record of each and every one of the 103 cases that he reports. I thought at one time of having a large number of record cases reported at this meeting, but a friend and neighbor of mine talked me out of that idea, which perhaps was well enough, for Dr. Welch's record is sufficient, and it might be interesting to some of you to look it over.

I am often asked if I allow the acid to go through the foramen. My answer to this is that I *try* to get the acid through in every case. Of course I go very carefully. You should not ram the broach through the foramen as if you were drilling a hole in a rock; nor should you stab the instrument into the membranes beyond the root. With the *broach* you might do harm. The acid attacks vital tissues very mildly, but with devitalized tissue the attack is prompt and vigorous, so if the tissues about the apical space are in their normal condition, the presence of the small amount of acid that gets through the canal will create no disturbance further than a slight irritation, which will pass off in a very short time if you will prevent its becoming inoculated by the introduction of septic matter. If there be pus present, you will do well to flood the pus pocket with the acid solution.

A word of caution. When working in small canals, always take a new broach, and keep in mind that the acid makes the broach quite brittle.

After the root canals have been filled be sure to trim the margins of the cavity; that is cut away all the borders of the cavity that *might* have been touched by the acid, you need not cut deep, just enough to get a fresh surface for contact with the filling.

There is another thing I want to mention while on my feet, in cases of chronic abscess where it is necessary to amputate a portion of the root and remove dead bone. This operation leaves

quite a chamber in the jaw that is often left to heal as best it may. This I believe to be wrong. This cavity should be packed full with iodoform gauze, and the gauze renewed at intervals of twenty-four to forty-eight hours, using a little less of the guaze at each visit. This is an old and established surgical practice.

Dr. O. N. Heise directed my attention to this after-treatment. Why it has been so generally overlooked is more than I can tell.

Dr. H. A. Smith: This discussion recalls the mineral acid theory of dental caries as taught us years ago by Professor George Watt.

He described three varieties of caries; one of which he claimed, was caused by sulphuric acid. By this acid the organic portion of the tooth is slowly carbonized, giving rise to what Professor Watt termed the black variety of dental caries. Accepting this theory as correct for the time, may we not produce by the use of sulphuric acid in root canal treatment artificial caries of Professor Watt's second variety?

Dr. Welch uses sulphuric acid in treating all root canals, whether septic or antiseptic. If the acid is used in foul root canals, may not a double purpose be effected? The canals would be widened by solution of the lime salts, and at the same time, the basis substance of the dentine, together with any micro-organisms present, would be burned and carbonized.

Perhaps the very general success which Dr. Welch claims has attended the use of sulphuric acid in putrefactive root canals, and in cases of abscessed teeth may be explained upon this hypothesis. It will be observed that in some of the cases reported by Dr. Welch, as cured by the sulphuric treatment, other well known antiseptics were used in connection with the acid. We are therefore left in doubt as to the real efficiency of this remedy, at least so far as these cases are concerned.

Dr. Harroun: Sulphuric acid is on record as the favorite treatment of Dr. W. H. Atkinson in all cases of necrosis, and it is no new treatment so far as cleansing the tissues is concerned. He used to tell us to use a quantity of vitriol, and not to be afraid of it. I have always made use of the aromatic sulphuric acid in such treatments.

DR. HOFF: What has just been said about the use of elixer of vitriol is liable to lead us to confound this agent with dilute sulphuric acid, and cause confusion in results obtained. Elixer of vitriol is a twenty per cent. alcoholic solution of sulphuric acid and has no great power as a solvent of bone or soft tissues. This point was very satisfactorily settled by Dr. J. N. Farrar by a series of experiments recorded in the *Dental Cosmos* for 1878.

I see no special advantage in using the dilute sulphuric acid, in the treatment of decomposed pulps in the pulp chambers. It seems to me there are other agents which will just as effectively accomplish the removal of the dead soft tissues, and which have no objectionable qualities. Hot water is preferable, especially if a little soda and some good antiseptic be added. It is less objectionable, as it will not injure living tissues, the instruments, or patient's clothing, should an accident occur. Therefore, as a simple detergent, I would not make use of the sulphuric acid in such cases. I can, however, see no valid objection to one using the dilute sulphuric acid as a sterilizing agent and detergent if proper precautions are taken to protect the other tissues from its caustic properties.

Sulphuric acid is a cauterant, and is decomposed in the presence of water liberating oxygen, which destroys the molecular affinities of organized tissues. It is very active in destroying calcified tissues as well as soft tissues. I would use it in the treatment of pulpless teeth not primarily as a sterilizing agent, but as a detergent in a sense, that is to destroy the remains of the pulp organ and so much of the calcified tissues as was desirable to enlarge the pulp canal for free access.

My experience with it has been rather unfavorable. In one case I attempted to use it in the same way these gentlemen have described, but after destroying the pulp I couldn't remove it by ordinary detergents. A case in which I used it was one in which there was a large amount of bone deposited. The canal was almost entirely filled up, and I couldn't remove the pulp by the usual proceedings. It was very much irritated and inflamed, and I had much difficulty in trying to remove it. I injected cocaine and then drilled it out. I undertook the sulphuric acid treat-

ment, and succeeded in enlarging the canal and removing the pulp entirely. I afterwards inserted a crown, and ever since the tooth has been giving trouble. There is no inflammation of the peridental membrane, but there is very much pain about the tooth. On testing it thoroughly, I am satisfied there is no inflammation about the tooth, but an irritated condition. I don't know whether it is due to treatment with sulphuric acid or not. Possibly it is. I am certain I did not encroach on the peridental membrane. I did encroach upon the cementum, and I can't account for it in that way. The absence of inflammation puzzles me a great deal about that tooth.

In regard to antiseptics following it, I think it is very good practice. I would use them for the reason that the sulphuric acid soon becomes diluted, although it may be an antiseptic and germicide in its active form.

In its undiluted form it is dissipated very quickly, because it is soluble in water and the fluids of the tissues. I think Dr. Welch's practice of using aristol is commendable, because it is not so quickly dissolved, remains a long time, giving the tissues a chance to recuperate under non-irritant antiseptic conditions.

Some Peculiarities of Oxyphosphates.

A Talk given at the Ohio State Dental Society, December 6, 1894.

BY W. V. B. AMES, CHICAGO, ILL.

MR. PRESIDENT: I did not understand until I came here that I was on the program for a paper. I think I wrote Dr. Callahan how much pleasure it would afford me to be here, and that I would show some peculiarities of oxyphosphates, and I was put on the program for a paper. I do not care to take up the time of the association since you have in store the valuable matter of Dr. Molyneaux and others. I have been doing a great deal of experimenting with oxyphosphate for several years, but I will only call your attention to what I have been able to produce

in the way of a phosphoric acid solution which is crystallized in such a form that it can be used as so much liquid and remedies the difficulty which we so often experience from having the liquid of a cement partially crystallized before it is used up. By reason of the form of crystal in my material there is a pasty consistency which is uniform throughout and will not undergo any change from long keeping. I have here also specimens of hardened cement which show greater density and closer texture than we have been familiar within these materials.

DR. H. A. SMITH: How is it as to solubility in the saliva?

DR. AMES: I have seen it hold contour for two years in an approximal cavity in a way that I never have in other materials of this kind.

DR. ——: What dissolves the phosphates?

DR. AMES: When an oxyphosphate dissolves it is either because there is not proper union or crystallization, or there is too much soluble alkaline phosphate cement contained in the mass. Of course the surface exposed to mastication will, with most cements, be worn away; but I believe that a great deal of failure at the cervical margin that is blamed upon the cement is in a large majority of cases the result of faulty manipulation of an undesirable cement. A cement has been used which will adhere tenaciously to a dry surface, but not at all to one that is slightly moist. The cervical margin may have been well prepared and made fairly dry, but if there is a trace of moisture, the cement will be very prone to draw away during the packing or the trimming of the filling. Then of necessity there is failure at the cervical margin. The cements containing soluble alkaline phosphate are the ones which are most apt to behave in this way, therefore they are not best adapted for filling but rather for crown setting. I do not believe that any one cement can be used to advantage for all purposes. We need cement of one quality for filling and of another for setting crowns.

According to my belief and observation, a cement that best answers the purpose of filling is one in the composition of which there are no soluble alkalies. Such a cement mixed as stiff as can be for filling, incorporating as much powder as is practicable,

will still have a slight acid taste while plastic, but no taste after proper crystallization. Such a cement mixed thin enough for crown setting would be in improper condition because enough acid would probably dissolve out to leave a friable mass. When we need extreme plasticity we had better use a cement containing alkaline phosphates which gives this plasticity as well as rendering the cement less irritant which is desirable in crown setting and for cavity lining usually. Such a cement placed under a metallic filling or within a crown, can, I believe, be relied upon; whereas, if used for filling purposes independently it would be unreliable.

Dr. Bethel: What is your method for mixing cements?

Dr. Ames: I believe in mixing more energetically than many do. I want a large stiff spatula and large mixing surface. There is a spatula made by the Boston Dental Mfg. Co., their number seven which suits me better than any other which I can buy. As I use my filling cement I mix it as stiff as I can upon the slab, adding the powder gradually and rubbing energetically, gather it up and knead it between the thumb and finger vigorously, incorporating more powder as long as the mass tends to become soft and sticky. After it ceases to take up powder readily there will be sufficient plasticity for packing. In this way I got the best results, getting such density of material as you will see in the specimens passed about. The best of the foreign cements can be worked in this way. There has been a sort of controversy as to whether we should mix cement on a chilled slab or not. Dr. Knapp, of New Orleans, once took exceptions to the statement of Dr. Evans, of New York, that there was an advantage to be gained by mixing the cement on a bottle filled with cold water. Now while this is a good practice in New York during the major portion of the year, it is a practice not well adapted to the atmospheric conditions prevailing in New Orleans where the condensation of moisture would be such as to seriously damage the cement. There is no doubt but that here in the north during the winter months when the air is comparatively free from moisture, we can use such a chilled surface to advantage

and do better cement operations than during the summer months when the use of the chilled slab is not practicable.

Dr. ——: What cement do you use?

Dr. Ames: In my practice I use almost entirely that which I produce myself. For crown setting and all work where a non-irritant cement is called for, I use what I have been able to produce, which resembles more nearly the Excelsior, of Ash & Sons than any other. The main difference depends upon my powder, which gives a glossy and close texture. For filling I use about the same powder with the pasty acid, which has been exhibited.

Dr. Taft: This is a subject of much interest, and I think we all realize that a good plastic filling is very desirable. We find a preparation of this kind behaving differently in different cases, and I am hardly able to discover whether that is the result of the material itself—it is at least in some cases—or how much it is dependent on the solvent power of the saliva in different mouths. You find fillings often times that have been for many years in the mouth and seem to be as perfect as when put in. Not long ago I saw a filling in a proximate cavity in an incisor, put in several years ago and there was no wear at all. In others, it wears out in a short time. Frequently when put into a proximate cavity, when it ls under the gum margin, how often it is underminded and the cement worn out at the cervical portion of the cavity and the rest remains in good condition. That could not be on account of the peculiar condition of the cement, but because a solvent is secreted by the mucous membrane. It may be it was not properly introduced.

Dr. ——: What is it that destroys it there?

Dr. Taft: It is an acid of the saliva. I have long desired to find the cement that will serve this purpose satisfactorily and have not been able to find it. It is a line that ought to be investigated. Investigation should be made in regard to the quality of material and the reliance that can be put upon it for the various purposes for which it is used. In the mouths of some persons cement will not wear any considerable length of time exposed to the secretions of the mouth, the mucous is a more active solvent than the saliva proper. A desirable point is to gain a knowledge of

the best material that will be reliable and its behavior be uniform. Different cements behave differently under different circumstances. Sometimes they are easily manipulated and sometimes quite otherwise. These variations I am not able to clearly account for.

I suppose the experiments of Dr. Ames are with a view of settling these questions. I think he can help us settle them. He has experimented more extensively than anybody else.

Dr. Sillito to Ames: Do the liquids crystallize on account of evaporation?

Dr. Ames: The matter of crystallization of cement liquids is not necessarily a matter of absorption or giving up or moisture. A certain solution may remain in the liquid state for a considerable time and then begin to crystallize from the effects even of a sudden jar, but more likely because of there being placed within it some nucleus about which the crystals will readily form. Such a nucleus is easily introduced by means of the spatula or whatever is used in transferring the liquid from the bottle to the mixing surface. With many of the liquids crystallization can be avoided by dropping from the bottle instead of inserting spatulas, etc., within the bottle. My main object in speaking to this extent, Mr. President, is not to advertise my materials as it may seem, but to impress upon the members my conviction that a great deal of good can be accomplished by the use of the proper cements in a differential way. If a man tells me he does not believe in cements for filling purposes, and then tells me that he uses certain materials I might mention, I say of course they will not stand. They might do for setting crowns, but I would not make a filling of them. If you use such a cement as the Harvard, or Dirigo, or Globe, or Concrete, or Eisfelder's, a very useful filling can be made.

Dr. Smith asks whether an acid or alkaline condition is more destructive to cements. I can not venture to say what the result would be with faulty material. I can only say that I believe that with material properly compounded and properly manipulated, there will be no solution, but only more or less wearing away of the most exposed surface.

Dr. Taft, asked Dr. Ames to mention the names of three or four cements that he considered the best.

Dr. Ames: I mentioned that the cement which I use for crown setting resembles the Excelsior of Ash & Sons, which I regard as very satisfactory for this purpose. It is well thought of by the men in New York and Philadelphia whom we best know. I have mentioned the Harvard, Dirigo, Concrete, Globe, Eisfelder's, and I might include some other German preparations possibly for satisfactory filling cements. What I use myself I term Ames' metalloid, which if worked as I have recommended, gives satisfaction. After mixing it as I advised, and packing it into the cavity, I work more powder into the surface as it is being shaped up. As the filling has the desired contour, rub the surface down with a pellet of cotton or some such material which is *very slightly* moistened, as you get by moistening a pellet and squeezing between dry surfaces of napkin. By means of this slightly moistened pellet the surface can be smoothed, and this slight moisture is an advantage with the cement which I use for fillings. If I have plenty of time to allow the filling to harden while I am making some other operation, I would work it down to the proper contour as nearly as possible, and use the moistened pellet just before using the rubber dam. I use a matrix wherever practicable, so as to facilitate the packing and finishing.

Dr. Sillito: I notice that the Dirigo cement is more lasting if you allow the central portion of the filling to bulge.

Dr. Ames: I have not used it enough to learn that. I will say in this connection that there is in the Dirigo a considerable portion of an antiseptic which is unmistakably hydronapthol. I do not believe that any advantage is gained by incorporating such an antiseptic with a cement. I believe that it detracts from the density and wearing qualities, and does not exert any valuable antiseptic influence.

Dr. ——: There is one cement you have not mentioned, namely, Brittons:

Dr. Ames: I would rather use Excelsior than Brittons. I believe it is equally servicable and much pleasanter to manipulate.

MONTHLY DIGEST.

Operative Dentistry.

DR. C. R. TAYLOR* writes of the "Treatment and Filling of Pulpless Teeth." He advocates a free opening into the pulp chamber and canals (sealing in ten per cent. sulphuric acid for a day or two, if necessary); thorough removal of all pulp tissue, using a smooth broach wound with a few fibres of cotton; washing out with three per cent. pyrozone; drying the canals and applying eucalyptus oil filling with chloro-percha, in which is inserted gutta-percha points, or a fine copper point, after evaporation of the chloroform. The oil of eucalyptus causes the gutta-percha to adhere to the dry walls of the canals, and the metallic point squeezes out the excess of gutta-percha.

CERVICAL CAVITIES.

Dr. WM. L. FISH presented the Odontological Society of Pennsylvania* with a new clamp for pushing back the gum from cervical cavities, so constructed that a single clamp serves for any tooth in the mouth, and which being attached to the tooth adjoining the one to be operated upon, leaves a clear space for operating. It is operated by the simple turning of a thumb-screw. Dr. Fish gave in detail his method of preparing and filling these cavities. He denounces the retaining-point as "an abomination, a delusion and a snare," preferring a slight undercut, made with inverted cone bur, thus shaping the largest diameter of the cavity at the bottom. After making the undercut, he levels the edge of the cavity from within outward, using a diamond cone point. He then proceeds to line the cavity with absolutely soft gold, followed by semi-cohesive worked in by hand-pressure with a rotary motion. He then fills with cohesive gold.

For the soft or plastic filling, he discards the beveled edge and makes the cavity as near as possible parallel through the thickness

* Dental Review, November 15, 1894.
* International Dental Journal, December, 1894.

of the enamel. In the manipulation of alloys he prefers ball instruments, which work the mercury to the surface, working down any surplus with the burnisher, that no mercury may remain in the filling.

In the discussion, Dr. Truman thought the use of this clamp would create such irritation that pathogenic germs would gather round the tooth, resulting in inflammation of the pericementum, if not pyorrhœa alveolaris.

Dr. Faught thinks that for those who use clamps, this one will do the work better than any of those now furnished by the depots.

Dr. Truman and Boice took issue with Dr. Fish on the subject of retaining points, while Drs. Brown and Faught agreed with the essayist.

SULPHURIC ACID IN ROOT CANALS.

Dr. J. R. Callahan read before the New Jersey State Dental Society* a "Second Paper" on the use of sulphuric acid for opening up root canals.

The acid, in a forty or fifty per cent. solution, is applied directly upon and about the dead pulp by means of a broach, bent to a right angle, with a little cotton twisted on the end. Old, discarded broaches, can not be used for this purpose, as the same broach should not be used a second time, the acid making them very brittle. The acid, by a process of dehydration, causes the pulp to shrink and toughen so that it is easily removed; a drop of the solution is then placed over the mouths of the canals, it being sometimes necessary to sink a little depression to keep the acid where it is wanted. With a number five Donaldson nerve-canal cleaner, bent to a suitable angle, with the shank cut short to make it fit close to the handle, rigid and strong—enter the canal slowly and carefully, with a pumping motion, the acid preceding and following the broach closely, destroying all septic matter with which it comes in contact. When all the canals have been thus treated, with a Dunn syringe fill the cavity with a saturated solution of bicarbonate of soda, which, by contact with the acid, lib-

* Dental Cosmos, December, 1894.

erates carbonic acid gas, causing an effervesence which carries all the broken up tooth and pulp substance out of the canals, out of the tooth, on to the rubber dam, leaving a deposit of bicarbonate of soda lining the whole tooth. When this is removed, the canals are found white and clean. If desired to enlarge the canals, repeat the operation. The canals being thus thoroughly opened, thoroughly cleaned and thoroughly aseptic, need only to be thoroughly dried when they can usually be filled at once. The action of the sulphuric acid is self-limiting, it is a pronounced germicide It acts with greatest vigor on diseased tissue, breaking it down and destroying it, leaving a fresh aseptic surface, in a fistulous tract as well as in the root. By its action, the dentine is softened for an indefinitely short distance, which being removed by the broach, the surface is again attacked as before till the desired limit is attained, but no further. The method is desirable because of its ease, brevity, thoroughness, and permanent success when intelligently used, and is applicable wherever the pulp is dead, whether recently or for a long time, fresh or putrescent, with or without abscess, blind or fistulous.

At the same meeting, Dr. C. N. Johnson read a paper on the management of "Pulpless Teeth"*. For the destruction of the pulp, Dr. Johnson prefers cobalt to arsenious acid, as being less liable to cause pain. The cobalt is applied directly to the pulp on a small pellet of cotton moistened with one of the essential oils and sealed in, oxyphosphate flowed over the cotton. In deep approximal cavities the gum is protected before applying the cobalt by building a barrier over the gum septium and along the gingival wall of the cavity to near the point of pulp exposure. In the anterior teeth the cobalt is removed after twenty-four hours, because of possible discoloration. In molars and bicuspids, it is left undisturbed for one week. When the cement is removed from the anterior teeth, the cobalt is washed out with one of the essential oils, the cavity dried, and a pellet saturated with the oil sealed in for one week.

At the second sitting for the posterior teeth (after one week),

* Dental Cosmos, December, 1894.

the rubber dam is applied, the cement removed, the cobalt washed out by flooding the cavity with absolute alcohol, evaporating till the cavity is dry. A sharp bur is used to open up the pulp chamber, lacerating and cutting up the body of the pulp till all the debris can be washed out with alcohol, which also assists in drying out all moisture in the pulp tissue in the root canals, facilitating its removal. The canals are then flooded with an antiseptic, wiped out with absorbant cotton on a broach ; the canal is again flooded with alcohol and dried, and it is ready for immediate filling.

When pulps are found dead, but without fistulous opening, the rubber dam should be applied before drilling into the tooth with a non-irritating, non-effervescing antiseptic, at hand for im mediate use the moment the pulp chamber is penetrated, the greatest care being taken not to force any septic matter through into the apical space. With absorbent cotton or bibulous paper, and repeated flooding with the antiseptic, the greatest part of putrescent matter may be removed without causing any disturbance at the apical foramen.

The canals are then flooded with alcohol and evaporated to dryness, then flooded with the antiseptic, a loose pledget of cotton saturated with the same, placed loosely in the chamber, and the whole sealed in for a week. If no trouble ensues, the canals may then be again washed out with alcohol, dried, flooded with an antiseptic, dried again and filled.

In case of fistulous opening, after removal of all putrescent matter and cleaning the canals, the antiseptic (usually Black's 1, 2, 3), should be injected through the canal till it appears at the opening on the gum. This may be effected by saturating cotton with the medicine, packing it in the canal, and forcing down upon it a plug of rubber such as is used for vulcanizing. When free passage is secured, pack in freshly saturated cotton, seal in and dismiss for a week. If the fistula is then found closed, the roots may be filled. If the fistula is persistent, carbolic acid, ninety-five per cent., may be injected; or if the opening is free, it may be preceded by pyrozone, three per cent., and the case dismissed for two weeks. Frequent treatments are to be avoided, unless there is a copious flow of pus. In chronic cases of slight discharge, after

the third treatment, the dressing in the canal should be left undisturbed for a month, though in the meantime the fistula may be treated through the opening in the gum.

For filling canals, Dr. Johnson prefers gutta-percha points, using as a lubricant gutta-percha dissolved in eucalyptol, as being less irritating to the apical tissues than chloroform, with consequent less soreness after filling.

ELECTRO-DEPOSIT FILLINGS.

Dr. Sigel Roush* portrays, as a possibility in tooth-filling, the ideal advantages offered by applying the principle of electro plating to the filling of cavities in human teeth. The deposit formed by this process is so close, the microscopic particles so penetrating, the adaptation so perfect, that a cavity filled by such a process would be nothing short of perfection. While admitting that his experiments thus far have been conducted on teeth out of the mouth, in which he has obtained some most perfect fillings, it is his firm belief that the difficulties to be overcome in filling teeth *in situ* by this process are not insurmountable, and that in this way we will yet produce the truly ideal gold filling.

GOLD CROWNS.

At the annual meeting of the Minnesota State Society,† Dr. W. P. Dickinson gave a demonstration upon the formation of the occluding surface of biscupid and molar gold crowns, emphasizing the importance of securing correct articulation, permitting utilization of the entire surface-area in mastication, as with the natural teeth.

PORCELAIN CROWNS.

Dr. Henry A. Knight presented the Minnesota State Dental Society‡ with a combination porcelain crowns, and demonstrated its value. He claims for his crown that it combines all the advantages of both the Richmond and the Logan crown, without the disadvantages of either.

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* Dental Cosmos, December, 1894.
† Dental Review, November 15, 1894.
‡ Dental Review.

BRIDGEWORK.

Dr. Van Woert, in the New Jersey State Society,* gave a "Blackboard Chalk-talk" on his system of dovetail backing and removeable faces in bridgework, describing a method of making the necessary instruments and appliances from cast-off instruments. He also illustrated various uses of common tin or soft-solder in prosthetic dentistry. In making partial plates, after adjusting the backings to the teeth, he removes them, having left the pins perfectly straight, and solders the backings to the plate with gold as usual. He then drills holes the size of the pins, covers the sockets and pins with a solution of zinc chlorid, readjusts the teeth and attaches them in place with soft-solder by means of a soldering iron. This is quickly done, and admits of easy repair.

In crown work, to secure a very close adaptation of dowel to root-canal in badly decayed roots, he inserts a small wire in the prepared canal and packs gutta-percha around it, withdrawing it when cool by means of the inverted wire. This cone is invested in equal parts plaster and marble dust, giving a mold the exact form of the canal. When dried and heated sufficiently to fuse ordinary tin solder with which it is filled, the selected Logan, or other dowel crown, is coated with sweet oil, the pin coated with a solution of chlorid of zinc, heated and inserted into the mold containing the soft-solder and cooled immediately. Union between pin and solder gives an exact fitting dowel, which can be inserted in the root canal with so little cement that there can be heating of the pin to cause expansion and consequent shrinkage, and therefore no ingress of fluids, softening of phosphates and loosening of the crown. A more perfect joint is made in this manner than is possible with cement or plastics, and is considered by Dr. Van Woert as preferable even to the How anchor screw with amalgam.

CARE OF INSTRUMENTS.

Dr. Wm. H. Potter† uses the Arnold sterilizer, in which a metal chamber is kept at 212° F. for the sterilzation of all dental

* Cosmos, December, 1894.

† International Dental Journal, December, 1894.

instruments. Nickel-plated instruments are simply exposed in the moist heat. Steel instruments are placed in a zinc tray containing carbonate of soda. In his ordinary piston syringes, he substitutes a felt packing, touched with soap for the greased packing, which the heat would ruin. Syringes thus fortified are put through the sterilizer after each operation. His hypodermic syringes are fitted out with a wash-leather packing, soaked in hot mutton tallow. The packing is removed after each operation and all parts boiled in a soda solution. Rubber dam straps and holders are sterilized after each case.

Separate labeled mouth-mirrors are a necessity from the impossibility of anything more than a washing. In the discussion of this paper by the Hartford Odontological Society, the necessity of the most thorough sterilization was strongly emphasized, and especially careful washing with soap and water before sterilization. Dr. Cooke washes his hand-pieces, etc., and puts in a weak solution of bichloride. Dr. Taylor unscrews the cone-socket of his hand piece, sterilizes the point, and washes the rest as best he can. It is impossible to perfectly sterilize the mouth, but the rubber dam protects the soft tissues, and the hard tissues are not very susceptible to the action of germs.

In reply to certain statements made by Dr. Bromell, in an article entitled "Metallic *versus* the Plastic Base for Artificial Dentures," (See *International Dental Journal*, October, 1894), Dr. Wm. Truman asks the question: "Is Prosthetic Dentistry Lagging?"* with a very decided negative reply.

Dr. Truman classes the statements so frequently made to this effect among the stock "facts" used in dental meetings without any question as to their foundation, and as merely evidencing lack of study and thoughtful sifting of evidence. Judging the progress of dental science by its ability to make happier and more pleasant the life of each individual of the community in so far as their pleasure and happiness can be enhanced by dental art, he considers that as the use of vulcanite enables thousands of persons of limited means to enjoy the comfort and satisfaction of artificial dentures, who otherwise would be constrained to do without them,

* International Dental Journal, December, 1894.

therefore the use of this material is by no means the unmitigated evil it is so often made to appear, neither was its introduction "the nucleus from which sprang dental quackery." While operative dentistry is more and more successfully accomplishing its mission of preserving in comfortable usefulness the natural organs, it still remains—with its expensive materials and expensive methods—a luxury the well-to-do alone can afford, while competition has so reduced the cost and improved the quality of artificial dentures that to-day few, if any, for financial reasons, need do without them. If service to the community, therefore, be the test, it is not prosthetic dentistry that is lagging in the race.

PROSTHETIC DENTISTRY.

Dr. M. L. Fay read a paper before the Union Convention of the Sixth, Seventh and Eighth District Dental Society of New York*, on the Preparation of the Mouth—what to extract and what to leave—the four staple materials for impressions—plaster, beeswax, gutta-percha, and modeling compound—the conditions governing the choice of material, and how to take an impression. He was followed by Dr. H. B. Meade, on Taking the Bite—the Selection and Arrangement of Teeth—Restoration of Contour and Waxing up the Case. Dr. Geo. B. Snow followed with a paper on Flasking, Vulcanizing and Finishing Rubber Plates, going very minutely into the details of the various steps of the work. These papers were discussed as a whole, at considerable length. Lack of space prevents a reproduction.

No. 1, Vol. I., of the *Dental Digest*, the official organ of the "Dental Protective Association" of the United States, opens with "Suggestions on Developing and Conducting a Dental Practice on Business Principles,"† by Dr. I. N. Crouse.

The desirable qualifications for a dentist are thus enumerated. "A liberal education, manipulative skill, artistic taste, business tact, industry, perseverance, good judgment, even temper, self-control, enthusiasm, and last, but not least, strict integrity." He

* Dental Cosmos, December, 1894.

† Dental Digest, January, 1895.

asks: "Is it too much to say that he needs all the logic of the lawyer, the scientific knowledge of the physician, and the high moral ideas and sense of responsibility of the clergyman, combined?" The selection of an office and its equipment is next considered. How to make patients appreciate the services you render, and some of the most advantageous methods of operating, will be considered in the next issue.

PROGRESS IN OPERATIVE DENTISTRY.

Dr. Thos. E. Weeks, Minnesota State Dental Society,* in pursuance of a previous resolution adopted by the Society, presented a report on the "Progress made in Operative Dentistry" during the past year, as gathered from current literature.

A step in advance noted by him is the increasing tendency towards the recognition of *principles* rather than *methods*. While correct methods are indispensable, a thorough understanding of the underlying principles is essential to the attainment of perfection. If a condition is to be remedied, the causes responsible for the condition must be recognized. The characteristics of materials used and instruments employed, come under the law of observance of principles. Of special importance is the recognition of the principles governing *contact*, *contour* and *occlusion* in filling teeth, contouring both for form and for contact, restoring ideal conditions to the fullest extent possible. The principles governing the use of gold as a filling material, and the causes of failure, new methods in the use of amalgam, new cements, "combination-filling," the renaissance of tin, and the marked advance in the treatment of root-canals, all received due attention, both in the paper and the discussion which followed the reading. In the discussion, Dr. Knight emphasized the value of the combination of amalgam and cement, suggested by Dr. St. John, using a thin layer of cement next to the tooth walls, followed by a mixture of amalgam and cement for the body of the filling, finishing the surface with amalgam. The mixed amalgam and cement is soft and adhesive, sticking to the sides of the cavity, so that it can be

* Dental Review, December 15, 1894.

placed in any cavity, requiring less positive retaining pits than other methods.

A REVIEW OF NEW REMEDIES.

In the Minnesota State Dental Society,* Dr. O. A. Weiss read a report on various remedies of recent introduction, or new uses of well-known medicaments, including potassium permanganate as an antidote for opium poisoning, the uses of pyrozone, sodium peroxide, kalium and natrium, sulphuric acid for opening up root-canals, salol as a root-canal filling and pulp-capping, and cocaine *pro.* and *con.*

In the discussion of the paper, Dr. Van. Woert added to the list *vinaigre de pennes*, introduced by Dr. Bogue, as a valuable antiseptic, trichloracetic acid, alumnol and phytolacea. Very satisfactory results were reported from the use of trichloracetic acid and pyrozone. Kalium-natrium and sodium peroxide do not seem to have given general satisfaction, probably from the great caution requisite in their use.

ELECTRO-THERAPEUTICS.

Dr. M. G. Jenison read a paper on this subject before the Minnesota State Dental Society.† After showing the medicinal and technical difficulties to be overcome, and the thorough special education necessary to make this valuable adjunct available to the dental practitioner, he enumerates its practical applications—as a local stimulant, a constitutional tonic, in the treatment of neuralgic affections, in acute and chronic inflammations, in obstinate cases of hemorrhage, as an anæsthetic, and as a germicide. With these possibilities open before us, it is well worth our while to at least investigate the subject thoroughly.

HEATING AND ANNEALING APPARATUS.

Dr. Henry F. Sibley exhibited before the American Academy of Dental Science, Philadelphia,‡ an apparatus ingeniously contrived to heat over an ordinary alcohol lamp or Bunsen burner,

* Dental Review, December 15, 1894.
† Dental Review, December 15, 1894.
‡ International Dental Journal, January, 1895.

a sand bath containing a receptacle for the hot-air chamber of the chip-blower; a water-reservoir with an aperature for the point of the water syringe, the metal top of which serves as a gutta-percha heater; it also carries an annealing tray, and on one side is a ring which supports a bottle of obtundent. The apparatus, which is provided with a thermometer, is compact, and arranged upon a base sufficiently heavy to give a firm support to the different parts, which swing around upon standards, being brought into use as required.

THE RELATIVE PENETRATING POWER OF COAGULANTS.

Dr. Jas. Truman read a paper on this subject before the Academy of Stomatology, Philadelphia.* Admitting as beyond question the importance of reaching the microscopic contents of the dentinal tubuli preventing decomposition and septic emanations, and recognizing the difficulties of manipulation, the desired result can only be attained through coagulation, or through the diffusability of various essential oils, aided by osmotic action, both methods having decided advocacy, and probably both having a positive value, the extent of which has yet to be determined. After giving a brief resume of the views of Drs. Black, Harlan, Hugenschmidt, Kirk, and others, and reaffirming his own position, taken in 1889, that "coagulants placed in the central canal would permeate the tubuli and coagulate the contents," Dr. Truman proceeds to give the results of a series of experiments which have occupied several months, with repetitions under varying conditions, demonstrating the correctness of the conclusions reached, namely, that coagulants will penetrate tubes of the minutest character possible to handle, the penetration being independent of circulation and in opposition to gravitation. The purpose of the article is to show, through the results of these experiments, that the belief that *coagulation furnishes its own barrier to diffusion*, is based on an error of observation. The details of this series of experiments, with a series of tubes numbered from one to fifty, can not be given here. Two conclusions were reached, *viz*, that "coagulants do not prevent by their own action diffu-

* International Dental Journal, and the Dental Cosmos, January, 1895.

sion throughout the entire tube," and that, "in proportion to the coagulating power of the agent, will be the penetrating force, independent of gravitation."

In the discussion, several of the speakers expressed a desire for further study of the paper before pronouncing upon the value of the experiments. Dr. Harlan stated that he would present the other side of the question before the First District Dental Society of New York at the January meeting.

TREATMENT OF PYORRHŒA ALVEOLARIS.

Dr. W. X. Sudduth, in the Minnesota State Dental Society,* read a paper on this subject, preceding it by an abstract of an earlier paper, in which the writer took the ground that pyorrhœa alveolaris is a local affection, depending usually upon a general catarrhal dyscrasia for its ability to engraft itself upon the tissues, being essentially catarrhal in its nature, beginning as a simple gingivitis and extending to the pericementum. Numerous predisposing causes were enumerated, the exciting cause being infection from the fluids of the mouth, experiments having demonstrated the practice of lactic acid in the saliva in mouths in which pyorrhœa alveolaris was present. Gout is regarded by the author as simply a complication, and not an etiological factor. The treatment advocated consists in the removal of all local causes of irritation, fixing firmly all loose teeth, correcting false articulation, and the use of palliative mouth washes and local stimulating antiseptics. The three per cent. pyrozone is used as a mouth wash, the soapy taste overcome by dropping a soda-mint tablet in the proper quantity just before using. This increases the antiseptic action and neutralizes the small degree of acidity present. In obstinate cases the pockets may be packed with a salve of laudlim and sozo-iodol and zinc. In case of infrequent dressings, pack with beeswax (softened in hot water), to which sulphate of zinc is added. This will retain its form and antiseptic qualities many days, being forced out of the pockets as healing progresses from the bottom. In the discussion, Dr. G. V. I. Brown emphasized the importance of correcting mal-occlusion.

* Dental Review, December 15, 1894.

In very persistent cases he has found it necessary to devitalize the pulp before checking the pus flow.

FACIAL NEURALGIA FROM A DENTO-SURGICAL STANDPOINT.

Dr. M. H. Cryer read, before the New Jersey State Dental Society,* a paper on this subject, giving a *resume* of the local anatomy of the fifth pair of nerves, with a view to an understanding of the aberrations of function; a list of the more frequent causes of facial neuralgia, with comparative illustrations, emphasizing the importance and difficulties of diagnosis.

Being convinced, through the process of exclusion, that the case is one of neuralgia, the same process should be followed in determining the cause, while all external and constitutional causes should be excluded before the surgeon is justified in opening the face or brain case for a resection or a removal of the Gasserian ganglion. The details of several cases were given.

ORAL SURGERY.

Dr. Chas. A. Van Duzee, in the Minnesota State Dental Society,† read a paper on this subject, taking the ground that the dental practitioner betrays a sacred trust if not competent to diagnose the pathological condition of the entire locality, though the operative skill necessary in the oral surgeon can not be attained without special training and clinical work, requiring more time than is usually accessible for the student of dentistry. Oral surgery is dependent, among other things, upon a thorough knowledge of physiology, anatomy, histology, and pathology, together with a ripe and practical acquaintance with human nature. When, through our knowledge, we diagnose a lesion that requires systemic treatment or surgical interference, if we call in the proper assistance, go to those whose daily work requires the equipment and manipulative skill which such cases must have, we shall have done our duty to the patient, to ourselves, and to our profession. In the discussion of the paper, Dr. Weeks said that the essential features were *honesty*, *ability* and *thoroughness*; honesty

* Cosmos, January, 1895.
† Dental Review, December 15, 1894.

with ourselves, our patients, and our Maker; ability, including knowledge—anatomical, physiological, and pathological; thoroughness in getting at the bottom cause in the first instance, not temporizing and letting the disease get ahead of the surgeon instead of *vice versa*.

A NEW METHOD OF APPLYING FORCE IN THE REGULATION OF TEETH.

Dr. Edward H. Angle* describes a novel way of exerting force to a moving tooth, the power being derived from lengthening a properly applied wire by pinching, or compressing it laterally, between suitably formed breaks of strong pliers. In the cases illustrated the wire (preferably the "anchor and retaining wire G" of the angle system); being applied and secured to the teeth by the angle methods, is gradually lengthened by "pinching," as described, at varying intervals of time, each pinch lengthening it about 1-100 of an inch, two or three "pinches" each day or alternate day, or once a week in some cases, moving a tooth as desired. The wire is finally left in position as a retaining appliance, being cleanly, compact and efficient.

THE DELIVERY OF FORCE BY PLUGGER POINTS.

Dr. E. A. Royce, in a paper read before the Odontological Society, Chicago,† gave additional arguments and evidences of the correctness of his published conclusions in regard to the behavior of gold under the plugger point.

His paper was an elucidation of the laws of devotion, especially the law for the wedge, as illustrated by the movement of boats in the water, force delivered to marbles, bullets or dice, the spreading of a rivet under the round-faced hammer, etc., all tending to prove that *gold does spread* during the process of condensation, provided that an oval-faced plugger be used, the direction of the force depending, not upon the line of impetus, but directly upon the shape of the face that delivers the force. He very pertinently asks: "If force is delivered by an oval-faced

* Dental Digest, January, 1895.
† Dental Review, December 15, 1894.

point, at an angle to the line of impetus, and that force is sufficient to change the position of the particles of gold, if they are not driven to one side, or in a direction more or less toward the walls of the cavity, where do they go, and what is the mechanical law that governs their movements?" To secure the perfect working of gold over the margins of the cavity the spreading force is absolutely indispensable, and the only way in which this force can be obtained is by the use of instruments, the outlines of which are based upon scientific principles.

FILLING ROOT CANALS.

Dr. I. C. St. John, in the Minnesota State Dental Society,* after reviewing various proposed methods of filling root-canals, gives his own, as follows: A solution of base-plate wax in chloroform or eucalyptus is used for saturating the canal walls, canal points of the same being used instead of gutta-percha points. These points are first chilled and then carried into the canals with cold instruments; the mass of wax is then penetrated with a heated root-canal drier melting the wax and more perfectly adapting it to the walls of the canal and the tubuli. For further condensing the filling, a ball of cotton may be placed over the mouths of the canals and forced down. Experiments out of the mouth have demonstrated the space apparently perfectly filled by this mothod.

Dr. Jas. H. Daly, American Academy of Dental Science,† offered a method of filling root-canals, partly in reply to an article by Dr. Nelson Shields, advocating gold-foil as the only material for this purpose. The important feature in filling root-canals being to thoroughly seal the apex of the root, without forcing everything through. Dr. Daly obtains the best results by using a tapering gold wire or broach, sharpening the extreme point so that the instant it passes the apex the patient will give warning. The length of the canal being thus known, is marked upon the wire, which is withdrawn, the tiny sharp point filed off, and the wire notched at about one-sixteenth of an inch from the end. It

* Dental Review, December 15, 1894.
† International Dental Journal, January, 1895.

is then driven home to the apex, a slight twitch breaking the wire off at the notch, leaving the apex securely sealed with a "Royal" metal.

In the discussion, Dr. Williams advocated tin or lead points, as having more conservative qualities than gold. Whatever he uses is well coated with some antiseptic paste. He leaves an end projecting into the pulp-chambers, so that it can be withdrawn in case of subsequent trouble.

PULP DEVITALIZATION.

Dr. Daly's paper on Root-Filling gave rise to an incidental discussion of pulp devitalization, a painless method being a great desideratum.

Dr. Daly prefers Dr. Harlan's paste, *viz.*, arsenious acid and hydrochlorate of cocaine equal parts triturated with lanoline; this makes a paste easy to handle and painless in its effects. Dr. Fillebrown would invariably reduce the inflammation and quiet the pain before applying arsenic, and prefers Prof. Flagg's method —arsenious acid and creosote diffused through finely chopped cotton fibres. A positive method, not followed by unpleasant features, is the administration of gas and forcible removal of the pulp, with a barbed broach, but patients will not always permit this.

PREPARATION AND FILLING OF PROXIMATE CAVITIES IN BICUSPIDS AND MOLARS.

Dr. E. H. Allen read a paper on this subject before the Wisconsin State Dental Society,* with the view of formulating a system with general rules. He emphasizes the importance of obtaining sufficient space (giving preference to the wedge over separators), and of waiting till all soreness has passed away before operating. Then adjust the rubber dam and open through the occlusal surface to get easy access and good light; the boundary of the cavity should be extended until tooth-structure can not come in contact after the teeth resume their normal position; side walls should be nearly parallel; leave no overhanging edges of enamel; cut

* Dental Review, December 15, 1894.

out the fissure across the occlusal surface, and if extensive cavities on both proximate surfaces, unite them across the occlusal surface; have all accessible margins carefully beveled (for this he uses a No. 50 stone-cut bur made to special order).

Having given full details of his rules for preparing cavities, the material for use in filling is next considered, gold being given the preference, unless when the cavity is so large as to nearly approach crown-work, or where the rubber dam can not be applied; also where the operator is doubtful of his ability to properly reach every part of the cavity. For the upper teeth, his preference is for cohesive gold in ribbons, condensed with Bonwill's mechanical mallet. For the distal surface of lower teeth, he uses a matrix and gold in soft pellets. He emphasizes the importance of thoroughly condensing the gold against all parts of the cavity, and of restoring the natural contour of the tooth so that approximal fillings will knuckle together near the occlusal surface. The same care is necessary in preparing cavities and in furnishing fillings with amalgam as with gold.

RESTORATION OF BROKEN MOLAR.

Dr. Noyes, in the Chicago Dental Society,* described what he termed a "make-shift operation," by which he restored a badly broken lower second molar, of which nearly the whole body of the crown was gone, being broken about half-way to the gum through the lingual two-thirds of the mesial and the anterior third of the lingual wall; buccally it was decayed across the whole length, and there was a bucco-lingual split either through, or taking off the anterior root. The patient was not willing to have the tooth cut off and crowned. A good-sized platinum wire was placed around the tooth, the ends twisted tightly, the ends and the portion across the buccal-wall falling within the cavity to be enclosed in the subsequent filling. The wire passed through a notch at the bucco-lingual angle preventing it from working down into the gum. The crown was then restored with amalgam, the filling holding the wire, and the wire holding the filling.

* Dental Review, December 15, 1894.

[*To be Continued.*]

PROCEEDINGS.

First District Dental Society of New York—Clinic.

A brief report of a Clinic given by the First District Dental Society of New York, January 8, 1895. The Clinic began at 9 A. M. and continued all day. The programme announced over fifty clinicians. Owing to the great number present, it was difficult to get even a partial report of some of the operations.

Dr. J. Bond Littig, of New York City, gave a demonstration of his method of making porcelain-faced molar and bicuspid crowns. The crown was made of platinum. A portion of the labial surface was then cut out or depressed, into which he bakes porcelain with the Downie furnace, then flows onto the remaining surface Roman mat gold.

Dr. Emory A. Bryant, Washington, D. C., exhibited a removable continuous gum dental bridge, also a new clasp for plates or new removable bridges, and his methods of constructing crowns and bridge work.

Dr. Gustave P. Wiksell, Boston, Mass., exhibited Dr. Libbeys' instruments for burnishing in gold fillings. Also improved trephines, which he claims is an improvement on the Buttnier system, for shaping the ends of roots for crowns. The Doctor also demonstrated with a patient the Hayes' system of anæsthetizing sensitive dentine.

Dr. Sidney S. Stowell, Pittsfield, Mass., gave a demonstration of his rapid method of making partial gold plates, making one in eleven minutes. He takes an impression in plaster or any of the modeling compounds, into which he pours Mellotte's metal (as cool as it will flow). He then blackens the male die by burning a match underneath it to prevent the counter die from sticking to it. He then builds up the edges of the die to form a cup, into which Mellotte's metal is poured to form a counter die. Two or three thin plates, gold No. 32 gauge, are swaged separately, and then placed together and swaged again, after which the thin

plates are soldered together. In this manner any thickness of plate required can be made. The doctor claims better adaptation to the mouth can be made in this manner.

Dr. S. C. G. Watkins, Montclair, N. J., is enthusiastic over his method of enlarging root-canals for their more thorough treatment, which he demonstrated. He winds cotton around a small jeweler's broach to convey the medicament, then dries the cavity and fills by again moistening it with oil of cajaput, and inserting into it a very small cone of gutta-percha and then a larger cone which has been warmed.

Dr. Z. T. Sailer, New York City, showed his dental instrument sterilizer, which is also so constructed that water is kept at an even temperature for use in the mouth, softening modeling compound, and heating a slab for softening gutta-percha stopping.

Dr. H. W. Northrup, New York City, demonstrated his method of capping teeth that have become worn down near the gum line and are sensitive. In the case presented he had inserted eighteen or nineteen crowns. There were also two or three small metal saddles which rested on the gums supported by crowns similar to the ordinary bridge.

Dr. G. A. Bowers, Nashua, N. H., demonstrated his method of making self-adjusting gold crowns, also porcelain tips for crown and bridge work.

Dr. Geo. W. Bleezarde, New York City, exhibited the Land furnace in which he baked a piece of porcelain one inch square in twenty minutes, then enameled and finised it in twenty minutes.

Dr. Joseph Speyer, of New York City, demonstrated the advantages of his soft rubber blanks for making vulcanite rubber plates. These blanks are made by pressing the soft rubber into forms that appear similar to the celluloid ones sold by dealers, and are used in the same manner, which saves the time of packing the rubber. Some of the blanks are provided with a pink rubber rim. The doctor proposes to have these blanks furnished by dealers to the profession.

Mr. A. E. Woolf, New York City, the discoverer of electrozone, was present and made some interesting experiments of the

comparative action of carbolic acid and bichloride of mercury and electrozone. It was shown how, by the use of the former, albumen was coagulated, but with electrozone the albumen was completely decomposed, gas bubbles arising until the decomposition was complete. To show the non-poisonous and non-irritating effects of electrozone, Mr. Woolf drank a small portion. Electrozone is used very extensively in New York by the Board of Health for disinfecting street refuse, etc.

Dr. Lewis H. Robinson, of Brooklyn, N. Y., presented an interesting case, a girl, age fourteen, with tardy eruption of the superior incisors. The form of the teeth could be observed by pressing on the gums, but had not seemed to advance in the last twelve months.

Dr. Nelson T. Shields, New York City, described his method of making gold crowns and bridges. He is using the Downie furnace, and makes a framework of platinum and irridium bars for the bridge and the crowns of platinum to support it. These parts are then united with the smallest amount of pure gold with all excess removed with the corrundum stone. Porcelain body is then fired on to this with the Downie furnace.

Dr. V. H. Jackson, of New York City, exhibited about one hundred and thirty plaster models of special cases of irregularity of the teeth, with the appliances for their correction.

Dr. F. Messerschmitt, of New York City, demonstrated the making of Dr. V. H. Jackson's regulating appliances, showing how to carve the models, make the "Partial Clasps," and the most exact method of bending the wires, using German silver wire with soft solder, not allowing the soldering iron to remain in contact with the parts any longer than is absolutely necessary, thereby retaining all the spring of the wire.

A detailed description of constructing the appliances as given by the originator, will be found in the *Dental Cosmos* for December, 1891.

Dr. D. Genese, of Baltimore, Md., gave a demonstration of his method of attaching porcelain in cavities on the labial surfaces of the teeth.

Dr. E. Parmley Brown, of New York City, showed a "Brown

Porcelain Bridge" of twelve upper teeth, that was originally made to be worn three years, but which had been in use seven years and a half, the same having been illustrated in Dr. Evans' book on "Crown and Bridge Work."

Dr. Burton C. Russel, of Keene, N. H., gave a clinic demonstrating his method of making porcelain inlays on the labial surfaces of incisors and cuspids. He had round rods made of porcelain of varying sizes and shades. The cavity is prepared perfectly round. A rod is then chosen that is slightly larger in diameter than the cavity, and mounted in the dental engine, which is made to revolve, grinding the porcelain on a fine flat corrundum wheel in the lathe that revolves in the opposite direction. After the porcelain is perfectly fitted to the cavity, a section of it is nearly cut off, being left attached to assist in its adjustment. The inlay is then pressed into place, using oxy-phosphate of zinc. The other part is removed by breaking and the inlay ground and polished in the usual manner.

Dr. W. Irving Thayer, Williamsburgh, Mass., described his method of controlling cases of hypersensitive dentine pulpitis, acute periodontitis and chronic abscess, his method of introducing hyperdermic needle, and demonstrating the use of his medicaments Nos. 1, 2, 3 and 4.

Dr. C. Sill, of New York City, exhibited an instrument for shrinking a sub-band around a tooth for crown work. The instrument is made with a steel band that is attached outside of the metal that is to be used for the band of the crown, and by turning a screw the sub-band is made to fit the contour of the tooth.

Dr. Geo. A. Mills, of New York City, exhibited some interesting surgical and dental cases, and demonstrated Dr. Rigg's system of treatment of pyorrhœa alveolaris, and described some of the various uses of iatrol.

Dr. W. S. Twilley, Baltimore, Md., described his method of making gold and porcelain crowns similar to the Richmond system, arranged so that the porcelain fronts can be adjusted or replaced at any time. The band, cap and pin are united with solder in the usual manner. The porcelain front is then provided with a heavy backing and attached with soft wax, not bending

the pins. The porcelain is then fitted to the cap and attached with hard wax, after which the porcelain is separated from the backing with a thin bladed instrument. Lead points, No. 4½, such as are used for lead pencils made by Henry Cohen, of Philadelphia, are used in the holes caused by the withdrawal of the pins, with the ends left projecting slightly. The parts are then placed in plaster and marble dust and united with solder in the usual manner. The solder flows around the carbon points, after which the carbons are removed with a drill and the holes slightly counter-sunk. The crown is then set with oxy-phosphate of zinc and the ends of the pins riveted.

Dr. Faneuil D. Weisse, New York City, gave a brief lecture in the Amphitheatre on "Method of Diagnosing Tumors of the Buccal Cavity."

Dr. John G. Hollingsworth, Kansas City, Mo., exhibited and explained his system of crown and bridge work, and demonstrated his method of contouring gold crowns. It is reported that the system is controlled by the S. S. White Dental Manufacturing Co.

Dr. W. E. Wells, of New York City, exhibited his improved new engine mallet, and also presented his pellets for use instead of capsicum plasters.

Dr. W. C. Deane, of New York City, exhibited Power's engine mallet, made by Ash & Sons.

The Kerr furnace, manufactured by the Detroit Dental Manufacturing Co., was exhibited.

Dr. J. P. Holder, of New York City, described the use of the Edison Le Lande battery and motor for dental purposes.

Tri-State Meeting.

The Russell House, Detroit, has been selected as headquarters for the joint meeting of the State Societies of Michigan, Ohio and Indiana, which will occur June 18, 19 and 20. The clinics and scientific sessions will be held in the Dental Department of the Detroit College of Medicine and Surgery.

By order of Committee.

EDITORIAL.

Mississippi Valley Dental Society.

The fiftieth annual meeting of the Mississippi Valley Dental Society will be held in Cincinnati, on the 17th and 18th of April, 1895. An excellent programe has been prepared by the committee having the matter in charge. This will be sent out to the members and to many others who are and have been warm friends of this Pioneer Society in the past, within a few days. A history of the Society is being prepared by Dr. E. G. Betty which will doubtless be of great interest, especially to those who were identified with the Society in the earlier years of its existence.

It is confidently expected that there will be a large attendance, not only of the membership but of those, who have not been identified with it.

Come and learn what has been done by this, the Pioneer Society, and in addition to this, aid to make it a sucessful meeting.

The Sanitarian.

This very valuable journal on sanitation, now in its twenty-third year, is doing grand work in the cause of sanitary science; and will continue in the future, as it has been hitherto, devoted to the promotion of the art and science of sanitation, mentally and physically in all their relations; by the investigation, presentation and discussion of all subjects in this large domain, as related to personal and household hygiene, domicile, soil and climate, food and drink, mental and physical culture, habit and exercise, occupation, vital statistics, sanitary organizations and laws, in short everything promotive of, or in conflict with health, with the purpose of rendering sanitation a popular theme of study and universally practical.

The *Sanitarian* will contain ninety-six pages monthly, making two volumes during the year. The volumes begin January and July. Subscriptions are received at any time. The subscription price is $4 per year. All correspondence and exchanges should be sent to Dr. A. N. Bell, Brooklyn, N. Y.

Biographical.

William O. Kulp was a native of Ohio, having been born at Wadsworth, O., Sept. 19, 1836. He had, therefore, entered upon his fifty-ninth year at the time of his death. He was remotely of German ancestry, his family having come from Germany about two hundred years ago. In the public schools and under private tutelage he received a good education. At the age of twenty he commenced the study of medicine, and three years later came to Muscatine, Ia. Trouble with his teeth and the difficulty he experienced in its alleviation turned his attention to dentistry, and he decided to enter that line of work. In Muscatine he became the junior partner of H. G. Hall, a prominent dentist of that place. It was in the school of experience that he laid the foundation for that profound knowledge of operative dentistry that made him afterward one of the best-known members of his profession in this country. After a couple of years Dr. Hall retired, and Dr. Kulp, after perfecting himself in a course of study at the Missouri Dental College, from which he graduated in 1866, practiced alone in Muscatine for the succeeding decade, coming to Davenport in 1871. Here his successful business career is a part of the history of the city with which everyone is familiar. He was first associated with Dr. White, practiced long by himself, and in 1893 admitted his son, Dr. J. R. Kulp, to a partnership, under which their business has since been successfully conducted.

It was through the efforts of Dr. Kulp that the Iowa Dental Association was organized in 1863. Since 1864 he has been a member of the American Dental Association. In 1887 he was called to the chair of operative dentistry in the Missouri Dental College, but illness in his family caused him to resign the position and return to Muscatine after a year. Upon the organization of the dental department of the Iowa State University, some fifteen years ago, he was chosen as the lecturer upon operative dentistry and dental therapeutics, and he has discharged the duties of the office since that time in a manner that has won for him the admiration and unqualified approval of the board of regents and of all

who came under the spell of his lectures. He will not be easily replaced upon the faculty of the university.

He was one of the principal supporters of the movement which resulted in the State regulation of the practice of dentistry in Iowa, and was one of the vice-presidents of the World's Columbian Dental Congress, one of the important meetings of 1893. The congress was attended by representatives of forty-five countries, and the paper Dr. Kulp read before that body received much flattering comment.

In various fields has the progressive spirit of the deceased made itself felt. He was a member of the board of directors and was treasurer of the Pan-American Transport Company, a steamship concern in the possession of valuable franchises and reaching out after South American commerce and mail contracts.

He was also secretary of the Western Land and Live Stock Company, which owns 100,000 acres of land and 30,000 head of cattle.

As a member of the executive committee of the movement for a deep water harbor on the Texas Gulf coast, he presented the claims of that project to the appropriate congressional committee, and before his death had the pleasure of seeing his desires in this connection in a fair way for realization.

In addition to these he was interested and active in many other important and public interests, in which whatever he did, was characterised by faithfulness and efficiency.

He was ever the friend and advocate of the right, and uncompromising against the wrong. His friendships were usually strong and enduring.

He was a man of strong intellectual force, and of a high moral and religious nature.

His loss is a serious one, not only to his family and to the community in which he lived, but to the profession of his state, and indeed to the profession of the entire country.

May his memory ever be cherished as a model and an example worthy to be followed by young and old, and thus may his name be honored henceforth.

THE DENTAL REGISTER.

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COMMUNICATIONS.

The Reason Why.

BY GRANT MOLYNEAUX, D.D S., CINCINNATI, O.

Read before the Ohio State Dental Society, December, 1894.

At the last meeting of this society, I had the honor of reading a paper entitled, "The Articulation of Artificial Teeth." In that paper I attempted to demonstrate that the utility of a denture depended largely upon a correct articulation of the teeth, and that this articulation should consist, not only of a nice adjustment of the cutting edges, but of a careful arrangement of the angles of the teeth with regard to the mechanical forces operative during mastication, and for the purpose of holding the dentures in position during use. However necessary the perfect arrangement of the teeth might be, it is not the only feature governing the successful construction of an artificial denture.

The teeth may be ever so perfectly articulated and the effect partially or totally lost if there is failure to perfectly adapt the dentures to the alveolar ridges and palate. In fact, we consider that the continued success of a denture depends quite as much upon the treatment of the model of the mouth, with a view of effecting a perfect adaptation, as upon any single feature connected with the construction of artificial dentures. By the proper treatment of the model, we mean the changing of the shape of the model, not in its entirety, but of certain portions that will insure at all times, and under all conditions, the maximum degree of retention possible in any given case.

The maximum degree of retention in superior dentures is not the same in all cases, nor is it possible to insure the same results in an unfavorable case that can be obtained in one where the natural advantages were considerable. But, with a full appreciation of the principles upon which the retention of dentures depends (barring mechanical means), and with the courage to carry them out to the fullest extent, many cases that by routine methods would be failures can be made to stay firmly in position. There are a great many mouths, the models of which require but little modification to effect an adaptation, while there are many more needing the most extensive alterations to obtain sufficient retention to support the denture, even during moderate use. It is with reference to these latter cases that our efforts are directed, hoping to present this subject in such a manner that the student will comprehend its object, and feel that in each case of artificial dentistry success depends upon individual study.

For a long time two theories have obtained regarding the force that holds superior dentures in place.

The first of these is the atmospheric pressure theory, and many are the adherents to this belief to-day. The atmosphere under usual conditions exerts itself in all directions simultaneously and its weight or pressure is not appreciated. When for any reason the air should be exhausted from a cavity, as for instance, a cartridge cap upon the tongue, the pressure of the air is noticed by the holding of the cap in position on the tongue. To appreciate the continuous pressure upon the atmosphere, we must be provided with an impervious cavity from which the air can be exhausted. A true illustration of this is the Madgeburg hemispheres, an experiment familiar to every school boy. When these hemispheres are placed together and the air exhausted, a force of more than fifteen pounds to the square inch of surface must be exerted to separate them, and they would remain intact indefinitely were not the air admitted by some mechanical means. If instead of one hemisphere we place over the opening of the other a piece of parchment or animal membrane, and attempt to exhaust the air beneath, we find that the membrane will not stand the pressure of the air and breaks. In order to avoid this break-

ing we place a column of water in contact with the membrane, and only partially exhaust the air. In a short time it will be seen that sufficient water has passed the membrane to equalize the condition beneath, and that the vacuum has been destroyed and that the membranous diaphram can be easily removed. Any other fluid would act the same as water, but the time required would depend on the density of the fluid. It is evident, that when the cavity beneath the membrane is filled with fluid, as it would be if a complete vacuum were produced, that although the membrane is held in place it is not by pressure of the air. If a partial vacuum be produced beneath animal membrane, it can only be for a short time, as one or two of three conditions will follow. Either air or moisture will pass through; or, the membrane, if sufficiently elastic and the cavity shallow, will fill the cavity completely, together with such fluids as may be in contact with the membrane. All of which is due to the elasticity and penetrable nature of animal tissue and the action of the atmosphere trying to establish an equilibrium.

The above has been used as an illustration because it is *parallel* to the condition that exists when "atmospheric pressure" dentures are inserted. If we cannot obtain a vacuum above our denture there could not possibly be a sensible pressure on its lingual surface to hold it in position.

When a denture containing the customary vacuum cavity on its palatine surface is inserted, the patient is told to close the mouth and swallow. This act is accompanied by a dilation of the thorax and closing of the posterior nares, which exhausts the air from the oral cavity underneath the plate as well. The air is still farther forced from under the plate by pressure of the tongue on the lingual surface of the plate. The tongue has no other exhausting power. The air is now nearly all removed from under our denture, and it is held for the time by atmosphere pressure partly. If the conditions would continue the same as immediately after insertion, there would be a constant support by the atmosphere, and the vacuum cavity would be the proper thing. Such however is not the case. If we allow our denture to remain in the mouth for an hour or so and then remove it, we will ob-

serve that the mucous membrane of the palate has been cupped down to almost fill the cavity in the plate, and that although the tissue covered by the plate was dry when the denture was inserted, that the plate is now covered with an oily fluid. It is evident now that our plate and mucous membrane are in contact throughout, save the intervening moisture, and that as all our space is obliterated we could no longer have atmospheric pressure if our illustration is correct. The question now presents itself, how is our denture supported if not by atmospheric pressure?

In an editorial review of Richardson's Mechanical Dentistry (last edition), one of the dental journals has the following to say:

"Discussing the force which retains a plate in position the author endeavors to show the 'absurdity of the atmospheric pressure theory, and maintains that it is necessary for retention by this means that a vacuum exist,' and then proceeds to annihilate the vacuum. We believe he is right in doing away with the vacuum, because if there be a vacuum it will soon be filled by loose tissue and it is evident it could not last long, but we will hold that it is the atmospheric pressure that secures the plate when he refers to it as the 'adhesion of contact.' *What is the adhesion of contact but the pressure of the atmosphere without a vacuum? It is the same pressure that forces water to follow the plunger up in the ordinary suction pump; that is, no vacuum that forces water up but the water rises to relieve a condition that would produce a vacuum.*" [Italics ours.]

The above quotation is given because it is the only argument that has been offered in support of the atmospheric pressure theory, and because it introduces a new phase of our subject. The question and seeming answer in italics are quite incongruous, as we know, that in order to have water rise in a suction pump, a removal of the air or pressure above the water must be accomplished, and that the water will continue to rise as the pressure is relieved until the column in the pump equals the pressure of the air when it will rise no higher, and to keep it there a vacuum must be maintained constantly above the column.

We also know that when two substances with perfectly flat surfaces are brought in contact, that some force is required to separate them; that this force is nothing like the force of the atmosphere; that in some instances it is only a few grains to the square inch, and in others more; that it varies with different substances; that if this force were due to atmospheric pressure it would be nearly constant; and finally, that this force is manifest in the absence of an atmospherc or in vacuum, and must be attributed to some power other than atmospheric pressure.

It is called "adhesion of contact," and certainly cannot be the same force as that which causes water to rise in the suction pump.

In any modern work of physics we see under the heading "Molecular Forces," three kinds of attraction, viz: Affinity, Cohesion, Adhesion.

"The Molecular attraction exerted between surfaces of bodies in contact is called adhesion, and is of three kinds."

Adhesion of solids to gases; Adhesion to solids to solids; Adhesion of solids to liquids.

It is this latter form of adhesion, that of solids to liquids, or rather solid and semi-solid with an intervening liquid, that claims our attention.

To have adhesion, two surfaces must be in contact, and it naturally follows that the more surface in contact the greater the adhesion.

The "adhesion between solids and liquids is greater than between solids." In the experiment of two plates of glass or two blocks of wood, with perfectly flat surfaces, when pressed together adhere with a certain force. But, it is impossible to perfectly adapt two hard surfaces mechanically to each other. If we place a film of water between in order to overcome the slight inequalities, we find the adhesion is very greatly increased. Continuing our experiment, we observe that the force required to separate the plates of glass or wood is greatest when exerted at right angles to the horizontal surface; when applied at other angles, the plates will slip or slide on each other and can be easily pulled apart.

Dr. Land, in his little book, "Scientific Adaptation of Dentures," makes a very practical application of this point.

This adhesion was formerly thought to be due to the pressure of the atmosphere, but as it can be thoroughly demonstrated in a vacuum it must be some other force and is "attributable to a reciprocal action between the surfaces of the bodies in contact." It is beyond all doubt the force of *adhesion* that maintains superior dentures in position, after the mucous membrane and plate are in contact. But, it is through the means of effecting a temporary pressure of the atmosphere, and through the elasticity of the mucous membrane that we can bring about a condition favorable to adhesion.

To further illustrate our point, we will ask the question: If the atmospheric pressure supports dentures, why is it that during febrile conditions when the mouth is dry or "parched" that the patient complains of looseness of the denture? Why is atmospheric pressure not operative now? Why is it that by painting the mucous membrane with a solution of alcohol and water or other stimulants that a perfect adhesion follows?

If we are satisfied that it is the force of adhesion that supports dentures, it behooves us to look carefully to every point that would lessen that adhesion, and improve every condition that would increase it. Adhesion, as we have stated, is the result of contact between the surfaces of bodies adapted to each other, but in the mouth adaptation means more than mere contact. An adaptation of two uniformly rigid bodies is at once and at all times the same, and pressure at any point on their horizontal surfaces would not change their relation.

In an artificial denture we have a uniformly rigid body. In the alveolar ridges and palate we have conditions anything but uniform. We find hard and soft spots arranged where they will be of least advantage. There is also the lower jaw playing over the superior denture at different angles, bearing harder on one point than another, the more compressible places giving way, while the plate rides on the harder points and loosens.

A denture may be ever so perfectly adapted for speaking purposes, but when the opposing teeth strike it at different angles,

as in mastication, the plate will begin to tilt and loosen, which proves that an adaptation for talking is not necessarily one for masticating. We have seen plates tried for their "sticking" qualities by pulling on the anterior teeth. There is an exhibition of the force of adhesion under the most favorable circumstances, as all hard parts are relieved and the retention is that due to contact between mucous tissue and the plate. If pressure were exerted in the bicuspid region, or anteriorly, the denture might not stick so well.

Now, with a view to obtaining the greatest retention in superior dentures, one or all of four forms of treatment in the model may be necessary. First, treatment to relieve pressure on the hard parts, by thickening the tissues over these points.

The hard parts are usually found in the median line of the palate and over the ridge corresponding to the position of the two bicuspid and first molar teeth, called "buccal region." The tissue over the regions corresponding to the six anterior teeth and at the tuberosities is generally more compressible.

The amount of relief over the hard parts would be governed by the compressibility of the softer portions.

Second. Treatment to produce as much horizontal surface as possible.

Third. Treatment to restore the model to the size of the mouth, or as nearly as possible.

Fourth. Treatment by relief, to produce in extremely hard, flat or angular mouths a thickening of vascular tissue, over the entire palate for the purpose of obtaining more moisture, and a soft elastic padding for the denture to rest upon. Incidentally, reliefs are applied to models for the purpose of preventing pressure on points undergoing absorption, as well as points tender from surgical operation; also, to protect models from influences that might injure the model during the process of constructing a denture. In brief, we desire to obtain a uniform padding of vascular tissue under the denture that will prevent fulcrums and friction on the hard parts of the ridge and the consequent injury resulting from this continual irritation. Also, to obtain all the horizontal surface possible. The paper can be better understood by referring to some practical cases.

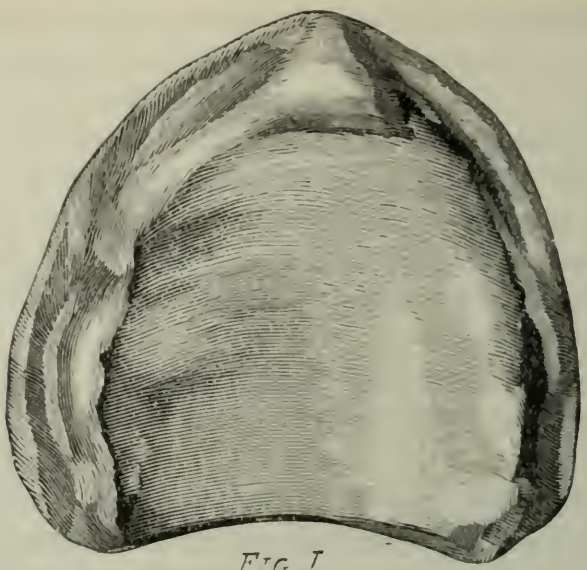

FIG. 1

Fig. 1. This a flat mouth, all horizontal surface, and thickly padded with soft tissue over ridge, median line and entire surface of palate. There is nothing to be done to this model in way of reliefs, for there could be no improvement. A denture made for this case will be worn with unusual degree of satisfaction, providing there is a fair occlusion with opposing teeth. The only

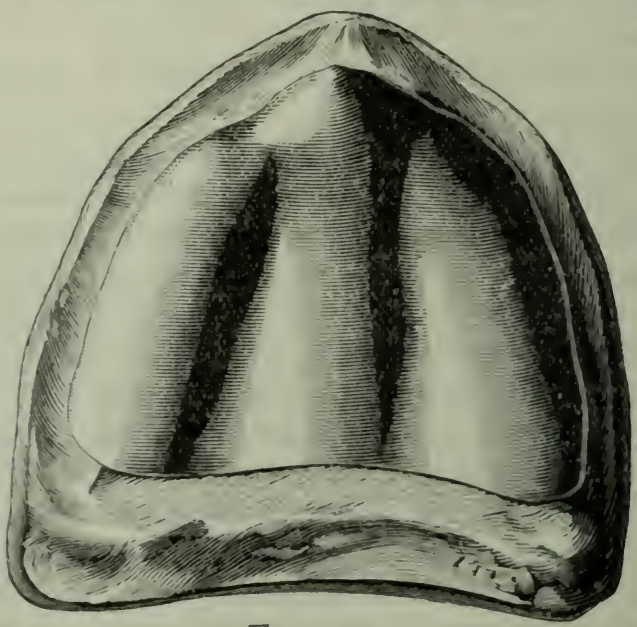

FIG 2

treatment that we would suggest would be the tinning of the model with No. 40 foil to protect it in case of a vulcanite denture.

Fig. 2. This is also a flat mouth, representing more horizontal surface than Fig. 1. But in place of the soft vascular covering to the ridge and palate, we find the mucous membrane almost without color, it is so thin. It is also very dry, having a glazed appearance and the buccal and labial side of ridge offers no assistance to support the denture, as this is angular.

This patient tried a number of operations but without good results. The plates when moistened would adhere fairly well for speaking, but even then would frequently drop. The treatment for this case according to our paper was to extend a relief over the entire palate of about 26-gauge, terminated at the junction of the palatine, with the labial and buccal surface of the ridge, and posteriorly at a line where the tissue was soft. The extent of this relief is shown in Fig. 2.

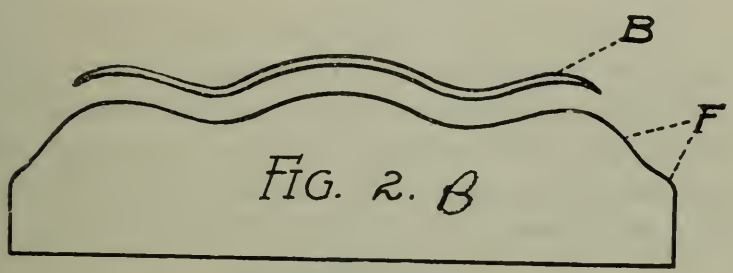

FIG. 2. B

Fig. 2 B. Is a vertical section of Fig. 2, and shows the relief B raised from the model.

The effect of this treatment was to bring positive contact at the circumference of the plate between the dotted line F, and to extend the plate as high as possible at the incisive and canine

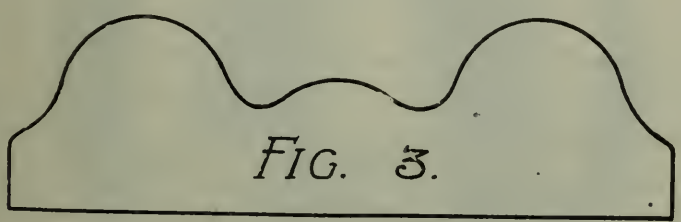
FIG. 3.

fossæ and over each tuberosity. The space occupied by the relief B was soon filled with tissue and an excellent adhesion was the result.

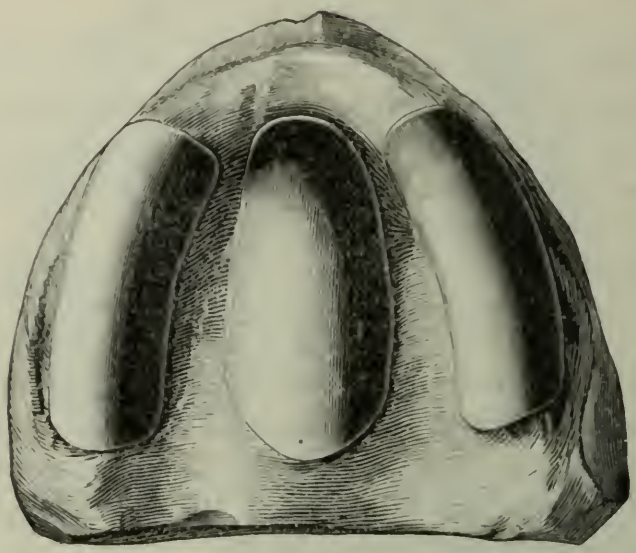

FIG. 3A

Fig. 3. This is a model that first would appear simple, yet it was the source of much trouble to several operators. The trouble was not the lack of horizontal surface but the uneven distribution of soft tissue and the resulting fulcrums. Anteriorly and posteriorly the mouth was soft, while in median line and buccal region the tissue was almost white it was so thin.

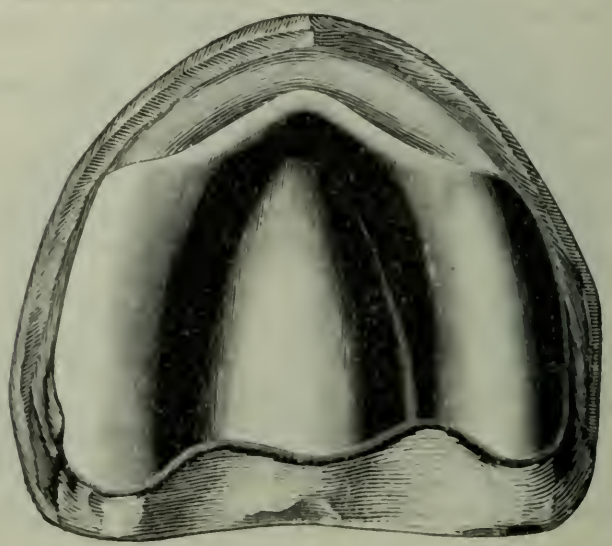

FIG. 3B

The treatment of this case was to pad the three hard points by placing relief as indicated in Fig. 3A. As the space between the lateral and central relief in this case is very slight, and as the application of three reliefs would make several edges to irritate the tissue, we would suggest that the case be treated as in Fig. 3 B, with one relief covering the three points indicated in Fig. 3A.

Fig. 4. This is the verticle section of a V-shaped model, and will be recognized as one of the most difficult mouths in which to obtain a satisfactory degree of retention.

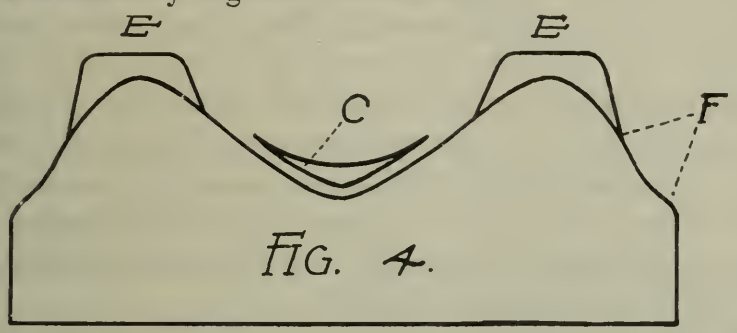

FIG. 4.

The manner of treating this model is shown in Fig. 4. The reliefs are adjusted; first, to prevent pressure on the least compressible portions; second, to create horizontal surface over the angles as shown by the shape of the reliefs in the diagram. By placing reliefs of uniform thickness, as shown in Fig. 4A, we

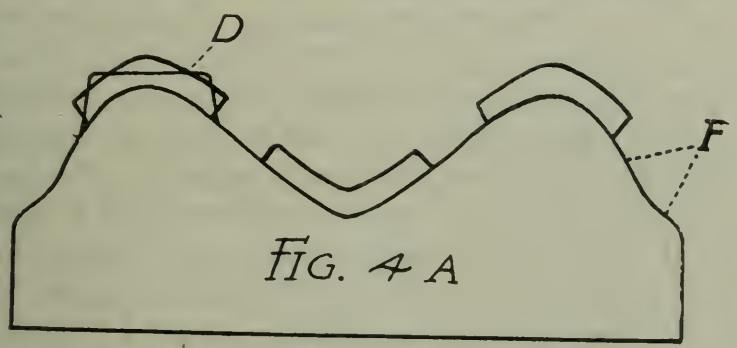

FIG. 4 A

prevent the pressure of the plate on these points, but we do not materially improve the conditions for adhesion as regards horizontal surface. The combined horizontal surface of E. E. C. Fig. 4, is quite that of the average mouth, and we have reason to believe,

other conditions being equal, that a fair degree of retention will follow. These reliefs have been somewhat exaggerated in the drawing, it was not intended for them to appear quite so heavy.

Treatment to restore the model to the size of the mouth is advocated for vulcanite. The great trouble with vulcanite plates is that they are generally too small for the mouth, and that "misfits" are due to the fact that some mouths cannot be forced into the plate.

It is quite often that when a denture is first inserted that it will not readily go to place. The dentist helps matters along by vigorous stroking of the lingual surface, all of which is to crowd the mouth into a plate that is entirely too small for it. Such a denture cannot be worn without injury. From the time we take the impression, both by our own acts and those changes that take place in the materials with which we are working, we are getting farther away from the size and shape of the mouth, and a certain amount of alteration is necessary to prevent these changes from effecting the adaptation of the plate.

We have long advocated the use of No. 40 tinfoil over the models for vulcanite,and we know that if every vulcanite plate were made on a model tinned with No. 40 foil, that infinitely better results would follow than by the use of silex or collodion. When reliefs are to be placed on the model, they should be placed first, and the foil stenciled over them and the model.

The foil answers another purpose. During vulcanization when the rubber is expanding with great force, followed by its subsequent contraction and shrinkage, the model is protected from injury. (We cannot at this point refrain from recommending the careful study, by all those interested in vulcanite, of the papers by Dr. Geo. B. Snow in the *Dental Advertiser* of 1887.) The reliefs spoken of are formed of block tin and tinfoil, ranging from No. 40 foil to block tin of 20 and even 18 standard gauge, in thickness. They are placed on the model as indicated by an examination of the mouth. The edges are beveled and no abrupt margins left to irritate. The tissue thickened in this manner, after a time, becomes permanent and remains healthy.

We have never seen a case where the judicious use of reliefs

ever produced harm. On the contrary, the patients who have experienced trouble appreciate to the highest degree this careful attention. It is not infrequent to find operators of years' experience claim they have never used "air-chambers," who at the same time tell how they shave the impression.

Now it does not make any difference whether you shave the impression or add to the model, the results are the same, though the object of the operators may be different.

We do not approve of the old-fashioned vacuum cavity with its sharp edges, as its only action is one of relief, to prevent pressure on the hard parts, and after these parts have been relieved let the edges be drawn out so that they are continuous with the model and not to be seen or felt. The form and thickness of reliefs are to be modified according to the material used in constructing the base of the denture, and to the conditions found in the mouth, and its shape.

A model for vulcanite or cast aluminum might require a little different and more extensive treatment than a model for a gold plate. A model for continuous gum would be different than either of the foregoing, but the principle involved in each case is the same.

We approve of adding to the model because the changes can be made more accurately, and the reliefs can be blended off with the model so that their margin cannot be distinguished, and, consequently, mechanical irritation will not occur.

My apology for this paper is the number of cases I have seen by reference and consultation demonstrated that there are many not acquainted with the possibilities of prosthetic dentistry, and this is offered as a partial solution to "THE REASON WHY" of some of our failures.

DISCUSSION.

DR. AMES: I do not like to take the floor so often, being a visitor. The reading of Dr. Molyneaux's paper interested me very much, since the adaptation of dentures and the utilization of atmospheric pressure is one of my hobbies. Before the reading of the paper I was speculating as to what Dr. Molyneaux

might have to show us, and I assure you it was a revelation to hear him tell that he could accomplish this change of form of the alveolar ridge by cupping down the tissues as he described. Of course we have all seen the tissues cupped by the ordinary air-chamber and become quite firm, but I must admit that to cushion up a plate, as he does, never occurred to me. There are some points, however, on which I must differ from Dr. Molyneaux, for he says that atmospheric pressure will be manifested without an air-space, and also that the utilization of atmospheric pressure is impracticable, because the tissues will either be drawn down or will have fluids drawn from them to defeat the purpose. This is practically the ground taken as I understood him. Now, I will not quarrel with any one about the capillary force and the adhesion of contact of moist surfaces, but what I want to claim is, that if one only utilizes these forces in the retention of artificial dentures, they do not accomplish the *maximum retention*. If a full upper denture is so constructed that it extends in all directions far enough, so that the entire periphery of the plate rests against and slightly displaces lax yielding tissue, we will not only get the adhesion of contact to retain the plate at ordinary times, but retention from atmospheric pressure at times when there is such pressure applied as would break the contact if the plate were not extended upon the lax, tissues at its entire periphery, by which means the air is prevented from readily passing beneath the plate as it would otherwise, and there is a *tendency* to the creation of a vacuum. There is not a *vacuum*, but a tendency to the creation of such a condition only, because the leverage is such that the entire or full atmospheric pressure of fifteen pounds to the square inch is not required to prevent the denture from coming away from the surface of the jaw. Dr. Molyneaux rightly states that the tissues will not tolerate a vacuum. While under the conditions ordinarily met with in connection with the wearing of dentures there is not sufficient traction brought upon the tissues, when the denture tends to leave them, to cause rupture of the capillaries. I have repeatedly caused the rupture of the capillaries of healthy tissue during demonstrations of this principle, by means of a denture having attached to it, near the

second molar of each side, a strong twine, by means of which sufficient traction could be brought upon the tissues by a *tendency* to the creation of a vacuum to cause a rupture of the capillaries, sufficient blood flowing therefrom to admit a breaking of the joint at the edge. The Magdeburg hemispheres I do not consider an illustration of what can or cannot be accomplished in the mouth. The illustration does not fit the case. I see where a great deal of good can be accomplished by the system of relief so ably brought out by Dr. Molyneaux, and I am very grateful to him for the points I have gotten in this line. With this cushioning up of such angular jaws and the carrying of the plate to the soft tissues in all directions, the maximum of retention will be such as to surprise most operators. To carry out the plans I am advocating a very carefully taken impression is called for. If the patient has an old denture I generally use this as the tray, extending it back with wax, if necessary, to get an impression of sufficient surface. If there is not an old denture available, an impression is taken in the ordinary way, a model made, and over this a blank or base-plate is formed, using the "Ideal Base-Plate." Trim the edges of this so that it does not press against and distend any of the tissues of the lip or cheeks and extends a little farther upon the soft palate than it is desired to extend the plate, which is to simply reach to the soft palate. This base-plate used as an impression tray, using soft plaster, should give an impression without putting any of the tissues upon tension, *i. e.*, without stretching any of the soft parts out of the natural position. By making a model from such an impression the rim of the plate can be made to nicely fill in all space between the jaw and the lip and cheeks, so that no air can enter at part of the periphery of the plate and by grooving across the model from a point outside one tuberosity to the same point on the opposite side, following the line of the beginning of laxity of tissue, the joint will be complete throughout the entire periphery. A very large majority of mouths will tolerate such a denture comfortably. In an occasional rare case other and more complicate means must be resorted to for accomplishing this satisfactory retention.

Dr. Taft: I have here a denture that some of those present

have seen. It has the following history: A person who had lost all her teeth from the lower jaw desired to have an artificial denture. There was no dentist within that region. She took a piece of 16 to 18 wire and bent it as near as she could to the size and shape of the arch from which the teeth had been taken. She procured the teeth of some animal, probably a sheep, and ground them, as she supposed, to about the size they ought to be —ground them on a grindstone; used twine, winding it about wire and attached the teeth, having ground out of the lower end a groove to enable the twine to hold them; she wound it around the teeth until they were firmly held in position. This piece was worn about three years and did service all that time. After this a dentist came along and she then had a set made by him.

I obtained it from the son of the woman who made and wore it. So sensitive was she about it that her family knew nothing of it till it was in the mouth and she was using it. I mention this to show that uncouth things can be worn in the mouth and for a long time. It is almost incredible, but it was stated positively by a son of the person who made and wore them.

We have difficulty sometimes with well-fitting plates to induce people to wear them. I have occasionally shown this to such persons with good effect, and usually it makes people wonder why they can not wear a well-fitting plate. It illustrates the proverb, "where there is a will there is a way."

Now, a word in regard to bridge-work. It is quite evident that from the expression here, a reaction is taking place in respect to the use of bridge-work. We have often been annoyed at the excess to which that kind of dentistry has been carried. There are dentists who make that almost an exclusive practice. Does not a large proportion of this work fail within one to three years after it is introduced? Occasionally pieces are found put in a number of years ago that seem to be doing well yet, but a large proportion of them show a failure within one to three years, and it is well this reaction should take place. It makes one indignant to find solid, living teeth cut away and ruined to introduce a piece of bridge-work. It is little short of an outrage upon humanity. I want to offer this protest against the general and

wholesale use of bridge and crown-work by so many of the profession. It is a very profitable kind of work. The charges usually made are far more than for ordinary plate work. Cupidity comes in here, and it ought to be ruled out.

Dr. G. L. Field, of Detroit: I am glad to hear Dr. Taft make this little speech here. I feel the same way he has expressed himself, feeling indignant at the work done by men who ought to have known better who put in bridge-work only to make dollars and cents out of it, and this will not, only in exceptional cases, last but a short time until it begins to give way. I saw a case, in a college I am connected with in Detroit, that made me extremely indignant, because it was in my own department, where we should have known about it. One student undertook to make a piece of bridge-work for another, and I happened to see it. One of the men at one chair said, "I am busy." I said, "What have you to do?" He said he had a piece of bridge-work to put on Mr. M., one of the students. He was trying to replace a molar that had been removed in childhood. He had ground away a molar and bicuspid that were perfectly sound to put in a poor-good-for-nothing bridge.

Dr. Molyneaux, in closing the discussion, said that the models used to illustrate the paper were prepared especially for vulcanite work, but that the principles were involved in all kinds of dentures, but modified to suit the material and method used. Vulcanite work has done more to ruin mouths than anything else, not so much on account of the vulcanite, but the careless methods of using it. Vulcanite is an excellent base when properly made. I believe that much of the bad results from vulcanite are due to the interference to nutrition which follows the insertion of many vulcanite plates made directly over a plaster model. The plate is too small for the mouth, and the tissues must be cramped in order to get the denture in place. Another trouble, "rubber sore mouth," I have often seen corrected by simply making a vulcanite plate with self-cleansing surface, such as is obtained by vulcanizing against thick tinfoil.

Dr. ——: Suppose you show us how you put your tinfoil on the model.

Dr. Molyneaux: If the society wants to be detained a little longer, I will show that for the benefit of those who might not understand it. Putting on the tinfoil is a very simple process. I have been accustomed to use both Ashmead's and Nye's tinfoil. I suppose any other would do as well. Take any form of model you like and a number forty tinfoil or number sixty. You put reliefs on the model wherever indicated. You take shellac, of the consistency of thick syrup, and cover the model, or that part of the model you want the plate to cover; then you take your piece of tinfoil, one sheet, that is Number 40, laying it over the model. Take a stencil brush, with quick successive taps and stencil the foil until every portion is in contact with the model, then with a piece of chamois rub over a couple of times until smooth. If you use a burnisher you can not get it down for a long time, and also get it full of wrinkles. You trim off the excess and then take your burnisher and go around the edge and if there be any wrinkle, as there might be, rub it down, and if you leave any impression of the stencil brush, the rubbing with chamois brings it down perfectly to the model, and you have a smooth surface. If you use a thinner tinfoil than forty it does not act as any protection to the model at all. Putting your shellac on first and then taking your sheet of tinfoil and going down over the edges in that way, you see it is over there perfectly smooth, and by rubbing it down with a piece of linen or something you have handy, it gives a surface on which you can vulcanize. The use of the stencil brush is an important thing. If you use thin shellac it will not hold the foil.

Can Not be Sent by Mail.

Bacteriologists and pathologists should take notice that by the new postal regulations, "disease germs and matters from diseased persons" are unmailable matter, and can not in the United States be sent by post.

The Hypodermic Use of Cocaine.

BY H. B. HINMAN, W. OF M.

Any method of preventing or alleviating pain in the extraction of teeth has always been hailed by the dental profession and its patrons with rejoicing.

Of all the local anæsthetics which have come into use within the last decade, there is none which is so powerful, or which has attained such universal use and wide-spread popularity as cocaine, or, more properly speaking, the hydrochlorate of cocaine, the alkaloid itself not being used for this purpose because of its slight degree of solubility.

When the drug first came into prominence as a local anæsthetic, it was used in much stronger solutions than it is at the present day, many employing as high as a 20-per-cent. solution. It is now almost universally conceded, however, that better results, with far less danger accompanying their use, are obtained by much weaker preparations, say a 2-per-cent. solution.

Cocaine forms the basis of nearly all the local anæsthetics on the market to-day, being combined in these preparations with other drugs, some of which act as adjuvants, and others as correctives and diluents.

One of the best formulæ which we have to-day for the administration of cocaine hypodermically, is that furnished us by Dr. Hoff, and is as follows:

R. Cocaine Hydrochlorate.....$\frac{1}{2}$ grain.
Morphine Sulphate.....$\frac{1}{4}$ grain.
Atrophine Sulphate.....$\frac{1}{100}$ grain.
Distilled Water..... .... ..25 M.

When compounded in these proportions, we have a full dose of a two-per-cent. solution, in which the morphine acts as a corrective to the cocaine, and the atrophine serves the double purpose of being a corrective to both the cocaine and the morphine.

Cocaine preparations should be renewed at least every three or four days, and preferable every day, as, after being kept a short time, a mould forms in the solution, which so chemically changes the cocaine that it will cause sloughing of the gums.

Care should always be taken in the selection of the patient, as weak and nervous persons, and those having diseases of the heart and lungs, are particularly subject to the toxic effects of the drug; and it should be used very gradually, if at all, in these cases.

The time of day also has a marked bearing on the subject, as the patient bears the administration of the drug much better early in the day, and after a hearty meal, than later on, when tired out and when several hours have elapsed since the taking of nourishment.

The toxic effects of cocaine are exhibited by an embarrassment of the respiration and circulation. Respiration becomes slow and shallow, and the pulse small, rapid and intermittent, and after a time, if the toxic effects be sufficient, they may cease altogether.

Cocaine should never be administered without having the proper antidotes and resuscitants at hand for use in any emergency that may occur.

Ammonia and nitrate of amyl are both given by inhalation for the purpose of stimulating the respiration and the heart. Opium and chloral are also administered, but in extreme cases a hypodermic injection of aromatic spirits of ammonia or sulphate of strychnia, together with artificial respiration, are the most efficacious.

It is well, when the patient shows signs of nervousness, to administer a little brandy, or ten to fifteen drops of aromatic spirits of ammonia well diluted with water, a few minutes before the operation, thus allaying the nervousness and insuring a strong, steady pulse throughout the course of the drug's action.

There are many forms of the hypodermic syringe on the market to day which are equally good—the two most important points in regard to their construction being that they are easy of manipulation and readily sterilized.

The points of the needles, as bought at the depots, are too sharp to work satisfactorily, as they are apt to become bent, and they are also troublesome, as they catch in the alveolar process very readily. It is always best to round them off somewhat on an oilstone before using.

The needle should be inserted a short distance from the neck

of the tooth, and pressed slowly but firmly toward the apex of the root. After passing into the tissues for a short distance, a drop or two of the solution should be slowly injected, and the needle then pressed forward a little further and a small quantity more forced into the tissues in a similar manner.

The amount and rapidity of the injection should be governed by the density of the tissues, as those which are very dense will take up less of the solution and require a smaller amount to anæsthetize them than where they are more loosely arranged.

The needle should not be withdrawn for about a minute after the injection is made, and then the finger should be placed over the puncture for a short time, to prevent the exudation of the cocaine solution.

Care must also be taken not to inject into an abscess cavity, as the fluid will then escape into the mouth, and is apt to paralyze the muscles of the fauces and the other accessory muscles of respiration there.

If the needle penetrates one of these abscess cavities, it should be at once removed and inserted at another point.

Two injections of from two to five drops each, of a two-per-cent. solution, one on each side of the tooth, are usually sufficient to produce complete insensibility to the pain of the operation. Many of the cases of sloughing of the gums, attributed to cocaine, are due to septic material introduced by unclean forceps, and would have occurred had the cocaine not been used.

We cannot be too careful in attending to the proper sterilization of the needle, lancet and forceps.

If the mouth be rinsed out freely with warm water for some minutes after the operation, it will tend to prolong the bleeding, and thus relieve the gorging of the blood vessels caused by their relaxation, after the over-stimulation from the use of the drug.

When these precautions are taken and strong solutions are not used, the use of cocaine will seldom be accompanied by sloughing of the gums.

MONTHLY DIGEST.

Operative Dentistry.

(*Continued from Page* 148.)

THE WILSON CROWN.

DR. H. H. WILSON* describes a crown for which he claims two points of advantage—increased strength, and ease of construction. The tooth to be crowned is cut off a little below the gum line, a narrow band of 22 k. gold is fitted flush with the end of the root and a flat piece of 30 or 32 guage gold soldered to it, forming a cap. A suitable Logan crown is selected and the palatal portion ground away without disturbing the pin. With the cap in place on the root, a hole is pierced in it, the post of the crown inserted and correct position obtained. The crown is then removed, the cap being left in position, and the post forced through a second disk of the same gold large enough to more than cover the ground surface of the crown. The gold is burnished down and trimmed off. Sticky-wax being placed around the pin, it is once more placed in position, all parts removed together, inverted and soldered. This crown can be completed at one sitting. Gutta-percha is preferred for setting.

LOCAL EXERCISE AND DIETETIC INFLUENCE UPON THE TEETH.

Dr. S. S. STOWELL read a paper on this subject before the First District Dental Society of New York.†

The prime factors in the laws of life and health are *exercise* and *diet*. When the normal use of an organ is discontinued, nature proceeds to eliminate it, the human teeth being no exception to this rule. *Local exercise* is of the first, and *diet* of secondary importance in the salvation of the teeth. Many cases were cited by the essayist in illustration of the position that lack of local

* Dental Review, December 15, 1894.

† Cosmos, January, 1895.

exercise is the prime factor in the retrograde metamorphosis of the human teeth of the present age. The remedy is simple; subsist upon food that requires masticating, that the teeth may have exercise like the other organs of the body, and they will develop strength and health. In the discussion of this paper, the ground was taken by Dr. Jarvie, Dr. S. G. Perry and others, that the present generation is better physically than the people of several generations back; that this is an age of athletic exercises; that our present mode of living has not degenerated, etc.

Dr. W. Irving Thayer emphasized the two points made by the essayist—that what is wanted for the teeth is not athletic exercises in general, but special local exercise for the teeth, and proper pabulum for the stomach and the teeth.

ETIOLOGY OF DEFECTIVE ENAMEL.

This is the subject of a paper by Dr. W. E. Royce, read before the American Dental Society of Europe.*

After a brief *resume* of the most important points in the development of the teeth, Dr. Royce reaches the conclusion that while some of the lesions referred to are due to prenatal influences, a great many are caused subsequent to birth, largely due to stomatitis from the use of mercury, attributing to hereditary mercurialization much of what Hutchinson attributes to hereditary syphilis—this through the direct action of the poison upon the germinal cells, as is transmitted alcoholic poisoning. In proof of his position, he exhibited the skulls of puppies treated with mercury, in his repeated experiments three puppies from the same litter having been selected, of which one was treated with mercury, another with Grey powder, the other not treated. These experiments will be continued upon rabbits.

PATHOLOGICAL CONDITION OF THE MUCOUS GLANDS OF THE MOUTH.

Dr. Geo. H. Winkler read a paper on this subject before the Homeopathic Medical Society of the County of New York,†

* Dental Digest, January, 1895.
† Cosmos, January, 1895.

discussing causes, appearance, results and treatment. The writer believes the condition to be due to "elimination by these glands of hereditary poisons," the glands themselves becoming poisoned, causing severe inflammation and sloughing, with most disastrous results, not only in the mouth, but sometimes in the stomach. Of the treatment he said: "I am an allopath both by medical and dental education, and for years exhausted the resources of that school in my efforts to combat this condition. . . . The paucity of internal remedies furnished by allopathy for the treatment of diseases of the mouth, and the accidental reading of a homeopathic paper, led me into a study of the homeopathic treatment of the mouth and the remedies. Among the latter I found *kreosotum*, which, in my four years use of it, has proved itself to be almost an absolute specific for the disease we are considering," (acrid, corrosive, slimy secretions, rapid white decay, erosion, etc.)

THE FINAL REPORT OF DR. J. J. R. PATRICK ON THE EXAMINATION OF PREHISTORIC CRANIA,

Under the auspices of the American Dental Association, is given in the *Cosmos*,* with the editorial comment: . . . "The dental profession may well be congratulated that this important collection of data has been placed in such shape that it may be utilized for further study and investigation. Such work is a necessary preliminary to all truly scientific study." . . .

TEMPERAMENTS.

Dr. Geo. B. Perry, in a paper read before the Chicago Dental Society†, after quoting from various authorities, gives his personal experience with a few cases, illustrating the four temperaments as usually accepted, and also some of the idiosyncracies and peculiarities met with in the dentist's daily practice. The discussion of the paper ran upon character and disposition rather than temperaments *per se*.

HYPNOTISM.

Dr. H. H. Fitch, in a paper read before the First District Dental Society of Illinois,‡ reviews the subject of hypnotism,

*Dental Cosmos, December 15, 1894.
†Dental Review, January 1895.
‡Dental Review, December 15, 1894.

quoting numerous authorities, showing its advantages as an anæsthetic, and the objections to its use, these being chiefly: the time necessary, the small percentage susceptible to hypnosis, the exhaustion of nerve force on the part of the operator, the vagueness as to the methods of dehypnotizing, the dangers of "suggestion" in weakening the patient's power of self-control, and the danger arising from the popular prejudices which would attribute any subsequent moral or mental obliquity to the effect of previous hypnosis.

The *International Dental Journal* publishes another section of the Address (to be continued) of Dr. A. H. Porter before the Alumni Society of the Department of Dentistry, University of Pennsylvania, on "The Physiology of Hypnotism."

MODERN ANÆSTHESIA.

The memorial celebration of the fiftieth anniversary of the discovery of anæsthesia, December 11, 1894, naturally occupies much space in the January journals.

The *International Dental Journal*, the *Dental Cosmos*, and the *Dental Digest* give abstracts of the address of Dr. Thos. Fillebrown, in which he presents "the history of the development of anæsthesia, from the earliest periods of human history until it culminated in the final discovery by Wells." Also of the address of Dr. Jas. E. Garretson, who took "the philosophical and humanitarian side of the question."

The toasts at the banquet were responded to as follows: "The Horace Wells Discovery," by United States Senator General Joseph B. Hawley of Connecticut; "Anæsthesia as a Dental Discovery," by Dr. James Truman; "Anæsthesia as a Factor in the Evolution of Surgery," by Dr. J. William White, University of Pennsylvania; "The Mastery of Pain from the Standpoint of the Layman," by Col. Alexander McClure, editor-in-chief of the Philadelphia *Times*; "The Development of Our Knowledge of Anæsthesia," by Dr. Wilbur F. Litch; "The Medico-Legal Aspect of Anæsthesia," by District Attorney Geo. S. Graham, Philadelphia; "The Humanitarian Aspect of Anæsthesia," by Rev. S. D. McConnell, of Philadelphia. Dr. G. Q. Colton, who

administered the nitrous oxide on that memorable occasion fifty years ago, detailed the facts as he knew them, and Mr. Charles Wells, son of the great discoverer, paid a feeling tribute to the memory of his father.

The occasion is characterized by the *International Journal* as "one of those epoch-making periods that come seldom in the history of professions and peoples, but when they do appear they mark a dividing line between the old and the new."

An account of the Hartford celebration of the event,* found in the *Cosmos*, is illustrated with a *fac simile* of the memorial tablet erected in honor of Horace Wells, unveiled on the occasion.

SCIENTIFIC WRITERS.

Editorially the *Review* criticises an apparent lack in the writing of scientific men, *viz:* that they draw no deductions of practical application from their work. The average reader is either not capable of intelligently drawing deductions, or will not take the trouble to do so.

For scientific investigations to benefit dentistry, scientific articles must be read, and to be read they must be carried down to a practical application. This would not, in any degree, interfere with a purely scientific habit of thought, and would immeasurably extend the usefulness of the work of scientific men.

DENTAL EDUCATION.

Dr. P. D. Houston, in a paper read before a general meeting of the Nashville Academy of Medicine,† discusses the subject of dental education, especially that phase concerning patients and the public—those in need of dental services but in ignorance of the capabilities of dentistry, suggesting the propriety of a text-book, simple, concise and cheap, for use in our public schools as the most efficient means of educating the people.

Dr. W. J. Morrison read a paper before the dental section of the same society‡ in which he urged the importance of impressing upon students the value of the teeth in their relation to the

*Dental Cosmos, January, 1895.
†Dental Headlight, January and March, 1895.
‡Dental Headlight, January and March, 1895.

rest of the human system and their function in digestion, also the necessity of instructing the public in the care of the teeth and the hygiene of the mouth. He dwelt especially upon the injury done to the human race by the injudicious extraction of teeth. While regretting the large percentage of men in the profession who pride themselves on their skill in the extraction of teeth, he said: "I would not be understood as deprecating the skill of an operator in performing the operation of extracting when necessary, any more than I would disparage that of a gynecologist in sacrificing the child to save the mother when conditions require."

Dr. W. F. Fowler, in a paper read before the East Tennessee Dental Association* reviews the "Rise and Progress of Dentistry" along the lines of education and literature, methods, materials and appliances, inventions and discoveries.

Dr. J. C. Walton, in a paper bearing the title "Popular Dental Education and the Newspaper,"† and with the phrase from Article IV of the Code:

"It is our duty to enlighten and warn the people" as a text, says: "There is little humanity and less philanthropy in withholding beneficial knowledge where innocent ignorance is of necessity the greatest sufferer. With seventeen thousand dentists in the United States, many of whom are desperately idle, and yet with dentistry enough that should be done to keep fifty thousand dentists busy, some way should be found of making the needs of the people and the needs of the dentists fit into each other. The remedy for this condition of things lies in the education of the public, both as to their dental needs and as to the proper source of service. Commercialism has thus far made the most successful appeal to the masses. Dignified, uncompromising silence does not enlighten the public; the "pamphlet" system has not proved effective; the newspaper remains as the resource needed for popularizing effective dental teaching. Being acceptable to the masses, it is the surest, quickest and most economical way of reaching the public."

* Dental Headlight, January and March, 1895.
† Dental Cosmos, February, 1895.

The essayist concludes with the outline of a plan which appears to be liberal, just, ethical and philanthropic, and which might be made effective and profitable.

SYSTEMIC DENTAL TREATMENT.

In the discussion by the New Jersey State Dental Society,* of the paper on "Systemic Dental Treatment,"† by Dr. L. Ashley Faught, Dr. Sanger said: "If we will only feel that we have the right, and will take the right, to practice medicine when the practice of medicine is indicated in dealing with our patients, having first thoroughly fitted ourselves to do so, then I believe we shall have . . come upon a higher plane, and that we will be better able to do for our patients the good that they expect and desire at our hands."

Dr. J. Foster Flagg said that, after listening to the paper, he felt that he had been derelict in his duty in not speaking more to that point in his lectures from the chair of pathology and therapeutics, and that in the future he should place legitimate medicament in a very much more prominent position, and strive to induct the idea of appropriate systemic treatment in combination with dental treatment.

In continuation of the same line of thought, Dr. Faught read a paper on "Dental Therapeutics" before the First District Dental Society of New York,‡ expressing the opinion that the rapid development of the dental profession is most prominent in the line of dental therapeutics, both local and systemic; that the dental practitioner of to-day who is not acquiring an ever-increasing knowledge of medicaments and their uses, is not capable of giving his patients that intelligent aid that they have a right to expect. While it is a duty to repair the ravages of dental disease, it is a higher duty to prevent this manifestation of disease and to alleviate suffering—not alone, however, by the administration of drugs—"the gospel of fresh air, sunshine and out-door exercise is the sermon that must be continually upon our

* Dental Cosmos, February, 1895.
† Dental Cosmos, December, 1894.
‡ Dental Cosmos, February, 1895

tongues." Having, in the previous paper, given a list of some thirty remedies constituting a basis for systemic dental medicine, the present paper is directed more especially to the influence of the nervous system on the health of the teeth and mouth, and the therapeutic treatment necessary in the restoration of "tranquility of nerve," to the impairment of which dental diseases are mainly due. The therapeutic remedies directed towards the organs of excretion, and especially the uric acid soluents, are the special topic of this paper.

In the discussion, Dr. E. C. KIRK questioned whether it would not be infringing upon the field of the general practitioner to follow out the principles laid down by Dr. Faught. While agreeing that every dental practitioner should be sufficiently intelligent and sufficiently educated to diagnose the systemic causes of dental disorders, he thought that in doing that he had gone far enough. To undertake the systemic treatment would be as though the physician, on finding that certain systemic conditions were due to diseased conditions of the teeth, should proceed to treat and fill the teeth!

DR. VAN WOERT agrees with Dr. Kirk, that it is not within the province of the dental practitioner to go beyond the local treatment. In closing the discussion, Dr. Faught said that the argument of his paper was not so much to advise entering into the treatment of the diseases or the use of drugs, as to lead our patients into hygienic lives, so that by going back of the trouble we can quiet that nerve trouble which causes the pain.

HYPNOTISM.

In a paper entitled the "Present Scientific Status of Hypnotism,"* Dr. W. X. Sudduth claims that hypnotism is one of the most common forces in nature; that we are subject to its influence at all times, and that were it not for *suggestion*, which forms the basis of hypnotism, we could make but very little progress, being, as we are, creatures of environment, dependent upon the labors and suggestions of others in most things. He finds a familiar illustration in its constant and harmless use in childhood; every

* Dental Review, January 15, 1894.

time that a mother or nurse puts a child to sleep, she hypnotizes, the means being the monotonous swing of the cradle, the lullaby song, the reiterated "go to sleep, sleep, sleep," etc. When a similar moral atmosphere can be established around the adult, the greatest benefit will be obtained from suggestive therapeutics.

Dr. Sudduth holds, with Bernheim, that hypnotism is closely allied to natural sleep, and, like the latter, can be made a valuable therapeutic agent in the alleviation of many physical disorders. It is only within the past few years that the subject has been placed upon anything like a scientific basis, but with the advance in our knowledge regarding the physiology of function through physiological chemistry, we are becoming better prepared to direct it. We have caught only a glimpse of the boundless possibilities of suggestive therapeutics coupled with a judicious use of specific drugs.

Quoting from Bernheim, he says: "The patient is put to sleep by means of suggestion—that is, by making the idea of sleep penetrate the mind. He is treated by means of suggestion—that is, by making the idea of cure penetrate the mind. . . . We profit by the special psychical receptivity created by hypnosis, . . . to persuade the brain to do what it can to transform the accepted idea into reality." After enumerating the various hospitals that, either exclusively or in certain wards only, are treating and curing functional disorders and organic disease by hypnotic treatment, and quoting a long list of cases (several pages), successfully treated by suggestive therapeutics, he says: "The special line of work that I have been, and am still engaged upon, is its application to surgery," having in his own clinics daily demonstrated its value as an anæsthetic, and concludes: "It is fitting that a dental clinic should be the first to take the lead in the matter, as dentistry has always been in the foremost rank in experimenting with anæsthetics, and with excellent results. Dentistry gave nitrous oxide gas and ether to surgery, and now leads in the introduction of hypnosis."

The paper was discussed at some length, Drs. Bailey, Weeks and Dickinson making a distinction between "suggestion" and "hypnotism," and opposing the use of the latter in dental practice.

Drs. Knight and Wood cited several cases of what might be the unconscious exercise of this power by the operator.

Dr. H. C. Aldrich, a practicing physician, is a firm believer in hypnotism and the good to be obtained from it.

Dr. M. B. Wood does not believe the possibilities for harm greater than from the use of drugs. Dr. F. E. Twitchell thinks the dentist should do all in his power to relieve pain, and does not believe in "leaving to the devil all good things." Dr. Sudduth, in closing the discussion, emphasized the necessity for the use of the same safeguards in the practice of hypnotism as in the administration of other anæsthetics, giving the following rules: "Never administer any anæsthetic to a woman without a witness who is *your* witness; never practice hypnotism without the presence of a witness who is a friend of the patient, and a witness *also* who is *your* witness. Under these conditions, practice it. Use it the same as any other powerful remedy."

At the Union Convention in Buffalo, N. Y.,* Dr. W. W. Belcher read a paper on "The Relation of Nitrous Oxid and Asphyxia, reaching the conclusion that nitrous oxid is asphyxiating, and to be used with caution, although the safest agent in use for producing unconsciousness; that no man has the right to jeopardize the life of a fellow-being for a minor operation such as the extraction of a single tooth.

During the discussion, Dr. George Fell demonstrated the use of his forced respiration apparatus.

HYDROGEN DIOXIDE.

Dr. Henry Leffmann, in a paper read before the Odontological Society of Pennsylvania,† furnishes the results of tests made during the past year, of samples of the hydrogen dioxide solutions sold to dentists, including samples from S. S. White Manufacturing Company, Sibley and Justi, the tests being both for acidity and for volumes of oxygen. The samples were in original packages, and were used when fresh. The figures given show very inferior samples, one-ounce bottles from the three

* Dental Cosmos, February, 1895.

† International Dental Journal, February, 1895.

houses named, tested in February, 1894, showing, respectively, S. S. W., 5.1 and 5.4; Sibley, 0.5; Justi, 1.4. McKesson & Robbins' pyrozone, opened occasionally during six months that it was standing in the laboratory, showed 9.1, containing when fresh almost exactly 10 volumes. Dr. Leffmann adds: "There is no reason why the large supply houses should retail such inferior samples as above noted."

In the discussion, he said: "A sample of English hydrogen peroxide, which I examined, costs one dollar for a four-ounce bottle and contains only about six volumes of active oxygen. How imperfect must the treatment be that depends upon such inferior articles."

In reply to a question regarding the tests for acidity, he said: "The acidity in Marchand's peroxide amounted to about eight in the test made to-day, against about four—the minimum—in the Oakland. The acidity of hydrogen is about two for the same volume."

AN ELECTRICAL DISINFECTANT.

Mr. Albert E. Woolf, New York, read a paper before the Central Dental Association of Northern New Jersey,* giving the results of a series of experiments on the action of the electrical current on sea water, obtaining from the decomposed sea water an electrical disinfectant —"Electrozone"—having a most destructive disintegrating power upon germs and germ life, with the advantage of being perfectly harmless—absolutely non-poisonous. As manufactured for commercial use for disinfecting on a large scale, putrid water and poisoned sewage are rendered innocuous, decomposed garbage is freed from all offensive odors, putrid meat in an advanced stage of decomposition is made sweet, etc.

Numerous experiments were made before the society upon various forms of albumen (including "ancient eggs"), illustrating the powerful action of the disinfectant.

The grade of this disinfectant suited for dental and medicinal use has not as yet been manufactured, except in experimental quantities, and is not on the market, though samples will be supplied for experimentation through Dr. Geo. C. Brown.

* International Dental Journal, February, 1895.

ABSCESS OF THE ANTRUM OF HIGMORE.

Under this title Dr. E. S. Hodgskin, M. D., treats of the causes of this disease and the symptoms in both acute and chronic cases, the diagnosis and the treatment, in a paper read before the Second District Dental Society of New York.*

As an antiseptic Dr. Hodgskin prefers peroxid of hydrogen, with the precautionary measure of first washing the pus out of the cavity with distilled water to avoid the formation of too much gas, with consequent distension and pain.

In the discussion Dr. V. E. Houghton said that he used only warm water and chlorid of zinc, being afraid of the effervescence of peroxid of hydrogen.

In the experience of Dr. W. E. Halsey, Listerine—one to twenty parts of water—meets every indication.

Dr. R. H. Sturgis M. D., expresses the supposition that in some cases the teeth may be affected secondarily, as the result, rather than the cause, of empyæma of the antrum.

PYORRHŒ ALVEOLARIS.

At the September meeting of the Minnesota State Dental Association,† Dr. W. X. Sudduth read a paper in continuation of the one read at the May meeting of the same society, published in the June and July, 1894, issues of the *Dental Cosmos*.

Accepting the simpler forms of the disease as an acute catarrhal process, easily amenable to palliative medication, combined with such mechanical handling as the case in hand may indicate, Dr. Sudduth gives minute details of treatment, with a long list of prescriptions for local applications or internal administration, designed to meet the varying conditions encountered—acid conditions, catarrhal conditions, the suppurative form, constitutional complications, the gouty diathesis, neuralgia, etc. In suppurative catarrhal conditions Dr. Sudduth lays special stress upon the value of sozo-iodol and zinc, to which he has called attention frequently since 1888, when he first directed the attention of the profession to its merits. As an appendix to the

* Dental Cosmos, February, 1895.
† Dental Cosmos, February, 1895.

article there is given an extended bibliography of the drugs and literature of Pyorrhœa Alveolaris.

THE ETIOLOGY OF PUS FORMATION.

Dr. S. Eschelman read a paper bearing this title before the Union Convention, in Buffalo, N. Y.*

He considers the phenomena of inflammation as but the exalted, or rather perverted, phenomena of normal nutrition. The dilatation of the capillaries, wandering out of the white corpuscles, effusion of liquor sanguinis, destruction and regeneration of cell life—the physiological means of carrying on the normal functions of the body—may from repeated irritation become pathological. The function of the cells being disturbed, if the irritation is light it may lead only to hyperplasia, without inflammation, as in the thickening of the epithelium on the hands of the laborer, etc. If the irritation be more pronounced, as in traumatic injury, inflammation may be developed, progressing through the suppurative stages to the production of pus, unless kept in an aseptic condition, thus excluding secondary causes.

An injury is not in itself sufficient to develop the inflammatory action to the production of pus. The argument of the paper leads to the conclusion that pathogenic bacteria are the essential and direct cause of suppuration, and that by their growth, development and formed ptomaines, they are capable of initiating the inflammatory phenomena and developing them successively through all the stages to the production of pus.

THE TREATMENT OF PULPLESS TEETH.

Dr. F. T. Van Woert, in a short paper,† gives the details necessary for the accomplishment of the best results in the use of peroxide of sodium, and sulphuric acid, in root canals.

Having used the latter exactly by the methods described by Dr. Callahan, his experience fully justifies the claims made for it, making it possible to master many otherwise hopeless cases.

Great care and ample time are required for the preparation of the sodium peroxide solution, but when properly made it can

* Dental Cosmos, February, 1895.

† International Dental Journal, February, 1895.

be kept in a glass-stoppered bottle, in a cool place, for a long time. Dr. Van Woert gives the following directions for its preparation: "Take a common tumbler about half full of distilled water, place it in the center of a good-sized pudding dish and pour all the cold water around it possible without floating the glass; add the sodium peroxide in very small portions, about what could be taken upon the point of the large blade of a pocket knife, dusting it in the water slowly to cause as little agitation as possible, and this amount should not be added oftener than once in a half hour, being careful to have the sodium peroxide finely powdered; this to be continued until the preparation begins to look opaque as powder is added. Let it stand over night, and it is then ready for use."

Dr. Van Woert said that he had received from a student in the Philadelphia College reports of very successful results from placing a small portion of the powdered peroxide in the pulp chamber, flooding the cavity with water, and allowing it to remain until the agitation from the combination ceases, after it is washed out and treated as before.

He adds: "This would seem to me a very practical and sure way of obtaining a solution that would be effectual."

In the discussion, by the New Jersey Dental Society,* of Dr. C. N. Johnson's paper on "The Management of Pulpless Teeth" (*Cosmos*, Dec., 1894), Dr. Peirce spoke favorably of the use of cobalt for pulp devitalization, as by its use there is less liability of getting too much arsenic in the tooth, and it can be left in long enough to insure removal of the pulp without tearing it in pieces. He also spoke favorably of the use of cotton in root-canal filling, the cotton being treated with aristol moistened with chloroform, and pressed to the end of the root, the rest of the canal being filled with gutta-percha.

Dr. Wm. H. Truman grinds arsenic to a paste with creosote and a little glycosal. He is not particular about the amount and not believing there is any risk of its passing beyond the apex of the root in ordinary cases. He recommends the use of cajeput as a lubricant when filling with gutta-percha.

* Dental Cosmos, February, 1895.

Dr. Watkins considers cajeput used in this way a complete failure, being a great irritant. He uses eucalyptol with chloropercha. He always uses iodoform in the canal and fills without removing it.

Dr. Jas. Truman protests against the statements made as to the use of indefinite amounts of arsenic left in the tooth for an indefinite time. He considers arsenic unlimited in its destructive power, passing through the foramen with resulting necrosis of the parts reached. He wants exact figures and believes the thousandth part of a grain of arsenic sufficient to carry destruction to the upper third of the canal. If it goes beyond that it endangers the pericementum.

Of *curing abscesses*, he said: "In my opinion there has never been an abscess cured, and there never can be, unless the cause of the abscess is removed. From my experience I don't believe there is a single particle of live tissue at the end of a root where there has been alveolar abscess."

"An abscess means the destruction or suppuration of the pericementum on the root of the tooth, and that once removed, there can never be a return of vitality, and that particular part of the tooth must be inevitably necrosed. How are you going to cure it? You can temporarily relieve it, you can close up the fistula, but beyond that you can not go, unless you remove the necrosed portion."

Dr. J. Foster Flagg, in advocating the use of cotton in filling the root canals, wants "natural cotton with its natural oil"—not "absorbent cotton." He said: "The fact is, gentlemen, a cotton filling can be made as perfect as any filling, and as non-leaking as any filling can be made."

PUTRESCENT PULP CANALS.

Dr. D. W. Barker gave the New York Odontological Society* an improved method of disinfecting putrescent pulp canals, which has not the objection of causticity found in other methods now in use. By bringing into contact, in the root canal, permanganate of potash and peroxide of hydrogen, violent effer-

* International Dental Journal, February, 1895.

vescence takes place with the liberation of nascent oxygen. The powdered permanganate of potash is introduced into the canal on a Donaldson bristle, peroxide of hydrogen dropped on it with a syringe, and the bristle quickly pumped up and out. The teeth so treated show remarkably quick cure.

In reply to a question, Dr. Barker stated that he had not known it to produce any irritation of the periosteum.

ROOT CANAL FILLING.

Dr. L. W. Skidmore, in a paper read before the First District Dental Society of Illinois,* presents a review of the various method and materials in use for root-filling, and gives his own methods of treating "pulpless teeth with putrescent pulps." After the removal of all debris and drying with cotton until there is no trace of putrescent matter, the canals are washed with peroxide of hydrogen or pyrozone, followed by alcohol, and the canals dried with hot air. A dressing of "cassia 1, enymol 2, galelthesia 3," is then applied on cotton and left in for several days. When the roots are perfectly sweet with no soreness remaining, the canals are moistened with eucalyptol, to assist the passage of chloro-percha, or gutta-percha and eucalyptol, which is worked thoroughly into the canals and followed by gutta-percha cones. A roll of vulcanite rubber is then placed in the cavity and with a blunt instrument pressed into the chloro-percha forcing it into all parts of the canal which may then reasonably be considered thoroughly filled.

At the December meeting of the Second District Dental Society of New York† the question: "Do the Oxyphosphates and the Oxychlorides, When Placed in Contact, or in Close Proximity to the Pulp, Cause Its Death?" was introduced for discussion by Dr. J. P. Geran, his own opinion being that they will eventually destroy the pulp unless there is a thick intervening section of good healthy dentine between the pulp and the cement.

Dr. F. E. Howard believes that death of the pulp will

* Dental Review, January 15, 1895.
† Dental Cosmos, February, 1895.

follow the use of the oxyphosphates when sterilization of the cavity with a coagulating antiseptic has been neglected. The addition of creosote—combining enough with the paste before it begins to set to render it permanently antiseptic—so modifies the action of the oxphosphate that he uses it with impunity provided that the pulp is protected by a thin covering.

A true pulp-capping material should possess both antiseptic and stimulating properties to induce an effort toward recuperation, in the deposition of ossific material, the natural protector of the pulp.

Dr. S. B. Palmer explained the death of the pulp under thin cappings as due to the acid set free by the decomposition of the cement by moisture from dentine containing much organic matter. The moisture in the dentine having an affinity for the acid of the cement, the dentine becomes inflamed and the lime element is taken back by nature. When the dentine is normal, and the pulp protected—as by varnish—the pulp is not destroyed.

Dr. J. Foster Flagg excludes the oxychloride of zinc because properly used only as a lining for the walls of cavities in teeth less than "above medium" in structure, and always preceded by red base-plate, rubber varnish, temporary stopping, or zinc sulphate.

Zinc phosphate he would not, as a rule, place in any doubtful contiguity to vital pulps, although in many instances large cavities, closely approaching vital pulps, have been satisfactorily and successfully filled with it.

Dr. W. S. Elliott thinks that when success follows this use of oxyphosphate it is due to the previous use of an escharotic—preferably Merck's creosote, and never carbolic acid. This arrests the function of the peripheral cells of the pulp tissue though leaving them the power of depositing lime-salts in an amorphous condition.

Dr. D. W. Barker uses a combination of iodoform, or aristol mixed with the cement liquid, applied in a thin layer when the pulp is almost exposed. He also uses with success a small piece of court-plaster applied over the region of near exposure.

Dr. C. S. Van Orden places in the bottom of the cavity a thin piece of asbestos paper with Canada balsam, and the cement over that.

THE MINERAL CEMENT.

Prof. S. J. Willey* outlines the principles governing the preparation of the materials entering into the cements and the methods employed in their manufacture, shows the fallacy of the popular idea that they can be easily, cheaply and *successfully* made by the dentist from the crude ingredients purchased at any drug store, and gives, as the result of a long series of experiments and consultations with a number of the best operators, valuable suggestions as to the correct method of mixing the mineral cements.

AMALGAM WASTE.

Dr. Wm. H. Truman† shows that the only really economical method of utilizing amalgam waste is to reduce it to an alloy by remelting to expel the mercury, casting into an ingot, and reducing to filings.

Attempts to save the mercury involve too much risk and expense though interesting as a laboratory experiment. At the present commercial valuation of silver any attempt to refine amalgam waste will be a financial disappointment while the proportion of gold in the alloys now on the market is too small to pay for the cost of refining.

CARE OF CHILDREN'S TEETH.

Dr. N. A. Stanley read a paper bearing this title before the Harvard Odontological Society.‡ He urges that every possible effort be made to preserve the first teeth until the permanent teeth erupt according to natures' plan which cannot be improved upon. He enumerates the probable ill effects of too early extraction, and the good results of preserving the first teeth in presenting a good surface for proper mastication and allowing

* Items of Interest, February, 1895.
† Items of Interest, February, 1895.
‡ International Journal, February, 1895.

of full development of the jaws, also in holding back the permanent teeth till full time for their eruption with fully matured normal structure; another important benefit is the habit, early formed, of taking proper care of the teeth. An important duty of the dentist is to so instruct patients that future generations may inherit a dental structure less prone to disease. He believes that the best results will follow the use of lime-water by both mother and child.

The treatment of very young patients must be left to the judgment of each operator, but their confidence and friendship must be won and care taken not to frighten, fatigue or hurt them in their early experience at the dentist's hands.

In approximal cavities in the first teeth he uses cement. For crown cavities, if not deep, amalgam; otherwise, cement or gutta-percha, not attempting very thorough excavation. For buccal cavities and those at the margin of the gum he uses gutta-percha. In corono-distal cavities, amalgam at the cervical wall, and cement for the rest of the filling. If a pulp is exposed he destroys it with arsenic, and after treatment with warm water followed by three per cent. pyrozone, fills the pulp-cavity with iodoform paste, or cotton, finishing with cement. When extraction is inevitable he uses chloride of ethyl, but not spraying until white.

In the discussion of the paper, Dr. Warner and Dr. Bailey dissented from the opinion of the essayist that premature extraction of the deciduous teeth would hasten the eruption of the permanent teeth while imperfect in structure.

Dr. Smith is opposed to the use of amalgam in the temporary teeth believing that it causes death of the pulp.

Dr. Grant commends Dr. Pierce's method of applying nitrate of silver on little pads of blotting paper.

Dr. C. H. Taft removes the discoloration caused by nitrate of silver by applying iodine and a solution of salt and water, followed by cyanide of potassium. He spoke of the possibilities of the prevention of decay by constitutional treatment, using the homœopathic remedies to supply the inorganic substances that enter into tooth structure; such remedies intelligently prescribed would help to prevent the necessity for surgical treatment.

It would appear from the discussion that it is rarely deemed necessary to fill cavities in the deciduous incisors.

IMPLANTATION.

Under the head of "Incidents of Office Practice," the subject of "Implantation" was briefly discussed by the New York Odontological Society.*

Dr. Jarvie gave the history of a case in which absorption of the root of a permanent right central incisor had taken place on both labial and palatine sides of the root, reaching into the pulp-canal. The tooth was free from decay, but the severe pain complained of by the patient led him to drill into the palatine surface for the purpose of killing the pulp. In treating the canal, after removal of the pulp, oozing out of the medicaments led to the discovery of the absorption. The tooth was treated and filled, but subsequently broke off at the point weakened by the absorption. It was decided to remove the root and replace the tooth by transplantation. In order to extract the frail root without bruising the gum or injuring the socket, he drilled through the center of the root with a Gates-Glidden drill, cut a thread in this and inserted a screw, firmly pulling out the root without any injury to the parts. Not being able to find a suitable natural tooth, he selected a good, suitably-shaped natural root, to which he attached a porcelain crown matching the natural tooth perfectly. The operation is too recent to pronounce upon the result.

The *periosteum* question being raised, Dr. Jarvie said that though he preferred to use a tooth with the periosteum intact, he would not say that it is essential. Dr. Perry thinks it does not make much difference, the age of the tooth to be implanted being the most important point; old, hard teeth, being the most favorable. He does not think a close fit in the socket essential, though it is valuable in the beginning.

Dr. Jarvie prefers to have it not fit too tightly in the newly-made socket. He cited a case in which the socket, after removal of diseased tissue, was nearly twice as large as the root of the tooth which he put in, ligating it to the adjoining teeth.

* International Dental Journal, February, 1895.

That was seven or eight years ago, and the tooth is now the firmest one in the mouth (the others, however, being rather shaky from pyorrhœa alveolaris).

Dr. Perry allows teeth saved for implantation to dry up, soaking them in bichlorid for a short time before using.

Of over a hundred cases of implantation, not more than one-half are probably in to-day; but he thinks that more than one-quarter are handsome successes. Often when an implanted tooth comes out, he slips in another—in one case four times in the same socket, in a period of six or seven years.

PORCELAIN INLAYS.

Dr. A. W. Harlan read a paper on this subject before the Chicago Dental Society. In the discussion of the paper,* Dr. Wassall said that he had found this work very unsatisfactory for front teeth, because of the difficulty of matching the color, and also of subsequent changes in the color. On the buccal surfaces of molars he has found inlays more serviceable than gold fillings.

Dr. A. E. Mattison has experimented for a number of years, but finds that he can take more time to make an inlay than to make a continuous set of teeth, and when finished it is not satisfactory.

Dr. A. C. Hewitt has obtained very satisfactory results, some of his inlays having stood the test of ten years' service without any perceptable deterioration.

Dr. W. G. Taggart thinks that the change in color results from not perfectly fusing the porcelain. He believes that when the electrical furnace comes into use, there will be no further trouble in baking porcelain to the color desired. Instead of baking porcelain inlays by the present methods, he would use the English teeth, selecting exactly the color and shading required; mounting the section on a mandril, grind to approximate size, and then, with lots of water, grind it into the cavity with its own grit. These inlays should be inserted with "jeweler's shellac," which has a sticky quality different from pure shellac. It is called "Bottom's wax."

* Dental Review, January 15, 1895.

CROWNS.

Dr. D. M. Gallie read a paper before the Wisconsin State Dental Society,* entitled "When and How Should Teeth be Crowned?" He said that he emphasized the word TEETH in contradistinction to ROOTS "because in this day of dental abortionists we find teeth cut down, ground down, broken off, and in every way sacrificed, for the sake of substituting a dental article called *a crown*, but which in many cases more resembles miniature tomato cans and sections of stove pipe" (!) the remainder of the profession being "compelled to do sewerage work" for these "self-magnified experts" in the removal of these "filth-traps and catch-basins of oral sewage." Dr. Gallie thinks that fully fifty per cent. of the teeth that are crowned to-day could be successfully filled, and that it would often be better to fill, even at a little risk as to the number of years the filling may last; should it subsequently fail, we still have a good foundation for a crown as the last resource. The natural crown should be substituted by an artificial one only (1) when the original is so badly decayed that its frail walls can not be strengthened sufficiently with cement to retain a permanent filling; (2), when the tooth structure is so soft and frail that it will fracture under the pressure to insert gold; (3), when the teeth are so malformed and irregular that crowning will be more advantageous than regulating; (4), when the tooth is badly discolored and the enamel checked, indicating that if bleached it would discolor again; (5), when a sufficient number of teeth are out to warrant the cutting down of two for the attachment of a bridge; even for the latter purpose, Dr. Gallie would not cut down two good teeth for the insertion of a dummy between, neither would he grind down and crown a good tooth to attach a dummy to it. Other negative cases are pointed out, and having thus narrowed the limits of *When* to crown, he proceeds to the question *How* to crown. The first point is always to devitalize the pulps, if not already destroyed. The paper then deals with the preparation of the root, according to the character of the crown to be used; the adjustment of the band to avoid

* Dental Review, January 15, 1895.

irritation of the gum, etc., with a description of Dr. Taggart's method of using the "Diatoric Tooth in Crown and Bridgework."

A backing of pure gold is swaged and burnished to the tooth, forming a V-shaped receptacle for the porcelain; through this backing a hole is punctured with a blunt instrument, forcing a ragged margin of metal part way into the hole in the porcelain, into which a mat of foil-gold is then packed. Removing the porcelain, the backing and the plug of gold are removed together, inverted and soldered into one mass, to which, when ready, the porcelain is cemented. By this method, the porcelain not being subjected to heat, is not changed in color nor weakened by checks, and in case of subsequent fracture, a single broken facing is easily removed and replaced.

Dr. F. W. Bliss, at the Midwinter Fair Dental Congress,* described his improvement upon the Downey crown. A band and cap of platinum and a pin of iridio-platinum wire are all soldered together with pure gold before fusing on the Downey porcelain body, the strength of this crown depending on the metal; whereas the Downey crown depends largely on the porcelain for its strength.

THE CORRECTION OF INJURY RESULTING FROM EXTRACTION.

In a paper read before the New York Odontological Society,† Dr. S. E. Davenport makes an urgent appeal to all who have the advancement of their profession at heart, not to advise the extraction of teeth for the purpose of regulating, without *first taking casts*, so that the relations existing between the lingual and palatal surfaces of the teeth may be observed; this occlusion of the inner surfaces frequently having an important bearing upon the opinion formed and the advice given; the casts serve also as a most important basis for intelligent study later. He says: "The rule to always take casts and study them before advising extraction would not only serve to teach the dentist many principles, but through his greater knowledge of Nature's laws, would cause him to be less frequently a murderer

* Dental Headlight, Jan'y-March, 1895, (reprint from Pacific Coast Dentist).
† International Dental Journal, February, 1895.

of the dental organs." Any examination of the natural teeth alone must be necessarily too superficial to serve as a basis for the condemnation of teeth, as the inner surfaces of the teeth must also be studied when the jaws are closed. This can only be done from perfect casts, properly hinged."

TWO SIMPLE METHODS OF TREATMENT OF FRACTURES OF THE LOWER JAW.

Dr. Thos. L. Gilmer, in a paper read before the Wisconsin State Dental Society,* said that every dentist might reasonably anticipate being called upon, either in consultation or alone, to treat fractures of the jaws, and it should be his aim to be prepared either to take sole charge of the case or to give valuable assistance to the surgeon in charge. He gave two simple methods, original with himself, by which the majority of fractures of the lower jaw may be successfully treated.

In the first method, soft iron wires of sufficient length are placed about the cervical portion of a number of teeth in each jaw, anterior and posterior to the fracture. The wires are twisted to fit the teeth closely, the teeth of both jaws brought into articulation, and the ends of the wires secured together, bringing the lower jaw firmly against the upper, a bandage being used, if necessary, to overcome muscular contraction. If no teeth have been lost, one might be sacrificed in order to feed the patient by means of a syringe with sufficiently large nozzle.

In the other method, an impression is taken of the teeth in both jaws, and casts made. If necessary, the cast of the lower jaw may be sawed in two on the line of fracture, and so reconstructed as to secure correct articulation with the occlusal surfaces of the teeth in the upper jaw. Reproduce the cast of the lower jaw in Melotte's metal, and swage a plate to cover several teeth anterior and posterior to the fracture, and extending down at least two-thirds of the length of the teeth. Cement the splint to the teeth with phosphate of zinc. This is cleanly, easily made, and permits the mouth to be opened and closed at will.

* Dental Review, January 15, 1895.

[*To be Continued.*]

SELECTIONS.

Care of the Poor.

If the highest function of prevention is exercised, it must be done through channels that relate to the health of the poor. Disease can be prevented in a great measure by maintenance of nutrition, warmth and cleanliness. It is better to prevent sickness than to cure it. This aphorism holds good, viewed from the most severe standpoint of money economics. There is no surer way to breed disease than through the avenues of starvation and nakedness. Fuel, food and clothing are great sanitary allies, and should be dealt out with a liberal hand as preventive measures. This applies equally to public and private charity.—*Buffalo Med. and Surg. Journal.*

Eye-Strain a Cause of Nocturnal Enuresis.

Dr. Geo. M. Gould reports a number of cases of children who were afflicted with nocturnal enuresis, that were cured by correction of the ocular defect by glasses. In most of the children the involuntary urination was accompanied by many other nervous symptoms, such as night terrors, headaches, chorea, etc., nearly all of which were relieved or cured by glasses that corrected the visual anomaly. Some of the patients had undergone operations and treatment that had extended over years without relief of the trouble.—*Med. News.*

In compliance with the request of the Board of Regents the entire homeopathic faculty of the University of Michigan have tendered their resignations, to take effect at the close of the present college year.

Sudden suppression of an excessive salivation occurring during pregnancy, Prof. Parvin says, may be followed by serious consequences.

EDITORIAL.

THE American Medical Association meets in Baltimore on May 7th prox. It will doubtless be a large and interesting meeting, at least the history of this body fully warrants this statement.

It is of interest to dentists to know that one of the important sections of this association is that of Oral Surgery. This section ought to elicit the attention and co-operation of the best men in the dental profession. Its members are connected with the leading medical associations of this continent and an opportunity is here afforded of hearing the principal topics of medical science and practice considered in papers and by discussion. It is gratifying to meet and know the men who have been instrumental in developing medical science. The section on oral surgery has already accomplished great good. The work done by it is said, by the medical members of the association, to be equal in character to that of other sections of the body. At every annual meeting members of other specialties, and general practitioners as well, read papers and discuss subjects in the dental section, and members of the dental section are often called upon to read papers and discuss subjects before other sections.

The American Medical Association is the great controlling power to prevent specialism from running wild, and yet fostering it in such a way as to develop the greatest amount of good.

Here specialties are brought together in such a way as to secure harmony and a realization of the fact that they are all but parts of one harmonious whole, and here we also learn that each of these may be helpful to the others. The fact is that all specialties in medicine have one common object, viz: the prevention and mitigation of human suffering and promoting the happiness of mankind.

It is very desirable that the specialty of oral surgery should avail itself of all the benefits derivable from an intimate connection with the American Medical Association.

A Return.

We are gratified to learn that Dr. A. W. Harlan has returned to his "*first love.*" In other words, has again taken editorial charge of "The Dental Review." This will possibly be a surprise, but doubtless a gratifying one to the profession generally.

He was the first editor of the Review and no doubt feels at home on his return. The doctor can do his profession great service with his pen and he certainly should use it, as he wields the pen of a ready writer.

Retirement.

We have just learned that Professor W. X. Sudduth has resigned as Dean and Professor of the College of Dentistry of the University of Minnesota, which will be a surprise to all his friends, and we doubt not a matter of regret on the part of the dental college.

He is, moreover, as we learn, to be retained as lecturer on special subjects.

This step has been taken by Dr. Sudduth in order that he may have time and opportunity to take up certain lines of advanced and original scientific work for which he had always a great desire. There are so few who have the ability and courage to enter upon the severe study and training involved in original scientific work, that it is gratifying to have one so well equipped for it, as is Dr. Sudduth, engage in it. He will enter upon this work, in the near future, in connection with the University of Chicago where large opportunities will be afforded him in his chosen field.

May his success be all that he and his friends can anticipate

NOTICES.

Mississippi Valley Dental Association.

SEMI-CENTENNIAL MEETING, APRIL 17 AND 18—HALL E, ODD FELLOWS' TEMPLE, SEVENTH AND ELM, CINCINNATI—1895.

PROGRAMME.

1. President's Address—Dr. J. Taft, Cincinnati. Discussers: Drs. J. N. Crouse, Chicago; L. P. Bethel, Kent; Frank Sage, Cincinnati.

2. "English Tube Crowns for Bridge-work," Dr. J. R. Callahan, Cincinnati. Discussers: Drs. Wm. V. B. Ames, Chicago; L. E. Custer, Dayton; A. F. Emminger, Columbus.

3. "History of the Society," Dr. E. G. Betty, Cincinnati. Discussers: Drs. Wm. H. Morgan, Nashville; C. R. Butler, Cleveland; H. A. Smith, J. Taft, Cincinnati.

4. "Rigg's Disease; or, 'What You Will,'" Dr. J. E. Cravens, Indianapolis. Discussers: Drs. A. W. Harlan, Chicago; J. S. Cassidy, Covington; O. N. Heise, Frank A. Hunter, Cincinnati.

5. "Crown-work," Dr. George Evans, New York City. Discussers: Drs. Grant Molyneaux, Cincinnati; C. I. Keely, Hamilton; Otto Arnold, Columbus.

6. "What a Dentist Saw in Examining Five Hundred Crania," Dr. M. H. Fletcher, Cincinnati. Discussers: Drs. J. E. Cravens, Indianapolis; C. M. Wright, E. G. Betty, Cincinnati.

7. "Tumors of the Mouth," Dr. C. G. Darling, Ann Arbor. Discussers: Drs. Truman Brophy, Chicago; M. H. Fletcher, Cincinnati.

Demonstrations—Electric Oven and Appliances for Accurately Determining the Heat—Dr. L. E. Custer, Dayton.

Practical Showing of Plastic Rubber, Etc.—Dr. A. S. Billings, Omaha.

TOPICS FOR DISCUSSION.

(As suggested by the American Dental Association.)

No. 1. Can alveolar-dental abscess arise after complete sterilization and obliteration of the canal by an impervious filling; and if so, from what causes?

No. 2. What are the best means of diagnosis of pulp-calcification in its several forms? To what extent does the process demand treatment, and how shall it be treated, (*a*) with respect to its prevention, and (*b*) remedially?

No. 3. What is the most satisfactory antiseptic and best method for root-canal sterilization?

No. 4. Is not operative dentistry liable to the same injury from the too prevalent use of plastic stoppings as occurred to prosthetic practice from the introduction of vulcanite?

LIST OF OFFICERS.

President—Dr. J. Taft, Cincinnati.

First Vice-President—Dr. Wm. V. B. Ames, Chicago.

Second Vice-President—Dr. A. F. Emminger, Columbus.

Treasurer—Dr. F. A. Hunter, Cincinnati.

Corresponding Secretary—Dr. H. C. Matlack, Cincinnati.

Recording Secretary—Dr. H. T. Smith, Cincinnati.

Executive Committee—Drs. J. R. Callahan, M. H. Fletcher, L. E. Custer.

Notice.

AMERICAN MEDICAL ASSOCIATION—DENTAL SECTION.

The forty-sixth annual session of the American Medical Association will be held in Baltimore, Md., on Tuesday, Wednesday, Thursday and Friday, May 7, 8, 9 and 10, commencing on Tuesday, at 10 A. M.

SECTION ON DENTAL AND ORAL SURGERY.

Dr. M. E. Fletcher, Chairman; Dr. Eugene Talbot, Secretary.

Chairman's Address.

"Bacteriology," by S. A. Hopkins, Boston.

"Adenoids," by Geo. F. Eames, Boston.

"The Effect of Sterilizing Processes upon Steel Instruments," by Wm. H. Potter, Boston.

"Common Ground of Medicine and Dentistry," Joseph Roach, Baltimore.

"Destruction of Children's Teeth, Cause and Remedy," by J. G. Humsler, Baltimore.

"The Progress of Modern Dental Practice," by A. H. Thompson, Topeka, Kan.

"Suppuration of the Intermaxillary Bones with Fistulous Opening into the Nasal Cavity," two cases, by W. Xavier Sudduth, Minnesota.

"Ulceration of the Oral Cavity and Its Treatment," by Dr. Genese, Baltimore.

"Specific Treatment of Necrosis of the Alveoli and Maxillæ with Sulphuric Acid," by W. A. Mills, Baltimore.

"Diseases of the Soft Parts of the Mouth and Ill-Developed Jaws," by W. S. Twilley, Baltimore.

"A Presentation of Inflammation and Tumorous Growths Caused by Wearing Rubber Denture," by Bernard Myer, Baltimore.

"Calcification of the Teeth," by R. R. Andrews, Cambridge.

"The Value of Differential Diagnosis in Dentistry," by Vida A. Latham, Chicago.

"The Discovery of Anæsthesia and its Outgrowth, Rapid Breathing as a Pain Obtruder in Minor Surgery and Medicine, with its History and Application for Twenty Years," by W. Bonwill, Philadelphia.

Bibliographical.

We have received recently the fifth edition of Dental Medicine, A Manual of Dental Materia Medica and Therapeutics, by F. J. S Gorgas, A.M., M.D., D.D.S.

This edition has been thoroughly revised and much enlarged. This was necessary, not because the work of the former editions were specially defective, but from the fact that new formulæ are being constantly brought forward, and especially because new

therapeutic agents are being introduced in large numbers, some of which, at least, are of value in dental practice, and their description and uses should have a place in such work as this. Among the new remedies added in this edition will be found Sodium-Peroxide, Pental Glycozone, Chloride of Ethyl, Phenosalyl, Boricin, Vaselone, Camphoid, Carbolate of Camphor, Carbolate of Cocaine and many others.

The work has been prepared with reference to both the practitioner and the student as well.

Doubtless there will be some changes and corrections to be made by the author in future editions; but this is about as nearly free from errors and faults as could reasonably be expected.

Dr. Gorgas has made this subject a special study for many years, both in the way of writing and teaching, and we know of no man in this country who is better, if as well, equipped for the preparation of a work on this subject as Dr. Gorgas. He has for years stood in the front rank as a teacher, and the subject of this treatise has been his favorite branch, upon which he has bestowed great attention and labor.

As a work on Dental Medicine it has no superior, if an equal. It is published by P. Blakiston, Son & Co., Philadelphia, and this is enough to say as to the execution of the work. It can be obtained of any bookseller.

Extirpation of the Stomach of a Cat.

At a recent meeting of the Paris Biological Society reported in the *Gazette Medicale de Paris*, M. M. Parchon and Corvallo exhibited a cat from which they had removed the stomach, and they detailed the results of the operation. The general nutrition was normal, the three species of foods—albuminoids, carbo-hydrate and fats were well digested; the digestion of milk, however, was faulty. The animal thrived best on a pap of milk, rice, flour, and yolk of an egg. Cooked meat was perfectly digested, raw meat imperfectly. Professor Dasht observed that we know the gastric juice produces changes in meat similar to those from cooking.

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COMMUNICATIONS.

The Origin of Pathological Tendencies.

BY JAMES B HODGKIN, D.D.S.

We shall never know the secret of life: for to know this will be to be as the gods—the life-makers. The history of the primordial germ will elude our keenest analysis, and neither scalpel or microscope will ever tell the secret of the original concept. Still, the desire to know, the restless wish to get to the fruit of this tree of knowledge will not be thwarted by difficulty, or turned aside by obscurity; for man still hopes to find that which makes him what he is.

Pathos, pain, sickness, organic weakness—how shall we inquire into the hidden nature of these, how study out the origin of the why one organ breaks down sooner than another; why this man's lungs go to pieces and that one's nervous system; why this woman has a lifelong bowel trouble and that one hysteria. We are, indeed, fond of saying that these are born with such and such tendencies, but beyond that and deeper than that lies the *why* it should be so. It is the province of this paper to look, so far as the writer's feeble powers may, into the causes that seem to go a step further into the case than simply the phrase "inheritance" implies. In other words, it is a question a step further than inheritance—how, or in what way, does the inheritance come? We can never hope to get all of this, never expect to fathom the mystery of nature, whereby she fashions cells, and from impressions so vague and occult as not to betray their

presence save by their results the whole work is biased, leaning this way or that, is predisposed to this or that sort of ultimate breakdown; to know all this is such knowledge as we can only hope for, not expect.

Certainly we are a long way off from such knowledge as yet. Are we nearer to it, than we are, as to why man grows to be six feet?

One thing is certain, there is, of all nature's constancies, nothing so persistent as type. Moving within certain lines and developing within certain channels, nature is, with but slight deviations, one. The man of to-day is wonderfully like his ancestor the savage; so like that we are puzzled to know if the skull we dig up was buried one hundred or one thousand years ago, and mentally this is more true than we are willing to confess. Where is the poet since Homer? or the lawgiver since Moses? There is no architect since he who built Thebes; no profounder thinker than Plato. Reproduction, not creation, is man's mission, and reproduction within certain well-defined limits.

But in reproduction man has been allowed, if I may so speak, to reproduce not only his individuality, physiologically, but in some degree his abnormalities and weaknesses. All, however, within certain limits. Over all and above all the slow and unconsciously moving hand of evolution fashions him into something better? or worse? who shall say?

Why one man should be so constituted physically as to be predisposed to pneumonia, another to heart or kidney, or nervous trouble is, on the face of things, impossible to answer. We flippantly say it is inherited. But *why* inherited? The type persists: six feet high, and perfect, so far as functions go; what is that subtle and intangible thing we call hereditary predisposition? How far can we go in analyzing and studying this subtility?

With the two forces operating—one strictly enforcing the type, and the other causing within certain limits, physiological deviations from that type, there seems to me to be a *third* or possibly a modification of the second force. Pathological conditions, or rather the tendency to pathological conditions, seem as strictly inheritable as physiological ones. That constitutional bias by

virtue of which certain diseases are likely to be developed seems to be as much an inheritance as symmetry of form. So we find, as hinted above, that almost every constitution has its predispositions, and these are as distinctive as the color of the eye or the form of the hand, the shade of the hair, etc. One family is predisposed to consumption, another to paralysis, and so on to the end of a long chapter. And even a supernumerary finger is as inheritable as a bad temper. We say of a certain man: "He goes too fast, walks, works too rapidly," and we charge his hurry with making him nervous. Really it is his nervous force that makes him go—and this he inherits.

Granted then that constitutional tendencies are inheritable and inherited, the question arises, in what way? We read in the 30th chapter of Genesis, that Jacob, whom Shakespeare makes Shylock to call "the crafty," placed before the breeding ewes certain colored rods, which these animals, seeing, would be maternally impressed by, and conceiving under these circumstances, bore offspring of certain colors. The impression here made is at the moment of conception, and it is to this phase of life, or life's beginning, that I wish to call attention. For of those obscure fœtal changes, resulting in monstrosities, which occur in intrauterine life, of which so much is made by the ignorant, and so little made by those that closely observe, I have only to quote the saying of William Hunter, that in a life spent in a lying-in hospital he had never seen a coincidence—that is, had never seen a case in which the birth-marks where they existed, corresponded with the mother's expectations.

A widow, remarrying, will bear children like her first husband; a female, of any species, receives from her first sexual contact an impress that persists through many successive pregnancies. Thus a female dog will have successive litters of puppies like the father of her first litter, although there be no resemblance between him and the father of her second, third or fourth. Some mysterious stamp is made on the nervous system by this first contact, that modifies in an obscure way, many succeeding pregnancies.

Taking these two forces then, ,—that of the persistence of type: that of the differentiation of type within certain limits,

and that third, or modification of the second force—the inheritance of pathological tendencies, and grouping these, we have the sum of what constitutes our "mold."

The question at the bottom is—at what time or in what way are these semi-pathological impressions, which we are obliged to recognize as existing, made on the constitution? Is it the "nine moons that go to the making of a man," as Tennyson has it; is it from accidental or incidenial impressions made on the fœtus in utero through the nervous system of the mother, as some are fond of imagining? I cannot think this is true. Nature does not thus work. I will illustrate what I mean by what we see oftener than we ought:

We have the picture, sometimes in the courts, sometimes in private life, of the seduced and betrayed woman abandoned to her fate by her betrayer. He refuses, after gratifying his lust, to make the amends for his crime he might, and leaves her to pine in solitude until she comes in the course of months to the maternal period. Imagine, if you can, what a torrent of feelings possess her. Now rage, now desperation, now despair, now hope. I cannot imagine a more troubled sea of unrest than the mind and soul of such a woman. Shame, fury, revenge, love, despair—a commingling of all that would make a turmoil of the soul, a hell on earth possesses her until the somber and to her disgraceful end. Suicide, murder, entreaty, all struggle for place in her perturbed soul. Did all these make their impress on the mind and character of her unborn son, what a monster he must be. Yet I am assured that some of the world's most illustrious men have been bastards, and born under circumstances such as I have depicted. I was told not long ago that on the bench of the court of appeals of one of the oldest and most honored of our States have sat at one time three bastards out of a total of four comprising the court; great and noble men, but legally fatherless.

It comes to me with more and more of increasing conviction that we are to look to the moment of conception for pathological tendencies no less than physiological stamp. When spermatozoa and ovum come together and the edict goes forth that "a man child is conceived," I cannot but think that he takes his ideal shape

then and there. If he is to be tall or short, to have blue eyes or black, have his mother's characteristics or his father's—that all this is the result of the culminating stamp of concept; and that as Minerva sprang full-fledged from the brain of Jove, so the created man is created with all his peculiarities and idiosyncracies, his constitutional bias, then and there.

Hence we see in this light of the subject that a child has teeth the form of the mother and the quality of the father, or the reverse, or the jaws of one and the teeth of the other. But I need pursue this thought.

Such a theory relieves us from the necessity of believing that man is the creature of circumstances, and of the numberless accidents and impressions of intra-uterine life; it shows beyond doubt that in this way, and this way only, can the type be preserved. It relieves us from the necessity of accepting the doctrine that teeth can be starved in an otherwise well-nurtured body; and that, save in the case of accidental interference with nutrition, as in the case of an eruptive fever, or the pitted and semi-lunar markings of syphilitic inheritance, they are molded in the form and after the style of their ancestors.

It has been years since I first began to feel that we, as creatures could not be the helpless victims of circumstances, the sport of environment, the makeshift of accident. That man is the creature of his environments is a truism, broad and general, but too broad to be more than of very general application. But he is not the defenceless and helpless thing that such a doctrine would make him. Not only man but even the inferior animals mold circumstances and take advantage of ebb and flow to gain the desired haven. And we have only to look about us to see that man as much creates the world in which he dwells as he is created by it. His nature clings to type with great tenacity, and I do fail to see that environments have much modified that great fact.

If this paper has any "central idea" it is the attempt to show that the creative stamp is greater than any environing influence, and that not by slow aggregations but by a full, complete and perfectly accomplished act is the creative concept made. The development of the individual "ego" is the result of that crown-

ing inception, and not the result of emergencies and trivialities. In the light of this basal theory we see how semi-pathological conditions by heredity become constitutional, and transmit themselves by one swift act to their successors, and by the individuality of primal stamp become a part of the person. Weak teeth, weak eyes, weak lungs—any weak organ is transmitted, and as pathologists we have to battle with the weakness.

The Present Needs in Dentistry.

BY J. TAFT.

Read before the Mississippi Valley Dental Society, April 17th, 1895.

We may imagine one standing upon the threshold of the present century and looking with earnest inquiry into the future, desiring to learn, if he may, something of the development of dental science and art in the coming hundred years.

He looks about for data upon which to base opinions or draw conclusions, but, so far as dentistry is concerned, he finds little, if any, promise for the future. There is no soil in which it can grow, no environment from which any remarkable product could arise, it had attracted no considerable attention on the part of the public, nor even by those engaged in the healing art. The elements of progress were not visible, and here an inquirer, however penetrating his gaze or vivid his imagination, would have utterly failed to gain a glimpse of that which has been realized in the development and growth of dentistry from that to the present time. The common mode of forecasting the future is by a survey of the history of the past; but the adoption of this method for estimating the progress of dentistry would have been a failure.

Is it true that we of to-day stand as helpless to forecast the future as he of one hundred years ago? Perhaps not, for the growth of dental science and the discoveries in dental practice are before us; from these, we may legitimately draw some conclusion as to the future. The resources of the dental profession

have grown to large proportions, especially when we take into account the brevity of its age.

The latter half of the century has witnessed the major part of the growth, notwithstanding this, we can not reckon with much definiteness of conclusion, as to what will be in the future, in the line of development and improvement.

Though the past growth may be but a shadowy index for the future, yet we may properly consider some points in the present state of our profession that may in the future be improved or changed.

I will invite your attention for a brief period to what may be regarded as some of the needs of the present time, and consider for a little, what may be done to answer these needs. And first, may be mentioned a lack of proper appreciation for dentistry as an honorable and useful calling. It is within the memory of man when the expression was frequently used, and even by men of culture, education and professional ability: "I am ashamed to be known in society, or even outside of my office as a dentist." Expressions of this sort are less frequent now than in the past, but language of this or similar import is heard even now; and in many cases where expression is not given to such thoughts the manner and bearing clearly indicate a want of just appreciation of the honor that should attach to those who devote their lives to the mitigation and prevention of ills and suffering to which humanity is subject. This is true not only of those outside of the dental fraternity, but, alas, of too many of those within it; and sometimes of those who are veterans in its ranks.

When we consider the great amount of empiricism and quackery that exists, and the difficulty experienced by the laity in discriminating between the truly professional dentist and the quack it is not a matter of wonder that both are placed, in popular estimation, upon about the same low level. An encouragement in this matter is found in the fact that many better prepared in general education and culture are now entering the ranks than in past years. Formerly it was the exception that a well educated person sought to enter the practice of dentistry; now a large proportion of those who come in are comparatively well educated and

there is a constant improvement in this respect. This need is being supplied, but not sufficiently rapid to satisfy the desires of the more enthusiastic.

To our dental colleges, in the main, belongs the credit of effecting this change; most of them requiring a good English education and some even more than this. The want of a liberal education has been one of the impediments not only in the way of professional progress, but has also been an obstacle to the realization of that appreciation to which an honorable and useful profession is entitled. The educated dentist is better prepared to place a true estimate upon his profession than one ignorant and uncultured. He who practices his profession chiefly from a mercenary motive does not, either in action or words, honor it as he ought, nor is he capable of exercising the desired influence upon the public as he would under the stimulus of high and noble motives, viz; the intent and determination to render to every one who comes in his charge the highest possible service.

A large proportion of the students who enter our dental colleges have very crude ideas with regard to true professional status and honor. Many enter upon the preparatory training with no higher ideas of the character of his prospective calling than the apprentice to the blacksmith or carpenter. His mind too often is upon the question, how can I make the most money, and how can I most quickly gain notoriety? Now, the correction of all these false conceptions devolves in the main upon those who have in charge the student's professional education and training. This is quite as important as his instruction in the principles and practice of his profession, but it may be said as it often is; "It is not the business of the dental colleges to teach ethics." In this day, however, there are few indeed who will clearly and pointedly venture this criticism. Why should not he who is helping the student in preparation for his life work, do all he can to make that preparation as complete as possible; not only store his mind with the knowledge of principles and train his fingers to the highest manipulative skill, but also give him such ethical training as will best prepare him for a successful career; often this is as much dependent upon deportment and correct manner as upon knowl-

edge and skill. I do not hesitate to affirm that no teacher does his full duty to those in his charge, who neglects the inculcation and fixing of true ethical principles, not only in the mind, but stamping them in to the very core of his being. Progress is being made in this direction, but there is room, and indeed great need for improvement yet; but it is coming.

At this point, permit a suggestion, or rather an inquiry in regard to equipment and facilities for giving instruction in our dental colleges. In this matter I am free to say that upon the whole, never were the dental colleges so well prepared for the accomplishment of their work as to-day. I have naught but commendation for a large proportion of the faculties of our colleges. It may with fairness be said that they are earnest and faithful in their work, and as successful as can be expected with their facilities and enviroments. In regard to the curriculum of some of our schools, at least, there might with a decided benefit be an extension; branches ought to be included that are omitted altogether. This, it may be observed, is being remedied. Additions are being made each year. Extention of the curriculum usually requires additional teaching force. The condition of buildings in which much of our college work is done, is so defective as to render it impossible to accomplish the best results. Quite a number of the colleges of our country have secured model buildings, others are hoping in the near future to secure adequate accommodations; but for the present there is great want in this respect.

In the present important methods of teaching, ample room and proper arrangement are required for the accomodation of each department of the work. The best and most approved equipment should be employed. Good light is a necessity. Natural light is always best. Artificial light should be avoided whenever possible. Thorough ventilation should always be secured. The arrangement and environment ought to be pleasant and inviting. These conditions should receive the earnest attention of every educator in the profession. Every dental school should have a museum fully furnished and supplied with every preparation serviceable for illustration in teaching; pre-

parations of the natural organs, as well as enlarged models of the same are indispensable for the full presentation of many subjects. Knowledge is communicated through the eye as well as by the spoken language to the ear, and indeed many receive knowledge more readily and more effectively by means of sight than by the spoken or printed word—hence, the importance and value of facilities for object teaching. Quite a number of colleges have more or less material proper for a museum, but none have all they need, and it may well be questioned if any have the material now in their possession arranged systematically as it should be to serve the best purpose. What would be thought of a literary or scientific institution of learning without a library or museum? The general verdict would be, deficient in equipment, therefore defective in work.

In addition to a good museum, there should be in every dental college a good library which should embrace all the standard works on the science and art of dentistry and a complete series of the dental journals, especially those in the English, and if possible, those in foreign languages, also the published transactions, so far as attainable, of all dental societies should have a place in such a library. In addition to these, every work that has been written in any language, in the past, so far as possible, should be included. In such a library other books than those strictly pertaining to dentistry will often be found desirable, such as dictionaries, works on comparative anatomy, hygiene, etc., etc. A well arranged and systematized library will be highly appreciated by earnest and educated students. The manner of utilizing such a library will be modified and determined by the number of students desiring its privileges. It would not be practicable to make such an one a circulating library, and hence, a well arranged and orderly reading room in connection with the library is a necessity. A few of our schools have done something in the way of providing these facilities and are doing what they can for increasing them. None that we are aware of have a completed equipment in this respect. In some of our schools at least, there is an entire want of interest in this matter, but attention is being more and more turned to the supplying of this great need.

The same criticism in regard to dental teaching may be made, that is often indulged in, in regard to the course usually pursued in the teaching of general medicine, viz: that there is relatively, at least, a deficiency in the study of hygiene—the laws of life and health: The chief effort is expended in the consideration of disease, its phases and management, and altogether too little attention devoted to its prevention. While the highest skill in treatment of diseases should be exercised, it is not as important as the ability to ward off and prevent recurrence of disease.

Doubtless there is room for improvement in the text books used in the dental colleges; up to within recent years these for the most part, have been prepared with reference to the general practitioner more than to the requirements of the student while the latter ought in some sense, to have the first consideration; and more now than ever before, for though the college is the only recognized way of entering the profession, and a far larger number are coming in, than ever before, at least sufficient in number to entitle them to some consideration, in the matter of proper text-books. The practitioner relies more upon the periodical literature for his reading matter than upon the standard works, and it is by no means so important now to have such works as in former times; but it is more important, to have properly prepared text books for the student than ever before.

An effort was made a few years ago by the National Association of Dental Faculties to have this want supplied, but the effort has not been as successful as was anticipated. A few responces have been made to this effort, but a great need still remains to be met in this direction. When this is accomplished another much to be desired change will be put upon the highway to hopeful realization, viz.: harmony, and unification in modes of teaching, and in requirements. It is gratifying to know however, that influences are in operation leading up to this desired object, and mainly through the National Association of Dental Faculties." This organization has done more for the promotion of harmony, unity, concert of action, and procedure, than all other agencies combined. Through the instrumentality of this body, the standard of entrance requirements has been much ad-

vanced, the curriculum and coarse of study made broader, the requirements for graduation have been raised, the qualifications, and endowment of prospective students, are now more closely scrutinized than ever before; and the time of the annual session has been, and is being increased. Justice requires this statement, that all this has not been wholly accomplished by the Association above mentioned, but that it has been the chief factor, none will deny. The American Dental Association has for years devoted its influence to the advancement of dental education, giving encouragement and counsel, to those aiming for the best things, and uttering caution to those who persistently go on low levels, or indulge in ways adverse to the interest to a true professional status.

The National Association of Dental Examining Boards, has exercised a wholesome influence upon the dental colleges of the country.

Now in view of all this, let us not conclude that Utopia has been reached, that nothing remains to be done. In nearly all the particulars of progress above mentioned, let us bear in mind, that only a transition state has been reached, that and the responsibility of carrying onward and upward, the work so well begun rest with the men of to-day, such as those who constitute this Pioneer Body.

When we look abroad over our professional field, and find so many needs, so many lapses, so many voices out of tune, so many movements in the wrong direction, it is no wonder that discouragement takes hold upon us, but let us not yield to its depressing influence, there are also many things to encourage. Indeed we can look with pleasure on many things pertaining to our profession, and perhaps none for which we should be more thankful than for the unity and solidity that are prevailing characteristics in its ranks. There is no element of discord to produce contending factions. Occasional agitations that have occurred have after a brief period passed away. Our profession presses forward in solid column to the accomplishment of the great objects of its being; and while all its members are supposed to be independent thinkers, and capable of drawing their own conclusion, and decid-

ing mooted questions, yet whenever important matters affecting the whole body arise, there is great unanimity and harmony of views and action.

Nowhere can a class of men be found, so free, yet so firmly banded together, without division or factions. The frequent coming together of the profession in more than a hundred dental societies in all parts of this broad land, for a common purpose, with a common sympathy and strong fraternal feelings, emphasize in a marked manner the unity of the dental profession; thus do we occupy enviable ground, which should be utilized in discharging the duties and responsibilities devolving upon us. We have no intestine struggles in which to spend our strength or divert our energies and naught to do but go on and fill the high behests before us. Is it then a marvel that such great and rapid progress should be made, and that in the race for high achievements dentistry should be abreast of even the foremost? Let us be careful that our work does not lag. The dental profession is one of the battalions of the great army engaged in the warfare against disease and the ruin it works. Let us then press on to that great victory, when disease shall be conquered and death shall no longer sit regnant as "King of Terrors," but shall be relegated to the position of the kindly porter to open the gate for the easy passage of redeemed humanity, from this to a higher sphere of activity and enjoyment.

DISCUSSION.

Two of the gentlemen named on the programme, to discuss the same, Doctors Crouse and Bethel, being absent Dr. Sage, of Cincinnati, the remaining discusser, spoke as follows:

Mr. President and Members of the Society: I am constrained this morning, in rising to address this Association, to do what I have often deprecated in others, that is, apologize for lack of adequate preparation. Time for such preparation has been short and my opportunity limited, and I do not feel myself in a position to discuss the subject with the thoroughness which its importance merits. In listening to the reading of the address by our President; however, there were several points to which I am particu-

larly constrained to give attention and to touch upon briefly. The first is, with regard to the statement which Dr. Taft makes in his opening, in substance that the dentists, as a body, are not sufficiently self-respecting; and that the dentists as a body are not, therefore, held in the high esteem to which we feel our profession entitled from those outside, meaning, I presume, our patrons, those who come to us for our services. This is a singular fact, which from my first entrance upon the practice of dentistry I have observed. And, if I mistake not, at the very first convention which I ever attended, and which, by the way was a meeting of this same Mississippi Valley Dental Association, this very matter was brought up. I then thought and still think, that dentists are not sufficiently self-respecting, and are not held in the high esteem that those in other professions are regarded. Now, accepting this as a fact, we come to the inquiry, what are the reasons of it? Why are dentists not sufficiently self-respecting let us first ask. In other words, why do they not thenselves hold their profession in sufficiently high esteem? I admit that there are in the profession many men who cannot be charged with a failure to properly esteem their profession, but who give themselves heart and soul to its practice, and have dedicated their best efforts to its advancement, and never for an instant deviate from their devotion to it. Such men are never distracted by the allurements of other professions, but remain content to be dentists and dentists only. For my part I have always envied men of that particular description; while I have sometimes, I will confess, stopped and asked myself the question—and if I say anything heretical here I am ready and willing to be called to order, and receive any admonitions in the way of keeping my mouth closed that any member chooses to give me—but I say the time has been when I myself have stopped to consider whether, in view of the laborious effort put forth and required of the student of dentistry in preparation for practice, and considering all the further pains-taking effort necessary after he gets into practice, whether the average student would not do better in some other calling? That question, I am afraid I must confess, has arisen in my mind more than once. I have thought, with respect to the profession

of the law, whether I could not, had I followed that which is generally recognized as the leading profession, and the one which furnishes the highest rewards and the most tempting perquisites of all the professions,—I have somtimes wondered whether I could not have made more money and have acquired more influence, and exercised my natural talents better in that sphere than in the one I chose? I say, I have sometimes asked myself that question, in the past; but now, so far as I personally am concerned, I am satisfied to answer that question in the negative. I think not. I think I know what the qualifications of the lawyer are, and what a lawyer must be in order to achieve success; and I do not think, so far as I am concerned, if you will pardon the egotism, that I have the qualifications which would have enabled me to become eminent in the practice of the law. Then the other professions, of medicine and the ministry, generally recognized as the leading professions—for, however it may be considered as derogatory to our claims in the dental profession, according to the strict definition of the term "profession" in "Webster", we are not in the category as professional men. We are rather what may be designated as semi-professional, not strictly professional, according to the definition, which describes a profession as a body of men engaged in any pursuit, not mechanical, agricultural or the like,—which definition, you will see, does not fit us altogether. So far as I personally am concerned I have been content to let these matters go. I don't care whether ours is a profession, or not; although I think we have a perfectly good right to claim to be a profession. The dental body, however, in the ordinary acceptation, does stand in an anomalous position in relation to the other professions; it occupies a position almost impossible to define; the metes and bounds of its proper functions have not as yet been ascertained and established. We can extend them almost indefinitely, as for, example in the direction of the treatment of tumors of the mouth and oral surgery, and to other departments now pursued by other specialists, if we choose. From my own stand-point, I consider, however that our proper province is to improve our present methods, not seeking to enlarge the boundaries of our ministrations. The public do not expect of us that we be physicians. I

do not mean by this to say that no one who practices either profession may not practice both, if qualified. But the public will measure us, so long as we profess to be dentists and invite them to come to us for ministrations in that direction, according to our abilities as dentists. While then every thing should be done to elevate and dignify our profession, it should be done in the direction of elevating dentistry in itself; not that the other may not be superadded, but let us stand upon the dignity of our own endeavors for the alleviation of human suffering in the lines we have long established, and not attempt to cloak our imperfections, if such may be justly imputed to us, by any borrowed splendor such as may come to us through a forced alliance with medicine or surgery. Dentistry will be best dignified by perfecting its methods, and so deserving the esteem and the gratitude of the public whom we serve and whose regard we would like to have. I say, then, that the discontent which some men feel with their own profession of dentistry, grows out of mental comparisons of their own standing as compared with that of other men in other callings; yet this is all comparative, of course, and I don't see anything in it to my mind of great importance. You will find in the villages and smaller towns lawyers who are supposed to be men of learning and high mental acquirements, who are not respected merely because they are lawyers; perhaps they are without briefs or cases, seldom appear in court, unless it might be, to champion a small suit in a squire's court, nevertheless, they have a certain following and command respect as men, though not as lawyers. On the other hand, the dentist around the corner, in the same village, having his office over some little grocery, perhaps, is constantly busy, is making money, and is esteemed even more highly than the lawyer in that community, even more highly than the physician, if he has a larger practice. Therefore it appears, that looking at the matter from the stand-point of the public, it is a question of money that measures the respectability of the dentist; if the dentist's wife wears a seal-skin cloak he will soon command the respect of the community. This, however, has nothing to do with the inherent respectability of dentistry; it is a respectable calling of which

none of us ought to be ashamed; we should rather be proud of our profession. It all resolves itself down to the question of individual qualification. If a dentist is a gentleman of refinement, and of intellectual attainments, and adds to these qualifications, industry and social standing—and we will include, money—for that is indispensable in some communities—I say he will be respectable, and his calling will be respected. I used sometimes to think, when I first came into the profession, that there was too much of a desire to elevate dentistry by adventitious means, that there was too much of an attempt to put it on a factitious and fictitious basis. Attempts were being made to rai-e it a little above the grade of a trade, in which latter light the public seemed disposed to regard it. And for this view of the matter the public could not be altogether blamed, since it is but a half-century since dentists were held to be the same as barbers, and in fact sprang from the ranks of the barbers. Time will make all this right. In this half century, dentistry has made magnificent strides. The public are hardly to be blamed if they can not yet fully realize the advancement made. But they are learning, and when you meet a man in the street now he calls you "Mister." Perhaps you have a new servant-girl, and she calls you "Mister;" and people come to the door, and say, "Is *Mister* Jones in? I want a tooth pulled." That is the only idea many have, even to this day, as all had once, that the dentist is a tooth-puller! They don't know anything about the treatment of teeth—don't care anything about it, don't appreciate it, unless you do it without any pain; then they do appreciate it sometimes. But these things will all change in time; all we have to do is to attend to our business, perform our work in the world properly, thoroughly and conscientiously, labor as best we can to alleviate the sufferings of man and woman-kind, put their teeth in order, and avoid quackery, and we will reap the desired reward in time. It is not necessary for us to do anything further about it, or resort to any outside influences to bring it about; but, at the same time, I don't fail to appreciate the instruments, the means that are being employed to elevate dentistry, adventitious outside means, if you so choose to term them. This meeting of this Association is one

of them. What do we meet here for? Not merely to exchange ideas of practice of dentistry, not merely to consult with one another as to how to fill roots; we know that although a secondary and remote object it is none the less an important one, that we impress the great public. We all know that; we don't say much about it, but that is true; and it is right that we should aim to do that by all proper means. It is all right. And we must impress the public with the idea that we are better than mere tinkers, or they will never be got to believe it. People are not grateful to their physicians; they are grateful to the trained nurse that comes to the bedside, and under the instruction of the physician, mark you, attends to their wants and alleviates their sufferings, prepares the medicines, and administers to their needs. They are grateful to the nurse, but not always to the physician, who is further back behind the throne and whose skill and painstaking research has made all this possible, and has brought about their cure. They don't think so much of the physician. And so it is with regard to their estimate of us; they come in, and if we treat their teeth, stop their tooth-ache, they go off and don't think of us again until the tooth begins to hurt again, or the face swells up; then they come back, not because they are grateful, but because they have the tooth-ache again. They will learn to be grateful as time goes on. They will find out—it is astonishing how many do find out—that we are not mere tinkers.

Another point that Dr. Taft made I was interested in, was what he said with respect to the difficulty which the public have to discriminate between the quack and the professional dentist. If I had not known the Doctor so well I would have thought he meant to be amusing and satirical there. That is one thing we have to contend with, the opposition of quacks. They use the same instrumentalities, and can fit up their offices as well as we can; they can administer to their patients as well as we a good deal of the time, and it is a hard thing for us to make patients believe that they are quacks. I know I have had patients come into my office and say "I went to some Steam Dental establishment, and they can pull a tooth as well as you can do it, and I believe a little better (laughter) I went there

and got a bridge put on. You would not put it on; you did not think it a proper case; and I have had it on six weeks, and I am satisfied it will last sixty-five years." That is what we have to contend with. It is useless for us to say to them that we have been practising twenty or twenty-five years, and this other somebody has been practising but four or five years, and cannot know as much as we do. We cannot tell them that it is not in accordance with the code of ethics. We cannot do that in our business. But still, I think those things will right themselves in time.

Again as to the matter of elevating the profession, although I am not much concerned about it; you must get men to quit cutting prices in the small towns; every one wants to make a plate for less than his neighbor this can only result in bringing the estimation of the work to the level of the tinker's and cobbler's. That does not tend to increase the respect of the public for us. Not that charging big fees is to make us respectable; I cannot do that all the time; but I don't regard myself any the less respectable on that account.

We have too, to avail ourselves of these outside aids, such as the study of medicine. Even though we don't use the knowledge of medicine the public will set more store by us if we have taken such a course. I think the time will come when all will have a medical degree; I hope so. Or, at all events I am willing to pay this compliment to the dental colleges, that I believe with their extended course of study, they will prepare their students as thoroughly as the medical colleges. I don't know whether in the future there will ever be any final fusion; but dentistry is practically a specialty of medicine, although all dentists are not medical specialists, unless they have a medical degree.

Another point: Nobody, I presume, has ever questioned the propriety of instructing dental students in ethics; at the same time the students in our dental colleges, who come and pay their fees for instruction in dentistry ought to be taught all they can acquire in the college pertaining to the practice of their profession and professional ethics. I have sometimes also wondered

why they have not established in dental colleges a chair of *belle lettres*, such as they have in classical colleges. Then the students need to be enlightened as to the how to do it and how not to do, in their occupation as dentists. Let them be instructed as to the management of the details of the business part of their profession, such as the amount and collection of fees, the reception of patients, etc. We can all look back over our earlier experiences and see where we could have avoided this or that error if some one had apprised us in advance of the little things that it is necessary to know, and which taken together make up the sum of business life. I do not consider such instruction beneath the dignity of a Dental College. It should embrace in its curriculum everything of practical value pertaining to the profession of dentistry.

I don't know that I have anything more to say on this subject and will make room for those who may have other points they wish to speak upon. There are others which deserve a thorough discussion.

On motion of Dr. J. TAFT, duly seconded, the privilege of the floor was extended to all present, whether members or otherwise and all were invited to participate in the discussions.

DR. HARRY B. RESPINGER, of Genava, Switzerland, was called upon and responded as follows:

MR. PRESIDENT, Ladies and Gentlemen: I will say a few words with regard to the practice of dentistry in connection with medicine. There has been, as I notice in the dental papers a great deal written in regard to this matter. In Europe, as well as in this country, we are tending to an advanced education of dentists, the giving of a good foundation, but I believe we may be going too for. I think that it is a mistake to require of a dentist a thorough medical education. While it may be well enough for him to have such knowledge, yet I do not conceive it to be any more a necessity than it would be for a pharmacist to have a complete medical degree; or pursue a course of study in medicine proper. I think it well to lay a sound foundation, but I think in many instances we may be going too far. I believe that by such a course we don't really advance the practice of dentistry. I do not think that a young man should be required, as is done in

Europe, to spend three years, or four years in studying medicine proper, and then to give to dentistry itself only a year or a year and a half. I think that is entirely a mistaken idea. Dentists in former days had medical knowledge, certainly, perhaps, very inferior to what we have, but they spent the most of their time in preparing themselves for their profession, by which they were to do good to mankind, and they were often men fully as capable as those of the present day. And thus, if I had to give my opinion on the matter, I should say, that I believe the curriculum of study as required in this country is certainly as good if not superior to our curriculum in Europe, where we demand of our dental students a two year's medical examination and a quantity of other matters which really afterwards are thrown aside. Not that I will say that it is useless, but it does not advance the student in his profession for which he is preparing. There is, however, one thing which I think is more important than the gaining of a professional education, that is, of a professional medical education ; and that is, to require a general liberal education. I believe by this means dentistry can be much further advanced than by the medical requirements. I do not certainly know it, but I believe, that in many schools in this country young men are permitted to enter who are really not far enough advanced in general education, they have not attained the proper standard, their intellect is not prepared for it, and thus their prescribed course of study is fruitless. I believe there should be a standard of education required, and that no young man should be permitted to enter a dental college until he has given proof, either by examination or by diplomas, from high schools that he is fully qualified to enter the dental profession. Thus, if I were to resume what I have said here, it will be, that I believe, that the profession at large could be further advanced by demanding from the students a liberal English education than by requiring students of dentistry to sit together for years on the same benches with medical students, and take a lot of degrees in subjects to which they cannot pay the same attention or take the same interest in, because they know that afterwards they will not be of immediate use. And by an English education I do not mean the preparatory education

such as is demanded in England or on the Continent of Europe, where they require of dental students six or eight years of Latin and as many years of Greek. I believe that is perfectly superfluous. Certainly, a Latin education, such as can be obtained in three or four years is, to my mind, perfectly sufficient, perhaps even more than enough. Such an education is very good for understanding difficult expressions which may be used at will. I really think an education necessary, sufficient to qualify a man, after he has entered his profession to write a paper without making forty or fifty mistakes in five or six pages, such as I have seen them do here in our Universities. Students should have a full knowledge of the English language, and should be required to know at least one more (Foreign) language, so as to be able to follow papers, in the different periodicals, which may be written for for the profession at large. I believe that is all I have to say on the matter. It is of no great importance; but it is my idea, and I have been pleased to state it.

Dr. H. A. Smith: I have nothing especially to say. I have listened to the address of President Taft, and it occurred to me that if he would read that to the Faculties Association it would be well. Dr. Sage, in his somewhat protracted speech,—(Dr. Sage: I asked you to call me down)—said he was out of wind. Dr. Sage gave us some sage advise on business matters; but he is wrong when he intimates that the Dental Colleges do not teach their students ethics, and that they do not discuss fees in a mild way, also. The people who get the best fees never say much about them anywhere, even to the patients. What I wanted to say to you was that Dental Colleges do teach ethics; they teach their students, impress upon them as much as posible the better methods in business, and in conducting their practice; therefore, it is not necessary for us to take another course in the dental colleges, but go around and visit the institutions and become better informed than to get off such statements as those.

Vice-President Ames then called upon Dr. Harlan, of Chicago, who spoke as follows:

Mr. President, Ladies and Gentlemen: I listened to the President's address with considerable interest, and to the address

of Dr. Sage. I do not know that I care to criticise the President's address, because most of his suggestions and most of his desires for the present needs of dentistry meet my own. In discussing some of the points that were brought up by Dr. Sage I should like to dispose of the quackery question first. The number of dental quacks, or the number of quack establishments in any city of any size do not interfere with the legitimate practice of dentistry to any extent anywhere. I think in the city of Chicago, where there may be thirty or forty advertising establishments of that kind, that legitimate dentistry does not suffer, but holds its head triumphantly above all such methods of gaining patronage; and certainly holds itself far above the operations that are performed in such institutions. Legitimate dentists, are largely, men of judgement and education and skill; and if they combine these three qualifications, why, there is no quack establishment in the world that can stand by the side of them. Legitimate dentistry is practiced honestly; there is no attempt to deceive. That puts every legitimate physician or dentist on a footing upon which any legitimate practitioner can stand.

With reference to the thorough education of dentists, it is almost universally put into practice; the dental degree in the United States is essentially a D.D.S. degree; the dental degree in England is L.D.S., or Licentiate of Dental Surgery; and the dental degree in every country where there is a dental degree is separate from the medical degree; there are only two countries in the world that require that dentists should have a medical degree, and those are Italy and Austro-Hungary. In Russia and Finland and Germany and other countries there is a separate dental degree. It is universal. The degree may not always be designated by the same name, but the requirements are about the same; in other words they all have a dental degree that is applicable to dentists and to dentists only.

The very excellent remarks of the gentleman from Switzerland, with reference to the education of dentists I heartily approve; that is, if a man has to spend a certain number of years, it is much better that he should spend some of those years in the acquirement of a foreign language than in being grounded in

some department of science, or in some branch of technical knowledge which will prove useless to him in his future practice of dentistry. The curriculum, in the fundamentals, it seems to me, should be—and practically is—the same; but when you come to the point where you start off into the theory and practice of the art and science of medicine, or the art and science of dental surgery, then the paths diverege, and the education of each in his particular line should be distinct from that of the other. Prior to that there should be no distinction; and in the minds of the best educated people in the world is not any distinction.

Now, as to the estimation in which dentists are held by the public, that is largely a matter that depends upon themselves. If dentists are simply money-grubbers, as some physicians are, the public estimates them at their own worth. If a dentist is not progressive, why, he stands in the same relation to the public that the unprogressive physician does, or the lawyer. In every community that has been long settled in this country you will find that the dentists are aldermen and common councilmen, and members of boards of education, mayors and county officers, etc., the same as their fellow-citizens, where such political duties will not interfere with the proper exercise of their profession. In Illinois we have quite a number of men who are members of the legislature; but dentists as a rule do not seek political preferment of that kind, who are engaged in dentistry or medicine. It interferes with the consecutive attention to their practice, and in that respect is many times detrimental to them. There is no reason why men should not serve on the board of education in the city of Chicago or Cincinnati, or that a dentist should not be a member of the library board; or that he should not be a member of some other board of that kind. I think that only twice in the quarter of a century that I have lived in Chicago, have I known a dentist to be a member of the board of education; but I think this state of affairs is due more to their evident lack of desire to give the necessary time to the performance of such duties, than because the mayors during that time have been unwilling to appoint them. I know two or three instances where members of my profession have declined honors of that kind, because it would take so much of their time.

The working years of a dentist, are shorter than those of a physician, on account, principally, of the physical labor that a dentist has to perform, which many physicians do not; and so, when a dentist arrives at sixty or sixty-five years of age, many times, he is unable to endure the physical strain, which a physician is not called upon to undergo; and the dentist's advice at that age, perhaps would not be sought for, when that of a physician of the same age, would be. So we can not parallel the two professions from the beginning to the end of their career.

I believe that the dental profession is growing in the estimation of the public, and that, in spite of what Dr. Sage says, there are very many grateful people—grateful in many respects.

The question of fees, I think, might with propriety be discussed occasionally; but what my fee should be for a certain operation might not be the one that you would require or desire, and so you can not establish any absolute uniformity in that regard. I do not think there is any minimum, or maximum, that you can establish, that will meet all cases, unless it should be outrageous in either extreme.

The teaching of ethics in dental colleges is a matter that I thought had received attention. It perhaps receives more attention now than it did twenty years ago, or before that time. I should say that ten lectures during a term might well be devoted to a combination of ethics and jurisprudence; and that it would not be a bad idea for any and every dental college to establish a lectureship or professorship, that would embrace those two subjects; and they might include in the ten lectures one or two devoted to a consideration of the requirements of dental practice.

While I am on the floor I would like to say that this is the twenty-third year since I became a member of this Association; and I am glad to see that there is such a large number present to-day.

Dr. Sage: In what I said about the practice, I wished merely to account for the estimation in which dentists are held, generally. In many cases the quacks perform operations which are for the time being satisfactory, and apparently as good as those of the honorable dentist, notwithstanding that deception

is practiced by the quack and he will in the end be found out. But the public, in the present apparent success do not always discriminate; they do not consider the eventual injury; and this is what is holding dentistry back. I say that the fact that there are such quacks, as Dr. Taft says, operating in the field of dentistry, is calculated to confuse the public as to who are honorable practioners and who are not. That drawback to regular and honorable dentistry will be overcome in time.

President TAFT: The Executive Committee has not fixed the hours for these meetings; has anyone a motion looking to that?

On motion of Dr. Betty the hours of meeting of the sessions of the convention were fixed at 9 to 12 m. and 2 to 5 p. m.

Chairman AMES: What is the pleasure of the Association in regard to the present discussion? Will we continue it in the afternoon session?

Dr. TAFT: There might be a half hour devoted to the continuance of this discussion. There may be other members desiring to speak, and we would like to hear from them. I offer that merely as a suggestion. Our time, of course, is limited.

On motion it was resolved to devote the first thirty minutes of the afternoon session to further discussion of the present topic, each speaker to be confined to five minutes.

On motion adjourned until 2 p. m.

AFTERNOON SESSION.

Convention met pursuant to adjournment, Dr. J. Taft in the Chair. The Chair requested those desiring to participate in further discussion of the topic last under consideration to respond promptly, as it was fifteen minutes past the hour set for reassembling, and reminded speakers of the five minute rule.

Dr. W. H. GILLETTE, of Cincinnati: Having been present this morning, I was very much pleased and gratified at the address of our President. I would not deign to say very much on that or mar its beautiful contents; but some of the remarks made as an outgrowth upon that, I beg to differ with. It was stated that the quack is not a detriment to the profession generally. With

all due respect to our Chicago brother, I beg to differ with him. It might not hurt some members of the profession, who are away up on top; but quackery does hurt those who can least afford to be hurt. I speak from personal experience. And if those of us who are in the lower ranks of the profession are affected by this thing, those in the higher positions will ultimately feel its effects. If the base of the mountain is not fixed its top will eventually tremble and fall. Probably the gentlemen who have preceded me have been on the top, and never started from the base; they are honest in their opinions, no doubt. But there are thousands like myself who start out each year, and who have to battle with the elements of the world, and who have not any amount of money to begin with, and we have to cope with the close competition, and one thing and another, of the cheap dental establishments, cheap advertising concerns and cheap private concerns, and the dental colleges. I must say that though I admire and love knowledge, wisdom and intelligence; yet they alone will not support men. A man may have all the wisdom, all the understanding, that is desirable and necessary to run a dental office, but what does it avail him, if he has not the dental office to run? Now, I mean by this, that I have seen men possessing great ability, great understanding, great intelligence, and getting a large fee, whose work was not worth absolutely anything. So that knowledge, wisdom, understanding, much as they are to be desired, are not all that is necessary in order to be successful dentists. Knowledge is power. Knowledge is power, and it is not. It is powerful in so far as we can apply it; but if I possess all the knowledge in the world, and have not the opportunities to apply it, then it goes for nothing. So I say that quackery does hurt. Just below me there has started out, as I see by the sign, so-and-so dentist; he has matriculated in one of our colleges, but he has not a certificate, has not passed the State board, or anything of that kind. Of course we have a way to govern that; we simply can shut him out; but does that right the wrong? No. After we shut him out what we want to do, I think, is to make the requirements more strict. The dental colleges may have the requirements, but are they on paper, or do

they require certain things that ought to be, from those who are going to enter into the colleges, and expect to graduate therefrom. Now, knowing this, are such men, are such quacks eligible to go through the dental college? I think something ought to be done to protect the profession.

Dr. Taft: The half-hour is not yet consumed; has any gentleman anything further to offer? If not we will pass to the next order of business.

Dr. Fletcher, of Cincinnati: It seems to me that the author of the paper should have an opportunity to close the discusion before it is passed, if he has something further to say. I would be glad to hear from our President, if he has.

Dr. Taft: I have nothing to say on the question which is not stated in the paper itself. There is nothing I care to discuss. The time is about up, and as our program is very full we will be compelled to work very closely to it, if the ground is to be all covered between this and tomorrow evening. If there are any further remarks we will hear them; if not we will proceed to the next subject, which is a paper by Dr. Callahan, on "English Tube Crowns for Bridge Work." Is Dr. Callahan present? (No response.) Dr. Callahan not being present we will proceed to the next subject.

[*To be Continued.*]

The Lay Press and the Medical Profession.

The *Cleveland Leader* in most candid fashion thus punctures the bubble of newspaper opposition to medical-practice acts:

"The truth is, we are ashamed to confess that the reason why it is easy to purge and guard the bar, and impossible, apparently, to protect the medical profession from defilement, must be sought in the large advertising patronage given to newspapers by quacks. For selfish and unworthy considerations the more cowardly and avaricious portion of the press is always willing to help the cormorants who masquerade under the guise of physicians, defeat bills to drive them out of business or out of Ohio. If there were no money for base newspapers in the toleration of the ignorant and unscrupulous persons who prey upon the public as doctors, they would very soon be expelled."—*The Medical Age.*

MONTHLY DIGEST.

Operative Dentistry.

(*Continued from Page* 201.)

PREVENTIVE DENTISTRY

Is the subject of a paper by Dr. I. P. Wilson.* The first great preventive measure is oral hygiene, in which it is the duty of every dentist to instruct his patients—especially parents—that they may in turn instruct and properly care for their children, and to do this successfully, the dentist should himself be the example of what he would have his patients be. The writer said: "It is the privilege of every dental practitioner to build up a clean, desirable practice that will not give him discomfort nor endanger his health." This being admitted, it follows that those who fail to appreciate information and advice along these lines, and who persist in the disregard of hygienic laws, asking only for *freedom from pain*, should be dismissed, out of self-respect and regard for health and comfort. A very important point in preventive dentistry is the proper treatment of enamel fissures in immature teeth. The writer advises against any excavation—syringe thoroughly with warm water, dehydrate with alcohol, dry thoroughly and fill with cement, placing the dry powder over the filling and pressing firmly with the finger, forcing the cement into the remotest recesses of the fissures, holding the finger in place to exclude moisture until crystallization has taken place. This will preserve the teeth through the early grade of immaturity, preserving all of the tooth structure, retaining the natural color, and without inflicting pain. "Preventive dentistry should be practiced more by the profession than it is, and our patients will not be slow to appreciate our efforts and remunerate us more willingly for preventive treatment than for more taxing services."

* Dental Digest, February, 1895.

PYORRHŒA ALVEOLARIS—ALVEOLAR ABSCESSES ON TEETH CONTAINING LIVING PULPS.

A short paper on this subject, citing a typical case, by Prof. W. D. Miller, was read at the American Dental Society of Europe.* He said: "Abscesses of this kind are now put down as the result of a deposit of uric acid, or urates, in the pericementum, in consequence of a general gouty diathesis, and is considered as evidence in support of the view that pyorrhœa alveolaris must have a similar origin."

In the discussion of the subject, DR. HUGENSCHMIDT said that when a patient, showing buccal manifestations of this diathesis, has no knowledge of gout in the family, skillful questioning will generally elicit the presence of rheumatism, migraine, asthma, eczema, or other manifestations of the arthritic diathesis.

DR. BRYAN cited a case found in his own mouth, and said that Prof. Black had recently described this class of cases, which he classifies as a distinct form of pyorrhœa.

DR. MITCHELL also cited a case similar to that described by Prof. Miller. The swelling was about the size of a pea. There was no pocket, and nothing else abnormal visible. The pulp was alive.

The same subject was discussed by the Academy of Stomatology (Phila.).† DR. BURCHARD described a case in which the swelling was located near the apices of the roots of the superior lateral and central incisors, with marked fluctuation at the summits of the swellings and some turgescence of surroundings. The dental ligaments were intact at the gingival margin, with no evidence of inflammation for half an inch above. The swellings disappeared with the administration of tartarlithine, but reappeared exaggerated, coincident with an attack of acute muscular rheumatism.

DR. KIRK cited cases in his own mouth, and said: "The best way to know a thing is to know it by personal experience." The pain, he said, was such as "any one who has had an alveolar abscess knows a great deal about." He is very sure there is not

* Dental Digest, February, 1895.

† International Dental Journal, March, 1895.

a dead pulp in his own mouth. He has also a duplicate case in the mouth of a lady patient. He believes there will be a record of pyorrhœa following this latter acute inflammatory outbreak, and that in these cases we have almost certainly the original lesion which induces the pyorrhœal condition—or the origin of one variety of it.

Dr. DEAN has a similar case, the tooth responding to all tests for vitality.

Dr. GASKILL had had a case with fistula between the first molar and bicuspid. Being unable to determine from which tooth the trouble arose, he drilled into the bicuspid and found a vital pulp, as also in the molar. The fistula was healed by systemic treatment. The same condition presented later, on the other side of the mouth.

DRS. CURRY, REGISTER, ROBERTS and LOUIS JACK cited other cases of abscesses on sound, live teeth. D. JACK said that he had seen so many cases that he is confident they exist more frequently than is supposed.

DR. TRUMAN is skeptical on the point, and questions if proper discrimination is made between vitality of the roots. The pulp in one root may be entirely dead, and in the other still alive, and in that case abscesses would occur from the dead pulp in one root. He said: "I have no belief that abscesses could occur near the apex of the tooth, and the tooth, or that root, retain its vitality." In the cases cited above, however, a number of the live teeth having abscesses were single-rooted teeth, *viz:* Dr. Miller's, a left superior central incisor; Dr. Bryan, a lower incisor; Dr. Burchard (Dr. Gilliam's patient), a superior lateral and central incisor; Dr. Kirk, an upper cuspid; Dr. Deane, a lower right central; Dr. Register, a lateral incisor.

DR. A. V. ELLIOTT, Florence, Italy, read a paper on "Pyorrhœa Alveolaris," before the American Dental Society of Europe.* He said that without going into the hair-splitting questions which are current to-day, practical experience had taught him that there can be no hard-and-fast rule applied to this disease; its most striking feature is its contrariness; the *Eureka* of

* Dental Digest, February, 1895.

yesterday becomes the discouragement of to-day. Though the pathology of the disease had not received very close study previous to the days of Riggs, he has found evidence in the skulls of the most ancient inhabitants of earth, of the ravages of this disease from the earliest days of man on the earth, leading him to the conclusion that "a given set of conditions invariably produce a given result," and that pyorrhœa alveolaris is but "the result of a tendency in the original constitution, acted upon and developed by favorable circumstances." A bad way of living induces bad blood and impure secretions. Nature will not suffer violence without revenging herself sooner or later. He mentions among the favoring conditions in those predisposed to this disease, *first*, a lack of exercise of the teeth, and, *second*, improper cleansing of the teeth. There is nothing new in the treatment indicated in the paper—the usual removal of deposits, washing out of pockets, disinfecting mouth wash, a stimulant application to the gums, and gum massage; finally, exercise by "chewing gum or anything else except tobacco, in which case the remedy would be worse than the disease."

To a similar treatment, Dr. Du Bouchet (Paris) adds: "For those obstinate cases considered as a manifestation of the uric acid diathesis, a regime of *sweet cider*," by the use of which he has obtained a number of vastly improved cases, as well as some apparently cured—the rationale of the treatment being that "through the systemic action of the malic acid, uric acid is transformed into hippuric acid, which has not the inconveniences of the former."

CANCER OF THE TONGUE.

Dr. E. W. Stevens (M. D.) read a paper on this subject before the Academy of Stomatology (Phila.).*

He said that while sarcoma of the tongue is rarely seen, epithelial cancer is more frequently met with in the tongue than in any other organ, and is much more frequent in men than in women. Leucoma and other pre-cancerous conditions or affections of the tongue were described, and the danger of the appli-

* International Dental Journal and Dental Cosmos, March, 1895.

cation of caustics emphasized as being the most certain means of transforming a simple into a cancerous ulcer. He pointed out the importance of diagnosis at an early stage, and especially of the recognition of the pre-cancerous stage and the diseases with which cancer of the tongue is most likely to be confounded—the dyspeptic ulcer, the tuberculous ulcer, etc. (In the discussion he said: "The members of the dental profession have the best opportunity to observe these various conditions which I have endeavored to describe. There is a good deal to be learned, and it is only by observation that we can finally procure much information about it.")

The hope of surgery for the future, in regard to lingual cancer, lies in prevention rather than in cure. As pre-cancerous conditions become more easily recognized by those who have the earliest opportunity of seeing them, and as the best methods of treatment in the earliest stages become familiar, so may we expect to see a decrease in the number of cases of lingual cancer. For the latter there is but one method of treatment, *viz:* Surgical operation. This may effect a cure in a small number of cases, while it usually prolongs life, and nearly always affords great relief.

In the discussion, the difficulty of distinguishing between benign and malignant tumors, and the undeterminate nature of both clinical and microscopic diagnosis was dwelt upon, the microbic origin of cancer being considered as not proven.

In reply to a question, Dr. STEVENS gave the formula of the wash preferred by him: ten grains of chromic acid to the ounce of water, which seems to ease pain and act beneficially.

Chromic acid is a superficial caustic, while nitrate of silver penetrates very deeply and acts as an irritant.

DR. ROBERT W. GREENLEAF (M. D.) read a paper before the Boston Academy of Dental Science* on "The Relation of Modern Therapeutics to the Practice of Dentistry." Contrasting historical, empiric and modern therapeutics, the former was defined as a "make-believe" stage, and the empiric an intermediate phase which has given much of value, while the therapeutist of

* International Dental Journal, March, 1895.

to-day classifies his weapons in the battle against disease with some approach to a scientific system. Drugs are only one of his many resources, used in conjunction with the remedial agencies of heat and cold; of hygienic measures—as food and rest; electricity, massage, surgical appliances and operations, hypnotism, used for centuries, yet waiting till to-day to be taken out of the bondage of ignorance and viewed calmly in the light of science—these are all collateral fields of modern practical medicine.

After defining the various divisions, classes and sub-classes of medicinal agents now in use, the essayist dwelt more at length upon the classes most essential to the dentist, placing him, in the use of them, upon the same basis as other specialists—aurists and oculists, *viz:* the ability to recognize that a need exists—then to advise proper counsel from the specialist competent to give it. He said: "To obtain such an ability it is necessary to study the fundamental principles of medicine, as one is not likely to see things of which he has no knowledge. With it, however, the medically-trained dentist will find many cases in which his patients are needlessly suffering because they are not given medical aid. . . . Moreover, with such knowledge, the dentist will find that he is far better equipped for understanding the problems of his own specialty." Of the agents more immediately required by the dentist, Dr. Greenleaf spoke of the *antiseptics* as worthy of most careful study, for the control of inflammatory processes so intimately connected with the presence of micro-organisms.

Of the *anæsthetics* he said: "It seems to me that every dentist should understand the use and dangers of anæsthetics, also their indications and contra-indications; then, if he chooses, he may use them safely. If he will not learn these matters he must be regarded as criminal to dare to use such weapons."

Of other groups, as antipyretics, expectorants, sialagogues, emetics, cathartics, anthelmintics, he said, . . . "each contains some drug, the need of which may be clearly indicated in certain patients under your care, who, but for your friendly counsel, might go unrelieved for years, or suffer serious illness which might have been prevented."

DR. FAUGHT'S paper on "The Systemic Treatment of Dental Diseases" (see REGISTER, Jan. issue, p. 48), was discussed at some length by the New Jersey State Dental Society.* The question, "How far does it come within the province of the dentist to practice in this direction?" was raised by Dr. Elliott. He said that, holding the degree of M. D. himself, he had enlarged his practice perhaps further than is usual among dentists, and had been taken to task for having practiced medicine without a license under the medical law. What is the limit of legitimate practice? This is the question that confronts us, and it must be decided.

DR. FAUGHT, in closing the discussion, said: "You are only held responsible for the exercise of due care in the practice of your profession. . . . The line of demarkation and the line of protection lie in your own personality; go to work and get the knowledge and acquire the ability to take care of yourselves in the use of these remedies. . . . The best men in the medical profession will take you by the hand and help you in diagnosing the case. . . . Instead of jealousy, I have had reason to thank the members of the medical profession in helping me out in these matters."

FRACTURES OF THE MAXILLA.

The question of originality and priority in certain methods of treating simple fractures of the lower jaw is discussed† in an interchange of spicy letters between Drs. E. H. Angle and T. L. Gilmer. Evidence in the shape of dates and references is furnished by both parties, with the result that the splint in question is found to be not the invention of either Dr. Angle or Dr. Gilmer, but belongs to Mr. Tomes, being fully described in Heath's "The Injuries and Diseases of the Jaws," as pointed out by Dr. Gilmer himself.

CLEFT PALATE.

DR. C. S. CASE presented to the Chicago Dental Society‡ four

* Dental Cosmos, March, 1895.
†Dental Review, February 15, 1895.
‡Dental Review, February 15, 1895.

patients who testified to the benefits derived from operations for cleft palate.

The subject and methods of operating were discussed at length by Drs. T. W. Brophy, G. V. Black, A. B. Freeman, T. L. Gilmer, Dr. Case and others.

PULP CAPPING.

Dr. C. R. Taylor* suggests capping pulps with cement applied on a suitably-sized piece of clean writing paper, the paper acting as a convenient carrier, and being also a splendid non-conductor.

PULP DEVITALIZATION.

Dr. A. G. Johnson, in a paper entitled "Arsenic," read before the Odontographic Society,† traces the history of the use of arsenic in dentistry, in different forms and combinations, giving the following formula:

℞
Arsenious Acid gr. xx.
Hydrochlorate of cocaine gr. xxv.
Lanolin q. s. ft. parte

as the most satisfactory in his own experience, care being taken to reduce inflammation of the pulp before making the application.

He cautions against the use of arsenic in temporary teeth, preferring repeated applications of carbolic acid. He concludes that, as a substitute for arsenic, cocaine will yet rank number one for pulp devitalization, preferably removing only the bulbous portion of the pulp, leaving the small fibers to continue the nourishment of the tooth.

ANTISEPTICS—FORMALIN.

At the meeting of the Academy of Stomatology (Phila.),‡ Drs. Kirk and Louis Jack spoke favorably of a dilute solution of formalin (five to ten per cent.), in controlling putrescence, enabling to close the tooth at once.

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* Dental Digest, February, 1895.
† Dental Review, February 15, 1895.
‡ International Dental Journal, March, 1895.

Dr. McQuillen has uniform success in the use of *sodium potassium*, never having had to use it a second time, after once thoroughly burning out or saponifying with it the putrescent matter in the root-canals.

COAGULANTS AND NON-COAGULANTS.

In reply to the paper on "Coagulants," by Dr. E. C. Kirk (*Cosmos*, April, 1894), Dr. A. W. Harlan read a paper bearing the above title before the union meeting of the First and Second District Dental Society of New York,* in which he restates very fully his reasons for believing that coagulants are impenetrable by antiseptics. He stated that the paper was designed to refute the erroneous impressions left last year by Dr. Kirk's paper, its teachings being so opposed to the facts of pure science that it became his public duty to present the present paper. In the discussion which followed the reading, Dr. Wm. Jarvie said that the result of hearing the papers mentioned, together with that of Dr. Truman on the same subject, was a state of doubt and uncertainty as to what is the best agent, or class of agents, to use in the treatment of pulpless teeth and teeth with putrescent pulps.

It is a case in which the doctors disagree, and yet patients get well by the use of exactly opposite agents.

Dr. J. Morgan Howe emphasized the value of clinical observation, and thinks that when experimental work contradicts experience, it is the experiments that are likely to be at fault.

Prof. Heitzman said that the verdict of the microscope was not in favor of the essayist. When the pulp is destroyed the tenants of the canalicule are killed also, their source of life and nutrition being cut off; the shrunken, dry threads within the canals furnish no pabulum for these gourmands.

Dr. S. G. Perry spoke from the clinical standpoint, being satisfied with the actual results obtained, though not understanding, from the chemical standpoint, what the action of the agent is or why the results follow. The thing for the dentist is "to get there," whether from a theoretical standpoint or not.

* Dental Cosmos, March, 1895.

The discussion was carried on to great length, the only conclusion reached being—as put by Dr. I. E. Hill—"we will go right on with what we have been doing for the past thirty or forty years, and have done successfully."

Editorially, Dr. Kirk regrets that the main point at issue—the penetrability of coagulants by antiseptics—was lost sight of in the discussion, in the consideration of collateral and subsidiary problems, which, though of the greatest practical value, are quite aside from the fundamental factor, which should be solidly established upon a basis of truth before the related questions are taken up for investigation and settlement.

ROOT-CANAL FILLING—SALOL.

Drs. Burchard, Kirk, McQuillen, Register, and others, in the Philadelphia Academy of Stomatology,* testify to uniform success in the use of salol as a root-canal filling material.

Dr. Burchard first uses a solution of sodium peroxide to saponify fatty material, dissolving and driving out the contents of the tubuli. This is neutralized by a weak solution of sulphuric acid, followed by thorough drying with alcohol and hot blast. A portion of salol crystals is taken up with a pair of long-pointed dressing pliers and held above a small flame until it becomes fluid. The closed points are then placed as high up the canal as possible, and slowly opened, the fluid running up the dry canal. An iridium broach is warmed and used to pump the melted salol to the apex, and a point of metal or gutta-percha thrust into the still fluid material.

Dr. Kirk said he had yet to see the first case of apical pericementitis following the use of salol in root-canals, though using it indiscriminately in "immediate" cases and those of recent devitalization. In reply to a question, Dr. Kirk said he did not think he would hesitate to use it in case of wide-open foramen, and if there was any risk of forcing any filling material through he would rather it should be salol than anything else he knew of, "but that was an accident to be guarded against."

*International Dental Journal, March, 1895.

Drs. Guilford and Kirk use it in filling the canals of teeth to be implanted, introducing it through the slightly enlarged apical foramen.

Dr. H. C. Register uses salol in connection with oxide of zinc, mixing the crystals of salol with the oxide before combining with the liquid. He also uses it by filling the canal and part of the pulp chamber with dry crystals packed down as tightly as possible, and then applying a small nerve instrument warmed slightly. As soon as it touches the salol it liquefies, when it will pass into the most infinitesimal space. Almost as soon as the instrument is withdrawn the salol solidifies into a hard crystalline mass. In putrescent cases, after desiccating thoroughly with hot air, he melts salol into the canals and fills the tooth at once, and has not had any subsequent trouble with such cases.

THE DENTAL TUBULI.

Dr. D. M. Cattell presented a series of lantern views of tooth-outline before the Northern Illinois Dental Society,* drawing the following, among other lessons from the views :

First—the impossibility of reaching the apical end of all roots; second—the importance of thorough sterilization for the removal of the noxious gases in the tubuli, as well as the pulp canal proper; otherwise, they may penetrate the cementum through the lacunæ and canaliculi, and, reaching the peridental membrane, cause serious trouble. Volatile tonics, capable of passing through the walls between the canal and membrane—such as oil of cassia, or Black's " 1, 2, 3," are indicated for this purpose.

THE TREATMENT OF BICUSPIDS.

A paper on this subject, by Dr. Charles W. Jenkins, was read at the meeting of the American Dental Society of Europe.†

Profiting by the suggestions offered very *apropos* by "an invisible and inaudible friend—Jack Tarukappe"(?) who seems to be always on hand at the critical moment, Dr. Jenkins records the following timely hints *soi disant* thus received, to make a

* Dental Review, Feb. 15, 1895.
† Dental Digest, Feb. 1895.

polite excuse to a patient and slip away into the next room and quiet his own tired nerves for five minutes, the faithful friend in the meantime administering invisible chloroform, hypnotizing the patient (!) so that both patients are refreshed by this brief respite; to hold the rubber dam water-tight by means of chloropercha, without a ligature, thus avoiding the torture of drawing the silk under the gum; in preparing a compound cavity extending far under the gum, rendering the adjustment of the rubber dam very difficult, plug the mouth of the root canal and insert a bit of wood in the center of the crown cavity, leaving sufficient room and retaining shape for emalgam at the neck. Fill that with a good sub-marine amalgam; after it is a little hard, apply the dam as in an ordinary case, withdraw the plug and go ahead.

Intending to follow the prescribed method in preparing an unfortunate bicuspid with two approximal cavities, "Jack" whispered, work for a triumph of common sense, rather than a triumph of art, and instead of making a bicuspid of gold, spotted with natural inlays, preserve the coronal ridge and as much of the denture as possible by filling the crown fissure and the approximal cavities with oxyphosphate, binding together the threatened parts, putting a strong buttress of cement against the coronal ridge, and cover the whole with gold, as thin as consistent with making it secure, the bicuspid will last longer, and look better while it lasts. As "Jack" said: "You can cut an eel from end to end, and cut out and cut off nearly everything that belongs to him and he will swim away pretending to enjoy life the same as ever, but your bicuspid is a creature that gets discouraged when his insides are trifled with!"

PROSETHETICS.

In the New York Odontological Society,* Dr. Hodson asked for suggestions as to how to hold firmly and comfortably in position, a lower partial plate, all of the teeth back of the cuspids being gone, the latter being live teeth and very sensitive, and the ridge a mere thread, very tender and delicate. Among the methods offered, Dr. Jackson advised wedging between the cuspid

* International Dental Journal, March, 1895.

and lateral on each side to obtain a slight space, and extending spring clasps from the plate, fitted to the distal side of the cuspids and extending somewhat towards the front. This, he said, will retain the plate firmly.

At the Union Convention in Buffalo,* Dr. J. B. Wilmott read a paper entitled: "Partial Artificial Dentures a Menace to the Natural Teeth." He observes a marked tendency to the development of caries on approximal and lingual surfaces of teeth in contact with artificial dentures, which he attributes to interference with the free movement of interstitial moisture. Accepting the theory that dental caries is due to the action of acid ptomaines of certain bacteria under favoring conditions, these conditions are all met in the mouth, wearing a partial plate, which is "a perfect fit" and removed but once perhaps in twenty-four hours. The remedy suggested is the use of thin metallic bases, leaving space for free wash over the surfaces of the natural teeth, depending for retention a skillful clasping, or on suction. A cut-off plate, exposing in the median line from three to five-eighths of an inch of the mucous covering of the palatal surface of the mouth, extending across the palate and retained by suction, offers great advantages toward immunity from caries of the palatal and approximal surfaces of the anterior teeth, and also aids in the function of taste, allowing the tip of the tongue to come in contact with the mucous membrane of the palate. Patients should be instructed to remove plates and rinse the mouth, forcing fluid over all the surfaces of the teeth several times a day, and under no circumstances to wear the plate at night.

Dr. S. B. Palmer recommends that the clasps of a partial plate should always have a lug extending over masticating surface of the tooth, or be in the form of a partial cap, relieving pressure on the gum tissues and preventing elongation of the teeth.

Dr. Magill said the clasp should embrace the crown and not the neck of the tooth. He described his method of inserting a screw in a tooth to hold the clasp in place, the clasp fitting over the screw.

* Dental Cosmos, March, 1895.

PORCELAIN-FACED BICUSPID CROWN.

Dr. A. W. M'Candless, in a paper read before the Northern Illinois Dental Society*, gave his method of making a porcelain-faced bicuspid crown.

The root having been prepared, a band of 22 karat gold, 28 gauge, is fitted as though for an all gold crown, and the buccal portion cut away. The cusp is then tacked to the ferrule at the point farthest from the porcelain front and the gold of the cusp cut down approximating the shape of the porcelain face at that point.

Grind the facing to proper shape, making allowance for the backing, bevel the edges all the way around and back with pure gold, 30 gauge. Catch the backing to the ferrule and cast with sticking-wax, slip off the porcelain and invest in asbestos fiber, exposing only sufficient to unite the backing to the ferrule. Remove the investment, fill the joints where solder is to flow with wax, fill the interior of the crown with plumbago to prevent inflow of solder, complete the soldering of the joint and contour the finished crown, filling the cusp with 14 karat solder. When all is filed or ground to proper shape and finish, force the porcelain to place. (A thin film of cement between porcelain and backing and bending the pins outward when the cement has set, will give sufficient strength to the facing.) A final plating of pure gold gives a beautiful finish which will never tarnish in the mouth.

TUBE TEETH IN BRIDGE WORK,

Dr. J. H. Spaulding, Paris, contributed to the proceedings of the American Dental Society of Europe† a paper on the use of tube teeth in bridge work.

By his method the natural roots requiring crowns are fitted with cap and pin as usual, the pins being of platinum wire of size to fit the tube of the teeth. The tube teeth are ground to fit the roots in circumference, and with cups and pins in places an impression is taken and model made. Each tube-tooth is con-

* Dental Review, February 15, 1895.
† Dental Digest, February, 1895.

caved on the under side and a thin plate of pure gold burnished to the ground surface, in which a hole is pierced to receive the pin and the concavity filled with 20 k. solder. Each crown of attachment is then placed in position on the cap and pin and held with wax, and all removed together; the porcelain is then slipped off the pin and the cap and base united by the wax invested for soldering with 20 k. solder after the wax is boiled out. The teeth which bridge a space are so ground as to leave a self-cleaning space before receiving the gold base as before described.

All the teeth being thus prepared with gold bases and pins, with caps and base united for the prepared roots, they are all put in position and adjusted as desired on the model and waxed together. The bridge is then lifted off the model, the porcelains removed and the bridge invested for final soldering.

Thus, none of the porcelain teeth are left in place at any time while soldering, but little gold or solder is used, and almost none presented to view when the bridge is in place. As the final step the tube teeth are secured to the pins by means of melted sulphur.

The same method is used in crowning bicuspids.

Let the prejudice against these English tube teeth—because of their unnatural shapes—be overcome and a demand created for them, and the demand will force their manufacture in more esthetic molds. They are the strongest teeth made; they can be ground and polished without injuring their appearance; they are easily adjusted; repair is very easy, though seldom required

ORTHODONTIA—JUMPING THE BITE.

Dr. C. S. Case,* in a reply to Dr. Ottolengui's "reply" to a previous article by Dr. Case on this subject, maintains his position that, while there is nothing in the natural construction of the tempero-maxillary joint, or in the character of the inter-articular tissues, to prevent the jaw from being permanently carried forward sufficiently to "jump the bite," or to interfere with the ultimate possibilities of perfect dental occlusion, yet, that in more than half the cases of abnormal protruding upper

* Dental Review, February 15, 1895.

jaw, this is not the remedy for the deformity. A careful preliminary study of the face, not merely of the teeth, but of the entire face, and especially of the relative position of the lower jaw and chin to the forehead, bridge of the nose, etc., may show that to protrude the lower jaw by "jumping the bite" would increase the deformity rather than remedy it. The upper jaw is as often too large in its relation to the other bones of the face as the lower is too small or receding. When this is the case reduction of the upper anterior protrusion is indicated—usually accomplished by the extraction of two upper bicuspids and forcing back the anterior portion of the bones, carrying back the six anterior teeth which gave abnormal prominence to the middle features.

Dr. Case also repeats his criticism of the case cited by Dr. Ottolengui, who claims that Dr. Kingsley permanently corrected the deformity by jumping the bite "in two weeks." Dr. Case maintains that the necessary structural changes at the temperomaxillary joint being impossible of accomplishment in that space of time, though the models presented apparently showed the results claimed. There is nothing to prevent placing the lower jaw forward the full width of a tooth and taking an impression of the face with the jaws in that position, but to secure permanent results something more is necessay than the mere temporary relative change in position. Nothing could have occurred at the joint, the real seat of requisite surgical change, to give the right to claim a permanent correction of the deformity.

[*To be Continued.*]

Food for Thought.

How was it that Marion Sims, Flint, Agnew, Keating, Fordyce Barker, Sir Andrew Clark, Charcot, Billroth, and others, had so much time for literary work? And yet their professional duties were certainly as pressing as any one's we know. It would seem that they felt the necessity of keeping their brains in good working order by writing; and if they thought so, no one could hardly be excused from saying, "Oh! I can find no time for writing."—*Rhode Island Medical Science Monthly.*

NOTICES.

Tri-State Meeting.

The Russell House, Detroit, which will be headquarters for the Tri-State Meeting, to be held June 18, 19 and 20, has made a rate of $2.50 and $3.00 per day according to location of room. The Hotel Normandie, an excellent house, just one block from the Russell, has made a rate of $2.00 and $2.50 according to room. Dr. W. C. Barrett, of Buffalo, will give a lantern lecture one evening during the meeting. Dr. Barrett has all of Prof. Miller's (of Berlin) bacteriological slides and those of Andrews on enamel formation. Dr. Hollingsworth, of Kansas City, will be present to demonstrate his system of crown and bridge-work. Railroad rates will be announced in the June numbers of the dental journals.

G. E. HUNT,
Secretary.

Illinois State Dental Society.

Meeting to be held in Galesburg, May 14 to 17, 1895.

PROGRAMME—ESSAYISTS.

1. Address by the President, J. H. Cormany, subject: "The Saving of the First Tooth."
2. A. W. Harlan: "Dental Science and Literature."
3. J. Frank Mariner: "Dental Art and Invention."
4. Louis Ottofy: "A Review of the Transactions of the Illinois State Dental Society for a Quarter of a Century." Discussion opened by—.
5. C. B. Rohland: "A Simple Method of Keeping Records." Discussion opened by—.
6. D. M. Cattell: "Results of Experimental Root Canal Fillings." Discussion opened by Dr. E. K. Blair.

7. C. R. Taylor: "The Human Tongue." Discussion opened by Dr. Garrett Newkirk.

8. W. V. B. Ames: "Combinations of Metals for Amalgams." Discussion opened by Dr. E. D. Swain.

9. C. C. Southwell (Milwaukee, Wis.): "Compressed Air in Dentistry." Discussion opened by Dr. W. H. Taggart.

10. A. W. McCandless: "The Duties of Dentist to Patient. The Duties of Patient to Dentist." Discussion opened by Dr. A. H. McCandless.

11. E. H. Allen: "The Illinois State Dental Society and the Relation it Sustains to the Dentists of Illinois." Discussion opened by Dr. C. N. Johnson.

12. C. R. E. Koch: "A Commentary on the Illinois Dental Statute of 1881." Discussion opened by Dr. T. W. Brophy.

The following questions will be submitted to the society for discussion:

1. Can alveolo-dental abscess arise after complete sterilization and obliteration of the canal by an impervious filling, and if so, from what causes?

Dr. G. V. Black will open the discussion.

2. What are the best means of diagnosis of pulp calcification in its several forms; to what extent does the process demand treatment, and how shall it be treated (*a*) with respect to its prevention, (*b*) remedially?

Dr. E. Noyes will open the discussion.

3. What is the most satisfactory antiseptic, and the best method of root-canal sterilization?

Dr. J. W. Wassall will open the discussion.

4. Is not operative dentistry liable to the same injury from the too prevalent use of plastic stoppings as occurred to prosthetic practice from the introduction of vulcanite?

The discussion will be opened by Dr. W. A. Johnston.

Clinics will be given as follows:

1. L. E. Custer (Dayton, O.): "Electrical Fusing of Porcelain."

2. W. V. B. Ames: "Gold Inlay."

3. A. E. Matteson: "Porcelain Crown. Exhibit Furnace."

4. S. W. Lukin: "Bridge. Using Logan Crowns and Gold Crowns for Posterior Abutment."

5. T. W. Prichett: "Filling—Using Amalgam."

6. J. G. Reid: "Enlarging Root Canals with Sulphuric Acid."

7. I. A. Lumpkin: "Gold Filling in Disto-Proximal Compound Cavity of Molar or Bicuspid."

8. Josephine D. Pfeifer: "Gold Crown."

9. C. C. Corbett: "Regulating Teeth with the Jackson Crib."

10. H. Logan: "Cast Aluminum Plate."

11. L. W. Skidmore: "Gold and Tin Filling in Bicuspid."

12. A. W. Harlan: "Treatment of Pyorrhœa Alveolaris."

13. W. H. Taggart: "Porcelain Bridge. Exhibit Electric Furnace."

14. Grafton Monroe: "Management of Sodium and Potassium in Treating Putrid Pulp Canals."

15. G. E. Warren: "Gold and Platinum Filling in Bicuspid or Molar."

16. W. W. Tobey: "Immediate Separation and Filling of Incisor Teeth, Using William's Untrimmed Gold."

17. D. O. M. LeCron: "Porcelain Faced Crown, Giving in Detail the Method of Riveting the Same after the Gold Work is Finished."

18. G. H. Damron: "Gold Filling. Sibley's Mat Gold."

19. C. N. Thompson: "Will Make and Fit Downie Crown."

20. E. K. Blair: "Root Canal Filling."

21. F. H. McIntosh: "Will Make and Fit Crown, Using the Ludwig Anchor."

22. H. R. Staley: "The Use of Cements in Retaining Gold and Amalgam Fillings." Illustrated by models.

A. H. Peck, Chairman Ex've Com.
Louis Ottofy, Secretary.
Masonic Temple, Chicago.

The Horace Wells Permanent Memorial,

UNDER THE AUSPICES OF THE AMERICAN DENTAL ASSOCIATION.

To the Dental Profession of America:

The Central Executive Committee appointed by the President of the American Dental Association is as follows: Dr. James Truman, Dr. Wilbur F. Litch, Dr. S. H. Guilford, Dr. E. C. Kirk, Dr. J. D. Thomas, Chairman and Treasurer.

This committee has been completed in its organization by including in its membership the presidents of all dental societies throughout the United States.

It is hoped to secure enough money to erect a bronze statue of Horace Wells in the national capital. The details as the style and character of the statue, as well as its definite location, will be decided upon at the next meeting of the American Dental Association, to be held at Asbury Park, N. J.

The committee takes pleasure in calling your attention to this opportunity for doing an act of justice to the memory of a worthy member of our profession, whose discovery has been of such incalculable benefit to humanity, and which has been so great an honor to our profession. You are invited to contribute whatever amount of money you may feel able and willing to donate to the fund, and to use your influence toward bringing our plan to a successful issue in a manner befitting the object.

Contributions may be sent by any member of the profession through the president of his local society, or direct to the treasurer, Dr. J. D. Thomas, 912 Walnut street, Philadelphia. An official receipt will be issued by the treasurer for all contributions. The full list of contributors will be embodied in the pedestal of the memorial.

J. D. THOMAS,
Chairman of the Central Executive Committee.

The Executive Committee requests that all who desire copies of the souvenir volume of the meeting held at Philadelphia, December 11, 1894, in celebration of the fiftieth anniversary of the discovery of anæsthesia by Horace Wells, will promptly forward their names to the chairman, in order that the number of copies

to be printed may be determined upon. The price has been fixed at $1.50 per volume, postage free to all parts of the United States; foreign countries at regular postal rates.

Bibliographical.

CATCHING'S COMPENDIUM OF PRACTICAL DENTISTRY FOR 1894—B. H. Catching, Editor and Publisher: Atlanta, Georgia.

This compend or digest of periodical literature of the Dental profession is just at hand, and in looking over it with some care, we do not hesitate to say that it is an improvement on a former volume of the same work. Dr. C. is evidently becoming more perfect by practice. Either that, or more time and care has been exercised in selecting and presenting the extracts. It is a work specially valuable to the busy dentist, and indeed valuable to every one. The student can consult it with much profit.

The work is divided into seven departments, namely: Operative Dentistry, Prosthetic Dentistry, Crown and Bridge-Work, Orthodontia, Dental Medicine, Oral Surgery and Miscellaneous. A very full index is given in each of these departments, so at a glance one can readily find any special subject or item.

This work has each year become more and more important and desirable for the dentist, so that now a dentist's library is not complete without this work. It can be obtained of the author, and through any dental depot, and doubtless in any book store.

EDITORIAL.

Mississippi Valley Dental Association.

The semi-annual meeting of this body was held in the Odd Fellows' Temple, Seventh and Elm Streets, April 17th and 18th; about one hundred persons being present. A very interesting programme of subjects had been prepared by the Executive Committee. The persons to whom subjects had been assigned accom-

plished the work expected of them. Every subject on the programme was presented by paper and fully discussed. The papers were of a high order and the discussions were much above the average. This may be attributed to the fact that the various subjects of the papers were assigned to individuals from two to three to each paper for disscussion. The papers were in the hands of those who were to discuss them, sometime before the meeting, so that they came fully prepared for the work before them, and right well was this duty accomplished. We have never, in any dental association, heard better, if as good, so systematic and well arranged discussion as on this occasion. For the past three or four years the members seemed somewhat to have lost interest in this society, but through the persistent efforts of the Executive Commitee, this meeting was made an eminent success, though last year there was a strong sentiment in favor of dissolving the society. The present meeting has been better in every respect than has been held by the same body for the last twenty-five years, and indeed it is a question whether, if ever, in the history of the society, a better meeting has been held. An enthusiasm was engendered that is prophetic of its success for years to come.

There were present quite a number of the older members from distant points.

The election of officers for the ensuing year were as follows:

President, Dr. William V. B. Ames, Chicago; First Vice-President, Dr. J. E. Cravens, Indianapolis; Second Vice-President, Dr. H. C. Matlack, Cincinnati; Treasurer, Dr. F. A. Hunter, Cincinnati; Recording Secretary, Dr. H. T. Smith, Cincinnati.

The Executive Committee are as follows:

Drs. J. R. Callahan, M. H. Fletcher, of Cincinnati; L. E. Custer, of Dayton, Ohio.

The Executive Committee consist of the same persons as last year.

The following were elected delegates to The American Dental Association, which meets at Asbury Park, New Jersey, on the first Tuesday of August next: J. E. Cravens, of Indianapolis; A. P. Bollinger, of Dayton, Ohio; H. C. Matlack, of Cincinnati; W. S. Locke, Cincinnati; W. B. Chambers, of Newark, Ohio;

W. D. Phillips, of New Vienna, Ohio; and Frank Sage, Sarah S. Harris, Jessie Dillon and Viola Swift, of Cincinnati.

The meeting continued two days, holding only day sessions, and never, perhaps, in any similar body, was more good work crowded into so short a space of time.

The papers and discussions will be published in full in subsequent numbers of "THE REGISTER."

Personal.—Mississippi Valley Dental Society.

Drs. Wright and Hunter are open for engagements as inductors of Presidents or indeed almost any thing else. An inimitable combination.

Dr. Geo. W. Evans, of N. Y., to the great gratification of all was present, and loaded to the muzzle with good things, which he liberally dispensed to the great edification of all present; and for which he received a most hearty vote of thanks. He presented much of detail and minutiæ, in regard to crown and bridge-work, which is greatly needed to obtain the best results in this department of practice. "Evans on Crown and Bridge-work," is a most excellent work, indeed; but it is not equal to the author for practical points.

Drs. Harlan and Eams of Chicago were present, and did much to add to the profit and interest of the occasion. They emphatically belong to that number who are always heartily welcomed to all Dental Associations, for they are ever ready to contribute to every good work, their effort for the advacement of the profession.

Dr. J. E. Cravens, of Indianapolis, was present and ready as usual for any work that might be asked of him, for the promotion of professional interest. He is always loaded for Pyorrhœa Alveolaris, and prompt root filling.

Drs. Brown and Mason were welcome guests and added interest to the occasion.

Dr. Morrell, of New Albany, was present and made glad his old friends and especially those who have known him from long ago as a worker in Association effort.

On to Baltimore—By What Way?

This question is in the minds of many, especially of those who are going to the meeting of the American Medical Association to be held in Baltimore on the 7th of May.

There are several routes, but none better, and we think none so good as the Chesapeake and Ohio Railway. This is one of the most picturesque and delightful routes in the country; the road throughout is in most perfect condition, it has no superior if an equal in this respect; its equipment is of the highest order. The attention and service, we have rarely seen equaled, one is made to feel at home from the moment he steps on the train. Of these things we speak from personal observation and experience. The general management of the road is such that one feels a sense of security not often experienced on some other roads. The scenery on this route is hardly equalled on any other road going eastward. The best train on which to make this trip is that which leaves Cincinnati at 12 o'clock each day and arrives in Baltimore at 8 o'clock on the next morning so that only an afternoon of daylight is occupied in making the journey.

All should bear in mind that this is the route for the meeting of the American Dental Association on the first Tuesday of August next, and don't forget it.

THE DENTAL REGISTER.

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COMMUNICATION.

Riggs' Disease; or, "What You Will."

BY J. E. CRAVENS, D.D.S.

Read before the Mississippi Valley Dental Association.

"What's in a name? That which we call a rose
By any other name would smell as sweet;
So Romeo would, were he not Romeo call'd,
Retain that dear perfection which he owes
Without that title." —*Juliet.*

It would seem that a name should be first a designation, later, possibly, a definition, or in emergency a description. It is possible for a name to express too much. There was a time when a particular lesion, presenting certain diagnostic elements was generally known to dentists as *Riggs' disease.* Just what the proper name for that disease now is would be difficult, if not hazardous, to mention before this association. However, this one fact holds good against all mutations of discussion as to etiology, pathology and endless suggestions of endless names, in this, that, the disease under consideration continues to exhibit pus that exudes, or may be expressed from one or more aspects of an alveolus that has been enlarged by—what? Certainly not by pus; for who can assuredly declare that pus destroys bone? Lining the concave wall of bone that forms the greater limit of a "pocket" of Riggs' disease, or pyorrhœa alveolaris, etc., there is a sort of cushion of soft tissue, apparently highly vascular and protected by the socket periosteum, an arrangement that effectually prevents pus or any other of the contents of a "pocket" coming in

direct contact with the alveolar bone. Truly, pus may bathe the involved portion of a root indefinitely, but does not destroy it. In the history of Riggs' disease (or if by any other name this rose of ours may bear a sweeter odor let it be so called), the only tissue really destroyed is alveolar process. But how? Realizing that a reasonable doubt as to adequate authority for some statements made in this paper may exist in the minds of some auditors, and claiming for myself a desire to induce others to careful study of all aspects of this subject, so important to dentists and their clients, I beg leave to offer some quotations from the Reference Hand-Book of the Medical Sciences, pp. 381 to 385, inclusive, *viz:* (Authorship of Dr. R. H. M. Dawbarn). "Inflammation of a bone may be induced by simple traumatism, by extension from a periostitis, by extension from arthritis, by exposure to cold, or to action of certain poisons, as phosporous, mercury, syphilis; by pressure, by eruptive fevers, typhoid, possibly acting as a primary, and certainly as a predisposing cause."

"It is of little clinical value to classify inflammations of bone, from an anatomical standpoint, into osteitis, osteomyelitis and periostitis, since primary periostitis, with exception of the traumatic and syphilitic varieties, is very rarely observed."

"Periostitis may originate from traumatism, either simple or compound, and in character may be simple (that is aseptic) or septic, from the presence of micro-organisms."

"Chronic, non-infective periostitis may be either fibrous or ossifying. In the former (fibrous) there is much increase in the amount of connective tissue, and the thickened membrane adheres unusually closely to the bone; in the latter (the ossifying) we have as a result an ossific deposit."

In the preceding quotations we have facts that appear to me to exactly fit the conditions manifested in pyorrhœa alveolaris; there prevails at first in the socket an inflammation of a "chronic, non-infective" character, that involves the periosteum and destroys the bone of the alveolus; later, under certain conditions, brought on by the surgical act, and supported by intelligent secondary treatment, the character of the inflammation of the periosteal membrane is caused to change from the "fibrous" and

destructive to the "ossifying," which I hold to be an *acute* stage, and "we have as a result an ossific deposit." Dr. Dawbarn says further, "The new bone of inflammatory origin is not deposited in regular systems of lamellæ, probably owing to faulty nutrition, and it is sometimes absorbed and disappears."

I hold that the pathology here given applies directly to Riggs' disease; that by the same anatomical element, namely, the "thickened membrane," or what later is referred to by the same authority as a "granulation tissue," the spongy structure of the bony septæ is destroyed; and that after proper surgical procedure the "chronic" or "fibrous" is succeeded by the acute form, that accomplishes an "ossific deposit" differing from the true alveolar bone in that it is but a *bone eschar*. Thus it is that failure may occur from a constitutional tendency to revert to the "fibrous" form, and the new deposit may be re-absorbed, and pyorrhœa alveolaris reasserted. This last is failure.

Observation of cures of this disease, under my own hand and peculiar method of treatment, leads to the conclusion that if development of new bony structure proceeds until the "pockets" are filled, and so obliterated, and the new tissue shall be closely adapted about the roots (which it will be, if there at all), there will be no return of the disease, no recurrent absorbent action, even in cases that have been only partially filled in with this new "ossific deposit."

The author here quoted says further that the products of chronic periostitis are *pus*, *fibrine* and *serum*; these elements principally form the constituents of the fluid contents of pyorrhœa "pockets." Quoting still further, we have, "In periostitis and rarefying osteitis, the absorption of bone is thought by some pathologists to be caused by the presence of certain large, multinucleated cells, the myeloplaxes of Robin, called from this idea, osteoclasts."

Other pathologists disbelieve that these large cells possess any such power, and attribute the absorption to the influence of the new granulation tissues present in such cases, and lying in contact with the bone." I have already mentioned this new granulation mass or tissue and first referred to it as a vascular

cushion or tissue that lined the greater diameter of a pyorrhœa "pocket" where it accomplished destruction of alveolar bone.

Dr. Dawbarn further says: "It is thought that the granulations (granulation mass) evolve an acid. Formerly it was believed that lactic acid was the solvent. Tilman's later researches seem to show that it is the carbonic acid contained in the blood which dissolves bone tissue."

In another place the author quoted says that sometimes no cause whatever can be assigned for periostitis; so it often is in Riggs' disease, that the cause or origin in a particular case can not be discovered or intelligently conjectured.

A significant point to all that I have quoted, and all I have read without quoting, on this subject, is that no mention is made of destruction of bone by pus.

The summing of my observations is, that *Riggs' disease per se is a periostitis of the "fibrous" character*, which Dr. Dawbarn has further described by the terms "chronic" and "non-infective" that this character of periostitis is destructive to bone and accounts to the dentist for the "pocket" that formerly bore so mysterious an aspect. Doubtless it is differentiated from that which occurs upon long bones or other parts of the skeleton, or under muscular tissue anywhere; because, this peculiar lesion occurs within the dental alveolus, within an articulation that is practically fixed although without ligaments.

Given an instrument sufficiently delicate and of proper shape for manipulating within these "pockets," and fingers in which sense of touch has been cultivated, and the velvety response of the cushion of "granulation tissue" that always lines these "pockets" may be readily detected.

In operating for cure of Riggs' disease, this "new granulation tissue" must be lacerated, for the purpose of inducing a radical *change from the chronic to the acute inflammation* of the socket periosteum, from which alone there is possibility and hope of securing the new "ossific deposit" that assures a cure. But in a "pocket" operation the complete removal of pyonal calculus and thickened and folded pericementum should be first accomplished, in order that the annoyance and serious inconvenience

of certain hemorrhage may be avoided. The union of new bone with the root may be something analagous to anchylosis, or it may result in a true articulation similar to sympheses of the sections of the superior maxillæ. I am inclined to the latter opinion, because often the roots remain too loose for an anchylosis, long after every symptom of disease has disappeared.

A "pocket" and its contained pus, fibrine and serum, are simply results of the chronic periostitis of the alveolus, just as the calculus discovered on the root is a result deposited from pus; in all cases the periostitis of the socket must have an external origin. The most absurd of all the vagaries advanced as to the etiology of Riggs' disease, or pyorrhœa alveolaris, is that it has an internal origin, and begins at or near the apex of the root. It is always a pleasant thing to contemplate ourselves as specialists in medicine and surgery, with perhaps a dash of fine art and delicate mechanics, but our greatest danger lies in a possibility of becoming too highly medicated, too intensely scientific; this tendency leads away from a plain contemplation of the mechanical and physiological aspects of the disease under consideration. I have observed that a "pocket" may extend to and entirely around the apex of a root, after traversing its entire length, and far beyond the remotest deposit of pyonal calculus, and there be no external evidence of the existence of such a "pocket," nor entrance discoverable to it, save and except that peculiar bluish red color of gum characteristic, and the sense of an indescribable uneasiness felt by the patient; that the lesion may persist even after removal of all discoverable pyonal calculus from the root, and most careful antiseptization of the case; and that constitutional treatment fails to check the ravages of the destroyer.

So far as I have been able to discover, the pericementum has little or nothing to do with Riggs' disease, except, possibly, to be affected by it, and thus add an annoyance. It is doubtful that the pyonal calculus ever is really deposited upon pericementum, because a dead pericementum in the socket is impossible in a living subject, and the live membrane disappears as the calculus encroaches. The calculus being a result of the disease, may accumulate at a point rather remote from the cervix of the tooth,

but there will be no pericementum left between the calculus and the entrance to the socket on that aspect of the root. The periostitis always is extended from an external origin or cause, such as an orbicular periostitis about the orifice of the alveolus, underlying a severe case of gingivitis, or an injury to the deeper membrane by dam-clamps, or badly adjusted apparatus for regulating teeth; ill-fitting crowns, independent or attached to bridge-cases; long protracted ligating at cervix; or, from traumatic injuries immediately about the socket; from any cause—as simple a thing as a splinter from a wooden pick thrust into the tissue of the gum—a frequent occurrence. Often the injury that sets up a periostitis is due to careless manipulation of dental instruments; and, as Dr. Dawbarn says of periostitis in general, the origin of Riggs' disease can not always be determined.

I believe that pyorrhœa alveolaris is not contagious; Dawbarn says that "chronic" periostitis is "non-infective;" this socket lesion is not a heredity, although conditions *may* be that tend to favor its establishment ultimately, and yet the disease may never obtain. It is not constitutional, and constitutional treatment does not facilitate its cure any more than it does the removal of an ingrown toe nail; it is not always symmetrical; it is not confined to adults, but as early as fifteen years has presented most stubborn resistance to treatment. While it may be associated with gout in Europe in many instances, in the United States it certainly is not the case, else the arthritis is most successfully concealed. This point has already been answered by Dr. A. W. Harlan, who declared that in this country gout is almost unknown. Riggs' disease often is associated with affections of the Schneiderian membrane, but prevails unaltered after that membrane has returned to a state of health. It certainly is true in the United States that a majority of victims of pyorrhœa alveolaris are also afflicted with nasal catarrh; but it could scarcely escape such association in a country where the catarrh is almost a badge of nationality.

Riggs' disease is most difficult to overcome in incipiency, that is, that condition just beyond gingivitis, where pockets are just beginning or hardly begun. In such cases the lesion consists in

an orbicular periostitis, the operation for which was first described by Dr. A. W. Harlan, consisting in scraping the periosteum from the bone immediately around the orifice of the alveolus, and smoothing the bone, if rough; for which Dr. Harlan designed a pair of right and left chisels that still are the best adapted instruments for this purpose. I have found pyorrhœa alveolaris most easily cured in middle life, and always more satisfactorily treated where the "pockets" were fairly well formed. Very deep "pockets" are not readily dealt with.

Probably there was written during the last two years, on this general subject of pyorrhœa alveolaris, more than had been during a decade before. I was about the first to begin that season of activity in a campaign against this disease, which I did in a report of a case in practice before the American Dental Association, August, 1892, at Niagara Falls, N. Y., wherein was given all details of treatment of a case of nineteen pus "pockets," which I there declared to be cured, the treatment having all transpired during the month of July preceding. It was not to be expected that my statement would be accepted, and in that I was not disappointed; with the exception of Dr. Harlan, I believe every voice was against me there; the general sentiment was that the case was not cured, and that I was deceived by appearances; others were blunt enough to declare that it had not been a case of pyorrhœa alveolaris at all; one gentleman would accept no diagnosis that was not backed by analysis of urine of the patient. But I am used to that sort of argument and courtesy, and so survived to examine that case again in August, 1893, and found that there had been no return of the disease at any of the nineteen points treated the preceding year. I examined this case again in September, 1894, and still all was well with the places treated. Two years ought to be a fair test of treatment.

At the close of 1893, Prof. C. N. Peirce, of Philadelphia, proclaimed the gouty character of pyorrhœa alveolaris, ascribing it to presence of uric acid in the blood, and claiming in proof of this connection, that uric acid was to be found in the calculus of this disease. While not prepared to admit all that Prof. Peirce

has written on this subject, and yet not prepared to deny, I trust not to do injustice to one whom I have long esteemed, and so will express no opinion on the uric acid and other propositions advanced.

The first paper by Dr. Peirce called forth an avalanche in response, which appeared in the *International Dental Practitioner*, early in 1894, and impelled the editor of the *Western Dental Journal* to remark, "Here we come, head us off, dad gast our fool souls!" or words to that effect. Not the least amusing aspect of this remark by the editor mentioned, was the fact that only a few years before he appeared in the American Dental Association proceedings arguing that pyorrhœa alveolaris is catarrhal. He has maintained a silence for some time, which I regard as ominous.

The discussion of the etiology of Riggs' disease might go on for another century, and all cases of the disease might be lost during the grand discussion from the loftiest planes. I hold that *one case cured* is better than a thousand essays and speeches upon the possible or probable causes of a disease that has been robbing poor humanity of good sound teeth, probably ever since the Ark rested on Mount Ararat. Of all the half score responses to Dr. Peirce's essay, only one suggested practical measures for the cure of the lesion.

In 1894, I had the temerity to write and have published a book, partly for the gratification of "mine enemy" but principally in a hope that many other brother practitioners would avail themselves of that system which had been so uniformly successful under my hand, in curing Riggs' disease. I still pursue this system with success, as a long list of grateful patients will attest. There are "none so blind as those who refuse to see." In Walter Scott's story of "Robert, Count of Paris," a character is brought to the light of day, from the cells under the Blachernal Palace where he had for several years been confined in total darkness; the poor prisoner for three days insisted that he could not see, and at last was induced to open his eyes and try; much to his surprise he could see. He had refused for three days to open his eyes.

President TAFT: The paper is now open for discussion. I will ask you to be prompt, gentleman.

DR. A. W. HARLAN, of Chicago, being called for by a number of these present, responded as follows:

Mr. Chairman, and gentleman; I am sorry I did not get in early enough to hear the beginning of Dr. Craven's paper; I thought it would not come off until tomorrow morning. Before I came here Dr. Cravens sent me a brief synopsis of the paper, which will probably furnish me with that portion which I did not hear. I would like to read the first paragraph of that synopsis, not for the reporter to take down, but simply to furnish a ground-work for my remarks.

(DR. HARLAN then read as follows: "Riggs' disease exhibits pus from one or more aspects of a socket or alveolus that has been enlarged by what? Not by pus, for who can say that pus destroys bone? Lining the concave bony wall that forms the greater limit of a 'pocket' of this disease, there is a sort of cushion of soft tissue, highly vascular, that is itself in turn lined and protected by the socket periosteum; so that neither pus or other of the contents of a 'pocket' can come in direct contact with the alveolar bone. Pus often bathes a portion of a root, but does not destroy it.

"In Riggs' disease or pyorrhea alveolaris, the only tissue really destroyed is alveolar process:—but not by pus. How then? In the essay itself I will give a number of quotations (necessarily incomplete) from a chapter by Dr. H. M. Dawbarn, In the Reference Hand Book of the Medical Sciences, Vol. V, pp 381 to 385, inclusive. All quotations therein are from this same author and chapter, and I use them to prove that Riggs' disease *per se* is a periostitis, of a fibrous, chronic, non-infectious character, destructive to bone and to the alveolar ridge most of all.")

The consideration of the etiology of the so-called Riggs' disease is a question that should concern every dental practitioner, because in nearly every locality in the United States we have loosening and loosened teeth. In that category we will not include teeth that are loosened by the mechanical arrangement of plates and clasps, or regulating appliances, but teeth that become loose

from causes within the mouth, at least not mechanical. In the first part of the discussion on this paper I am unable to see how there can be a production of pus in any locality in the body, without the presence of micro-organisms. I am not aware that any sort of trauma, or any application of any corrosive agent to the natural tissues of the body, that are capable of decomposition, will produce pus, without the presence of micro-organisms. The author, I think, denies the production of pus from micro-organisms. I don't consider that Dawbarn is very good authority on that point. The experiments that were made some years ago by Herman Knapp and his collaborators show that the introduction of various irritating agents beneath the skin in sealed glass tubes and bulbs, when introduced under the greatest antiseptic precautions, and the bulbs afterwards crushed beneath the enclosed skin, that in not a single instance was pus produced, nor could the pus microbes be discovered in the serous exudates found in those cavities on opening them either at the beginning of the process or at a later period. The conclusions that were arrived at by Knapp and his collaborators at that time and to this day have not been disproven; and this I conclude, considering the large number of workers in bacteriology in the various departments of medicine and surgery, indicates that the scientific world has accepted this experiment as conclusive, up to the present time. The paper of Dr. Pierce and his school has been very violently assailed by Dr. George S. Allen and some other writers, with chemical analysis to show that uric acid was not found in the calculus that was taken from, or near, the apices of the roots of the teeth. So that, it seems to me, is still an open question. One chemist in Philadelphia found some urates, I think, and the chemist in New York did not find any. Consequently either the calculus was not the same, or one or the other of the gentlemen erred in making his analysis As a matter of fact, and in this respect I agree with Dr. Cravens, we find the so-called Riggs' disease at almost any age. He states in his paper that at fifteen years of age and upwards he has found it. I recorded one case about four years ago where I found the disease as early as the ninth year. I never saw but that one; but it was distinctly the

so-called "Riggs' disease" pocket, and I called attention to it at that time. The trouble about the discussion of this whole question lies in this particular: we find teeth that are loosened and loosening, with deposits on the sides of the roots, and sometimes deposits covering the apices of the roots, say two roots of molars with the third untouched. We find deposits over the apex of a single tooth and a pocket, and the tooth not perceptibly loose; and in other cases we find something that is founded on so-called "Riggs' disease," where there are absolutely no deposits on the roots of the teeth—they are entirely free from deposits—and still the teeth are loosened, and when the finger is pressed under the gum, from the apex down to the gingival margin we find a discharge of pus. It seems to me that we should restrict the classification of this disease and make what we would call "Riggs' disease," a disease where there is always a deposit on the root of the teeth, or else confine it to where there is no deposit, but where the gum and periosteum is separated from the root. These two cases should be differentiated, because in the latter case it is hardly possible that the character of the pus that is produced through the agency of micro-organisms would completely denude the root of the tooth of a previous deposit of calculus. Is there any variety of pus so active in its nature that it will separate such a deposit from the root of a tooth? I, at least, have never observed such a character of pus. Taking then, that phase of the disease where there are deposits on the roots of the teeth, the question before us is, what produced this deposit? Is it of constitutional, or local origin? I will try and answer the last part of it first. If it is of constitutional origin why does it not deposit on the roots of all the teeth uniformly in the same mouth? If it is a truly constitutional disorder why do we find that there may be a first bi-cuspid with deposits, and then a second molar and a second bi-cuspid and the first molar entirely free? I do not know that that is absolutely proof positive that it is not of constitutional origin, yet you see hundreds of cases where a so-called "Riggs' disease" has attacked a tooth, and you find two teeth, or three, or four on one side of the mouth, or all the teeth in position, not loosened or loosening, and the teeth on the other side perfectly

free. Have you not seen such cases? After reading the paper of Dr. ——— of Esen, Germany, in 1881, on what he called infectious alveolaritis, I have been strongly of the opinion that the so-called "Riggs' disease" was a disease of local origin, but that constitutional complications might exist which would enable or permit this disease to progress more rapidly and be coincident with it. It is not impossible; but with the inception of the disease, as a disease it seems to me that there is no evidence to support the theory in spite of all the papers of Miller, Black, Wetzel and others—in spite of all the papers pro and con, that there is no evidence to support or prove that it is a disease of strictly constitutional origin; but that it must have some external agencies to begin with, no matter whether those be from the effects of a clamp, or a pair of forceps misapplied, or an unskillful operation around the tooth, that it must be local.

In the next place, Dr. Cravens, as I understand it—if I am wrong I wish to be corrected—says that it is not infectious. Now, a gentleman who stands very high in the bacteriological world, whose name you would recognize as deserving of that high position that he holds, if I mentioned it, communicated to me in confidence a case of infection that he brought about purposely to determine the effect in the mouth. He said that he did not wish to have this published at the time, because he was not sure of it; but, later, after the tooth was lost through the infection, he told me that he was satisfied that it was infectious; and he still claims that it is infectious. He claimed that the introduction of an instrument bathed in the pus from a "pocket" of this kind, if used on a sound gingival margin or beneath it, would carry the disease in the same mouth from this pocket to another, as he had seen a case where the teeth had been thus lost.

If I am not mistaken Wetzel also inoculated one or two or more dogs—I think I am not mistaken in that—to prove the infectiousness of it. Now, if we accept the theory that pus cannot be produced without the agency of micro-organisms, we must accept the theory that the so-called "Riggs' Disease" is infectious; otherwise the first part of the theory would be useless.

The next question would be, if a nidus were formed around

the root of the tooth for the collection of the spores of the pus microbe, naturally the destruction of the peri-dental membrane would be first, and secondarily the destruction of the alveolar socket would ensue, and, thirdly the production of the deposit would result; that is, the three processes are, first the peri-dental membrane destroyed, and the pericementum; second the bony socket contiguous; third the deposit from the serum, sanguinary pyonal, as Dr. Cravens calls it. Now, the mere deposition of granules of this sort of calculus being merely mechanical is not sufficient in itself to produce pus, because we deny that pus is produced without the agency of micro-organisms. Second, the chemical constituents of deposits found on the roots of teeth under such circumstances are found to be different from the ordinary salivary calculus, because it is wanting in certain constituents that are found in the ordinary salivary calculus as we find it. Another proof of the fact that it is not of salivary origin is this: that beyond the line of detachment of deposition of salivary calculus you will never find a peridental membrane recede from the root, and as soon as you dislodge the salivary calculus from the root of a tooth down to the extreme point of its deposition you won't find any pus corpuscles, or pus microbes; because if you did, there would be a detachment beyond, that would be a nest for the future proliferation of developed microbes, which would destroy the peridental membrane. We don't find the peridental membrane destroyed beyond this mechanical deposition of salivary calculus. It is deposited on the roots frequently after the peridental membrane has been destroyed by the so-called "Riggs' Disease," and we find salivary calculus on the roots of such teeth; but in a case of that kind it is just as though you could run a white-wash brush over the side of the root, and it leaves it ragged and irregular, in granules, there being no membrane around the root to jut up against it; the membrane does not extend to and around the apex of the root only in exceptional instances. The destruction of the bony socket of the teeth may be accomplished through the ichorous nature of the pus, produced by a certain micro-organism called the micrococci pyogenes citreus. It is possible to produce the death of the bone

surrounding the root of a tooth, and a number of observers have found that it was necrotic tissue, and that it was an organism that could be isolated from the pus. There are some teeth, where the apices of the roots have been uncovered through the proliferation of the so-called "Riggs' Disease" and we find that the pulp dies in consequence, and that the root of the tooth assumes a bluish-black hue, and that the cementum on the roots of such teeth appears to be totally devoid of any semblance of vitality. This is only in extreme cases; and the question in my mind would be in differentiating, whether that cementum was destroyed in consequence of the presence of the pus, or whether it acquired that character from the destruction of the pulp. That I have not been able to determine. I should be inclined to the belief, that the vitality of the cementum was lost simply on account of the destruction of the pulp, after the peridental membrane was stripped from it. Dr. Cravens says that pyonal calculus is a result of the disease; I am perfectly willing to agree with that, because as I view it, as I have stated it, it must be the result of the disease; and I differentiate it from salivary calculus, as I have previously stated; and I say that it is the third step in the natural history of the disease, if left alone.

I don't know that I am called upon to say anything about the treatment of this, as I believe it is simply the etiology we are now considering, and we will leave the treatment alone. I will only say this, that if it were a constitutional disease we could cure it by simply removing the mechanical difficulties in the way and then administering our remedies constitutionally and the case would get well. But they don't get well without local applications. If the man is suffering from some grave disorder that requires the administration of remedies, why, that could be carried on at the same time; but the administration of the remedies, except for the toning up of the general system will not affect the cure in these cases, without the application of local remedial agents, whatever they may be. I think that is all I have to say.

Dr. J. S. Cassidy, of Covington: I do not think I have such pronounced views upon the nature of "Riggs' Disease" as

to be unable to agree with many of the points made by those who argue pro and con, especially some of those made by Dr. Cravens, in his excellent paper. As Dr. Harlan says, there are cases and cases of this disease, and that all which are diagnosed as "Riggs' disease" are not truly genuine "Riggs' disease," or pyorrhœa alveolaris. Ever since Dr. Ingersoll suggested sanguinary calculus, near the apex of the root as the possible incipient stage of this disease, I have had an opinion that such was the case—that the disease was a local reflection of at least a constitutional predisposition to it. Now, while at this point I would say that Dr. Harlan asks why, if this disease be constitutional, all the teeth are not similarly involved? It is because, I think, if it be constitutional, that the conditions—the local conditions—in each tooth are not alike; that there is a law of periodicity, which applies to this as to most other things, all other phases of matter, animate or inanimate—a periodic law. That might be, for instance, I will not say proven, but as tending to the idea that there is such a law—instanced in this: why will a bicuspid withstand the destructive processes when its neighbors on either side of it have been destroyed? Why has it stood sound, alone, for so many years? And its mate on the other side of the mouth, say, first or second bicuspid, or any other tooth, if it has a mate, which it generally has, I believe. Those two teeth remain sound and free from disease until a certain period of life, nine years—which is the extreme limit of this disease (Riggs' disease), I believe, to appear, in seventy-five years, as the case may be; then disease appears, caries of the surface of the bicuspid, we will suppose, and it appears almost simultaneously in an analogous position on its mate. Now, why are those teeth persistently well so long, while all their neighbors have gone? Simply because, according to this view there is a periodic law to regulate these matters, as well as local influences. I have regarded this disease, called pyorrhœa alveolaris as a constitutional or as a local reflection of a constitutional cause; and I say that ever since the statement of Dr. Ingersoll, about ten years ago, of sanguinary deposition on the roots of the teeth, that I have regarded this disease as due, primarily, to these deposits. They are too minute for us to dis-

cover, even if we extract the tooth in the beginning—too minute to discover but yet of a sufficiently irritating nature to produce inflammation and its train of symptoms and the troubles that follow, and which have defied the best efforts of therapeutics to overcome. Now, what is the solution of that? Is the alveolus involved? I don't know. It might be, as Dr. Harlan suggested a deteriorated pus—not pus by itself, but deteriorated. I cannot conceive of pus alone causing the deposit, and agree with the essayist in that respect. I cannot agree with the essayist, however, that the calculus is pyonal, that it is caused by pus, cannot call it by that name. He gives it that name. Why? There is no reason why it should have that name. I do not think it can be called, properly speaking, pyonal pus. Pus is a consequence of the destruction of the disease itself. Micro-organisms, of course, must be present as a consequence of the disease, a catabolism instead of a metabolism; and why nature should attack the aveolus instead of the root of the tooth, is because, I presume, it finds the alveolus more susceptible of attack, more easily destroyed than the root itself; but if the root be extracted the disease is cured. My opinion is that a genuine case of "Riggs' disease" cannot be cured in any other way. I believe I have said all I wish to.

Dr. Hunter: The idea of my being inflicted upon this Association for the discussion of this subject is somewhat in the nature of a joke. However, there are several reasons why I have been selected by the committee. First; because I am personally acquainted with the essayist, and have a respect for him; second, because I am personally acquainted with the committee and have no respect for them; and, third, and I suppose the most important, is, that I know nothing whatever upon the subject! But in this day of advanced science, when the theories of yesterday are scorned today, and when the theories of to day will be laughed at tomorrow, it matter little what is said on any given subject from either side for everything goes! When beef is considered a stimulant, and whiskey a food, the theories of yesterday are certainly not "in it" today. Our friend the essayist has given us a very plausible theory. I have had the pleasure, recently, of reading

his little book that he refers to, in which there is a beautiful theory advanced, and in some respects a plausible theory. One of the plausible points of the theory is just, in my mind, what Dr. Cassidy objects to—pyonal calculus. He demonstrates in that book by analysis, and giving the authorities, that pus contains a greater proportion of lime salts than saliva; and he says in the book the wonder is, not that there is so much deposit from the pus as that there should be so little. To my mind that seems plausible. The constituents of pus, as far as the lime salts are concerned are very much greater than that of saliva; but Dr. Cravens is very enthusiastic; he gives us theories; he has given us a theory before. There are many of us here that remember how enthusiastically he advocated the theory some years ago of nature appropriating from the topical application of oxy-phosphate of lime material for making phosphate of bone. I believe he has given up that theory. I hope that this present theory will stand the test of time better than that did. In his treatment by mechanical manipulation he is certainly more thorough than the majority of us are; and we do know that in the treatment of this disease that the more thorough the treatment the more good we do the patient; but in my own mind I doubt very much if the removal of the result of the disease is going to effect a cure. You must get at the cause of that disease. We are endeavoring to do it, and the theories advanced by the essayists and others are all tending in the direction of discovering the cause of this disease. We need such enthusiastic observers in the investigation of any subject. The Doctor's hair is a little thin on top; but it is of a good color! I hope that his theories will stand the test of time. He claims to have produced cures by simple mechanical manipulation that the rest of us have been unable to do. In that book he speaks of a thorough removal of this calculus; and anything short of that is only a temporary success; or as he expresses it, a partial failure, I believe—(Dr. Cravens: Modified failure). Well, I am willing to admit that I have only made modified failures in all of my experiences. I cannot cure this disease; and I believe that the evidence is sufficient, from what the essayist says that it is hereditary, or that heredity is the predisposing cause.

I have seen too much of that in my own family—in myself. I have the disease in my own mouth, and I know a little about it practically; but cannot cure it. I guess I will put myself under the care of Dr. Cravens.

Dr. O. N. Heise: I did not have the pleasure of hearing the paper, but from the synopsis sent me I cannot help but agree with the main points, except that it is periostitis, and he does not say how that is produced; he simply makes that statement without saying what grounds he has for it; I wish he would make some explanation of that.

Dr. Cravens: Did you hear the paper?

Dr. Heise: I did not. I simply judged from the synopsis you sent me. Not having heard the paper read I don't think I am able to say anything about it.

Dr. Taft: Are there others who wish to take up the question, or make any general remarks on this subject?

(Dr. Wright was called for by several members.)

Dr. Hunter: He don't know any more about it than I do.

Dr. Wright: That is the reason I want to speak on it. I don't know that I can say anything of interest on the subject at all. The one point of the infectiousness of "Riggs' disease" I want to speak of as a matter of history. Thirty or thirty-five years ago, in Dr. Keely's office when he had the first case, we did not know anything about it, that is, the simple loosening of the teeth that was present, and existed then, as now. We believed then in extracting those teeth, so that possibly the other teeth would not be lost, believing that it was infectious from one tooth to the other in the same mouth. The disease used to spread; and we extracted the affected teeth for the purpose of curing the disease. That was thirty-five years ago and we don't do that now.

President Taft: Has Dr. Cravens anything further to say on the subject?

Dr. Cravens: I have very little further to say on the subject. Dr. Harlan stated that I said the calculus was the result of the disease. I see a rather quizzical expression in Dr. Taft's eyes, as though he wondered why I should find it necessary to make such a statement. I will explain that I should not have

thought it necessary to lay down that for the information of Dr. Harlan, in the paper, but I made that statement because I know there are many, perhaps the majority of dentists, who have the idea that calculus is the cause of the disease, so that I took the trouble to explain that the calculus is the result of the disease, and not the disease the result of the calculus. In regard to the infectious character of the disease, if it were infectious it seems to me that it would prevail generally in any mouth in which it had once obtained a foothold. It has only been a matter of ten days, or two weeks, since I had the opportunity to examine the lower molar of a gentleman that I had treated two years ago. It was the only case of pyorrhœa in his mouth. I can not find a symptom of it now. He has pretty near a full complement of teeth. I met him on the street a few days ago, and as I was coming up here I told him I would like to look at that tooth; and he came to the office, and there was no sign of it anywhere else in his mouth. Now, Dr. Cassidy spoke of the calculus, and did not believe that I had any authority, or perhaps thought I was wrong, in holding that it was deposited from pus. I did not say it was caused by pus, but that it was deposited by the pus. Dr. Hunter came very nearly to answering that question; in fact, I think he did, but in his analysis did not give quite all of it, in his analysis from the book. It is shown by the authorities I quoted from, that the pus contains 300 per cent. more of the elements of the calculus than the saliva. So that is why I used the remark that I did, that Dr. Hunter referred to—I mean as to the salts. The other constituents that come from the pus we do not expect to find in the saliva. As to the extent to which the disease is curable, of course Dr. Cassidy's remedy is older than Dr. Cassidy—perhaps older than the disease.

I carried the disease back to Mt. Ararat, and would not like to go back further, because I believe some of our scientists claim our diseases have altered nowadays, because the solar rays did not come direct to the earth before the flood, on account of the constant canopy of clouds, the atmospheric conditions, too, were different, and the diseases before the flood were very much different. So I would not like to go back any further than the time

when the ark rested on Mt. Ararat for the first case. In regard to inoculation, Dr. Harlan thinks some cases have been reported of that, and that there were evidences to prove that the disease could be transmitted by inocculation. I don't know anything about that. You may have pyorrhœa on one side, a lower incisor say, and it will not affect the other side. I have treated such a case and cured it; there was no more pus, no more congestion, and it remained in that condition and the others remained unaffected. It is not symmetrical, and that is one thing that proves to me that it is not constitutional. If it was constitutional, why would it not be general? In very many cases it is isolated, one tooth here and there—not symmetrical.

On motion the discussion on this topic was now closed.

PRESIDENT TAFT: We will now hear a paper by Dr. J. R. Callahan, of Cincinnati, entitled "English Tube Crowns for Bridge-work."

ENGLISH TUBE CROWNS FOR BRIDGE-WORK.

We will admit, that modern bridge-work when properly constructed, is a blessing to suffering humanity; but great as the blessing may be, we have to acknowledge that there are many weak points that even the expert is unable to overcome

The man that will show us how to make the attachments to roots, that will not irritate the gums, that will not afford lodgment for food, that will not make a disgusting display of gold, that will not break or twist out of shape, that can be repaired without destr ying the whole piece, and can be adjusted without destroying sound teeth; that man will confer a great blessing upon our profession as well as upon thousands of people who carry about in their mouths those unsightly, broken and stinking abortions that are altogether too common in our midst.

It is our desire to call your attention to at least a partial correction of some of the defects in bridge-work as constructed in this country. The points in favor of the use of the English tube crowns in the construction of bridge-work, that we wish to demonstrate to-day, are the concealment of metal, the introduction of crowns that are easiest to mount, least liable to fracture,

that do not change their color during the course of construction of the bridge, and that are easiest to replace in case of accident.

We will give a few details for the construction of a simple piece of bridge-work extending from first superior molar to first superior bicuspid. The abutment teeth are ground to the proper shapes; gold caps are then made to fit these stumps; after caps are in place upon the roots, cut a hole through the cap just over the root-canal for the pin to pass through, being careful to have opening of such dimensions that the pin wire made for these teeth will fit in the cap snugly, having selected a suitable crown fit it roughly to the cap; place the pin in the root and try on the crown; if it be much out of line with the other teeth the fault must be put right by bending the pin or reaming the canal in the direction necessary; try on the tooth once more; when the proper position for the pin has been ascertained, remove cap and pin from the mouth and solder the pin in its place.

(Being careful to use smallest amount of solder and to get perfect attachments.) The caps should now be put in position and the crowns placed loosely on the pins; the crown to be suspended between molar and first bicuspid is now fitted to its place; the neck or that portion of crown coming in contact with gum, should be ground to the right shape; a very thin platinum plate should now be soldered to a piece of pin wire of proper length; pass the wire pin through the tube in the crown and burnish the platinum plate to the V-shaped portion of crown just referred to; now try the crowns and caps in the mouth, place a little sticky wax on the second bicuspid crown and platinum plate and force all the pieces to place in the mouth; with a camel's hair brush place a very thin film of oil over the porcelain crowns, then remove the whole bridge from the mouth by means of plaster in the impression tray, trim the plaster from about the metal parts, then cover the pins and caps with impression compound, allow the compound time to become thoroughly cool, then cut away the plaster and remove the crowns; the oil that was placed on the crowns will make this easy; this will leave the pins sticking from the modeling compound; now place a mixture of plaster and marble dust over these pins and after it is dry remove the

modeling compound by means of dry heat; this will put the metal parts in position to be soldered together and the porcelain crowns are out of the way, or in other words the piece will be soldered together without subjecting the porcelains to the heat that so often cracks and otherwise injures them; place a piece of platino-iridium wire extending from molar to first bicuspid; in the depressed platinum that was on the second bicuspid crown, flow enough solder over this to make a strong and smooth union; cool and remove and finish; place the metal on the roots in the mouth, adjust the crowns on the pins and see that everything fits to its place; then finish grinding the occluding surfaces; then remove the whole piece from the mouth, roughen the pins slightly with a fine file, then boil all the parts in acid to remove every trace of oil or grease, dry with alcohol; then we are ready to attach the crowns to the bridge; have a small vessel filled with melted sulphur, with pliers grasp the bridge by the metal pins, the crowns being in position, warm the bridge piece slightly in the flame of bunsen burner, then with a warm wire carry the melted sulphur to the pin in the grinding surface of crown; the sulphur will run into every crack and crevice in the neighborhood, and when cool the bridge will be ready to be cemented to the roots, and we will have a bridge piece that will show but a small line of gold at the gum border; that has been easy to construct.

The tube crowns are stronger than other kinds of porcelain teeth, for the reason that they are supported over their whole lower surface and the greatest strain in occlusion falls mostly in a vertical direction upon the crown and parallel to the line of the central pin; whereas in a flat tooth, the attachment being on one side only—the impact of the bite is more unevenly distributed, and not least of all they have not been exposed to the heat of soldering, which so often cracks and weakens the teeth in all kinds of metal plate work; the crowns under this method can not change in color. (1st), on account of their having been kept from the heat, and (2d), because there is no metal backing to contend with; and if a crown should be broken, a new one can be put on in a few moments, without removing the bridge from

the mouth; I have yet to see the first one break. These crowns can be gotten either through your regular dealer or from C. Ash & Sons, No. 30 East Fourteenth St., New York City.

To all who are not familiar with this kind of work, and desire to give it a trial, I would advise them to read the paper of Dr. John Girdwood, in the printed proceedings of the World's Columbian Dental Congress.

The Dental literature of this country, will always be painfully silent on the use of these crowns, so long as the combination of Dental Manufacturers hold the American Dentist by the throat, as it does to-day.

Dr. Callahan having concluded his paper, President Taft called upon Dr. Ames, of Chicago, to open the discussion upon the same.

Dr Ames: I suppose that Dr. Callahan asked me to discuss this subject because at different times we have together discussed to a considerable extent this particular class of work and to the desirability of concealing gold to as great an extent as possible. I think that one of the most desirable objects to be attained in the construction of crown and bridgework is more scientifically artistic results than those we so often see. And it is to be done with the maximum amount of porcelain and the minimum amount of metal. I don't know of any better way to accomplish this than by the use of these English tube teeth, and in the manner described by Dr. Callahan; unless it be by means of the use of another form of teeth made by the same people; that is, the diatoric teeth which have an opening partly through the crown, instead of all the way. In my use of these teeth, as well as of the diatoric teeth, I sometimes have to proceed rather differently than as Dr. Callahan describes here, in order to get my crown, and the proper alignment of crown on the root. The Doctor says he fits the pin to the root, and if, by placing the crown upon the pin, it does not come in a proper line he reams the root and bends the pin. I am not always able to accomplish it that way. In a majority of cases I make the pin in two parts. To be explicit I would fit the band and cap to the root, perforate the cap, put the pin, which is to be contained within the

root and solder it, and cut it off flush with the surface; then I would take an impression of that, as in an ordinary case of crown work—or without an impression work to the mouth direct—and grind my tooth to the position, giving it proper alignment, and then burnish and fit to the crown end of the porcelain tooth a cap, turning it slightly over the edges and perforating that at the point of the whole in the tooth, putting the pin in there and soldering it, and then put the two in their proper relative position, and run solder between the two, in that way getting a proper alignment where I could not do it nicely otherwise. It seems to me by using the separate piece of metal, one cap for the root and one for the tooth and burnishing the metal over the edge of the porcelain slightly, having the porcelain tooth in a sort of a bed, which gives it a more substantial attachment, I think, than if it is simply set together on a plane surface—it is in a sort of a receptacle, you may say—and I think it will stand a greater amount of strain. The diatoric teeth, I like a little better for bicuspids and molars. Dr. Callahan suggests that I draw a diatoric tooth on the black-board. I think you are all familiar with it. I am not a draughtsman. (A voice: You are a drawer.) Sometimes, if I am lucky!

(Dr. Ames then drew upon the black-board an illustration, and made remarks accompanying same which it was impossible for the stenographer to follow and re-present here in an intelligible manner. He concluded by saying:) I think the first work I did of this kind was with the English Tube teeth, because I happened to have a few of those before Mr. Sykes established the branch of Ash & Sons in this country; but when he came here I became familiar with these diatoric teeth, and I began their use, because, I think, you can get better patterns, better selections of these, while they do not carry much of a selection of the tube teeth. It must be five or six years or more; and I find that while at first glance it often seems that the attachment of the porcelain to this cap would be weak and not be satisfactory, yet from actual experience I find it is very strong. (A voice: The porcelain will break: can you replace it easily?) I never had one broken. (A voice: What would you do if you did?) I think you will

find that they will hold; you can grind this hole closely, and if it gets too large simply fill in. I have never had one come off. I have never had the porcelain to break or come off from its attachments; but I have had the attachment to the root weaken. I have in my pocket a tooth that is made up in this way. Here is a molar of that kind, which was a dummy in a bridge piece that I changed, for reasons not necessary to mention, and it will show what can be done with those, and show about what I would consider to benecessary as to strength of gold. This was, of course, the dummy between two crowns, and will show about the way this can be done. That is attached upon the gold with silver. I find that these teeth, either the tube teeth, or the diatoric, are extremely satisfactory for these dummies, for making the span you can arrange these any place. Say you have, furthermore, two or three bi-cuspids, you can arrange them in position and flush up the backing here to a sufficient extent to give strength for the span. (The Doctor then explained certain peculiarities in the sample exhibited, and continued:) The advantage in the use of this English porcelain that makes it very desirable to me, is, the peculiar texture and homogeneity of the texture and material, enabling you to grind it down and polish it; and the advantage in doing your work in this way is, that this peculiar porcelain is liable to change color in firing, and in doing the work in this way there is absolutely no danger of getting the color affected. While speaking of this, I want to mention a matter possibly a little out of the line of this discussion: I want to speak of the possibility of using these same teeth for cuspids and incisors, in such a way as to avoid having the porcelain in position while doing the soldering, thus avoiding the danger of change of color. This is a method that has become popular among men who endeavor to do this kind of work nicely and in an artistic manner; in backing up incisors or cuspids, and then removing the porcelain from the backings; remove the porcelain teeth from the backings and insert through the holes in the backings little graphite pencil points, waxing these in position as the pins would be if the porcelain tooth were there, flowing the solder off the finger around these points, drilling out the cavity, the whole being

retained by these graphite pencil points, cementing or fusing on the silver and rivetting down the pins. I have used that method; and I want to give the credit for my knowledge of that to Dr. Buckner, of Baltimore, Md., who gave me my knowledge of it, I think, in 1889. I have practiced it very satisfactorily since, and inasmuch as that has been written of and shown to a considerable extent recently, the credit of it should be properly placed; and so far as I know Dr. Buckner was the originator of that, as I obtained the idea of him at least six years ago. I think that is all.

DR. CUSTER: I don't know that I can add very much to what has been said. I can only agree with the author of the paper, because he has given the idea and principles of bridge-work, when correctly constructed, having reference to the requirements of strength and hygiene and beauty, not omitting the element of repairability. The point of strength, I think, has not been touched upon in this: where a piece is suspended between say, the first bi-cuspid further back to the second molar, you would have, then a bi-cuspid and molar. There is the principle of suspension. As any of you know metal will stand more strain in a pulling direction than in a bending. We gain more strength at the least expense of metal by this treatment, the tooth being set upon a pin, and the pressure being brought to bear so that the effect upon the gold is simply a pulling strain from one abutment to the other. Another point of strength can be mentioned, and that is, let the teeth be put there on the principle of locking; have a groove ground in the side of one porcelain tooth, and the one that fits into that have a corresponding projection to occupy that groove in its neighbor; let that principle be carried clear along through the bridge; then if the pins were to be broken in any one tooth, I apprehend that the tooth would be retained by this locking of one tooth into the other. A point in regard to hygiene is, that the whole space is filled up—the inter-dental space. That is a necessary thing to observe where two teeth are in touch with one another, and the proper thing, of course, always to observe in filling. Here we have, let us say, three or four teeth, and the inter-dental space partially filled. Why not fill the whole

space; let it be filled solidly. Have either platinum or pure gold next to the mucous membrane, and then block in solidly with pure gold teeth, at the outer surface imitating the surface of those teeth. The mouth has always seemed to be a self-cleansing thing; yet it is anything but that in many cases coming under my observation, If we are going to fill in there, why not fill it all in with a material which will not deteriorate, and which will not invite micro-organisms? And then I think we have done the best thing possible. Another thing, the base being of pure gold or platinum would not come in contact with the mucous membrane produce irritation. During mastication, especially, the food would not be forced in; normal action will keep that self-cleaning. If you have not accurately fitted that case, so that it comes in contact with the mucous membrane, the mucous membrane will fill that in after a time, next to the band. I think that is the most beautiful piece of work that can be constructed. There need not be but a mere line of gold on the outside. The point has been touched upon that these teeth may be ground, without marring their appearance, afterwards being polished. The point of repairability is also a strong argument in their favor. It is such a strong one that it is of the highest value, and it is the first recommendation that directed my attention to the use of these teeth; but I have never had to repair them. If necessary it is evident it can be very easily done, by the mounting of new teeth upon the old pin.

Dr. Emminger, of Columbus: I know so little about these English tube teeth it is hardly worth while for me to attempt to say anything. Some time ago Dr. Callahan wrote me and wanted me to discuss his paper, and said he would forward me a copy of it. That is the last I have heard of it. I came to the conclusion that he was simply making another effort to maintain his reputation, that he has so long enjoyed in this community, among dentists; but the manner in which he has presented this case, I think, displays some very good features. The possibility of constructing a piece of work which would have very little metal exposed, and also be easily repaired, when it becomes necessary, seems likely; but I have found in a number of cases of bridge-

work that it was not this part that needed repairing; you need new piers for your bridge; he has not set forth any plans by which he can obtain them. The English tube teeth, I think, have features of strength which you can not get with teeth with pins that are burned into the teeth, the latter being liable to fracture, probably from the effects of the fire, which is very annoying to all who have to do with bridge-work. But these English tube teeth are, I think, much stronger and the case is much easier repaired, and they give much less annoyance to the operator when repairs are necessary. I never have constructed any work in this manner, and therefore know very little about it, and have not much to say on the subject.

Dr. Wright, of Cincinnati: As there is another subject of a kindred nature to this, upon which Dr. Evans is to address us, I move that we hear Dr. Evans at this time, and then the discussion can be combined on the two papers—always provided that Dr. Evans is willing.

Motion seconded.

President Taft: Dr. Evans prefers that his paper be read to-morrow morning.

Dr. Wright: Then, with the permission of my second, I withdraw my motion.

Dr. Taft: If the subject is different, as I understand from Dr. Evans that it is, it will perhaps come in just as well to-morrow morning. We will continue the discussion on the present topic, and then proceed with the next paper. Are there any further remarks?

Dr. Harlan: I would like to ask Dr. Callahan, the author of the paper, one question. He says that in case of fracture of one of these teeth it is very easy to repair it. Now if he uses silver, the melting point of which is 268°, I don't think it is very easy to put one of those English tube teeth on the bridge in the mouth. You would have to melt the silver, or use oxy-sulphate of zinc, or some analogous substance; isn't that so?

Dr. Callahan: Yes, sir. In case you have to renew the crown, you would have to set it on with cement. I would not attempt to put on silver, although I have seen some mouths you could do it in, and it would not hurt them either.

Dr. Harlan: I only asked that question for fear somebody would get the idea that it would be easy to repair one of those bridges, and use silver, because they would have to apply more heat than could be borne by almost any patient.

The thing that strikes me as something that would be a great improvement in the making of bridges of this kind, is the manufacture of a half-round rim of gold in which to set the end of the ground tube tooth, so as to produce greater solidity, and which could be chamfered off to a minimum in appearance at the buccal aspect; that would add very much to the strength. Dr. J. H. Spaulding, of Paris, at the last meeting of the American Dental Association of Europe, read a paper on the use of English tube teeth in bridge-work, which was published in their transactions a short time ago, and in the *Dental Digest* and other publications, that has a pretty good set of directions for making this kind of bridges, which, added to Dr. Callahan's paper, will make a very complete treatise on that subject up to the present time. The remarks of Dr. Custer about a rest of pure gold or platinum under a bridge on the gum has the same objection that almost all appliances of that kind have, that is to say, they form a nest for micro-organisms; it is not food or saliva that causes the irritation, but it is the proliferation of micro-organisms, that produces redness, which is similar in kind to the redness that we find underneath rubber plates, wrongly attributed to the coloring matter of the plate.

Dr. Gillette, of Cincinnati: Dr. Ames gave his preference to diatoric over English tube teeth. The diatoric has a transverse opening, and I would ask him what disposition he makes of that? Does he leave it open, or fill it, or use it in the construction of the crown, making it stronger? And if he fills it, with what material; otherwise it would be uncleanly, it seems to me.

Dr. Ames: The transverse openings connect with the central chamber there, and in cementing, as I ordinarily do, that fills the lateral openings. I find that proper cementing saves plugging with gold. I had taken the precaution, in some cases, of plugging those little lateral openings with gold foil; but in those cases

in which I did not, I find that the cement remained flush for several years, perhaps.

DR. TAFT: Are there any further remarks?

DR. AMES: If I will be allowed I will say a little more. I omitted to say in regard to what I think we are coming to in this country in this class of work. I think the time is not far remote when we will have no use for English tube teeth, or diatoric teeth, used in this way. We will make solid bridges of porcelain right through, using, of course, some platinum to make our connection, attachment to the roots, and to give strength of span; but we will have very much more platinum or very much more porcelain embodied in the bridges of the next few years than we have in this.

PRESIDENT TAFT: I would ask if Dr. Ames has any experience, or is it only imaginary?

DR. AMES: I may say that I am adopting it to a greater extent right along, making molar crowns of porcelain, bicuspid crowns of porcelain almost entire, fitting a platinum band cap and dowel to that of the root; then taking what is ordinarily called a saddle-back tooth, which has pins. A saddle-back tooth is similar to a diatoric tooth, with the exception of having pretty much this shape (illustrating on blackboard). The saddle-back tooth, instead of having a chamfer, the shape of the diatoric, is more of a saddle-back, the pins coming out at about that angle (illustrating). Now, a bicuspid or molar can be adjusted in its proper position upon a platinum foundation, the band cap and dowel having been fitted to the root, and the pin bent down into contact with the platinum cap and soldered, then these places filled in with porcelain and baked either in—the only facilities I have of doing it at present being a Downey furnace, using Downey materials—this pin being usually allowed to approach as much as can be here; then bending the two pins around this, bending this pin down against the cap, as the case may be, filling it with porcelain and fusing it. I have confidence in that being a thoroughly substantial and the most artistic of anything possible to make. These saddle-back teeth, more especially for the molars, are to be obtained of better shape than either tube teeth or

diatoric ; when it comes to the molars you get the buccal surface and the masticating surface of an artistic shape, and all you need to do is to fill in this posterior surface, the getting of contour there being a very simple matter, and I must say I am very much in favor of it.

DR. WRIGHT: I want to call the attention of the Association to a remark of Dr. Harlan, and ask for some explanation in regard to it. Criticising Dr. Custer's remarks, he said there was no particular objection in those plates resting on the gum, to the saliva or food getting in there, but it was the micro-organisms. I should like to know what hurt a poor little micro-organism would do under a plate if there was no saliva or any meat and bread, or such things, there?

DR. HARLAN: Dr. Wright misunderstood me. The object of my remark was to cover the point that peripheral irritation of mucous membrane is the result of micro-organisms' presence. Of course they do find food for their sustenance in the saliva and other substances in the mouth; but the red spot that is usually there is caused by the excretion of the micro-organism, just as the red spots found under rubber and other plates are caused by the excretions of some organism, instead of being occasioned by the coloring matter or the presence of metal or rubber.

DR. WRIGHT: Then it is some specially active micro-organism that Dr. Harlan has a spite against.

DR. HARLAN: That is right.

DR. FLETCHER: I can report some failures. I have a liking to report failures. I have tried making porcelain bridges in the Downey furnace, with a platinum foundation. Last week I had a patient come in for whom I put on two bicuspids, using the canine for one abutment and the first molar for another. I had previously put on some bridge-work on the plan of using a crown covered with gold, fastening to the base, etc.—securely done. That broke down. I bethought myself of this plan, which, I adopted. Sent the patient away, telling him I thought now that was something he could not break; I don't think you can chew that to pieces. I did not see him until last week he came in with that bridge broken all to pieces. The platinum bridge itself

had been made very strong, having been soldered with pure gold, and made very heavy and using all the porcelain that there was room to use, and the best material, building it out until I thought it was strong enough so that no teeth could break it. But that has been my experience. I have now another one that came back fractured. I saw it more than a month ago, it is made after the same plan, and that I think is going to do the same way. What the mistake is I do not know. But I thought it was the acme of strength so far as bridge-work goes. It has proved to be as much of a failure as I ever made, and I make a good many. If Dr. Ames or any other gentleman can enlighten us on that class of work I should be glad to hear it. It has been my plan for years to use very little gold on the teeth. A suggestion was made to me by Dr. Sherman. He takes a rubber tooth, gets rid of the head pins by pulling by punching with the pliers, and covers the teeth completely in the back with gold 22 carats, trimming it around the edge until it perfectly fits the back of it, and forms a shoe at the top, which Dr. Ames spoke of a few minutes ago. That is the first step, after you have selected the proper size. My plan is to run in 22 carat solder; then I fit the bridge, filling in with any lower carat solder you may see fit to use, also using platinum and iridium bars to strengthen it. In this way it don't show any gold at all, excepting at the gum margin. It forms a perfect shoe for the porcelain, the work being over the gold, so that it is perfectly protected in that way. If it breaks you cannot take it off and put it on new, as Dr. Callahan speaks of with the English tube crowns. At the same time I have very lately seen a case of bridge-work broken in a way that no one would imagine. The English tube crown does very well theoretically; if it pans out practically you could put on a crown accurately, but my experience is that these things break where you least expect it. I believe that the porcelain plan spoken of by Dr. Ames, if it be practical to put the body together in such a way that the process is available in an ordinary office, and you can get it sufficiently strong, it would be the acme of cleanliness; but the only thing it lacks is the strength, and that is one point I see against Dr. Ames porcelain-work.

Dr. Ames: I don't think I claimed special strength, but artistic results, mostly.

President Taft: If there is no further discussion desired on this topic we will proceed with the regular order. Dr. Betty's paper would come next. Shall we take up that paper now? Has Dr. Callahan anything further to say?

Dr. Callahan: There is one point not touched upon, and that is the grinding of the teeth. If the English teeth are not exactly the shape you want you can grind them to any shape, then polish them, and have a perfect enamel. In regard to this sort of a bridge Dr. Custer spoke of, I don't think that was understood thoroughly. If you take a bridge in this shape and if the pressure is brought from below, the teeth being in position here, and folding this up somewhat, and if the pressure was below you can break it very easily but with the pressure from above down to the center here you could not break it at all, so far as the breaking of the metal is concerned. But if you break the porcelain off, as I say, it can be easily replaced, and there is no danger of breaking the pin, on account of the "V" shape. As to porcelain work being cleanly those of you who have taken old and continuous gum-plates and put them in the furnace and seen them smoke and smell, know they are not very cleanly.

On motion, further discussion on this subject was closed.

President Taft then announced that Dr. E. G. Betty, of Cincinnati, would read his paper on the "History of the Society."

Second Childhood.—Columbus, Ind., Feb. 27.—Mrs. Ann Featherstone, aged ninety-eight, has been ill for three weeks. Her physician to-day announced his patient as convalescent, she having successfully cut a large jaw tooth.

A Dexter (Mich.) woman got so much faith in faith cures that she threw away her false teeth, expecting her natural teeth to grow in again. She waited six months, and now has neither faith nor teeth.

Statistics of all countries show that unmarried men are far more liable to insanity than benedicts.

Twenty Sixth Annual Session of the Alabama Dental Association, 1895.

The Alabama Dental Association convened at the Battle House in its twenty-sixth annual session. The following officers were present: Dr. O. H. Boyd, president, Troy; Dr. O. C. Farrish, first vice-president, Camden; Dr. H. B. Williamson, second vice-president, Evergreen; Dr. G. M. Rosseau, treasurer, Montgomery; Dr. S. W. Foster, secretary, Decatur (now residing in Atlanta, Ga.) There were present about forty members when the session opened in the ladies' ordinary at 11 o'clock.

The meeting was called to order by President Boyd, who introduced Rev. J. J. Taylor, of the Baptist Church of this city, who opened the proceedings with prayer.

The President then introduced Hon. E. M. Robinson, who delivered the address of welcome. Mr. Robinson is a bright young lawyer who enjoyed the distinction of being the youngest member of the late Alabama Legislature, but who is highly regarded, and enjoys quite a reputation as an orator.

Of the advantages of associated effort he said: "Your present annual meeting marks the twenty-sixth anniversary of the Alabama State Dental Association, and I feel safe in the assertion that during the period of its existence, it has done more to dignify and elevate your profession than any other power or influence. The value and potency of organized endeavor cannot be overestimated in this busy, bustling universe of ours, and right wisely have the dentists of Alabama recognized the force of this great principle. No science, no profession, no calling or occupation that ever invoked the energy or ingenuity of man, has ever yet reached the highest point of possible achievement. However, much has been accomplished in the past, and to whatever extent the torch of genius has lighted the pathway of progress, there are always new regions to explore, new discoveries to add to the splendor of past accomplishment. And the science in which your efforts are enlisted is no exception to this universal rule. . .

The most effective method for raising the standard of any profession is the comparison of ideas, the interchange of useful

thoughts. That is the function of your annual convention, and its influence is felt throughout the dental world. You have met, not to elect your officers for the ensuing year and then adjourn, but for the purpose of promoting the cause of dental science. The lessons which you have learned in the school of experience, beside the dental chair, will be imparted to your brother dentists in your deliberations here. The thoughts moulded by each of you in the silent solitude of your studios will now be published to the world and will doubtless enrich the dental literature of your age."

Of the early history of dentistry, and its recent advances he said: "Dentistry does not look to the nineteenth century for its origin and birth. Way back in the early morning of civilization, when the star of empire was still hovering in oriental skies, and when the land of the pyramids was the first in historic importance, the treatment of the teeth was a recognized branch of Egyptian science; and more than a century ago, the supplanting of nature's handiwork with artificial masticators was granted place in your professional equipment. But, like every other science or profession whose votaries are worthy of the name, dentistry has kept pace with the progress of the ages, has stood abreast of civilization's ceaseless march, and to-day registers the highest point in its development.

Fifty years ago when a dentist in the hills of the "Nutmeg state" startled and electrified the dental and medical world by the discovery of anæsthesia, and its application to the practice of dentistry, I have no doubt there were those who believed that your profession had arrived at the flood tide of its glory, and that no further advancement was possible. And yet, during the last half century, the dentists of America have done more to perfect the science of dentistry than had been achieved in all its previous history."

He paid an eloquent tribute to the services rendered to humanity by the science of dentistry, as follows: "The dentist of to-day is essentially a many-sided man. As the stately river draws its coursing current from a thousand hills and dales, and is fed by myriad rippling rivulets, so does the science of dentistry

receive its contributions from well nigh every source of human thought.

Yours is indeed a lofty profession. You alleviate human ills, banish the most excruciating of earthly pains, and, with the magic wand of science, you level the mountains of physical affliction. You apply to the distorted nerves of the suffering patient that subtle substance which destroys the power to feel, you lift him on the wings of morning to ethereal realms, and, while

"His soul to fancy's fond suggestion yields,
And roams romantic in her airy fields."

you perform the operation which would formerly have caused him to howl with agony, and then you bid your grateful subject grieve no more.

He who lessens human woe and stimulates human happiness, is termed a benefactor of mankind. And surely you who master the mysteries of the mouth, explore its hidden recesses, and place content and peace to rule where anguish and distress were wont to reign supreme, should wear the benefactor's jewelled crown."

He closed his address with the following glowing, poetic words of welcome: Welcome, then, exponents of a noble science, welcome to Mobile! The "Queen city of the gulf" salutes you and bids you hail! Her streets are yours. The doors of her hospitable homes will open at your bidding. The trees, which fringe her avenues, have blossomed into vernal beauty at your coming, and the fragrant flowers, in recognition of your presence, send forth their sweetest exhalations. The restless waters of her beautiful bay murmur a joyous greeting as they lap the shifting sands away; and the breezes, which bring their messages from o'er the gulf's broad bosom, breathe forth a melody of welcome.

May your deliberations be pleasant and profitable, unmarred by a single detracting incident; may your sojourn among us bring you closer to our people, and establish ties of friendship that shall endure forever; and, in after years, "When memory's bells chime soft and low," may the recollection of your visit to

Mobile steal upon your senses, like a blissful benediction from an unforgotten past.

Welcome, thrice welcome, to Mobile!

In his address in reform to this genial greeting, Dr. S. W. Foster said: "Our hearts were made glad as we listened to these words of greeting so characteristic of Southern hospitality. And we feel as we enter into the deliberations of this meeting, inspired by them to greater enthusiasm, and gentlemen, if we assume this as the pervading spirit during this, the twenty-sixth annual meeting of the Alabama Dental Association, it will be replete with success and we will all return to our homes wiser men and better prepared to supplant the thistle of pain with the poppy of ease."

Sketching briefly the early history of Alabama, he said: "Over her waved the scepter of four different nationalities. Here at the entrance to this beautiful bay, near two hundred years ago, a French colony settled. After sixty years of adversity as well as prosperity it was ceded to Great Britain. And a little more than one year later the Spanish government obtained control and it was, as late as the year 1803 before the United States came into possession of it, and well might she feel proud of such a possession.

Of the early history of the Alabama Dental Association Dr. Foster said: "Just twenty-six years ago a small band, composed of eight members of our profession, men who loved their noble work, men who realized in their hearts what a boon to suffering humanity the science of dentistry was, men whose hearts were ready and hands willing to spare no time or expense, that they might, by their united efforts, grapple scientifically with the diseases of the oral cavity. Those diseases which so effectually destroy the life-giving function of digestion, and bring him, who otherwise would be a stalwart man, to a premature death. These were the men, who saw that there was a higher, a nobler calling than the mere eking out of an existence, or filling their coffers with gold. Our constitution tells us that their design was to promote and foster the advancement of knowledge in dentistry, in course and good will. It was this beneficent and ennobling

spirit which called them together in Montgomery for the purpose of organizing the Alabama Dental Association, which to-day stands as a monument to their efforts, and an incentive for us, to push onward to greater achievements. Some of that noble band have since fallen at their post of duty, others have done a noble work and growing weary have resigned their places to younger men, and with their blessings bid them God speed. But I am happy, as I stand before you to-day, to know that he who presides over this meeting was one of those few self-sacrificing men who organized the association and formulated its constitution. I congratulate him this morning, as he occupies the most honored chair within the gift of this society upon the success of the work he aided in putting forth, and to which he has been faithful. The Alabama Dental Association has been a grand success. It has done more to lift our profession from the valley of mediocrity and place it on the high plane of perfection of to-day, than any other similar organization. Through its influence valuable dental laws have been secured and the state dental examining board created. Our dental law and examining board are cited as authority. It has had due influence toward raising the curriculum of our dental colleges. And its blessings bestowed upon humanity are untold. And now, gentlemen, as we again assemble in this capacity, let us with appreciation due him, who has labored for more than a quarter of a century for the good of our association, do honor to the grand old profession, and make this the most instructive meeting during its history."

President Boyd in his annual address said: "It is not my intention, gentlemen, to inflict upon you a lengthy array of pretty words, nor to call your attention to everything that might more properly be discussed by you, for I think the shortest compliance with the constitutional requirement will serve you best.

"Ours, gentlemen, is a grand calling—a calling of labor and forebearance, of vexations and heroisms, that the masses know not of. Grand, because of the masterly effort made to relieve human suffering and make human health and comfort, and grand, because of the scientific research and because of the mechanical

and surgical skill displayed. Who is it that can contrast the public estimate of dentistry of a few years ago with that of to-day and not be impressed with the wonderful strides of advancement. It is true that the progress of civilization in general has been greater for the past few years than was ever before known, but with all that none of the researches into the misty mazes of science have been so far reaching, nor so beneficial and comforting as have those made by the dental profession. This progress is due, in great part, to the young men. The same man who said that 'the pen is mightier than the sword' has remarked that in science the young men are the practical elders, inasmuch as they are schooled in the latest experiences gathered up, while their seniors are cramped by the dogmas they were schooled in while the world was some decades younger.

"Had we here in this association older men who are content to live by the theories they gathered up while younger, this statement would be true to the letter. But as it is, with old men who are not old, and who keep up their indefatigable researches with the ardor of young men, and young men who never tire, but are continually trying to give some benefit to the profession and the world, there seems to be a continual struggle for supremacy between the two, with its ultimate object the best good to humanity. I say, gentlemen, let the struggle continue."

Roll call and payment of dues concluded the morning session.

AFTERNOON SESSION.

The association was called to order at 3:30 P. M. by President Boyd, and a paper was read by Dr. A. A. Pearson, of Montgomery, on "The Treatment of Pulpless Teeth," the discussion of which occupied the entire afternoon.

The discussion was participated in by Drs. J. P. Gray, D. R. Stubblefield, of Nashville, and W. S. Hightower, of Moss Point, who had previously been elected honorary members of the association; also by Drs. T. M. Allen, of Birmingham, F. H. McAnally, of Jasper, O. C. Farrish, of Camden, W. G. Browne, William Crenshaw and C. V. Rosser, of Atlanta, and R. C. Young, of Anniston.

Dr. Pearson's paper was very brief. He said that he had recently been so fortunate as to cure, in a week, a chronic abscess that had been under another man's treatment for a year without benefit.

His treatment was very simple, requiring only a Donaldson broach, a Gates-Glidden drill in the right-angle hand piece, warm carbolized water and a little carbolic acid on the end of a piece of cotton. With this, and nothing more, he cured the abscess and the patient was satisfied. The tooth was a left, lower molar, the anterior root having two canals. Having treated as above, and cleaned out the root canals filled the root canals with a thin paste of oxide of zinc and oil of cloves, and gutta-percha points. In conclusion he said that notwithstanding the claims of many eminent dentists that caries is being prevented or ought to be prevented, he finds as much decay this year as ever before, and decay continues to recur around fillings all the same.

Professor Gray (of the University of Tenn., Dental Department), said that the great trouble with pulpless teeth and abscesses was that they were treated to death. All that is wanted is to get them clean, and let nature do the rest. The hundred and one remedies that are being continually pumped into and through, only serve to aggravate the conditions and continue the irritation. Prof. Gray advocates the iodoform vapor in small root canals.

Dr. T. M. Allen does not think that iodoform has any place in a dental office, because of its intolerable odor, but uses aristol, which vaporizes and recrystallizes in the root canal in the same way that iodoform is used by Prof. Gray, and has no toxic effects.

Dr. F. H. McAnally cited root canals filled with plaster of Paris, nine years ago, which have never given any trouble.

Dr. D. R. Stubblefield (Vanderbilt University), said he would add one essential omitted by Dr. Pearson in the equipment for treating pulpless teeth, and that is brains—brains as well as common sense, in order to adjust the means to the end in view. For the final removal of septic matter from root canals he advocates peroxide of hydrogen.

As an acid is necessary to retain the extra atom of oxygen in combination which also makes it a germicide, the hydrochloric or sulfuric acid alone gives equally good results. He described the different conditions in which pulpless teeth are found, and the necessity for judgment in opening them up. He believes in removing all infected dentine from the root canals, leaving only healthy tooth structure. He uses amalgam in filling root canals, carrying it on a broken off Donaldson drill to the apex, leaving a little button there, no matter what the rest of the canal may be filled with, a very small portion being sufficient to close the apex solidly, using it "as a lock to the back door." He advocates corrosive sublimate for cleaning out root canals. He said: "it is easily used, you can get it anywhere, it is convenient and trustworthy."

One gentleman (whose name your reporter could not catch), treats with complex phenique and fills with paraffine wax. Keeps accurate records, and does not have more than from five to eight abscesses for every one hundred root canals filled since adopting this method.

Dr. W. G. Browne (Atlanta, Ga.) burns out the canals, considering that what fire will not cleanse nothing will, heating any kind of a nerve canal instrument and introducing it very hot. For inaccessible canals file down and bend a fine copper wire, insert and heat with the electric cautery. Expects to find salol very valuable in root filling material.

Dr. Wm. Crenshaw (Atlanta Dental College), wants a root canal filling that can be removed if necessary, and so does not use amalgam. He carries a little oxy-chloride of zinc into the canal and unites a point of gold wire or gutta percha sprig. Believes that oxy-chloride of zinc is the one thing that will go to the apex.

Dr. Hightower learned his method from Dr. Crenshaw, but finds that it sometimes goes through the apex and causes trouble.

Dr. C. V. Rosser has not fixed upon the one best method; has occasional failures with one as with the other. Thinks some really scientific method ought to be settled upon. Wants to

know how to avoid the acute trouble that sometimes follows opening up a long-time quietly dead tooth, in spite of all precautions. Would not use amalgam or cement in a root canal unless he were absolutely sure there would be no subsequent trouble, which he never is sure of.

Dr. T. M. Allen thinks a very important point to be always taken into consideration is the age of the patient, probable degree of calcification and condition of the apex. As much care is needed not to force air through as with filling materials, instruments or medicaments. Air, forced through, expands through the heat of the tissues and causes swelling, inflammation and suppuration.

Dr. H. B. Williamson fills root-canals with lead points dipped in iodoform. Even if forced through, will do no harm. Easy to fit, causes no inflammation, never fails.

THE NIGHT SESSION

was taken up in the discussion of a paper on "Mechanical Dentistry," by Dr. S. W. Foster, of Atlanta. Those who took part in the discussion were Drs. T. M. Allen, R. C. Young, J. P. Gray, George S. Vann, A. A. Pearson, W. G. Browne, William Crenshaw, C. V. Rosser, P. R. Tunstall.

Dr. Foster said that while no branch of dental art had been so neglected and abused by the average practitioner, yet there are but few who really know how to properly execute this class of work (plate work as it is usually called). There is nothing that demands higher skill, artistic taste, and knowledge of the laws that govern, in the restoration of features, selection of teeth correct in shape, size, color and expression according to the different temperaments and their combinations. It is true that any properly trained *mechanic* can take an impression, get the bite, run the models, put together peices of rubber and blocks of teeth and give it a beautiful finish, and perhaps satisfy the patient. But all that is not prosthetic art.

For the class of mechanical work described, the full denture is the simplest piece of work, but to the prosthetic artist, it is with the full denture that it is most difficult to "make art conceal art," in restoring the natural contour to shrunken features, and

in selecting teeth that shall be in harmony with the age and complexion of the patient, with the color of the hair and eyes, and typical of the temperament. This demands time, study and knowledge not recognized by the average "plate worker."

The discussion dwelt at some length upon the comparative merits of plaster, wax and modelling compound in taking impressions, each having advocates and opponents.

Dr. T. M. Allen condemned strongly the "travelling dentist" who pulls out all the teeth in a rural community on one round and brings back the ready made "sets" in his next trip, buying his teeth by the wholesale, all of the same size and shade, regardless of individuality.

Dr. R. C. Young deplored the extraction of roots which should be treated and filled preserving the contour of the arch, crowning wherever possible and resorting to the plate only in the last extremity.

Prof. Gray commends the emphasis placed upon knowledge of temperaments by the essayist, which he said, was almost a hobby with him. A knowledge of the corresponding contour, color, shape, etc., of the teeth is necessary in the selection of teeth to unite temperaments of mixed type, as are nearly all American people. He deplored the custom of turning over plate work to the student or of sending it out to some one who has not seen the patient. No matter how exquisite the workmanship may be it will not have the essential individuality. He said you have no right to do it. It is your duty to give your patients your best work in all lines, and you have no right to give it to some one else to do for you, or if you do it yourself putting it off till night when you are too tired to do it properly. It should hold a place in your estimation not excelled by any other work in your practice. You should never take an impression of the mouth without getting with it a vivid impression of the patient's whole face, with every shade of individuality, and then make the teeth to suit all the rest. Crown and bridge work is as much mechanical dentistry as is plate work. Filling cavities and restoring contour of the teeth is purely mechanical work.

Dr. J. S. Vann spoke in favor of modelling compound for

taking impressions in difficult cases. He said modelling compound gives a perfect impression, but it is a material that must be studied and used properly. It soon looses its plastic properties. It should be softened in warm water, and after it is placed in the impression cup, warmed again over the flame, getting the palatal surface much warmer than that next the cup. Hold it up firmly in place, not relaxing the pressure while with syringe and cold water you cool off the impression cup until, on raising the lip you feel that it is cool from above. It must feel thoroughly cool before it is ready to remove from the mouth.

Dr. A. A. Pearson. I agree with Dr. Gray that we ought to give more attention to our plate work. We ought to take hold of it in the morning when we are fresh and vigorous.

Dr. Gray. When modelling has once moved in the mouth the impression is ruined. The patient must not swallow or the soft palate pulls it down and the back part of the plate wont fit. I used it for three years and I spent the next three years in making over the plates of those of my patients who did not go some where else for a plate that would fit.

Dr. W. G. Browne gets most excellent results with modelling compound. He puts the tray in the mouth and tells the patient to bite up on it and hold it there himself.

Dr. Crenshaw spoke of the superior results from using the dry heat or superheated steam process, with the Seabury vulcanizer.

Dr. Rosser said that for plate work to be a success the case must be studied—diagnosed—as carefully as the physician diagnoses a case of serious illness. He said one cause of the unsatisfactory plates we use, is the inaccessibility of the dental depots to many men. They carry a large stock of teeth and if they have not got just what they want, use the best they have got. They may have ability and perhaps artistic teeth, but circumstances are against them.

Dr. Allen. There are competent men in the depots who will select the proper teeth if a guide for color and size is sent with proper information. The trouble is they order all their teeth from the same mold. They write, send me so many sets of

teeth, with no distinction of shade or size, and they use them indiscriminately for all cases. They are mere mechanics. They may be able to get a good impression but it is doubtful if they know how to set up the teeth. They are satisfied if they can make the teeth stick in the wax 'till they get the plaster poured.

Wednesday the association spent the day on the waters of Mobile Bay and the Mexican Gulf.

The next session was called to order at 8:30 P. M. when the discussion of mechanical dentistry was continued.

DR. GEO. H. TAYLOR gave many interesting items concerning laboratory methods, refining gold scraps and making solder of a definite carat, etc. Bridge work was discussed at some length. Dr. Taylor maintained that it is impossible for any one to construct a bridge from the impression or model without seeing the patient, while Dr. Allen claims to have perfect success every time, never having had one returned as unsatisfactory, though he does not see the patient. Dr. Allen also maintained that it is poor economy for the dentist of the present day to spend his time making solder and refining gold scraps, when everything of the kind is so well done, ready for use, and kept by reliable dental depots. Dr. Taylor and Dr. Browne claim great satisfaction for the die-stamped crowns. Dr. Rosser wants an open mouth band that he can look into and see that it fits before he puts on the cusps.

DR. BROWNE stamps the cusps of a shell crown by putting modelling compound in the blank before driving down the mandrel.

DR. TAYLOR uses gold foil leaving it in the cusps, adding a little borax and fusing with blow pipe.

DR. ALLEN considers borax in soldering absolete, using Parr's flux.

DR. BROWNE stamps an aluminum blank (with the Morrison die plate), for use over a gutta percha cap molded over a tooth partially prepared for crowning, putting crystals of cocaine in the gutta percha cap to prevent the tooth from becoming hypersensitive between sittings.

DR. R. A. RUSH read a paper for discussion under "Mechan-

ical Dentistry," describing a case, exhibiting the model, in which as the result of a pistol used with intent of suicide the superior alveolar process and teeth had been shattered and a large opening made into the antrum through the palate. The antrum is denuded of lining membrane, the bone being bare. Food and water pass into the antrum, it being necessary to introduce fluids into the throat through a funnel. It is also necessary for the poor man to hold his nose when smoking. A superior molar on each side and a central incisor are all the teeth left. A plate constructed for the case had gold clasps around the teeth and a protuberance in the plate closing the opening into the antrum. The central incisor had since been lost from pyorrhœa alveolaris and Dr. Rush desired suggestions as to the best method of constructing another plate for the case. He feared that gold clasps might eventually cause the loss of the molars, one of which is a dead tooth and penetrates into the antrum. After considerable discussion and numerous suggestions, nothing better was offered than either a good suction plate, or crowning the molars and securing the plate to the crowned teeth.

Dr. Browne would gold-line a rubber plate and anchor as above.

Dr. Allen would make the plate of black rubber, vulcanizing between tinfoil surfaces, making the clasps of soft rubber.

Subject "Mechanical Dentistry" passed.

His Tooth Exploaded.

A short time ago William Arnold, an employe of the Carnegie mills at Beaver Falls, Pa., was attacked with a violent toothache in a big "double" molar. The man has a dread of dentists, and he could not be brought to the point of having it extracted. The pain grew into a paroxysm of agony, and while the man was writhing there was a muffled explosion in his mouth, and the next instant he was spitting blood and the fragments of the tooth from a badly lacerated mouth. Dentists say that the breaking of a diseased tooth in such paroxysms of pain is not unparalleled.—*Exchange.*

COMMENCEMENTS.

University of Buffalo—Dental Department.

The third annual commencement exercises were held in connection with the Departments of Medicine and Pharmacy at Music Hall, in the city of Buffalo, on Tuesday, April 30th, 1895. After thorough examination by the board of curators, including the State Dental Examining Board, the Chancellor upon their recommendation conferred the degree of D.D.S. upon the following members of the senior class:

Will B. Bartlett.
Charles Frederick Bunbury.
Gerald Griffin Burns.
Charles Alexander Bradshaw.
Fred. Ellsworth Cloud.
Thomas James Dorland.
Charles Edwin Flagg.
Frederic Jacob Gieser.
William George Gowland.
Perry Charles Hammersmith.
Frank Lewis Haynes.
Albert Heinrich.
Lott Myron Howder.
George Lintner Hussong.
Harry Bestow Huver.
Lloyd Starr Ingalls.
William Erastus Jenney.
Clint Wood La Salle.
Charles Thomas Lewis.
John James Madden.
Henry James McLellan.
Alfred Edward Mimmack.
Bertram Amos Moyer.
Thomas Clarence Phillips.
Miss Annette Rankin.
Albert Boniface Rieger.
Frank Mills Rowland.
John Wesley Steele.
Harry George Tripp.
Burdette Washington Whipple.

The whole number of matriculates for the session was 160.

SELECTIONS.

Health Commandments.

From the Medical and Surgical Age.

1. Thou shalt have no other food than at meal time.

2. Thou shalt not make unto thee any pies, or put into the pastry the likeness of anything that is in the heavens above or in the earth below. Thou shalt not fail to chew it or digest it, for dyspepsia shall be visited upon the children to the third generation of them that eat pie, and long life and vigor upon those that live prudently and keep the laws of health.

3. Remember thy bread to bake it well, for he will not be kept sound that eateth his bread as dough.

4. Thou shalt not indulge sorrow or borrow anxiety in vain.

5. Six days shalt thou wash and keep thyself clean, and the seventh day thou shalt take a great bath, thou and thy son, thy daughter, and thy maid servant, and the stranger that is within thy gates. For in six days man sweats and gathers filth and bacteria enough for disease; whereupon the Lord has blessed the bath-tub and hallowed it.

6. Remember thy sitting-room and bed-chamber to keep them well ventilated, that thy days may be long in the land.

7. Thou shalt not eat hot biscuit—wait.

8. Thou shalt not eat meat fried.

9 Thou shalt not eat thy food unchewed, or highly spiced, or just before work or just after it.

10. Thou shalt not keep late hours in thy neighbor's house, nor with thy neighbor's wife, nor man servant, nor his maid servant, nor his cards, nor his glass, nor with anything that is thy neighbor's.

Thus endeth the tenth commandment.—*Medical Brief.*

And their are others like unto them, viz:

Thou shalt keep on friendly terms with thy stomach and bowels, for in them abideth more than half the ills of life.

Thou shouldst put nothing in them that would give offence, for they are sensitive members of your ventral family, so to speak, and will not hesitate to call you when you least expect, chiefly in the small hours of the night.

Finally, Thou shouldst measure thy days and nights by these golden precepts, so that in the observance thereof thou mayest keep away from the breakers on the other shore.

The President of the American Medical Asssociation.

Doctor Donald Maclean has been selected to fill the highest office within the gift of the American Medical Association. This is an honor worthily bestowed, and the Doctor, the Association, and Detroit are alike to be congratulated.—*The Medical Age.*

NOTICES.

National Association of Dental Examiners.

It is earnestly requested of the presiding officers or secretaries of the examining boards throughout the states and territories that they kindly forward to the national secretary the full list of officers, with their respective addresses.

In view of the large meeting expected at Asbury Park this coming August, the secretary desires to give every board due notice in ample time, and likewise obtain a corrected list of the officers to date.

CHARLES A. MEEKER, D.D.S., *Secretary*,
29 Fulton Street, Newark, N. J.

THE American Dental Association holds its next annual meeting at Asbury Park, N. J., Tuesday, August 6th, 1895. I am requested by the President, Dr. J. Y. Crawford, to give notice that it is the privilege and duty of each State and Local Society to appoint and send delegates to the American Association.

Each State and Local Society which has adopted substantially the same Code of Ethics as that governing the conduct of members of the American Dental Association is entitled to one representative for every five members and fractional part thereof.

Blank certificates for delegates may be had on application to Corresponding Secretary.

Many questions of interest will come up for discussion at this meeting, and every Dental Society in the United States should be fully represented in this, our National Convention.

EMMA EAMES CHASE,
Corresponding Secretary,
American Dental Association.

ST. LOUIS, MO. April 27th, 1895.

East Tennessee Dental Association.

The twenty-eighth annual meeting of this Association will be held June 11th to 13th inclusive, at Harriman Tennessee. A very interesting programme has been prepared in which, among other subjects there is Alveolar Abscess. Crown and Bridge-work. Dental Medicine. Plastic Fillings. Gold Fillings. Diseases of the Oral Cavity and Treatment. How to Build up a Practice and how to lose it. Wednesday morning will be devoted to clinics.

A general and cordial invitation is extended to all who can possibly attend. The usual reduction in railroad rates will be given.

The citizens of "Happy Harriman" will entertain the East Tennessee Dental Association in a manner which would do credit to an older town than five years. A banquet on night of 13th, an excursion on 14th to State Mines on the H. C. & I. R. R. The excursion committee have gotten up a splendid programme, and taking all things together, the twenty-eighth annual meeting should eclipse all previous meetings held by this Association. Let all who can possibly do so, Go!

Most Respectfully Yours,

GEO. C. BRAUSE, *Secretary.*

Illinois State Dental Society.

The thirty-first annual meeting of the Illinois State Dental Society was held at Galesburg. May 14 to 17, 1895. About 200 were in attendance. The following named persons were elected officers for the ensuing year: President, Walter A. Stevens, of Chicago; Vice-President, C. R. Taylor of Streator; Secretary, Louis Ottofy of Chicago; Treasurer, Edgar D. Swain of Chicago, Librarian, J. R. Rayburn of Fairbury; Chairman of Executive Committee, W. A. Johnston of Peoria. The next meeting will be held at Springfield, May 12 to 15, 1896.

LOUIS OTTOFY, Secretary.

Masonic Temple, Chicago.

EDITORIAL.

A Morning Star.

Recently a beautiful "Morning Star" came to the Editor of the DENTAL REGISTER, borne in the uplifted right hand of a beautiful Bronze Statue, which had been fashioned by most exquisite Art.

Where did it come from?

It came from the warm, loving hearts of our Confreres of the Odontological Society of Cincinnati.

Upon the Pedestal of the Statue there is appended a silver Tablet bearing the following inscription:

"PRESENTED TO

DR. JONATHAN TAFT

BY THE

ODONTOLOGICAL SOCIETY OF CINCINNATI.

In appreciation of his Efforts to Elevate the
Profession of Dentistry during a period of Fifty Years.
April 30th 1895."

This Figure, beautiful, exquisite and valuable as it is, is as nothing, to the recipient, compared with the Spirit and Regard that prompted the presentation.

The Memory of the occasion, and that which it represents can never be effaced while life lasts.

My Friends, May it be done to you as you have done to another; and may your cup of happiness be as full as his has been made, by this act of yours.

J. T.

National Association of Dental Faculties.

The annual meeting of this body will be held at Asbury Park, N. J., on Saturday, August 3d, at 10 o'clock A. M. It is very desirable that all colleges having membership be promptly present at that hour, as much important business will be before the

association, and the time allotted is usually short for the work to be done.

The Executive Committee of the association will meet on Friday previous at 10 o'clock, at the same place. All business for that committee should, so far as possible be in their hands before the meeting, in order that there may be no delay.

J. TAFT,
Chair. Ex. Com.

Tri-State Meeting.

The State Dental Associations of Ohio, Indiana and Michigan will hold a union meeting in the City of Detroit on the 18th to the 20th of June, inclusive, 1895.

It is very desirous that there be a full attendance on the part of each of these States as preparations have been made for a large number. The occasion will be one not only of professional interest, but of social enjoyment as well. Indiana and Ohio will be the guests of Michigan in a social way, and if the guests are equal in number to the hospitality of the host it will be a rousing time.

The Meetings and Clinics will be held in the Dental Department of the Detroit College of Medicine and Surgery where ample accommodation for all the work will be found.

The head-quarters will be at the Russell House. The Normandy is conveniently situated and will afford excellent accomodation.

Railroad rates have been secured at the usual one and one-third rate, within the Central Traffic Association territory, this embraces all the states here named.

To make this arrangement available certificates must be taken where the tickets are purchased and these certificates must be signed at the meeting by Dr. G. E. Hunt.

Only a partial program has as yet appeared but we are warranted in promising a splendid list of subjects, for both papers and clinics. In both these directions there will be much presented of intense interest; so come and bring your largest intellectual pocket with you.

THE DENTAL REGISTER.

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COMMUNICATIONS.

A History of the Mississippi Valley Dental Society.

BY DR. E. G BETTY.

MR. PRESIDENT AND FELLOW MEMBERS :—I was requested by the Executive Committee to prepare an historical sketch of this Society to present to you at this, the semi-centennial, though in reality the fifty-first meeting of the same.

This is a task I executed nine years ago, presenting the results of my work as an inaugural address when assuming the duties of presiding officer.

It has always appeared to me that some one capable of the effort should undertake the preparation of such a history and I am only sorry that it had not been done by one of those who took an an active part in its organization. The only available material is the minutes contained in the record book, whose faded lines but too surely tell the lapse of time.

More than half a century of busy years, each one leaving its imprint on progress' page have passed into history since the birth of the Mississippi Valley Association of Dental Surgeons.

What was then not much more than a mixture of the callings of the barber and the jeweler, is now become a distinct and noble profession, having for its aim the conservation and integrity of an important part in the economy of the noblest work of God.

The men who thus banded themselves together to further the usefulness of dentistry knew nothing of anæsthesia, the telegraph, the cylinder press or the telephone, all of which now play a most important part in the daily practice of our profession. There

were no colleges, no literature, either textual or periodical, no burring engine, no rubber cloth, no cohesive gold, no mineral teeth. What a contrast between the then and now. And all this within so short a time, yet withal so pregnant with great achievement. It almost takes one's breath away to think of it.

The first page of the record book confronts us with the statement that, "In compliance with a call from the 'Cincinnati Association of Surgeon Dentists' in connection with other members of the profession in the West, a convention of Professional Dentists met in Cincinnati on Tuesday, the 13th of August, 1844, at 11 o'clock, A. M., in the lecture room of the Medical College of Ohio."'

There were present at this meeting the following gentlemen: Joseph Taylor, Maysville, Ky.; J. P. Ullery, Lawrenceburg, Ind.; A. D. Bigelow, Newark, Ohio; James Clark, Lebanon, Ohio; D. P. Hunt, Indianapolis, Ind.; G. D. Teter, Ripley, Ohio; D. B. Wheeler, Xenia, Ohio; Wm. B. Ross, Newport, Ky.; F. E. Suire, Madison, Ind.; J. W. Cook, Cincinnati, Ohio; P. Knowlton, Cincinnati, Ohio; A. Berry, Raymond, Miss.; J. B. Ross, Philadelphia, Pa.; M. Rogers, Cincinnati, Ohio; John Allen, Cincinnati, Ohio; H. Crane, Cincinnati, Ohio; Wm. M. Hunter, Cincinnati, Ohio; W. J. Madeira, Cincinnati, Ohio; Charles Bonsall, Cincinnati, Ohio; James Taylor, Cincinnati, Ohio.

A committee of five was nominated to draft a constitution. Drs. Allen, Cook, Rogers, Bigelow and Hunt being the gentlemen chosen. They presented a constitution (which was adopted,) preceded by the following preamble, which, by the way, has rarely, if ever, had its sentiment improved upon by any society since organized.

"The undersigned, practical dentists of the Mississippi Valley, deem it expedient to form an association for the purpose of mutual improvement in the science and practice of our profession. Desirous of promoting the exercise of that gentlemanly courtesy which should characterize members of liberal professions, in both social and professional intercourse, believing also that by frequent interchange of opinions and observations in practice, by reporting

from time to time, cases of interest as they occur in individual practice, we may do much to elevate the character and standing of our profession, and make it worthy the confidence of an enlightened public."

Then follows the constitution, which, I believe, has been reconstructed but never definitely acted upon, so that the Society to-day is practically working without one, a "consummation devoutly to be wished," as such an instrument is by some deemed hurtful to the practical working of a scientific body.

The first address or essay delivered before the newly organized society was by the honored and never to be forgotten James Taylor, his subject being "Medico Dental Education." The address was on motion adopted by the Society and ordered filed among the archives, but which, I am sorry to say, has long since disappeared, unless, indeed, it has been preserved by subsequent publication in the REGISTER, a point upon which I am uninformed, though at this same meeting Drs. Cook, Rogers and James Taylor were appointed a publishing committee, probably for the purpose of printing this and an address by Dr. John Allen on the "History of Dental Science," also read before that meeting.

Thus we have in these simple records the facts pertaining to the organization of one of the very first societies, and to-day the oldest, formed for the purpose of advancing and improving, professional knowledge among the practitioners of dentistry, the vast influence of which could not then be computed by the most enthusiastic, but which is now evidenced by the fifteen thousand or more practitioners in the United States alone, some forty dental colleges and universities, and quite that many periodicals devoted to its interests, and better than all, an enlightened and growing public opinion.

Before the completion of the organization several communications were made, "relating principally to the *mal-practice* of filling teeth with mineral paste."

This naturally leads to the conclusion that there then existed considerable manipulative ability, and the members imagined, with correctness too, that the use of mineral paste, undoubtedly

amalgam, would lead to a reduction of professional dignity and standard, to say nothing of commensurate remuneration for performing a legitimate operation. Another instance of the broad views entertained by these pioneers is shown by their resolution to the effect "that the discoveries and improvements known to the members are and ought to be considered the common property of the profession." In 1845, Dr. Wm. B. Ross delivered an address upon the propriety of patenting new remedies and discoveries. A long and animated discussion followed, during which a resolution was presented to the effect that "Any member of this Society who may patent any instrument or mode of practice may be subject to expulsion from the Society." A resolution was also adopted providing that a committee of three be appointed by the chair to investigate and report whether "Dr. Allen, of our Association, is the author of a dental improvement for which he has obtained a patent."

These instances show conclusively that a liberal spirit prevailed, which, if cultivated, would redound to the benefit of the profession at large and very materially hasten its progress. I know of but one instance in which a discovery of vital importance, in fact a foundation rock, was freely given without let or hindrance or price. I refer to Dr. Barnum's gift of the rubber cloth.

This priceless treasure was eagerly accepted; but how was it rewarded? Poor Barnum in the generosity of his heart gave away, what to him would have reaped a vast fortune, only to die in poverty. I well recollect that the Dental Profession of the United States was a long, long time collecting the beggarly sum of $1,000 to give as a charity to his widow or to pay his funeral expenses.

However this may be, the spirit was in the right direction and has been the means of building up that fraternal spirit which is now so characteristic of our colleges, our Society meetings and our literature.

At a very early period of its existence the Society made its influence widely felt throughout the medical profession, many members of which were elected to honorary membership, among

them was Prof. Daniel Drake, one of the most prominent practitioners and teachers of medicine the West has ever produced, and it was in Cincinnati that he displayed his powers and influence in the advancement of medical and kindred sciences. Our present famous hospital is indebted to him for its establishment, and to him also the Ohio Medical College owes a great deal of its reputation in the early days of this city. His estimation of the scientific ability of the gentlemen composing the Society at this time, 1846, was so high that he sought information from them to incorporate in a work on medicine he was then preparing.

His letter is as follows:

"To the President of the Mississippi Valley Association of Dental Surgeons: *Sir*: — In the Historical and Practical Treatise on our Diseases, which I am now engaged in preparing for the press, I have appropriated a chapter to maladies of the teeth and am anxious to obtain from gentlemen devoted to their treatment as much information as possible. Permit me then to request of the members of the Association over which you preside, such facts and observations as they may be able to communicate on the following points:

First: What is the nature of that diathesis or constitutional predisposition or disorder, if any, which so often occasions decay in the deciduous teeth of our children?

Second: To what causes, external or pathological, local or constitutional, shall we ascribe the premature decay of the second teeth, in the West?

Is a hereditary scrofulous diathesis a cause of infirm teeth? Is dyspepsia a cause of early decay? Does the acid thrown up by many dyspeptics in paroxysms of that disease act chemically on the teeth? What is the effect of repeated salivations on the teeth and gums? What are the effects of tobacco on the teeth, and are those of chewing and smoking the same?

Third: Has the tartar of the teeth a constitutional origin?

Fourth: Is the decay of the teeth greater in the West than in the Atlantic States, in the same latitudes, and is there any difference in different latitudes in the same meridians?

Fifth: Is there any difference as to soundness of teeth between our native and foreign population?

Sixth: Are the teeth of our colored people less subject to decay than those of white, who labor and live in a simple manner as to diet and drinks?

Replies to these questions, or information not referred to in them, on diseases of the mouth generally, communicated to me within the next few months, will be acknowledged as a favor, while I shall scrupulously give with every new or important observation the name of its author.

I have the honor to be your obedient servant,

DANIEL DRAKE."

This letter was read to the Society and a resolution passed appointing a committee to comply with the request as far as possible, and also thanking Prof. Drake for the interest he manifested in promoting dental science.

It may be mentioned in this connection that these very questions in one form or another, have worried the brains of the profession from that day to this, and it is safe to say, have not been adequately and scientifically answered. The man who can do so may rest assured that his name will descend in perpetual honor in the annals of dentistry, and the people will rise up and call him blest.

The Mississippi Valley Society is also responsible for the founding of the DENTAL REGISTER, a journal that has exercised a wide influence in molding professional thought and is still in the ring, not like the prize fighter, "slightly disabled," but strong and vigorous as of yore, ever battling for the right of science and the wrong of ignorance and guided by the sturdy pen and watchful eye of one who has passed his semi-centennial as an investigator, teacher, author and practitioner, the Gladstone of dentistry, Jonathan Taft.

It was in 1846 that the idea of establishing a journal was conceived and found expression in a resolution by Dr. Edward Taylor to the effect "that a committee of three be appointed by the chair to ascertain the cost of publishing a quarterly journal, devoted to the interests of our profession, and, if they think it advisable, to propose a scheme for said publication, and submit it to the next annual meeting of this Society."

The committee appointed to discharge this important trust consisted of Drs. James Taylor, John Allen and Henry Crane, and right well did they execute the commission, for the result of their labors is known wherever there is a practicing dentist. At the evening session of the same day, Dr. Edward Taylor offered an amendment to this resolution, authorizing the committee to issue during the year a specimen number, not to cost in excess of fifty dollars. This, however, was not done, as the first number of "The DENTAL REGISTER of the West" did not appear until October, 1847, since which time it has not lapsed a single issue, being therefore the oldest dental journal in continuous existence.

It is then, to Edward Taylor, that the profession owes the REGISTER, and not his brother James, as has generally been thought, though the latter was its first editor, and lent to it the energies of an active and well-stored mind.

So long as our Association exists, it may point with pride to its record of usefulness in achieving the two great feats of having been the progenitor of the oldest dental journal in the world and second oldest dental college, though as to the latter, the Society took no action as a body, though the members lent their influence as individuals and provided the means to purchase the ground and erect the building. During its long life the Association usually met in Cincinnati, though upon one occasion it met in Louisville, and another in St. Louis, where a Union Session was held with the Missouri State Society.

Close examination discloses the fact that the records are not complete; part of 1860 is missing. In 1862 no session was held owing to the civil war; the minutes of 1866, 1868 and 1869 are wholly missing, while half of 1871 is absent. This is very much to be regretted, for it detracts from their value as a continuous history of the progress of our profession during the past half century.

The old Society did not always have plain sailing and bright skies, as the casual observer might imagine, judging from the harmony and good feeling that have so long held sway. In one year, 1852, things were at a low ebb, interest seemed to flagg, and indications pointed towards an adjournment *sine die*, thus

allowing the College Association to become the medium of professional progress; upon this question, however, the members were equally divided, the proposition was to disband and concentrate upon the above mentioned body. In order to prevent such a calamity, one of the younger members hustled around and found two new members, viz., Dr. George Watt and Dr. John G. Hamill. The accession of these gentlemen produced a reaction, the votes of these latter turned the tide in favor of continuing the Society. It was well they did so, and it is to be hoped that from this day on we will constitute ourselves a committee of the whole to maintain an interest that will perpetuate this dear old Society, the mother of them all.

Many instances of an interesting nature crop out here and there in the pages of the record, but which it is not the province of this paper to treat, though I trust you will pardon mention of one or two, leaving this as an opening for others to relate their anecdotes of bygone days.

During the first years of the Society, a large number of honorary members were elected, generally from the medical profession. At the first meeting it placed upon this list Chapin A. Harris, the father of dental education, and, as Kingsley said: "Fortunate was it for posterity that Chapin A. Harris and his colleagues were denied admission to the medical colleges. They builded wiser than they knew. Dentistry, independent, has grown with a vigor unparalleled."

Professors John Locke, R. D. Mussey and Professor Shotwell, the first a chemist and philosopher of national reputation; the second demonstrated that the skin is an absorbent, while Professor Shotwell identified himself with medical education in this city. I might mention many others, but time presses.

In conclusion I may express the hope that from this time on we will never neglect the old Society nor allow her to die of inanition.

It is a privilege to be a member and a treat to attend her meetings.

Dr. Betty's paper was listened to with close attention.

The Chair then announced that as the hour of adjournment

was close at hand discussion of the subject would be deferred necessarily until the morning, and requested all to be on hand promptly at 9 A. M.

Dr. Callahan announced that if the Association should find it impracticable to conclude their sessions on Thursday the hall was at their service indefinitely.

Drs. Emminger and Welch, committee on membership, reported favorably the name of Dr. W. W. Shryock, of Ft. Wayne, Ind., as a candidate for membership in the Association.

On motion the Secretary was instructed to cast the unanimous ballot of the Association admittiug the gentleman to membership, and the Secretary announced the same.

On motion, adjourned until 9 A. M., Thursday, April 18th.

SECOND DAY—MORNING SESSION.

Convention met pursuant to adjournment, President Taft in the chair.

The Secretary read the minutes of the session of April 17th, which on motion were duly approved.

PRESIDENT TAFT: Is there any miscellaneous business in the mind of any one? A half hour this morning was to be devoted to the paper read yesterday evening by Dr. Betty, on the History of the Society. Four persons are named to open that discussion, the first two of whom, Drs. Morgan, of Nashville, and Butler, of Cleveland, are not present. Dr. Smith comes next.

DR. H. A. SMITH, of Cincinnati: I think it is hardly possible for me to add anything of especial interest, after the very excellent paper upon the history of this Association from the pen of Dr. Betty. Whatever I may say, however, will be in the nature of reminiscences. My advent in the profession was coincident with my joining this Association. The day after receiving my degree I was inducted into this Association, elected a member, and from that time I have without an exception attended each annual meeting. I have often said that if my connection with Dental Associations was blotted out of my professional life it would be rather barren of pleasurable thoughts.

There is a good deal of hard work connected with dentistry,

and that is the one bright spot, my relations with my fellows, and especially with Associations like this—especially my relations with my fellow dentists in this Association. At that time I considered it an especial honor to be made a member of the Dental Association, being a young man just from college; and I have always considered it an honor that I have been a member, and so regard it to-day. While I have been connected with a good many Associations, nearly all, in fact, to which I was eligible, yet I regarded my membership here as especially delightful.

On the floor of this body I have seen all the prominent dentists of this country, and it seems to me those of us who were among the early members will recall that we had representatives from New Orleans, and all up and down the Mississippi river proper, such men as the Knapps, of New Orleans; and coming up in this direction we had representatives from Natches, Nashville, Memphis—in fact all the leading men of that section have been members of this Association. From Pittsburg, we used to have, I think, quite a showing of membership, and Cleveland, as well as Cincinnati, and all the States of the Northwest; for instance, such men as Dean, Cushing and Allen. Some of those men are dead; they were in attendance at almost every annual meeting. And we had them from still further West—Milwaukee. Look over dental literature up to the present day, and you will find the leading spirits have been members of the Mississippi Valley Association. Then, is it not an honor to have been a member of such an Association, or, rather, is it not an honor still to be associated in such a body as this? I ought not to omit Professors Watt and Atkinson; some of the most brilliant efforts of Atkinson have been made right on this floor; with his genial manner, always ready to help out a discussion with a joke, as well as with suggestions as to scientific methods, always a welcome member. With these reminiscences, however, I would not detain you longer, except to say that the Mississsippi Valley Association will continue in its usefulness. It has done a good work, certainly, being the pioneer in Association work, and furnishing a pattern for numerous other Associations to follow. I took up an old book the other day, published forty years ago, and I was

surprised at the freshness of thought in that journal, as compared with similar publications of to-day. It seems to me that we have not made very much advance. It had a paper by our worthy President on dental carries, a paper by Dr. James Taylor, an article by Dr. Townsend—by the way he has appeared on the floors of this Association. He delivered at one time an address, or two lectures, on the conduct of dental practice, and there is nothing better extant to-day. You can not find anything better. Refer back to all the lectures that were given before this body, say forty-five years ago, and see the uniform excellence of the literature; you will find that contributions from many of the members of this Association live, and bear even to-day the imprint of the best thought; they were the productions of thinking men. That article by Professor Taft struck me, and showed me that we had not made so great an advance over the thought of that day; you will be astonished at what those men investigated. In the paper read by Dr. Betty did you notice the questions presented by Professor Drake to this body—how fresh they were? We are discussing the same topics to-day. The questions Professor Drake put to this body, in order that he might embody the replies in his work, are phenomenal. That indicates how far-seeing and scientific those men were. We ought to inaugurate a movement in this city to build a monument for Dr. Drake, the founder of the Ohio Medical College; he was a medical man, but how thoroughly versed in dentistry. I felicitate myself on the opportunity of continued membership in this Association. I believe it will continue to be a factor of usefulness for many years. (Applause.)

President Taft at this point resigned the chair temporarly to Dr. Brown, and took the floor.

Dr. J. Taft, of Cincinnati: I find my name on the list of those who are to discuss this subject. I do not now remember that I was consulted about it; but I saw this two or three days ago, and so the matter has not, of course, been out of my mind for that time, or, rather, has been occasionally in my mind, and though I have not looked up the literature on this subject connected with the society there are many things that naturally

come to the mind of a man when he has been for a long time, a good while, at least, connected with this Association, and took some part in a feeble way in its work, learning more through it however, all the while, than I was ever able to give to it. I remember when coming into this Association in its early days, how much interested I was. I remember how much gratified I was to be associated with the men who constituted its membership, with the men from all over the Mississippi Valley; men then regarded as the leading men of the profession, were embraced in the membership of this body. It was, to a young man coming into association with these men, a matter of considerable pride, to say the least, a matter of great gratification, in which I have no doubt Dr. Smith and many others shared fully. I remember thinking that if I could ever reach the position that many of these men occupied, how proud I should be of my position. They were representative men, of strong character, men who were able in their day to accomplish great work, and they did accomplish such in the organization, and in maintaining and carrying on the labors of this Association. Just think of it! Those men were brought together, fifty to one hundred from all parts of the country, in the early days of the life of this Society, to conduct a work, without a guide, without any precedent. They were to mark out for themselves their line of action; they were themselves to find a way to accomplish a work, in which they had nothing to guide them; and well did they work, as we see, as we know, who have much knowledge of the history of what was done. Now, what did this Society do? The influence of the work of this Society upon numbers of men was very marked, indeed. There were such men as Richardson, whom you well know as the author of mechanical dentistry, and who was trained in this body; and undoubtedly an important stimulus operating upon him in the production of that work was occasioned by the influence of this Society. Dr. Richardson also became a teacher in the Ohio Medical College.

Professor Watt also received much of his training in this Society, and always during his life he was willing to acknowledge his indebtedness to the Mississippi Valley Association. He was

always proud to speak of what it had been for him, and to give credit to those who had been instrumental in leading him on to correct ideas, and correct impressions in regard to a professional life. And other men were trained, as well, in the work. These are some of the things that this Society has done. I cannot begin to give you even a synopsis of all the things that were done, but I have referred to a few only. It was the pioneer, and has been actually the pioneer of other societies in this country. The organization of the American Dental Association, the representative body of the profession of this country—none better, perhaps, in the world—was effected by a number of men, twelve or fifteen perhaps, a majority of whom were members of this body, and had received their training in it, in Association work. The American Dental Convention had quite a number of the members of this body in its organization. That organization did not live very long; it was a kind of fast and loose affair; but after all it served a purpose in its day. It was the antecedent of the American Dental Association, and closed its career within a few years after the organization of the latter body.

Both of these organizations received their impress, and their formation largely from what had been done in this body, as a pioneer in this work. Now, what has been done by some of the men who were in it? We all use the mallet, for example: The first conception of it, the first mallet that was produced, or, perhaps the first two, were by members of this body.

The late Dr. George W. Baxter, of Warsaw, Ky., devised and constructed, so far as I know, the first automatic mallet that was ever made. Contemporaneously with him, and I think independently of him, there was an automatic mallet constructed by Dr. Collins, who resided in this state, both these gentlemen being members of this body, and were such for some time previous to that. The man who introduced the mallet to the profession, as an instrument in filling teeth, was a member of this body—Dr. W. H. Atkinson—introducing that implement first at a meeting of the Indiana State Dental Society, so far as I remember, in February, 1859, or 1860, was it? (Dr. Wright: I think so.) Perhaps in February, 1859; I am not sure, but it

was one of those years. He was a member of this body, who did good work for it while he retained his membership; he was a member for three or four years. Some of the best work of his life, so far as I have ever heard, was done in this body. He was very advanced in his thinking, and in his work, and his influence made an impression on the Society that has never wholly passed away. This Society was the first one to offer a prize for a popular essay on dental surgery, looking in those days to giving intelligence to the people as a means of elevating the profession. The men composing this Society at that day recognized the necessity for disseminating such knowledge in thus offering a prize of one hundred dollars for the best essay—popular essay—on dental surgery, with a view of educating the people, with a view of making their influence felt abroad among the people, believing that the result would be the elevation of the profession, and the broadening of the popular appreciation of the profession, and the benefits conferred by it upon mankind.

This Society in those days proved itself able to do what no other Society could do. This Society, for example, took up the full consideration of the amalgam question and also that of dental patents. It took advanced ground on those subjects, having them under consideration for three years or more. They discussed these subjects thoroughly, but after all the Society was not injured; it was really benefitted by this discussion; but what was the result in other societies of the presentation and discussion of this same subject? It was upon the discussion of the amalgam question that the American Society of Dental Surgeons, one of the first organizations in this country, foundered, and went to pieces—on the dissensions and troubles that arose from the discussion by them of that question. The same subject was discussed in this body calmly, dispassionately, intelligently, thoroughly, and notwithstanding there was a diversity of opinion, yet the discussion was carried on so thoroughly, so fully, yet without injury to the body. It was, as I have stated, a positive benefit to it. It demonstrated its inherent strength that it was able to survive other bodies seemingly much stronger, but which had gone down nevertheless, simply because of internal dissensions arising in this way.

These are a few of the things that have been done by this body. A number of teachers have gone out through the influence of this body, who have been active in educational work for many years. In most of the more important societies organized years ago the members of this society took more or less part, and made more or less of an impression; they were able, by their experience gained here, to exercise an influence for the benefit of other societies. In the early days, many a time use was made of the constitution of this society for the information of other societies in many points. The experience of this society was a guide to others in very many particulars; at least it was in the early days sought for quite extensively by others who were taking up Association work.

These are only a few of the things that come to my mind in thinking over the work of this Association; but is not this a grand record? Is it not the proper thing to sustain this body, having a record of this kind, and not to simply lay it upon the shelf, and say: "You have finished your work; there is no longer anything for you to do." It seems to me that this Society in remembrance of its past history, of what it has done, that it ought to buckle on its armor and go forward, and stand in the front ranks to-day, and in the years to come, as well as it has in the years gone by. Stand in the front rank! Be a leader, as it has been the pioneer. Let it rather continue to be the pioneer for future organizations, as well as for those of the past, in all that can elevate our profession and advance its highest interests. Shall it not be sustained? Shall it not go on with the grand work that has been so nobly commenced and so persistently carried forward during the last half century?

I leave you, gentlemen, to answer this question.

Dr. WRIGHT: Dr. Taft has well spoken of this Association as being the mother society. It is also the mother of one of the most active and useful societies in Europe; the American Dental Society of Europe can claim the Mississippi Valley Association as her mother. Over twenty years ago five men met on the Righi and acted as midwives for a little boy that was born to this society. All of those gentlemen were members of and received

their training in this society. They were Drs. J. G. Van Marter, George W. Field, C. T. Terry, N. W. Williams, and myself. And this little society, conceived at that time, or born at that time, on the Righi, was baptized in good champaign, and has been a very thriving and useful society ever since, and it would be very sorry to hear of anything amiss happening to its mother out here in Cincinnati.

Dr. Harlan: As I am one of the younger members of this society I cannot indulge in any reminiscences to any large extent; but I would like to say that among the names of those embraced in the membership of this society I now recall, who have not yet been mentioned, Dr. S. P. Cutler, Isaiah Forbes, Eward H. Hale, Henry Barron, C. W. Spalding, W. H. Eames, and others in that locality, who have all deceased. Isaac Knapp, the leader in the State of Indiana for many years; and one of the old familiar faces that I remember, that I see no longer, is J. P. Ulrey; and then in Ohio there was ——— Rankin, one of the staunch supporters, and George W. Kelly, for many years Treasurer of the American Dental Association; and I might go on and mention names of others—S. J. Cobb, of Nashville, and Ross, of Kentucky, and Wm. H. Goddard, of Louisville. If I were to continue I might mention many other names of those who were members of the Mississippi Valley Association of Dental Surgeons, men who contributed largely to making dentistry what it is to-day—a respectable profession among the other professions. Many of the famous dentists of Europe have been members of this society, men who have practiced there in times past, and retired, and some who have gone hence. I remember Blount, who was a member, who now lives in this country; and Jenkins, of Dresden; and Hedden, (?) who formerly lived at Madison, Indiana, and still others; one man from Ohio, Dowd, lived in Paris for many years. I am not quite certain if Dr. Bing was ever a member of this Association, but Shelley was, and Blandy, who still lives in London; and the elder Coffin, who was a member of this Association for a short time, but is dead, and leaves his sons in the practice in the city of London; and then over in China there was H. H. Winn, and other men who lived in

China and Japan; and all along there through the islands there are men who were members of this society. One of the very young men, a son of the well known dentist, is now practicing in Shanghai, J. W. Hall; and W. St. George Elliott, who practices in London; and in Tokio you will find a member of this society who was a frequent visitor at its sessions in years gone by; and in Rio Janeiro there are one or two men who were formerly members of this society. I might go on; but I will not. J. M. Whitney, of Honolulu, was a member of this society many years ago. I think that is a record of which we should be proud. Some of the very best literature that the dental profession possesses has been contributed by members of this society; and if they do not always give their productions to this society in the first instance they read them before State Associations throughout the United States, and they read them before the National organizations; and it may be safely said that it was the stimulus derived from their connection with this society, to which they largely owe the inception of these literary labors. And it was largely through the inspiration of this society that we owe the present state of dental legislation throughout this country. Ohio did not have a law, I believe, in regard to the practice of dentistry, until 1867 or 1868, somewhere along there. If she was not the first State, she was one of the first, to adopt such a law; and since 1867 every State and every Territory in the United States has a law regulating the practice of dentistry; and since that period every foreign country has taken the cue from us and has adopted rules and regulations covering the practice of dentistry. It is not possibe now to practice anywhere in Europe, except in Asiatic Turkey, without first complying with the local police regulations. England is far behind us; she did not enact a law until 1878, and it is only within three or four years that France has had a law regulating the practice of dentistry. Switzerland, two or three years prior to that; and Italy one in 1890. So all these things have come practically from the United States; and it does not matter if once in a while the biologists and bacteriologists of the United States have not been in the advance guard.

PRESIDENT TAFT: (Resuming the Chair.) Has any other member anything further? Dr. Betty, shall we hear from you?

DR. BETTY: I think I said enough yesterday on that subject,

PRESIDENT TAFT: I received a telegram from the President of the American Dental Association, in which he sends greetings to this body, and remarks that he expected to be here until the last moment; hence sends greetings, and asks that this body appoint delegates to the American Dental Association. Drs. Welch and Emminger are the members of this committee, and I will ask them to select the delegates from this body to the American Dental Association. We are entitled to one for every five members. I would suggest that those who think of going will report themselves to this committee, to save the committee the trouble of hunting them up, and that they so report as promptly as possible, that they may be properly appointed and duly authorized to go as delegates from this body. The national organization meets at Asbury Park on the first Tuesday in August; there will be a grand meeting, and no doubt a very important one, one that everybody is always interested in when they are there, and you should all be interested enough to attend. I have a letter from Dr. W. M. Morrison, in which he says: "My compliments and congratulations to the Society, and sorry I cannot be with you on the occasion of this meeting. Sincerely hoping it will be a successful and profitable one, I am, yours truly, Wm. M. Morrison, of St. Louis." He is one of the oldest of our members, if not the oldest; and it is something of importance that is keeping him away. I just received a letter from Dr. W. P. Hall, one of the old members of this body, a portion of which letter I will read: It is dated from Piqua, Ohio.

"I deeply regret that my engagements are such that I can not be with you at this meeting of the Mississippi Valley Association. I think I became a member of it in 1855 or 1856, and maintained my membership until within a few years, (three or four years; Dr. Hall was here, I think, three years ago, perhaps.) The annual meeting and greetings and discussions and clinics

were to me always pleasant and profitable. I consider the Association as a great educator, and very helpful to all live progressive men in the profession. Fifty years ago the first day of this month I commenced the study of dentistry with Dr. John Jones, of Dayton, Ohio, who was quite distinguished as a skillful dentist in his day. His early practice antedated metal dies and swedge plates, even before porcelain teeth were made, except pivot teeth. I remember seeing a partial upper set of teeth he made for a lady, by bending gold wire and adjusting it with pliers to the mouth and remaining teeth, and next forming clasps around the molars, which had been worn satisfactorily for twenty-five years. The teeth were soldered to the wire; I presume you have seen many such cases. For several years after I commenced practice, we used spiral springs to hold the sets in the mouth. (Perhaps many here do not remember of having seen work of this kind.) I spent two years with Dr. Jones, and on the first day of May, 1847, I located in Piqua, where I am still happy in the daily practice of my profession. This fiftieth anniversary naturally recalls the past, and in the retrospect we may well be proud of the progress made in dental science in fifty years. Indeed it is almost phenomenal. Wonderful improvements have been introduced, and yet some of the old practice will bear favorable comparison with the new. You will pordon me for mentioning one or two illustrations, personal to myself. A short time since, a lady from Urbana was visiting friends in Piqua, and she called to see me and show me the teeth that I had made for her so many years ago, and they were still doing as good service as ever. The upper set I made on gold forty-three years ago, and the lower set is continuous gum, made thirty-three years ago. Neither require repairs. How many of the old members can show a better record? I may possibly get down on Thursday. I hope you will have a delightful session. Salute the brethren, and believe me ever, yours truly."

Dr. Callahan: I have received a number of letters of regret from those not attending. Some I have not yet opened. Among others I find one dated April 17th at Indianapolis, in which the Executive Committee of the Tri-State Dental Meeting

cordially invites members to meet at Detroit, Michigan, June 18th to 20th next. Signed by G. E. Hunt, Secretary.

Dr. Welch: I have the name of Sarah S. Harris, graduate of the Ohio Dental College, a candidate for membership.

On motion, the rules were suspended, and the Secretary was instructed to cast the ballot of the Association for admission to membership of the lady named. It was so done, and announcement formally made to the society of the fact.

President Taft: Dr. Harlan has placed here a couple of volumes, embracing the transactions of the Columbia Dental Congress, a very valuable work, indeed. He states that there is a number of sets on hand still, and that can be procured if any member wishes the opportunity. I can say this: I received the work a little while ago, and it is a most excellent work, one indeed that no progressive dentist can afford, in justice to himself, to do without. I contains a large amount of very important matter indeed, matter that will serve for reference, and good reference, for years to come,—all the lifetime of any of those present. This work is still procurable. There are about three hundred sets remaining, and they can be had at the price of membership in the Congress—ten dollars; that is in leather binding; the price of which is twelve dollars, a mere pittance for the value that will be obtained.

Dr. Smith: To those who attended that meeting it will be almost essential. I want to say that Dr. Harlan, who edited that work, has done it admirably well; and he has done it without compensation. They are short of money about $1,000, and anybody who feels like contributing in purchasing these volumes will be doing a good thing. The American Dental Association at the last meeting made an appropriation of $500 to help pay for this work; it has been expensive because of the large number of illustrations. Take such a subject as was treated by Dr. Callahan yesterday; it gives you an extended paper on the subject of tube teeth. So it is practical, as well as embodying professional research.

President Taft: I am sure any subscriber will have more than the worth of his money. It will not be a contribution.

You will receive more than the worth of your money. There should be a vote of thanks extended to Dr. Harlan.

On motion it was so ordered.

Dr. Brown, of Ft. Wayne, Indiana: You are, most of you, aware of the effort now making to erect a permanent memorial to Dr. Wells, who discovered nitrous oxide gas as an anæsthetic. That those not informed may understand, I will read the following from a circular, which is issued by the committee appointed by the American Dental Association:

"At the celebration of the 50th anniversary of the discovery of anæsthesia, held at Philadelphia, December 11th, 1894, a resolution was passed directing the President of the American Dental Association to appoint a committee to take into consideration the erection of a suitable permanent memorial to Dr. Horace Wells, and to secure contributions toward the fund for that purpose. Dr. J. D. Thomas, of Philadelphia was elected Treasurer of the meeting. It is hoped to secure enough money to erect a bronze statue of Dr. Horace Wells in the National Capitol. Details as to style and character of the statue, as well as its definite location will be decided on at the next meeting of the American Dental Association to be held at Asbury Park, New Jersey. You are invited to contribute whatever amount of money you may feel willing and able, to the fund, etc. It is hoped that a motion to vote a suitable sum from our Treasury in behalf of this worthy object will prevail. Our Association cannot well afford to withhold its name and influence, as a pioneer organization, from this cause."

President Taft: You have heard the statement by Dr. Brown. What is your pleasure in regard to it?

Dr. Smith: Would it be proper for this society to make a donation?

On motion, it was resolved to contribute ten dollars to the fund for the erection of a permanent memorial to Dr. Horace Wells; or more, if the state of the Treasury, in the opinion of the Executive Committee, will warrant it.

In putting the question on the foregoing, President Taft said that he hoped that this formal action by the society would not

preclude other contributions by members, but that all would contribute according to their abilities: If they could not spare a dollar or five dollars, then give less, as the cause was a worthy one.

PRESIDENT: The next order of business is number 5, on our program, "Crown Work," by Dr. George Evans, of New York City.

DR. EVANS spoke as follows:

Mr. President, and members of the Association, I would say in explanation of my not appearing before you with a regularly prepared paper, that I was notified by your committee to give a talk, or as I understood it, a demonstration, on the subject of something relating to crowns or bridge-work probably that would interest you a little; and it was not until I received the announcement of the meeting of the Society that I noticed my name was down as an essayist. I have not had an opportunity to prepare a paper, as I stated, in regular form, and will have to depend upon notes in the rough, etc., to guide me during my talk, which will be a criticism of some forms of crowns for front teeth and an explanation of a method of crowning. I will preface my demonstration proper with a few remarks, which to some, may appear irrelevant, but are not so, I think.

In presenting the subject of a tooth crown, I am aware that dental science, in the opinion of many members of a dental society should receive preference to that of art. But the usefulness of the profession depends on its art. Science is its guide, its aid. This statement, however, is not disqualifying to dentistry, respecting its acceptance as a profession. I so remark in consequence of some opinions that I have heard expressed here upon yesterday at the session of this society. What is science, and what is art? I will endeavor briefly to explain. Nature is the presentation of the phenomena of the universe, including man himself. Science embraces the study, the investigation of these phenomena; art is the utilization of these phenomena of nature, and the reproduction of them. Science, to further its investigation, depends on art; art, on science to still broaden its field of usefulness. For advancement one is often entirely dependent on

the other; for, in science we use art, and art in science. Art embraces everything that is directly or indirectly the result of the work of the hands, including the creations of the sculptor, the painter, the architect, the physician and surgeon, the dental surgeon, and so on down to the humblest mechanic. The medical profession is constantly practicing art. What is a surgeon doing in the formation of a splint or appliance for his patient if it is not art? Or in the construction of a plaster or wood fiber jacket, in cases of spinal curvature, on his plaster model of his patient is he not practicing art?—indeed that which may be decidedly pronounced mechanical, so far as art is concerned. Dental art consequently, should receive the same liberal consideration in the classification of dentistry under the head of a profession, or in placing it as a specialty of medicine. Therefore, anything that is at all novel in art, or that may be of interest in that connection is proper for presentation to a dental society. Now, I have here drawn the form of a front tooth, a central incisor; the presentation of that to you, the mere drawing, is art; but the consideration of that form, analytically, is science. Now, that is simply a drawing of a central incisor; but there are some points about that even, that some of the gentlemen here have not considered. In that drawing we notice the apex of the root and the incisive edge of the tooth are almost on a direct line. Now, there seems to be nothing much, at a glance, to assist us; but there is a great deal to guide us; in the first place every tooth crown that is inserted should have the incisive edge, as nature intended, directly on a line with the center of the root canal, the root on a line with the apex. Place it the least bit forward or inward and you throw it in an abnormal position. That is a guide to us in drilling the root, not only in a front or incisor tooth; but it is also a guide to us in reaming the root canal; if we follow that guide it will prevent us from perforating the side of the root. All you have to do is to calculate where the incisive edge of that tooth was originally placed; also guided by the eye as to the position of the adjoining or approximal teeth's incisive edges, which will control the direction of your drill or reamer. I mention that in connection with the method here illustrated regarding the

crowning of a front tooth. The objectionable features of collar crowns are the exposure of the collar at the servico-labial section, which is difficult to avoid, and the irritation its presence there is apt to cause the peridental membranes, which it is more liable to do at this point than at the other sides of the root. The collar, to be invisible, has to be fitted well under the gum-margin. This requires extensive removal of the periphery of the cervico-labial section of the end of the root rendering adaptation of the collar at this point an operation few practitioners succeed in accomplishing perfectly. The width of this section of the collar has also to be so reduced that it contributes but little strength to the crown. As a matter of course, in bridge-work it is almost absolutely necessary in many cases that we should have the collar to entirely encircle the root of even a front tooth, but I tell you, many times patients will not endure the exhibition of the gold outside the gum margin. It is often almost impossible to avoid this, in many cases, if it is placed there at all. Many of these patients are ladies who have visited Europe, and have gotten European ideas instilled into them in regard to metal showing, and they must have a plate put in having a crown that the gold shall not show above it. This is not so all over the country, but in many sections it is the case, at least with the society ladies of New York city. And I don't think it is confined to New York city. Another thing, we will consider, is, what is the use of a collar on that portion of an upper incisor tooth, and I refer in my discussion here to-day almost entirely to the upper front teeth—I am not attempting to bring before you an exhibition of the crowning method in all its details. I wish only now to bring to your attention a few points, and I must necessarily be brief. We all know that in the normal occlusion of the front teeth that the force comes as exhibited below. (Referring to illustrations on paper in view of audience.) I may say that this method of presenting these drawings on a roll, like this, is a method perhaps a little different from what you have seen; but I find it very convenient in lecturing to college students, because it gives me a cue to my subject, as I go along, and you can easily withdraw from the sight of students the portions discussed and have

only before the eye what is being especially considered. That, I think, is a very good feature of it. It is also convenient to carry a large number of illustrations in this rolled form. Now, as I stated, the force of occlusion comes about in that manner—that angle. It will readily be understood that there is no necessity really at this line here for much support, beyond what is obtained by the cap itself. All the resistance is required at the palatal section of the root. The form of crown that I here illustrate is not new in principle, neither do I present it as a universal substitute for the ordinary collar crown, but as embodying features which are advantageous. The method I offer facilitates and simplifies the operation of construction so that it can be performed by those of only ordinary skill. In my intercourse with dentists I have had several very prominent men in the profession candidly, privately acknowledge to me that they never could quite, satisfactorily to themselves, fit a collar on a front incisor tooth; in fact, on many teeth. There was always something about it not quite satisfactory when the operation was completed. Now, this embodies the principle of the collar crown; a collar is not necessary, if you can have a perfectly tight, accurately fitting post in the root, and in the metal or cap which covers the end of the root, that is all you need. You can obtain all the strength necessary in this manner. Dr. Van Wort of Brooklyn, seldom, as I understand, places a collar on the root of a front tooth; I have seen some very fine operations, and apparently durable ones come from his hands.

One trouble with the collar as ordinarily made is this: there is a section right here at the cervico-labial portion of the tooth that is very difficult for many to fit their collar accurately to. In trimming off that edge, as is illustrated in the form of the tooth there, there is a curve that requires considerable trimming and reduction to enable you to properly fit the collar, and when it is fitted, there is many times an edge here that protrudes, as shown at "D," and when the crown and the porcelain then is fitted to endeavor to bring it in line with the other tooth, as in the drawing here of the natural tooth is illustrated, you have to protrude that porcelain a little further; that forms a cavity, or recess, that is shown here at "C," that in many cases is not filled

in with metal. Unless you, in considering the curve, solder around the cap and collar in such a way that it shall flow and fill in up there you have got a recess that is more or less a detriment, and that produces irritation of the cervical margin, and causes irritation from that cause alone. In more than one case where recession of the gum has taken place, which I have examined, it was due to that little recess in the porcelain where it protrudes; it is not due to the collar. That is caused in fitting the collar, the tooth is removed at that point to get a perfect fit of the collar, and the porcelain is not able to fill it in; I don't say it is not possible, but it is difficult, unless you run your solder in there it is always difficult; you will have that little recess that will constantly produce the irritation. Now, take a superior incisor, as here illustrated. This shows the form to which the root is to be trimmed. The end is trimmed at the proximal sides and sufficiently here at the palatal side to bring it on a line with the gum; the cervico-labial portion is left intact. In doing that I use these trimmers, such as I will here show you; they have not before, perhaps been brought to your attention. They have been introduced by myself; I have tried every other form that has been presented by others, and after all I have never found anything—and other gentlemen have endorsed that opinion to me—anything equal or superior to these for trimming on the sides of the root, placing them in a dental engine, and resting the finger on the incisive edges of the adjoining tooth you can trim off the root most easily. I also use, in trimming the sides, and instrument like this, which aids me very much. (You will excuse me in introducing these instruments in the way I do. There are a good many questions asked me by gentlemen, how I do this, and how I do that.) After the shaping is done in the manner indicated, with disks and trimmers, the root-cannal is next enlarged with an Ottolengui root-cannal reamer, which only takes a moment. The size and condition of the root and the judgment of the operator should determine the number or size of the reamer to be used, and the depth to which the canal should be reamed. I generally commence with No. 1, the smaller size, and then increase. I very

seldom use one larger than No. 1 for an incisor, and No. 2 or 3 for a cuspid. To the reamed canal is fitted a prepared iridio-platinum post, as illustrated here in Fig. 6, corresponding in size to the reamer used. By reaming the tooth-canal and then introducing the post, if it is exactly the size, you at once have a tight fitting post. By reason of the serrations or screw thread on the post, if you draw out the reamer it will enable the post to permanently and rigidley fix itself in the canal. That is one point gained; and the object of this is so that it can be screwed to this platinum plate. Next take this prepared platinum plate, having a perforated concave depression. Its size to be proportional to the root of the tooth. The depression is formed in it as illustrated here. It can be stamped on a die; one form will almost do for all cases, because the plates, if made a little large, can be trimmed down on the edges to suit. This depression I fill with a small piece of pure gold, then punch a hole in it, and enlarge it so this screw post will fit in it. Some of these disks and posts are here presented; the gentlemen can pass them around—the reamers at the same time. I show them because some of the gentlemen never have used them, and it is necessary to call attention to them. If necessary the orifices may be slightly enlarged with a round headed bur. The disk of platinum plate is about No. 35 gauge. In the depression of the disk the pure gold has been mounted, and the post, when fitted to the canal, is grasped at the line of the orifice of the canal with small pliers, about here, as you see, in that manner (illustrating). That gives about the distance it goes into the post. The disk should fit in the orifice of the canal, when the post is in position by twisting, the post is then put into the plate and the edges turned down. By twisting the post in the disk, change of position is instantly effected; some times, when just about nearly through I have found a chance to give it a press upwards, which will bring the edges of the platinum down into the orifice of the canal, and the serrations on the post enables the post to catch firmly. Both post and disk are next removed, and the post secured in position in the disk by being held in a Bunsen flame, and heated to a point that fuses the pure gold in the depression.

No flux is necessary as sufficient remains from the first fusing of the gold. The post with the disk is next inserted on the root, the platinum pressed with a large flat plugger, and malleted so that the line of the edge of the end of the root will be impressed upon it. The platinum is next removed, and slit at the two points between the palatal and proximal sides. The line of the end of the root is supposed to be represented here on the disk. By the process I have just explained, and guided by the mark of the end of the root on the platinum the proximal portions are bent over with small-pointed pliers to embrace the sides of the root. The post and cap are then placed on the root and the side flaps, with the aid of foot-shaped condensers and burnishers, are closely fitted. The palatal flap is next brought down to position. Frequent removals and annealings are necessary during the process, which should include finally trimming the edge of the platinum, smoothing with a corundum point, and then an annealing and an all-around burnishing of the cap to the root. At the cervico-labial section the porcelain can rest on the platinum, or the platinum can be trimmed so that the front edge of the porcelain may be fitted against the root, covering it, the platinum is trimmed off at that point. The projecting end of the post should also be removed, leaving it a little flush at the palatal side. The porcelain front, which should be a cross-pin plate tooth, is ground and closely fitted to the surface of the root or metal, as may be, at the cervico-labial section under the edge of the gum, but a properly shaped space opening toward the palatal side is left between it and the surface of the cap. To shape the porcelain simplifies the fitting of the cervical section. The space between the cap and the porcelain is also easier filled in the soldering. To the porcelain front, here, a piece of very thin platinum foil is shaped, the porcelain heated, the part veneered with a mere film of gum shellac, and by pressure with a napkin or cotton the platinum foil is attached thereto. The rest of the porcelain is then backed with the platinum plate (about 35 gauge). The platinum is left slightly extending over the incisor edge, and the porcelain front is waxed in position on the

cap. Fig. 13 shows the crown waxed up ready for investment. Wax in full amount must be extended over the collar to its edge, in the seams, and between the porcelain and the cap at every point solder is to flow. I generally use Parr's wax. In trimming the investment the material must not be removed from over the collar lower than the line of the surface of the cap, or in such a manner that the platinum turn-over edges are not exposed to the direct force of the flame. If the collar is not exposed, the solder will flow over the outer surface of the platinum, just where it is wanted and where wax has been applied, and all the parts will become united.

The investment must be slightly raised at one end, and headed up at its base with a full flame of a gas blow-pipe thrown in the direction indicated in the drawing. Heat thus applied will cause the solder to flow downward and fill the interstices in all parts of the envestment as though it were an ingot. The best way is to apply a little solder at a time until the deep parts are filled. The flame is then withdrawn for an instant, and with a small pointed flame and more solder the backing can be contoured. As platinum forms the cap and backing, the soldering can be conducted without fear of accidentally fusing those parts.

I wish to explain a point with regard to the cementing of crowns, this kind of crown, or any kind of collar crown. Having the root and crown ready I warm the crown, and apply a thin coating of chlor-gutta-percha to the post. The chloroform, instantly evaporating, leaves a film of heated gutta-percha. Immediately the crown is adjusted to the root and removed. This shapes the gutta-percha on the post. The crown is then allowed to cool, and is cemented on as though no gutta-percha was used on post. A crown so cemented can be removed at any time by repeated applications of the thick part of the heated root-canal drier to the metallic portion of the crown, which communicates the heat to the post. In a short time the sheath of gutta-percha around the post is softened, and the crown can usually be removed without difficulty. I also attach ordinary bridge-work in this way, having abandoned the use of methods classed as "detachable," which only allow the bridge to be removed by the

dentist. (Dr. Evans here passed among the audience a tooth which he had crowned and afterwards had to extract, which exhibited a sample of his work that was made without any idea that it would ever be exhibited as such.)

The question may be asked, as it was asked of me once by a gentleman, when I was describing this method, does that pin enveloped with a film of gutta-percha hold in, in that way? You all know you can cement on a crown very firm, if you have a nice fitting post, with a little film of gutta-percha alone. Here is an ordinary root that has been capped in the usual way, and the post alone is secured with gutta-percha, and nothing put in the cap; try that and see if either of you, gentlemen, can move it. I question if I could move it with the pliers without heating it. In that way I have found perfect satisfaction and security.

One other thing I would like to bring to your attention, which I have had remarkable success in, and that is in making all-gold dummies. A great many gentlemen have told me that they preferred to use on the lower jaw where it is not seen, gold dummies. We all know that in making gold dummies with a porcelain front they fill them in at the labial side in the cap,with gold, that makes them very heavy. Where they make them entirely of gold, like the dummies of the kind shown to you in the past by Dr. Knapp, of New Orleans, you remember they are heavy. My method is to form these dummies hollow. You can take a crown—I prefer a seamless crown that is stamped out of one piece of gold. You can do it with one of those crowns you can purchase, you can do it with a crown that is made with one of the machines now in use. The crown is shaped and fitted to the model as a dummy, and, if you intend to have it rest on the membranes, in the form that the bridge was constructed yesterday that was shown by Dr. Callahan; you can then remove it and place it—first, before that, though, I fill in the crowning surface with gold solder, or gold plate—the crowns that I use are alloyed with platinum—you can melt gold plate right into it and fill the space in. I always boil them out in acid. I never solder the crown on the

outside, till I remove the flux; that is a little point. I don't want to melt them; it spoils any bridgework. Don't be in such a hurry that you neglect to boil them in acid, and remove that flux from the inside. If you neglect that you are very apt to melt them when you solder on the outside. I remove that and then adjust this ball of solder in the center of the flame and then heat it up to the melting point, the solder flows down and runs along the plate, and the moment it strikes the edges it firmly unites. The point has been brought up. "Is that hermetically sealed up? Does it leak?" To an educated man I should think it is not necessary for me to say it is hermetically sealed, because we all know when you heat that to a certain point, to a red heat, you will exhaust almost entirely the air. When you heat to a dull red heat your solder melts, then you heat it up a little further and the solder flows over to those edges, and as the crown cools, as a matter of course the solder cools, and the entrance is instantly stopped, and hermetically sealed—just as a housewife, as you all know, takes a jar of preserves and fills it up with boiling water and seals down the top. Make the form in this way. This is to make a certain rim that I have not heard much said about, but which I see in many men's work, and I practice in my own work. It is all right to restore the teeth in form, but I prefer to favor the grinding or occluding surface of a dummy always; consequently from the palatal to the labial side I always reduce the dimensions of it slightly, about in proportion as you see there; that is the normal average size of the tooth, (illustrating) and that would be the proportional size, as a rule, I would form my dummy.

There is something else in that. It lessens the curve of the self-cleaning surface. It is very desirable not to have too much curving in. If that was a long tooth it is very apparent that an immense slot would be formed by making the dummy as wide in proportion as that. I will pass around some specimens I have here. There is a bridge I formed when I was getting ready to go to the American Dental Association last summer. I was not over a couple of hours making that bridge. As a matter of course I could not do that, with work intended for the mouth.

In making my explanation you will pardon me if I have presented any material such as I have presented at the American Dental Association's meeting. I have not before presented it as much in detail as I have here. I presented it there and afterwards made some little drawings. My explanation there was anything but clearly understood by the gentlemen present, I fear. It has been commented on favorably by my friends, and Dr. Crouse thought it would prove interesting matter to you. As I replied to Dr. Callahan, in asking me to appear before you, such an educated and intelligent body of gentlemen as the Mississippi Valley Association, it would be very difficult for me to present to you anything in the way of crown or bridge work that would be novel or interest you. I did not wish to encroach upon your time to no purpose, and have selected these few points, hoping you would find something in them of interest. Because of this method having been favorably commented upon, I have felt encouraged to present it. I thank you, gentlemen.

DR. TAFT: The remarks of Dr. Evans have been very full and exhaustive and I presume very satisfactory, yet I think we can well afford to devote a few moments to further discussion upon this subject, it being a very interesting one. Has any gentleman anything to offer?

DR. GRANT MOLYNEAUX, of Cincinnati: It is certainly very gratifying to have members of the profession of the prominence of Dr. Evans come from New York city to Cincinnati and give their valuable time to us in such an interesting address. I have heard some of his remarks before, and have found many of them to be extremely valuable. The talk he gave us embraced several very important features, but there are some other features that I don't quite agree with the Doctor in—one point first, in connection with the crown, I would like to ask him whether this crown would be servicable in connection with the average, porcelain crown? Before he answers the question, I would say that we believe the object of a ferule among the profession, many believe as the Doctor has stated, that the ferule is necessary to make a strong crown—and I am one of those persons who hold that in the majority of instances a ferule is necessary, especially in

bridge pieces; and I believe that a complete ferule is necessary, if we are to have a ferule at all. The object of the ferule is to support the arch, give the greatest strength to the arch; and at the same time that a half ferule does not fulfill the object of the ferule in all instances, and that in order to add sufficient strength to the crown a complete ferule would be necessary. It strikes me that in the majority of instances a ferule might completely encircle the end of that root without destroying any more of the root than the Doctor does in the adjusting of this porcelain facing. I do disapprove of attaching ferules to any extent beyond the free margin of the gum. Take a root of a tooth in that shape. Now, of course, if the root is left in that form, it is usually, in fact it is quite impossible for anybody to pass below the free margin of the gum with a ferule; but is it necessary, does it add any strength to the tube to pass far below the free margin of the gum? It strikes me it is only necessary to reach this point, just below the free margin of the gum, and at that point we can slightly cut those corners, and adjust a ferule to that point, and to that point, (illustrating) completely encircling the root. It would add quite as much strength, in fact, just as much strength as if that ferule passed below an eigth of an inch, for the strength given to the crown by the ferule is only at the point where the ferule is in contact with the arch, and beyond that it becomes a source of irritation, and a receptacle for stray food that might decompose and give rise to trouble, as frequently happens where this ferule is driven far below the gum. It seems to me, that in taking this ferule off here, as the Doctor suggests, we lose to some extent the utility of the ferule, that the root is not thoroughly protected, and that we will meet with difficulty from attempting to adjust a porcelain crown ground to fit close against the root, without any protection to the margin. There is another point that is in favor of the operation, and that is, its artistic feature. That the method Dr. Evans has suggested here is probably one of the most artistic crowns that can be adjusted. But would it be a serviceable crown, would it be a strong crown, in connection with bridge work? Of cource the object of of a ferule is to give additional support to

the pin by impinging upon the sides, and only in that way, as pressure would be exerted at this angle (illustrating) of the tooth, from the lingual side towards the labial, that the ferule would bind and give resistance, and an additional support to the pin, by pulling against that angle, so it has been hoped, as this force is the greater in the direction I have indicated, and the ferule would compensate that. We extend our ferule that usually make it heavier, and as the gold is not to be seen the tube is allowed to project a little below the free margin of the gum, and formed in this manner, so that we can get a firm adjustment of the ferule, while anteriorly we reduce it to such dimensions as that it shall be hardly perceptible. That gives it a large degree of support. There might be some instances in connection with bridge-work, when the force would be exercised at this angle, and then this half ferule would fail, and this tooth fixed in that manner would not give support, because the angle of force, biting against that, it would push the crown in this manner, and the ferule would not give the support intended. That would be more complicated bridge-work. They would probably put a single crown where protected on both sides by the natural teeth; and where the force is distributed, or between several natural teeth with the crown adjusted just as ordinarily. Now, then, it seems to me that there is another point that is of value, in suggesting a full ferule for the teeth; and that is, to make this joint perfect. Take another root, and if we allow the ferule to pass entirely around the tooth, then grind in our porcelain facing, fit this and back it up with thin platina—that has been my hobby for a long time, to back up with—either thin platina or pure gold. There is a peculiar point—where the color of the teeth is a yellowish or cream tint, and you line the teeth up with platinum, porcelain teeth, well—at night—that tooth will be conspicuous, because it will look like a discolored pulpless tooth; it will be a very dark tooth; if it is lined up with pure gold it is not so perceptible; so that is a point to be considered. If a bluish tint is to be developed in the lining up of porcelain teeth with a platina back, it is suggested that if the teeth are cream color pure gold would be suggested. I had an experience of this sort that caused me a

great deal of trouble. A lady complained, said her friends told her she looked like she had a dead tooth in her mouth. In day time it was not noticeable, but at night it was distressing to her friends. I tried it again, with the same result, on a lighter tooth, until I used the gold and then we seemed to get the color better proportioned. If we surround those teeth entirely by a ferule I believe we can make a more serviceable piece of work if we allow our ferule to come a little higher; that is, encircle the root entirely and then let this backing come over and barely lap the edge of this tooth at this point; then, before adjusting the tooth in connection with this band, painting that with a solution of borax, without allowing it to touch the porcelain, as our gold solder flows down from the plate, as he suggests, it flows on to this surface here, which need only barely face it and gives a very fine gold cap over that portion of the porcelain, which it seems to me is very advantageous in grinding. It requires some pretty accurate adjustment at times to do it, but in many instances it can be done, and then the joint here is perfect. The solder flowing over it supports that tooth at the top, and the porcelain holds it at the bottom. It seems to me that the tooth adjusted here in this manner to the porcelain bearing, connected there, if the strain be in this direction, it might have a tendency to force the porcelain off the pins.

The suggestion Dr. Evans made in regard to a guide in drilling the root is exceedingly valuable. I have used that ever since I heard him last summer at Old Point Comfort. I have followed that advice in several instances with crowns that I was compelled to remove, and I found it to be exceedingly valuable. I could take a crown off very easily that while in place seemed to be perfectly firm. The point he made with regard to counter-sinking for the pin is another valuable thing.

I enjoyed Dr. Evans' remarks very much, and I think I can thoroughly commend what he said here, to the careful consideration of the most of my friends. Last year, at Old Point Comfort, the remarks he made there were so valuable that I put them into use. That one point about the ferule, I still believe in connection with bridge-work especially, it would

be desirable to surround the teeth, and it is not necessary to get the action of the ferule to pass far below the free margin of the gum; therefore I would ask the Doctor whether he can depend upon that ground for the bridge as he makes it?

Dr. Smith: There is some difference in opinion in reference to the value of this ferule; from Dr. Molyneaux's standpoint, it seems it is not worth much. He says that the pressure is outward, and it is on the incisor teeth; when you have the band anteriorly the pressure outward would force the band away, would it not? It would not support it anteriorly, while on the root labial surface; on the contrary, if the impingement were outward it would bring it posterior, actually in contact, as it is where the support is.

Dr. Molyneaux: That is exactly what I said. I say in the majority of instances the force is outward, and therefore it would not be necessary in a single crown to have any at all, but in bridge-work, if the force is directed from outward in, is protruding much, then you would want the ferule on the inside.

Dr. Smith: There is no dispute about that. But it is the anterior tooth we are talking about; therefore it would indicate it did not need any anteriorly; therefore, if fitted accurately you have accomplished all possible.

Dr. Molyneaux: In bridge-work—where there is a lateral motion—take a cuspid tooth.

Dr. Smith: That is removed from sight much more largely than anteriorly. I want to call attention to the fact that the argument defeats what you claim; you take and support that pin by this firm attachment behind and then the crown he describes is certainly the one to make.

Dr. Evans: I will state that the crown is not presented as the suporter of bridge-work, although I have used it satisfactorily. You take a large, strong central, used to carry a lateral with it why, you will find enough support in this.

Dr. Molyneaux: You would not advocate it, then, as a rule, for bridge-work?

Dr. Cravens: We do not pay much attention to prosthetic dentistry. I suppose this comes under that head. Mark Twain,

in his "Innocents Abroad," on the occasion where he visits Rome, had occasion to make the observation that it is astonishing how much you know under certain circumstances. He says, when he went to Rome and saw the Coliseum, "Now, I recognized it at once!" This crown, that Dr. Evans has given us a description of so admirably, I recognize as an old acquaintance. There are about half a dozen gentlemen, graduates of the Indiana Dental College, who, some of them, at least remember that crown as described, is practically the Cousins' crown. Some of them went so far as to call it the "Cravens" crown, which I disclaimed. I call it the "Cousins" crown. It is practically the same, the only exception being that the band is even less than given in the Fig. marked No. 9. In the crown I described and instructed students to make, there was just a little skim at the palatal or labial part of the root, the root being beveled directly from the front, in the upper teeth beveled downward, and absolutely no gold showing in front, in fact none there, even the platinum cap dressed back so far from the front that the porcelain of the tooth rested directly on the root. My objection to putting a band along the lateral surface, proximal surface, is that with those teeth there is almost always a depression laterally, and that it is the most difficult place to get a band to fit accurately. We can all fit closely enough in front, but with the proximal surface we have trouble; or in fact with any operation to be performed on that surface. So that I omit the band entirely, except just a little band. When Dr. Smith started out I thought he was going to make all of my speech. In fact, he did, except in regard to Mark Twain. I did not say anything about my Professors, but I want to say that I have made crowns that way as far back as 1880; but I don't consider it original with myself. I don't know who gave it to me first, don't know as anybody told me. That is, just enough over the palatal portions, in the direction as Dr. Smith referred to, from the rear upward and forward, and the little flange affords all the support you can possibly get. The credit of that crown was due originally to Dr. Darby, of Philadelphia, who twenty years ago gave a description of four incisors, which I think he describes as

movable pivots, constructing four sockets for each, setting the sockets on the roots, pivotted and fitting tight. That was before the days of bridges. He describes that manner of making the crown. Dr. Marshall Webb gave a method of making the same crown, not removable, however, but fixed; and with Dr. Marshall Webb's admirable precision, he gives a method of making the crown so that when it was put on, it was impossible to put the crown in position with cement or India-rubber, or anything else, except in the position in which it had to go. I will add, that I object to the band going under the gum. In trimming the root—I construct it so that enough of the root, the posterior labial portion, should extend over the gum below, far enough so that the little section of the flange would not impinge upon the pericementum.

Dr. G. W. Smith, of Cincinnati: I just want to add a thought or two in the line of bridge-work. I see in this the same principle, I have in my office a crown I made ten years ago on the same principle. There is the same objections to this crown. It cannot be set up rightly for less than $25 to begin with; there was too much work about it. Again, in that crown, the main support, where it gave me the most trouble was, fastening the gold rightly to the porcelain. We are having that trouble to-day. The porcelain facing, without we can get up something which will give us more stability in the facing we have put on the gold, it will be carried away by mastication. That has been my trouble. I have been working on this for ten years. The best I can get out of bridge-work to-day is making the bands and suspension here described, and then melting the solid gold on them. Gentlemen, it is the acme process of bridge-work. It is the only thing that will stand; and I believe I may say that I make as much bridge-work as any of my dental friends in this city. I have found that in mastication it breaks down; then we have trouble to remove and repair it. It breaks down repeatedly. The only solid work is to do as has been done, fitting on those bands and then hanging solid 20 carat gold crowns between for the masticating back teeth.

Dr. Molyneaux: You can always find people who have

seen similar things; but this crown they have not seen; I defy anybody to show it to me in the literature. There are some that approximate it, but they are not the same. Dr. Evans deserves credit for the many valuable points he has explained. The only point in my mind is whether it could not be a little better made by a ferule passing entirely around the root, but very narrow in front, and cemented down. It could be made of porcelain, with a platinum ferule, and you could fuse that instead of the gold with the electric furnace, such as will be exhibited by Dr. Custer. You will be able to fuse that whole surface with porcelain, and make a perfect operation. Dr. Evans has the credit for that crown as it stands; that is quite an advance.

Dr. Evans: The principle is as old as the hills; but the method, that is what I presented.

In answer to Dr. Molyneaux, I will say, that I have not presented this form of crowns as a crown for bridge-work. I think I have used it in conjunction with other support. I will say, that with a ferule surrounding three-fourths of a root, counting the lateral sides and the palatal side, all the force, in my opinion, and in that of most gentlemen, I think, excepting what Dr. Molyneaux has stated, is almost entirely in that direcaion. Now, as to hiding the collar, I can hide the collar, but, as I distinctly stated, it is a most difficult operation to perform; I have found decay occur where a root has been crowned without a collar. I have generally found it on the proximal sides, the sides that Dr. Cravens does not believe in crowning. In regard to the color, in lining with platinum, that is correct. I agree entirely with Dr. Molyneaux in that respect. Where you use the porcelain, as a matter of course, you can fasten those pins by first thinning it down and using the porcelain required in backing. In cases where this platinum lining has to be soldered a tint will be sent through the teeth by its use. Just before I left home the same question came up and I took a piece of platinum and rolled it out quite thin, and after shaping it as a backing annealed it several times to take the contraction in a measure out of it that takes place in the heating of these metals, and it worked satisfactorily. This is no new idea; I presented it in my work on crown and bridge-work. Even this very crown is there—just a little

alteration in the method. About soldering over the edge of the porcelain here, that can be done, and I acknowledge I always endeavor to do it where I make the crown and put the collar there. My point in this was to make that little edge of porcelain take the place of the collar. As a matter of course you can trim that up and make it present a smooth surface to the investing membrane, or gingival margin. In regard to the proximal sides of the crown being trimmed down, I think the proximal sides very easy to trim down. I do it in an instant with a wheel. And now, in regard to Dr. Darby, and the question of originality, there has not been a crown introduced in the last twenty years that is realy new in principle. Oh, yes, go back over thirty—forty years—the old "Harris' Principles," that were put in my hands in 1859, has what you might call a gold pivot tooth; what is the crown of to-day but the same old thing, with a base of metal put around the line? I make such a crown as that, sometimes, on the cap end of the root, in this same old way, that was done fifty years, or a number of years ago, and after the crown is all finished, you might say—I then add a little base of metal around the palatal and part of the proximal sides. I invest it and solder it there, and it makes a mighty neat crown, too; but it is the same old thing, with a little collar added. As to Dr. Darby,—Dr. Darby was not anterior to these other methods; he is only one of the "Latter Day Saints on the subject of those crowns of his.

I have read of that matter, I think, very lately, though I have not especially looked it up; but I am well versed on this subject, and it is the same old thing, read of in the books away long ago. What is new in this is not the principle—the principle is old—away back—but it is only the simple method to facilitate the operation; and in speaking on that point I will answer the other gentleman, Dr. Smith, in suggesting that the whole point about that is to facilitate the operation. In regard to the time I will take, if you will give me the patient and the chair, and allow me, after preparing the root, I will ream the root canal, fit the post and adjust the cap in just ten minutes. I know I did crown a tooth before the Dental Society in about

half an hour; I think those gentlemen, if there are any of them here that have seen me work, will believe what I say. I will let you take a watch, and I will make the die for the tooth in five minutes; and I am willing to show that process up too. I want to make this statement on time; I generally am on time.

DR. SMITH: Have you had any trouble with porcelain being broken away by mastication in the central incisors?

DR. EVANS: If you cover the incisive edge of your porcelain with metal as was described, the force comes on the edge. But this crown is not presented as a crown for bridge-work; but more as a method of crowning the largest of the incisors and laterals occasionally; and in ladies' teeth where you don't want the gold to show. Dr. Frank Abbott does not believe in collar crowning, and is not much of a believer in bridge-work; but he does believe in that crown. I think I advanced most of these points. I thank you, gentlemen, for your criticism. I like criticism; the more I am criticised the better I like it. A gentleman said to me once in New York, a microscopist, the worse criticism a man can get is no criticism at all; and that is just the way they treated me in Europe.

DR. SMITH: While we are on the subject of a collar: if there is any advantage in having gold contact, why not take No. 20 foil, gold foil, burnish down, and then place platinum on that, underlying your platinum back put on thick foil, and then form your back; then you will have gold, which is more desirable, I think, as some teeth are affected by metal contact.

DR. EVANS: That is an idea. I thank Dr. Smith for it; I will put it on record, and will practice it, instead of using crown metal; because crown metal is dangerous to use, the expansion and cooling is so unequal; in forming the collar you have often experienced difficulty in soldering the ends, and in lining the teeth with it, I have been afraid this expansion and contraction would crack and cause trouble.

DR. TAFT: Dr. Fletcher's paper is next in order. How long will it take, Doctor, for the reading of your paper?

DR. FLETCHER: I should prefer to have it read after dinner, and have paper and discussion come together. There is a

paper here by Dr. Darling, that can be read; as I am one of the members to discuss it I can take up the discussion after dinner.

On motion the regular order was modified and the reading of the paper by Doctor Darling was made the next order of business. Dr. Darling being absent, the same was read by Dr. Callahan, during which Dr. J. Taft, temporarily resigned the chair to Dr. Emminger.

COMMENCEMENTS.

Baltimore College of Dental Surgery.

The fifty-fifth annual commencement exercises of the Baltimore College of Dental Surgery were held at Ford's Grand Opera House, Baltimore, Md., on Thursday afternoon, March 21, 1895, at 2 o'clock.

The annual oration was delivered by Rev. William Rollins Webb, and the valedictory by B. M. Smith, D.D.S.

The number of matriculates for the session was one hundred and sixty-six.

The degree of D.D.S. was conferred on the following graduates by Professor M. W. Foster, Dean:

NAME.	RESIDENCE.
M. H. Adams	Louisiana
J. G. Armacost	Maryland
H. G. Baxter	New York
H. J. Boyd	New York
C. E. Brown	Virginia
S. P. Cronan	Connecticut
W. G. Dalzell	Louisiana
G. R. Dashiell	Texas
A. E. DeViney	Texas
H. R. Eavey	Maryland
K. W. Egerton	Maryland
F. W. Epes	Virginia
C. H. Frink	Florida
J. G. Geiger	South Carolina
Fred. Hammond	Maryland
D. S. Henry	South Carolina
M. J. Hellwig	New York
H. Hoeper	Germany
H. W. Hoffer	Texas
E. G. Laflin	Connecticut
T. H. Lowe	Massachusetts
J. W. Lyle	Mississippi
A. M. Marcy	Ohio
C. Meikle	New York
O. Morgan	Pennsylvania
J. B. Rousseau	Alabama
L. D. Reavis	Oregon
P. C. Richardson	Texas
I. C. Rink	Pennsylvania
W. R. Roland	Pennsylvania
W. H. Simpson	Massachusetts
G. F. Showers	West Virginia
B. M. Smith	Pennsylvania
E. M. Summerville	Pennsylvania
E. H. Sting	Ohio
W. M. Sturgis	Virginia
C. H. Theberath	New Jersey
A. C. Thweatt	Virginia
F. Waesche	Maryland
J. L. Walker	Virginia
R. H. Weiskotten	New York
E. Weymouth	Maine
G. W. Williams	West Virginia
J. H. Wheeler	North Carolina
H. White	Maryland

Ohio College of Dental Surgery.

The forty-ninth annual commencement exercises of the Ohio College of Dental Surgery (Department of Dentistry of the University of Cincinnati) were held in the Auditorium of the Odd Fellows' Temple, Cincinnati, Ohio, on Tuesday, April 2, 1895, at 8 o'clock P. M.

The annual address was delivered by Dr. W. O. Thompson, president of Miami University, and the class oration by Charles E. Fitzpatrick, D.D.S.

The number of matriculates for the session was one hundred and eighty-nine.

The degree of D.D.S. was conferred on the following graduates by James Leslie, D.D.S., of the board of trustees:

NAME.	RESIDENCE.
F. P. Anshutz	Indiana
W. G. Baker	New York
C. H. Barlow	Ohio
A. P. Bell	Ohio
E. M. Revard	Ohio
H. J. Bond	Pennsylvania
J. W. Bond	Indiana
W. C. Bowyer	Ohio
A. B. Boyd	Kentucky
H. H. Braxtan	Indiana
J. A. Calhoun	Ohio
A. P. Chambers	Ohio
A. H. Clancey	Ohio
F. A. Couch	West Virginia
E. M. Davis	Pennsylvania
C. O. Edwards	Indiana
H. D. Finney	Pennsylvania
C. E. Fitzpatrick	Ohio
J. E. Froendhoff	Ohio
H. Gillham	Kentucky
W. Gillham	Kentucky
J. B. Griffiths	Ohio
W. P. Huston	Ohio
W. H. Johnson	Ohio
D. P. Jones	Ohio
C. C. Leming	Indiana
E. Matthews	Kentucky
F. E. McGilliard	Ohio
C. P. McLaughlin	Indiana
A. J. Myers	Indiana
J. N. Myers	Ohio
C. M. Meade	Indiana
O. Miesse	Ohio
T. S. Noble, Jr	Ohio
W. H. Rogers	Ohio
M. J. Ruddy	Kansas
C. A. Porter	Indiana
E. Shaw	Ohio
R. A. Sprake	Kentucky
J. V Stahl	Ohio
L. Stern	Ohio
H. H. Stevenson	Minnesota
T. Storey	Canada
F. J. Tarrant	New York
F. S. Taylor	Ohio
W. J. Thomas	Pennsylvania
G. D. Thorne	New York
C. D. Van Houten	Ohio
A. S. Woodrow	Ohio
R. L. Walsh	California

Pennsylvania College of Dental Surgery.

The thirty-ninth annual commencement exercises of the Pennsylvania College of Dental Surgery were held at the American Academy of Music, Philadelphia, Penn., on Wednesday evening, March 6, 1895.

The address to the graduates was delivered by J. Ewing Mears, M.D., professor of anatomy and surgery.

The number of matriculates for the session was three hundred and nine.

The degree of D.D.S. was conferred on the following graduates by I. Minis Hays, M.D., president of the board of corporators:

NAME.	RESIDENCE.
Harry Archy	Pennsylvania
J. S. Ashbrook	Pennsylvania
H. P. Bachman	Pennsylvania
John C. Bansley	Canada
Chas. R. Berlew	New Jersey
F. Sloan Betts	New York
Teofilo Borrero	U. S. of Colombia
E. Lee Boyles	Pennsylvania
H. M. Brown	Ohio
Thurl E. Bullard	Maryland
W. P. Clark	Connecticut
E. Clark, L.D.S	England
Jas. Cleary	Massachusetts
A. J. Cottee	Australia
R. S. Connor	Ohio
Chas. W. Cooke	New Jersey
N. J. Coyne	New York
J. I. Creasy	Pennsylvania
A. B. Dewees	New Jersey
G. W. C. Entelrine	Pennsylvania
J. E. Evans	Ohio
Carl Fisher	Germany
V. P. Ford	Pennsylvania
H. E. Friesell	Pennsylvania
Alfred Garcia	Cuba
Chas. M. Gowen	Georgia
S. H. Griffin	Massachusetts
Michael Grady	Connecticut
Martin Haase	Germany
J. M. Haymaker	Pennsylvania
F. A. Haymaker	Pennsylvania
Elwood Hay	New Jersey
Geo. W. Hartzel	Pennsylvania
H. G. Holch	New York
W. T. Herbst	Pennsylvania
H. E. Hosley	Pennsylvania
J. B. Hoffman	Pennsylvania
R. W. Hue	England
R. B. Hubbard	New York
J. H. Ivins	New Jersey
R. W. Jewett	New Jersey
J. C. Kamerley	Pennsylvania
John Krell	Pennsylvania
E. H. Kuhns	Pennsylvania
W. G. Lowrey	Pennsylvania
A. B. Longshore	Pennsylvania
Chauncy Lunger	Pennsylvania
M. L. Mandelstam	Pennsylvania
Geo. S. Mason	Pennsylvania
L. W. McCullough	Michigan
J. J. F. McLaughlin	Massachusetts
Howard Mellor	Pennsylvania
H. C. Miller	Pennsylvania
B. W. Moore	New Jersey
J. W. Mountain	Connecticut
W. F. O'Mally	Massachusetts
Beat'ce F. Osborn	New York
Seth G. Osborn	New York
R. C. Phillips	England
F. W. Proseus	Rhode Island
W. R. Roe	Canada
O. P. Roller	California
Anne L. Russell	Pennsylvania
Severo Salced S	Chile
Carl Scheidt	Germany
J. W. Shuman	Pennsylvania
A. G. Slonaker	New York
O. G. Smith	New Jersey
J. F. Smull	Pennsylvania
W. C. Spencer	Pennsylvania
L. E. Sticker	Pennsylvania
H. J. Stewart	Pennsylvania
F. A. Stewart	Pennsylvania
H. J. Steil	New York
G. H. Thompson	Canada
R. W. Turner	Pennsylvania
W. H. Van Meter	New Jersey
P. S. Voegtlen	New Jersey
Edwin G. Warne	England
Geo. L. Wernet	Ohio
H. K. Wilkins	Pennsylvania
R. A. Willmott	Canada
M. L. Zimmerman	Russia

Total 83.

Philadelphia Dental College.

The thirty-second annual commencement exercises of the Philadelphia Dental College were held at the American Academy of Music, Philadelphia, Pa., on Thursday evening, March 7, 1895.

The address to the graduates was delivered by Professor Thomas C. Stellwagen, and the valedictory address by George Fulton Taylor, D.D.S.

The number of matriculates for the session was three hundred and sixty-seven:

The degree of D.D S. was conferred on the following graduates by Ex-Governor James A. Beaver, president of the board of trustees:

NAME.	RESIDENCE.
Erik G. Akerlund	Sweden
Geo. C. Anderson	New York
C. U. Anthony	Pennsylvania
Fred. Eugene Ball	Maine
Arthur Laird Ball	Canada
John J. Barrett	Pennsylvania
George B. Beach	New York
Albert O. Berg	Sweden
M. W. Bieberbach	Germany
Harvey R. Black	Maryland
Charles H. Bogart	New York
Frederick S. Brooks	California
James B. Caine	New York
Richard H. Calely	Pennsylvania
C. D. Candler	Maryland
H. A. Carothers	Pennsylvania
Theo. D. Casto	West Virginia
A. D. Coleman	Massachusetts
James F. Coll	Pennsylvania
M. J. Collins	Maine
M. B. Crisman	Pennsylvania
Eliz. Cummings	California
Mrs. M. E. Cummings	California
Willsam S. Dalby	Britsh Columbia
A. G. Danforth	Maine
Victor E. Darling	Massachusetts
Joseph I. DeRoy	Pennsylvania
Wardell F. Engle	New York
Geo. C. Ferguson	Canada
Cassius L. Finney	Pennsylvania
R. J. Fitz Simons	Canada
David L. Floore	Kentucky
Rose Flynn	Pennsylvania
John H. Foquet	Pennsylvania
John W. Forssell	Utah
Harry A. Foreman	Pennsylvania
Harry K. Freeman	Pennsylvania
Chas. C. Galloway	Iowa
H. D. Gihon, Jr	New Jersey
Wm. L. Githens	New Jersey
James C. Gleason	Rhode Island
I. Milton Hadcock	Canada
G. S. Hagerthy	Maine
Edgar H. Hand	Pennsylvania
E. F. Hilferty	Pennsylvania
William L. Hill	New York
Alvin W. Irving	Texas
C. P. Jones, Ph.G	New York
A. B. Kelly, B.S	Mississippi
John P. Kelly	Massachusetts
Edward A. Kent	Michigan
H. A. Krumrine	Pennsylvania
Robert M. Leslie	Montana
Isidore Lett	Pennsylvania
F. Lawrason	Canada
C. H. MacDonald	Massachusetts
George A. Magee	Pennsylvania
John W. Martin	New York
Josiah Mason	Canada
W. J. McElligott	Connecticut
T. F. McElligott	Pennsylvania
E. McKenney	Canada
I. W. E. McLellan	Canada
W. W. McVea	Louisiana
J. W. Meadows	Canada
Glen W. Means	Pennsylvania
W. C. Mechem	Kansas
W. H. Merrigan	Massachusetts
Mrs. M. M. Moyer	Pennsylvania
C. R. Murphy	Canada
T. J. O'Connor	Massachusetts
W. H. Owens	New Jersey
Geo. E. Ozias	Pennsylvania
Joseph B. Page	Kansas
Thomas Parker	Pennsylvania
Arthur Pearson	Connecticut
W. J. Peebles	Pennsylvania
C. F. Pepper	California
Louis E. Plant	Connecticut
A. D. Preston	Massachusetts
A. L. Puckey	Pennsylvania
John F. Regan	Massachusetts
E. A. Rickards	Maryland
Chas. A. Riedel	Germany
J. F. Robertson	Washington
Peter Rogmans	Netherlands
F. B. Rose	New York
John F. Ross	Canada
Robert E. Rose	Iowa
Henry S. Russell	New Jersey
C. E. Sawyer	Maine
C. H. Scruton	New Hampshire
W. F. Shaw	Massachusetts
Stella Sims	Illinois
D. G. Snyder, B.E	Pennsylvania
Rasmus Steensen	Denmark
C. E. Stolte	Oregon
W. H. Strangways	Canada
T. R. Stuart	Canada
C. A. Summers	Pennsylvania
George F. Taylor	Massachusetts
John A. Taylor	Pennsylvania
F. J. Tewksbury	Vermont
A. C. Thompson	Connecticut
W. E. Travers	New York
Harry V. Walls	Connecticut
C. W. B. Wheeler	New York
C. A. Wilbur	Rhode Island
E. E. Williams	Pennsylvania
James A. Witter	Pennsylvania
Walter Wood	Georgia
Peter H. Wood	Newfoundland
James B. Woods	Pennsylvania
J. E. Woodworth	Wisconsin
James C. Wright	New Jersey

Total 115.

New York College of Dentistry.

The twenty-ninth annual commencement exercises of the New York College of Dentistry were held in Chickering Hall, New York City, on Monday evening, April 15, 1895.

The address to the graduates was delivered by Rev. Geo. R. Van de Water, D.D., and the valedictory by J. Levin Chaim, M.D.S., D.D.S.

The number of matriculates for the session was three hundred and sixty-one.

The degree of D D.S. was conferred on the following graduates by Professor Frank Abbott, M.D., dean of the faculty:

Robert R. Abrams.
Irving F. Adams.
William H. Achtel.
Joseph D. Alvord.
Ralph E. Aitken.
Otto H. Albanesius.
Eugene F. Beers.
Albert R. Benedict.
Arthur I. Bernstein.
Albert R. Brown.
Ernest T. Brown.
Frederick C. Brush.
Joseph L. Chaim, M.D.S.
Myron L. Colburn.
John T. Conton.
Ernest A. Wm. Dahlman, A. B.
Clinton A. Downs.
William B. Dunning.
Robert McK. Farris.
John T. Gilchrest.
Horace P. Gould.
Solomon R. Halley.
Harry E. Hawes.
Louis A. Held.
Michael P. Higgins.
Charles M. Hoblitzell.
James D. Hyland.
George A. James.
Albert M. Johnston.
Herman J. Kaufer.
John W. Kingsland.
Charles F. Kirkup.
Albert E. Koonz.
Clinton H. Leighton.
Wm. R. Longenecker.
William D. Lubitz.
John A. Marr.
William B. Martin.
Clarence M. Master.
Carl F. C. Mehlig.
Max. J. G. A. Meibauer.
William H. Meyer, B.A.
Arthur H. Merritt.
Arthur P. Morgan.
John H. McArdle.
George A. McEachren.
Harrison A. McNear.
Kelsey B. Osmun.
George B. Palmer.
David A. Proctor.
William B. Ready.
John W. Remer.
George E. Reynolds.
Joaquin Yela, Jr.
Austin J. Ruddy, Jr.
Mozart M. Solomon, B.A.
Harry L. Sanford.
Johann F. Schaeffer.
Granville E. Scofield.
Otto Schreiber.
Charles A. Secord.
John F. Shea.
Robert A. Sheppard, Jr.
William B. Short, Jr.
Morris Skalmer.
Edgar E. Sloss.
Walter D. Smith.
Oliver E. Stedman.
Howard M. Stowitts.
George T. Stevens.
Albert J. Todd.
Robert V. Totten.
Jason H. Tuttle, Jr.
Clarence W. Travis.
Herbert M. Vanderbilt.
Theodore D. Van Sickel.
Jose. V. Y. Vilaret.
E. Waller.
Frederick S. Welden.
Dwight O. Whedon.
Augustus H. Xiques.

Missouri Dental College.

The twenty-ninth annual commencement exercises of the Missouri Dental College (Dental Department of Washington University) were held on Thursday, March 28, 1895.

The valedictory was delivered by Dr. Frank A. Glasgow.

The number of matriculates for the session was eighty-six.

The degree of D.D.S. was conferred by Chancellor Winfield S. Chaplin on the following graduates:

NAME.	RESIDENCE.	NAME.	RESIDENCE.
Samuel F. Arthur	Missouri	Nova G. Phillips	Missouri
Harry F. D'Oench	Missouri	Rudolph L. Schmitt	Texas
James A. Henderson	Missouri	Clay V. Sidener	Missouri
Isaac F. Hereford	Missouri	William F. A. Schultz	Kansas
James B. Houf	Missouri	Benjamin F. Stevens	Missouri
William J. Lark	Illinois	Charles I. Trimble	Missouri
Lorenz E. Lehmberg	Missouri	Alfred C. Washington	Illinois
James F. McLellan	Missouri	Frank C. Wick	Missouri
John W. Marsh	Illinois	Thomas W. Willard	Mexico
George L. Miller	Missouri	Edward A. Woelk, Jr	Illinois
John B. Norris	Missouri	Francis M. Worley	Kansas
Thomas Owings, Jr.	Missouri	James McH. Young	Missouri

Indiana Dental College.

The sixteenth annual commencement exercises of the Indiana Dental College were held in the Grand Opera House, Indianapolis, on the evening of March 27, 1895.

The number of matriculates during the past session was one hundred and twenty-six.

The following students were graduated:

NAME.	RESIDENCE.	NAME.	RESIDENCE.
Carl Bauer	Ohio	Minnie Masters	Indiana
H. G. Conklin	Ohio	Otto Michaels	Indiana
S. S. Curry	Florida	L. M. Mains	Indiana
I. W. Carey	Ohio	W. W. Mitchell	Indiana
Jesse Emerson	Indiana	J. F. McDonald	Nova Scotia
R. J. Gillespie	Indiana	W. E. Pruner	Nebraska
E. H. Grace	Indiana	M. D. Powell	Indiana
B. M. Harbison	Indiana	P. C. Reade	Indiana
F. A. Hamilton	Indiana	H. E. Strain	Indiana
B. F. Johnson	Ohio	W. M. Van Scoyoc	Illinois
L. L. Kimerer	California	F. H. Walters	Michigan
H. S. Lee	Illinois	C. H. Weeks	Ohio
M. E. LeGally	Ohio	J. G. Wherry	Indiana
C. C. Murphy	Indiana		

Total 27.

Chicago College of Dental Surgery.

The thirteenth annual commencement exercises of the Chicago College of Dental Surgery were held in the Schiller Theater, Chicago, Ill., on Tuesday, April 2, 1895.

The number of matriculates for the session was four hundred and sixteen.

The degree of D.D.S. was conferred on the following grad-

uates by Truman W. Brophy, M.D., D.D.S., dean of the faculty :

Cassius L. Anderson.
Robert E. Anderson.
Rene Anema.
Arthur Atkinson.
George F. Baker.
Peter T. Barber.
Uri N. Barber.
William O. Barrett.
Preston G. Beirman.
Joseph Bendit.
Howell Boatner.
Ivory L. Bowman.
Louis B. Bradley.
John F. Brenneman.
Edward F. Brown.
James J. Carey.
Harry J. Combs.
William R. Cone.
Charles I. Cox.
Edward C. Crawford.
Dexter H. Davison.
Walter Dean.
Walter L. Dickson.
Robert Y. Dudley.
Wallace E. Eddy.
Adney J. Elmer.
George E. Everett.
Albert M. Farr.
Charles H. Farrand.
William Fraser.
Arthur L. Fouche.
Wilber E. Fribley.
Frank H. Gehbe.
Henry W. Glantz.
Alexander W. Glass.
Peter G. Godfrey.
Hart J. Goslee.
Spurgeon D. Gostelow.
Wilbur F. Green.
Alvin T. Grove.
Edgar C. Grove.
Alfred Guthrie.
James P. Harper.
John P. Harvey.
William S. Heaton.
William C. Hessler.
Le Roy E. Hughes.
Louis E. Jelinek.
Augustus C. Jacobs.
David H. Kennedy.
Walter H. Kepner.
Benjamin L. Kirby.
Ora L. Kibler.
Ferdinand C. Kloetzer.
Arthur D. Kifner.
Charles W. Lacey.
William F. Lawrenz.
William H. Lee.
George I. Little.
John B. Lucas.
Russell Lyon.
Lewis M. Magill.
John E. Magunson.
Thomas W. McAfee.
Silas E. McDonald.
Chas. D. McDougal.
Ross N. Martin.
Theodore R. Michaelis.
Francis H. Miller.
Arthur W. Morrow.
Marion J. Newman.
Thomas H. O'Neill.
Chas. A. Pankey.
Chas. S. Parker.
Marshall A. Payne.
Walton A. Perkins.
Wilfred E. Perren.
George W. Pfleeger.
Dean R. Phillips.
William A. Pitt.
Samuel H. Pollock.
Edward Reyer.
Louis R. Richardson
Frank H. Robinson.
Walter A. Rothschild.
William R. Russell.
Martin C. Rifan.
Hugh H. Salmon.
Athanasious J. Sanichas.
John T. Search.
Callanus L. Smith.
Archibald C. Snavely.
Geo. W. Snyder.
Albert F. Solliday.
Chas. J. Sowle.
Ira D. Steele.
Geo. A. Sweetnam.
Geo. E. Tanna.
Mathias A. Thomets.
Edmund G. Tompkins.
Charles C. Trailor.
John E. Trombley.
Peter C. S. Weart.
Ralph H. Washburn.
George N. Wilcox.
Joseph A. Wright.
Edward T. L. York.

Total 107.

Cincinnati College of Dental Surgery.

The annual commencement exercises of the Cincinnati College of Dental Surgery were held at the Y. M. C. A. building, Sinton Hall, Cincinnati, Ohio, on Thursday evening, April 4, 1895.

An address was made by Professor G. S. Junkerman, M.D., D.D.S., and the valedictory was delivered by Mr. William Howard Neff.

The number of matriculates for the session was twenty-six.

The degree of D.D.S. was conferred on the following graduates by Francis B. James, LL.B., president of the board of trustees: Andrew J. Bradford, William H. Gensley, William Lockman, Jr., William C. McCormick, and Walter L. Stevenson, all of Ohio.

EDITORIAL.

American Dental Association.

The thirty-fifth annual session of the American Dental Association will be held at Asbury Park, N. J., commencing Tuesday, August 6, 1895.

GEO. H. CUSHING, Rec. Sect'y.

THE following circular has just come to hand, and is fully explanatory of its intent. The object is one that in justice to the subject is an eminently worthy one. There is not a dentist in this country that is not indebted to Dr. Chapin A. Harris, and largely so, indeed more than can ever be paid; and it is to be hoped that every one will esteem it a great favor and indeed a pleasure to contribute to the object specified in this circular. And now we earnestly ask that every dentist and dental student will manifest their regard and love for the Father of Dentistry in this country by making a substantial contribution to the Harris Memorial Fund that a monument may be procured that will be a reminder not only to the present generation, but to many generations to come, of what Dr. Harris was and did for dentistry, not only in this but in all other civilized countries, for all are reaping the fruits of work he performed. Decide to contribute and decide to contribute at once, and decide to make the contribution one worthy the object.

To the Dentists of the United States.

CHAPIN A. HARRIS MEMORIAL.

A movement has been inaugurated in Baltimore which has received the earnest endorsement of Dr. M. W. Foster, Dean of the Baltimore College of Dental Surgery; Dr. F. J. S. Gorgas, Dean of the University of Maryland and other prominent members of the profession of that city. It is proposed to erect a

mortuary tribute to one of the greatest names in the annals of Dentistry—"Dr. Chapin A. Harris." He was a native of New York State and lies buried in Mt. Olivet Cemetery near Baltimore—but his grave is in a condition of discreditable neglect.

The object of this appeal is to provide funds for a monumental tribute worthy of his name and to establish constructive evidence of the estimation in which he is held by the Dental Profession.

Mr. Ernest W. Keyser—the American sculptor now in Paris—has modelled from a photograph a remarkably faithful portrait bust of Dr. Harris and executed designs for the proposed monument.

Dr. Chapin A. Harris was born in 1806 at Pompey, Onandaga County, New York. He studied medicine, removed to Ohio and afterwards settled in Baltimore, Md., where he practiced dentistry until his death in 1860. He founded and assisted in the organization of the first dental college in the world—"The Baltimore College of Dental Surgery"—chartered in 1839. Was for many years its Professor of Dental Surgery. He edited the "American Journal of Dental Science," the first of its kind ever published—1839 until 1860--and was a voluminous contributor to other dental and medical journals. He was the author of "Principles and Practice of Dental Surgery." "Characteristics of the Human Teeth," "Diseases of the Maxillary Sinus," "Harris' Dental Dictionary," and edited "Fox's Natural History and Diseases of the Human Teeth," with additions, etc. These books are widely known to the civilized world.

Circulars soliciting contributions will be distributed over the entire country and it is believed that if each member of the profession co-operate by even the slightest subscription the aggregate result will determine whether the unquestioned services rendered by Prof. Harris to the Science of Dentistry should receive its meed of recognition and the tardy testimonial reach a successful consummation.

"The Snowden & Cowman Manufacturing Company" of Baltimore, one of the oldest in the United States and favorably known as reliable dealers in dental supplies have kindly con-

sented to act as custodians to the "Harris Memorial Fund." Contributions are earnestly solicited and will be thankfully acknowledged. Address:

THE SNOWDEN & COWMAN MANFG. CO.,
No. 9 W. Fayette Street, Baltimore, Md.

The Tri-State Dental Meeting.

The joint meeting of the State Societies of Ohio, Michigan and Indiana was held as previously arranged and announced, in Detroit, June 18, 19 and 20, in the Dental College, in Detroit. The meeting was a success in all respect, far beyond the most ardant expectations. The attendance was much larger than was anticipated by any one, even the Committee, whose business it was to correspond and estimate the probable attendance, were greatly surprised at the numbers present. Not only was there a large number of the membership of the three State Societies present, but also a large number of non-members from the respective States, but from other States as well, viz: Illinois, Missouri, Kentucky, Pennsylvania and New York; in all about three hundred and fifty.

The papers read, of which there were a goodly number, were upon very interesting subjects, and well prepared, and fully discussed. Interesting clinics were conducted on two afternoons, in which many valuable practicable matters were presented. Each of the State Societies held their respective meetings for the transaction of such routine or special business as might come before them. These meetings took the place of the regular annual meeting for Indiana and Michigan, but Ohio will hold the regular annual meeting at the usual time and place, viz: in the first week of December next, and at Columbus.

One of the most enjoyable features of the occasion was the boat excursion up the Detroit River to the St. Clair Flats where a splendid entertainment was given at the Star Island House. Upon this occasion the Michigan Society was the host and the other State Societies, together with the visitors were the guests;

and right royal was the entertainment from the moment of stepping on the boat till the return at eleven o'clock P. M. The occasion was one never to be forgotten by all who participated.

The success of the meeting as a whole was so pronounced and created such enthusiasm, that it was decided to hold another Tri-State meeting of the same Societies in 1898, and Committees were appointed to have the matter in charge.

Not the least important features of this meeting were its social advantages. Here were reunions of old or former acquaintances, and new acquaintance made that will be a joy for the future.

This meeting showed the importance and value of, at least, occasionally taking our Association work out of the routine groove in which it so generally runs, and projecting into it new features.

May not other States, that are favorably located, employ some such innovation, that will impart new energy and give new zest to dental society work. The social advantages are certainly worth more than such a meeting costs in time, effort and money.

To the local committee of arrangements of the recent Tri-State meeting at Detroit, viz: Drs. Geo. L. Feild, Joseph Lathrop and A. W. Diach, is due the thanks of all the participants of that grand occasion; for the credit is in a large measure theirs. Their efforts were unsparing to make the meeting what it was.

The thanks of the meeting was also due to the authorities of the Dental College for the excellent accommodation given; without charges, for all the purposes of the meetings, clinics, side meetings, etc.

THE annual meeeting of the Northern Iowa Dental Society will be held at Clear Lake, September 3d, 4th and 5th. A good program has been prepared and a very interesting and instructive meeting is expected. Thursday afternoon will be devoted to social enjoyment. A tour of the lake, regatta, etc. All dentists in Iowa and adjoining states are cordially invited.

For further information and programs, apply to Dr. G. H. Belding, Calmar, Iowa, or Dr. J. J. Crout, Rock Rapids, Iowa.

WM H. STEELE, Chairman, Ex. Com.

American Dental Association.

The annual meeting of this body will be held at Asbury Park, commencing Tuesday, August 6th, 1895. Arrangements have been made with various hotels for the accommodation of the members.

"Coleman House, fronting on the ocean, is the largest hotel in Asbury Park; rates $3.50 to $4.00 per day. West End Hotel, a first-class house, opposite the Coleman House, rates $2.50 to $3.00 per day. Hotel Brunswick, one that is first-class in every respect, rates $3.00 per day. The Neptune, a nice quiet place, $1.75 to $2.00 per day. The Clifton, $2.00 per day. The Strand, $2.00 per day."

Arrangements have also been made with most of the railroads for reduced rates to the Association. The arrangement is for one and one-third fare the round trip upon the certificate plan, certificates being taken wherever tickets are purchased. The various lines of railroads from the west to the east furnish good accommodation; rates will be the same upon all the lines, and the time about twenty-two hours.

We have during the last two or three years made a number of trips over the Chesapeake & Ohio and have no hesitancy in recommending it as equal to, if not superior in some respects at least, to any other route. This road runs through the finest mountain scenery, and the road itself, with all its appointments is in superior condition.

The trains are in charge of thoroughly efficient and gentlemanly officers. This always adds much to the comfort of travel. This road passes through Washington, Baltimore and Philadelphia, through the latter place direct to Asbury Park, making as short time as any other road.

The best train by this road to take at Cincinnati is the twelve o'clock midday train. That arrives at Asbury Park the next day about ten o'clock. Some of the discomforts of some other roads are avoided by taking this route.

THE DENTAL REGISTER.

VOL. XLIX.] AUGUST, 1895. [No. 8.

COMMUNICATIONS.

Tumors of the Mouth.

BY DR. C. G. DARLING, M.D. OF THE DENTAL DEPARTMENT OF THE UNIVERSITY OF MICHIGAN.

Read before the Mississippi Valley Dental Society, April 18th, 1895.

Tumors small and benign give neither the patient nor the dentist much concern. They are early submitted to him for treatment and he usually brings them to a successful termination, but the malignant varieties coming insiduously, never giving a hint of their true character until they are decidedly present, already appropriating space and tissue to their own use and like the squatter, determined to hold the ground at any cost, they soon become a source of danger and discomfort to the patient, exciting the anxiety of the dentist, and wise is he who at an early date seeks refuge in consultation in all cases where the malignancy of the growth may be questioned.

It is not the object of this paper to treat of the origin and pathology of those tumors which may appear in the mouth but rather to examine them from a surgical standpoint and discuss methods of surgical treatment.

Fortunately the risk to life in operations about the face and mouth is slight when compared with operations of the same magnitude in other parts of the body. No life-sustaining organs are involved. Shock is not great and sepsis is so slight in wounds of this locality that it seldom proves fatal. Therefore nearly all operations about the face are a success so far as recovering from

the effects of the operation and the repair in tissue may be concerned. Even those failures made so by a return of the disease are not without good results, and I will attempt to show by the records of a few cases, that even the unpromising and rapidly developing tumors may be removed, prolonging the life of the patient and giving comfort in his last days.

The first case was treated by Prof. Nancrede in the university clinic and has been reported by him in the "*Annals of Surgery.*"

E. L., a man thirty-three years of age, entered the University Hospital in March, 1891, and gave the following history: In July of 1890 he had noticed a small growth on the inferior border of the lower jaw which corresponded to the position of the first molar tooth. Early in October two teeth were extracted (whether by physician or dentist I do not know), under the impression that at the roots of these would be found the cause of the trouble and that it could be easily removed, but, instead of improvement, there sprung up from the alveolar process a mass which rapidly increased in size until nearly all of the right half of the lower jaw was involved. The growth soon began to break down, while the discharges and sloughs from this suppurating mass were not entirely expelled but portions were swallowed and taken into the lungs causing a rapid decline in the patient's health. The diagnosis of rapidly growing sarcoma was made and on March 30, 1892, the first operation was made; removing a little more than half of the lower jaw. The parts healed promptly and in three weeks the patient left the hospital apparently cured.

Three weeks later, however, he returned with the disease well advanced in the remaining portion of the jaw. This was promptly removed together with the floor of the mouth well down to the base of the tongue. June 10, 1892, he again returned to his home and no change for the worse was noticed for two months, when nodules began to develop on the right side near the old scar. These continued to increase in size and join together until quite a bulky tumor was formed. For the third time he came to the hospital; again it was decided that opera-

tion might give relief, although the tumor now extended well up toward the temporal region involving nearly all branches of the facial nerve and reaching downward along the carotid vessels. After a tedious and dangerous dissection which lasted more than two hours the growth was successfully removed.

Again the patient made a good recovery and died about two years later from the effects of sarcoma in the lungs and kidneys. During this time he was remarkably free from pain and seemed to enjoy life. No great deformity was caused by this extensive operation and he could speak nearly as distinctly as before, though the entire lower jaw and the floor of the mouth were removed.

The next case (also in Prof. Nancrede's clinic) while less formidable than the preceding one, was made so by the character and extent of the growth, the patient having submitted to the operation while the disease was probably confined to a portion of the lower maxillary bone.

Mr. C. E., thirty-seven years old, had always enjoyed excellent health. Twelve years ago the appearance of the right lower wisdom tooth gave him much trouble and it became necessary to extract it.

During the operation a portion of the root was broken off and allowed to remain. From this time the parts were sensitive and easily irritated and a few weeks later a small tumor developed which was probably cystic or soon became so, for, he says, it was opened many times by physicians and dentists always discharging a thin water-like fluid but never discharging any pus.

Six years ago it began to increase in size but made slow progress until about two months ago, when a change came on rapidly and at the time he entered the University Hospital, March 14, 1895, the growth had extended forward on the lower jaw nearly to the median line, backward to the angle and well up the ramus, pushing the tissues of the cheek prominently outward. There was an opening in the central portion of the tumor from which flowed a thin offensive fluid; the patient stated that some small pieces of bone had been discharged through the opening, but no trace had been discovered of the offending root. All the molar

teeth on that side have recently been extracted and their place is now occupied by the growth.

A probe inserted into the opening revealed the fact that some fragments of bone still remained, which would undoubtedly come away soon if the tumor is allowed to pursue its course unmolested.

Excepting these, a large portion of the bone seems to be destroyed or displaced by the growth.

Excision of the right half of the lower jaw together with the outlying parts of the growth offered the best chance for a cure, and the patient promptly selected this course.

The operation did not present any unusual points of difficulty except that the bone was easily broken at the point of disease making it much more difficult to remove the ramus.

Recovery has promptly taken place and at this time he is well. In this case is found, what was at first a very simple tumor, a dentigerous cyst or epulic growth, after many years of irritation changing to a sarcoma. The dread which the physician, dentist or patient may have of operation, or their faith in medical measures probably were responsible for the delay which had allow this change to take place. This case is an earnest appeal to early and complete removal of all tumors of the mouth except in those cases where the growth is not irritated, remains stationary, and can be frequently seen by the surgeon or dentist in charge, and operation advised, when the slightest change for the worse takes place.

Sarcomatous tumors of the jaw may be removed with a reasonable hope of cure when the growth is central (myeloid sarcoma), if the entire bone to which the disease is confined be removed. Periosteal sarcoma does not promise such good results, because the surrounding tissue may be involved, but these tumors come early in life when the patient is vigorous and will rapidly recover from operations. In all tumors of this class, not only the jaw should be removed to the median line, but the entire periosteum and attachments of muscles must also be taken away, if we operate with any expectation of a cure. Another tumor of the mouth remarkable because of its slow growth and change,

occurred in a patient who entered the University Hospital in June, 1894, during my term of service in the clinic.

Mrs. D., sixty-six years old, was for many years troubled with catarrh. Twelve years ago she first noticed a growth in the hard palate to the left of the median line. She was wearing a plate at the time and believed that it may have irritated the mouth and thus caused a tumor to develop, at least the irritation was soon so great that she could not wear it.

The tumor probably began in the hard palate or the floor of the left antrum, was a very slow growth until a few months since when it began to rapidly increase in size. It involved all the border of the left maxilla, nearly all of the hard palate and much of the soft palate. The left antrum and the nasal passages were filled by the extension of the growth upward. It projected so far downward that the mouth could scarcely be closed. An exploring needle passed into the tumor did not come in contact with bone where the border of the maxilla and the hard palate should be found. A portion of the tumor was excised for microscopical examination and the pathologist reported carcinoma.

The malignant nature of the tumor and its certain fatal result if allowed to remain, together with the danger of a return of the disease if the tumor was removed, were all explained to the patient. She expressed a strong desire to have the operation made and it was done, Prof. Nancrede kindly assisting me. Tracheotomy was first performed and the larynx packed with a sponge, that we might continue the anæsthetic and the operation at the same time without having blood enter the trachea, as it certainly would with the severe hemorrhage we must encounter unless such means were taken to prevent it. An incision was carried from the middle of the lip upward to the left of the nose and under the left eye, the flap was then reflected to give sufficient room for cutting the bone. The alveolar portion was first divided in the median line, then the molar and nasal portions, after which the diseased part was torn from its resting place by the lion forceps. The alveolar border was cut away at least one inch to the right of the median line and all the surface from which the growth was removed was scraped with a curette to

remove any small particles of diseased tissue that might be remaining. Hemorrhage was stopped by means of the Paquelin cautery, and the cavity was packed for forty-eight hours with iodoform gauze.

The patient made a good recovery and returned to her home in a few weeks, free from pain and relieved of the presence of such a tumor. When last heard from she was entirely well. The disease in this case may return but not for some months. During this time she will be free from pain and death may result from some other disease.

Here is another case illustrating the proper method of operating for carcinoma when the surgeon sees his case early.

Mr. W. H., farmer, has been a moderate drinker, enjoying good health. Three weeks ago he first noticed a small growth on the under surface of the right side of his tongue, it was closely connected with the surrounding tissue, growing rapidly and painlessly. A small portion was excised under cocaine anæsthesia and submitted to microscopical examination. October 17, 1894, he was operated upon in Prof. Nancrede's clinic, one-half of the tongue being removed well back to the base. Rather a heroic operation for a small growth of three weeks duration you may say, but here is the pathologist's report: "I have made sections of the growth from the tongue already reported as epithelioma and as far as I can see you have gone well outside of the disease." This extensive operation was the only hope of cure for this man, even then the lymphatic glands may have been involved, and the return of the disease may be noted at that point while the scar surface remains healthy. Cancer appearing in the mouth can scarcely be mistaken for any other growth, and there is never any difficulty in removing a portion to confirm the diagnosis, then prompt and thorough removal is the only chance for cure. When any lymphatics are found to be suspiciously enlarged, they must also be removed at the same time.

Mechanical devices to take the place of parts removed or to correct deformities following operations for malignant disease should not be applied for some time after complete recovery because of the danger that such irritation might renew the disease.

When the cicatrices are well formed or the diseased condition is not malignant nor beyond the bone, this point may be disregarded and the deformity corrected. The use of medicine in the treatment of malignant tumors is not to be considered where operation is possible but may be tried as a last resort. Coley, of New York, has recently reported thirty-five cases treated by injecting the combined toxines of erysipelas and the bacillus prodigiosus. In five of these cases he has reasonable hope of a permanent cure. All of his cases were inoperable and the diagnosis was verified microscopically. The investigations being carried on at the present time concerning the causes and treatment of these tumors certainly promise great results.

While we wait for these promises to become truths, let early and complete operation be the leading treatment of all tumors of the mouth, then few of our patients can say—

"Oh that comfort comes too late,
Tis like a pardon after execution;
That gentle physic given in time had cured me;
But now I am past all comfort here, but prayers."

DISCUSSION—AFTERNOON SESSION.

Convention met, pursuant to adjournment, President Taft in the chair.

The Chair announced that the discussion on Dr. Darling's paper, read at the close of the morning session, would be next in order.

Dr. Fletcher: I was one of those appointed to discuss the paper, and I would say that there is a great deal that might be presented on the subject, provided I knew enough about it. Personally I do not know much about tumors, and their treatment. Nevertheless, I have had sufficient experience in removing a few of them, and their after treatment to be aware that it is an exceedingly difficult matter to entirely eradicate even a benign tumor at times. I have this morning seen a patient, who, within the past thirty days, has had a part of the superior maxillary bone, on the right side, removed, for a malignant growth of some character. The patient came from the northern part of the State,

for the purpose of consultation, and amongst others he called upon me. He was told by four or five of our best surgeons that the probabilities were that the tumor would return. On examining the cicatrix, as far as it had formed, there was an appearance about the edge, of an angry, red, congested condition which indicated, even to one of limited experience, that there was still trouble brewing. The probabilities are, that before many months, or a year or two at the farthest, that the tumor will return. This coincides to some degree with the statements of the paper, as they were most of them what are regarded as complete cures for the time being. However, I believe he states finally that a true carcinoma is not likely to be cured permanently by any treatment you can give it. As far as my knowledge of those things goes, the benign tumors or bony tumors, are of a different character, may be and often are permanently removed. A point that we should probably be more interested in as specialists is that of the etiology of this character of tumors. I hold in my hand a specimen of which I will read you the clinical history. This case was operated on by Dr. P. S. Connor, of our city. He reported the case to me as follows: dated November 3d, 1894. Miss M. (colored,) age 26 years. Since the age of 5 years has had a small lump in the jaw, which grew very slowly until about six months ago. Jaw removed November 6th, 1894. Extended wound; healed by first intention; discharged November 20th, 1894; well. That, of course, as you may see by the extent of the tumor, and the amount of tissue taken away, would leave the face in a very bad shape. No doubt we would all like to consider ourselves as dental surgeons; but it is beyond the limits of legitimate dentistry and stomatology to go into this; such cases more properly belong to a surgeon, who is thoroughly fitted in every way, experience, knowledge and instruments, for this character of work. However, I consider it our duty to know enough to see upon examination of the mouth when it needs such attention. To be sure, a tumor of this character and size is plain enough for any body to see.

Ten days ago I took from the left side of the lower jaw, a small tumor, which has the characteristics, as far as I am able to tell, of a malignant growth; but I have not yet made an exami-

nation of it. It seems to me these tumors must have an exciting cause, and these causes may in there origin be connected with the pathology of the teeth. They may arise from the extraction of teeth. This case was sent to me after a week's suffering from an extracted lower molar. There was intense inflammation of the jaw about the seat of extraction. The bone about the sockets of the teeth was highly inflamed, and the soft tissues were exceedingly tender. I took this, at first, to be a matter of poisoning from unclean forceps. Whether such was the fact or not I do not know. In the treatment of the case, before it healed, a tumor showed itself just posterior to the sockets; and ten days after taking this tumor off I found it one-half the size it was before. That is about ten days ago. It is now nearly time for it to return again. If I still find that growing, that is, if it has started again, I shall feel considerably exercised over the man's future. He is a strong healthy man, thirty-five years of age, and has every condition about him to fasten a malignant tumor, as far as I could see. This bony tumor removed by Dr. Connor is of special interest, from the fact that a molar tooth, superior wisdom, has been carried clear out of its place, the crown of it is directed towards the nose, about the junction of the vertical plate of the palate bone where it joins on to the superior maxillary. You can see, Mr. President, that it is entirely out of place. This condition, here, I consider the exciting cause, (showing the place) as I explained before another Society where this was discussed. I found between the teeth, where the tumor had been sawed in two, a membrane going in from the mouth, showing that irritation of some character probably started at that place. My theory is that, from some dental lesion there was sufficient irritation of the periosteum on the floor of the antrum to start a growth in that particular position. As the history, which I read, shows, this tumor started at about five years of age. At that time the dental follicle holding the wisdom tooth was far enough back, and far enough up in the antrum, (a point which I expect to explain in a paper which is to follow) to undermine that follicle, taking with it the bone that surrounded it, and making a complete circuit, almost; coming around until the crown of the tooth points towards the

nose; and it can be accounted for in my mind only in that way; this tumor, starting at that point, simply carried with it the dental follicle and its surrounding tissues, and pushed it about the antrum until it has finally landed where you will see it on examination. This case is very interesting to us, because of this particular feature of exciting causes which may arise from teeth. These exciting causes may be old roots of teeth, salivary culculus, alveolar abscess, in fact anything that continually irritates the tissues in those localities; so that it behooves us as a profession to look after these things, and be ready when there is a semblance of cause of that kind of trouble, to remove it. The rough edges of worn teeth, broken teeth, everything of that character that can irritate the mucous membrane, may cause a malignant growth.

Further than this, Mr. President, I believe I have nothing to say on the subject of tumors.

PRESIDENT TAFT: Are there any further remarks on this topic? Has any one any questions, or suggestions, to make? Can we hear from you, Dr. Respinger?

DR. RESPINGER, of Geneve, Switzerland: There are more competent men to speak on that subject than myself. I have not any experience in that direction.

PRESIDENT TAFT: Then we will proceed to the next order of business unless there is some one else who wishes to be heard.

DR. CALLAHAN: I move we have Mr. Fletcher's paper, and let anything further in the line of tumors be discussed at the close of that paper.

[*To be continued.*]

SO STRANGE.—"You say that I was born in Berlin, papa? Well, then where was mamma born?

"In Magedeburg."

"And where were you born, papa?"

"In Hanover, my child."

"Isn't it strange that we three got to know each other?"

PROCEEDINGS.

Twenty-sixth Annual Session of the Alabama Dental Association, 1895.

Reported for the DENTAL REGISTER by Mrs. J. M. Walker.

[*Continued from page* 306.]

The Association was called to order on the third day at 10 A. M.

Under the heading "Theory and Practice," the Secretary read a paper from Dr. C. L. Boyd, entitled "Something of What Dentists Do, and What They Should Do." The paper treated of the causes of failure in various branches of dental treatment, and outlined the remedies therefor, dwelling particularly upon the importance of the care of the teeth of children. The paper was discussed by Drs. Brown, Young, Crossland, Allen, Foster, Sann, Pearson and Prof. Gray.

The almost universal early failure of proximal fillings in molars and bicuspids, Dr. Boyd attributes to one or all of three causes: first, that the dentist is incompetent to handle the material he uses; second, that he fails to properly prepare the cavity, or third, that the teeth are of poor structure.

The causes of the numerous broken plates we are called on to repair was also discussed, the general causes being lack of foresight in adaptation and construction of the piece and in mal-occlusion.

Dr. Boyd dwelt feelingly upon the negligence of which children are the victims, through the ignorance of parents as to the value of their teeth, and how to care for them, insisting upon early dental attention and proper nourishing food. The greatest work of the dentist is to educate the people, teach them to be cleanly in the mouth, and to care for the children's teeth. He also strongly advises gum-massage, aiding the development of the jaw and preventing that crowding of the teeth which conduces to decay.

In the discussion of the paper DR. BROWN cited some cases of cement fillings in molars and bicuspids exposed to mastication, which were as hard as porcelain almost, having been in service from seven to twelve years. The durability of cement, he thinks, depends not so much on the make as in the method of manipulation, and also on the secretions of the mouth. It requires a certain knack which cannot be described, and also upon not overworking it—not working it after it begins to crystallize.

DR. R. C. LOWRY, judging by his own experience, considers cement as poor a thing as can be put in the mouth. He related two cases of aluminum crowns set with cement, the cusps being filled with amalgam, which melted down in the mouth in twelve hours.

DR. ALLEN thinks that the trouble with cement, as with amalgam, lies in the fact that being so easy to insert, no care is taken in the preparation of the cavity. The cavity should be as carefully prepared and with all the same antiseptic and other precautions as though for gold, the filling material as carefully inserted, and the filling as thoroughly finished. Then you will get good results, no matter what you use. All deep cavities should be partially filled with cement—a good sticky cement—packing gold right into it. Then when this has hardened, trim the gold and condense it; this is better than retaining points. Dr. Allen does not approve of giving little children coarse, hard food to masticate. The temporary teeth are not suited to that purpose from their brief duration, during the early part of which the roots are undeveloped, and the teeth not firmly fixed in the alveolus, while during the latter portion of their retention the roots are being absorbed, the edges having sharp, jagged points not fitted to bear the pressure of excessive mastication. The effort being painful, the child swallows its food as best it can, and the foundation for dyspepsia is early laid. The first molars have the same imperfectly developed roots and the structure is immature and poorly calcified for some time after eruption. For this reason, if decay sets in early in these teeth, as is often the case, do not fill with gold, no matter how able and willing the parents may be to pay for gold, and do not use amalgam which discolors the dentine.

Use the cements or gutta-percha and renew as frequently as necessary, explaining to the parents the reasons for this course. In this way you will save the teeth, at least, until the function of the pulp is fulfilled. Use every effort to prevent early devitalization of the sixth-year molars while the root is incomplete. Application of the usual agents will be followed by trouble, because of the open funnel-shaped apex. A knowledge of physiology, histology and embryology is necessary to the dental operator if he would avoid serious blunders. Even for the making of a rubber plate a knowledge of physiology is necessary, as not every mouth can wear a red rubber plate, but I beg you will not discuss that point.

PROF. GRAY has recently adopted a very satisfactory method of using gutta-percha. After drying the cavity he saturates it with common resin cut in chloroform and then presses in heated gutta-percha. It adheres to the walls like cement and does not pull away. He has found it very satisfactory in the mouths of his own children where he has the opportunity of observing it closely.

DR. S. W. FOSTER: Dr. Boyd places before us two essential points—the prevention of caries, and the arrest of caries. One of the great causes of caries is the lack of hygienic care. With but few exceptions where the teeth are really kept clean there is but little caries. Another important consideration with young children is the preservation of equilibrium in development, physical and mental, with no overdevelopment in either direction. Do not confine them too closely in schools rooms on the one hand, and do not let them run with the pigs on the other.

Many of the failures in the proximal fillings mentioned by Dr. Boyd are due to carelessness in the preparation of the cavity margins. It is important to cut the walls well back and knuckle the fillings, otherwise the teeth will disintegrate midway between the gingival margin and the coronal surface. We also fail to make sufficient space for restoration of contour and knuckling, letting only metal come in contact—these cavities usually coming in pairs. If necessary, take a week to secure space (I use cotton for separating). It is the only way to succeed with these cavities.

DR. VANN spoke of the method taught by Dr. Land, of

Detroit, and endorsed by many dentists of Chicago, of saturating the cavity walls with the liquid of the cement preparation, and then burnishing in the cement powder, as also the alloys. It made fillings that were like ivory, *out of the month*, but he had met with many failures in practice, after adopting the method which he learned in Chicago.

Dr. Pearson thinks the reason we see so many failures in amalgam fillings is because we put in such a large proportion of them. In his own practice he is compelled to put in ten amalgam to one of gold. His patients won't pay ten dollars for a gold filling when they can get amalgam for two.

Dr. Allen: You ought to get six to eight dollars for an amalgam filling such as you would get ten for if gold!

Under the same heading, "Theory and Practice," Dr. R. C. Young read a paper, covering a large range of practice in operative dentistry. In obscure cases where neuralgia of the fifth pair of nerve leads to the suspicion of a dead tooth, which is difficult of location, Dr. Young suggests applying a ball of heated red gutta-percha to the teeth one after the other. When the right one is reached the response will be unmistakable, the localized heat causing an increased flow of blood to the already congested pulp. In case of great soreness of a tooth from periamentitis, he suggests a strong ligature tied around the tooth with long ends upon which the patient is directed to pull strongly away from the socket, up or down as the tooth may be an upper or lower tooth. This affords great relief while the tooth is being drilled into for the escape of the accumulated gasses. Disarticulate the tooth, and give it rest, by molding gutta-percha over an adjacent tooth, dropping it into a glass of cold water to restore its elasticity before placing permanently in position. After the pulp has been removed Dr. Young washes out with pyrozone 3 per cent, dry out and dress with beachwood creosote on cotton in the cavity—nothing in the roots at the first setting, cover with temporary filling (never sandarac) leaving vent hole. If no trouble after 48 hours, dress again with cotton twists in root-canals, saturated with creosote, repeat until all soreness and oder has disappeared, then fill canals with chloro-percha or gutta-percha points. If the pulp is

putrescent treat with sodium and potassium converting the putrescent mass with a soapy compound. Wash out with warm water, followed by pyrozone 3 per cent. with equal quantity 1-1000 bichloride mercury. Dress as before. Counter-irritation by applying iodine, saturated solution, on the gum or a small patch of adhesive plaster warmed and powdered hydrate of chloral pressed into the surface, placed over the root left on some time. Hot foot bath at night with antikammia 5 grain caffeine 1 gr. every two or three hours. Saline cathartics are also strongly advisable. If the inflammation is persistent, force the abscess, putting a hot raisin or fig over the root. If a fistula is present sterilize the canal, forcing through permanganate of potash 10 per cent. followed by pyrozone, then carbolic acid, 1 part; oil cassia, 2 parts; oil eucalyptus, 3 parts. Repeat several times with 24 hours interval, then force through chloride of zinc (40 grs. to the ounce). If it is found difficult to force the medicament through with the syringe, fill the root canal cavity, saturate a piece of absorbent cotton with the same and place in the cavity, cover with a piece of rubber and force down with "ball puncher"(?) In case the tooth will not tolerate a close dressing, pass a probe in the root, pack stopping around and when hard withdraw the probe. This allows gasses to escape but does not permit enterance of saliva. Immediate root-filling, after removal of live pulp, Dr. Young considers objectionable, as the tooth breaks down much sooner than when the dentine has been thoroughly sterilized. When ready to adjust the rubber dam, pierce the holes with a red hot needle (an old syringe needle is good). This makes a hole less liable to tear, and hugs the teeth closer. For filling root-canals Dr. Young prefers chloro-percha and gutta-percha points—cement absorbs and becomes offensive; lead discolors; gold is too difficult. If the tooth is off color, after the root is filled, with the dam still on, fill the cavity with pyrozone 25 per cent; evaporate with chip blower (—or pipette with the bent point drawn out smaller by heating in alcohol flame till red hot and drawn out to size wanted), or asbestos may be used as a vehicle for applying the pyrozone. Open the pyrozone tubes with caution, cooling thoroughly in ice water and holding in towel wet with ice water while grinding or filing off the end. In filling proximate cavities

in molars and bicuspids, a convenient matrix may be made from a strip of very thin copper, about 38 gauge. Cut a piece just the width of tooth to be filled and long enough to go half way around the tooth. Anneal and place, binding it to the tooth with ligature thread passed around several times. Then with bibulous paper, cotton or spunk, pressed in cavity outward against the matrix, give it the required contour, seeing that it fits snugly at cervical margin.

In closing Dr. Young addressed an emphatic warning against the use of coagulants in the treatment of teeth.

In the discussion, being asked why he so emphasized this, he said—There is something there that you want to get out. If you build a wall around the enemy's camp, and they have full supplies of everything they want, you will never capture them! If you seal up, cover in, encapsule the contents of the tubuli, you prevent the entrance of agents with which to sterilize the dentine. You do not want to seal in the decomposing matter. Coagulation makes an impenetrable bar to your remedies.

Dr. Conley thought that if cement became offensive in the tooth it was because the tooth had not been properly disinfected.

Dr. Young attributes it to osmosis.

Dr. Stubblefield considers gutta-percha open to the same objection. In a dead tooth, through endosmosis moisture is always present, stasis resulting in decomposition.

Dr. Young cited the Atlantic cable as proof of the impracticability of gutta-percha.

Dr. Stubblefield thought the conditions under which gutta-percha is used in a root canal, and at the bottom of the Atlantic Ocean differed too widely to admit of comparison. A dead man tied down where the Atlantic cable lies would be pickled and preserved forever. He thinks the apical foramen should be closed by something absolutely non-absorbent, and for this purpose uses amalgam, carrying it up to the apex on a suitable instrument and packing it there. Withdraw all you please and you will still leave a little button—a lock on the back door.

Dr. Stubblefield thinks Dr. Young's treatment too complex, requiring too great a variety of agents. He thinks treatment is

too often overdone. He commends taking off pressure on a sore tooth, the equivalent of placing a broken arm in a sling, giving it a rest. He considers creosote to be an escharotic, and therefore a coagulant, and consequently, on Dr. Young's own theory is not the thing for use in a root canal. Dr. Young does not consider it either escharotic or coagualant, having demonstrted that.

Dr. Stubblefield: Then I have long labored under a delusion and am glad to have it dispelled. Dr. Stubblefield advocates drilling out root-canals, removing all infected dentine till sound structure is reached, using a large Morey or Gates-Glidden drill at the mouth of the canal; enlarging cautiously, and using smaller drills as the canal is penetrated, learning by experience to *see* with the touch, and having sufficient knowledge of the anatomy of the teeth to be able proximately to know when nearing the apex.

Dr. J. P. Gray is very cautious about drilling into unknown territory. He advocates the use of cement as being the best thing there is for the tooth, as long as it stays in. A good quality of cement will save a tooth longer than gold, especially if the cervical margin is lined with tin. Dr. Gray uses gutta-percha over the tooth adjacent to the sore one, but cools it in the mouth, first brushing the tooth with chloroform to make it adhere. If the walls of a cavity are smeared with the liquid that comes with cement, you will secure absolute union between the cavity walls and the cement. It is good in saucer shaped cavities and is equally good when using cement for filling crowns. He considers Justi's cement the only reliable American cement on the market, and sees no reason why fillings of this cemont should not stay in for years.

The secretary read an essay entitled "The Ideal Professional Man," contributed by Dr. B. D. Brabson, Knoxville, Tenn.

He said: * * * Man's inherent right to become superior in his vocation is limited only by his desires and capabilities for no allegation is more positively proven than "As a man thinks so is he." A man can rise no higher than his own conception of his possibilities, and for a man to arrange his plans of life without regard to his right to excel is detracting from the ideal. * * *

The truly great man is he who is able to adapt himself to his surroundings, to rise above his failures, and whose resolution grows strong in its encounter with difficulies. * * * * We must measure success or failure by the good we do.

The subject of Ethics was discussed at some length in connection with charges preferred against two members of the association, and especially the importance of having the Code of Ethics read in the presence of those about to join the association, that they may know to what they bind themselves.

By resolution the Constitution, By-Laws and Code of Ethics was ordered incorporated, as an appendix, in the published volume of transactions, so that every member of the association would be placed in possession of it in permanent form. When sent out in the form of a letter or pamphlet they are liable to be thrown aside as perhaps "another local anæsthetic circular" and consigned to the waste basket without having the wrapper removed.

The report of the Board of Dental Examiners showed that of twenty-four applicants, thirteen had been granted license. A recommendation from the board in regard to efforts to secure the passage of an amendment to the dental law prohibiting the extraction of teeth except by licensed practitioners of dentistry or medicine, elicited a lengthy discussion of this point. The matter was finally referred to a committee of three, to be put into proper shape for action at the next meeting of the association.

The report of the Publication Committee showed that the advertising pages in the volume of transactions covers the cost of publication of the proceedings in this desirable form.

ELECTION OF OFFICERS.

President, Dr. A. A. Pearson, Montgomery; First Vice-President, Dr. P. R. Tunstall, Mobile; Second Vice-President, Dr. F. H. M'Anally, Jasper; Secretary, Dr. J. H. Crossland, Montgomery; Treasurer (re-elected), Dr. G. M. Rousseau. Montgomery.

Selma was chosen as the next place of meeting, the time being always the second Tuesday in April.

Mississippi Dental Association, 1895.

Reported for the DENTAL REGISTER by Mrs. J. M. Walker.

The Mississippi Dental Association met in annual session April 3, 1895, in Jackson.

The meetings were held in the Senate Hall of the State Capitol.

The President, Dr. W. E. Walker, of Pass Christian, occucupied the chair.

The meeting was opened with prayer by the Rev. Dr. Williams, of St. Andrew's Episcopal Church.

A brilliant address of welcome was delivered by the Hon. R. W. Banks, an address remarkable for bright wit and eloquent rhetoric, well sustaining the reputation of this very popular speaker for always saying the right thing at the right time and in the most charming and effective manner. After a brief but characteristic response by Dr. W. W. Westmoreland, of Columbus, the president read his

ANNUAL ADDRESS.

DR. WALKER confined himself—after the usual words of greeting and congratulation—to suggestions of a practical character, for the consideration of the association.

Having reorganized, at the last meeting, under a charter and revised constitution, he urged upon the members the importance of familiarizing themselves with the provisions of the new constitution, and especially the conditions imposed by the charter. He said: "Allow me to suggest that every one who has not done so, should secure a copy of the charter, and study it that you may know and understand our powers, privileges and liabilities as a chartered body."

In view of the numerous applications annually made for beneficiary scholarships in the dental colleges by worthy young men of limited means, Dr. Walker reviewed the inducements offered by the colleges in Baltimore and Atlanta, the Northwestern College of Chicago and others; the scholarship prizes offered by the

Louisville, Ky., and the Ohio College, Cincinnati, the honor appointments of the New York College of Dentistry, etc.

He urged that special inducements be offered the young men who pass the board, to join the association at the same meeting. He said: "It is our duty to offer these young dentists every inducement to enroll themselves in our ranks that they may enjoy the advantages of association work, and thus prepare themselves to take the places of those who, year by year, are seen no more among us. By thus early placing in their hands the Constitution and Code of Ethics, to which they must subscribe on joining the association, many of them may be led into and kept in the right path, who, if allowed to go back to their homes with only the promise—and no doubt the honest intention—of joining us when better able to meet the expense, might, in the busy strife of competition, without this restraining influence, go so far astray that we might never win them back to the path of professional honor and integrity."

He called the attention of the association to the importance of efforts to secure, through the Legislative Committee, such amendments to the dental law as shall secure to dentists exemption from jury duty and militia duty. Also that an effort be made to secure the enactment of a law making malpractice (in dentistry and if possible in medicine and pharmacy as well), a misdemeanor, the penalty of the same to be forfeiture of license to practice. The restriction of the promiscuous extraction of teeth, and the injection of nostrums for so-called painless dentistry is also in the hands of the Legislative Committee.

A communication from the Louisiana State Dental Society looking to a Tri-State meeting of the Louisiana, Texas and Mississippi Dental Associations in the spring of 1896, was read and given appreciative consideration. The charter of the Mississippi Association requiring that all meetings be held "within the State," makes the proposed meeting impracticable and the invitation was declined.

Drs. C. L. Alexander, Charlotte, N. C.; D. R. Stubblefield and J. Y. Crawford, Nashville, Tenn.; T. P. Hinman and Frank Holland were guests of the association for the first time and were

elected to honorary membership. Dr. Wm. Crenshaw, an old friend and honorary member of the association was also present.

The first paper read was by Dr. J. P. Broadstreet, Grenada, on the subject of "The Care and Developtment of the Teeth."

The paper was a powerful arraignment of the negligence and indifference of the dental profession toward little children, and the necessity for the education of parents and the public, teaching the importance of caring for the teeth of their children.

The paper received very earnest discussion. Drs. Stubblefield and Crawford were especially eloquent upon this topic. Dr. Westmoreland urged the importance of guarding children against eruptive fevers while the teeth are in the formative stage. Dr. Crawford spoke of the injurious effects of the rubber nipple of the nursing bottle upon the tissues of the gums, many babies having it in their mouths almost continually. He considers the inventor responsible for many of the deaths that occur among teething children.

He attributes a large proportion of infantile mortality during that period so dreaded by mothers and nurses while "cutting" the "stomach" and "eye-teeth" as due to keeping the child too long at the breast or the bottle instead of weaning it after the eruption of the first baby molars—nature's indication of the need of solid food—the benign influence of function giving the exercise needed for the development of the jaw to make space for the broad crowns of the cuspids.

Without this exercise—denied to the child kept at the breast or on the bottle—the jaw remains undeveloped, and the cuspids are bound down between the baby laterals and first molars; they cannot erupt, the child has convulsions and dies.

Ages of experience have taught mothers and nurses that this is a period in dentition to be looked forward to with apprehension of serious trouble, but why this should be so they have never been taught.

Calling the Vice-President, Dr. Frank Smith, Grenada, to the chair, Dr. W. E. Walker read the next paper entitled: "A Unique Case in Amputation of Tooth Roots."

He considered the case unique from the fact that with no

caries anywhere in the mouth, the pulps of the first four molars had died and the teeth abscessed, one root of each of these molars being entirely devoid of vital attachment, the pericementum being destroyed over the whole surface of the necrosed root, with pus discharging around the gingival margin. There had been more or less discharge from the abscesses for twenty years when the patient first presented, in the spring of 1892. At that time the chronic inflammation had developed an ugly-looking tumor on the gum of the posterior root of the lower first molar. Examination revealing the condition of the root, as described, amputation of the root was decided upon. The perfect crown was opened into from the sulsus, the putrescent contents of the pulp chamber and the roots removed and when ready the anterior canals were filled. The posterior root was then amputated on a line above the gum margin to the point of bifurcation, the pulp chamber filled with gutta-percha which was pressed out through the opening at the point of amputation and smoothed off below with a warm instrument. The morsal opening was filled as usual, and the patient left for his Northern home without treatment of the tumor or the three other abscessed first molars.

Three years later, in March of the present year, the patient again visited the Gulf Coast and reported requesting similar treatment of the other three first molars, the operation described having proved a perfect success. The tumor had disappeared, the abscess had healed, the socket had not only filled up but the tissues had built up under and around the projecting posterior portion of the crown, so that only probing with an instrument revealed the absence of the entire posterior root.

The operation was repeated, the posterior root right lower, and the lingual root of each of the superior first molars being similarly necrosed. The roots were amputated and the opening filled as described, with every prospect of saving four good molars instead of giving the patient a plate, which would have been necessary had the teeth been extracted.

The paper was discussed by Drs. Holland, Stubblefield, Crawford, Alexander and others. In the discussion the importance of saving as much of the tooth substance as possible, especially on

single-rooted teeth, was urged by Drs. Stubblefield and Crawford. Dr. Crawford considers a treatise on dental sugery incomplete which does not include this operation.

Dr. Walker described the operation, as performed by him, as follows:

When it is decided at what point the root shall be excised, which in molars is generally about $\frac{3}{32}$ of an inch from the cemento-enamel line, a hole is drilled, slanting apically to the point of bifurcation; this is followed by others on either side. With a fissure-drill the holes are then connected on a plane and cut through to the circumference of the root, which is then easily removed with an elevator or delicate pair of forceps, without disturbing the tooth.

Dr. Holland thought the operation more easily described than performed.

The second and part of the third day of the meeting was devoted to clinics.

Dr. C. L. Alexander, Charlotte, N. C., the special clinician for this meeting, constructed a piece of bridge-work by an original method, which he terms a

SUSPENSION DENTURE,

A method by which the teeth are not subjected to cutting or banding, the denture being supported by short screw points in the lingual portion of the natural teeth. In the case operated on at the clinic, the superior left lateral and right central incisors were to be supplied. A narrow band, or skeleton attachment, was adjusted to the lingual surface of the right lateral and left central with arms extending to each of the cuspids. On the band a hollow receptacle was constructed partially filling each of the vacant spaces, with holes in the anterior walls to receive the long pins of bridge-work facings which were secured in place by bending the pins inside and filling the hollow with cement with a facing of amalgam to protect the cement from the fluids of the mouth.

The piece was constructed upon a metal model having pins corresponding to the screw points the piece when finished being

simply slipped into place, the pins in the lingual surface of the teeth passing through correponding holes in the skeleton attachment.

Dr. T. P. Hinman demonstrated his special methods of securing perfect adjustment of the Logan crown and a new method of banding the Logan crown with the aid of a little screw-press of the Hollingsworth contouring method, using 22 k. gold of 28 or 29-guage for the band, reducing it to the necessary thinness under the gum margin.

Dr. Crenshaw demonstrated practically the method of bridge repair in the mouth, using the Bryant method and outfit.

Dr. Crawford demonstrated an original method of restoring broken incisors, with porcelain tips, grinding the tip from a porcelain tooth—preferably of English body because of susceptibility to high polish after grinding. In the present clinic a central incisor broken across the crown and having large gold approximal fillings was cut squarely across both gold and tooth substance, and a lower incisor adapted as porcelain tip, being placed transversely, and so reversed as to place the lengthwise pins of the porcelain tooth in holes drilled perpendicularly in the tooth, on either side of the living pulps—and preferably in the gold filling where the case admits. Other clinics were made by members of the association.

At the night session of the second day Dr. D. B. McHenry, of Grenada, read a paper on Metallurgy. The arguments of the paper being in favor of a return to the older methods of metal work, prosthetic dentistry in vogue before this branch was debased by the introduction of rubber plates.

Dr. J. B. Askew, Vicksburg, read a paper on "Dental Education" which led to a lengthy discussion covering education, legislation and ethics.

Dr. J. Y. Crawford spoke of the intimate connection between dental education and dental legislation and of the chaotic state of the latter owing to the effort to make the dental law cover every possible contingency. It all hinges on the simple question: What is right? What is wanted is equal and exact justice to all. He thought that every college diploma should

include a solemn oath, before a notary, to abide by the Code of Ethics. Then, if a man violates his word, he perjures himself, and no perjurer can have the confidence of any community.

Drs. Holland and Crenshaw spoke of the contradiction involved in some of the States, in which a college chartered under the laws of the State confers a diploma which a Board of Examiners, created by the same law, refuses to recognize.

Dr. W. T. Martin, Yazoo City, spoke of the difficulties attending the efforts to secure the enactment of the earlier dental laws, which are the basis of all subsequent legislation. Those laws were the best that could be had at that time, but are far from being what is wanted and needed now, in view of the great advances that have been made all along the line.

Dr. W. E. Walker, calling the vice-president to the chair, spoke of the insufficiency of the degree conferred by the dental colleges, and of the license granted by the State Boads. He said: "I do not think we should be confined in name (as we certainly are not in practice) to surgical operations upon the teeth. * * We cannot practice our profession successfully if we limit ourselves to treating merely the teeth, without, in very many cases, treating the surrounding tissues also. It often becomes our duty to treat diseases of the antrum, to treat abscesses after their are no teeth left, to treat necrosis of the maxillaries.

He said: I do not believe that we have any legal right, under our license to practice dentistry, to treat many of the diseases which nevertheless we do, and must treat, to make successful the more purely dental services we render." He said that he had treated some cases in conjunction with the physician, and in some cases (notably of abscesses) he had had to take a bold stand in opposition to the physician, and he thought he would have found it difficult to prove that he was practicing dentistry and not medicine, though he has no license—no legal right—to practice medicine other than the dental specialty.

Dr. Walker then suggested for consideration the degree of S.D.—Stomatologiæ Doctor—to obtain which, the degree M.D. as well as that of D.D.S. should be a prerequisite, the degree representing the education which a man receives both in med-

icine and dentistry, putting the mouth-doctor on a par with the eye-doctor as a specialist. The attainment of this degree would require a course of probably four years, the courses in medicine and dentistry running *pari passu*, as is the case in the dental and medical departments of some of the universities, a few hours each day being devoted, during the entire course, to the development of skill and manipulative ability—the education of the fingers so essential to the dentist.

In the discussion of the report from the committee appointed to consider the president's address, DR. J. B. ASKEW related some incidents in his experience, relative to jury duty. On one occasion he was forced to serve on a jury on which he was the only white man; serving on a criminal jury with eleven negroes. On another occasion he was summoned at a time when he had three critical cases on hand. One, a young lady who had closed her school fifty miles away, to come to the city for the treatment of three abscesses; another, an abscess which had opened on the chin (the result of a railroad accident), with very offensive discharge and acute suffering requiring attention twice a day; the third, a gentleman coming on that day from a distance by railroad for pressing services. He sought the district attorney, who said there was nothing in the law to exempt him. Finally, through personal influence with the counsel on the other side, and the friendship of the judge he get off. Such cases as these are convincing evidence that dentists should be exempt from jury duty.

DR. J. P. BROADSTREET said that physicians are exempt from privilege-tax on the ground that they do so much charitable work, but he thought that argument applied with equal force to the dentist. Dr. Frank Smith added that the dentist not only does quite as much charity work as the physician, but is also at expense for material.

After an interesting discussion the following resolutions, offered by DR. J. B. ASKEW, were adopted:

"*Resolved*, That it shall be the duty of the Legistative Committee to urge upon the Legislature the importance of exempting dentists from jury duty, militia duty and the payment of privilege tax.

Resolved further, That members of the association are requested to see the members of Congress representing their district and urge upon them the necessity of appointing dentists in the army and navy."

Dr. Askew called attention to the fact that the Confederate Government was the only government in the world that appointed dentists to the army and navy, but he was satisfied it could be done again if properly urged before Congress.

As a new governor will be elected and go into office before the next meeting of the association, one of whose first duties will be the appointment of a new Board of Dental Examiners, the following dentists from different sections of the State were selected by the association for recommendation to the governor in his selection of the five members of the board: Drs. Geo. B. Clement, W. E. Walker, P. H. Wright and J. A. Warriner of the list recommended to Governor Stone and appointed by him on his first board; also Dr. L. A. Smith in place of Dr. Geo. B. Rembert, resigned from the association and left the State; also Drs. D. B. McHenry, L. G. Nesbit, J. B. Askew and E. E. Spinks constituting the present board, D. Birdsong, the fifth member, having resigned. The vote of the association was unanimous in favor of this list.

Dr. W. E. Walker read a paper giving the history of three cases of abscesses on the roots of teeth containing vital pulps.

Drs. W. T. Martin and L. A. Smith reported cases of the same nature.

Dr. J. P. Broadstreet said he had always considered alveolar abscess a certain indication of dead pulp and had never encountered a case such as those described in the paper. In reply to questions Dr. Walker stated that in the cases he described the gingival margin was intact, and in the second case the sinus treated after the removal of serunal calculus from the apical portion of the side of the root, through an opening made by distending the sinus with cotton for a day or two, the removal being facilitated by the application of a drop of trichloracitic acid.

Several papers were read by title only and ordered published in the proceedings for want of time for discussion.

The papers were, on "Inflamed and Abscessed Teeth, and Methods of Treatment," by Dr. L. A. Smith, Port Gibson.

"Fermentation of Carbo-hydrates as the Principal Source of Acidity in the Human Mouth," by Dr. P. H. Wright, Senatobia, and "A Few Remarks on Fillings," by Dr. T. C. West, Natches.

The election of officers was unanimous, but one candidate being put in nomination for each office, as follows:

Dr. T. C. West, Natchez, President; Dr. Frank Smith, Water Valley, Vice-President; Dr. L. H. Jeffries, Natchez, Secretary; Dr. C. C. Crowder, Kosciusko, Treasurer.

The association adjourned to meet in Jackson, in 1896. The date to be announced by the Executive Committee.

MONTHLY DIGEST.

Operative Dentistry.

(*Continued from Page* 252.)

OUR RESPONSIBILITIES.

DR. M. L. HANAFORD, in a paper read before the Northern Illinois Dental Society,* discusses the subject of the responsibilites which rest upon the dentist, toward his patients, toward the public, toward the profession and toward himself, which, if fully met requires "an array of virtue and strength of character most wonderfully comprehensive, toward which as our ideal though we may strive ever so faithfully, there will still be other and greater possibilities before us."

* Dental Review, Feb. 15, 1895.

HOW CAN WE CONVINCE OUR PATIENTS THAT WE ARE HUMAN? is the title of a paper read by Dr. M. R. Harned, before the Northern Illinois Dental Society.* According to the dictionary "*Human* is what every man is; *Humane* is what every man should be," and humane is clearly what Dr. Harned thinks dentists ought to be toward their patients, as evidenced by the suggestions that he offers for the palliation of the evils incident to the dental rack of torture." He says: "Our first and ever present idea should be to help humanity out of her affliction as far as possible. At least palliate the dread effects of inheritance and ignorance. If we teach the people not to dread us, then we teach them to take care of themselves as far as we know, and it should be our constant study to know more, and in helping them, we help ourselves. . . Our duties to humanity are not only to preserve teeth, but to conserve vital energy, and by scientific attainment deserve the title of *professional* men.

IN THE RUT, OR "WHERE AM I AT?"

Under this title, Dr. C. J. UNDERWOOD, in the Northern Illinois Dental Society† discusses four classes, in one or the other of which, dentists, as well as men in other ranks of life, may be found.

First, the ultra-conservative, or *fossil*, burrowing in what *was* the rut before it was buried under the *debris* from the wheels of progress. He knows nothing of disinfectants; he never fills root-canals, preferring a recut hole under the margin of the gum; "gum-sets" are his delight, for the insertion of which he tears out the abutments of the most promising bridge, and uproots the prospects of the most desirable crown. He is mostly bald and very gray and there are very few of him.

Second—The *conservative*—jogging on in the rut, holding on to that which is good, sailing by chart over known seas, and in safe harbors.

Third—The *radical*—breaking his neck to find a shorter cut or a smother track;

* Dental Review, Feb. 15, 1895.
† Dental Review, Feb. 15, 1895.

And, Fourth—The ultra-radical, the *crank*—egotistical, skeptical and unstable, imagining himself in the lead, swayed by the same spirit of selfish lust for gain and flattering notoriety that, in politics, makes the anarchist, in religion, the atheist.

As it takes all kinds of people to make a world, so it may be fair to assume that all of these characters are necessary to the best and most rapid development of our profession.

Let us hitch on to the professional chariot, and so unite, and blend effort and intelligence, that our progress may be marked by a rut that no one need be ashamed to travel in.

"AMBITION."

AMBITION is the subject of the leading editorial of the *Review*.* The distinction is drawn between honorable, laudable ambition, or that which seeks aggrandizement at the expense of others.

The ambition for a young man to cultivate is that which urges him to accomplish something for the profession that no other man has ever been able to accomplish. The ambition which impels him to bring honor to his profession, and happiness to humanity, irrespective of personal aggrandizement, is the ambition which, after all, proves to be the surest road to a worthy prominence.

DR. CROUSE continued his "Suggestions on Developing and Conducting a Dental Practice on Business Principles."†

The points dwelt upon in the present chapter are cleanliness of person and surroundings, personal hygiene, self-control, and the means of minimizing pain—first in the application and retention of the rubber dam, the method adopted by the author for retention being the use of spunk and sandarac varnish, or a little oxyphosphate of zinc, applied to the face of the tooth; the use of clamps he considers neither necessary, wise nor humane.

To obtund sensitive dentine he advises the alternately repeated application of carbolic acid and tincture of aconite root, and the use of keen, sharp, modern burs—never using on sensi-

* Dental Review, February 15, 1895.

† Dental Digest, February, 1895.

tive dentine the burs which has been dulled by cutting enamel. He says in conclusion of this branch of his subject: "The dentist who inflicts unnecessary suffering or who neglects to relieve his patient from all suffering possible, by adopting every legitimate means, is certainly censurable and does not deserve any degree of success."

MODERATION IN PRACTICE AND IN STATEMENT.

Under this title DR. S. G. PERRY, in a paper read before the New York Odontological Society,* makes an earnest though somewhat humorous plea for more conservative accuracy in observation and expression, and a cultivation of the scientific spirit.

As long as we are careless in our habits of thinking, careless in the observation of facts and hasty in our deductions, careless in our methods and in our statements of experience and opinions, we cannot in justice claim that we are *a very scientific body of men*, or that our profession is a very exact one.

The most practical way of helping our profession to a higher plane lies in the encouragement of the scientific spirit, in exactness in practice and in the tabulation and report of our experience.

To eliminate, as far as possible, *the personal equation* is an acquirement of the first importance; the discovery of facts uninfluenced by fancies, using the careful, accurate language of science in describing them; saying exactly what is meant, and meaning exactly what is said; not confounding *opinions* with facts, though the opinions of those who have had long experience also have great value.

The same spirit of moderation should also be cultivated in modes of practice. The moderate man will be cautious about the promiscuous insertion of immovable bridges; in placing all-gold crowns in conspicuous places; in putting large gold contour in weak, shaky teeth. He will realize that the highest art is the art that conceals art. Finally, the dentist should be an all-around man; he should have many sides, and "moderation" ought to be stamped on every one of them.

*International Dental Journal, March, 1895.

THE LOYALTY OF SOCIETY MEMBERS.

This topic is discussed editorially in the *International Dental Journal*,* the line of argument being that each member, and particularly those best endowed by natural capacity and acquired ability, should give to their local society their entire work in any given direction, otherwise the society is being deprived of strength and sources of growth, while the society receiving such assistance will fail to do efficient work when deprived of this stimulus.

Local, State and National societies should form an ascending scale; the work of individual members of local societies should be winnowed and sifted by the State Associations, and put into digestible form for presentation before the National bodies, where all advanced work should have final consideration.

The proceedings of the National Associations "qualify the world's opinion of the status of dental science and practice, and should present a criterion for the guidance of all."

The negative side of the question of "Raising the Entrance Standard" to dental colleges is presented editorially in the *International Dental Journal*.† In the words of Profs. Pierce and Taft, what is wanted is "a reasonable degree of scholarship," with more attention to the examinations throughout the course, especially the final one. Unless there is a known *moral* reason against it, admit them, and by giving each one thorough, conscientious training, instruction and care, endeavor to develop such men (and women?) as will fill their places in the field of dentistry with credit. "Raise the standard" by seeing that it embraces ethics and morals, for in the neglect of this lies the secret of much of the discredit that has come upon the profession

The editor of the *Dental Digest*‡ discusses briefly the subject of "Dental Legislation," taking the ground that when a diploma is required, the methods of the school ought to be open to inspection and examination at any time, and when a diploma is

*International Dental Journal, March, 1895.
†International Dental Journal, March, 1895.
‡Dental Digest, February, 1895.

not required, that a limit of at least three years' practical work ought to be exacted before application for license is entertained.

DENTAL PROTECTIVE ASSOCIATION.*

The suit defended by the Association on the "Low Bridge Patent" has been indefinitely postponed owing to a press of other cases, and the ending of the term of the Federal Court in Brooklyn. Dr. CROUSE thinks the case will come up for a final hearing in the near future.

The editor of the *Dental Digest*† calls attention to a recent curious decision of the Illinois State Board of Health, *viz.:* that a graduate of pharmacy, of veterinary science, or of dentistry, is not entitled to one year's standing in a medical college, but must enter as a freshman! As graduates of reputable dental colleges are entitled to membership in the American Medical Association, if members of a local medical society, there is an incongruity somewhere. The editor of the official journal of the American Medical Association, in discussing the matter, thinks that such discrimination "ought to lead to organizations . . . similar to the American College Association," quite ignoring the ten-year-old National Association of Dental Faculties.

FRACTURES OF THE MAXILLA.

DR. L. P. HAIGHT‡ gives two methods of treatment of fractures of the inferior maxilla. The first method is very similar to the second method given by Dr. Gilmer, with the exception that articulation of the opposing bones is secured before taking the impression of the teeth for the splint. By the second method given by Dr. Haight, bands are cemented to a tooth on either side of the fracture (in the case given, the fracture extending up between the central incisors, the cuspids were banded). Tubes of German silver are soldered to the bands, through which a wire is passed, which is bent at a right angle at one end, and having a screw thread cut on the other end projecting beyond the band to receive a nut. The fractured ends are drawn together

*Dental Digest, February, 1895.
†Dental Digest, February, 1895.
‡ Items of Interest, February, 1895.

by tightening the nut on the screw end of the wire. Dr. Haight cautions against tight bandaging, avoiding the bandage entirely if possible, as the free and untrammeled supply of blood to the injured part is one of the secrets of success in securing perfect union of the fractured bone.

THE ADAPTABILITY OF FILLING MATERIALS.

Dr. C. E. Francis, in an article read before the Midwinter Fair Dental Congress,* under the general heading, "Practical Suggestions," concludes that, while *solidity* is an essential feature in all fillings, *adaptability* of the material chosen to the cavity walls is absolutely necessary in all cases, and lack of this feature the most general cause of failure. This he attributes to the too general use of cohesive gold in places where soft, pliable stoppings, are demanded, and where the choice lies between soft gold and tin-foil. Pure tin, as prepared by Prof. Darby, in thin shavings of pure block tin, or the cohesive tin-foil, more recently manufactured by Kearsing, is recommended by Dr. Francis as a most excellent agent for securing safety to frail cavity walls, and for preserving them without further deterioration or loss of tooth structure.

Dr. Lord, in the New York Odontological Society,† spoke of the tin foil recently brought out by Mr. Williams as superior to any he had ever used. It works waxy, so that almost anything can be done with it with suitable instruments. You can build out or contour with it, as much as you desire, if the cavity has three walls remaining. It is a No. 3 foil.

COMBINATION FILLINGS.

Dr. S. B. Palmer‡ explains the value of combination fillings from the standpoint of chemical and electrical science, showing the results of the combination of tin and gold in varying proportions, the relations of tin and amalgam, of amalgam and amalgam when joined at different times, and the combination of gold and amalgam.

* Dental Headlight, Jan'y-March, 1895, (reprint from Pacific Coast Dentist).
† International Dental Journal, February, 1895.
‡ Items of Interest, February, 1895.

"THE NEW ERA."

Dr. W. G. A. Bonwill, at a meeting of the New York Odontological Society,* read a *resume* of his former paper bearing the above title, in order to bring it before the society for discussion.

The paper and the author were both criticised rather severely by Drs. Lord and Perry. Dr. Lord said that what was good in the paper would take care of itself, but that it seemed necessary to say something about that which was bad, or not so good. He thought that some of the statements in the paper were contradictory, and that too much importance was placed upon the use of plastics, the very high value put upon amalgam being counter to the views of a large majority of the profession.

Dr. Perry regretted that Dr. Bonwill does not discriminate more, instead of making such unqualified statements.

Dr. S. B. Mills thought that Dr. Bonwill was entirely right from his standpoint, Dr. Perry also being right from *his* standpoint; that there is a golden medium in practice, and that amalgam, as it can be used in the hands of men who have the requisite ability, is of great advantage to both operator and patient.

Dr. Jarvie thinks that a large share of the failures we meet with are due to the poor structure of the teeth treated, and to environment, rather than to incompetent operators. In frail teeth of young patients he approves of filling approximal cavities and the space between the teeth, with gutta-percha, the time that it is left in, depending upon circumstances. He thinks the paper will do good by calling attention strongly to certain points to which no attention would be paid if put in a mild way.

In closing the discussion, Dr. Bonwill defended his position with his usual energy and decision of statement. He regretted that gentlemen were so very careful of what they might say about the use of amalgam in their own practice that they would not rise to the discussion. He said: "You all speak as if you seldom use amalgam, and yet every one of you, I know, uses it. I know just how much amalgam is used by others, and I am willing to bring my practice to show you how much good I am doing with it."

* International Dental Journal, February, 1895.

A COMBINATION BOX

Dr. Sailor exhibited before the New York Odontological Society* a combination of conveniencies calculated to add to the perfection of an operation, and to the ease and comfort of both patient and operator. It contains two compartments for hot water, at different temperatures—one for sterilizing purposes and one suitable for molding, modeling compound for impressions; also a glass of water held in place at one side by springs; two compartments for gutta-percha, requiring different grades of heat, and which can be kept ready for days without losing any of its qualities. There is a wire frame for holding the mouth mirrors at such a temperature that the breath will not condense upon them; a depression for holding the instruments for using gutta-percha; a little slab for medicines for use in sensitive teeth, giving both the soothing effect of warmth and the effect of the medicines.

The entire stands on a bracket six or eight inches long, near the cabinet, always ready for use.

THE CODE OF TEHICS.

At the June meeting of the Connecticut Valley Dental Society, the question of legitimate advertising by members of dental societies was discussed, and a committee appointed to report on the interpretation of the Code. The report was presented at an adjourned meeting, held in October.†

The committee submitted that whether dentistry is a profession or a trade depends on the course pursued by the individual practitioner, and the manner in which his business is conducted. There is nothing in the Code that calls for any sacrifice on the part of any practitioner who wishes to be known as a reputable professional man. The committee found no reason for suggesting any changes, either in the wording or in the construction of the Code, and no interpretation of its provisions necessary.

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* International Dental Journal, Feb. '95

† Dental Cosmos, February, 1895.

EDITORIALLY.

Dr. Geo. J. Dennis* considers the probable causes of the apathy too often manifested in dental societies, and offers suggestions as to the methods of examination into the possible sources of this periodic trouble and remedies for the same.

The question of "Politics in Dental Associations"† and the baneful effect of political methods upon what should be purely professional and scientific work is considered. The American Dental Association is cited as an illustrious example.

The subject of "Legal Restriction of Nostrums" is considered‡ the ghastly record of fatalities consequent upon the ignorant use of secret cocain preparations demanding that the use of this drug be placed on a clearly-defined, legitimate basis. The margin of safety in the use of cocain, in accurately-known doses is so narrow that its use in unknown quantities, by men who are ignorant of the most elementary features of the action of the drug, in the nostrums vended for *painless dentistry*, falls little short of criminality, lacking only the feature of statutory definition to make it so. The proviso-clause in many State laws, permitting the "extraction of teeth" does not include the injection of unknown drugs in unknown quantities into the human system, and a strict interpretation of the clause would put an end to the *painless dentistry* business, with its grave menace to life and health.

* Dental Review, Jan. 15, 1895.
† International Dental Journal, Feb. 1895.
‡ Cosmos February. 1895.

A Death from Bromide of Ethyl.

L' Union Medicale, May 8, 1894, reports that Mendoza reports a case of a death following anæsthesia produced by bromide of ethyl. Ten seconds after the application of the compress to the face the patient's color became cyanotic and the veins turgescent, the eyes were moved convulsively, the pupils were widely dilated. Rythmic tractions of the tongue and artificial respiration were practiced thirty minutes and active flagellations resorted to without effect. The cause of death seemed to be respiratory failure.

SELECTIONS.

Phenacetin in Rheumatism.

According to the *Journal de Medecine de Paris* for April 29, 1894, useful results are obtained in cases of acute rheumatism by applying phenacetin externally to the painful parts.

The following perscription may be used:

℞ Phenacetin, - - - - gr.lxxv;
Lanolin, - - - - ʒvi;
Olive oil, a sufficient quantity.

To be rubbed about the inflamed part.

Or,

℞ Phenacetin, - - - - gr.lxxv;
Alcohol, - - - - Oii.

In this solution dip compresses and apply to the painful parts.

Report of the Collective Investigation Committee on Anæsthesia at the Recent Surgical Congress in Berlin.

Professor Gurlt, Berlin, in presenting the report of the committee on anæsthesia, said that, on the proposition of the Society, he had carried out the investigation to a fourth year. In 1893, sixty-three reports had been received, of which nine were from abroad. Fifteen reports had been sent from twenty-one German university clinics. The total of last year's cases was fifty-one thousand eight hundred and forty-six. Of these, thirty-two thousand seven hundred and twenty-three were chloroform administrations, eleven thousand six hundred and seventeen of ether, three thousand eight hundred and ninety-six with ether and chloroform, seven hundred and fifty with chloroform, ether, and alcohol (Billroth's mixture), two thousand seven hundred and sixty-nine with bromide of ethyl, ninety-one with nitrous oxide. The total fatilities were twenty, and of these, seventeen were due

to chloroform. The average death-rate was one in two thousand five hundred and eighty-seven administrations. The death-rate from chloroform was one in one thousand nine hundred and twenty-four. When the results of the previous year were added, the totals were one hundred and sixty-three thousand four hundred and ninety three administrations, with sixty-one deaths. The rate of mortality was: chloroform one in two thousand six hundren and fifty-five: chloroform and ether, one in eight thousand and fourteen; Billroth's mixture, one in twenty-six thousand two hundred and sixty-eight. In fact only one death had occurred fron ether narcosis, and that was a case of heart-disease. In correspondence with the low death-rate from ether, its employment had largely increased of late years, from six thousand two hundred in 1892 to eleven thousand six hundred in 1893. Pitchet's purified ice chloroform had been used three thousand eight hundred and ninety times, with two deaths, so it would appear that the dangers of chloroform inhilation did not lie in any accidental impurity; indeed the facts seem to point the other way, and that the danger was directly proportionate to the purity of the chloroform. This consideration had lately led to a different mode of administration. It had been given more slowly, and occasionally atropine and cocaine had been used with it. As regarded accidents, two hundred and fifty-five severe cases of asphyxia had occurred, and tracheotomy had to be performed three times. Konig's cardiac messaga, so called was frequently, used, but not always with success. Ether had, therefore, shown itself the least dangerous anæsthetic, ten times less dangerous than chloroform, but it was not without its shady side: it was dangerous in lung-affections. It was agreed to still continue the investigation.

Spasmodic Neuralgia of fhe Face.

M. Josias, in speaking at the Societe de Therapeutique, related the case of a woman, aged sixty, who suffered for eight years from spasmodic neuralgia of the left side of the face. At times the pain was exceedingly acute. The branches of the nerve were

sensitive to pressure, while the edge of the gum on the same side was so painful to touch that mastication was rendered impossible; the patient had from an early age suffered from her teeth, so that nearly all had been extracted. To obtain ease she had exhausted nearly all the hypnotics known, and when she had arrived at the hospital, maximum doses of morphia or sulfonal only gave her a few minutes of relief. Remembering that his colleague, M. Jarre, had reported eighteen cures of obstinate neuralgia by resection of the mucous membrane, periosteum, and a portion of the osseous tissue, where the gum was most sensitive, the speaker requested him to take in hand this patient. M. Jarre operated as usual, and the result was immediate; on the same day all pain had disappeared, never to return.—*Paris Cor. Med. Press and Circular.*

COMMENCEMENTS.

Western Dental College of Kansas City.

The fifth annual commencement exercises of the Western Dental College of Kansas City were held at the Auditorium, Kansas City, Mo., on Tuesday evening, March 5, 1895.

The annual address was delivered by Hon. Webster Davis, the faculty address by Dr. A. M. Wilson, and the valedictory by F. G. Worthly, D.D.S.

The number of matriculates for the session was one hundred and sixty-three.

The degree of D.D.S. was conferred on the following graduates by the dean, Dr. D. J. McMillen:

NAME.	RESIDENCE.	NAME.	RESIDENCE.
Mrs. A. Baum	Kansas	R. W. Hood	Nebraska
L. A. Biggs	Missouri	Wm. A. Hazlett	Missouri
W. D. Bonfils	Missouri	Isaac Lesher	Kansas
Oscar Bruce	Kansas	J. F. McClure	Missouri
R. M. Burgess	Missouri	R. D. McIntosh	Missouri
Charles W. Corel	Missouri	Tom D. McGowen	Missouri
J. E. Chastain	Kansas	L. M. Moore	Kansas
E. W. Clark	Missouri	E. E. McCarty	Kansas
Alfred Daughaday	Missouri	R. L. Ready	Missouri
B. D. Gamble	Kansas	T. A. Sims	Indian Ty
A. Gihl	Missouri	C. C. Thomas	Missouri
E. H. Henry	Kansas	W. J. Tinker	Missouri
T. H. Howell	Indian Ty	B. L. Thorp	Missouri
G. A. Hartley	Kansas	F. G. Worthly	Missouri
W. N. Hall	Missouri	Irving Woolsey	Kansas

Total, 30.

University of Maryland—Dental Department.

The annual commencement exercises of the Dental Department of the University of Maryland were held at the Academy of Music, Baltimore, Md., on Friday afternoon, March 29, 1895, at 3 o'clock.

The annual address was delivered by Rev. Dr. C. Herbert Richardson, and the class oration by D. Edward Hoag, D.D.S.

The number of matriculates for the session was one hundred and eighty.

The degree of D.D.S. was conferred on the following graduates by Hon. John P. Poe, attorney-general of Maryland:

NAME.	RESIDENCE.
W. C. Arthur	Pennsylvania
W. B. Ashbrook	Pennsylvania
H. C. Baker	West Virginia
L. O. Bartlett	Cuba
N. G. Bowbeer	Canada
L. D. Blackwelder	Pennsylvania
A. L. Bumgarner	Pennsylvania
W. J. Carter	Georgia
W. W. Cavers	New York
B. F. Copp	Colorado
J. C. Criswell	Pennsylvania
J. M. Fleming, Jr	North Carolina
J. S. Geiser	Pennsylvania
T. O. Heatwole	Virginia
H. C. Henderson	North Carolina
D. E. Hoag	New York
J. S. Hegner	Switzerland
J. H. Ihrie	North Carolina
S. J. Irvine	Texas
G. F. Jernigan	Texas
B. Kritchevsky	Russia
W. H. Kuich	Pennsylvania
C. W. Link	West Virginia
G. H. Lyndon	Ohio
A. N. McKeever	West Virginia
G. C. Mann	Virginia
C. F. Matthews	California
E. H. Markley	Pennsylvania
F. L. Parker	South Carolina
R. W. Palmer	Virginia
D. H. R. Patton	Nebraska
J. A. Rawlinson	Brazil, S. A
S. C. Reynolds	Canada
B. F. H. Rouse	Maryland
L. St. C. Saunders	Nova Scotia
D. Smithers	Maryland
G. E. Starr	Maryland
J. A. Stults	New Jersey
E. A. Tigner	Georgia
G. S. Tigner	Georgia
N. McK. Wilson	Maryland
C. A. Ward	Ohio
G. N. Ward	New York
M. E. Williams	New York
S. H. Wolf	Pennsylvania

Total, 45.

Birmingham Dental College.

The second annual commencement exercises of the Birmingham Dental College were held in Seal's Academy of Music, Birmingham, Ala., Thursday evening, March 28. 1895.

The address to the class was delivered by Captain Joseph F. Johnson, president of the board of trustees.

The number of matriculates for the session was twenty-four.

The degree of D.D.S. was conferred upon E. A. Wilson, of Alabama, by T. M. Allen, D.D.S., dean.

Total, 1.

Western Reserve University—Dental Department.

The annual commencement exercises of the Dental Department of the Western Reserve University were held at Association Hall, Cleveland, Ohio, on Tuesday, March 5, 1895.

The annual address was delivered by Charles F. Thwing, D.D., president of the faculty.

The number of matriculates for the session was fifty-three.

The degree of D.D.S. was conferred on the following graduates:

NAME.	RESIDENCE.
Frank H. Acker	Ohio
Leonard L. Bleasdale	Ohio
Allyn P. Buchtel	Ohio
Jay H. Burrows	Ohio
John W. Glas	Pennsylvania
Geo. A. Kennedy	Indiana
Dudley E. Mollen	Ohio
Percy O. Parsons	Ohio
James J. Rosensteel	Ohio
William W. Sherman	Ohio
Franklin J. Spargur	New York
David R. Stevenson	Ohio
Richard A. Suhr	Ohio
Louis S. Vinez	Ohio
Robert D. Wallace	Ohio
George N. Wasser	Pennsylvania
Henry J. Zoeckler	Ohio

Total, 17.

Royal College of Dental Surgeons of Ontario.

For the session of 1894–95 the students in attendance were: Freshmen, 50; juniors, 40; seniors, 45; total, 135. The following passed the senior examination and were admitted Licentiates of Dental Surgery:

J. C. Bansley.
W. C. Brown.
W. J. Bruce.
H. F. Burgess.
C. Bowerman.
W. Bell.
W. J. Brownlee.
C. W. Corrigan.
W. B. Cavanagh.
I. P. Cunningham.
L. H. Dawson.
George Emmett.
E. W. Falconer.
E. Fitzpatrick.
J. A. Fleming.
William C. Gowan.
William F. Ganton.
Richard Graham.
W. T. Griffin.
William S. Hall.
A. Irwin.
Fred. W. Ivory.
William C. Kennedy.
C. B. Lillie.
R. A. Marquis.
W. H. Mosley.
A. E. Mullin.
R. G. McLean.
T. E. Oliver.
E. W. Oliver.
K. Peaker.
J. P. Raleigh.
J. F. Ross.
H. C. Skinner.
N. Schnarr.
W. W. Thornton.
J. N. Wood.
A. J. Wyckoff.
F. Walters.
H. Wightman.
R. A. Willmott.

Total, 41.

All of the province of Ontario, Canada.

No formal commencement is held.

Vanderbilt University—Dental Department.

The sixteenth annual commencement exercises of the Dental Department of Vanderbilt University were held in the chapel of the University, Nashville, Tennessee, on Wednesday, February 27, 1895.

The charge to the class was delivered by W. H. Morgan, dean, and the valedictory on the part of the class by H. S. Peach, B.A., D.D.S., of Alabama.

The number of matriculates for the session was one hundred and thirty-six.

The degree of D.D.S. was conferred on the following graduates by J. H. Kirkland, Chancellor of the University :

NAME.	RESIDENCE.
J. U. Ball	Louisiana
C. S. Bingham	Mississippi
J. S. Barter	Illinois
W. D. Beckwith	Georgia
A. D. Cage	Tennessee
M. A. Carroll	Alabama
F. G. Campbell	Tennessee
D. S. Dudley	Mississippi
C. P. Davis	Georgia
C. M. Eddy	Illinois
T. P. Fancheux	Louisiana
J. A. Gholson	Tennessee
B. F. Gilmer	Illinois
F. R. Greene	Florida
L. T. Govee	Texas
J. G. Glass	Alabama
W. S. Hanner	Tennessee
S. H. Hatcher	California
J. R. Hiperger	Illinois
J. M. Jacobs	Georgia
L. H. Jeffries	Mississippi
Y. Jones	Alabama
W. T. King	South Carolina
P. A. Lee	Louisiana
J. J. Middleton	Louisiana
G. C. McKennon	Arkansas
W. Z. McElroy	Tennessee
J. A. Naftel	Mississippi
P. O. Patureau	Louisiana
H. S. Peach	Alabama
J. R. Pirtle	Kentucky
J. L. Reeves	South Carolina
N. T. Rowland	Arkansas
W. J. Saunders, M.D.	Tennessee
Lillie Selph	Tennessee
W. H. Spurm	Louisiana
T. L. Whitehead	Virginia
C. C. Winfrey	Kentucky

Total, 38.

The next session beginning the first of October, will be extended to six months.

Meharry Medical College—Dental Department.

The ninth annual commencement exercises of the Dental Department of Meharry Medical College (Central Tennessee College), were held at the Gospel Tabernacle, Nashville, Tenn., on Tuesday, February 5, 1895, in connection with those of the medical and pharmaceutical departments.

The address to the graduating classes was delivered by Rev. B. F. Rawlins, D.D., of Cincinnati.

The number of matriculates for the session was ten.

The degree of D.D.S. was conferred on the following graduates of the dental class by Rev. John Braden, D.D., president of the college: J. Abner Agnew, of West Virginia, and B. Frederic Barlow, of Texas.

Total, 2.

University of Iowa—Dental Department.

The thirteenth annual commencement exercises of the Dental Department of the State University of Iowa were held at the Opera House, Iowa City, Iowa, on Monday evening, March 11, 1895.

The annual address was delivered by Professor C. S. Chase, A.M., M.D., of Waterloo.

The number of matriculates for the session was one hundred and fifty.

The degree of D.D.S. was conferred on the following graduates by Charles A. Schaeffer, Ph.D., president of the university:

NAME.	RESIDENCE.
J. C. Alexander	Wisconsin
Mrs. W. J. Addenbrooke	Wisconsin
W. J. Addenbrooke	Wisconsin
Grant Bruner	Iowa
C. C. Colby	Nebraska
H. M. Eaton	Iowa
G. H. Edginton	Iowa
R. C. Grimm	Iowa
F. E. Hart	Nebraska
F. B. Hyatt	Iowa
H. R. Hitchins	Iowa
P. H. Jones	Iowa
W. L. Lamb	Wisconsin
L. G. Lawyer	Iowa
I. S. Mahan	Iowa
M. B. McCabe	Iowa
Martha S. McCoy	Kansas
J. A. McErlain	Iowa
C. A. Palmer	Iowa
A. O. Petersen	Illinois
E. A. Phillips	Iowa
F. J. Ruggles	Iowa
J. I. Tomy	Iowa
C. M. Work	Iowa
B. E. Wright	South Dakota

Total, 25.

Columbian Dental College.

The third annual commencement exercises of the Columbian Dental College were held at Kimball Hall, No. 243 Wabash Avenue, Chicago, Ill., on Saturday, March 9, 1895, at 2 P. M.

The opening address was delivered by S. Allen Wilson, B.S., D.D.S.; the class valedictory by R. Fred. Throckmorton, M.D., D.D.S., and the closing address by Edward C. Nichols, LL.B.

The number of matriculates for the session was forty-eight.

The degree of D.D.S. was conferred on the following graduates by J. D. Shugart, D.D.S., dean:

NAME.	RESIDENCE.	NAME.	RESIDENCE.
S. G. Abbott	Wisconsin	A. P. Lusk	Wisconsin
D. A. J. Ferner	Illinois	W. Fred. Nickel	Illinois
W. Herbert Fisher	Canada	C. H. Parker	Illinois
J. E. Kraft	Missouri	R. Fred. Throckmorton	Iowa
W. E. Little	Illinois	Albert F. Wineman	Illinois

Total, 10.

Medical Department of the University of Denver.

The fourteenth annuul commencement exercises of the Medical Department of the University of Denver were held Tuesday evening, April 16, 1895.

The address to the graduates in Dentistry was delivered by the Hon. B. M. Malone.

The degree of D.D.S. was conferred on the following graduates by Chancellor McDowell: William Curtis Ball and Louis Arthur Whitney.

Total, 2.

Ohio Medical University—Dental Department.

The third annual commencement exercises of the Ohio Medical University, including the Dental Department, were held in the Board of Trade Auditorium, Columbus, Ohio, on Tuesday evening, March 19, 1895.

The annual address was delivered by S. McChesney, D.D., and the address on behalf of the faculty by G. M. Waters, B.A., M.D.

The number of dental matriculates for the session was fifty-four.

The degree of D.D.S. was conferred on the following graduates by J. M. Dunham, A.M., M.D, president of the board of trustees:

Enoch Francis Downing.	Dr. T. Gray Merrett.
George Howard Henry.	Charles Stewart Millen.
Elmer Earnest Latham.	George Prince Stephenson.
Arthur Nettleton Lindsey.	Halstead Robert Wright.

Total, 8.

National University—Dental Department.

The annual commencement exercises of the Dental Department of the National University were held (in connection with those of the Medical Department) in Metzerott Music Hall, Washington, D. C., on Tuesday evening, May 14, 1895.

The address to the graduating classes was delivered by Professor William Mercer Sprigg, M.D., and the valedictory address by Harry Jerome Allen, D.D.S., M.D.

The number of matriculates for the session was thirty-six.

The degree of D.D.S. was conferred on the following graduates of the dental class by the chancellor of the university:

NAME.	RESIDENCE.	NAME.	RESIDENCE.
Harry J. Allen	Dist. Columbia.	Albert E. McConnell	Dist. Columbia
Llewellyn F. Davis	Maine	Ambler A. Marsteller	Virginia
Harry P. Davis	Virginia	William D. Monroe	Virginia
William W. Hodges	Pennsylvania	Nora Moyer	Pennsylvania
Frank D. Magnus	Connecticut		

Total, 9.

Columbian University—Dental Department.

The eighth annual commencement of the Dental Department of the Columbian University was held at Metzerott Music Hall, Washington, D. C., on Tuesday, April 30, 1895, at 8 o'clock P. M.

The address to the graduates was delivered by Professor H. B. Noble, D.D.S., and the valedictory by Henry Knowles, D.D.S.

The number of matriculates for the session was sixty-four.

The degree of D.D.S. was conferred on the following graduates by the President S. C. Green, D.D.

NAME.	RESIDENCE.	NAME.	RESIDENCE.
Don F. Aguilera	U. S. Colombia	Eugene L. LeMerle	Dist. Columbia
Joseph Cohen	Texas	Charles W. Orr	New York
James W. Davis	Maine	Will K. Petty	Dist. Columbia
William S. Gustin	Ohio	Harry D. Parsons.	New York
William Hislop	Ontario	William H. Trail	Maryland
Robt. E. L. Hackney	Virginia	Ernest C. Varela	California
J. Everett Keene	Dist. Columbia	Israel G. Warfield	Maryland
Henry Knowles	Georgia		

Total, 15.

Cleveland University of Medicine and Surgery—Dental Department.

The annual commencement exercises of the Dental Department of the Cleveland University of Medicine and Surgery were held (in connection with those of the medical department) at Association Hall, Cleveland, Ohio, on Tuesday evening, March 26, 1895.

The number of matriculates for the session in the dental department was twenty-seven.

The degree of D.D.S. was conferred on the following graduates:

NAME.	RESIDENCE.	NAME.	RESIDENCE.
Samuel Howard Stevens	Ohio	Edwin Stanton Kiplinger	Ohio
Louis Amedius Keller	Ohio	James Milford Chambers	Ohio
Jay Thorne Newton	Ohio		

Total, 5.

The Boston Dental College.

The twenty-eighth annual commencement exercises were held in Berkley Temple, Boston, June 20th, at 8:00 P. M.

The address was delivered by Prof. Geo. A. Bates, D.D.S., and the valedictory by Dr. A. W. Noll, D.D.S. The graduating class, numbering forty-two, received their degrees from the hands of the President of the College, Dr. I. J. Wetheree, D.D.S., the names of which are as follows:

John Francis Ager.
Arthur David Allard.
Walter Ira Boynton.
Chauncy Morris Carpenter.
William Martin Flynn.
Helen Mar Henry.
Arthur Horsfall.
Ernest Hosmer.
Roscoe Henry Hull.
Walter Mayo Kelty.
John William Kenney.
John Walter Keyes.
Charles Bingley Little.
Carrie Gertrude Locke.
Guy Bernard Manzer.
George Henry Martin.
John Amon Dexter Mills.
James Thomas Moriarty.
James Edwin Nealis.
Albert William Noll.
Daniel Butler Nye.
John William Pomfret.
Percy Morris Porter.
James Francis Potter.
Jeremiah Patrick Reardon.
John Lawrence Reilly.
William Thomas Reilly.
Francois Xavier Medard Polycarpe Renaud.
Walter Edwin Rowe.
William Alexander Rowe.
George Atherton Sleeper.
Westford Marlow Taylor.
George Olivir Tessier.
Edmond Emanuel Vadnais.
Charles Everett Walker.
Richard Ambrose Walsh.
Lewis Lincoln Warren.
Oscar Emery Wasgatt.
Conrad Ogilvie Hall Webster.
Roscoe Livingston Wentworth.
Elmer Lorendo White.
George William Yale.

Total, 42.

University of Michigan—Dental Department.

The twentieth annual commencement of the Dental Department was held in connection with the general commencement of the University, in University Hall, June 27, at 10 o'clock A. M.

The commencement address was delivered by James H. Canfield, LL.D., President of the Ohio University.

There were enroled in this department one hundred and eighty-seven, and in the graduating class forty-seven.

The degree of D.D.S. was conferred by Dr. J. B. Angell, President of the University, upon the following named persons:

Douglas Anderson.
Archibald Elmer Ball.
Amos Barnes.
Orville M. Barton.
Alfred Lee Beatie.
Joseph Henry Billmeyer, Jr.
Joseph Augustin Bucknall.
Fred. Crittenden Clapp.
Lewis Emmett Coonradt.
Mary Bruyn Crans, B.S. University of North Dakota.
Fred. Ellsworth Dodge.
John B. Dowdigan.
Edmund Dubuis, D.E.D.G., Dental Dep't, Univ. of Geneva, Switzerland
Walter Gideon Dunham.
George Frederick Fiddyment.
Van Camp Carratt, D.D.S., American College of Dental Surgery.
Fred. Pratt Graves.
Arche Greenwood Hicks.
Harry Benson Hinman.
Marshal Luther Howver.
Arthur Stimson Kennedy.
John Fredrik Henry Kuyper.
Walter Allen Lapman.
Harry Hallenbeck Lauderdale.
Albert Leland LeGros.
William Gustave Lentz.
Frank Eugene McLaughlin.
Joseph Merckens.
Daniel Merner.
John Henry Neeley.
George A. Parmenter.
Clarence Fletcher Piper.
Harry Benedict Respinger, D.E.D.G., Dental Department, University of Geneva, Switzerland.
Burt Townsend Ruthruff.
Francis Frederick Scott.
Newton J. Smith, Jr.
Charles Bradford McCall Southwick.
Joseph Herman Stromier.
Clifford Paul Sweny.
Andrew Roane Thorpe, A.B., St. Vincent's Coll.
Christian Leonard Theurer.
George McAlpine Tyng.
Perley Tapler Van Ornum.
Elizabeth von Bremen.
Friedrich von Widekind.

DOCTOR OF DENTAL SCIENCE.

Will Hamilton Van Deman, D.D.S. | Charles Traver Whinery, D.D.S.

Total, 47.

Kansas City Dental College.

The thirteenth annual commencement exercises of the Kansas City Dental College were held at the Auditorium, Kansas City, Mo., on Friday evening, March 1, 1895.

The salutatory was delivered by William A. DeBerry, D.D.S.; the faculty address by Professor Rathbone; the vale-

dictory by Amos L. Curry, D.D.S., and the annual address by Bishop Hendricks.

The number of matriculates for the session was one hundred and fifty-three.

The degree of D.D.S. was conferred on the following graduates by Dr. L. C. Wasson:

NAME.	RESIDENCE.
George A. Adcock	Missouri
George R. Burns	Indiana
John Barber	Missouri
Ferdinand J. K. Bush	California
Walter E. Blackwell	Missouri
William H. Brosman	Nebraska
Theron J. Branstetter	Missouri
Julian C. Bogue	Oregon
Harry W. Balthrope	Mississippi
Edward L. Conrad	Missouri
Amos L. Curry	California
Henry W. Cussons	Nebraska
John W. K. DeHaven	Missouri
William A. DeBerry	Missouri
Leland P. Davis	Nebraska
William E. Furrow	Oklahoma
Charles I. Glenn	Missouri
Walter R. Gwin	California
George J. Geenen	Illinois
Joseph T. Longstreth	Missouri
Joseph Lutz	Kansas
Jesse Miller	Missouri
Samuel M. McDonald	Missouri
Milton B. Metzler	Missouri
Franklin K. Munday	California
James A. Nevitt	Missouri
Thomas G. Newell	Minnesota
Charles C. Needham	Missouri
Charles M. Palmer	Colorado
Abram P. Preston	California
Harry L. Prevost	Missouri
Frederick H. Riley	Missouri
Overton M. Saul	California
Charles N. Smith	Kansas
Albert R. Streicher	Missouri
Arch. Thompson	Missouri
John W. Vaughn	Kansas
Walter Z. Wright	Kansas
Eric C. Watkins	Kansas

Total, 39.

University of Tennessee—Dental Department.

The annual commencement exercises of the Dental Department of the University of Tennessee were held at Nashville, on Thursday, March 21, 1895.

The charge to the dental graduates was delivered by Professor Joseph P. Gray, M.D., D.D.S., and the valedictory by W. A. Titus, D.D.S.

The number of matriculates for the session was fifty-eight.

The degree of D.D.S. was conferred on the following graduates by Thomas W. Jordan, A.M., acting president of the university:

NAME.	RESIDENCE.
J. W. Blair	Tennessee
S. A. Garth	Missouri
F. M. Gayle	Louisiana
E. D. Hancock	Kentucky
Clarence Hudson	Missouri
J. B. Love	Tennessee
J. E. McGowan	Tennessee
L. H. New	Tennessee
J. R. Pendleton	Missouri
J. I. Pettus	Arkansas
J. T. Phillips	Alabama
N. A. Royer	Tennessee
H. R. Rouse	Indiana
A. C. Seiser	Missouri
W. A. Titus	Pennsylvania

Total, 15.

EDITORIAL.

A Well Deserved Honor.

We have just learned that Dr. L. P. Bethel, of Kent, Ohio, editor of the *Ohio Dental Journal*, has been elected to a full Professorship, in the Dental Department of the Western Reserve University.

We extend congratulations. The institution has honored itself in this selection. Dr. Bethel is well qualified for any work he will undertake.

"UNDER the lead of Dr. C. E. Stroud, of Sandusky, O., physicians over the country are being urged to assist in a movement to erect on the campus at the University of Michigan a bronze statue of the late Dr. Corydon L. Ford, America's greatest anatomist."

The proposition of the above paragraph is one eminently proper. Such a recognition of the service rendered by the late Prof. Ford, to the medical profession and to the Medical Department of the University of Michigan, and indeed to the entire University, and to several other medical colleges with which he as a teacher was associated, would seem to make it well-nigh imperative that some such recognition as indicated above should be made. Dr. Ford was for over forty years a teacher of anatomy, and for most of this time had not a superior, if an equal, in this country in this line of work. Thousand of physicians and dentists in this country, and indeed in other parts of the world, remember him with the warmest gratitude and heartiest respect, every one recognizing and acknowledging his superior ability. We here suggest that those who have been his pupils in the Dental Department of the University of Michigan bear this matter in mind and in their affections, and so soon as a call may be made for the means of carrying out the proposition, that every one be ready to respond in a manner worthy of the cause.

Obituary.

Died July 5th, at his summer residence in Manchester, Vt., Dr. Augustus Woodruff Brown, D.D.S., age 90. He was born in Litchfield, Conn., and was supposed to be the oldest dentist in America at the time of his death. He practiced in New York City for half a century, and retired in good circumstances, fifteen years ago.

He was at first associated with Dr. Solyman Brown, his eldest brother, whose name is one of the best known in the profession at that period. In their office at 13 Park Place, New York City, the first Dental Society in the world was organized, and the first Dental Journal planned. These were The American Society of Dental Surgeons, of which Dr. Eleazer Parmly was first president, and *The American Journal of Dental Science*, of which Dr. Solyman Brown was the first editor.

Dr. A. W. Brown at one time had the most aristocratic and lucrative practice in New York, and was widely known in social as well as professional circles.

One of the earliest honorary degrees of the Baltimore College of Dental Surgery was conferred upon him. He married Emma Mandeville, who survives him together with two daughters. He had nine children but none of his sons lived to manhood.

Dr. E. Parmly Brown, son of his brother Solyman, studied with him and is the only member of the family now in dentistry.

Funeral services were held at Manchester, and the interment was in the family vault, in old Marble Cemetery, New York City.

Resolutions adopted by the Odontological Society of Chicago, in reference to the death of Dr. J. J. R. Patrick, of Belleville, Illinois.

Whereas: Death has removed from our midst, Dr. John J. R. Patrick, of Belleville, Illinois, and there has passed from the scenes of human activity a character whose labors have enriched the stores of science, a man who delved fearlessly and steadfastly

into those mysteries of nature which call forth the most subtle energies of the human mind, and yield results, making the lives of succeeding generations happier; now therefore be it

Resolved, That in the death of Dr. Patrick, the world loses an honored citizen soldier, the field of science a conscientious, faithful laborer, and the dental profession a light whose extinguishment will kindle the professional interest in the work he has accomplished for it, and thus extend and perpetuate his good influence. Be it further

Resolved, That to the family, friends and professional associates of Dr. Patrick, we extend the assurance that we appreciate his worth and are grateful that his life has been spared until it nearly completed the allotted time of three-score and ten.

JAMES A. SWASEY,
ALISON W. HARLAN,
LOUIS OTTOFY,
Committee.

Ulyptol.

Ulyptol belongs in the same category with steresol. It is occasionally mentioned as a "new antiseptic." It was originally named and introduced in 1886, and is prepared by mixing six parts salicylic acid, one part carbolic acid and one part oil eucalyptus. It is also known as eulyptol, and the mixture is of service in treating wounds—*American Therapist.*

NITROGLYCERINE, three drops a day of a one per cent. solution, is a powerful anti-neuralgic, especially in persistent sciatica.

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COMMUNICATIONS.

What a Dentist saw in Examining five hundred Crania.

BY M. H. FLETCHER, M.D., D.D.S., CINCINNATI, OHIO.

Read before the Mississippi Dental Society, April 18, 1895.

Mr. President and Gentlemen:

In presenting this subject according to the program, it is not my intention to go into detail of any of the pathological conditions of the tissues of the mouth, but to offer to you a few facts which have impressed me during the little work I have done in examining crania. This work was begun with special reference to the study of the antrum of Highmore, and for the purpose of determining if possible what relation the teeth might have to the diseases of that cavity, since it is claimed by all the authors familiar to me (excepting Dr. E. S. Talbot), that antral trouble comes more largely from the teeth than from an other source. In the examination of five hundred crania, making one thousand antra, my conclusions were that the teeth were as often, and probably much oftener, made pulpless or otherwise pathologically affected by diseases of the antrum, than the reverse; the reasons for which were set forth in a paper read before the American Medical Association two years ago at Milwaukee, to which I refer you. In pursuing these examinations I found it difficult to confine myself strictly to the points in question, because of so great a number of most interesting conditions which presented themselves for a dentist's observation. In fact the title of this paper could as properly be, *what a dentist did not see*, in the examination of five hundred crania, as what he did see. It was most exasperating to find such numbers of interesting conditions, both pathological

and normal, realizing that the time at command was not sufficient to accurately pursue even one subject—an experience corroborated by Dr. E. G. Betty.

In pursuing such work, I was particularly struck, as others have been, with the fact that almost every lesion which a dentist is called upon to treat, leaves its mark in some way on the hard tissues of the jaws or the teeth; I will mention most of them, and ask if I am not right. Of course all the normal conditions of the hard tissues and their histology can be studied.

In pathological conditions you may study:

Faulty development or osseous deformities of the head, jaws and teeth; certain features of the development of the hard tissues; tumors of bone, necrosis and caries; faulty development of the teeth in enamel; of Dentine or Cementum, malformed teeth either permanent or temporary; irregularities of teeth as to position; united teeth; fused teeth; supernumerary teeth; supplemental teeth; nodular teeth; tumors of teeth; syphilitic teeth; calcic deposits of all varieties; the effects of calcic deposits upon the bone, and its effect upon the teeth.

In the teeth themselves you may study:

Caries; necrosis; abrasion; erosion; fractures; hyper-cementosis; exposures of the pulp, indicating pulpitis in all its forms; all forms of new growths of the pulp chamber.

In the diseases of the alveolar process:

Alveolar abscess; necrosis and exfoliation; absorption or phagadenic affections; hypertrophy.

Diseases of the antrum, and the relation they may or may not have had to the teeth.

These and many others points of practical interest to the stomatologist may be studied with great advantage by the examination of crania.

You may say there is nothing new about this, that we all knew it before, and that it has been gone over by the Examination Committee of the American Dental Association, by Dr. E. G. Betty and others, and the results have been published, most of which is true I admit, but who have been the greatest gainers by these examinations? Those who have done the work, without

doubt, for *they* have come in direct contact with the objects and phenomena, and received the greatest benefit thereby.

There are important features to be observed, however, which I have not yet seen published. *One for instance*, is that the dental follicles holding the crowns of the superior molar teeth (in normally shaped antra) are usually formed at the expense of that cavity, each follicle being covered with a dome of bone which protrudes into the floor of the antrum, while the tooth is being formed and pushed into the mouth; this dome flattens out and entirely disappears by the time the tooth is completed, excepting in rare cases; this seems a perfectly natural result, when we remember that the alveolar process is only formed after the eruption of the teeth, its position and shape being entirely governed by the position and shape of the teeth; there is, then, no other place where the crowns can find space enough for their development but the one mentioned at the expense of the antrum. The finding of some of these domes in the floor of the antrum, in connection with some bony processes, may account for the description by anatomists, to the effect that the roots of the molar tooth protrude into the floor of this cavity, and are either bare or covered with bone, forming numerous bony tubercles corresponding to the apices of the sockets of the teeth; other authors taking these as authority have perpetuated this statement until it seems the prevailing opinion that this is the normal condition.

Zuckerkandle pictures these in a normal skull, and most works on anatomy, which I have seen, speak of it as being the normal condition; Gray, Leidy, Quain, Holden and others do so, in fact I have seen no exception to this description in any work on anatomy; but over one thousand antra according to my examinations *show it only five times*, and one of these specimens I pass about for your inspection.

As to another point, I quote the following from Dr. Boderker's late work on "Anatomy and Pathology of the Teeth;" he says, "the apices of the roots of the second biscupid and the buccal roots of the molars are in contact with the floor of the antrum." This is given without exception or qualification; an examination of a few sections through the alveolar process and into the antrum

at this place, will, I think, show this to be the exception rather than the rule; since these specimens are more common, according to my own observation, and I believe it to be normal; the apices of the roots of the molars do sometimes come in contact and often perforate the floor of the natrum as shown in specimens, but I find this condition the exception rather than the rule.

As to the second bicuspid, I have very seldom seen it in contact, or even pointing directly toward the floor of the antrum, and a drill taking the direction of the axis of the tooth would most likely run a quarter or half inch before reaching even the anterior wall of the cavity, and just as likely miss it all together, or in some cases would probably reach the floor of the nose.

These may seem like minor or unimportant points, but since we must have the anatomy and osteology of these parts described, for the benefit of those who are likely to deal with pathological conditions in this region, the description had better be right than wrong, and dentists or rather stomatologists had just as well have the credit of doing it right as any other set of men, hence, the necessity of investigating and discussing the subject. I have never seen a description of these features in any text-book based on a series of examinations, but have seen such statements as referred to, over and over again, and made without exception or qualification, the following, as an example is copied from Gray's last Edition, describing the antrum or maxillary sinus, he says, "projecting into the floor are several conical processes, corresponding to the roots of the first and second molar teeth; in some cases the floor is perforated by the teeth in this situation;" and *he* quotes Mr. Salter on "Abscess of the Antrum" as authority. If the points referred to above are of a sufficient moment, and need correction, let us present sufficient proof, and have the correction made, if the statements herein made are based on error, then *I* shall be exceedingly glad to be corrected.

Another fact of great interest to me was, that showing an almost total absence of dental lesions of any character in the mouths of Northern Indians and Esquimaux. In forty-eight Alaska Indians, only two abscessed teeth were found, and these teeth seem to have been broken rather than decayed. In

thirteen Esquimaux, no abscesses and no decay was found in the whole *sixty-one skulls;* there were exceedingly few with calcarious deposits upon the teeth; and no cases where the teeth had apparently been lost from this deposit and its consequent results. The cases of abscesses in these tribes show about 3 per cent, whereas, the cases of abscessed teeth in the Mississippi Valley Indians proved to be about 30 per cent; these were all upper molars, but the comparative per cents would probably remain about the same if all abscesses had been counted.

The loss of teeth from tartar and its consequences in the Mississippi Valley Indians was simply enormous; having taken no statistics on this point, I cannot give numbers and per cents, but speaking from memory, I should say that the loss from tartar in the Mississippi Valley tribes must have been found in 33 per cent of cases. Great quantities of tartar still clinging to many of the teeth, and numbers of cases showed unquestionable evidence of the teeth having been partially, and in many instances totally lost from phagadenic diseases; which, doubtless, were brought about by excessive accumulations about the teeth.

These facts are significant for the reason that the food of the two classes or nations were so different; the northern tribes living almost entirely upon meats and oils, which are free from grit, and need but little mastication; while the tribes living in temperate or torrid zones lived more largely upon the vegetable diet, containing more or less grit, then the vegetable substances usually need more mastication than meat before they can be swallowed. If I tried to account for the difference in quality of structure or loss of teeth in these people of such different habits, it would be after the above manner, and that after long lapses of time heredity would cut quite a feature, for no doubt generation after generation of these tribes lived under the same environments.

The chemical difference between animal and vegetable foods may cut some figure, but I believe the mechanical feature is primarily the greater factor.

As to diseases of the antrum, it seems to me that these people were remarkably exempt, when we consider that they could have had no surgical or medical attention; and also that about 25 per

cent of them had abscessed upper molars. This fact is significant, too, when it is claimed by the majority, and, in fact, nearly all authors, that diseases of the antrum come more largely from this class of teeth than any other source. This series of examinations show that out of the 252 cases of abscessed upper molars, only 12 perforated the antrum. This would seem a remarkably small number and count as a point in favor of claiming that abscessed teeth do not cause antral trouble as often as most authors maintain they do, in comparison with other causes of inflammation of this cavity.

My reasons for believing that the teeth are, and may often be, affected by diseases of the antrum, are strengthened by considering a certain feature of the anatomy of the parts, mentioned by Gray, and omitted by most other anatomists—namely—that, "in some cases the floor is perforated by the teeth in this situation." I found this to be the fact in twenty cases showing that about 4 per cent of persons have, normally, nothing covering the apices of these teeth but mucous membrane; I here would say that the statistics on this particular point *are not accurate*, on account of the inability to see into the antrum, in an unbroken skull. Many skulls were broken, however, so that examinations could be thoroughly made on this point, as well as others; and when they were not broken, the sense of touch was used to determine the presence of bony processes, septa and the general form of the cavity, and the normal openings above the teeth as far as possible. It was also observed that these normal openings occurred where the floor of the antrum was comparatively flat, and not where there was a conical process, and that those cases where the conical process occurred were almost invariably covered with a considerable thickness of bone.

These conditions being present, it would seem a natural result, when the mucous membrane of the floor of the antrum becomes broken down, for the blood and nerve supply of teeth so perforating the floor to be interfered with, and possibly entirely destroyed, since the apical foramen of the teeth must be exposed to these destructive influences. In cases of occlusion of the osteum—maxilare and other openings into the nose, the antrum may

become tensely engorged, and under this condition, if there be no bony covering to the apex of a tooth, it would of course be more or less driven from its socket and become very sore to the touch, or occlusion with its antagonist, under such conditions I can imagine the teeth having been blamed for the trouble, since it, or they, would be exceedingly tender on percussion, and one under these circumstances would be most apt to say, "there is your exciting cause in that tooth."

It is my belief that if accurate statistics could be had, they would indicate that the exciting causes of diseases of the antrum would show, say, 10 to 1 in favor of intranasal disorders. I make this statement, taking into consideration the larger per cent of teeth that are known to perforate the bony floor of the antrum, for my observations also show that a much larger number of teeth are denuded of bone, on the buccal surface of the alveolus, hence, the *large preponderance* of abscessed teeth which discharge in this locality, a place where one familiar with the disease invariably looks for a fistulous opening. In this situation, if the bone is not entirely absent in some spot, it is so thin that it offers to internal pressure the least possible resistance of any other part of the sockets of the teeth.

Other points of much interest to us as specialists could be considered, but since I took no accurate figures on them, I will defer their discussion until close and more careful observations can be made.

DISCUSSION.

Dr. Wright: Dr. Shields has an interesting case, the relation of which will occupy but a few minutes of the time of the society; he was once a dentist but from physical and mental causes (laughter) was incapacitated and has gone into another specialty of medicine; he is still interested in our profession, and as it will be to the interest of the society, with your permission I move that we liston to him for a few moments before Dr. Cravens starts the avalanche.

There being no objection, Dr. Shields took the floor.

Dr. Edward Shields, of Cincinnati: It has been some time

since I interested myself actively in the dental profession, but up to the present time I have not lost all of the interest that I once cherished for the profession. A very interesting case of actinomycosis in the pulp on the teeth came under my observation a year ago last March in this manner: A patient was recommended to Prof. Albert's clinic for diagnosis of a swelling, occuring on the right side of the lower jaw. By mistake he came into the dermatological department, I was there in the laboratory at the time, and the first assistant seeing that the patient had a swollen jaw, said to me, "you were once a dentist; remove the tooth." I did so, thinking I was dealing with an ordinary abscessed tooth; and out of curiousity I fractured the tooth, and was surprised to find an ossified deposition in the pulp; the age of the patient being seventeen I thought it was rather strange that an ossific deposit was to be found in the pulp. A few moments later the physician who referred the case to Prof. Albert's clinic came in, and I showed him the tooth, and told him I had removed it. He said, "that was not a case for you; that is a case of actinomycosis, and should have gone to Prof. Albert." I quickly gathered the fragments of pulp and tooth and took my pulp and macerated it, and put it under the microscope, and was gratified to find that this ossific deposit was nothing more than a mass of actinomycosis. As the tooth was not decayed in the least it led me to believe that the tooth was not the source through which the infection had passed, but that it was secondarily affected through the blood-vessels. The second case in question is one that Dr. Callahan has some knowledge of. In 1888 a physician of this city came to me with a swollen face and dead tooth, apparently perfectly sound otherwise no fissures decayed. I opened up the pulp cavity, and removed the pus, and treated the tooth by the usual methods then employed; and in due course of time the tooth began to die, and the pulp canal was filled with oxyphosphate of zinc and cotton—that is, the cotton saturated with the oxyphosphate. About six years later he again presented himself at my office with the first or second molar badly affected in the same manner. The first tooth was in the upper jaw. The second case was in the lower jaw—first, or second bicuspid, I forget which.

It was very loose, and I pushed it to one side, as you would a temporary tooth, and then took my forceps and attempted to remove the upper tooth. To my surprise I found that he had nothing but a crown, with two pins from the two oxy-phosphate pulp fillings remaining in the crown of the tooth. Six months later, on the opposite side I removed a tooth having the same characteristics; and Dr. Callahan, I think, had the pleasure of removing a tooth from this gentleman's jaw either this or last year. Now, as to the etiology, I must say, that I don't know—have not the slightest idea as to the cause. There is no specific history, and the only theory that I can think of giving is, and it is hardly possible, that of a thromba clogging the vessels and cutting off the nutrition of the tooth and consequent absorption.

PRESIDENT: We will now proceed with the discussion.

DR. CRAVENS: I am somewhat in the position that Dr. Frank Hunter said he was yesterday; he was designated to open the discussion on the subject of pyorrhœa, and he said he did not know anything about it. I suppose that the committee in the same spirit selected me, because I have paid very little attention to the antrum. However, the antrum is there, and seems to have come to stay; and since I was selected to discuss the subject I have tried to find out something about it, with the assistance of the encyclopedia and some other aids. (Laughter.) A long time ago an inspired individual said, "Seek, and ye shall find." We usually can find abundant evidences to our own satisfaction at least, to support any preconceived opinions we may have in regard to religion, politics or pathology, or any other matter. I know it is so in my own case. I can prove anything to my own satisfaction upon which I have formed an opinion. I am afraid that Dr. Fletcher, when he started those laborious researches, probably set his stakes ahead for five hundred skulls; now, I gather that from the title of his paper; he set his stakes for five hundred skulls, and with a determination to do or die in proving what he believed to be the truth. And every man who is seeking for what he considers to be the truth, and who has a determination to get at the truth, has to be inspired with the idea that he is to do or die, that he is going to find it—that's all! So that,

perhaps, the essayist, to his own satisfaction at least, has proved his point. I am not going to quarrel with him on that. I agree with the essayist that in hunting for the causes or the etiology of antral troubles, entirely too much has been charged against the teeth, and that it is the exception, the very rare exception, for the dentist to observe antral troubles. I can only recall three, and I have been practicing longer than Dr. Fletcher by a few years; and perhaps one reason why I have not discovered something about the antrum, as he has, is because he has made a specialty of that; in other words, he has been seeking that. "Seek and ye shall find!" He has been seeking for specific information, as various other members of the profession have done, by a certain line of study. I want to compliment the author of the essay for his perseverance. There is not much encouragement, not much to excite enthusiasm, in searching for truth in Golgotha; and there is where he has been searching for it! He states that from what he has seen in those one thousand antra, he believes that the ends of the roots of molars projecting into those cavities are always uncovered. Is that right? (to Dr. Fletcher.)

DR. FLETCHER: Not always. I gave a per cent.

DR. CRAVENS: I believe that if the Doctor had examined those skulls in the living subjects (and that would be difficult), I think he would have found his proposition a mistake. I believe that nature never shoved the apex of a tooth root into the Highmorian cavity, without a bony protection, however thin. She never completed the apex of a root of a tooth in the mucous membrane alone. The denudation of the apices, as seen by Doctor Fletcher, we cannot deny. No doubt he found that they were denuded, and by the very process given in my essay of yesterday in pyorrhœ (Riggs' disease), in my quotations from Dr. Dawbarn, where he attributes destruction of bone to a perfectly natural process, due to periostitis, it is what he calls "chronic non-infectious." It is utterly impossible for apical developement to proceed in the air. There is a rhinologist in Indianapolis (there are a number of them there), a Doctor Kline, who has made a special study of this subject. I had the pleasure

of listening to an essay or report on that subject he made before a little assembly of surgeons. He said that in treatment the opening in the antrum must be made very free—I think he used a drill for this purpose, and he said it was $\frac{3}{8}$ of an inch in diameter. He did not have perhaps just the proper instrument, but he wanted something to make a hole to get a drainage of the antrum. I will cite here one case that came under my own notice about a year ago. It was not very profitable to me (may have been to humanity, however), the patient was an evangelist, a sort of a missionary for the Young Men's Christian Association, and he was totally incapacitated for his work by an antral trouble; a dentist in Indianapolis (not myself), had extracted a molar for him, which was very badly broken down; and, it seems, in his desire to get a sufficient hold, he had pressed upward, and had forced a root up into the antrum. I enlarged the opening until I could put the end of my little finger in it. The reason I did so was, that just before that I heard Dr. Kline state how large he made his openings. I gave the patient a syringe and told him what solution to use. He attended to it, and a short time ago a gentleman who is related to him told me the opening had healed up entirely and the patient was comfortable, and I suppose, grateful. It happened that on Tuesday morning I received by mail a copy of the *Lancet*, published in New York, of the February issue. There were a number of short articles of a surgical nature, and I glanced through them. One attracted my attention. It was an article by Dr. Scanes Spicer, on "Chronic Empyemia of the Antrum Maxillare." It threw a light on this subject of perforating the antrum. It says "after a crucial incision over the canine fossa and reflection of flaps, a large opening is made with a chisel and mallet." A dentist is a better mechanic than the ordinary surgeon; a dentist would bore the hole every time; but this gentleman gets there just the same. "A large opening is made with a chisel and mallet" (he places the patient under the influence of an anæsthetic) "in the anterior wall of the antrum, according to the methods of Dr. Robertson, as published in the *Lancet*, 1892." Great care is taken that the bone is chipped away down to the level of the floor of the antrum,

and a groove established down the alveolus. The opening is large enough to admit the finger to explore the interior. The interior surface is now curetted thoroughly so as to remove every trace of soft fungous granulation tissue, abscess sac, polypi, cysts, necrosed bone, or other objectionable material. Instead of now closing the operation, I introduce the finger into the antrum to act as a guard, and pass Kraus' trocar and canule down the inferior meatus of the corresponding nostril well behind the nasal duct opening, and make one or two large perforations through the inner wall. Chips of bone are usually pushed into the antrum, and can be detached by manipulation. We have left now as well as the large opening in the anterior wall a permanent large accessory osteum maxillare in the inferior meatus of the nose. He goes on to say that he "packs anterior opening with creolin gauze, tightly, for twenty-four hours, to assure permanency of opening for drainage and douching purposes. Washes with solution of boracic acid three times daily with a syringe; also frequently has patient blow air through antrum from the mouth and through opening into the nose, this latter process induces movement of currents of mucous and other stale fluids in the antrum. Cure certain and healing regular, and reasonably quick." Now, in regard to opening the antrum, I am not trying to deal with all the Doctor's paper. I don't feel myself competent. In such an operation then, as draining, the prime object should be to secure better drainage; and the question as to the shortest route or the most direct route, perhaps, is entirely secondary. The main question is to secure better drainage, so I suppose that is the object of Dr. Spicer in making so large an opening. By the way, Doctor Fletcher, when you want to continue your corrections of anatomical descriptions given in the text-book, I hope you will succeed in getting them to say nasal fossa instead of canine fossa. Dr. Fletcher is to be commended on his able declaration against the prevalent custom by which our text-books are made, viz: quoting the statements of others and so perpetuating what errors have crept into the original writer's text, from one generation to another.

Dr. Betty: I did not know anything about the Doctor's

paper until he sent it over to my office day before yesterday. I heard it in its entirety to-day for the first time. It was not my intention to criticise his paper, so much as to congratulate, not only Dr. Fletcher, but all the members of this society for having on their list of membership any man who has concluded to devote some time to original research.

Among the points that Dr. Fletcher has taken up is one that is new to me, in this: that the anatomical formation of that portion of the antrum in contact with the apices of the teeth being a source of or a guard against devitalization of the pulp, or acute chronic catarrhs of the antrum. I have forgotten whether the Doctor states in his paper or not, that it is very difficult in the great majority of specimens to see into the antrum at all. In this specimen, which he passed about, the interior of the antrum cannot be seen, unless an incision has been made upon one or the other of the aspects of the antrum, in order to get vision into it. This specimen has been cut in order to afford such an opportunity. In the various collections in the museums of crania, I will say, they are very, very jealously guarded. Any one from the outside, a student or investigator, who essays to use this material in any manner at all, is closely watched, almost searched, before he comes into the building, and pretty sure to be scrutinized before he leaves it—in fact, some specimens he is not allowed to look at, at all, for fear in the handling, some portion of the specimen that may illustrate some particular point, may be carried away, or that those examining it may be more or less careless and some accident may happen to it, the specimen may drop or something fall upon it, by means of which its value may be destroyed, its usefulness for the particular purpose for which it is kept, impaired. I was very much interested in this paper, and I am glad to see that Dr. Fletcher has made this point, which was new to me. Hereafter, when doing anything of the kind myself, I shall endeavor to include in the investigation a thorough examination of the antrum as it is possible to make, for the reason that it will have a particular bearing upon our practice in any such cases of antral trouble as may come under our supervision. Dr. Fletcher makes the point, I believe, that in 4 per cent of cases he found, where the

apices of the roots projected through the floor of the antrum, there was covering those 4 per cent, a mucous membrane. I would like to add to that, that there must be, in addition to the mucous membrane, a sub structure of cellular tissue containing the nerves and blood supply to those apices; that must necessarily be there. I have therefore derived the inference that, supposing one of those teeth had penetrated the antrum, we will say from first to third molars inclusive, possibly in rare cases the root of the second bicuspid—although he has shown these specimens to the contrary—that a sudden blow or injury to one of those teeth would be a direct cause of probably some form of antral catarrh. In the first place, there would be an acute inflammation, resulting in catarrh, possibly self-discharging, of the products of inflammation—pus—into the nose, or sometimes out directly into the mouth, either through the opening made by the extraction of that affected tooth, or alongside of the periosteum, the space occupied by the pericementum, that membrane lining the alveolar socket, and covering the root of the tooth. Pus would naturally gravitate in that direction rather than accumulate on the floor of the antrum. There is an opening into the nose; usually, I think, it is opposite the floor of the first turbinated bone.

Dr. Wright: Are you going on the supposition that the patient always maintains the vertical position?

Dr. Betty: Not always. He does three-fourths of the time. That is a very important point brought out in Dr. Fletcher's paper, one that I shall adopt hereafter in any further examination I may make. There are two or three other points that I want to refer to. Dr. Cravens was inspired upon this occasion to make a statement to the effect that he does not believe nature ever intended to shove the apex of a root in the Highmorian cavity.

Dr. Cravens: I said uncovered by bone.

Dr. Betty: I would like to ask Dr. Fletcher another point that is the reverse of this. Would a catarrh of the antrum, in such cases, say this 4 per cent of cases where there is a formation of the floor of the antrum, and nothing over-laying the apices of of the roots but the soft parts, would a catarrh of the antrum produced by continuity of tissue from nasal catarrh—could it result

in the devitalization of any such tooth perforating the floor of the antrum?

Dr. Fletcher: I had one case in which every tooth—molar tooth and second bicuspid—were completely devitalized by engorgement of the antrum with pus. The bone was broken away in this case.

Dr. Betty: But it proceeded so far as to slough off the soft parts?

Dr. Fletcher: Yes.

Dr. Betty: And thence the devitalization of the tooth pulp as a consequence?

Dr. Fletcher: Yes.

Dr. Betty: That is the point I wanted to get at. I want to say, Dr. Fletcher, in all the papers on examination of crania, or examination of the jaws in the dessicated state, that is, the dry state, such as you see—these specimens on the table before you—and even in the tables I have gone over in journals on craniology and anthropology, I have seen no tables relating to the measurements of the antrum, or any of the sinuses, nor have I seen this especial point that you make relating to those protuberances or elevations on the floor of the antrum to accommodate the apices of the encroaching teeth; so that Dr. Fletcher, so far as I know, is the first one to have made a series of examinations of that kind. Hereafter we will see that it is also included, and furthermore, I would like to say that Dr. Fletcher's work brings him very closely to us, a statement that he makes in the paper somewhere, he asks the question, "who derives the benefit from these examinations?" "Who derives the greatest benefit from these investigations? Undoubtedly the one doing the work." Those who have done no work of this kind at all can have no adequate conception of the amount of time and trouble and worry there is, in order to gather together any data or statistics, no matter how small, in order to either confirm or disprove any particular point that may be mooted or called in question; for instance, as this one is here brought out in this discussion. Dr. Fletcher, as I stated, makes a statement that 4 per cent of cases of perforation of the antrum by the apices of the roots are accompanied by certain peculiarities;

neither Dr. Cravens nor myself having made any similar examination are not prepared to either accept or controvert this statement. This indicates the necessity for each of us to undertake particular lines of original research in order that we may bring something of value to these and similar discussions. I say this, not especially with reference to this particular examination, or to show that the facial index of a race of people proves a certain intellectual capacity, but that such investigations afford some tangible results always, something that the reason can take hold of, data for analysis and comparison.

Furthermore, any such statements as made by Dr. Fletcher, when founded upon a series of investigations, must necessarily carry a weight of conviction owing to their positive nature as evidence collected in that manner, and brought before us so graphically that you cannot help being interested in further pursuing the subject. We are all benefitted by such studies, and the more so when they do not seem in line with previous experiences. If they substantiate former theories, well and good; but we are benefitted in any event. The one that first promulgates the theory will be benefitted; he makes the examinations, and his mind is thereby broadened and enriched; then he gives to us his 4 per cent conclusion; we are then 4 per cent in advance of previous thought in that direction.

Another point that Dr. Fletcher gave me this morning; or, possibly, I pointed it out to him; I have forgotten which; and that is, in making these investigations he was absolutely astonished, and so I admit was I myself, to find out how really little I actually knew of the anatomy and structure of the jaws, a portion of the human anatomy around and with which we are busy every day! We wondered that we knew so little as to the structure of the teeth, and how they are set in the jaw. You may use diagrams of crania and photographs and other means of graphically describing those parts; but they convey no idea at all comparable with the study of the actual specimen itself. You take up a skull and examine the mouth. Here in this specimen, all you see is this portion of the dental arch, three or four straggling teeth, and ten, fifteen or twenty holes in this arch; that is, apparently, all there

is in view; yet when you come to analyze it, and consider its anatomy, and having learned its anatomy try to get some idea of its physiology, and after accomplishing that, in some measure try to get a further idea as to its pathology, you will find that the subject grows upon you to such a degree that it is almost appalling. And in a vast museum there is not only that one specimen, but miles, apparently, of shelves, rows upon rows, and you want to give up almost before you begin.

There is one other point in the paper that I would like to emphasize rather more than I have done. I want to ask this question for the benefit of myself, and, of course, through me for the benefit of others. "There are important features to be observed, however, which I have not yet seen published; one, for instance, is that the dental follicles holding the crowns of the superior molar teeth, in normal shaped antra, are usually formed at the expense of that cavity; each follicle being covered with a dome of bone, which protrudes into the floor of the antrum, while the teeth are being formed and pushed into the mouth. This dome flattens out and entirely disappears by the time the teeth are completed, excepting in rare cases. It seems a perfectly natural result when we remember that the alveolar process is one formed for the eruption of teeth, and its position being entirely governed by the position and aspect of the teeth. There is, then, no other space where the crowns can find space enough for their development but the one mentioned, at the expense of the antrum." I would like now to add to this, that we will have very likely to take the skull in *utero*, before there is any crown to the tooth, and before there has been any deposit at all in the *cul de sac*, or dental follicle in which the teeth begin, or germinate, before there has been any ossific deposit at all. That time must be along very early in fœtal life, because as early as the tenth week of intra-uterine life, the germ of the first molar of the permanent set of teeth makes its appearance. We will go along then until the seventh or eighth month; we will then have the bony structure of the cranium; I think there are sections made of that; it will be found in Flint's text-book on physiology, published some eight or ten years ago; there must, then, be a contour of the face, more

or less definite, and underlying that of course under the cheeks, under the malar portion, is the projection of the malar process, of the anterior aspect of the malar process, and the superior maxillary that forms the outer and interior wall of the antrum. Now, then, Dr. Fletcher maintains that the teeth are formed at the expense of the conformation of the antrum, because the teeth are formed before three years of age, and in what we know and denominate as the alveolar process; and I can say, according to your definition, Dr. Fletcher, if I understand correctly, that the crown will appear somewhere between the floor of the antrum, between that and an imaginary line showing what will be the alveolar process of the future, when it is formed, as it will be, in the adult skull. Now, the particular bearing that I wanted to ask Dr. Fletcher, of this question, is why Dr. Mummery (?), in his examinations—and Dr. Talbot more recently—lays great stress, very great stress, upon the lateral measurements of the jaw being made opposite the first molar of the permanent set of teeth? Can you answer that?

Dr. Fletcher: I cannot.

Dr. Betty: I don't think Dr. Talbot can answer it, either. He gave me no adequate reply when I put the question to him in this society. If, as Dr. Fletcher states, a portion of the teeth are formed at the expense of a portion of the territory occupied by this cavity, the alveolar process must be formed subsequently to that, and—in other words, as a growth from the inferior process from both antra and on both sides; is it not so?—equally in harmony or in unison with the projection of the alveolar arch from the palatine process of the superior maxillary, and that is before fusion takes place between the two; because, if I am correctly imformed, the union between the two superior maxillaries does not take place until, I think, after the condyles of the femur have become ossified, and a bona fide part of the thigh bone; I think that occurs about the thirtieth or thirty-fifth year, does it not?

Dr. Fletcher: I do not know.

Dr. Betty: The formation of the face, contour of the features, as regards the upper two-thirds of the face, from the eyebrow down to the lower portion—this portion of the face (illus-

trating by gesture)—the anterior and outer aspect of the bony wall of the antrum enters as an artistic element in the configuration of the features, and also is a racial distinction between the different varieties or races and families of mankind. Now, Dr. Talbot, in his measurements has followed Dr. Mummery in making the lateral measurements of both jaws, upper and lower, from a point being the middle of the outer surface of the first molar teeth, so as to get the widest diameter. His only reasons for making this measurement is, that the first molar of the permanent set erupts entirely free and independent of any lesion whatever, of any dentition whatsoever, either first or second, independent of the first dentition, because it comes in and straightens clear posteriorly to the second molar of the deciduous set, and also precedes, necessarily, the second and third molars of the permanent set. Now, I have found that the second molars are just as free and independent in their eruption as the first one is; not so with the third molar, I would say that it is not so uniformly situated in the lower jaw, owing to the angle.

Now, then, Dr. Fletcher, if you will be kind enough to answer that question I will be obliged. (Applause.)

Dr. Fletcher: I am not sure that I understand the particular feature referred to.

Dr. Betty: That it is at the expense of the antrum, and has nothing to do with the subsequent formation of the alveolar process—that the formation taking place in the arch is at the expense of the territory usually occupied in that portion of the face, by both maxillary sinuses.

Dr. Fletcher: It seems the most natural result to me that this should be the place, as stated in the paper, for the formation of those crowns. As to the value of this place for measurements, it seems to me that variation can only be the rule, for various influences may cause the crowns to stand in or out of the arch; the anatomy of the parts is such that they can only form in the antrum and by the time the roots are formed, and the crowns be pushed into the mouth, the crowns may be pointed in almost any direction. According to our present nomenclature we only know the alveolar process as a bone which surrounds the teeth. In my examinations

I was struck with this, in examining the skull of a child, finding the second molar with a dome. Then I went back over some examinations I had made, remembering I had seen several skulls of young subjects; after that I conducted my observations having in view as well that particular feature. The formation of the teeth, as I say, determines the position of the alveolar process and determines to a great degree the width of the arch. If the bone is already formed, or is of such density and unyielding character that the teeth cannot take their normal places you have irregular teeth, as we well know. It is my opinion based on my observations, that we have no antrum in a child of six of any size, because the space is taken up by the dental follicles of the coming teeth. Taking out those follicles and clearing out the spaces that they occupied would in my opinion probably make the antrum perfectly conform to the contour of the face at that age; and the presence of the teeth in that locality as the crowns become developed and assume their normal size necessitates the widening of the face, and more space for their subsequent places, and in that way you have a broadening arch; the bones will all give to pressure; even down to old age, they will conform to a certain amount of continuous pressure; and this being the fact, as I understand it, gives an explanation of how the teeth do what I have suggested: that they not only broaden the arch, but they produce the bone, or the bone is produced to cover the places where they may find spaces to come through into the mouth.

Dr. Sage: I don't know whether there is any special significance in the statement of the paper, as quoted by Dr. Betty, that the alveolar process forms only after the eruption of the teeth, and I am not sure that my controverting the statement would be of any special significance in this connection. I am inclined, however, to call in question the statement that the alveolar process is formed only after the eruption of the teeth; according to my reading, in dentition the alveolar process forms coincident with the development of the teeth, and continuous with the eruption of the teeth, is absorbed and again forms and is again absorbed; and until its final form is absorbed no less than three times before the process of dentition is complete; that is my understanding of

the matter. And finally, the alveolus of the permanent teeth forms, as Dr. Fletcher stated, regularly and coincidently with the eruption of the teeth, assuming the position to which the tooth in its eruption serves as a guide. I don't know whether there is any significance in Dr. Betty's statement or not. I offer this statement now merely to correct any misapprehensions.

Dr. Wright: Mr. President: if you found yourself appointed to discuss the question of "what a dentist saw in examining five hundred crania," without having any knowledge of what this dentist's peculiarities were, would you not think that much would be left to your imagination? Therefore I began to guess. At first I thought, is it possible that Dr. Fletcher is sentimentally philosophical? Has he taken those skulls in his hands and said, with Hamlet, "Alas! Poor Yorick! I knew him, Horatio"—(applause), or, is he more romantic and dramatic, and with Salvini, will he exclaim, "Oh, it is so good to be a skull—a numbskull!" (Laughter) These were two of my guesses. I did not know whether Dr. Fletcher was an anthropologist, or was interested in any special branch of the subject of anthropology, or was an ethnologist; I did not know whether he was a simple anatomist; and so I was surprised completely, when I got a little paper the other day—night before last—when I was away from my encyclopedia, and away from my books, and could not "post" on the subject—a subject which I did not know anything more about than does Doctor Cravens. (Laughter.) But there were two points in this paper that struck me, as they have Dr. Betty and Dr. Sage, and so I took notes vigorously on the paper, quoting: "There are important features to be observed, however, which I have not yet seen published. One, for instance, is that the dental follicles hold the crowns of the superior molar teeth, in normally shaped antra, are usually formed at the expense of that cavity, each follicle being covered with a dome of bone which protrudes into the floor of the antrum, while the tooth is being formed and pushed into the mouth; this dome flattens out and entirely disappears by the time the tooth is completed, excepting in rare cases." I want to ask whether this is a recognized fact; and if not, whether Dr. Fletcher can bring sufficient proof for

his statement, as he claims it has not been published before? Dr. Fletcher speaks of only five in a thousand antra showing the tuberosities or bony tubercles corresponding to the apices of the sockets of teeth. Without my authorities I am not certain about it, but I think many of those present, Drs. Smith, Callahan and others, are under the impression, with myself, that dental anatomists have recognized that the tubercles corresponding to the teeth sockets are only exceptionally shown, and that it is not the rule. Another point: in relation to the position or relation of the roots of teeth and the floor of the antrum. Is it not clinically shown, in surgical operations (and that is the way we know most about it at present, as surgeons) that the antra can be frequently *easily entered* through the socket of an extracted first superior molar; and that even the second bicuspid socket does, in some cases, form an easy entrance into the antrum? Those are the two points that I have noticed.

I agree fully with the author that correct anatomical descriptions of these particular points, "based on a series of examinations," should come from the dental as well as from the general anatomist; and I wish to compliment Dr. Fletcher on the part he has taken in this work. At the same time I think as careful scientific men, we should demand more explicit proofs of the positions taken by the Doctor, before we dare to quote him as an authority. We want more exact data. We want to have diagrams and measurements. The facts are to be had—if not in the Smithsonian Institute, then somewhere else—for crania exist; but we must demand accurate statements of methods of examination, methods of measurement, methods of arriving at percentages, before we can be satisfied on either of these points.

Now, as the question has been raised by Dr. Fletcher. Craniology is a science that has occupied the attention of many earnest students of ethnology in many countries; and France, England and Germany have contributed an infinite number of measurements and studies in this line—the study of the races of men. My attention was first directed to this study of ethnology in 1876 by a work by Oscar Peschel, and at that time I began to appreciate the difficulties of the study, first in regard to the

especial point of the differences in races—the skulls either long or broad, the facial angle acute or obtuse, the length of other bones, the proportions of upper and lower limbs, the hair, etc. etc., as distinctive features of race; the influence of habit and heredity on the infinite variations in these proportions. During the Civil War in the United States measurements in regard to the dimensions of the body extended to 1,104,841 men. How many tables of cranial measurements have we today to which to refer! Why, there are over one hundred and forty measurements now employed on each skull by anthropologists and ethnologists.

I wish Dr. Fletchor would pursue some first-class regular method of measurement of this one region of the cranial anatomy, as a dental anatomist, and give to the world *facts* that would make his name and his city (and his friends) famous among scientific fact hunters. There are two kinds of scientific workers: 1st. The fact hunter, who gropes away as patiently as anybody can, in his laboratory under ground, everywhere under the broad heavens, to gather facts! 2d. Those who draw conclusions from facts thus so patiently ascertained.

A fact is a glorious thing to present to the world, to leave as a legacy. Think of what it means in this age of speculation and hasty deduction from flimsy falsehoods, in medicine and in dentistry and in general science!

In regard to the other observations of the author in his examinations of skulls, they are, as he well says, of intense interest and advantage to him who makes the examinations. I have enjoyed that pleasure in various places, in some old churches on the Continent, about Switzerland, in Alpnack, in Olton, at the convent of Mariastein, and where the skulls from neighboring battlefields have been gathered and placed on shelves, row after row, to the number of hundreds and thousands, in the vaults under those old churches. I observed these, as Dr. Fletcher has his five hundred, and have read in the lesions of these osseous histories, the aches and pains of the original possessors of the ghastly death's heads. But these were not scientific observations on my part. They were made for my own pleasure as a dilettante, and not as a fact hunter; and I have never felt called upon to

offer any remarks, written or spoken, on the results, except in private conversation. I felt that I should have had a definite object, and should have pursued that object eagerly and earnestly, as Goethe did in his search after the mid-jaw in man. How many hundreds of skulls he must have hastily glanced at in searching for this one little point? And he found it, and was happy, for a great problem in anthropology was solved by its discovery. Ruskin says, "The more I think of it, I find this conclusion more impressed upon me, that the greatest thing a human soul ever does in this world is to see something, and tell what it sees in a plain way."

Dr. Smith: Some ten years ago I found in our dissecting room an inferior maxilliary that presented this peculiarity; it seemed as though the third molar had penetrated the inferior dental canal. I took the specimen to Chicago, and had it with me at the American Dental Association, and showed it to Prof. Atkinson, and called attention to the fact that I thought it seemed as though the root of the third molar had penetrated the inferior dental canal in its development. He looked at it, and was very cautious about expressing an opinion; did not say very much. He then said, "you ought to be very sure when you make an assertion of that kind. I doubt very much the entire absence of bone." If the position taken by Dr. Fletcher is true it may account for certain lesions—phases of facial neuralgia. I doubt it very much. It has set me to thinking, this question coming up since I have heard the paper read; I doubt very much if the root of a tooth ever penetrates the antrum. You must have a thin covering of bone, as Dr. Atkinson intimated. The bone of the antrum is proliferated by its own periosteum, and does not depend on any tissue of the teeth at all. If you take those skulls and examine the roots you assume that the roots never had a covering of bone, but they may have had, even though it was as thin as paper. If you examine those skulls where it is denuded the bone is so thin that in the dry state it falls away, and that is all there is about it. An observation made on a dry skull is nothing. We ought to be very cautious, as Dr. Atkinson said. We should be very slow to assume. If it is true that those roots

will penetrate the antrum it will account for a great many of those cases of facial neuralgia, and we ought to know it.

Dr. Sage: Since Dr. Smith has spoken it occurs to me to say one word more. I was not aware at the time, yesterday, that I was committing the grave offense of talking forty minutes. You should have called me down. I think it is Jno. Tomes who speaks of the close approximation of the roots of the first permanent molar to the inferior dental canal as frequently accounting for those obscure cases of neuralgia which arise. I think it is Richardson, also, who cites an instance of the perforation of the walls of the floor of the antrum, in which he found a root, a cuspid had penetrated the anterior wall of the antrum.

Dr. Smith: In the normal condition, if the root is exposed, it will account for these lesions; I assume that has not been proven, and is hardly physiological.

Dr. Fletcher: In regard to this point that has been largely discussed, I cannot go through all that has been said. It seems to me perfectly natural that we may have the apices of these teeth denuded of everything but soft tissue, from the fact that on the roots of those teeth we have the pericementum and the mucous membrane covering it. You have in that exactly what bone has—it is covered with periosteum. This periosteum, if I know the anatomy and physiology of other parts of the body, in that particular position may be continuous over the floor of the antrum into the socket of the tooth and over the apices of these teeth. My examinations led me to believe that in a normal condition those teeth were covered with nothing but soft tissues. They could not be denuded entirely of everything but the mucous membrane—I should have qualified that by saying soft tissues—which includes peridental membrane, and over that the mucous membrane on the floor of the antrum. So that it seems to me a perfectly natural condition to find there, normally.

Dr. Smith: Without previous disease of the antrum? I mean any character of lesion?

Dr. Fletcher: Yes. In the examination of the crania you may see that bone had not been broken away. If you will take the pains to examine them closely, those two I showed you in

which the apices of those teeth perforated directly through the flat floor of the antrum you will find no more space than sufficient to accommodate the peridental membrane, that is the space that it usually occupies. In examining them closely you will find that it has not the appearance of broken bone. It seems to be a perfectly normal condition; consequently, I reason as I do about it.

DR. SMITH: I will ask you a question: If that is the normal condition why do we have those upheavals over the ends of the roots?

DR. FLETCHER: That is a question I don't think anybody can answer. Why are some men bow-legged? You may say it is rickets, or anything else.

DR. SMITH: I would hold, then, one is the normal condition and the other is not. Why should the one be covered and in the other be denuded entirely?

DR. FLETCHER: Why, I could not say. I used the word normal; I should say physiological; there can be no question, then, about it.

Through personal illness and illness in my family I could not get at this paper in time to give it to the gentlemen appointed to discuss it sooner; so I wish to apologize to them for the delay. However, I feel very grateful and highly complimented in what has been said. One or two points, I think, Dr. Cravens spoke of in regard to selected cases. I don't see the Doctor here now; but if he will go with me to the Army Medical Museum and attempt to select special skulls out of 3,000 cases in a limited time, I know he will agree with me that it would take longer to select than to take them as they came. In fact such selection would take longer than the examination. The examination I will say (since that has been hinted at, seriously or otherwise), was seriatim, as they came in the cases, each one numbered by a private number, and also by the museum number. I can give the No. of every skull I examined; and you can go and see them for yourselves. I wish some of you would do so, gentlemen.

In regard to the matter of establishing facts, I can say, nothing would please me better than to have confreres associated in this work. I expect to continue it as time and opportunity favor,

and should be glad to be shown mistakes. I have a mania for looking after facts, and am one of those fellows that Dr. Wright spoke of. The paper has been written with the object of bringing the subject before the profession, and if possible to stimulate enough persons to go at this work to get the statistics necessary, spoken of by Dr. Wright. There is no reason why we should not do it, and a great many reasons why we should do it.

PRESIDENT: I suppose we may regard the discussion as closed for the present.

On motion, bills in the hands of Dr. Callahan, amounting to $46.85 were ordered paid by the Association.

DR. CALLAHAN: I hold in my hand a card of regret from Dr. John S. Marshall. I would also remind you that as yet no provision has been made for election of officers for the ensuing year.

PRESIDENT: The subject next to be presented is a demonstration of Electric Oven and Appliances for accurately determining the heat, by Dr. L. E. Custer, of Dayton, O.

DR. CUSTER thereupon proceeded with the demonstration, but as the exhibition would be unintelligible here without proper illustrations and figures, the stenographer made no attempt to report the same. The exhibition of the oven was very interesting to all present.

The Committee on Membership, Drs. Emminger and Welch, reported favorably the names of Drs. J. A. Stein, of Ripley, O.; F. M. McCarthy, of Shelbyville, Ind.; and W. B. Chambers, of Newark, O., as candidates for membership. On motion, the rules were suspended, and the names reported were accepted as members, and announcement made by the Secretary.

The Committee reported the following as delegates appointed to attend the American Dental Association meeting, to be held on the first Tuesday of August next, at Asbury Park, N. J. viz: Drs. J. E. Cravens, A. P. Bollinger, H. C. Matlack, W. S. Locke, Frank Sage, W. B. Chambers, W. D. Phillips, Sarah S. Harris, Jessie Dillon and Viola Swift.

PRESIDENT announced that the next order of business was the election of officers for the ensuing year.

On motion of Dr. Mollyneaux, the rules were suspended and Dr. Wm. V. B. Ames, of Chicago, was unanimously elected to serve as President of the Mississippi Valley Association of Dental Surgeons for the years 1895-6. The Secretary was instructed to cast the ballot accordingly, which being done was formally announced by Dr. Taft, in the Chair.

The remaining offices were then separately filled by the same process and the results in each case formally announced by the Chair, as follows: First Vice-President, Dr. J. E. Cravens, Indianapolis; Second Vice-President, Dr. H. C. Matlack, Cincinnati; Treasurer, Dr. F. A. Hunter, Cincinnati; Corresponding Secretary, Dr. W. S. Locke, Cincinnati; Recording Secretary, Dr. H. T. Smith, Cincinnati.

THE CHAIR: What other officers are elective, Dr. Callahan?

DR. CALLAHAN: I think that is all. The Executive Committee will be appointed by the President.

THE SECRETARY: There is usually a committee appointed on publication of the proceedings of the session.

THE CHAIR: Have you all the papers?

THE SECRETARY: The stenographer and I have all of them.

DR. CALLAHAN: Then, I presume, the committee to be appointed on publication will take charge of all the papers and the stenographer's report of this meeting.

DR. TAFT: I presume so. I will appoint Drs. C. M. Wright and Frank A. Hunter as a committee to conduct the newly-elected presiding officer to the Chair.

The committee thereupon escorted the newly-elected President to the rostrum, where he was received by Ex-President Taft and introduced by Dr. Hunter as follows:

DR. HUNTER: It affords me pleasure to present to you the "heir apparent," although we see he has no hair apparent.

PRESIDENT AMES: You would naturally expect me to be "covered with confusion." I thank you very much for the honor you have conferred upon me; all I can say is, that the only regret that I feel at the present moment, and which I experience from day to day is, that life is too short for each and every one of us to look forward to meeting with this Association for the

next fifty years of its history. I hope to be an attendant for very many years to come, and that the next session can be made somewhere nearly as great a success as the present one. Thanking you again for the honor conferred, I will give my best effort.

Dr. J. Taft: Mr. President and gentlemen: I feel that I cannot take a seat without expressing to you my very great gratitude indeed, for the success of this meeting. I hear from every one nothing but satisfaction for the manner in which this work has been done, yesterday and to-day; and for this you are very largely, indeed almost wholly, indebted to the Executive Committee, who have been untiring in their perseverance to secure the success of this meeting; and it is due to them that we have had such a pleasurable time during these two days.

Personally I must express to you my warmest and sincere thanks for the manner in which you have carried this work through, and for the way in which I have been sustained, in guiding your proceedings—although, so far as guidance was necessary it seemed to go of itself, without much guidance. But I wish to express to you my sincere thanks for your support and co-operation during the two days past.

On motion of Dr. C. M. Wright, a vote of thanks was extended by the Association to the retiring President, and officers of the Society for the able work during the session, and before the session, in affording the members the pleasure of this meeting when last year the prospects looked so dark.

On motion of Dr. Mollyneaux, a vote of thanks of the Association was extended to Dr. George Evans, of New York City, for coming to Cincinnati and delivering his interesting talk before the Association this morning.

Dr. J. Taft: I would suggest that a similar vote of thanks be passed in acknowledgment of the services of Dr. L. E. Custer, of Dayton, in connection with his demonstration of and improvements upon the electric oven.

The Chair stated the motion, after second.

Dr. Harlan, of Chicago: I think the expression toward Dr. Custer ought to be stronger than that. I think that Dr. Custer has done something for the dental profession which is

deserving of a carefully-worded and well-written resolution, testifying our appreciation of his talents in this direction, and his generous intentions toward the Association, in presenting us freely and fully the fruits of his inventive genius in connection with the electric oven. I hope the Executive Committee, or some proper authority, will present it in that way. This is one of the bright stars in the galaxy of 1894, the discovery of the method of baking porcelain by electricity; it is not inferior in any way to other great discoveries in electricity by men that are known the world over. (Applause.)

DR. MOLLYNEAUX: I move to amend to the effect that Dr. Taft write a suitable testimonial to Dr. Custer.

The amendment being accepted, the Chair put the question and the same carried by a unanimous vote.

The Chair appointed as a committee on publication, Messrs. Drs. H. T. Smith, J. Taft and E. G. Betty.

President Ames announced that he would appoint as Executive Committee, Drs. J. R. Callahan, M. H. Fletcher and L. E. Custer, to succeeed themselves. (Applause.)

DR. CALLAHAN: I am asking for an opportunity—

DR. CRAVENS: I object. Nothing before the house.

DR. CALLAHAN: I would simply state that I would have positively refused any appointment of that kind, except from my friend from Chicago, whom I have a great desire to serve and will do the best I can. (Applause.)

DR. J. TAFT: In reference to the general meeting of all the societies of Ohio, Indiana and Michigan, to be held at Detroit in June, a cordial invitation is extended to all members to be present at that time; probably some of those present are not members of the State Society; but it is earnestly requested by the committee having the matter in charge that all persons connected with the societies of the three States, and other members of the profession as well, even though outside of the three States named, be invited to be present on that occasion, as guests. I may say that the profession in Michigan has decided to have all attending from outside of Michigan there as their guests. They have provided a liberal entertainment, and expect to have a grand occasion at

that time; and the Ohio and Indiana, and all attending invited guests outside of those States, are to be the guests of Michigan; they are to provide all entertainment and pay all bills, so far as the entertainment is concerned. (Applause.) I feel warranted in extending a hearty invitation to all the members of this body to bring your wives, sweethearts, sisters and cousins, who wish to be present on that occasion; they want to make it an especially enjoyable occasion, and a good program is provided and the useful features will be very marked. They have provided a steamer which will go up the Detroit river to St. Clair flats, and they will have an excursion that will occupy a whole afternoon and evening; so there is no doubt but you will all have a good time. The social amenities will be a feature of the occasion. Michigan is anxious to have a large representation of the profession from this and neighboring States. (Applause.)

The list of delegates to the American Dental Association, as previously reported by the committee, was read and the action of the committee on motion confirmed, with the understanding that if others wished to go in that capacity they would be accepted up to the limit of the quota allowable from this Association.

On motion of Dr. J. Taft, the matter of time for the next meeting of the Association was referred to the Executive Committee with power to act, including the officers of the Association.

Dr. J. Taft: It has now been demonstrated that the time for the dissolution of this society has not come; but that it is fit to live a while longer. In view of the fact that we have had so successful a meeting I trust that every member will consider himself and herself a committee of one to see that the next annual meeting is not inferior to this. I must say that I have never seen a more interesting meeting or one into which more profitable work was crowded in two days than that of yesterday and to-day, never in any meeting that I have attended. We have no politics in this meeting and very little of unnecessary routine; just a few little matters in order to keep the machinery oiled for smooth running, in the way of miscellaneous business.

I trust that next year we will come with a determination to make the session of the Mississippi Valley Association equal to

this in interest and as much better as possible. Let us all bear this in mind and do what we can to make the next annual meeting an eminent success.

Dr. Mollyneaux: I want to make a motion that somebody be appointed to get Dr. Callahan mad! Last year he tried to kill the Society because they sat down on him so hard, and this year it went the other direction. If somebody can get his dander up we will have a good meeting next year.

Dr. Callahan: If I remember rightly, Dr. Callahan did no such thing as that.

Dr. Wright: With all due modesty, I claim all the credit for this success this time.

On motion, adjourned to meet in Cincinnati, at a future date to be announced by the Executive Committee.

Monthly Digest.

SOME PRINCIPLES RELATING TO AMALGAMS.

Reported for the Dental Register by Mrs. J. M. Walker.

In a paper bearing this title, read before the New York Odontological Society,* Dr. E. C. Kirk, noting the marked improvement in the character of amalgam alloys, which, as "everywhere now attainable," "fulfill their function as savers of teeth, under certain conditions, in a manner unapproached by any other material"—finds that this improvement has been largely the outgrowth of the empirical method of study—an investigation addressed principally to the ingredients of the amalgam alloy, and the modifications which these ingredients, in kind, number and amount, exert upon the physical and chemical properties of the resulting amalgam.

Studying the point from a scientific standpoint, Dr. Kirk reaches the conclusion that the amalgam alloys are true chemical compounds, the property of setting or hardening from a plastic mass, the elevation of temperature during this formation, changes in the volume of the mass in setting, all indicating a chemical

* International Dental Journal, April, 1895.

union of some portion of the constituent elements of the amalgam. He concludes that the best results should be attainable in an amalgam the constituents of which are chemically united in atomic ratios; all the affinities in such an amalgam being satisfied, there is no liability of further physical or chemical change. To determine the exact precentage amounts required to effect a combination in atomic ratios, when several metals are used as constituents of an amalgam, is an exceedingly complex problem. The same result is practically attained, however, as pointed out by Dr. Kirk, by utilizing the selective affinity of mercury, supplying sufficient mercury to allow complete solution of the fillings, forming a mass of a soft buttery consistency, which, when rubbed between the fingers shows no trace of solid particles, the elements of the alloy being dissolved in the menstruum. When crystallization has taken place, the excess of mercury (and of uncombined alloy) is gotten rid of by straining through chamois skin by compression with heavy pliers until the mass is left in suitable working condition. With an amalgam thus prepared, the filling should be built to more than full contour and the excess of mercury removed by pressure and absorbing with crystal or sponge gold, pellets of which are rubbed into close contact with the amalgam surface, as long as any whitening of the gold takes place. The filling should then be carefully burnished, and in a very short time given the final polish. Dr. Kirk reviewed the various methods advocated for removing the excess of mercury, and gives the preference to gold, used as described, because of its superior affinity for mercury.

In the discussion, in reply to questions, Dr. Kirk states that he does not leave any of the gold in or on the filling, as this would form a gold amalgam, which is lacking in the qualities for a good filling, and especially is not sufficiently hard for a masticating surface. Dr. Kirk further states in the discussion, that the mercury which is squeezed out through the chamois carries with it portions of the other metals, which being uncombined want to be gotten rid of, so that only that which is in chemical combination shall be utilized.

Dr. Bogue suggested that it is the excess of mercury that

causes the discoloration of amalgam fillings, and cited the case of two fillings of the same mix put in the same mouth at the same sitting. If one has the mercury removed by pressure and absorption with gold, and the other be allowed to set without this treatment, the first filling will be hard and firm and white and accurately adapted to the walls, while the other will discolor and be granular, with a tendency to curl up at the edges.

Dr. Kirk thinks the result is due, not to the mercury *per se*, but to the mercury *plus* what it holds dissolved in it. The same fillings mixed with the expressed mercury will not give a combination at all like the original mixture.

Dr. Bogue considers amalgam a material, which, put in with matrices, malleted to press the mercury to the surface and then having the mercury taken off with gold, are good things to contour with, having a surface whiter "than a discolored tooth," which will set before the patient leaves the chair, and which will stay white if the materials are right.

Dr. S. G. Perry uses amalgam as described and has "never found anything else that will compare with it." The crystal gold does not adhere, and cannot easily be made to do so, but it does take away the excess of mercury and he is "willing to pay the extra cost of the gold in that form to be able to take away the excess of mercury in such a quick and satisfactory mannner."

It leaves the filling so hard that if there is such a thing as the "spheroidal tendency" spoken of, it has no opportunity to show itself.

Dr. Henry Burchard agrees with Dr. Kirk that the solution of metals in mercury and subsequent crystallization is a chemical process, and that unless the solvent be present in sufficient amount to insure perfect solution the resulting filling is "an indefinite mass in which we cannot accurately determine the effects of action and interaction."

Dr. Geo. S. Allan wished to thank Dr. Kirk for bringing out so strongly the fact that it is right and according to chemical laws, to prepare the amalgam so that there may be an excess of mercury, the squeezing out of which carries with it a certain amount of alloy that would be injurious. The mercury unites

with definite amounts of alloy to form definite compounds any excess whether mercury or alloy remains only as an adulteration.

AMALGAM—ITS USE FROM A PRACTICAL STANDPOINT.

Dr. W. E. Halsey, in a paper bearing the above title, read before the Second District Dental Society, New York,* considers the practical value of a knowledge of the metals entering into the composition of the dental alloys, and their relative proportions in giving an understanding of why one amalgam is superior to another in the most desirable attributes; how to secure the special feature most needed; how to rectify defects, etc.

With such knowledge, properly applied, there would be less abuse and misuse of amalgam.

He describes in detail two typical cases illustrating the misuse and the proper use of amalgam, and the combination of zinc-phosphate and amalgam; also to the combined use in a filling of gutta-percha, zinc-phosphate and amalgam—the first as pulp protector, the second as cavity lining and protection of frail enamel walls, with submarine amalgam to guard against recurrence of decay at the cervical margin, and contour amalgam for edge strength, resistance to attrition from mastication.

By such a combination filling, the pulp is protected from outside influences, weak walls are strengthened and color maintained, recurrence of decay is guarded against by a coppered amalgam at the cervical wall, and lost contour is restored—thus fullfilling the mission of a filling, in tooth salvation.

In the discussion Dr. Van Waert endorses the use of oxyphosphate under amalgam, to secure durability and good color.

Dr. V. H. Jackson mixes amalgam with only enough plasticity to work easily without crumbling, inserts it quickly and burnishes, in from four to ten minutes.

Dr. J. P. Geran thinks that most of the failures in gold filling are due to faulty manipulation and that faulty manipulation is due to the fact that students are not taught to manipulate gold as they were before amalgam came into use. That the introduc-

* Cosmos, April, 1895.

tion of amalgam, cement and gutta-percha, as filling materials, has done much to degrade dentistry.

Amalgam is easier to use than gold, but we should not shirk our duty to our patients because of the draft upon our energies.

The consideration should be what is best for the patient not what is easiest for us.

Dr. Halsey closing the discussion said that while he took pride in his gold work, his first consideration was, what material would best preserve the teeth, as they present, and that many teeth can be saved with plastic that cannot be saved with gold.

SELECTIONS.

Pental.

Mr. T. E. Constant read, a paper at the Odontological Society recently on "The Production of General Anæsthesia for Dental Operations by Means of Pental." He remarked that pental is a new drug only as regards its name and method of preparation; it is, in fact, the amylene of Snow. The manufacturer, C. A. F. Kahlbaum, of Berlin, claims for it a definite and unvarying chemical composition and freedom from all impurities. Pental, or isoamylene, $(CH_3)_2C.CH.CH_3$, is a colorless liquid of low specific gravity, having a constant boiling-point of 38° C. It is obtained from amylene hydrate by heating with acids. It is insoluable in water, but mixes with chloroform, ether, and alcohol. It is extremely volatile and inflammable. It has a peculiar and somewhat disagreeable odor, but is so little irritating that the pure vapor can be inhaled without the slightest discomfort. In his early experiments, Mr. Constant endeavored to induce anæsthesia by the open method,—that is, by pouring the drug upon a piece of lint lying in a cone-shaped holder; but this he found unsatisfactory owing to the waste of time and the quantity used. Subsequently he devised an apparatus somewhat on the principle of the Ormesby inhaler. In the majority of the

cases the following phenomena were noticed: Almost immediately the pental was inhaled there were slight flushing of the face and quickening of the pulse, the increasing frequency being unaccompanied by any diminution of force. Respiration, if quiet at the commencement of the inhalation, became deep and rapid when the handle of the inhaler was turned full on, but became quieter when it was turned off. The eyes, if closed, opened as the patient became anæsthetized, and had a fixed and staring look. The conjunctiva reflex was rarely lost, although in some cases it was absent after four or five inspirations. In a few instances there was profuse perspiration after thirty seconds. The duration of anæsthesia produced was on the average of one and a half minutes, but varied greatly with the patient and with the character of the respiration, never having been less than a minute or more than three; there was no muscular relaxation. Occasisnally the patient's eyes would follow the movements of the operator; otherwise the patient remained quite still. In about five of the one hundred and forty cases the patients declared they were perfectly concious throughout, but felt no pain and had no desire to move. There were no after-effects immediate or remote, in any one case where it was administered in this way. However, he had cases where dangerous symptoms arose, and recently three fatal cases had been reported.

In conclusion, Mr. Constant said that whatever may be the safety of pental as compared with chloroform, there can be no doubt that it is more dangerous than nitrous oxide, and the last-named agent should invaraiably be chosen for breif operations. Nevertheless, he was of opinion that those of the medical profession who are in the habit of administering chloroform for operations where nitrous oxide, or nitrous oxide and ether, conld be used equally well should give the preference to pental, because, even if it be no safer than chloroforn (and personally the writer believes it to be far more so), the ease of administration, the certainty of its action, the rapidity of recovery after its use, and the entire absence of after-affects entitle it to a claim upon the consideration of those who deem chloroform a justifiable anæsthetic in dental surgery.—*Lancet*, April 28, 1894.

Formaline as a Preserving and Hardening Fluid for Histological Purposes.

G. Bergonzoli (*Bull. Scientifico*, 1894, No. 1, p. 18) says formaline or formal, in solution, concentrated to 40 per cent. of formaldehyde, is a limpid liquid, slightly opalescent, neutral or slightly acid, of a characteristic pungent odor. The antiseptic properties of formaldehyde have been studied by Loew (1886), Aronson, Berlioz, and Trillat. The author has found from his observation that solutions of formaline are deodorant and disinfectant; that pieces of tissue immersed in it are rapidly fixed and hardened, and only shrink to an almost imperceptible degree. The color is perfectly preserved, only the coloring matter of the blood being dissolved. For nervous tissue it is excellent. Formaline has the advantage over alcohol that it is not inflammable and is much cheaper.—*Rev. Internat. de Biblog. Med.*

The Necessity of a Higher Estimation of Tooth and Mouth Hygiene.

Hr. P. Ritter, at the Society for Inner Medizin, pointed out how the mouth was the starting point and breeding place of germs. Now he had frequently seen workmen and workwomen lose their places on account of want of incisor teeth, or foul breath. Continuous toothache frequently led steady men to the brandy-bottle for the relief of pain. In pregnancy the necessity for attention to the mouth and teeth was especially great, as women at these times so often suffered from tooth and face ache. Probably the cause lay in excessive nausea present leading them to neglect the care of their teeth, so that the secretions became acid and favored caries. Women should be recommended to brush their teeth three times a day after the third month, using some astringent fluid and an alkaline tooth powder, and a moderately hard brush. On the basis of many years' experience, he held the following to be demanded. The appointment of experienced dentists to examine the mouths of all school children at stated intervals, the parents

to be informed of the result of the examination, and left to have the treatment required carried out privately or through institutions. The appointment of dentists for the poor. Delivery of addresses in the Volksschulen on the importance of the masticatory apparatus and the toilet of the mouth. Dissemination of printed instructions on the toilet of the mouth to the whole of the poor population.

After several speakers had addressed the meeting, Professor Miller said he could completely confirm what Hr. Ritter had said as to the influence of the teeth on the whole organism. Every tooth contains a *cavum dentis*, and in this hollow lay the pulp. Through pulpitis arose toothache. The pulp then decomposed and formed an enormous number of foul-smelling masses and toxic substances that, brought under the skins of white mice, even in the smallest quantities, caused violent inflammation and suppuration. The suppuration of the pulp broke both internally and externally. Such abscess cavities never healed, but a suppuration focus permanently remained, and these could give rise to secondary processes. It was not a rarity for abscesses of the teeth to be treated by extraction. The speaker then pointed out the connection between inflammation of the tympanic cavity, and pneumonia and the oral cavity. The fact that there were healthy men with bad teeth was an exception. One frequently met children of twelve who had not a single sound tooth, and to whom every attempt to chew was painful. The roots were purulent, the gums red and inflamed, pus was constantly being formed and swallowed, and naturally the health suffered greatly.

The best means of taking care of the teeth was a brush—all other aids were accessories. The water does not pass between the teeth, but it was in these interspaces that caries began. Few people knew how to use a tooth brush properly. The brush must be small and pressed firmly into the interspaces, in order to cleanse them. Of substances to employ, many were useful, but many did harm. He could not altogether exclude salicylic acid. It was used by thousands and thousands of people, without their teeth being injured by it. Salicylic or other acids were not serviceable for every day use, but their occasional use was of advan-

tage. Whether a remedy did harm or not could not be found out in a reagent glass, but by practice alone. He placed no value on tooth-powder; it kept the teeth white, but as it could not penetrate into the interspaces it could not prevent caries.—*Berlin Cor. Med. Press and Circular.*

Guaiacol.

Among the thereapeutic possibilities of guaiacol, its use upon mucous membranes is important. As an antiseptic it is almost equal to carbolic acid, while pure guaiacol is devoid of the caustic properties of carbolic acid. It can, therefore, be applied undiluted to the mucous membrane of the throat and nose, if not used in excessive quantity. It stings, but the unpleasant sensation soon passes off. It is often curative in tonsillitis; it is a prophylactic of apparent power against diphtheria; it is a useful agent in cases of tuberculous ulceration of the throat; and is one of the best of topical applications in ozena and other nasal affections. In the case of children and others to whom the undiluted drug might possibly prove too severe, it may be diluted one-half or two-thirds with glycerine or any bland menstruum (olive oil, cotton-seed oil, cocoanut oil, liquid petrolatum). To get good results from guaiacol, whether used internally or topically, one must have a pure preparation. Some of the specimens found in the shops are contaminated with impurities possessing more or less caustic quality. —*Philadelphia Polyclinic.*

Deleware has a new medical law. It provides for two boards of examiners, regular and homeopathic medicine being represented, and imposes a fine of $500 or not more than one year's imprisonment for persons convicted of practicing without a license. The law went into effect in July.

The qualified practitioners in Belgium number 2,950, 1 to 2,122; midwives number 2,372, 1 to 2,640.

PROCEEDINGS.

Semi-Centennial Meeting of the Mississippi Valley Dental Association.

FIRST DAY—MORNING SESSION.

The fiftieth annual session of the Mississippi Valley Association of Dental Surgeons convened in Hall E, of the Odd Fellows' Temple, corner of Seventh and Elm Streets, Cincinnati, O., on Wednesday morning, April 17th, at 8 o'clock, with the President Dr. J. Taft, of Cincinnati, in the Chair.

The proceedings of the convention were opened with prayer by Dr. Taft. Minutes of the forty-ninth session were read and approved.

The Treasurer submitted his report, showing a balance in the Treasury of $49.59. Same referred to an Auditing Committee, composed of Drs. C. M. Wright and H. C. Matlack, who, after examining and auditing the same, reported all correct.

On motion of Dr. Callahan, the Executive Committee was authorized to secure the services of Douglas A. Brown, stenographer, to report the proceedings of the convention.

The President named as a committee to draft resolutions of condolence upon the death of Dr. J. J. R. Patrick, of Belleville, Ills., Messrs. Drs. Harlan and Betty.

Dr. George Evans, of New York City, briefly addressed the Convention, and was followed by Drs. Harry Benedict Respinger and Edmund Dubuis, of Geneva, Switzerland. These gentlemen were present by invitation, and remained throughout interested participants in the meetings. These remarks were of a general and congratulatory character, and are not reported at length because of their having been delivered prior to the arrival of the stenographer. President Taft then relinquished the Chair temporarily to First Vice-President Ames, of Chicago.

The President's address being next in order was then delivered, giving some suggestion on various points of interest which will be found on page 214 Register of May.

COMMENCEMENTS.

Detroit College of Medicine—Dental Department.

The second annual commencement exercises of the Department of Dental Surgery of the Detroit College of Medicine were held at the Strassburg Academy, Detroit, Mich., on Monday evening, June 17, 1895.

Addresses were delivered by Professor T. A. McGraw, M.D., J. Ward House, D.D.S., Professor George L. Field, D.D.S., and Professor J. Taft.

The number of matriculates for the session was eighty-one.

The degree of D.D.S. was conferred on the following graduates by Hon. Sidney D. Miller, president of the college:

NAME.	RESIDENCE.	NAME.	RESIDENCE.
H. R. Barclay	Ontario	L. C. Moore	Michigan
A. D. Buchanan	Ontario	E. McDonald	Ontario
T. J. Collins	Ontario	J. W. McQueen	Ontario
W. E. Cowen	Ontario	H. Nesbit	Ontario
J. H. Dunn	Michigan	S. C. Smith	Michigan
M. A. Gardner	Michigan	L. N. Wigle	Ontario
W. G. Heasley	Michigan	G. A. Wilson	Ontario
J. F. Mackenzie	Ontario	C. P. Wood	Michigan
A. J. Monagin	Michigan	F. W. Young	Michigan

University of Minnesota—Dental Department.

The annual commencement exercises of the Dental Department of the University of Minnesota were held, in connection with those of the law, medical and other departments of the university, at the Exposition Building, Minneapolis, Minn., June 6, 1895.

The number of matriculates for the session was seventy-three.

The degree of D.M.D. was conferred on the following graduates by Cyrus Northrup, LL.D., president of the university:

NAME.	RESIDENCE.	NAME.	RESIDENCE.
Henry C. Babcock	Minnesota	Frank S. Robinson	Minnesota
Frederick E. Cobb	Minnesota	Arthur J. Sauer	Minnesota
William A. Demo	Minnesota	Erwin L. Sinclair	Minnesota
Herbert B. Hurd	Minnesota	George S. Todd	Wisconsin
Frank H. Kyle	Minnesota	Frank J. Wagner	Minnesota
Mark O. Nelson	Minnesota	Nathan L. Watson	Minnesota

American College of Dental Surgery.

The ninth annual commencement exercises of the American College of Dental Surgery were held at the Grand Opera House, Chicago, Ills., on Thursday, April 4, 1895, at 3:30 P. M.

The number of matriculates for the session was three hundred and fourteen.

The degree of D.D.S. was conferred on the following graduates by Professor B. J. Cigrand, B.S., D.D.S., president of the board of directors:

NAME.	RESIDENCE.
Florence R. Atkinson	Illinois
Michael L. Aren	Illinois
John Bradbury	Illinois
Harry G. Burke	New York
Frank W. Booth	Iowa
Charles Norman	Iowa
Robert B. Bogle; M.D	Tennessee
John B. Buehner	Illinois
Frederick P. Bushspies	Illinois
Frank Bisewski	Illinois
Francis N. Brown	Illinois
A. A. Clinkenbeard	Illinois
Louis P. Coleman	Iowa
George B. Crissman	Illinois
Arthur Enders	Michigan
Frank T. Edwards	N. Dakota
Augustine A. Flick	Pennsylvania
Charles L. Good	Minnesota
Jasper E. Green	Iowa
Ira C. Gamern	Illinois
Frank E. Gunther	Illinois
William M. Griffith	Illinois
William G. Hay	Wisconsin
Harry G. Hitchcock	Wisconsin
Harry D. Haffa	Iowa
Hans M. Heggland	Illinois
John H. Hartinger	Indiana
Peter Hall	Canada
Walter C. Hunt	Washington
Clinton L. Hopkins	Texas
Edson B. Jacobs	Ohio
Oscar A. Johnson	Illinois
Edward A. Kelly	Illinois
Edward F. Kenyon	Illinois
William Knedendorf	Illinois
Emil Kark	Wisconsin
Maurice Kraus, M.D	Austria
Samuel Lutz	Illinois
William H. Lind	Wisconsin
Chauncey C. Landon	Indiana
John M. Little	Pennsylvania
Leroy Lewis, B.Sc	Oregon
Martin L. Menges	Indiana
James W. Murray	Iowa
William G. McDavitt	Illinois
Chas. F. P. O'Connor	Illinois
Waldo A. Overholser	Illinois
Charles B. Payton	Iowa
Gideon A. Price	Illinois
James S. Reed	Nebraska
R. F. Rowdybush	Illinois
Meredith Rice	Illinois
Elmer B. Roberts	Iowa
James L. Russell	Iowa
Frederick C. Rieck	Pennsylvania
Theo. G. Scholz	Illinois
Nathan W. Smith	Ohio
Harry P. Stewart	Ohio
Nelson I. Sims	England
Frank H. Skinner	Illinois
Andrew C. Thompson	Illinois
Frank R. Timmermann	Illinois
Albert P. Voorhies	Louisiana
Casimer Wolpers	Ohio
Isaac Wiener	Mississippi
George R. White	Illinois

University of Pennsylvania—Department of Dentistry.

At a public commencement, held Thursday, June, 13, 1895, at the American Academy of Music, Philadelphia, Pa., the degree of Doctor of Dental Surgery was conferred by Charles C. Harrison, A.M., provost, upon the following candidates, after which an address was delivered by Horatio C. Wood, M.D., L.L.D.,

Professor of Materia Medica, Pharmacy, and General Therapeutics, and Clinical Professor of Nervous Diseases:

NAME.	RESIDENCE.
William C. Achard	Switzerland
William L. Aitken	Australia
George S. Allen	Illinois
William P. Angle	Pennsylvania
Carlos A. Barrios	Nicaragua
Hass D. Best	Pennsylvania
A. Mark Bradner	Pennsylvania
Charles A. Bushong	Pennsylvania
D. R. Campbell, L.D.S.	Scotland
Victor Carballo	Uruguay
Harry L. Cleaver	Pennsylvania
Walter E. Decker	Pennsylvania
W. E. S. Dobbyn	Australia
Edmond J. Donnegan	Pennsylvania
William Dudderidge	Canada
Jonas S. Dudley	Massachusetts
David Dunlop, L.D.S.	Scotland
Charles S. Evans	Pennsylvania
Joseph E. Faulk	Pennsylvania
J. D. Forrest, L.D.S.	Scotland
Walter R. Garretson	Iowa
Willis P. Grandy	Arkansas
Sheward Hagerty	Pennsylvania
George H. Hahn	Pennsylvania
William E. Harris	Virginia
Newton C. Hassell	Pennsylvania
Edward A. Hoenig	Pennsylvania
J. Herbert Hood	Pennsylvania
Joseph M. Houston	Pennsylvania
C. S. Hurlbut, Jr.	Massachusetts
Fred C. Kemble	Ohio
John A. Kilmore	Pennsylvania
Franklin F. Kribbs	Pennsylvania
Oscar Lang	Wisconsin
Roman J. Levy	Russia
S. A. A. Lewis	Rhode Island
J. A. Lopez, Lascano	Ecuador
Jose Rafael Madan	Cuba
J. Boyd Mader	Pennsylvania
Arthur G. Maitland	New Zealand
F. B. Manchester	New Jersey
R. Middleton, D.V.S.	Pennsylvania
W. J. Moorhead	Pennsylvania
Charles S. Myers	Pennsylvania
Samuel F. Nabers	Alabama
William B. Noble	Pennsylvania
Charles F. Odell	Ohio
Alfredo Pimienta	Spain
Frank J. Potter	New York
Wm. T. Robinson	Pennsylvania
Armand Rous	Indiana
G. B. Saxenmeyer	Pennsylvania
J. Harry Schaffer	New York
A. O. Schwabe	Austria-Hungary
Daniel E. Sorg	Pennsylvania
Adam C. Spangler	Pennsylvania
Rolof B. Stanley	Pennsylvania
Ira B. Stilson	Connecticut
H. C. Sturtevant	Pennsylvania
Isaac R. Tann	Pennsylvania
Fred G. Taylor	Wisconsin
Philip A. Traynor	Delaware
Clyde A. Van Valin	Pennsylvania
David S. Watson	Illinois
T. Fred'k Watters	Ohio
Frank P. Welch	Oregon
Frederick M. Wells	Canada
William C. Wells	New York
Edward Wishart	Pennsylvania
William H. Yale	California

The number of matriculates for the session was two hundred and seventy-eight.

Northwestern College of Dental Surgery.

The tenth annual commencement exercises of the Northwestern College of Dental Surgery were held at Kimball Rehearsal Hall, Chicago, Ill., on Wednesday, April 10, 1895.

The valedictory address was delivered by James Archibald Black, B.S., and the doctorate address by Professor F. H. B. McDowell.

The number of matriculates for the session was forty-three.

The degree of D.D.S., was conferred on the following graduates by Dr. J. A. Whipple, dean of the faculty: M. O. Reed, Illinois; W. P. Ranger, Illinois; J. A. Black, Ontario, Canada; J. C. Packard, Wisconsin; Anton Mueller, Austria.

University of California—College of Dentistry.

The annual commencement exercises of the College of Dentistry of the University of California were held at Odd Fellows' Hall, San Francisco, Cal., on Thursday evening, June 13, 1895.

An address on behalf of the faculty was delivered by William Cormack Reith, D.D.S.

The number of matriculates for the session was one hundred and seventy.

The degree of D.D.S. was conferred on the following graduates by Martin kellogg, A.M.. L.L.D., president of the university:

William A. Atwood.
Federick R. Axton.
Thomas F. Barrett, B.S.
Herbert A. Bernard.
John N. Borger.
John B. Bowles.
James A. Brown.
Louis E. Brun, B.S.
Byron L. Carpenter.
Ralph C. Coleman.
David M. Coney.
Eugene M. Dodson.
Oscar P. Fitch.
James G. Fitzgibbon.
Arthur M. Flood.
Arthur J. Ford.
Reuben L. Hale.
Eminel P. Halsted.
John R. Hardy.
Charles P. Hauselt.
Edward S. Holloway.
Joseph A. Jeffrey.
William B. Ludlow, Jr.
Francis A. McCan.
Amiel Morris.
Robert E. O'Connell.
Clarence H. Pearce.
Robert H. Porterfield.
Frederick E. Sawyer.
Leo Sichel.
Walter E. Singleton.
Robert W. Smith.
Harley H. Stephenson.
Edward L. Strain.
Arthur L. Tibbetts.
Newton B. Wachhorst.
Edwin R. Waterman.
Frederick H. White.

Total, 38,

EDITORIAL.

American Dental Association Meeting.

The thirty-fifth annual meeting of this body was held in Asbury Park, August 6th to the 9th inclusive. About two hundred members were present and quite a large number of visitors. The meeting was, all things considered, a good one; a number of excellent papers were read and discussed—instructive and entertaining. The spirit of the meeting was good, notwithstanding some unfavorable conditions. Asbury Park is not a desirable place to hold such a meeting. Suitable accommodations were not afforded the members and visitors; no headquarters were

provided, and indeed it was said could not be, on account of the great crowds of people present; and the dentists were distributed, a few here, a few there, all over the place; some were compelled to occupy quite undesirable places so that the social feature of the occasion was almost wholly lost. Another discouragement was found in the place of meeting—the Auditorium, a large glass building, four times too large for the meeting, which was held in the center, and a wall of exhibits completely surrounding it, so that it was simply impossible to secure proper quiet and order. The exhibitors were not responsible for this, so much as persons who were not interested in the meeting, were on the outskirts, and were necessarily the occasion of more or less stir and confusion.

A very sad feature of the occasion was the severe illness of the President, Dr. J. Y. Crawford, who was present at only the opening session and was even then very ill. He went from the hall to his bed, and was not out of his room again during the meetings. This brought a feeling of sadness over all present. The sympathy that was in the heart of every one, was shown in the fact that Dr. Crawford was, by an almost unanimous vote, elected President of the Association for next year.

The officers elected for the ensuing year are as follows: President, Dr. J. Y. Crawford, of Nashville, Tenn.; First Vice-President, Dr. James McManus, of Hartford, Conn.; Second Vice-President, Thomas Fillebrown, of Boston, Mass.; Secretary, Dr. Geo. H. Cushing, of Chicago, Ill.; Corresponding Secretary, Dr. Emma Eames Chase, of St. Louis, Mo.; Treasurer, Dr. H. W. Morgan, of Nashville, Tenn.; Members of the Executive Committee for three years: Dr. J. N. Crouse, of Chicago, Dr. L. Ottofy, of Chicago, and Dr. V. H. Jackson, of New York.

Saratoga was elected as the next place of meeting, first Tuesday of August, 1896.

There was quite a feeling against the Association being taken to the far East, the third time in succession; it certainly looks so to one from the West. Saratoga is not the best place in the country for either a scientific or professional meeting; there are too many outside attractions (fuss and feathers) to attain the best results in scientific work. But perhaps it will come out all right,

and to attain that end, we suggest that every member consider himself a committee of one to work for the largest and best meeting of this body ever held. So may it be.

Meeting of the National Association of Dental Faculties.

The annual session of this body was held at Asbury Park, August 3rd, 5th and 6th, 1895, Dr. Frank Abbott President. There was quite a large attendance, every college having membership was represented, thirty-three in all; five were admitted to membership, making in all thirty-eight.

Much important business was done, all of which will tend to the elevation of dental education. One of the most important was the increasing the college term to six months; that regulation to take effect with the session of 1896–7. A resolution was passed to make it seven months, but there was a feeling on the part of some that that was a greater step than should be taken at once, though all admitted that seven months was not too long; after thinking over the matter for a time, and out of deference to the views of those who regarded seven months too great a step to take at once, and to secure entire unanimity of action, a reconsideration was proposed and carried; and the six months term was unanimously adopted. This action will certainly result in the greater efficiency of the colleges; it will enable them to bestow more time upon the work of the course and also to somewhat extend their curriculum, if they desire to do so, both of which is in the line of progress.

This Association is exercising greater influence for the elevation of the profession than any other one agency, and especially is this true in respect to the future of dentistry; it does not much affect the present practitioners, only in a reflex way, but it is prophetic of great things for the future.

The officers for the present year are: President, Dr. S. H. Guilford, of Philadelphia, Pa.; Vice-President, Dr. Geo. H. Cushing, of Chicago, Ill.; Secretary, Dr. Louis Ottofy, of Chicago,

Ill.; Treasurer, Dr. H. W. Morgan, of Nashville, Tenn.; Executive Committee, J. Taft, of Cincinnati, Thos. Fillebrown, of Boston, and B. Holly Smith, of Baltimore.; Ad Enterim Committee, T. W. Brophy, of Chicago, Dr. A. O. Hunt, of Iowa City, Iowa, and H. A. Smith, of Cincinnati, Ohio.

From the great interest manifested, and the many important questions that ought to be considered by that body, it is well nigh a certainty that there will be a full, and, it is to be hoped, a unanimous, attendance next year. There are so many subjects of a practical nature that ought to have attention that no member can afford to be absent.

The National Association of Dental Technics.

The second annual meeting of this body was held at Asbury Park, August 6th, 7th and 8th, 1895. President D. M. Cattell, in the Chair. This organization has for its special object the promotion and elevation of demonstrative teaching in our colleges, and a more important subject could hardly be presented; for, notwithstanding the great progress that has been made in this direction in our educational institutions, vastly more can, and will be done, by combined effort such as is now being put forth. It is practically making the advance, that may be made by any one, the common property of all; and, indeed, in this matter bringing all to a common level, and to the possession of the best methods.

With such combined effort in operation it is impossible to estimate the possibilities of the future of dentistry.

The student of today has very little appreciation of the advantages within his reach, when compared with the former times, and even with those of a little while ago.

The officers for the present year are as follows: President, Dr. T. E. Weeks, of Minneapolis; Vice-President, Dr. S. H. Guilford, of Philadelphia; Secretary-Treasurer, Dr. J. T. Stephan, of Cleveland; Executive Board, Dr. D. M. Cattell, of Chicago, Dr. N. S. Hoff, of Ann Arbor and Dr. H. W. Morgan, of Nashville.

A Book Reduction.

A notice has just come to hand from P. Blakiston Son, & Co., in which it is stated that they will in the future make the prices of all their medical, and of course dental books as well, at absolutely net prices. So that physicians and dentist will be able to purchase their books at the same price all over the United States. This will certainly be an inducement to purchase books to a greater extent than heretofore. Doubtless others in the book trade will make the same changes.

A reduction of twenty to thirty per cent. means much to the physician or dentist. *Make good selections, and buy books.*

OBITUARY.

John J. R. Patrick, D.D.S., Belleville, Ills.

JOHN J. R. PATRICK, D.D.S., died April 10th, at 1 o'clock, of heart disease, aged sixty-nine years. His demise was not unexpected, he having been a confirmed invalid since last August.

The deceased was a native of England, and was born in Liverpool in 1826. He passed his boyhood days in Belfast, Ireland, and when about twenty years of age came with his parents to America. The family lived for a time in Iowa, and later came to St. Louis, where the deceased worked as a silversmith. During his leisure hours he took up the study of dentistry, and soon qualified himself for admission into the ranks of the profession. He then gave up his trade of jeweler and silversmith and devoted himself entirely to his chosen profession.

He came to Belleville early in the fifties, and opening an office began the practice of dentistry and was very successful.

In the fall of 1862, he enlisted in the 130th Illinois (Infantry)

Regiment, of which Judge N. Niles was Colonel, and was Captain of Company G until mustered out in the Spring of 1865.

Dr. Patrick was twice married. His first wife whom he married in England, having died in Belleville about five years ago. His second marriage occurred about three weeks ago with Miss Anna Rischar, of this city, who survives him. He also leaves a niece, Mrs. Marcellas Clouse, of Birkner Station, and two nephews, William and Andrew Boatman, the latter in the State of Washington.

He was a learned paleontologist and had recently completed the second of his two reports on prehistoric skulls. This work was done as curator of the American Dental Association, of which he was a distinguished member.

His very large collection of Indian antiquities, skulls, etc., was sold by him to the Missouri Historical Society.

He was skilled in his profession and delivered special lectures to the students of the Missouri Dental College and State University of Iowa.

He was a member of Hecker Post No. 443, G. A. R.

Dr. Patrick was esteemed outside of his profession as a contributor to the archives of the Smithsonian Institution. His work on prehistoric crania, and exploration of Indian mounds is too well known to need special comment here.

Living as he did in close proximity to St. Louis, he was a frequent visitor to that city as well as a member of various societies in Missouri.

Dr. Patrick was a genial man, friendly in his attitude toward younger men. He was a great student and an omnivorous reader. He was an inventor, an investigator, a controversialist and a well-read physician as well as a dentist. He will be long remembered for his picturesque personality and his earnestness in debate before learned societies. The profession in Illinois will mourn his decease, as in his removal from the active sphere we lose a conspicuous figure from our midst, one who was ever progressive. He did not dwell on the past, it was the future, now alas! no future in this vale of leave.—*Dental Review.*

Necrology.

At the meeting of the Mississippi Valley Dental Society, April 18th, 1895, the following action was had.

Drs. Harlan and Betty, Committee on Necrology, reported as follows:

Resolutions on the death of Dr. J. J. R. Patrick, of Belleville, Illinois.

WHEREAS: It has pleased an all-wise Providence to remove from our midst John J. R. Patrick, D.D.S., long a member of this organization, and a conspicuous figure in many dental societies in this country, as well as a prominent citizen of Illinois:

Therefore, Be it resolved, that in the death of Dr. Patrick dental surgery and dental science has lost one of its most ardent devotees and distinguished members; and this Society desires to express its sorrow at the loss of one of its fellows who had so long and honorably maintained the dignity of the profession.

Resolved, That a copy of these resolutions be forwarded to the family of the deceased, and that they be spread on the records of the Society.

A. W. HARLAN,
E. G. BETTY,
Committee.

On motion the report was received and adopted, and ordered spread upon the minutes. As a mark of respect the vote taken was by all members rising in their seats.

Southern Dental Association.

The next annual meeting of the Southern Dental Association will be held in Atlantic, Georgia, commencing the first Tuesday in November. Arrangements are being made for the greatest meeting in the history of the "Southern." The Cotton States and International Exposition will be in progress and railroad rates will be very low. All friends will be given a hearty welcome.

Respectfully,
E. P. BEADLES.
Cor. Sec. SOU. DEN. ASSO.

Quackery in China.

In the far-off province of Yun-nan of southwestern China there are divisions in medical practice not unlike those America and Europe know. There are "regulars" and there are quacks—and it is difficult to tell which of the two are the more unsafe. A missionary writes to one of our cotemporaries: "Quack doctors are commonly to be met with at very fair and on every market day, and they interfere not a little with the regular and resident practitioners of the city. So far as the people are concerned it makes but little difference which of them treats their cases for the local and the itinerant doctors are alike ignorant of the first principles of anatomy, physiology or medicine."

Dentists' Relations Not Confidential.

During the trial of the case of The People vs. Stonewall J. De France for forgery, the defense attempted to raise a question of identity, for which purpose they showed that the teeth of the accused were entirely different from those of the person committing the forgery as alleged. In rebuttal, a dentist of Detroit was cited who testified that subsequent to the date of the forgery he had inserted three false teeth in the place of two incisors for De France. The case was carried up on appeal to the Supreme Court of Michigan, on the ground that the trial court had erred in admitting the dentist's testimony, claiming that his knowledge was privileged as between physicians or surgeons and patients. The Supreme Court affirmed the verdict of conviction and held that the terms "dentist" and "physician or surgeon," as the latter are used in the statute covering this point, are not interchangeable and that a dentist's relations with his patient can not be considered confidential as is the case with a physician or surgeon.

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COMMUNICATIONS.

Dental Section of the American Medical Association Meeting at Baltimore, Md., May 6th, 1895.

THE VALUE OF DIFFERENT DIAGNOSIS IN DENTISTRY BY DR. VIDA A. LATHAM, D.D.S., OF CHICAGO.

The subject of diagnosis is one of great importance and the man who can diagnosticate rapidly and correctly is usually successful in his profession. Diagnosis is valuable not only for treatment, but it enables one to form an accurate opinion as to the future course of a disease.

It seems a curious fact that works on dental surgery are so very imperfect and rambling on the subject of diagnosis. This is a matter of regret and also that research is so slow in progress—that is, slow in availing itself of so many new facts introduced from science generally. What is the reason? I am afraid it lies in five reasons:

1. The hurry to obtain a diploma.
2. The study of only just what seems absolutely necessary in the practice of dentistry and a corresponding inability to apply general principles.
3. The fear of encroaching on general medicine.
4. Insufficient preliminary education.
5. Lack of a thorough knowledge of the normal conditions, and a habit of relying too much upon one mode of treatment. The most difficult problems, perhaps, we have to diagnosticate in dental pathology are the neurological.

Dental irritation is one of the commonest and most powerful causes of reflex nervous disturbances.

We all know of many cases treated by the medical profession for months which might have been relieved by attention to the

teeth. Understand, I do not mean to omit the medical treatment of such diseases as syphilis, malaria, neoplasmus, etc.

With regard to etiology of dental periostitis and pulpitis, the diplococus pneumonia may be regarded as a factor, usually accompanied by the staphylococus pyogenes aurens and albus.

Pulpitis may cause inflammation of the antrum just as well as a severe catarrhal inflammation can do so.

Causes of neuralgic pain are: 1, sensitive dentine; 2, fibroid pulps; 3, crowding; 4, necrosis of pulp in a confined space; 5, exostosis; 6, alveolar periostitis; 7, filling over exposed pulp; 8, malpresentation of third molar; 9, rhematic and gouty diathesis; 10, anemic and chlorotic states; 11, serumal calculus on roots; 12, malaria; 13, pulp nodules; 14, sympathy; 15, recession and absorption of gum and alveolus; 16, pressure of gases in the pulp chamber; 17, traumatism the most pernicious form of neuralgia is that which is due to septic influences occurring after some traumatic injury in which paresis or paralysis of the nerve affected sometimes follows. Differential diagnosis between antral abscess and ozœna —points in favor of the former are: 1, the presence of pulpless teeth; 2, a shortening of the face from the oral cavity to the orbit; 3, accumulation and reaccumulation of pus, showing at the hiatus, in middle meatus, half an inch from anterior extremity of inferior turbinated bone; 4, discharge of pus increased on putting patient in horizontal position especially on the sound side; 5, relative darkness over the diseased maxilla when the bones of the face are illuminated; 6, Puncture through nose and aspiration of fluid; 7, the presence of carious teeth, especially roots in the upper mandible.

Ozœna is recognized by: 1, characteristic fetid discharge; 2, olfactory anæsthesia; 3, detection of denuded necrosed bone in nares; 4, presence of crusts of dried secretions and ulcers, especially in naso-pharynx; 5, the teeth may be normal; 6, diathesis syphilitic or strumous.

The following appended tables may be useful in diagnosing:

SENSITIVE DENTINE.	IF THE PULP IS SENSITIVE.
When an examination over a considerable part of the cavity walls does not respond to simple pressure, pain is not persistent.	When the examination is made near the pulp it responds to pressure.

HYPERÆMIA OF THE PULP.

Pain of boring character; tooth highly sensitive to hot and cold temperatures. Painful in mastication and on pressure. Hard to distinguish from.

EXPOSED DENTINE.

Absence of throbbing pain—pathogenomonic of pulpitis; serious neuralgia may be a symptom.

PULPITIS.

Pain of a boring character rapidly increasing, assuming a throbbing form, extending from the diseased tooth to the neighboring teeth and to the side of the face, the tooth forming the center of its intensity. The larger and younger the pulp, the greater the pain. In time the pain subsides, to return, though, on the slightest provocation, or the horizontal position being resumed. Pulp injected with blood throughout, the exposed part deeper in color.

CHRONIC PULPITIS.

Pain less severe than in acute form, not very intense nor long in duration when present. Comes on at irregular intervals—often vague neuralgic pains. Sudden changes of temperature or applications of irritants will produce a paroxysm of pain lasting from a few minutes to hours. Pulp shows inflammation limited to exposed spots, but but the rest pale and healthy.

NECROSIS OF PULP.

Pain becomes changed to a dull, heavy ache with a feeling of tension. Tooth feels too long, is raised in alveolus by the pericementitis and periostitis and loosened. May have some swelling at the side, on the gum or at the root. A change of color can be seen by strong light, the dead tooth having a dark line in the pulp region.

It is often difficult to distinguish pulpitis from hyperæmia. In hyperæmia the throbbing character of the pain is not so well marked and the pulp usually not exposed. Pulpitis must also be distinguished from periostitis, the differential points being as follows:

PULPITIS.	PERIODONTITIS.
Pain sharp, laminating or throbbing, intermittent and reflected within the tooth.	Pain dull, heavy and constant, and without the tooth.
Thermal changes cause pain.	Thermal changes do not cause pain.
Pressure or percussion on tooth gives no pain at first.	Pressure or percussion on tooth gives pain from the first.
Slight pressure on a piece of cotton in cavity generally gives acute pain.	Slight pressure does not give pain except through pressure transmitted to the periosteum.
With pulpitis we have pericementitis by continuity.	Tooth loosens and elongates.

No diagnostician, who is conscientious as well as competent, will set up his own opinion as the standard but will always rely upon the perception of those to whom he wishes to make the diagnosis plain, and in this very idea is the safety; for the recapitulation of the case may reveal points previously unnoticed, so giving certainty and confidence to the patient and himself. To become a good diagnostician it is imperative to understand principles and laws, in preference to formularies and modes; and to comprehend these one's powers must be not only good but kept in constant use thus insuring the best and latest methods, reading and experience.

THE SPECIFIC TREATMENT OF NECROSIS OF ALVEOLI AND MAXILLA WITH AROMATIC SULPHURIC ACID.

In his paper, Dr. W. A. Mills, of Baltimore, gave some of his experience with this old-time treatment. He cited a case of necrosis superinduced by chronic abscesses. The necrosis extended from the left central to the right bicuspid.

Treatment consisted of:

Acid sulphuric aromatic, - -	℥ij;
Aqua, - - - - - - -	fl. ʒx;

To be injected into fistulous opening, by patient, five or six times per day. Bicarbonate of soda to be used as a mouth wash after each injection. At end of two weeks discharge ceased and the cavity was packed with:

Carbolic Acid, - - - - -	c.p.;
Tinct Iodin, - - - - -	aaʒss;
Aqua, - - - - - - -	fl. ℥xij;

The following day this dressing was removed, the nerve canals of devitalized teeth were opened, disinfected and filled. Patient instructed to syringe out cavity twice daily with the carbolic acid and iodin wash, as long as syringe could be used. In five weeks the parts were again in normal condition. The second case cited, the necrosis extended from the inferior cuspid to cuspid. Fistulous openings presented at the right of the left inferior cuspid and at the left of the right inferior cuspid and pus was copiously discharged. This condition had continued for over

a year, although a number of physicians has prescribed for it. A surgeon told the patient that all of the incisor teeth would have to be removed before a cure could be effected. This the patient would not submit to. Treatment in this case was similar to Case No. 1 and cured. All the teeth were save intact.

In conclusion the essayist said: "The excuse I have to offer for my paper is to call the attention of the surgeon, no matter how prone he may be to operate in the oral cavity not to do so before he has failed with the sulphuric acid treatment, or use more conservative surgery than is usually practiced in similar cases."

COMMON GROUND OF MEDICINE AND DENTISTRY.

Dr. Joseph Roach, of Baltimore, said:

While the work of the average dentist may be mechanical, the fact that both he and the surgeon work on the human body makes a bond of union between them which is worth study, inasmuch as whatever links in this bond are found to be the common property of both, are of much greater interest than any dissimilar points.

In the maladies of common interest, I wish to mention those often obscure and occasionally grave diseases that involve the maxillary sinus. This is obvious for the reason that in such cases the dental surgeon very often is apt to be the first observer on the ground. Whether he takes the cases himself or turns them over to the surgeon he should be able to accurately diagnose the trouble.

He spoke also of impacted and abscessed third molars often causing serious pharyngeal trouble.

He said: "The lower molar is often too large for the space between the second molar and the angle of the jaw. In consequence, its eruption is so interfered with that it may be either only partially erupted or may be impacted at an angle against the second molar appearing through the gum slightly or not at all. Abscess of this tooth often evolves not only the tissues immediately around it but the tissues of the throat becomes inflamed and grave results ensue. Abscess opening into the pharynx is certainly one of the sequellæ of this trouble."

Chairman's Address.

Dr. M. H. Fletcher, of Cincinnati, in his address referred to the fact, that all the professions which have man himself for their subject, which aim to rectify his physical deficiences are today, and always have been, of greatest interest; their scientific advancement in the past decade is more marked than in any previous one, but our lack of knowledge is still very great.

In the course of his address the essayist said:

There is one feature of education, in both dental and medical colleges, which I consider of the greatest importance. It is that of having suitably trained instructors in our colleges. This I deem to be as great a defect as any at the present time, in our system of teaching.

It is not an uncommon thing to find in a class, students who outrank many of their professors in strength of intellect and natural ability. Not only these, but all students have a right to demand that their instruction be presented to them in the best possible manner.

It is a perfectly easy matter to get professors for the asking, but trained teachers are rare, and even those who have the natural qualities to become good instructors are not numerous. No one doubts that we have professors in almost every college who are thoroughly capable, but on the other hand a great number fall short of this standard. I believe a majority of students in all colleges are industrious and of good intent, and many of them are barely able, financially, to carry them through a three or four years' course.

Such students, if denied the full measure of their capabilities to receive, are defrauded of both money and time; the first of which never is, and the last never can be, repaid. There are no normal schools, so far as I know, for the proper training of dental and medical teachers, and if there were it does not seem practicable for many of our eminent practitioners—who are in other respects most suited for the position of instructors—to leave work and go to other localities for such training; but such a normal school, it seems to me, is demanded in some suitable form and it would seem a most fitting topic for discussion and action by our National

Association of Faculties. The distance a missle flies and the velocity with which it goes is exactly proportional to the force which impels it. The analogy holds good in our colleges, for students of high grade can not be graduated unless the force can be found in his Alma Mater to produce the desired result; consequently, it would seem no more necessary, if as much, to lengthen the term at college, increase the curriculum, and raise the standard of entrance, than it is to increase the quality and ability of college instructors.

THE DESTRUCTION OF CHILDREN'S TEETH—CAUSE AND PREVENTION.

This paper was read by Dr. J. G. Henisler, of Baltimore. He attributed the destruction of teeth in children to neglect and ignorance as to the proper time and means of caring for the teeth. As a means of prevention he suggested that physicians watch the mouths of children and if decay appeared on the permanent teeth to send these patients to a dentist. Another means suggested was to educate patients themselves.

ILL-DEVELOPED ORAL CAVITIES – IRREGULARITIES AND SOME OF THE CAUSES.

In his paper on this subject Dr. W. S. Twilley, Baltimore, said that among the causes of irregularity of teeth is the resistance offered the permanent teeth by the temporary ones. Another frequent cause is a want of simultaneous action between the increase of the permanent teeth and the decrease of the temporary, by absorption of their roots. When the permanent teeth are large and the growth of the jaws does not proceed proportionately, they are found to crowd and overlap. By premature extraction of the temporary teeth, the jaws are liable to contraction and when the permanent teeth appear, there not being sufficient room in the arches, they will crowd and overlap. Again, where the upper incisors extend inwards and come in contact with the lower centrals, the child finds it easier and more comfortable to throw the lower jaw forward.

This finally becomes habitual and promotes the increase in the length of the lower jaw itself. The almost universal acceptance

of the theory, that the premature extraction of the deciduous teeth, or the extraction of the permanent ones, are the only causes of irregularities, is a great error. Many cases of irregularity are due to neoplasms and hypertrophies, as these growths in children cause a diminution of the normal contours of the bony framework of the oral cavity as well as that of the nasal.

ARCH OR SPAN FILLING.

Dr. W. A. Mills, of Baltimore, read a paper on this subject. He described his method as follows:

Take, for example, two superior bicuspid teeth which have a space the sixteenth of an inch between them. I wish to fill with gold. In this case I have cavities on the proximal surfaces, otherwise I would make them. Prepare cavities as though they were to be filled separately. Be sure to make the anchorage as strong as possible as they become the abutments of the arch when completed. Set an orange-wood wedge firmly between the teeth. Bind teeth firmly together with german silver wire, to prevent any spreading of teeth during the packing of the filling material. Fill space with oxyphosphate mixed rather stiff, forcing sufficient cement over and against the buccal and palatine surfaces of the teeth to form a matrix. Before the cement sets too hard, remove it from cavities in the teeth, and a sufficient amount from the space to give proper form to the arch, buccal and lingual surfaces of the filling, then proceed to fill as though it were a single cavity. When filling is completed, remove rubber dam, matrix wedge, and binding wire then polish filling. With an amalgam filling the same process is used except that gutta-percha is employed in place of the oxyphosphate and this and the binding wire are not to be removed until twenty-four hours afterward when the filling can be dressed and polished.

I do not recommend these fillings only when necessity demands.

CALCIFICATION OF THE TEETH, BY R. R. ANDREWS, CAMBRIDGE, MASS.

Calcification has always been a difficult subject, and authorities have been at sea concerning the finer process which nature takes to fashion the fully calcified substance.

Calcification is a process by which organic tissues become hardened by a deposition of salts of lime within their substance. In the intercellular tissue, and in the substance of the cells themselves, these salts are deposited by the rich blood supply always near. They are deposited in minute particles and in such fine subdivisions that it makes it difficult to demonstrate many of them even with the higher powers of the microscope.

The intercellular substance, either a protoplasmic or gelatinous fluid or semi-fluid, contains the lime particles. In it they change their chemical nature, uniting with the organic substance of the part and form small globular bodies which have been called calcospherites; and these blending or coalescing into a mass form a substance called calco-globulin. This calco-globulin, which is a lifeless matter, has been deposited through the cells into a gelatinous substance, and in some cases into the substance of the cells themselves, where, by a further hardening process, it becomes the fully calcified matrix. If a soluble salt of lime be slowly mixed with another solution capable of precipitating the lime, the resultant lime-salt will go down as an amorphous powder, and sometimes as minute crystals. But when the lime-salts are precipitated in gelatin or albumen, the character of the lime-salts is materially altered. Instead of a powder there were found various curious but definite forms, quite unlike the character of crystals or powder produced without the intervention of the organic substance. Mr. Rainey found that if carbonate of lime be slowly formed in a thick solution of albumen, the resultant salt has changed its character. It is now in the form of globules, laminated like tiny onions. These globules, when brought in contact with one another, become agglomerated into a single laminated mass, it appearing as if the lamina in immediate apposition had blended with one another. The globular masses at one time of mulberry-like form, lose the individualty of their constituent smaller globules and become smoothed down into a single mass, or longer, and Mr. Rainey suggests as an explanation of the laminated structure, that the smaller masses have accumulated in concentric layers, which have subsequently coalesced; and in the substitution of the globular for the amorphous or crystalline form in the salt of lime, when in

contact with organic substances, Mr. Rainey claims to find the clue for the explanation for the development of shells, teeth and bone. At a more recent date Prof. Harting took up this line of investigation and found that other salts of lime would behave in a similar manner and that by modifying the condition of the experiment very various forms might be produced. The most important addition to our knowledge made by Prof. Harting lay in the very peculiar constitution of the "calco-spherites," by which name he designated the globular forms seen and described by Rainey. That these are built up of concentric laminæ, like an onion, has already been stated, and Mr. Rainey was aware that albumen actually entered into the composition of the globule, since it retained its form even after the application of acid. But Prof. Harting has shown that the albumen left behind, after treatment of a calco spherite with acid, is no longer ordinary albumen; it is profoundly modified, and it becomes exceedingly resistant to the action of acids, alkalies and boiling water. For this modified albumen, he proposes the name calco-globulin, as it appears that the lime is held in some sort of chemical combination, for the last traces of lime are retained very obstinately when calco-globulin is submitted to the action of acids. Now, it is a remarkable fact that microscopic glistening specks and globules are constantly seen at the edges of tissue where enamel cementum, dentine or bone are to be found or are forming. These microscopic globular bodies have been called calco-spherites, and it appears as though some such process, as described by Prof. Harting, is transpiring within the substance of the tissues where bone, dentine or enamel is to be formed. It will be noticed that near this point of formation there is always to be found a rich, capillary blood supply, and from this the lime-salts are given out. The abundant appearance of these microscopic glistening globules, referred to above, at the time of the formation of the enamel and their entire absence at earlier stages, is, to me, an indication that the globules are an enamel substance, the matrix forming calco-spherites, and following up their future confirms this.

The growth of the enamel once began takes place by addition of the globules. I am convinced that the larger ones are com-

posed of hundreds of smaller ones which have coalesced into the main mass. When enamel is commencing its process of calcification, if we examine carefully with high powers, we shall find in that slight amount of the enamel organ that is directly over the calcified point of dentine, in what remains of the stellate reticulum and in the stratum intermedium principally a very large number of glistening points. They are the forming calco-spherites, or rather, they are the minute particles of lime from the blood supply, changing their chemical nature as they pass into the protoplasmic juices of the part. These appear to be passing into the formative cells and these cells superintend their formation into enamel rods—that is, they are laid from the cells against the forming rod. Within the substance of the ameloblasts they are seen to be growing larger by the smaller ones coalescing with others. If at this point of their development the layer of enamel cells is pulled away from the cap of the formed dentine, we shall see that the cap of dentine is everywhere covered with quite regularly formed granular bodies. If, on the other hand, the layer of enamel cells is against the formed cap of dentine the masses are assuming block-like forms, as though taking the form of the future enamel rod. They appear to be in a gelatinous substance which is between the dentine and the enamel cells, and here, by an unknown chemical process, they become the hardened columns of the enamel. In dentine, the calcifying process goes on in much the same manner.

The odontoblasts are merely masses of protoplasms and appear to have no membrane; as in the case with the ameloblast, it has a nucleus at a point farthest from the calcifying matrix. In forming the odontoblast, or pulp tissue through the odontoblast, it gives out a rich gelatinous substance about as wide as the layer of odontoblast cells. Everywhere between the odontoblasts is found a rich supply of connective tissue cells, whose function appears to be the forming of a network of connective tissue fibers into this gelatinous substance, this network seeming to be a scaffolding upon which the calco-spherites, which are to form calco-globulin, are to be deposited. Into this layer the odontoblasts are also superintending the placing of the minute

globules, which are within them and which have been given to them the rich blood supply found everywhere near their pulp ends. Into the calcified substance the globules form against the calcified matrix where, fusing with others, they form a mass entirely filling the gelatinous substance. This gelatinous substance with its mass of globules now becomes calco-globulin. By some natural hardening process it then becomes calcified matrix and thus another layer of calcified matrix is formed.

In the cementum, a tissue I have not studied as carefully as I have the others, I am convinced that the calcifying process is much the same. The first cemental calcification takes place by the cementoblasts giving off these globular bodies near the neck of the rod into a gelatinous substance, this also being given off by the cells. It assumes the form of plates or scales, afterward the cells themselves appear to fill with the globules and lose their identity in the forming matrix. That peculiar tissue, which we call "tissue on the borderland of calcification," is composed of globular glistening bodies which have coalesced and formed a layer within a gelatinous substance previously given out by the formative cells. In this condition it is a tissue indestructible both in acids and in caustic alkalies and only in this condition is it true calco-globulin. The conclusions here given on the subject of calcification are arrived at after many years of original investigation. They are, I believe, with slight modification, accepted by most of the more recent authorities. I shall now review very briefly some of the, to me, erroneous views presented in a recent work—I refer to a work entitled, "The Anatomy and Pathology of the Teeth." The author and his associates, in a chapter describing "the calcification of the enamel," makes these statements:

"The more we turn to the center of the cup 'enamel organ' the more shall we be struck by the presence of glistering homogeneous lumps in the epithelia, until we have reached the center of the cup, where we observe that epithelium has been transformed into a number of such lumps in a regular arrangement, which reminds us of their origin, epithelia (enamel cells) gradually become enlarged and are at last split up into a number of medullary corpuscles." Again, "medullary tissue develops into con-

nective tissue of a decidedly fibrous character." Again, "there is good reason for the assumption that the medullary tissue sprung from the previous external epithelium (of the enamel organ) is the source for the completion of such enamel as we observe upon temporary teeth when they emerge from their sockets." Again, "if we examine the lower edge of the cup of the enamel organ at about the sixteenth week of embryonal life we observe a peculiar change in the columnar bodies of the internal epithelium which consists in the appearance in a more or less row-like arrangement of highly glistening globular bodies replacing the previous columnar epithelia. These bodies are either solid or slightly vacuoled and *are formations of living matter* such as we are accustomed to look upon as medullary, embryonal or indifferent corpuscles, in their earliest stages of appearance. Obviously the glistening globules have originated from the reticulum of living matter of the columnar epithelia (enamel cells) themselves. We feel justified in this conclusion from the fact that we can trace, step by step, the growth of these glistening granules up to the formation of glistening lumps such as we have termed medullary corpuscles. * * * * The lumps are extremely glossy, with a high degree of refraction. They are arranged at first irregularly in a layer of considerable breadth, and higher up in rows, and by their coalescence and prolongation give rise to small columns, the ameloblasts. * * *

"These (medullary) corpuscles or the liquids contained in their reticulum become solidified into basin substance and immediately infiltrated with lime-salts. * * * The enamel rods are built up in rows of such calcified or petrified medullary corpuscles."

These observations, in regard to the calcification of the dentine, endeavor to show that the odontoblasts are split up at their distal ends into these glistening bodies, which they call medullary corpuscles, are lumps of protoplasm in which living matter is stored up in different shapes, the glistening globules of small size having arisen from protoplasm, and that these represent a juvenile condition of living matter in its most compact aggregation which enter directly into the formation of the basis substance of dentine, while at the same time, continually superadded to the proximal

ends of the odontoblasts are the medullary corpuscles derived from the living matter of the papilla. The continuity of the odontoblasts in dentine is established. They assert a similar proceeding from ameloblasts in a reverse direction. Thus, the ameloblasts being broken up at their proximal (dentine) ends into medullary corpuscles, which are entirely transformed into blocks of enamel rods and superadded to at their distal or perispherical ends by medullary corpuscles derived from the stratum intermedium. * *

"The indifferent corpuscles serving to supply additions to the ameloblasts exhibit all intermediate stages between small, globular, glossy and compact nucleated, protoplasmic lumps." * * "Nothing but a transmutation of solid, globular lumps of living matter in delicately reticulated medullary corpuscles seem to be required for the building up of the minute blocks of the enamel rods without the intermediate stage of ameloblasts. * * * The first appearing enamel is made up of irregular, angular, glistening lumps, greatly varying in size."

In these few selections from a chapter in this book on "Calcification" I have given some of the points which they present, and these I propose to briefly review. No one can be more clearly aware of the patient and persistent effort and of the immense amount of labor and earnest research which the author has given to his work than myself, and great credit from his profession is due to Dr. Bodecker for his labor. I am not in accord with his views as to calcification of the dental tissues. To some of us "the reticulum" and the "medullary corpuscles" are bugbears. To the earnest investigator, who did not know the author, it would seem from their description of the calcifying processes, as if a tissue has been built up to fix a theory. So far as I am aware, photo-micrographs of these tissues, as described in this chapter on calcification, have never been shown. There is no absolute evidence to prove the correctness of their assertions. These peculiar theories on the calcifying process cause a very considerable amount of doubt in the mind of any one who has given this subject attention in the way of original investigation. The theories advanced clash strangely with facts. The glistening bodies seen in the epithelial layers of the enamel organ are but lifeless lime

globules and do not have their origin in a reticulum of living matter in these epithelial layers. Their origin is more probably from the blood supply which is everywhere abundant near these layers. It is speculating in a very lively manner to assert that the cells in the enamel layers split up into a number of medullary corpuscles of a fibrous character and then become formations of living matter; and it is wholly a hypothetical statement to make when they say that these glistening bodies by coalescing and prolongation give birth to the ameloblasts. These lumps of living matter which they call medullary corpuscles are but glistening masses of lifeless matter known to be calco-globulin.

They are not medullary corpuscles; they do not arise from protoplasm; they are not "a juvenile condition of living matter in its most compact aggregation."

Gold as a Filling Material.

L. C. MOORE, '95 D. C. OF M., DETROIT, MICH.

Perhaps it would be well to speak of some of the properties of gold foil and of the means of producing it, for it must be of interest to those using this material to know of its manufacture. Ottolengue says Gold is pre-eminently the best material with which to fill teeth. The properities of Gold which adapt it for the restoration of carious teeth are its softness, enabling it to adapt itself to the form of the cavity; its tenacity which gives facility of introduction and of consolidation; its resistance of chemical action, which prevents waste of material by the various influences to which it is subjected; and its agreeableness of color, which when pure and unburnished, approaches more nearly the shade of the natural tooth than any other metallic substance. The writer is inclined to differ somewhat from the above opinion, given by Dr. Jack, of Philadelphia. As to the color, I am inclined to think that the gold color is least objectionable because custom and the relative value of gold over other precious

metals have made it so. Being the best of metals, it is preferred by the majority of patients in locations where it is seen principally on account of its intrinsic value. It is safe to say that if other precious metals possessed the properties of gold and were equal in intrinsic value, they would be quite, if not more, popular as materials with which to fill teeth. So far as color is concerned, other silver colored metals are less conspicuous and, to my notion, would be preferable if they would retain their color as gold does. It is a fact that gold is the only precious metal of the yellow color. Its main disqualification is its great conductivity of heat, and it also unfortunately requires considerable time for its proper insertion, in addition to which it lacks some of the good qualities of other materials; but, nevertheless, it can be stated positively that the main reliance for the salvation of teeth which have decayed must be upon gold. There is no data sufficiently accurate to give evidence when gold was first used in dental surgery, but it was early seen to be far more durable and sightly than lead, which was the first material ever used as a stopping for carious teeth. The results from the use of gold as a stopping are satisfactory, and it is even found to succeed well when other materials have failed. It is furthermore voiced by the profession of all periods as the most satisfactory material in all respects with which to fill teeth, provided the position is not prohibitory and the quality of the tooth structure sufficiently dense to prevent the requisite amount of force without injury to the borders. These elements qualifying success are, it is true, various, as a tooth which is thought by some operators to be too soft to be packed with gold by his methods can be easily done with safety by another whose methods are different, but the filling will be in each case of the same solidity.

The purity of gold foil is an important factor and a description of the refining process may be interesting as well as instructive. For the following facts I am indebted to Dr. Jack in the "American System":

"Purity of gold imparts to the foil the extreme softness it should possess and gives it the facility of being easily adapted to the surfaces of the cavity. However solid a filling may appear

to the eye and touch, if the gold used does not possess the property of plasticity, there is danger of imperfect adaptation at some point. To point out the superiority of gold foil of to-day, we will compare the present results with the analysis of thirty years ago. A test made at the United States' mint in 1884 by Dr. E. Townsend of 1000 parts of crystal gold gave .993-½ pure gold, and was at that time declared to be equal to the foil in general use, and superior to most. Pure gold is rarely obtained, and from the great care and expense required, its production is well nigh impossible. The removal of the smallest particles of other metals would be important if practicable, since any metallic combination with it impairs its ductility, and likewise causes it to harden under pressure more than if it were absolutely pure. The slightest particles of arsenic, antimony, tin and lead would be sufficient to affect its ductility. The impurities of crude gold, as mined, consists principally of silver (which is always present), of iron and of either iridium, platinum or palladium, and it sometimes contains lead. Gold may be adulterated by arsenic and bismuth. The usual process of purification at the mints (which is the source from which gold foil manufacturers derive their gold) is by quartation. The silver is removed by nitric acid and the gold left in the form of a dark powder. The gold is now from .995 to .998 pure. It is also sometimes precipitated by the action of boiling sulphuric acid which raises the fineness to .999. Even at this degree it is not sufficiently pure to produce the softest and most tenacious foil. Manufacturers are obliged to subject it to further processes. As gold bullion from the mints varies considerably, it has to be approximated by the process of deflagation, which consists in continued fluxion of the gold with potassium nitrate which has the power of oxidizing the baser metals, as zinc, lead, arsenic and copper. It is further subjected to the action of sulphur dropped into the boiling metal which combines with the silver, and of corrosive sublimate for the removal of the last traces of iron. It is at last very nearly pure. Dr. Jack goes on to describe the making of gold foil. He says: "The ingot of refined gold is rolled between steel rolls into very thin ribbons the thickness of tissue paper. It is then weighed and divided into

pieces of appropriate sizes to produce any of the numbers, 4, 5, 6 and so on. The little squares to the number of 200 are taken up by wooden pliers and placed in alternate layers with sheets of vellum which mass is called a cutch. A case of strong parchment is placed over the cutch in both directions to enclose the whole in a secure manner. The mass is now beaten by means of short-handled hammers upon a block of wood which should extend to the earth to afford solidity.

Considerable skill is required to attain evenness and to produce a good quality of foil. When the sheets are drawn out by beating until they extend to the edge of the vellum, they are removed, one by one, into a larger cutch and the process completed. The packet is repeatedly folded or rolled to prevent the gold adhering to the surface of the vellum and to keep the mass somewhat loose. Now, when the proper thinness is attained, the sheets are taken out and cut into size by a sharp reed on a leather cushion. The sheets are then accurately weighed, when they are ready for annealing.

This is an important and delicate process, and may be done in several ways, such as a frame of platinum wire gauze with a spirit lamp under it or in the muffler of a furance. In any event, it is important that the heat be high enough to thoroughly soften the gold and do it evenly to every part of the sheet. The sheets are then put in the books so familiar to dentists."

It would seem that gold foil has certain distinct and easily recognized properties which have direct relation to its use as a filling material. These are cohesiveness, softness, hardness, tenacity and fragility.

Cohesiveness is that property of gold which causes one particle or layer to adhere to another when they are laid together and if brought into actual contact by pressure, they become permanently united. This property is always present, independent of the purity of the foil. It is argued that silver increases cohesiveness, but at the same time lessens the softness of the gold foil. In our daily use of foil, we can easily see the great value of this property, for surely it is the means of making our filling a solid, impenetrable mass through which, provided it is properly inserted,

caries cannot take place. It is a dam through which bacteria and salivary secretions cannot pass. Cohesiveness manifests itself directly after it is finished in the annealing process in its manufacture, but if lost is capable of being restored by heating to near a red color over the spirit lamp. Exposure to the atmosphere and various other conditions overcome this property, but heat will renew it. (The duration of the condition is very short, for an hour's time will show change, and in the course of a day it will be entirely lost.) For the knowledge of the cohesive property of foil, we are indebted to Dr. Arthur, who, after a number of experiments, recognized and revealed it. It is truly said, that this made a "revolution in dental surgery," and while it has increased the field of dentistry and has been of incalculable benefit, it has also done a great deal of harm by being used when not applicable. This holds true, especially on the margins of the cavities. A wrong impression has arisen in the minds of some, that cohesive gold is hard gold on account of the defectiveness of much of it now in use. Perhaps one reason for this is that when it is pure and accordingly soft, it is capable of being condensed into a condition of absolute solidity, and would consequently appear less yielding. If it becomes contaminated with other metals as copper, platinum, palladium, zinc, etc., as previously stated, while still retaining its cohesiveness, it is much harder, thus becoming harder to manipulate. In such a state, it is not fit for filling teeth, except for surfacing cavities in the grinding surfaces where mastication is extremely severe.

Non-cohesive gold foil is a gold which is incapable of cohesion, even after being highly heated. In this respect, it is distinguished from cohesive which, by exposure, loses this characteristic property. This difference has been the means of producing many unfortunate stoppings. This kind of gold has often been mistaken for and called soft gold in contra-distinction to cohesive foil. While non-cohesive gold, even when not absolutely pure, is more yielding when used in a mass than the purest cohesive, it is quite important that it be as pure as possible, for then on account of its softness and extreme tenacity, its working qualities are eminently shown. In this condition it is capable of being adapted to the margins of the cavities by slight force.

It may be said that this variety of gold may be used advantageously for filling accessible cavities at the beginning, the common cement of proximate cavities, and for lining the labeal walls in the anterior teeth. Non-cohesive foil, when perfectly pure, is nearly as soft as tin, and is somewhat easier to manipulate, but differs very little in its working qualities from it.

Now comes the question, "In what form can we best manipulate gold?" Formerly, there were but three ways in which it was used; the rope, the pellet and the tape, the first named being the most common. At the present time there is a large number of forms used, so that a person is not confined to any one kind. The pellet and rope are very rarely used and have given way to the mat, the compact and loose block, the compact and loose cylinder, the ribbon, rolled gold of considerable thickness plated with platinum and crystal gold. The tape is made by folding any portion of a sheet over and over until the desired width and thickness is produced. Sometimes it is an advantage to use small portions of the tape. It is then cut transversely in small pieces, which are called mats. These are especially valuable when non-cohesive gold is used in small cavities.

The compact block is formed by folding a tape on itself a number of times which is done by siezing it in the pliers and making turns of any desired size, either square or narrow. These, of course, should be of non-cohesive gold, as a mass so compact of other gold would become unmanageable by the cohesion of the layers. These blocks are useful in starting large proximate cavities at the cervical wall especially. They are also very useful in simple crown cavities. This form of block has been wrongly styled a cylinder.

The loose block is composed of cohesive gold, and is generally made of what is called corrugated gold, this being used as the layers only touch at certain intervals. This variety of gold is used only for building up after a foundation has been established.

The compact cylinder is made by rolling a tape of non-cohesive gold upon a fine broach, commencing at the end of the tape and rolling until the desired size has been reached. The size varies according to the thickness and width of tape. Compact cylinders are recommended for stoppings in buccal and coronal surfaces.

The loose cylinder, from outside appearance, resembles the previous kind, but it is decidedly different. This form of gold can be made only by the manufacturers. They are composed of several sheets laid one upon the other and wrapped loosely upon a needle-like piece of steel. After this rod has been removed, they are cut into assorted sizes, and are usually made of corrugated cohesive or semi-cohesive gold. This kind of gold is best employed in commencing fillings in which event it is usually annealed.

Ribbon gold is formed of whole sheets, and in some cases, of two sheets of flat cohesive gold, folded like a tape three times. These ribbons are then cut crosswise with shears into little strips which after being annealed are ready for manipulation.

Platinum plated with gold was first introduced for the purpose of filling teeth exposed to view, but now it has another and quite a valuable use and that is on the masticating surfaces of teeth worn down by years of constant grinding. Another advantage claimed is the tint which the two metals impart which resembles more nearly the shade of many teeth than gold alone. It might be well to say that this kind of gold is not adapted for composing the body of fillings, and should be used only for surfacing as it requires more force with the mallet than is safe upon the tooth at the beginning of the filling.

Dr. A. J. Watts was the first one to present crystal gold, some thirty years ago. The filling material at first was rather imperfectly prepared, being, in some cases, a simple precipitate of gold which was treated with nitric acid, the acid being neutralized by amonia, the gold was found in a crystalline condition. Afterwards it was thoroughly heated on a slide in a muffle, when it was ready to be used. This kind of gold became very popular and was used extensively for a time, but gradually fell into disuse, the reason for this being because of the impurities in the gold and also owing to the hurried and careless manner of introducing and packing it. Later, it was manufactured by electrolysis and since that time has been used moderately. Great care must be exercised in using crystal gold to prevent condensation in the primary manipulations; the pieces should not be too large, that they may be dispersed in a thin layer over the surface slightly compressed

and afterwards thoroughly condensed by rather small instruments before inserting another layer. With such precautions, excellent results are obtained. But, after all, I can see no advantages in it over ordinary foil.

In annealing gold foil there does not seem to be any special methods introduced, it being only necessary to heat it in a flame which does not contain sulphur or phosphorus. Cohesive gold, heated in this way, its property is restored and non-cohesive gold, its toughness and density returned without making it harsh.

When a cavity is filled with pieces of gold, the mass is retained by the form of the cavity; but, unless the pieces of gold are placed in correct relation, each to the other, and to the walls, or are perfectly united together, the mass may become separated and part escape from the cavity, thus disfiguring the appearance of the filling and ultimate injury to the tooth. A writer on this subject gives three methods by which gold may be packed to prevent this accident.

1st. By the mechanical arrangement of the layers.

2d. By incorporation of the layers.

3d. By cohesion of the layers.

The first is applied to non-cohesive gold; the second, to the combination of cohesive with non-cohesive, and the third to cohesive gold exclusively.

I will not describe the manipulation of gold foil further, as this paper is already too long. Gold may be packed by hand pressure or malleted by hand, automatic or electric devices.

Notwithstanding all our knowledge of gold, its properties, and its virtues, I am reminded almost daily that we must not expect too much from our operations, for we are all doomed to disappointments in our indiscriminate operations. We are to acquire the skill, the technique and to learn to discriminate, but these things can only be learned by experience successes and disappointments. In our enthusiasm and ambition we are likely to undertake the construction of temples of fame which afterwards and altogether too soon, are tumbling ruins. So much is dependent upon the close observance of the technique. Gold alone is not the only requisite necessary in the construction of these temples. When we consider

that a cavity in the tooth prone to decay is to be hermetically sealed with a foreign material, and that material a metal, it is not a very easy thing to do, although seemingly a simple matter to excavate a cavity and fill with a stopping of gold, but to seal that cavity absolutely against further decay, besieged by enemies upon all sides is not an easy task.

Generation and Degeneration of the Tissues of the Mouth.

BY W. H. WHITSLAR, M.D., D.D.S., CLEVELAND, O.

Read before the Tri-State Dental Meeting at Detroit, June 18th, 1895.

The first general observation we should perceive in the study of vital phenomena is the mutual dependence of all things, which in their groupings together compose the system of Nature. This dependence requires for each being the existence of all the others.

Anatomy is a part and parcel of physiology, and, of all studies, it enables us to obtain the best appreciation of the beauties of living phenomena. It is essential to understand the situation, size, form and structure of organs, and their relations, in order to have a perfect conception of their functions.

Now, the phenomena of development, growth, sensation, decay and death, and many others, belong to life. Life occurs only in material structures which exist in obedience to the laws of physics and chemistry, and is a superstructure upon these laws which cannot be studied independently of them. Indeed, the greater part of the phenomena of organic beings is chemical and physical, modified only by an additional principle called life.

Man's life is inseparably linked with the plants and animals, and his existence depends upon the climate and productions of the earth. His own organic constitution participates in all things that surround him, hence it is necessary, in order to understand the conditions of our existence, to begin at the germ of organization and pursue the changes that occur in the nearest approximation to the inorganic material of the universe. We should study

the protozoa, and rise in the scale until we arrive at the height of God's perfected being—man. In this study we would find the mutual dependence of all living organisms, and the expanse of power widening as the scale of organization ascends, each being independent in propogation of species. Whilst there is a vital power given to each organism in the first place by the Creator, there is a correllated physical and chemical relationship thereafter between individuals, in accordance with their environments. Recognizing the dependence of man upon his surroundings and his predecessors, in a measure, his individualism is born when the pronucleus of the ovum is impregnated with the spermatazoon.

If the theory of Weissman be true, then in this microscopic cell there exists germ plasm that has been transmitted, or a continuity is established that carries with it the natural impress of parental characteristics. In this way heredity forms an active agent in the generation of all parts of the economy, and it is an important etiological factor in pathogeny.

So, beginning with the cell, or egg, its first aptitude is its adaptation to its environments, and in the hope of the establishment of an equilibrium between itself and parent it extracts from its trysting place pabulum until it is expelled from the body. The equilibrium between parent and embryo is not recognized until the child is entirely independent, and a personal existence commences.

To be specific, we must particularize. Every animal arises from an egg, i. e., an impregnated cell from the female. The union of this protroplasmic material involves chemical and physical phenomena, and, endowed with united vital forces, organization is promoted. These chemical changes increase in proportion to the growth. Indeed, the cell is the simplest physiological apparatus, and as such is the seat of chemical processes. It is generally conceded that all chemical changes of importance do not take place in the animal fluids, but that these occur in the cells. The cells regulate by their activities the chemical processes and exchange of foods.

In the generating of the tissues of the mouth from the primitive cell, the process of segmentation evolves the ectoderm and

entoderm, from which springs the mesoderm. Just why these layers of cells, which are seemingly evolved from the same material, should mature different tissues is difficult to understand. All we can say is that there is a different chemical and physical arrangement of the molecules of matter presided over by existing vital forces.

That vital phenomena have to do with the chemical arrangement of bodies is exemplified by the experiments of Mr. Rainey in the processes of calcification. In the formation of enamel or dentine, calcific material is held in chemical combination with the intercellular substances in the vicinity of, and in, the enamel organ and dentinal papilla. By the action of ameloblasts and odontoblasts—specialized cells—enamel and dentine are formed. It is by their activities that the lime is deposited chemically as well as physically.

An aggregation of cells composes what is termed the enamel organ, and it is said that the function of the enamel organ is the formation of enamel. Strictly speaking, however, it is a matrix to mold the form of the tooth, the performance of function being resident in the ameloblasts.

Function is a vital phenomenon: and pathologic conditions are perverted physiological phenomena. The difference between these two conditions is an indefinite line wherein the balance of vitality is overcome by perverted function. If tissues are degenerated from their normal tendencies, regeneration balances the waste, but if they are normal it is a physiological process. If, however, the cell destruction is greater than the cell production, regeneration is suspended and atrophy results. Thus we observe that the degree of atrophy is proportionate to the diminution of function.

Now we find frequently that teeth have white and brown spots that are congenital. These spots are the result of perverted function of the cells that superintend the deposition of the lime salts. This perversion is ostensibly caused by starvation or improper metabolism of foods. It would not be entirely amiss to surmise that the white spots were produced by increased function, but limited in the supply of organic materials. In these we find

the intermediary organic substance is deficient. The colored spots contain a greater amount of organic matter than the white spots. This may be due to the sluggishness of circulating fluids in the vicinage, resulting in stagnation or lessening of the chemical and physical processes. Thus, while other parts of the tooth are developing, an area of imperfect tooth material is constructed, which is due to the lack of power of the cells which have to do with the building, so to speak. There is a failure of correllation of the organic and inorganic substances, and the tooth becomes more of an admixture than a proper organization.

Notwithstanding criticisms to the contrary, I believe that hæmoglobin and oxyhæmoglobin of the blood and their derivatives, hæmochromogen, hæmatin and methæmoglobin, acting as transudation products, or even the results of decompositions, stain these areas by being incorporated with the material.

It is to be remembered that the blood vessels are in close proximity to the ameloblasts, also that these cells are derived from the malpighian layer of cells, which have to do with the pigmentation of the mucous membrane. There is in this a close analogy which may be significant. However, we must rely upon the activities of the blood in the vicinity, for it is the first tissue to exhibit extreme atropic changes.

It is necessary to have blood present after the first stages of calcification to further that process. During these preliminary stages the mineral elements may be found in proximity to the developing tooth, and from these the primary deposits may be accrued.

The mineral substances are the most essential constituents of the teeth. Phosphate of lime is greater in amount in the teeth than any other tissue. The consumption of it during pregnancy is often so great that it does not appear in the usual amounts in the excreta, scarcely any trace being found (Lehman). This may account in part for Lehman's declaration that lime salts are deposited mechanically in bones. He gives as proof, the ease with which lime salts can be so thoroughly dissolved from bones by hydrochloric acid. Acting upon this hypothesis, may we ask the question, "Are enamel and dentine deposited mechanically?"

This is partially true, I believe, for, as already stated, there is resident material in the part, as well as that which is carried to it by blood and intercellular fluids. This may be a process of osmosis, or it may be one of catalysis. We learn that "earthy phosphates are found in all cells and tissues. Indeed, they seem to be of greatest importance for the life of the cells and the chemical processes that accompany their evolution; that it is impossible to separate them from the protein substances without decomposition. There is no animal tissue which does not contain mineral substances." "The bones, teeth and muscles contain the most minerals." "In the distribution of mineral substances we find them dissolved in the fluids and partly combined with organic substances."

The question naturally arises, are mineral substances manufactured within the body? It is established that on the burning of the organic substances the mineral bodies are liberated and eliminated. They, in part, combine with new products of the oxidation and become attached to the organic bodies which are free from salts and are absorbed from the intestinal canal.

Hence, it would be seen that a constant supply of mineral substances is not absolutely necessary, and that an insignificant amount of inorganic bodies must be administered. So I wish to argue that, for this scientific reason alone, it is not a necessity to administer constantly foods bearing large quantities of phosphatic materials to develop good teeth. We must rely upon the resiliency of life as the energizing power to create metabolism. Physical forces strive to maintain themselves in equilibrium—thus we have metabolic power. A point of rest, normal state of being, is attained because physical forces act upon matter even if it has attained its equilibrium. Inorganic chemistry also induces motion, and continues active in motion and metamorphoses until the closest affinities are satisfied. Albinus established the axiom that the essence of vital force consisted in motion. But if that vital power is by disease deficient, then the metabolism of materials into tooth structure is obstructed, and we see the results in deformed teeth, both as to form and structure.

Let us, for example, suppose that fever disturbs the parturient

woman, she is robbed of nutritive power to supply her embryo. Unfortunately Nature does not come to the rescue and, the equilibrium being unbalanced, she is sacrificed at the expense of her general health, and the embryo develops, but less actively. Because of this sacrifice we seldom witness defective deciduous teeth, and unless the parent recuperates, the disease shows its tracings upon the permanent teeth; in other words, produces a disease destroying the pivotal anchorage upon which the balance of vital phenomena is supported.

Rachitis and concomitant diseases, affecting particularly the bony structures, are resultant from imperfect metabolism and starvation. The mineral substances leave the body uninterruptedly in starvation until death (Hammarsten). The experiments of Chossat and Voit show the loss of weight of bones during starvation to be as high as seventeen per cent. in pigeons, and fourteen per cent. in cats. Blood and its solid ingredients decrease in proportion to the weight of the body. Naturally, then, the teeth, whose development is dependent upon blood, must suffer.

It is not necessarily sufficient to argue that the teeth suffer in the same proportion as bones, because one system of organs may derive its nutriment at the expense of another organ, so it is impossible to say that teeth receive their aid from this or that. They do suffer, however, and all the permanent teeth developing whilst in utero show at times marked signs of starvation. The cells, which are the constructive agents of the the teeth, may have such environments that the resiliency of their activity is sufficient to controvert the disease: their chemical and physical activities are alert, and extract from other tissues material for a continuance of construction. This seems to be a gift of specialized cells.

Phosphate of lime is an important adjunct in metamorphosis of animal tissues. We receive much of it through our food. The graminivorous animal receives it through the vegetable kingdom in certain nitrogenous bodies which contain phosphate of lime, as in vegetable albumin, legumin and glutin. Phosphate of lime is not removed from the body until it is partially decomposed or oxidized, and in this process phosphoric acid must accrue, which enters into union with the lime that enters the body with cereals

and leguminous plants. Hence, we observe the relation of our bodies to all that surrounds us, as stated in the beginning of this paper. Our body is a great chemical laboratory, in which wonderful phenomena are exhibited.

Developing tissues of the mouth have great reliance upon chemism, and improper construction may be due to the disassociaction of molecules of matter, all these being modified by the principle of life.

Dental Law.—Holland.

LAW REGULATING THE CONDITION FOR OBTAINING QUALIFICATION OF DENTIST,* OF DEC. 25TH, 1878, ALTERED DEC. 12TH, 1892.

ARTICLE 8.—The title of dentist, allows the practice of dentistry, by which is understood the local treatment of disease of the teeth, their alveoli and gums. This title can be obtained upon successfully passing a practical examination, in which sufficient evidence must be given of the practical knowledge of operative dentistry and inserting artificial teeth and plates.

ARTICLE 9.—Only those who have successfully passed the theoretical examination can be considered for the practical examination. This examination includes:

(*a*) Anatomy of the teeth, their aveoli and gums.

(*b*) Physiology of these parts.

(*c*) Hygiene, pathology of and medicaments for these parts, in which is included the capability of distinguishing diseases of the teeth, their aveolar processes and gums, of which the cause is general or resides in other parts.

(*d*) Materia medica, and knowledge of prescription writing, as far as necessary to prescribe local medicaments for diseases above mentioned.

The following is an extract of the by-laws, etc.,

*Dutch: "Tandmeister." German: "Zahnmeister." Certainly a title far inferior to the American D. D. S.

The title of "Tandarts," German "Zahnartz," is however allowed in Holland and is now mostly adopted.

Those, who have after examination obtained the right to practice dentistry in another country, or in one of the Dutch colonies, may be partially or entirely excused from the theoretical examination and from the preceding examinations. The Government reserves the right, after having been advised by the Government University, to decide which certificates or diplomas excuse the holders from the examination, either entirely or partially.

Excused from an examination in branches under letters (*a*) and (*b*), are:

Those who have attained a diploma as doctor of medicine of one of the Holland Universities, also those who have passed second physical examination.*

To come in consideration for the theoretical examination (leiste natum kundig) for dentist, the first physical examination must have been passed, or permission obtained from the professors of the University to be examined for it.†

The theoretical examination is conducted by members of the medical faculty of the Netherland Government Universities, fee $10.00.

Practical examination $10.00.

In case of refusal the next examination is free of charge, a third examination $10.00 each.

The committee for examination consists of the president, and members, place-taking members, and secretary, and are appointed by the Government each year.

Examinations are held in public, except those on the sick-bed, to which others than the candidate may be present, by permission of the examining committee only.

Those who pass receive a diploma which gives the right to practice dentistry.

Those passed must, before they are admitted, swear and solemnly declare to practice dentistry according to the constituted law, to their best knowledge and ability, and not to make public

*This is one of the examinations of our universities, and rather severe,

†The examination in Holland is always conducted by a committee appointed by the Government, in which the teaching professors have no part.

to any one, what has, in confidence, been communicated to them, or has come to their knowledge, unless demanded by the law as witness. "So help me God Almighty." (I promise it.)

Examination is held twice at least, each year.

The Minister of Interior decides the place and time for the committee to assemble.

Examination is conducted in the Dutch language only.

The money paid by the candidate goes to the Government, which pays the examining committee a regular fee.

The entire regulation of the examination is constituted by the Government.

A dentist is allowed to treat diseases of the teeth, alveoli and gums, by prescribing medicaments for those parts.

General anæsthesia, prescribing of systemic remedies and furnishing of medicine is forbidden.

Before engaging in practice the diploma must be revised by the medical inspector of the province in which one wishes to locate—and must furnish a legal proof of locating.

On moving, the inspector must be again notified, and certificate issued by him returned.

The Lord Mayor of the town in which one locates as dentist must also be notified officially.

The same regulations hold good for temporary residing at a place.

Practicing without diploma or infringing the dental law is punished with from one to six months imprisonment *and* fine of from $10.00 to $40.00, together or separately.

Practicing without having diploma revised or registered is punished with a fine of from $4.00 to $40.00.

In conclusion allow me to say, that if that gentleman has passed the examination under the new law of '92, he likely will be well posted on those branches, as I know the examining committee are very strict and honest, but if he is an "old timer," I should think that his theoretical knowledge would be very limited.

The practical part receives so little attention in Holland, that the "old time" dentists know little more than extracting teeth and making plates of rubber and probably of gold.

National Association of Dental Faculties.

The twelfth annual meeting of the National Association of Dental Faculties was held at the Ocean Hotel, Asbury Park, N. J., commencing Saturday, August 2, 1895; the president, Dr. Frank Abbott, in the chair. The entire membership of the association was represented at this meeting as follows:

University of California, Dental Department—L. L. Dunbar.
University of Denver, Dental Department—R. B. Weiser.
Columbian University, Dental Department—J. Hall Lewis.
National University, Dental Department—J. Roland Walton.
Southern Medical College, Dental Department—Frank Holland.
American College of Dental Surgery—Louis Ottofy.
Chicago College of Dental Surgery—Truman W. Brophy.
Northwestern College of Dental Surgery—J. A. Whipple.
Northwestern University Dental School—George H. Cushing.
Indiana Dental College—George Edwin Hunt.
University of Iowa, Dental Department—A. O. Hunt.
Louisville College of Dentistry—Francis Peabody.
Baltimore College of Dental Surgery—M. W. Foster.
University of Maryland, Dental Department—F. J. S. Gorgas.
Boston Dental College—J. A. Follett.
Harvard University, Dental Department—Thomas Fillebrown.
Dental College of the University of Michigan—J. Taft.
Detroit College of Medicine, Dental Department—G. S Shattuck.
University of Minnesota, College of Dentistry—Thos. E. Weeks.
Kansas City Dental College—J. D. Patterson.
Western Dental College—D. J. McMillen.
Missouri Dental College—A. H. Fuller.
University of Buffalo, Dental Department—W. C. Barrett.
New York College of Dentistry—Frank Abbott.
Ohio College of Dental Surgery—H. A. Smith.
Western Reserve University, Dental Department—H. L. Ambler.
Pennsylvania College of Dental Surgery—C. N. Peirce.
Philadelphia Dental College—S. H. Guilford.
University of Pennsylvania, Dental Department—James Truman.

Meharry Medical School of Central Tennessee College, Dental Department—G. W. Hubbard.

University of Tennessee, Dental Department—J. P. Gray.

Vanderbilt University, Dental Department—Henry W. Morgan.

Royal College of Dental Surgeons of Ontario—J. B. Willmott.

The following colleges were admitted to membership:

University College of Medicine, Dental Department, Richmond, Va.—L. M. Cowardin.

Atlanta Dental College—Wm. Crenshaw.

Birmingham Dental College—T. M. Allen.

Cincinnati College of Dental Surgery—G. S. Junkerman.

Cleveland University of Medicine and Surgery, Dental Department—S. B. Dewey.

The following, laid over under the rules from last year, were adopted as here given:

Resolved, That in view of the recommendation of the Executive Committee that this association now in session shall require that all colleges, members of this association, shall extend the term of the session of 1896-97, and of succeeding sessions, to not less than six months each;

Beginning with the session of 1895-96, no college shall be permitted to retain membership in this association if it is conducted or managed, in whole or in part, by any person or persons who do not practice dentistry in accordance with well recognized and generally accepted forms, generally known as dental ethics, or if they are owned in whole or in part by men or women who are engaged in disreputable dental practice, or if any college have upon its list of trustees, the faculty, demonstrators, or in any other capacity, any one who does not practice dentistry in accordance with the principles above mentioned. This shall refer to dentists only.

Beginning with the session of 1896-7 the examinations conducted by the colleges of this association shall be in the English language only.

The other resolutions which came over from last year for action were laid on the table.

A resolution was adopted requiring each college holding mem-

bership in the association to file with the secretary sixty days before the next meeting a detailed statement of its equipment and facilities for teaching; all new applicants to file a similar statement with their applications. The secretary was instructed to have blank forms printed for the purpose and forwarded to the various schools.

The report of the special committee on preliminary examinations was received and the committeee discharged.

The following resolutions offered by Dr. Patterson were adopted:

Resolved, That students in attendance at colleges of this association are required to obey the laws regulating the practice of dentistry in the various states, and failing to do this, shall not again be received into any of the colleges of this association.

Resolved, That when a college of this association has increased the cost of tuition fees, no student shall be received at the former fee except those who have matriculated at such college prior to such action.

The Committee on Text-Books reported in favor of the adoption as text-books by the colleges of the association of two works, namely, "Dental Anatomy," by G. V. Black, M.D., D.D.S., and "Methods of Filling Teeth," by Rodrigues Ottolengui M.D.S. The report was adopted.

The following lie over until next year:

Amendment to the rules offered by the Executive Committee:

That each college be allowed two delegates, and be limited to one vote for each school.

By Dr. Peabody:

That when a student who has matriculated within the time limit in any recognized college shall, from sickness, death or sickness in the family, lack of funds, or other reasonable cause be compelled to retire from that college before the expiration of the term, he may be allowed to make up the deficit of time in the same or any other college (provided he enter at a date not later than that on which he retired), be examined by the last college entered, and if the examination be up to the requirements of that

college, and otherwise satisfactory, may be given tickets for advanced standing or graduated, as the case may be.

By Dr. George Edwin Hunt:

Amend the last portion of rule 3 to read as follows:

"Except on such conditions as would have been imposed in the original school, and these to be ascertained by conference with the school from whence he came."

By Dr. Gray:

Moved that when students from one college apply for advanced standing to any other college of this association it shall be the duty of the Dean or Secretary of the latter college to ascertain by correspondence with the college from which the student comes if there be any objection to his acceptance.

By Dr. Gray:

Resolved, That all colleges of this association shall charge not less than one hundred dollars tuition each session.

By Dr. A. O. Hunt:

Resolved, That a student who is suspended or expelled for cause from any college of this association shall not be received by any other college during that current session.

In case the action of the first college is expulsion the student shall not be given credit at any time for the course from which he was expelled.

Any college suspending any student shall at once notify all other members of this association of its action.

The following resolution offered by Dr. Ottofy was adopted:

Resolved, That the endorsement of application for membership, made during the coming year, shall be based upon definite knowledge obtained by a careful examination of the methods of teaching, the equipment, and the efficiency of the Faculty.

The report of the committee on revision of the constitution, laws, and codified rules was considered section by section, and laid over for final action next year; and the committee, consisting of Drs. Louis Ottofy, A. O. Hunt and J. D. Patterson, was continued.

The following were elected officers for the ensuing year: S. H. Guilford, President; Geo. H. Cushing, Vice-President; Louis

Ottofy, Secretary; Henry W. Morgan, Treasurer; J. Taft, Thomas Fillebrown, B. Holly Smith, Executsve Committee; H. A. Smith, A. O. Hunt and T. W. Brophy, Ad Interim Committee.

The newly elected officers were installed and the president announced the standing committees as follows: J. A. Follett, L. L. Dunbar, Geo. Edwin Hunt, C. N. Peirce and T. W. Brophy, committee on schools; J. D. Patterson, A. O. Hunt, J. B. Willmott, T. E. Weeks and J. P. Gray, Committee on text-books.

Adjourned to meet at the call of the Executive Committee.

National Association of Dental Examiners.

The thirteenth annual session of the National Association of Dental Examiners was held at Asbury Park, N. J., commencing Monday, August 5, 1895; the president, Dr. L. Ashley Faught, of Philadelphia, in the chair.

The following state boards were represented at the sessions:

Alabama—T. P. Whitby.

Delaware—C. R. Jefferis, D. M. Hitch.

Georgia - J. H. Coyle.

Iowa—J. T. Abbott.

Kentucky—H. B. Tileston.

Kansas—J. O. Houx.

Colorado—R. B. Weiser.

New Jersey—F. C. Barlow, Chas. A. Meeker, Geo. E. Adams, E. M. Beesley.

Pennsylvania—Louis Jack, W. E. Magill, L. Ashley Faught, Jesse C. Green.

Tennessee—F. A. Shotwell.

Virginia—J. Hall Moore.

District of Columbia—H. B. Noble, Williams Donnally.

The following boards were elected to membership:

Connecticut—Geo. L. Parmele.

New York—Wm. Carr.

New Hampshire—Edward B. Davis.

A resolution, offered by Dr. Barlow, requiring credentials to

the association to bear the official seal of the state board making the application, was adopted.

A resolution offered by Dr. Donnally last year, and laid over, permitting persons who have been delegates to the association to be associate members without the right to vote or hold office, was taken up and adopted.

Dr. Jack offered the following, which was adopted.

Resolved, That this body would express to the Association of Faculties the importance of an examination of the equipment, methods and facilities of instruction of all the dental colleges of this country; it being understood that such examination is to be purely in the interest of higher educational standards and toward an approach to ultimate uniformity in the curriculum and methods of the schools, and more particularly to enable safe action to be made with respect to new schools.

Later a communication was received from the secretary of the National Association of Dental Faculties to the effect that the association had ordered the secretary to secure information from the various colleges regarding their equipment and general facilities for teaching; that this information would be systematized so as to be available at the next annual meeting of this body.

The following "plan of requirements for the recognition of dental schools," offered by Dr. Jack, was adopted, with a proviso that it shall apply only to colleges making application after the close of this session:

That each dental school which may in future come before this board for recognition, must have a teaching faculty composed as follows, to wit: at least three professors of dental subjects, namely, for operative dentistry, for dental prosthetics, for dental pathology and therapeutics. For the medical subjects there must be at least five professors, namely, for anatomy, for physiology, for chemistry, for pathology, and for materia medica.

Its students must also be taught the subjects of chemistry and bacteriology in laboratories adapted to the purpose and under suitable instructors.

That such special school must possess, in addition to suitable lecture-rooms, a well-appointed dental infirmary and a general

prosthetic laboratory; also each school must be provided with a room or rooms suitable for manual training in operative dentistry, and must furnish in this way systematic instruction to its students.

All of these provisions are to be determined by careful inspection on the part of the Board of Examiners of the state within which is located the school, or other authorized body duly indorsed by this association. And upon the result of this examination may depend the question of reputability.

The following colleges were added to the list of recognized schools: Dental Department of the University of Denver, Denver, Col.; Department of Dentistry of Detroit College of Medicine, Detroit, Mich.; Dental Department of Western Reserve University, Cleveland, O.

Applications from the following were laid over one year: University of Buffalo, Dental Department; Atlanta Dental College; University College of Medicine, Dental Department, Richmond, Va.; Birmingham Dental College; Cincinnati College of Dental Surgery.

The Committee on Colleges in its report, which was presented by its chairman, Dr. Jack, expressed the view that more should be required to establish the right of dental schools to recognition by this body than good organization and the fulfillment of the rules of the Association of Faculties. Evidence should be furnished that the teachers are of high standing; that they require of their matriculates the stipulated preliminary training, and that they are carefully qualifying their students in every necessary direction. To ascertain these facts is a matter of difficulty. It is necessary, too, in addition to an ascertainment of the character of the faculties of any school, to discover the degree of confidence which has been developed in the minds of the local members of the profession.

The number of students in actual attendance in all the schools of the country for the session 1894–95, excluding those attending special courses, was 4979, as against 3997 at the previous session; graduates 1207, as against 911.

The committee also expressed the conviction that it is becoming evident that the dental schools are increasing in number

beyond the needs of the public, owing to the tendency of medical schools to inaugurate dental departments. The installation of dental departments in connection with medical schools is necessarily often incomplete, and therefore the committee believes that restrictions should be placed upon the rapid increase of inefficient dental colleges. As the practice of dentistry is largely based upon knowledge of chemistry and bacteriology, and as manual training has become an integral part of the curriculum of some of the better schools, we recommend that the association do not in future recognize any school unless satisfactory evidence is furnished that the students of such schools applying for recognition are being taught in modern chemical and bacteriological laboratories, and are also furnished with every convenience for manual training in prosthetic and operative dentistry, and that this latter mode of practical instruction is systematically carried on in at least the first year's course.

The committee also called attention to the importance of a higher standard of preliminary education, and to the impropriety of schools advertising as instructors practitioners who occasionally clinic before the students, but are not a part of the staff of the institution.

The report was adopted.

The following resolution, offered by Dr. Magill, was unanimously adopted:

Resolved, That we will not in future consider favorably an application for recognition from any college which has as a member of its faculty one who also holds membership in the State Examining Board.

Dr. Donnally moved that final action shall not be taken on the application of any college until such application has been in the hands of the chairman of the Committee on Colleges for at least ten months so ordered.

The following were elected officers for the ensuing year: J. T. Abbott, Manchester, Iowa, president; H. B. Noble, Washington, D. C., vice-president; Charles A. Meeker, Newark, N. J., secretary and treasurer.

Adjourned.

SELECTIONS.

Neuralgia of the Fifth Nerve—Treatment.

BY B. MERRILL RICKETTS, M.D., CINCINNATI.

The fifth nerve is more frequently the seat of pain than any other. The remoteness of its ganglion, together with the anatomical relations of it and its branches, renders it one of the most difficult to attack from a surgical point of view. The stretching, division and extirpation of one or more of its branches seem to have fallen short of the object sought for.

There is no pain which can equal in severity that associated with this nerve. Medication of all kinds seems to have fallen short of giving any very great relief, and, so far as I am able to determine, no case, until within a recent date, has ever been permanently relieved in this way. If in the removal of the ganglion of Gassa lies a remedy from a surgical standpoint, all will be glad.

There are but two operations which should receive any consideration: First in importance, the Hartley operation; second, the Langenbeck operation.

It is an utter impossibility to remove the Gasserian ganglion by the Rose operation upon the dead, much less upon the living body, where the field of operation is covered with blood, and the means insufficient to remove or even destroy that ganglion. It lies between the external and internal coats of the dura, which makes it all the more difficult to attack.

There are three principal objections to this operation: (1) Loss of the cornea, which occasionally ensues; (2) ankylosis of the lower jaw, which is always more or less present; (3) fistulæ. I would therefore exclude this operation from further consideration.

The Hartley operation is the most radical and scientific of all in this connection. It is by far one of the most difficult found in the domain of surgery. The hemorrhage which is sometimes severe, generally follows the detachment of the dura that it may be allowed to be pushed backwards; it may also result from the

tearing away of the nerve from the dura, and it may, too, be the result of injury to the middle meningeal artery, which should always be ligated immediately upon its presentation to view, and it must necessarily be pushed back with the dura. After stripping the first and second branches to a point beyond the ganglion, they are divided, a section removed, and their ends tucked into the foramen ovale and rotundum respectively. In this way the ganglion is destroyed and all connection with the periphery obliterated.

The Langenbeck operation is next in importance to that of Hartley. I understand that the operation has been made about fifteen times by Langenbeck himself, and six times by Bernays, of St. Louis, one of which I saw the latter operator make. The technique is more difficult to understand than either of the other two, and it is this reason, perhaps, that has kept it from being popularized.

The operation is made by removing the first and second branches. The first, after having made a sub-periosteal resection of the lower jaw, which enables the foramen ovale to be reached and about two and a half inches of the nerve removed, the bone is reunited by a silver wire with the end protruding through the integument, so that it may afterward be removed. The second or infra-orbital branch is removed by dividing the nerve in the spleno-maxillary fissure, the knife having first been passed from before backward along the external wall of the orbit on a line with the meatus auditorius externus. The incision is first made at its exit, so that it may be extracted after this division is made. Quite a large hematoma within the orbit results, but at the end of a week is completely absorbed.

In all the cases thus far operated upon, so far as I am able to determine, a permanent cure has resulted.

I believe that the treatment of trifacial neuralgia is on the verge of a revolution, and, while I am sorry to see any of the glories of surgery lost, I hail with delight any remedy that will relieve these unfortunate people of their agony.—*Lancet Clinic.*

NITROGLYCERINE, three drops a day of a 1 per cent. solution, is a powerful anti-neuralgic, especially in persistent sciatica.

Double Dislocation of the Superior Maxilla.

BY H. H. SPIERS, M D., RAVENNA, O.

On November 20, 1894, I was called to see a double dislocation of the inferior maxilla, caused by yawning or gaping during the chill of an ordinary intermittent.

The dislocation remained unreduced for nearly four hours, owing to residence in the country and absence of a local physician.

The reduction was readily effected by placing the thumbs of the attendant far back on the body of the inferior maxilla, slightly pressing downward, at the same time using the fingers of both hands to elevate the anterior portion.

The patient, a female, aged forty-two, of slender build and of nervous temperament, had fallen down stairs two years previously and injured the spine, with imperfect recovery.

We have, then, a delicate organism previous and present injury, with malaria.

No doubt some of our distinguished contemporaries would give heroic doses of quinia sulphas and dismiss the case as cured. Or perhaps they might search for plasmodium malaria before giving anything. Either action would be entirely proper in the premises.

But with a five days' previous history of chill at 4 A.M., followed by fever and then a profuse sweat, ordinary practitioners prescribe at once.

Quinia in large doses is not well tolerated, and does little, if any, good. Muriatic acid in conjunction cannot be taken. Fowler's solution and iodide of potassium break the intermittent. A blister to the spine, a bandage to the jaw, and nature does the rest.

The patient makes a perfect recovery, and has been in good health every since.

In what way did Fowler's solution and iodide of potassium break the intermittent? Possibly by killing the plasmodium malaria. Probably by eliminating the malarial poison from the system.

Chemistry as the Servant of Anatomy.

The French Institute has just elected as a foreign associate Professor Kowalevsky, of St. Petersburg, whose original and novel experiments in anatomy and biology are known to all students of these sciences. Among other ingenious methods of experimentation he has devised what may be called that of "chemical anatomy;" that is, a system of recognizing certain organs in the lower animals by observing the reactions in them of appropriate injected chemical substances. By this method he has arrived at results that could never have been attained by dissection alone, even with the aid of the most powful microscope. We translate from a notice of Kowalevsky's work in the *Revue Scientifique*, Paris, August 3, an account of some of these experiments:

"M. Kowalevsky has established the most curious and unexpected distinctions; thus by means of experiments of great elegance and simplicity he has succeeded in recognizing in invertebrates the kidneys, the lymphatic glands, and the spleen, though the scalpel of ordinary anatomy would have been powerless to discover them. His method is very simple. He injects into the body of the animal colored liquids like carminate of ammonia, indigo carmine, the classic dye of heliotrope, chlorid of iron, or impalpable powders such as the carmine or black suspended in India ink, and sometimes the bacteria of charbon, which he cultivates. He lets the animal live for a longer or shorter time and then kills it and shows what has happened to the injected material.

"One or two examples, taken from innumerable experiments, will suffice to show the precision of the method.

"The tincture of heliotrope injected into a cuttlefish remains blue in the majority of the organs of the body, notably in the multiple appendices situated in front of the branchial hearts; but in these last organs it changes to red; a little ammonia, even its vapor alone, changes it back to blue.

"These branchial hearts have, then, another function than the purely mechanical one; they secrete an acid.

"The choice and picking out of the reagents by the organism is yet much more remarkable in the following experiment.

"Into a St. James's snail was injected an intimate mixture of carminate of ammonia and indigo carmine. The animal was allowed to live for some time and then dissected.

It is well known that in this mollusk there are glands near the heart, called the precardial glands, and two other much larger glands placed on each side of the visceral mass, called the bodies of Bojanus.

"What action has each of these glands on these reagents? The carminate of ammonia remains in the precardial glands, which give an acid reaction after the injection of heliotrope; the indigo carmine is found in the body of Bojanus.

"The precardial glands are, then, the homologues of the cortical layer of the kidneys, where are found the Malpighian bodies, having an acid reaction, while the bodies of Bojanus, with their alkaline reaction, . . . correspond to the zone of the *tubuli contorti*.

"It is useless to pursue further the analysis of this method of chemical anatomy. Nevertheless it is impossible not to recall how happily injections of chlorid of iron serve in the diagnosis of some organs. For in exploring the organism of the animal that has been given an injection, we can, by the acid of yellow prusiate of potash and of the blue color that it gives with iron, recognize unmistakably where the iron has collected and where it has left no trace. . . .

"The consequence of these studies is the discovery of the duplication and division of several glands, and of organs that anatomy and the scalpel alone had not revealed to us and could not possibly have discovered. M. Kowalevsky has thus revealed to us scattered groups of cells, or even isolated cells, that represent the most complete organs.

"Thus, by this method he has just sought for the lymphatic glands of myriapods and has found them scattered about in the form of groups of cells or of isolated cells on the sides of the body or elsewhere, where they had never hitherto been recognized."—*Translated for* THE LITERARY DIGEST.

A CONGRESS of Hygiene will be held at Bordeaux, France, in November on the occasion of the exhibition to be held there.

A New Medical Application of Electricity.

The researches of D'Arsonval in physiological electricity have borne fruit in a new application of electricity to medicine, as described in a paper read by Dr. Apostoli before the British Medical Association at its recent meeting. We quote an account of his method from *The Lancet*, August 10:

"The current of high frequency and high potential is caused to traverse a large helix inside which the patient is placed; and the effect is to step up induction currents of a similar kind inside the patient's body. These travel in closed circuits through the tissues and produce nutritive changes, which can be recognized by their effect in increasing the elimination of carbon dioxid and of urea. The actual figures are promised at an early date. The results are good in diseases characterized by failure or impairment of nutrition, and accordingly Dr. Apostoli reports successes in anæmia and debility, gout, rheumatism, neurasthenia, and hysteria. In diabetes also there have been some favorable cases. The principle of the localized application of electricity for the relief of disease, so ably insisted upon by Duchenne, has delayed the recognition of the important general effects to be obtained from electrical treatment. At present there is a distinct movement in favor of general electrification as a therapeutic means, and the results appear to be almost identical in character, whether the method employed be by the alternate current electric bath, advocated by Gautier and Laret, or the high potential induction method of D'Arsonval and Apostoli, or the electrostatic methods favored by Vigouroux and Morton of New York, who use the Wimshurst or some similar machine as the source of the electricity applied."

A PHYSICIAN reports that he has not failed for many years to quickly check every case of vomiting of pregnancy, neuralgic toothache and *pruritus pudendi* of the pregnant state, simply by a single vesication over the fourth and fifth dorsal vertebræ.—*Med. Summary.*

Itching of the Mouth.

In the *Deutsch Medizinal-Zeitung* for August 15th there is an abstract of an article entitled Pruritus Oris, by Tommasoli, published in the *Giornale Italiano delle malattie e della pelle*, 1894, No. 3. The author relates the case of a peasant woman, 33 years old, without anything remarkable in her history, who for four years had suffered with an itching and biting sensation in the cavity of the mouth, which compelled her to bite her tongue and to compress the mucous membrane of the cheeks between her teeth. The affection was aggravated in paroxysms, and occasionally she was entirely free from it. The chief situation of the abnormal sensation was in the tongue, which often bled from severe bites. Examination of the cavity of the mouth showed on the mucous membrane of the cheek two whitish, almost horizontal and symmetrical stripes, which were nearly as long as the alveolar processes, to which they corresponded roughly in their course and of which a slight impression was to be seen. Beginning at the last molars, these stripes reached almost to the angles of the mouth. The epithelium on these stripes was moist and soft, but not apparently destroyed. The whole looked like a linear zone of œdematous swollen mucous membrane. Yet, on palpitation, the stripes felt like cords, indolent and not yielding in the slightest to digital compression. All the rest of the mucous membrane, as well as the tongue, appeared sound. The author believes that this was a chronic paroxysmal paræsthesia of the buccal mucous membrane, giving rise to actual changes in those parts of the mucous membrane that were most affected. He gives the name preitus to this affection.

Ulyptol.

Ulyptol belongs in the same category with steresol. It is occasionally mentioned as a "new antiseptic." It was originally named and introduced in 1886, and is prepared by mixing six parts salicylic acid, one part carbolic acid and one part oil eucalyptus. It is also known as eulyptol, and the mixture is of service in treating wounds.—*American Therapist.*

What Solder Can Do.

"There are those," says *The Scientific Machinist*, Cleveland, August 1, "who have a natural taking to solder, and claim that they can do anything with this low-heat metal. Give them any substance and they are ready to go to work immediately. A glass water-gage was given to one of this fraternity, with a request to solder it into a brass elbow at both ends. The glass tube was heated to a red heat and covered with chlorid of silver till a reaction was formed and the surface of the glass well silverized; then a special solder was made to take hold of both the glass tube and the boiler fittings, and now there is a water column that will stand all that the boiler can stand, with no danger of its giving out in the packing."

Some of the Causes of Neuralgia.

Recent investigations have brought out the fact that there are many severe cases of neuralgia caused by abnormal conditions of the nasal passages. In several instances there has been found enlargement of the bony structure of hard lumps of diseased tissue pressing against certain nerves and causing the most excruciating pain. Removal of these has resulted in complete cure, although there have been returns of the growths after the first operation. Persons who habitually suffer from pains in the head should have their conditions carefully diagnosed. Long continued suffering not infrequently brings about protracted and incurable mental and nervous disorders.

Properly Classed.

"Ya'as, I don't deny that I am an Anglomaniac. I thought you knew that, Miss Maud."

"I knew you were something of a maniac, Mr. Sissy, but didn't know what kind."—*Boston Beacon.*

EDITORIAL.

Professional Standing.

A recent number of the *Lancet-Clinic* has an editorial on this subject that contains thoughts and suggestions pertinent to the physician, and not only to him, but to any who are engaged in any line of practice of the healing art—the Dentist, for instance.

The writer gives expression to the following: "All physicians have many interests in common, and these interests are of such a nature as to be justifiably likened to family relationships. If one is injured, all suffer; if one prospers, all rejoice. * * * * A suit for malpractice on the part of a known and reputable practioner cannot be successfully prosecuted without considering the question as to who are well known and reputable practitioners; the answer to this may be found by a reference to the roll of the county or local medical society, for it is in the home organization or family circle that a man's true character and ability are best known. Hence the great advantages that accrue to the physicians by their being identified in a favorable way with their immediate neighbors. The county society is in fact a guarantee and a protective association for those who belong to it. The men who are not identified with their home society have no reason to believe that they have any professional standing whatever, which is usually true. Nearly all the professional work of physicians is done single-handed and alone. In that way an admirable individuality is built up, but sooner or later there comes to every one a period when association is necessary; when this time does come to a man, who loved and attended his county society, supporting friends will come to him from every direction.

In the home organization all members have common ties and common interests. The man whose name is not found on the society list has something the matter with his professional escutcheon—something wrong with his degree; he has a suspicious, or actually bad, professional record, with whom a consultation is a hazardous risk.

The man who is conscious that he is all right, has a recognition of his claim from his reputable neighbors. On the other hand, the man who is conscious that there exists a blur on his record, keeps it out of sight, and himself under cover, so far as he may.

It is a good thing for physicians and especially young men to become identified with their county societies."

The principles involved in the above statements are as applicable to the dentist as to the general physician. Dentists are engaged in a common cause, all have the same difficulties to meet and to overcome, and ought to have common sympathies, and every true professional dentist will be a help and support to his fellows. In order to secure the best results in this direction, friendship should be cultivated and maintained; societies should everywhere be organized and sustained and all truly professional dentists should be interested and actively engaged in such work; it is helpful to the individual, and to his confreres as well, and above all secures the greatest benefit to those whom it is the business of a dentist to serve; and in this direction there is the greatest need, there are none who do not more or less need help in this respect. Every one might be more efficient if he would, and verily there is need.

Association and co-operation is the order of the day in almost every human occupation. In many departments of far less importance and value to humanity than dentistry is, there far more perfect, extensive and efficient organization.

Let us all ponder these facts, and each appreciate his responsibility, and act in obedience to his convictions.

A Law to Regulate the Practice of Medicine.

The medical profession of Ohio is moving in the direction of securing efficient legislation to regulate the practice of medicine. First and foremost to secure for the people immunity against the abominations of quackery, and the enormous evils it brings upon the people; and second to give encouragement to legitimate med-

icine, and to secure a higher and more advanced medical education, to secure greater thoroughness and efficiency in its practice. Ohio practically has no law regulating medical practice, and as a result quackery has grown to gigantic proportions. The quacks of the State doubtless obtain nearly, if not quite, as much money as all the legitimate physicians of the State together; and for what do the people give this immense amount of money? Simply for the satisfaction of being gulled, deceived and too often for having health injured or destroyed, and many a time death resulting.

Ohio has a law establishing and maintaining a Board of Health, whose duty it is to attend to the sanitary and health condition of the people of the State, and in the discharge of its duty vigorous measures are employed, and rightly, too. But how shall we account for the course of our Legislature in the establishment and support of such an agency, while at the same time there is an absolute refusal, so far as the past is concerned, to do anything to abolish or even check a practice that produces more suffering, disease and indirectly, if not directly, death than any other agency, except the liquor traffic? What have our Legislators been thinking about? The people of the State being robbed of their money, health and too often of life itself, by this evil, and no effort even attempted for its removal or curtailment.

The press of the State, both secular and religious, with very few exceptions, lend themselves to the maintainnance of this enormous iniquity; they are in a very large degree responsible for it; without their aid it would be crippled and shorn of a large part of its power. There are but few publications in Ohio the advertising pages of which should not make an honest man's face tingle and burn with shame. The explanation of this state of things is found in the greed of the proprietors of our papers. Brethren of the press, you had better right up on this question.

It is to be hoped that the incoming Legislature will see this question in its true light and recognize its enormity, and take righteous action in the matter.

And now a word to the dentists of the State: you are a part or branch of the medical profession and should be interested in

everything that pertains to its welfare and prosperity, and on this account it is entirely proper that the dentists of the State make common cause with the physicians in the securing of needed legislation. Consult with the physician of your respective localities and learn in what way you can aid in promoting this cause, and in the attainment of success you will be the instrument of bringing great good to the community.

The law regulating the practice of dentistry needs a little readjustment, and it will be wise to secure all the proper aid possible to that end.

It is to be hoped that the men who are sent to the Legislature this fall will view some things at least in a different light from their predecessors.

Removal.

The Ohio College of Dental Surgery has been removed from its old historic locality on College St., Cincinnati, to the northeast corner of Central Avenue and Court St. The old building has been inadequate for the proper accommodation of the College for several years; indeed it has hardly ever been what it ought to be, in regard to light and commodious arrangement. Its surroundings have never been quite satisfactory.

The new location is a very good one indeed, with ample room for any probable requirement; two or three hundred students can be well accommodated; two stories are devoted to the work of the College and these are very well arrainged for all parts of the work. The rooms are light and airy and abundantly large—The building is so located that its light cannot be cut off nor encroached upon.

The change is an excellent one and will certainly add to the facility of the work, making it easier, and consequently better, and more satisfactory to all concerned.

The Faculty is to be congratulated on this change.

To Examine Medical Students.

Springfield, Ill., August 31.—The Illinois State Board of Health has issued a call for examinations to be held in Chicago, September 16 and 17, of all matriculates in medical colleges not graduates of some literary institution. The branches used in examinations are reading, writing, grammar, geography, arithmetic, composition, elementary physics and United States history. The questions are furnished by the faculty of the State University, who will rate the papers and issue certificates to successful applicants. These examinations have heretofore been conducted by the faculty of different medical colleges. The State Board decides that every applicant for matriculation should submit to the same examination conducted by disinterested persons.

Dr. John S. Billings, U. S. Army.

L'Union Medicale of August 31st, says: "Surgeon-General Billings, of the United States Army, has asked to be retired in the month of October. This very distinguished confrere will leave the Army Medical Museum, of which he is administrator, and the library of the Surgeon-General's office, of which he is librarian, institutions which have been made what they are by his ability and devotion.

"Before taking his retirement Surgeon-General Billings hopes to terminate the last volume of the Index Catalogue, an immense and precious work for which the entire medical profession should be grateful to the Government of the United States, its Army Medical Department, and above all to Dr. John Shaw Billings. In retirement Dr. Billings will not cease to work. He has accepted the Chair of Hygiene at the University of Pennsylvania."

The final volume of the Index Catalogue has just come to hand, and is in all respect equal to its predecessors. This series of sixteen large volumes of index matter, gathered from the entire field of medical literature, and is of incalculable value.

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COMMUNICATIONS.

Rhisodontrypy, or Hullihen's Operation.

BY DR. S. B. BROWN, D.D.S.

Read before the Tri-State Dental Meeting at Detroit, June 17th, 1895.

Lessons from history awaken and stimulate successive generations to a nobler endeavor.

Dentistry being the youngest of the learned professions—but a generation removed from its birth in science, its history has not the fascination of antiquity.

However, if a glimpse through the labyrinth of its past is not especially alluring, it should be sought for, and valued as profitable knowledge, as by comparison with vicissitudes attending its growth, we can better appreciate the present and find encouragement for the future; such information engenders interest and loyalty, tending to strengthen love and fidelity, to maintain inviolate the sacred trust bequeathed to us.

Allusions to the beauty and deformity of the teeth as bearing upon the physical perfection of our race can be traced through all the writings of the ancient poets and satirists, including the author of the Song of Songs.

Every century has produced dessertations and treatises relating to the teeth. History has not authenticated that art corrected their defects to any extent, in those ages. The oft repeated statement that the jaws of nummies gave evidence of expert dental skill among the ancient Egyptians, is entirely fabulous. Eustachius gave their anatomy in 1574.

The diary of the Rev. John Ward, vicar of Stratford-on-Avon from 1648 to 1679, containing also reminiscences of Shakespeare, reads as follows: "Upon a signe about Fleet Bridge this is written."

Here lives Peter de la Roch and George Goslin, both which, and no other, are sworn Operators to the King's teeth."

This being the earliest evidence of special dental operators.

A retrospective span of fifty-six years marks the event of the birth of dentistry, as now recognized, America being its cradle.

Since that epoch its wheels of progress have turned with such increasing rapidity from decade to decade, that to try all things and to hold fast to the good—to keep pace with the vanguard—has enforced our utmost activity.

Innovation following innovation has familiarized us with the marvelous. The crowning event of the century being the World's Columbian Dental Congress—the greatest, most auspicious, instructive and in effect far-reaching in our history. Who did not feel a thrill of pride on that occasion in being one of a profession whose achievement had been so great, and then for the first time presented for the world's recognition?

To the dental profession of Chicago our homage is due for so worthily sustaining their part as host of the dental world. In a research of our history of fifty-six years for a single event one most likely to challenge our attention and interest, with an added practical sequel, one has been chosen which was then hailed as "a consummation devoutly to be wished." as a happy alternative: as previously the forceps or turn-key had been alone indicated for treatment in pains of odontalgia.

Its consideration by this assembly is peculiarly fitting as the semi-centennial of its advent—

Without historical knowledge, the recent graduate is liable to regard the invention of crown and bridge-work as the grand division line between ancient and modern dentistry: while those of more extended practice will cite the discovery of coffer dam and the dental engine as the period of separation between the false and the true; those of still more remote matriculation quote pulp-capping, root-filling and cohesive gold-foil as the first helpful light to their professional pathway.

He only of maturer years can lead you in reminiscence to the welcome announcement of the discovery of atmospheric pressure for retention of dental plates and Hullihen's operation for the silencing of aching teeth.

Realizing how circumscribed were the resources of that time, we can comprehend the enthusiasm attending this revelation—that dental plates would hang upon their own hook, and throbbing pulps disposed of with a simple twist of the drill.

No subsequent discovery in our existence has been proclaimed with more joy than that with which the glad tidings of this event rang out just fifty years ago. At that time Dr. S. P. Hullihen, an eminent dentist, of Wheeling, Virginia, discovered an operation for the surgical treatment of dental pulps which he denominated "Rhisodontrypy," a description of the operation being to drill through the gum and alveoli a line within the margin of the latter, into the pulp canal.

This unique operation was for exposed or congested pulps, either previous or subsequent to the operation of filling. In cases where life remained, the purpose was to give vent only, wounding the pulp as slightly as possible—aiming to preserve its vitality—the gum acting as a valve for its further protection. The drill was usually driven with a bow and slack cord.

The American Society of dental Surgeons, and dental journals of that time discussed its practicability with little adverse criticism.

During its period of popularity (a seven years' wonder), as with inventors at the present time, many claimants clamored for the honor of priority, in a discovery so promising, among which were Drs. Hale, of St. Louis; John S. Clark, of New Orleans, and S. P. Miller, of Worchester, Mass; all admitting that Dr. Hullihen first made the discovery public.

At the thirteenth annual meeting of the American Society of Dental Surgeons, held at Newport, Rhode Island, August 3d 1852, Dr. C. O. Cone, of Baltimore, first brought the attention of the profession generally to the discovery of Dr. Hullihen, accompanied by a paper on the subject from the latter, stating the length of time it had been tested. The subject was discussed, and regarded as one of the most important steps to which the profession had advanced.

In the same year (1852), the *Dental Register of the West*, editorially said: "Dr. Hullihen, of Wheeling, Va., has introduced a new method of treating these delicate and sensitive threads of vitality which bids fair to supersede the killing method—they are bled into subjection and appear to behave much better than when poisened to death. The mere fact of preserving the vitality of the teeth and also the national color of the organ is sufficient to warrant a general introduction of the plan."

Dr. John S. Clark, of New Orleans, writes to the *Dental Register* in April, 1853, as follows: "I have usually a half dozen cases under treatment, and more at the present writing. As to the honors in the new operation, I say God-speed to the man who can advance the profession one step toward 'that good time coming.'"

The foregoing fragment of dental history, perchance, would not have been reviewed for your edification in historical lore alone—the dust would not have been wiped from generally discarded and forgotten methods, had we not an example of history repeating itself—but for the aid its sequel brings in the solution of the problem. How can we best preserve deciduous teeth?

The early professional life of the writer was contemporary with the later one of Dr. Hullihen, and the operation which bore his name was employed until pulp extirpation and root-filling supplanted it.

In the treatment of deciduous teeth with pulp complications, the operation of Rhisodontrypy, with modifications, was several years since readopted with more satisfactory results than with other treatment.

The modus operandi consists in thoroughly removing pulp tissue or its debris, when exposed, when the cervix is perforated on the mesio-buccal surface one sixteenth of an inch within the gingival border and terminating at the floor of the pulp chamber; the cavity being prepared, a disc of lead properly adapted is placed on the cavity floor to prevent obstruction to the vent which the perforation affords. When filling completes the work thus treated the organ of resorption performs its natural function, without interruption and childhood is dentally blessed to the limit of nature's plan.

In the treatment of pulpitis in permanent teeth, were extreme inflammation prevails, the practice of risodontrypy can be employed to great advantage over the method of drilling through crowns or fillings, as with it the minimum of vibration results.

As we stand upon the brink of another century, contemplating its needs and possibilities, let us hope that future dental historians may profitably wipe the dust from our record in this the closing decade of the nineteenth century.

Plates, of which the accompanying miniature illustration is a representation,, will be shown to elucidate the subject. Also deciduous teeth which have been treated as described, and years subsequent normally shed, will be shown in proof of the efficacy of Rhisodontrypy.

DISCUSSION.

Dr. J. Taft: I am gratified that Dr. Brown has presented this subject, which, as he has intimated, has well nigh passed from the memory of the profession. A few remember something of its introduction, some half a century ago. When it was properly and judiciously performed, it resulted well, as we shall see from the testimony of those who were most engaged in it.

The earliest account of the operation is given by Dr. Hullihen himself, in 1845. He practiced it from that time until his death, a number of years afterward, and as he himself declared, with as good success as any other dental operation, perhaps the extraction of teeth excepted.

The operation consisted in simply perforating the root of a tooth near the border of the alveolus into its pulp chamber, wounding the pulp, thereby depleting it and causing its contraction. This was performed in teeth having pulps exposed by decay. Those having been the cause of pain were treated in this way, in a great many instances with decided success, as he affirms. He preferred, however, taking those cases that had become as little as possible the subject of disease, inflammation or aching, the result being more promising. Where the pulp was diseased, suppurating, losing its vitality, the case was of course impracticable. But in most instances where the pulp was exposed by excavation,

or where it was almost exposed, but covered with a very thin layer of undecayed dentine, this operation was employed, and this was the most favorable class of cases for its employment.

This operation was brought to the attention of the public more especially and pronouncedly at the meeting of the American Society of Dental Surgeons, held in Newport, R. I., in August, 1852. At that meeting Dr. Hullihen presented the method of performing the operation. It was regarded as a very decided step of progress in the treatment of exposed pulps. Prior to that time the only resort for exposed and aching pulps was the forceps. There had been before that an effort on the part of some to preserve exposed pulps by capping, but the facilities for that operation were then so circumscribed that very little was accomplished, compared with what is now attainable by that method. Dr. Hullihen, recognizing the importance of saving alive the pulps of the teeth, performed this operation. It was attempted by a great many other members of the profession, with varying success. Dr. Hullihen, in his presentation, emphasized the importance of careful discrimination in the selection of cases, and regulated his methods of procedure according to those indications, speaking of the different individuals, pointing out the fact that the same individual at different times and under different conditions of the organism, would be differently susceptible to such operations as this.

Quite a number in the profession took up the operation with varying results, there being about the same variation in results as we find now-a-days in the performance of difficult operations.

At the time of this meeting at Newport, Dr. Hullihen claimed that he had performed the operation five hundred times with very few failures. Dr. C. O. Cone, then of Baltimore, Md., and subsequently of Lexington, Ky., took up the operation, went to Dr. Hullihen, learned his method carefully, and made a report at Newport in regard to the matter. In that report he gave an account of fifty cases which he claimed had nearly all been successful. Of course there are different ideas of success. If you make fillings that remain and prevent recurrence of decay for 10, 15, 20 or 30 years, such operations are regarded as successful, and the greater the length of time the greater the measure of success.

And so with other operations. But the physician treats a case and restores the patient to health. The next week the patient is sick again. We do not dare say, therefore, that the treatment was not a success, because the disease returned again."

Prior to this meeting at Newport, Dr. Cone addressed a letter to Dr. Hullihen, asking him certain questions in regard to this operation, as follows:

1. "Give a history of the origin of your operation for the treatment of exposed dental nerves.

2. A detailed description of the operation, the cautions to be observed in the performance of the same, and the instruments employed.

3. The symptoms attending and following the operation.

4. Indications and counter-indications for the operation.

5. Relative success and failure of the operation in general, and in different classes of teeth, and in the same mouth, at different ages.

6. Pathological changes dependent on, and effected by, the operation."

Of course Dr. Hullihen's reply, setting forth his own claims for this operation, ought to come to us with considerable force. Dr. Hullihen says:

1. "The history of the origin of the operation to which you refer is briefly this: In 1845 I was called upon to plug a molar tooth for a lady, in which the nerve was very much exposed, and under circumstances that made it impracticable at that time to attempt the destruction of the nerve in the usual way. I therefore drilled a hole into the nerve cavity of the tooth, with the view of permitting the matter to escape, should the nerve suppurate (a process I felt sure would take place very speedily), and then plugged the tooth without any reference to the pressure that the plug might make upon the nerve. It was observed both by the lady and myself that the insertion of the plug did not occasion the slightest pain. In 1846 the lady again called to have her mouth prepared for a whole upper set of artificial teeth. She informed me that the tooth that I had plugged for her, 15 months before, had never caused her the slightest pain or uneasiness.

Upon extracting the tooth, I found the fangs in a perfectly healthy condition. On breaking the tooth, I found the nerve somewhat diminished in size, but in all other respects in a healthy state. The hole which I had drilled into the nerve cavity was filling up with some osseous deposit at both ends; more at the end next the nerve than that next the gum. There was likewise some appearance of an osseous deposit at the bottom of the carious cavity.

The case immediately opened the way to a number of experiments, tending, if possible, to discover the best course of treatment in all cases where the nerve had become exposed, and that without destroying the nerve or protecting it from the pressure of the plug, causing but little, if any, pain to the patient during the operation, and without endangering any painful condition of the tooth to arise afterwards, or any discoloration to take place in it, more than is common in teeth that are plugged, and that too where the nerve is in no way exposed.

2. The operation consists in making a hole through the gum, the outer edge of the alveolar process and root of the tooth in the nerve cavity, and then in opening the blood vessel of the nerve. The hole should be made of about the caliber of the nerve, at the point operated upon. If the drill employed be too large, there will be a difficulity in determining the exact moment when the nerve is reached. If too small, in obtaining the necessary discharge of blood. The drill should be spear-shaped, one cutting edge longer than the other, spring-tempered, and having a small neck. Spear-shaped, because the point is more easily located at the place desired. One cutting edge longer than the other, because such a shaped drill gives indication of its approach to the inner cavity by catching in it before it breaks through into the cavity. Spring-tempered, because less likely to break. Small-necked, so as to permit the free escape of the cuttings made in the process of drilling. The operation may be commenced on either the incisors, cuspidata or bicuspids, by pushing the drill through the gum, down to the alveolar process, about a line back from the edge of the process and directly over the center of the root of the tooth to be operated upon. Upon the molars so that

the hole will be freely opened upon the main body of the nerve. The drill is then driven forward by means of a very slack string and weak bow, until its near approach to the cavity is recognized by the catching sensation before mentioned. The drill and bow laid aside, and all the cuttings of the drill most certainly removed from the hole, then with a drill rotated by the fingers the hole may be opened into the cavity. The friction of the drill upon the gum will prevent the bleeding from it. The entrance of the drill into the nerve cavity generally opens the blood-vessels, which may at once be recognized by the color (arterial blood), and by the freedom of the discharge. By pressing a lock of cotton down into the carious cavity, an oscillation may be seen in the hole through the gum. By pressing the tooth into the alveolar cell, the bleeding may be much increased, either of which indicates (so far as the making of the opening into the nerve cavity is concerned) may be considered complete.

3. The symptoms attending the operation are, of course, the prick of the drill upon passing it through the gum; then a momentary tenderness when the drill emerges from the alveolar process into the root, then a slight, painful sensation as the drill nears the nerve, which is gradually increased until the drill is plunged into the nerve cavity; and strange as it may appear, the pain occasioned by passing the drill into the nerve cavity is never half so painful as the mere touching of the nerve through a carious cavity in a tooth. The symptoms after the operation are: first, a slight, dull pain from half to one minute in duration, after the blood begins to escape from the nerve cavity. The insertion of a plug upon a nerve scarcely ever occasions the slighest uneasiness at the time of filling the carious cavity, nor afterward, unless the opening made through the gum into the root becomes permanently closed by the cuttings of the drill or a clot of blood, and in this event the pain is instantly relieved by freeing the opening. There is always more or less soreness of the gum after the operation, but never any soreness of the tooth. This soreness of the gum never causes it to become swollen and it appears to be occasioned solely by the presence of the drill cuttings left in the hole, or from cuttings being pressed into the substance of the gum

itself, from using a drill having too large a stem or neck. This kind of foreign matter often gives rise to a small pustule which forms around the hole made through the gum, which, of course, will continue to exist until the cuttings are thrown off by suppuration or otherwise removed. Sometimes, but very rarely, a small red pimple shows itself in the opening made through the gum, which pimple, from its great vascularity, appears to arise from the ruptured blood-vessels of the nerve. The slightest pressure upon it occasions a very pungent pain in the tooth. This little growth is readily destroyed by applying it to nitras argenti. One application is generally sufficient to effect a cure. But in the great majority of cases, where the operation has been properly performed, there is no soreness of the gum, nor even any appearance of the opening made through it after the first week or ten days from the time the operation has been performed.

4. The indications for performing the operation are, in all cases, where the nerve has become fairly exposed, particularly so in the teeth of young subjects, and where the pressure of a plug will likely provoke inflammation in the nerve by its close proximity to it. The counter-indications are, when the nerve is more or less inflamed, in other words, when the tooth is aching, and when from the age of the patient and appearance of the tooth there is no reason to believe that the smallness of the nerve is such that no fear of inflammation may be entertained from the insertion of a plug in the carious cavity

5. The success of the operation, when properly performed, so far as I have been able to form an opinion, may be said to be universal. Out of not less of five hundred times that I have performed the operation, during the last six years, particularly so when performed in the manner I have just described, I have yet to meet the first case where the tooth has ached, an abscess formed, or where a tooth has become necrosed in consequence of the operation. But when the operation has been improperly done, such as performing it on an aching tooth, or by making too small a hole to permit the necessary discharge of blood, or in suffering a proper-sized hole to remain choked with drill-cuttings or a clot of blood, or by breaking a drill in the nerve cavity, or in carelessly

pushing a portion of gold from the carious cavity into that of the nerve—in all such cases inflammation of the nerve was sure to ensue, causing toothache, oftentimes alveolar abscess, as well as total necrosis of the tooth.

6. Your question respecting the pathological changes that may be produced in the nerve of the tooth by performance of the operation, I do not feel prepared at this time to answer. The most careful examination of many cases, and at different periods after the operation has been performed, is the only reliable way of obtaining correct information upon this subject. This kind of an investigation I have not had an opportunity to make, except to a too limited extent, to venture an opinion."

Dr. Hullihen certainly operated under very unfavorable conditions, compared with those under which we operate to-day. If we should attempt to use the bow and drill, we should find our operations very much circumscribed. The statement as to the results attained seems marvelous.

The point brought out by Dr. Brown is a very valuable one, namely, the drilling into the roots of temporary teeth, and usually with decidedly good effect. We drill into the roots of other teeth as well. I have occasionally performed this Hullihen operation, not frequently, not perhaps as frequently as I ought. It is an operation which might be employed many times by the intelligent, skillful operator, with decidedly good results. To those who care nothing about the operation, to those who are not readily able to make close discrimination and diagnosis, I would say, let it alone. Of course we now have facilities for performing this operation that Dr. Hullihen never dreamed of. We have the dental engine, which can be delicately and skillfully used for such purposes. When the pulp chamber has been nearly reached—indicated by the first pain felt by the patient—the drill can be taken in the hand, then move on until the pulp canal is opened.

This operation, like many others, has passed from the minds of the profession and perhaps has been regarded by some who are not able to perform it rightly, as a failure, but it can in many cases be employed with good results, especially when conditions are favorable.

I wish simply to explain that the presentation I have here made is based upon the fact that Dr. Brown gave his paper the title of "Rhisodontrypy." In one sense that is a correct nomination, but from the impression I received sometime ago, I thought perhaps he was going more at length into the subject of Rhisodontrypy than he did. I only brought this matter before the society on account of its historical interest. You cannot brush away the testimony of such men as I have quoted, It does not do to say that Dr. Hullihen, Dr. Cartright, Dr. Bellisario, Dr. Hume, Dr. C. O. Cone, and others, than whom none stood higher in their day, were ninnies and fools. It must not be understood that I champion the general employment of this operation; but after all, there is an education in studying old methods, sometimes; and to say, you stink, and your operations smell badly, and all that, does not amount to anything. That is not scientific. Lazarus did not stink after all. That statement was about as accurate as some others that have been made.

Dr. Barrett: Is this a miraculous operation?

Dr Taft: No, sir. The operation that Dr. Brown has presented is a feasible one, the statement of Dr. McKellops to the contrary notwithstanding; there is something in it; and to seal up the cavity, as he does, that is the true way to avoid inflammation; and by making this drainage, this escape provides against future trouble in the roots of the temporary teeth. I know it is practicable, for I have used the same method, time and again, with good results.

Abrasion of the teeth.

BY DR. CARRIE M. STEWART, D.D.S.

The simplest form of wasting away of the teeth is known as chemical or spontaneous abrasion.

Of this diseased condition little is known, excepting that it is likely to attact the teeth suddenly and unexpectedly, and apparently without cause. It may cease its destructive action after a time as suddenly as it began, or continue until the teeth affected

are almost entirely destroyed, causing great pain and discomfort to the patient. Again, its progress may be very rapid or so slow as to require a number of years in which to complete it destructive work.

When affected by this condition, the teeth are found to be unusually sensitive to the action of acids, heat and cold and any other form of irritation to which they may be subject There is but little pain experienced, excepting when irritated, until the disease has reached the vicinity of the pulp, when this organ gives prompt notice of its danger of exposure from destruction of the enamel and dentine forming its normal protection. Of the cause of this condition, but little is known. It is not due to mechanical means for mechanical abrasion forms a class by itself and its cause and the remidy for its cure are easily understood and acted upon as the circumstances may require.

It was thought by some authors, to be due to absorption, but that theory cannot hold good from the fact that, if due to absorption, it would be extremely unlikely and highly improbable, that the pulp would make the calcareous deposition which it usually does, to protect itself from the action of external influences.

All agree in attributing the cause of the mischief to chemical action of some kind; but just what it is and in what part of the mouth it is to be found, has not yet been determined. Some have confined it to a peculiar acid condition of the saliva, but it is plainly to be seen that if this was the case all the teeth would be acted upon alike, which they are not. Just now, it is attributed to an acid condition of the mucous of the mouth, which, according to the statements of the advocates of this theory, remains in contact with certain parts of the teeth attacted and chemical abrasion of that part results.

This seems to me as improbable as the acid saliva theory. If it were possible for the mouth to be kept in a certain position all the time so that the acid mucous could act only on certain portions of the teeth, it might be quite probable that the result was due to such a cause, but such is not the case. Of course the teeth nearest the point where the secretion and exudation of the vitiated mucous takes place would be more or less affected; but

the mucous does not remain at one point, it is distributed to other parts of the mouth as well as the saliva and comes continually in contact with portions of the teeth which are not affected by chemical abrasion. So it seems to me that the objections to the acid saliva theory would hold good in the acid mucous theory also. The superior teeth are more often attacted by this condition than the inferior. It usually begins on the points of the central incisors, progressing most rapidly in the median line and from there proceeding each way into the tooth substance. On account of the peculiar course it takes, the central incisors are sometimes found with their cutting edges cupped out leaving an elliptical space when closed. This form of the abrasion is of rare occurance however, and is supposed, by the upholders of the acid mucous theory, to be due to the action of the acid mucous secreted by the mucous follicles of the tongue, which organ, being brought frequently in contact with the cutting edges of these teeth, produces this peculiar form of the abrasion.

Chemical abrasion may be found on the labial surfaces of the superior incisors and cuspids, and the bicuspids and first permanent molar. The second and third molars are rarely affected. The buccal surface of the teeth are seldom acted upon.

This condition may be manifested on the masticating surfaces of the molars, especially upon their prominances. It may also be found in the shape of pits or grooves on various parts of the teeth.

One curious feature of this diseased condition is, that the surfaces affected are always smooth and highly polished, not presenting the roughened appearance that the action of acid upon the tooth substance usually does.

As we know nothing of the subject, excepting that it is a gradual wasting away of the enamel and dentine, varying in rapidity, cause unknown, its treatment is very difficult. Supposing it to be due to a vitiated condition of the oral secretions, the proper method of procedure would be to employ systemic treatment with a view to neutralizing or entirely abolishing this acid condition. Constitutional treatment is always more or less long and tedious however, and we do not know certainly that this

condition absolutely requires it, but it should be used until either a cure or a failure, after persistant and patient effort, takes place. Meantime, the abraded surfaces should be filled with gold, preferably, and the contour of the natural tooth retained as well as is in the power of the operator to do it.

He who discovers the cause, prevention and cure of this disease will confer a lasting benefit upon humanity, for although it may not be termed of frequent occurance, still when it does take place its ravages are anything but desirable or to be looked upon as of little importance to one who appreciates the value of a sound, perfect set of teeth.

President's Address.

BY J. Y. CRAWFORD, M.D., D.D.S., NASHVILLE, TENN.

Abstract of paper read at American Dental Association, Aug., 1895.

In his address Dr. Crawford recommended that the two public addresses at the memorial meeting at Philadelphia, together with a synopsis of what was said at the banquet, be incorporated into the annual proceedings. He suggested that "the old question of representation of dental surgery in the medical corps of the army and navy demands an earnest and united effort on the part of our profession. . . . . That a committee be appointed to investigate the propriety of some inquiry being made in regard to the condition of the mouth and teeth of an individual before obtaining life insurance. . . . . Knowing, as we do, how destructive the diseases of the mouth and teeth are to human comfort, happiness and health, it is passingly strange that no attention has been paid to the subject in conducting a medical examination of an applicant for life insurance."

Regarding dental prophylaxis in the scholastic part of our population, he said: "Our system of education is sacrificing the teeth and health of our people, by putting the child in school at too tender an age. . . . . The child should not be put to hard study while he is undergoing the process of tooth-shedding and

tooth eruption." He suggested that the association ask medical colleges throughout the country to institute special chairs upon the subject of Dental and Oral Surgery, so that medical students will be required to know something of the diseases of the mouth and teeth and the deleterious influence they have in the impairment of the general health.

In his address Dr. Crawford referred to the question of ethics in no uncertain terms. He spoke of the pernicious use of the secular press advertising patent medicines to the world, and of the regretable mistake of some ministers, professors of universities, etc., giving personal testimonials recommending some nostrum the contents of which they know nothing. Further he said: "If the dental surgeons of the United States would unite in demanding the enactment of such laws as would require of all men, proposing to engage in the practice of dentistry, an observance of ethical conduct, it would be but a short time before the statute books of all the States would be graced with laws that would annihilate the quack and the mountebank."

He requested, also, that all reputable dental colleges formulate a uniform oath or obligation to which the student should subscribe.

Ought the Formation of Dental Schools be Limited?

BY C. W. STAINTON, D.D.S., BUFFALO, N. Y.

Abstract of paper read at American Dental Association, Aug., 1895.

In the course of his remarks on this important subject Dr. Stainton stated that the number of physicians practicing in 1895 is about 120,000, an average of one for every 587 of population; that medical schools in 1895 numbered 156. Number of dentists in the United States in 1895 about 25,000, or one for every 3,134 of population. (He gave numerous comparative tables which we cannot here append for want of space—ED.) Number of dental schools, 1895, is 48.

Continuing, he said: "What can we deduce from these

estimates? That the dental ranks are as full to-day in the United States, in proportion to the demands, as the medical ranks. The over-crowding of our ranks in any locality is prolific in cheap and nasty practitioners, and the lowering of the standard and character of our specialty. The over-production of dentists is not a good thing, either for us or the public." He said we could restrain this somewhat by raising the standard of admission to our dental colleges and lengthening the course of study. "But," he continued, "the multiplication of dental colleges is the chief danger in this direction. . . . . Dental schools are not being formed now from any need felt for them as an educational necessity. Two impulses control this matter:

First. Personal ambition to have a position in, and be connected with, a dental college, for the prominence it is supposed to give.

Second. A purely commercial spirit on the part of medical schools to have a dental department. Already over 60 percent. of our schools are appendages to medical schools, and medical influences and elements are fostering, more than any and all other influences and elements, the formation of new dental schools.

Regarding the remedy for the formation of new colleges, he said the Faculty Association should serve notice that hereafter no dental school would be accepted under any circumstances unless consent of the Association was first asked and received for its formation. The moral force of 25,000 dentists, yea, of the world, would sustain it in such a movement

Business Education for Professional Men.

BY C. B. BLACKMARR, D.D S., JACKSON, MICH.

Abstract of a paper read at the Tri-State Dental Meeting, June. 1895.

Professional men usually do everything they have to do in a very unbusiness-like manner. Business education for professional men. Do they need it? I think they do. Whenever you see a successful professional man, you will also notice that all his mat-

ters are attended to with promptness and dispatch. One thing I have noticed in my practice is that patients who have the most to do and those who do the most business are those who keep their appointments the sharpest.

A lazy or slow professional man usually thinks because he has or takes plenty of time his patients and every one else has.

The law of supply and demand will work just as well in professional work as in any other. If a dentist's patients want his services at ten dollars an hour, he has a right to ask it, because his time is worth it. But a man whose time is not worth it has no right to charge it, and his patients will resent it, and his practice in time will show the results of such dishonesty.

A man's patients are usually willing to pay him what that man's time is worth and no more. And just because a recent graduate happens to hear of a certain professor getting $50 for looking at a tooth is no reason why he should try to get $50 for consultation fee.

I once heard a successful business man ask a recent graduate this question: "How do you know what to charge a patient when you have finished a filling?" "I don't know," said the graduate. "Don't you have some basis upon which to calculate what your fees should be?" "No, sir," said the graduate. "Can't you charge for your time by the hour or some such way?" "No, sir. But I know of a practitioner who stutters and when asked how much a certain piece of dental work would cost, says f—f—f, and if the patient looks scared, he says *forty;* but if he does not flinch, he says *fifty* dollars, and I guess I will do that way." "All right," said the business man, "but I am glad that I am not obliged to conduct my business on such principles."

I think generally young men, as they are sent to colleges, are impressed with the idea by others that if they only get their professional education, that is all they have to do. So many young men think that their education alone should bring them patients without any further exertion on their part.

I have several young men on my mind now who have not succeeded in their profession, in a financial way at least, owing entirely to their unbusiness-like manner of conducting their practice.

One, for instance, could never be found in his office during the hours stated on his door. Neither was there any word left where he was nor when he would return.

Another young man agreed on his office door to open at 9 A. M. He never was known to keep his agreement. Only a good guesser could tell why. I often wish that that young man would notice whether business places, like banks, etc., opened any more regularly. If that young man ever made an appointment with a patient, it would usually be to come in some afternoon next week, or if he did actually mention a day and time, he always kept his patient waiting half an hour or so. The patient, of course, not keeping the next appointment so closely.

A man who won't keep his appointments in one thing won't in others. If he don't keep his office hours, he won't pay his debts when he says he will. A man who is not honest enough to keep appointments will not fill a tooth nor do anything else honestly.

I have gone into professional men's offices during office hours and found the reception room open, vacant and quiet as death. No one to attend to whoever happens in, nor to tell when the professional man would be in.

How long do you think a bank or business place would exist upon such principles?

A professional man suffers proportionately as much. A traveling dental agent once told me that he went into one of the most elegantly furnished dental offices in this State, and waited forty-five minutes without being waited upon by any one. He knew some one was in the laboratory or operating room, because he could hear them talking. Patients came in and would not wait so long, and went away disgusted. That dentist quit practicing on account of lack of patients in a few years.

Patients often blame dentists for not doing good work for them, when the patients themselves are to blame. Dentists often blame their patients as an excuse for not doing good work for them, when the patients would have gladly given the dentist more time and larger fees, if they had known they would have had better work done by so doing.

The dentist and patient are both, many times, to blame for low-grade work. The class of patients a dentist has should decide the class of work he does. If he would like to do another class of work from what he is doing, he must work into that class, letting go the other class gradually.

A professional man, to be financially successful, must please the patients he has, expects to have, or wants to have. He must satisfy them in his promptness, his fees, in his operations, in his appearance, manner, etc. Professional men and their methods are a continual puzzle to the business men. Their basis of professional fees is a query to them. How a physician or dentist has a right to treat abscesses, tumors, etc., mouth in and mouth out, with no apparent benefit, and to charge for the same, is a mystery to business men.

These subjects should be studied out and shown to the young professional men, so they could answer intelligently and in a prompt manner all such questions when asked by their patients, or any one else.

The Æsthetic Correction of Facial Contours in the Practice of Dental Orthopedia.

BY C. S. CASE, M.D., D.D.S.

Read before the Tri-State Meeting at Detroit, June 18th, 1895.

I use the term "dental orthopedia" in preference to that of orthodontia because it is more applicable to our present advancement in this department of dentistry. The latter word, being derived from the two Greek words *orthos*, straight, and *odous*, tooth, is confined to the straightening or regulating of the teeth: whereas the present definition of orthopedia—from *orthos*, straight, and *pais*, child—is "the surgical and mechanical correction of deformities of children and of deformities in general." The prefix "dental" localizes its scope to the region of the teeth. Its meaning now may be confined to straightening the position of the teeth, and also to the correction of all deformities that are due to a

malposition of the teeth or that can be corrected through the medium of the teeth.

The correction of certain deformities of the face, or the æsthetic remodeling of the natural features by changing the shape and surface contour of the bone over that region of the face that can be affected by force appliances attached to the teeth, has been the subject of numerous papers presented by me before leading dental societies. And as these have been widely published, I presume that the majority of my present hearers are well informed in regard to my claims and the principles, at least, involved in the treatment I have proposed.

The principal object of presenting the subject at this meeting is to afford an opportunity to many who have been unable to see cases I have treated, or personally examine the plaster casts, which, I have reason to believe, speak far more eloquently of the truthfulness of what I have been able to accomplish in this class of dento-facial irregularities than it is possible for me to express in words.

Of these casts, which I here present, the larger portion have been selected from cases that were used to illustrate the papers read at the World's Columbian Dental Congress and the last March meeting of the Odontological Society of New York City, and published in the proceedings of these meetings. In addition, I now present the casts of three cases that have not been shown elsewhere (see cases 3, 4, 5), the whole comprising every variety of that class of facial deformities that are due to a marked irregularity of the teeth accompanied by a facial defect that can be remedied only by a decided movement of the roots of the anterior superior teeth. This does not refer to the far more common deformities that are caused by a malposition of the crowns of the anterior superior teeth, nor does it include those very common forms of facial imperfections where, though the teeth themselves show no special irregularity, they can be used, without harm to their usefulness or position, as means for applying force that will result in a decided beautifying of the face.

I believe the time is not far distant when the skillful operator in dental orthopedia will be able to æsthetically correct and beau-

tify many common types of facial imperfection which we ordinarily recognize and denominate as "plain," "unattractive," and even "ugly."

This will be accomplished by force appliances attached to the teeth and worn for a few months during youth, or at a time when the immaturity of the bones permits them to yield most readily to the proper force, the teeth in these instances subserving the purpose of convenient places for attaching the appliances, and, through this medium, of directing and applying the force to the bones over that portion of the face which requires movement.

This subject is a new one, and, as Dr. Farrar has kindly remarked, "decidedly an advance step in orthodontia." It, moreover, pertains to a practice somewhat beyond the scope of dentistry proper, and yet one that cannot be touched by the general orthopedic surgeon, because it requires for its perfect accomplishment an intimate knowledge of the teeth and the manipulative skill of a dentist. I therefore present it to you for what it is worth, with the belief that those who care to give the subject any thought must be convinced of its possibilities after a careful examination of these models, leaving it for those who have been intimately associated with some of the cases I have treated to convince you of its practicability.

A second object of this paper will be to modify some of the sanguine expressions in my early publications on the subject.

In the first half-dozen cases of this character which I treated, I was fortunate in meeting with no obstacle whatever. In fact, the very first case for which I invented the peculiar apparatus, which I have used so successfully for applying force to the roots of the teeth responded so readily in every respect that I was able to make a greater change in the positions of the teeth and shape of the face than I have since been called upon to accomplish.

See Case 1, Miss S., age 13. By examining the plaster casts which were made at the beginning of the operation, it will be found that the upper dental arch was decidedly small and retracted, while the lower was large and prominent, with the peculiar open occlusion characteristic of a mouth-breather.

This gave to the face a long, narrow, and decidedly angular

appearance. The lower lip protruded with an entire obliteration of its usual graceful curve, while the upper lip and middle features

Case 1.

of the face were equally depressed. The lower part of the nose being drawn back by its muscular attachment to the depressed bone, assumed a thin and pinched appearance. Within seven months from the commencement of treatment, much to my surprise and the pleasure of all, this was corrected, and to-day, as has often been remarked, she is quite a handsome young lady, the final model of her face hardly doing justice to her present appearance.

This and similar successes led me to the conclusion and published opinion that I could with perfect facility move the anterior portion of the superior maxillary process forward or back to any extent that a case might demand; and also to the statement that

when force was applied to the anterior teeth in phalanx in the manner described, they would not move by virtue of the absorption of the walls of the sockets, as ordinarily occurs, but that the entire bony structure in which they were imbedded would be carried bodily forward or back with the roots.

I now desire to say that I believe my original claims will hold good in nearly all cases where the treatment is attempted sufficiently early in life, but that instances will occasionally arise when the contrary seems to be true.

When abnormal prominence of the features occurs along the upper portion of the superior lip and lower portions of the nose, caused by the position of the roots of the anterior superior teeth and maxillary process, reduction can rarely be performed with ease. Especially is this true if caused by the anterior position of the roots of the cuspids. These roots being surrounded by the most massive and dense part of the superior maxillæ, in which they are deeply imbedded, together with the fact that their position is such that their movement bodily in a posterior direction necessarily requires the absorption of a large portion of bone, makes this operation one of the most difficult in dental orthopedia.

The posterior movement of the incisor roots is not as difficult, as can be well understood by examining a macerated skull. The bone in this region, because of its peculiar shape, will usually respond to the proper force by bending bodily.

Especially is this true when force is applied in the anterior direction, as is well shown by the casts of a number of the cases which I have brought for your inspection. And while this movement in a posterior direction would theoretically seem to be impossible for an adult on account of the position and early ossification of the vomer, I am pleased to call your attention particularly to the practical demonstration of this principle for patients older than eighteen.

Case 2 is that of a young lady who was twenty years of age when I commenced treatment.

It will be seen by an examination of the models that the roots of the anterior teeth, at the beginning of the operation, were very prominent. The crowns of the incisors being inclined inward, gave

to the face a bulged and very unhappy expression along the superior portion of the upper lip, affecting the shape of the nose. You will see the same expression in the beginning face model of Case 3. This condition, more or less intensified, is not an uncommon one. If you have not often observed it among your patients and others, it is because you have not learned to classify it among the conditions which demand your skill.

The teeth of these persons are often in proper alignment, and through long habit and avocation you proceed to treat them with

Case 2.

little heed to the facial defect with their position produces. If you think of it at all, it is to become conscious that the face is homely, plain, or ugly—made that way—unchangeable.

And so the subject is dismissed as one which makes no appeal

to you; yet this, as well as many other facial imperfections that are produced by a malposition of the teeth, is a condition which, if taken early, can be remedied with no great difficulty; and in doing so you will confer one of the greatest of human blessings. Now see what I have accomplished for this young lady. Notice in the final model of her face the improvement of the shape of her nose, the ease and graceful curve of her upper lip, and the natural pose and perfection of her mouth. To-day she possesses a face of more than passing beauty, produced from one that was, to say the least, exceedingly plain and unattractive. Nor is it possible for you, as in other cases, to fully appreciate the change by these models, the difference in all these cases being far more marked in conversation.

But what of the difficulties? Please to remember that a person over twenty years of age is not a typical case for moving the roots of the six anterior teeth in a posterior direction.

The wonder is that I was able to accomplish so much. The first bicuspids were extracted. The second bicuspid and molars on each side were banded, and the bands firmly united and cemented to the teeth. From these anchorage attachments the reciprocating force bars extended to the anterior teeth, as will be described later. For nearly one year the great power of this apparatus was continually exerted in forcing the roots of the six anterior teeth and their surrounding bone to take a more posterior position. During this time the spaces produced by the extraction of the bicuspids were entirely closed; and, as a proof

FIG. 1.

FIG. 2.

of the amount of force that was used, this was accomplished almost wholly by a forward movement of the posterior teeth; not by tipping their crowns forward, but by bodily moving them almost in an upright position through the process. For, as will be observed by a careful study of the models, the anterior teeth at their cervices have been forced back but very little. The occluding ends of the teeth, especially of the incisors, have been forced slightly forward. The great force being exerted at their roots seems to have moved the apices back at least one-eighth of an inch. Fig. 1 fairly represents the original relative position of the central incisors during a masticating occlusion, and Fig. 2 the present position.

Case 3 is that of a young man who was eighteen years of age when I commenced treatment a little over one year ago. The

Case 3.

teeth are large and strong, jaws and bones proportionately large and rigid. The facial prominence or bulging of the face in the region of the wings of the nose was far more pronounced than was the former case, and unfortunately due largely to the anterior position of the roots of the cuspids. After the first bicuspids were extracted, anchorage attachments were made for the posterior teeth as before, but the reciprocating force bars extended only to the cuspids. The anchorage was further enforced in this case by rubber bands extending from the upper attachment of the cuspids to the posterior ends of a bar that was attached to all of the lower teeth, as has been repeatedly described by me elsewhere.

The power of this apparatus was continued from May, 1894, for eight months, since which time to June 10, 1895, the incisors

Case 4.

have been included by an extension of the force bars. I removed the apparatus at this time for the purpose of taking impressions to bring the models of the case before you in its present incomplete state.

The bicuspid spaces have been closed partly by the forward movement of the anchorage teeth, but not so much as in the former case, nor have I been able to retain them in as upright a position. The roots of the cuspids, which seemed to present an almost insurmountable resistance to far more force than I have ever employed in any other case, have moved appreciably, but not as much as I hoped. I leave it for you to judge of the improvement, which is quite marked in some particulars, not shown by the face models, and due to the regulation of the incisors.

Now, I wish to introduce to your notice two cases, 4 and 5, which are the only ones where I have attempted a forward movement of the roots of the superior incisors, that the surrounding process and immediately adjoining bone did not move bodily forward with the teeth.

Case 4, Miss J., aged sixteen, commenced treatment September 12, 1894.

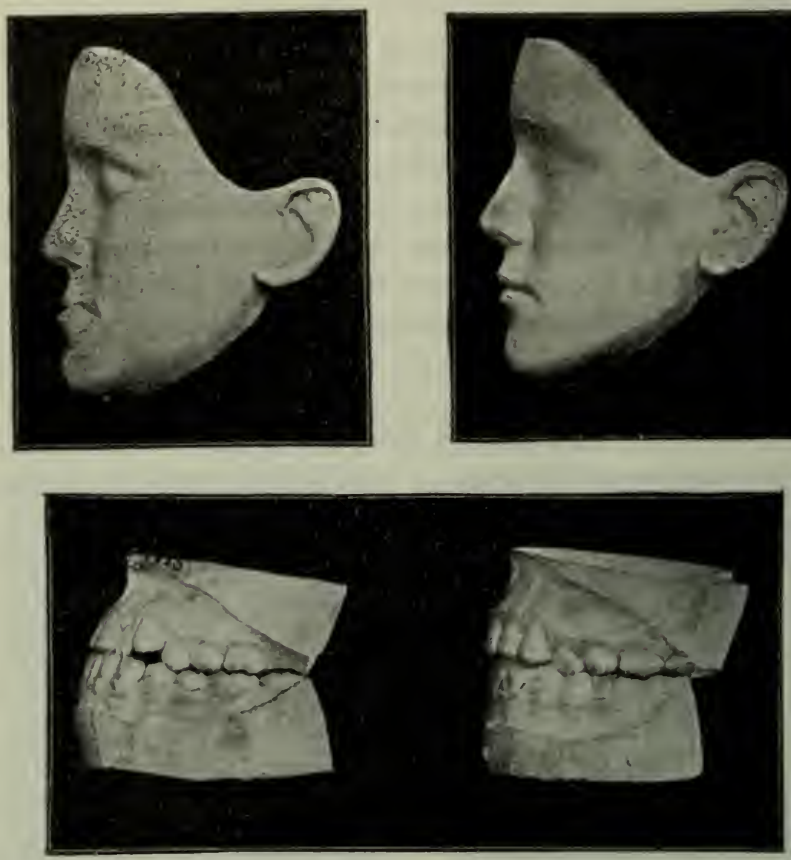
Case 5, Miss F., aged fourteen, commenced treatment September 22, 1894.

In both these cases, as soon as there was an appreciable movement it was accompanied by a decided prominence over each root, showing that the roots had moved by the immediate absorption of the sockets and the bending outward of the anterior alveolar plate. In one instance, before my attention was called to it, I could distinctly see the shape and position of the apices of some of the roots, which looked as though they were just ready to burst through the gum. Whenever this condition seemed to endanger the possibilities of success, the force was reduced, but not sufficient to allow the roots to return. Then I would wait for the ridges to be evened up by nature building in new tissue, when force would be again applied for a little further movement.

The necessity of these interruptions in the progress of the movement has required for these operations a much longer time than would otherwise have been necessary, and though neither

are complete, the present results are quite satisfactory as regards the possibility of bringing about the desired position of the teeth.

Case 5.

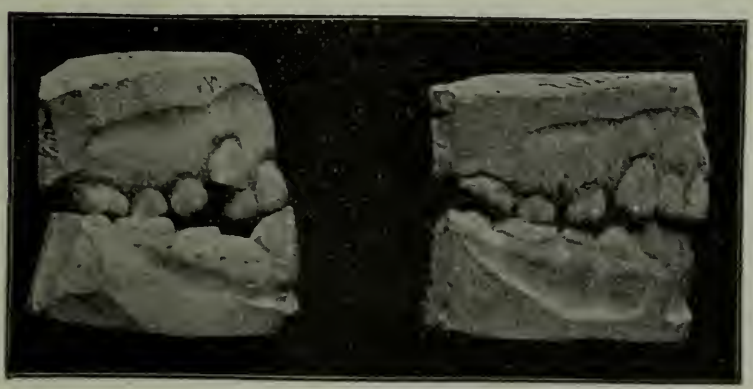


Considered, however, from the standpoint of æsthetic facial development, they can never be as successful as they would have been had I been able to command a movement of a greater area of the superior maxillary bones. Had the teeth in many other cases I have treated moved in the same manner, they would have proven utter failures in the main object that was successfully attained, because they required something more than the mere movement of the roots and alveolar process. And this is true, though fortunately to a somewhat less extent, of these cases.

Before proceeding with the reading of the remainder of my paper, which pertains to the construction of apparatus, I will

briefly describe the models of other cases I have brought for your examination, and which have been used to illustrate other papers presented at other meetings.

Case 6.



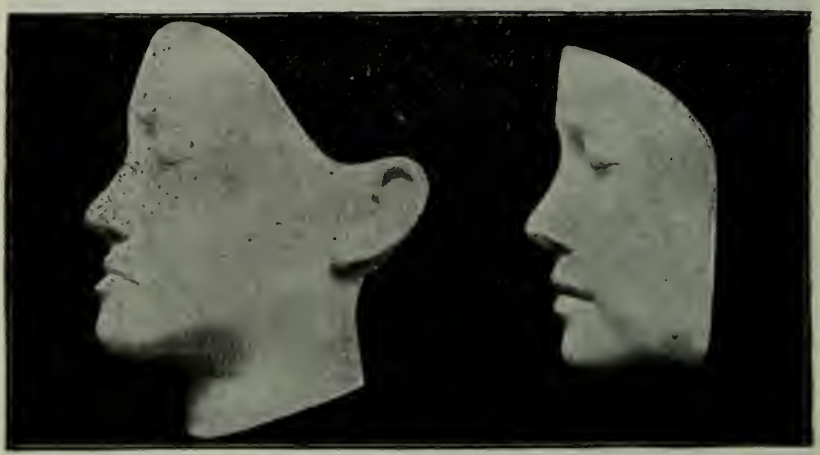
Case 6, Miss M., aged sixteen ; commenced treatment December 26, 1893; staying bands October 15, 1894.

In this case the upper jaw was too small for the teeth, which were greatly crowded, and with the cuspids, as will be seen, in their customary positions under these conditions. The dental arch was lacking in its anterior extension rather than width, the incisors being quite posteriorly placed as regards the other teeth, producing a marked depression of the upper lip that was decidedly inharmomous, to say the least. In preparing it for the application of the contouring apparatus, the crowns of the incisors

were first forced forward with jack-screws, and the cuspids crowded down more nearly into alignment. At this stage in the operation, models of the case were exhibited at the Illinois State Dental Society, to show the common facial result of the ordinary method of correcting this character of irregularity. The crowns of the incisors were pushed forward at a considerable angle, and all the teeth were crowded, with contracted interproximate spaces. The incisive fossæ seemed deeper than ever, while the facial imperfection was unimproved.

Now, mark the change which occurred after wearing this, the contouring apparatus, four months. Notice the upright position of the incisor, and the ample room that has been obtained for all the teeth; and, moreover, this change has produced, as in other instances, a decidedly favorable improvement in the face.

Case 7.



Case 7 is that of a girl, thirteen years of age when I commenced treatment, and which was finished in six months.

I wish you to particularly examine this case, because, more than all the rest, it exemplifies the entire movement of the incisors and intermaxillary process, without the slightest apparent change in the position of any of the other teeth, with the exception of the cuspids, which were allowed to fall into more perfect alignment.

Case 8.

Case 8 is that of a Jewess, thirteen years of age, which was also finished in less than six months.

This was an inherited family type, and one that is often mistaken for a prognathous jaw, and occasionally treated with a submental splint and head-gear, in an attempt to force the chin back.

The superior maxilla was so small and retracted that the teeth flared outward to meet the lowers.

Treatment in this case consisted in expanding the dental arch forward and laterally, and so applying the force that there was a much greater movement of the roots than the crowns of the teeth. This resulted happily in a general enlargement of the maxillary process, with a much fuller contour to the middle features of the face, even to straightening the nose, as in Case 1.

Case 9 is that of a boy, fourteen years of age, which I will leave for Dr. Cushing to describe, as it is one of the cases he referred to me.

In answer to numerous inquiries which I receive, I have decided, in this connection, to describe and fully illustrate some of the important features of the latest methods I have adopted in the construction and application of the contouring apparatus.

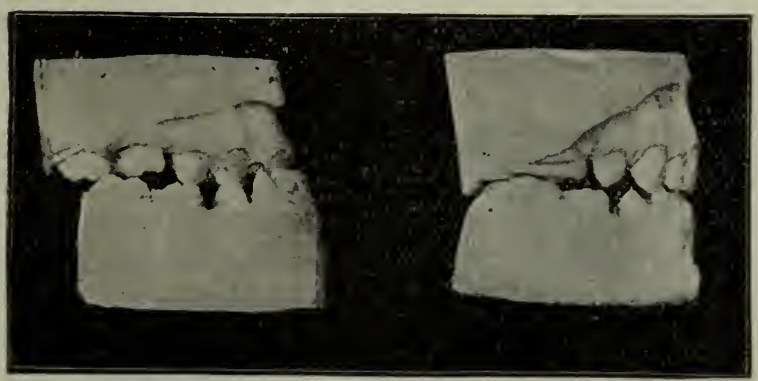
I do this with the hope that some of the difficulties I encountered in my first cases may be avoided by you, and which were partly due to the comparatively crude construction and application of the apparatus I used then and published in my early writings upon this subject.

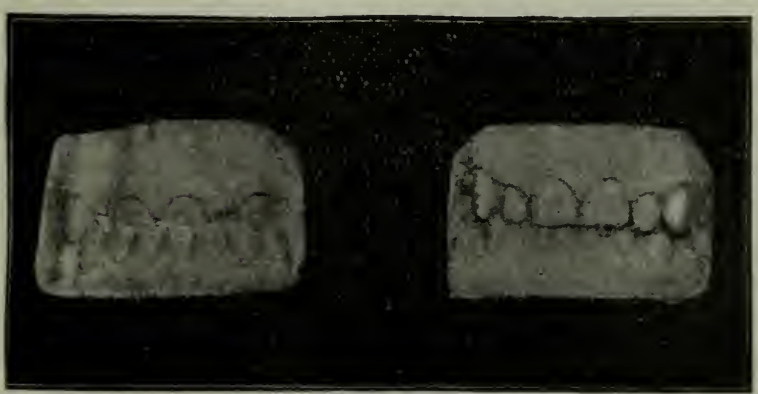
"The limited area upon which force can be applied to a tooth, compared to that portion covered by the gum and imbedded in a bony socket, has made it next to impossible, with all ordinary methods, to move the apex of the root in the direction of the applied force; nor could this ever be accomplished with force exerted in the usual way at one point upon the crown, however near the margin of the gum it be applied, for the opposing margin of the alveolar socket must receive the magnitude of this direct force, and in proportion to its resistance it will become a fulcrum, exerting a tendency to move the apex of the root in the opposite direction."

But if in the construction of the apparatus a static fulcrum is created, independent of the alveolus, at a point near the occluding portion of the crown, while the power is applied at a point as far upon the root as the mechanical and other opportunities of the case will permit, the apparatus becomes a lever of the third kind,

the power being directed to a movement of the entire root in the direction of the applied force.

Case 9.





This proposition is made plain by reference to the diagrams. In Fig. 3 let *A* be a point upon a central incisor at which force is applied in the direction indicated by the arrow, then will the

Fig. 3.

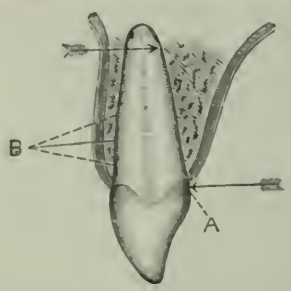
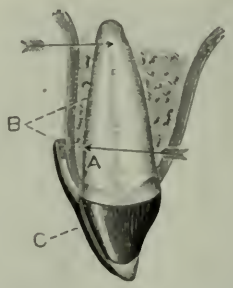
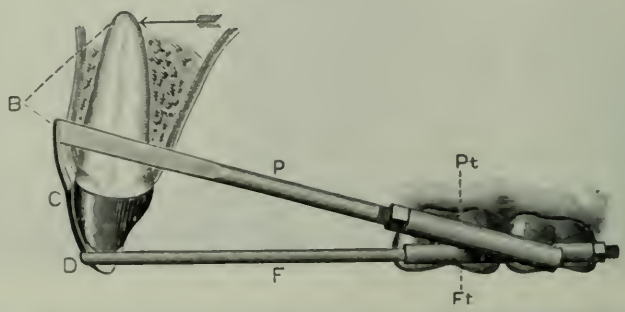


Fig. 4.



opposing wall, *B*, of the alveolar socket, near its margin, receive nearly all of the direct force, and in proportion to its resistance will there be a tendency to move the root in the opposite direction. This proposition will also hold good even if we apply the force at *A*, Fig. 4, or as far upon the root as may be permitted,

Fig. 5.



by attaching a rigid upright bar, *C*, to the anterior surface of the crown; the only difference being that we distribute the direct force over a greater area. But if, as in Fig. 5, we attach to the lower end of *C* a traction-wire or bar, *F*, and further enforce the mechanical principles of our machine by uniting its posterior attachment to the anchorage of the power bar *P*, we will have neutralized our anchorage force materially and created an independent static fulcrum at *D*. Our apparatus now will distribute its force over the entire root and give us complete direction and control of whatever power we put into it.

The entire tooth can be carried forward bodily, or either end can be made to move the more rapidly. The force thus directed to the ends of the roots will have an increased tendency to move the more or less yielding cartilaginous bone in which they are imbedded.

For material for regulating appliances I prefer German silver, not because of its inexpensiveness, but because much experience with all metals has taught me that none possess the same favorable qualities for this work.

The bands which surround the teeth should be wide and thin. If No. 10 Band S. G. wire is rolled to four or four and a half thousandths of an inch, it will usually be about the right width. This banding material should be drawn firmly around the natural teeth, the ends bent sharply to a right angle for the joint. When these are soldered the joint should project about a thirty-second of an inch, with its sharp corners clipped. Then the bands should be carefully fitted and burnished to the teeth with the joints a little to one side of the center of their anterior faces, to allow the upright bar to take its proper position, exactly in the center and parallel with the long axis of the tooth, and also to serve as a strengthening girder to the attachment. These and other small details may seem unnecessary, and yet, practically, they are of vital importance in the construction and application of the apparatus. It will be remembered that I originally made these upright bars of flattened No. 18 wire, leaving the ends long enough to bend over when in place and clasp the force bars. The operation of bending the bars was often a difficult and painful one, especially when it became necessary to remove and re-cement a band.

For upright bars I now cut pieces from Nos. 15 or 16 wire, about three-fourths of an inch long. These are filed slightly at the middle to receive the band, to which they are firmly soldered in the position described. Then they are bent and filed so as to fit perfectly the face of the tooth against which they are to rest. They should also follow the curve of the gum, nearly touching it, and extend above its free margin about one-fourth of an inch. The perfecting of these can only be accomplished at the chair.

Finally, the bar is shaped with a file according to whether force is to be applied in an anterior or a posterior direction.

I will first describe the method of procedure for cases which require a forward movement of the roots. In cases of this character I have never found it necessary to apply force to other roots than those of the incisors. The cuspids are usually retarded from taking their positions of alignment by the posterior position of the incisors, and are frequently so prominent that it first becomes necessary to force the crowns of the incisors forward with jack-screws or otherwise before the contouring apparatus can be effectively placed.

Usually in those conditions when the cuspids interfere, the upper ends of the upright bars can be at first ligated to the power bar, and thus the incisors forced forward until the power bar can be slipped into its proper position, which, as will be described, is always back of the upper end of the upright bars, against which it presses for the purpose of exerting force as high upon the roots to be moved as possible.

The posterior surface of that portion of the upright bars which stands in front of the gum is filed flat, so that their antero-posterior thickness tapers to one-half their original diameter at the ends, where they serve as rests for the power bar.

The anterior surfaces of the ends are rounded and polished to a thin edge. These ends should not extend above the upper edge of the power bar, unless it seems necessary to bend them at the extreme end to form a catch to prevent the power bar from sliding up.

The lower ends are grooved with a small round file to receive the fulcrum bar, which is a wire (No. 22 or 20), threaded only at one end in the Nos. 12 or 11 hole of the Martin screw-plate, the other end being held in place by bending it back after passing it through the lower anchorage tube.

The power bar should be made with the greatest care, in order that it be of the required rigidity and strength. Extra hard German silver wire, No. 10, should be drawn without annealing to Nos. 13 to 16—the size being regulated by the probable power necessary, and also by the distance from points of

attachment and application. In other words, when the anterior end of the anchorage tube (*Pt*) at which the nut works is even with the bicuspids or at no great distance from the points of applying the force, less rigidity of the bar will be requisite; and again, for very young patients or where little power will be needed for the required movements. Ordinarily, however, No. 13 will not be found too large.

When it has been drawn to the proper size or selected and cut about the right length, that portion which is to extend between the right and left first bicuspids should be flattened in the rollers to about one-half its diameter. Then it should be bent so as to conform to the shape of the gum along the line where it is to rest. After bending closely over the cuspids, it should extend straight back into the tubes, into which its threaded ends should pass from one-half to three-fourths of an inch.

For more complete direction in the proper method of cutting a screw, making drills, taps, and nuts, I refer you to other writings where I have fully described the process.

The construction of the anchorage attachment, which now remains to be described, is of the greatest importance to the ease and accuracy of its application and subsequent usefulness.

Two molars, or the first molar and a bicuspid, and sometimes all three, should be selected for the anchorage teeth. When these are accurately fitted with wide bands, an impression in compound, of one side at a time, including the cuspids, should be taken. The bands should then be removed from the teeth without bending, and carefully placed in their proper position in the impression, which should be filled with Teague's or other investing compounds. You now have the bands upon a small model that will hold them firmly in their proper relative positions during all the soldering process.

As the position and mechanical perfection of the power tube (*Pt*, Fig. 5) is of paramount importance, it should receive first attention.

Select a strong tube one-half or three-fourths of an inch long, that loosely fits the threaded end of the bar. Its anterior end should be placed so that the nut will work freely upon the bar

without impingement upon band, tooth, or gum, and it should take a direction that points exactly to that place upon the cuspid over which the power bar is to extend. In order to strictly observe this important direction, it usually becomes necessary to raise one or the other end of the tube from the bands by the intervention of lifts. It is often convenient to rest its posterior end upon the lever tube, its sharp projecting edges being rounded so as not to irritate the cheek.

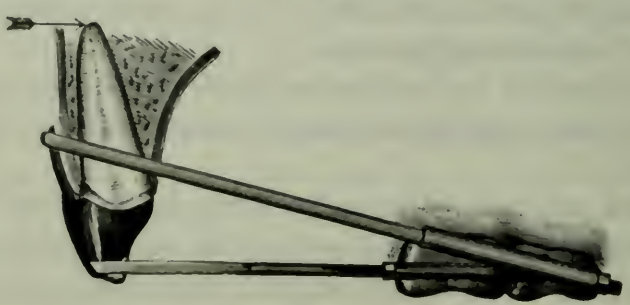
The lever tube (*Ft*, Fig. 5) should also loosely fit its bar or wire, and be soldered directly to the bands, which it firmly unites, and thus serves to give statical strength to the anchorage. Their direction is not as material as that of the power tubes, because of the smallness and flexibility of the lever wire. Their posterior ends should project sufficiently free from the other parts to admit of the working of the nut. And in those instances where reciprocating rubber bands are to extend to a lower appliance—the advantage of which has been explained elsewhere—I allow these tubes to project for that purpose, finding them much more convenient than the buttons which I formerly used.

The tubes now being fitted with their joints turned toward the bands, they are attached with an abundance of silver solder, the bands also being united along their proximal surfaces.

All the parts which have undergone the soldering process are now boiled in sulphuric acid to remove the borax and oxid, after which the entire apparatus is polished and heavily gold-plated.

The teeth being properly separated with wax tape, the anchorage appliances should first be fitted to place in the mouth, and the cement allowed to harden before proceeding further, to pre-

Fig. 6.



vent dislodgment by the force necessary in placing the power-bar in position, especially as it often becomes necessary to remove and re-bend the bar several times in the final perfecting of its shape.

With the anchorage appliances and power-bar in place, the bands for the anterior teeth may now be fitted and cemented, allowing the upper ends of the upright bars to rest in front of the power-bar. Finally, the lever-bar is placed and the contouring apparatus is ready to commence the application of force at the next sitting.

An apparatus for moving the roots of the anterior teeth in a posterior direction is, in the main, constructed quite similarly. See Fig. 6. The power-bar now being used for traction force, the same rigidity is not as necessary as in the other apparatus. I find, therefore, that a No. 16 wire, not flattened in front, is of sufficient size.

The other, or lever-bar, the force of which acts in the opposite direction to prevent the occluding ends of the teeth from being drawn back, should be as large as No. 18. It should be flattened in the same manner described for the power-bar. The upper ends of the upright bars are grooved on their anterior surfaces to form a rest for the power-bar, while a shoulder is filed on the posterior surface of the lower ends, which forms a slot, when in place, for the flattened lever-bar to rest.

It being understood with this apparatus that the power-bar nuts work at the posterior ends of the tubes, while those of the lever-bar work at the anterior ends. Proper provisions for this arrangement should be made when constructing the anchorage appliances.

(*Discussion December No.*)

The Teachings of Adversity.

The Bitter One—"I tell you, a man changes his mind about his friends and enemies."

"How so, old man?"

"His enemies stop hitting him when he's down, but it's then that his friends begin."

Dentistry in Brazil.

BY THOS. B. MERCER, D.D.S., MINNEAPOLIS.

Mr. Ward McAllister, in his treatment of the mechanism of society, very wisely named his work "Society as I Have Found It," so that, I take it, criticism could be attributed to personal opinion rather than as a statement of absolute fact. I will plagiarize the idea, and consider my article "Dentistry in Brazil as I Have Found It" in all but title, for the same reason.

To review dentistry in the Brazilian Republic, it may be well, in view of the fact that it may be considered on open field for location to speak of its advantages and disadvantages as such in addition to a general description.

The climate, an all-important factor to the foreigner, is of course, distinctly tropical, accompanied by that lavish display of vegetation characteristic of the tropics—becoming in the lowlands a perfect net-work of palms, mosses, grasses, etc., luxuriant beyond description. The summer season, from about December 1st to April, is extremely hot and as the large cities are all seaport towns (with the exception of Sao Paulo), low and damp, they become veritable incubators for low-fever germs which, to the unacclimated new-comer, is often fatal, but in other seasons it is often pleasant indeed and until the novelty wears off is really quite ideal.

The people, a mixture of the Portuguese, African negro and native Indian, are an olive complexioned, rather slight people—the better class pleasant to meet, quite cordial, but inclined to be hypocritical. Their government is at present a very unstable affair, which is detrimental to money exchange and cripples the country. For admittance to practice dentistry in your own name an examination in the Portuguese language before the Medical Board of Rio de Janeiro must be taken which, by the way, is very severe, but by being in the employ of or using the name of some one licensed, you are not interfered with.

Practically all of the representative dentists are North Americans who employ from three to five more, but there are some

native practitioners who come to "the States" for their course, then return. Prices being high the work among these representatives is of a very superior quality and conscientiously done. Their offices are fully equipped with all late appliances, but there are native dentists who are about as numerous as barbers and, who, with few exceptions, maintain about the same degree of dignity. Their outfit would include little more than forceps, amalgam, a spatula and arsenic. They use the latter about as freely as we would dental plaster—from as an obtundent in a simple cavity to an exposure. The pulp is never removed—so when pulpitis or an abscess develops it is extracted or they "save up their money" and apply to a "dentista Americana" whose appointment book usually has a dozen or more cases bearing evidence of the skill(?) of these native operators. Outside of the office the life is hardly as agreeable as most of us would wish, as for the first year you are handicapped by the languague and after you have mastered that after a fashion, and feel that you would like to become acquainted and mingle somewhat in the society that is afforded, you are confronted with the fact that, humiliating as it may seem, a dentist holds an inferior position. This also holds good among the British residents. But grant that you gain the dental entrie, you soon find their ways and what is expected of you so different from what you are accustomed to that you are pleased to let it alone and return to your dental friends once more, where, with the exception of a dinner or an excursion "up country" now and then you experience the steady routine of work, eat and sleep.

This, however, may be a meager argument to many, when I repeat that prices are good, and there is usually plenty of work, after you are once established, but after some little experience the question arises to me: "Is the game worth the candle?"

An Illegal Practitioner Sent to Jail.

In New York City, the lawyers employed by the County Medical Society have secured the conviction of a "Doctor" Ruffo for practicing medicine without a license and registration. He was sentenced to a three months' term in the penitentiary.

REPORT.

Report of Treasurer of World's Columbian Dental Congress in Full from March 23d, 1891 to July 23d, 1895.

RECEIPTS.

American Dental Asso	$1,000.00
Illinois State Dental Soc.	321.00
Iowa State Dental Soc	100.00
Southern Dental Asso	200.00
Washington City Den.Soc.	50.00
Alabama	130.00
Arizona	20.00
Arkansaw	20.00
Austria	10.00
California	548.00
Canada	20.00
Connecticut	220.00
China	30.00
Colorado	40.00
Chili	10.00
Cuba	10.00
Delaware	50.00
District of Columbia	190.00
England	50.00
France	100.00
Florida	20.00
Georgia	125.00
Germany	10.00
Hawaii Islands	40.00
Illinois	3,802.00
Iowa	460.00
Indiana	355.00
Italy	10.00
Kentucky	120.00
Kansas	130.00
Louisiana	60.00
Maryland	250.00
Massachusetts	395.35
Mississippi	40.00
Michigan	245.00
Mexico	20.00
Maine	190.00
Minnesota	405.00
Montana	10.00
Missouri	715.00
Miscellaneous	11.70
Nebraska	180.00
New Jersey	477.50
New York	1,515.30
North Carolina	210.25
New South Wales	30.00
North Dakota	40.00
New Hampshire	10.00
Ohio	620.00
Oregon	20.00
Pennsylvania	840.30
Paraguay	20.00
Rhode Island	25.00
Russia	30.00
South Dakota	10.00
South Carolina	130.00
Scotland	20.15
Switzerland	20.00
South America	10.00
Spain	20.00
Tennessee	290.00
Texas	170.00
Vermont	120.00
Virginia	100.00
Washington	80.00
West Virginia	10.00
Wisconsin	150.00
American College Den. Sur.	10.00
Baltimore College	10.00
Chicago College	10.00
Columbia University	10.00
Louisville Dental College	20.00
New York Dental College	10.00
Ohio Dental College	10.00
University of Buffalo	10.00
University of California	10.00
University of Minnesota	10.00
Univ. Western Reserve	10.00
Wilmington Den. Mfg. Co.	40 00
Philadelphia College	10.00
	$15,851.55
Amount received from Columbia Nat'l Bank	286.06
Donations of Executive Committee	3,600.00
	$19,737.61

DISBURSEMENTS.

General Finance Committee, L. D. Shepard	$ 926.25
Executive Committee Secretary Expenses	3,018.84
Treasurer's Expenses	583.59
Treasurer's Bond	100.00
Secretary General's Expenses	1,299.48
State Conference Committee, J. Taft	218.87
Registration Committee, Fred A. Levy (per G. C. Brown)	34.00
Invitation Committee, W. C. Barrett	16.95
Clinics Committee, C. F. W. Bodecker and S. H. Guilford	80.35
Biology Committee, R. R. Andrews	18.15
Nomenclature Committee, G. V. Black	31.00
History Committee, J. Taft	1,523.57
Membership Committee, E. Noyes	13.50
Publication of Transactions Committee, A. W. Harlan	4,529.95
Donations by Executive Committee, Traveling Expenses	3,600.00
Woman's Department	307.00
Dental Manufacturing Co., S. S. White	121.80
Medals	720.00
Buttons and Badges	257.63
Club House	1,530.00
Banquet—Deficit	274.60
Refunded Memberships	50.00
Exchange	6.36
	$19,261.89
Paid by Columbia National Bank	286.06
Unpaid by Columbia National Bank	127.09
	$19,675.04
Balance, July 23d, 1895, in Merchants and Loan Trust Co. Bank.	62.57
	$19,737.61

(SIGNED) JOHN S. MARSHALL,
TREASURER.

SELECTIONS.

The Health of a Bacillus.

Dr. C. H. Tebault, of New Orleans, in a recent edition of Gaillard's *Medical Journal*, quotes Professor Peter, of Paris, as follows: * * * "I have seen different germs produce indentical accidents. I can go further, and say, identical germs can produce different diseases. I have seen the bacterium coli, the virgule bacillus of Finkler, produce cholera. I have likewise seen the bacillus coli produce cholera, dysentery and typhoid fever. * * * From these facts I conclude that the bacillus is not unhealthy by

itself, but that it may become so, and acquire new properties in the midst where it vegetates. * * * I have come to the conclusion that we ourselves, owing to some internal modifications, develop cholera and dysentery, and it is this change that modifies an innocent bacillus and endows it with toxic properties, that it may transmit to others. * * * The inoffensive bacillus is cholerized by the cholera."

In these days it behooves a healthy innocent bacillus to look a little out when he goes for his promenade lest he find his way into a dysenteric bowel and get poisoned. If this nefarious business of poisoning bacilli with the choleraic discharges and the diseased human excreta is not stopped the health of the bacilli as a body will be endangered and we will look to Professor Peter to suggest a method by which the continued innocence of bacillus may become an assured fact.—*Colorado Climatologist.*

Phosphorus Poisoning.

The *Revue internationale de medecine et de chirurgie pratiques* for August 10th contains an abstract of an article on this subject by M. Magitot, which was published in the *Revue d'hygiene* for March, 1895. This affection, says the author, is the result of a slow and progressive absorption of white phosphorus. It is observed in the workmen in factories for the manufacture of matches. The vapors diffused in the atmosphere under the form of gaseous oxides, and also of phosphorus in a crude state, penetrate the organism through different tracts, especially the respiratory tract. The quantity absorbed varies according to the nature of the occupation, also according to the arrangement of the factories and the conditions of ventilation.

The rapidity with which these vapors penetrate the organism is very great, and in a few months they give rise to symptoms which persist for a long time. This condition leaves an impress of decay on the organism and cyanotic disturbance. It gives rise to bronchial troubles, to suffocation and to coryza. It alters the osseous system and fractures are more frequent among

this class of workmen than among others. It also modifies the urinary secretion. In regard to treatment, Dr. Magitot advises the use of oil of turpentine, antiseptics and alkaline solutions. He also expresses the wish that the authorities would take legal measures to suppress this affection by forbidding the use of white phosphorus in the manufacture of matches.

An Avalanche of Modern Drugs.

The *materia medica* of the old-time physician was of the simplest. The few drugs that he carried with him in his saddle-bags served him, either singly or in combination, for a great variety of purposes, and with them he treated—and in no small proportion of cases cured—all the common ills that flesh is heir to. He would have stared with astonishment at the avalanche of chemicals that come tumbling from the manufactories by dozens nowadays, each possessing therapeutic properties more or less accurately ascertained. Of this modern embarrassment of medical riches *The Hospital* speaks in a leading article bearing the suggestive title "Drugs Many; Remedies Few." We quote a few passages for the benefit of our readers:

"'New drugs are added every day for the benefit chiefly of those who do not know how to employ the old ones.' Such is the verdict of Sir William Broadbent, pronounced in the presence of his professional brethren assembled in annual congress under the auspices of the British Medical Association. By way of set-off to this may be placed the opinion of the average patient, who plumes himself upon his family physician or favorite consultant because the learned gentleman is so thoroughly 'up-to-date,' and so prompt in the application of 'all the new things.'"

After reminding us that the origin of most of the new remedies is in the enterprise of the pharmaceutical chemist, and disclaiming any intention of belittling this enterprise, since its rise is "a development for which medicine must be grateful," the article goes on to say:

"But there is another side to the question. * * * What, then, in a word, is the point of Sir William Broadbent's judg-

ment? It is this, that many men never set themselves to prove experimentally for themselves the value of any drug or drugs, and so they never come to a condition of mind in which they employ remedies with confidence, precision, and success. The story of King David's sling and stone has a priceless application in medicine. It is infinitely better for a man to confine his practise to the use of a dozen drugs of which he has long and intelligently studied the various applications, than to employ a thousand of most of which his knowledge is merely guess-work. * * *

"It is the ruin of modern medicine that men do not use heir minds and base their work on the immovable foundation of their own proved convictions. They are not even so steady as kites in the air, which are at least moored to the earth by strings. Their counterpart is the thistle-down; and they are carried here, there, and everywhere, nobody knows where, by every therapeutic puff of wind that blows.

"Is there, then, no place for new remedies and new methods in modern medical practice? There is room of the amplest; room and to spare. What we insist upon is this twofold principle, that the old which is tired and proved shall be loyally preserved, that well-known drugs shall be retained, and that the new shall always, in every case, and by every individual, be subjected to continuous and competent examination and proving. This, we say, is not recondite philosophy; it is the most elementary common sense. But it is for the lack of this elementary common sense in daily practise that thousands of practitioners are soldiers bearing rifles but who can not shoot, sailors in commend who can not navigate their own ships. The third-rate practitioner, who has not gained a just self-confidence by reason of thoroughness and success in practice, always hankers after the reputation of being thoroughly 'up-to-date.' The British Medical Association will not have meet in London in vain if all men of this order, and all their patients also, will seriously lay to heart Sir William Broadbent's words, that 'new drugs are added every day for the benefit chiefly of those who do not know how to employ the old ones.'"

Treatment of Phlegmonous Inflammations.

In the lesser phlegmonous inflammations alcohol dressings abort the inflammatory process and in the graver forms they cause the rapid formation of a circumscribed abscess filled with thick pus. Alcohol of 60 to 90 degrees is to be used. The skin of the inflamed area is cleansed with ether; if there is any open wound it is covered with powdered iodoform; then a thick, even layer of cotton soaked with alcohol is applied with a proper protective over it; this latter is pierced with holes or slits so as to allow evaporation of the alcohol and prevent any caustic action. The dressing is kept in place for twenty-four hours and must be renewed daily for some days after the disappearance of all tumefaction.—*Gaz. Med. de Paris, No.* 28, 1895.

EDITORIAL.

Ohio State Dental Society.

The annual meeting of this body will be held in Columbus, on the first Tuesday, the 3rd of December next. The indications are that this will be one of the best meetings of this society ever held, both in attendance and in the interest that will attend the occasion. There is quite a number of vital questions that will, or ought to be considered at that time and there is no doubt but that they will.

A program is being prepared, but is not completed; we are able however to give the following as a part of it, viz:

"Does the Practice of a Specialty of Medicine Tend to Make a Man Narrow-minded?" By Dr. C. M. Wright, of Cincinnati.

"Diagnosis of Heart Lesions, Previous to Administering Anæsthetics." By Dr. W. H. Whitslar, of Cleveland.

"Dental Education." By Dr. J. T. Jackman, of Cleveland.

"The Advent of Electricity." By Dr. Edward C. Hall, of Columbus.

"Selection of Anæsthetics and their Administration." By Dr. A. O. Ross, of Columbus.

"Report of Two Cases of Neuralgia of Second Branch of the Fifth Pair—Operation—Relief." By Dr. W. D. Hamelton, of Columbus.

"Some Thoughts in Connection with the Combination of Amalgam and Gold." By Dr. F. W. Knowlton, of Akron.

"Implantation of a Tubed Tooth." By Dr. J. B. Snyder, of Bryan.

A paper—subject not yet given. By Dr. H. T. Smith, of Cincinnati.

A paper—subject not yet given. By Dr. Grant Mitchell, of Canton.

A paper—subject not yet given. By. Dr. L. L. Barber, of Toledo.

There will be clinics, by Drs. Whitslar, Condit, Snyder and a number of others. Some of these we know from personal observation will be interesting and instructive.

The above constitutes only a minor part of the program, the whole of which we are assured, will be distributed in a few days.

A most cordial invitation is extended to all who possibly can, whether in or out of the State, to be present. If there are any critics of the former work of the society, they above all others, ought to be present and help to put things to rights. If there are any who can afford to stay away it is those who have in the past received the most from these meetings. Those who have not been feeding at this table had better come in and partake.

The American Dentist in Europe must not become negligent, or careless if he wished to maintain in security the high position his predecessors made for "American Dentistry." The following was clipped from "*The Swiss and Nice Times*," of Aug. 11th, 1895, and it is only one of many straws which show the direction of the wind of public opinion—Eternal vigilance is the price a reputation for superior skill even among American Dentistry.

It is remarkable what rapid progress the Swiss have made in scientific dentistry of late years. This however is not surprising when we consider the fact of their fine dental colleges, which are on a par with the other colleges and universities of Switzerland. It has been a custom with Swiss students to go to the United States, and there they have learnt all that is taught of interest at the American colleges. Swiss practitioners have superseded the Americans in such cities as Geneva, Zurich and Lucerne. This is easy to understand inasmuch as the Swiss dentists are established and not nomad; they have properly fitted ateliers for mechanical work, an important item in modern dentistry. American dentists, who formerly made large fortunes in this country, are gradually making room for the native, educated dentists. Many of these Americans practise in three different countries in the course of a year, and have little more than a hired room for receiving clients and doing their operations. The practising of talented reputable Swiss dentists has done away with the extortionate charges, which are a special feature of the nomad American.

Ohio State Dental Society.

The annual meeting of this Society will be held in Columbus on the first Tuesday of December, 1895.

There is a number of important subjects that will require attention at that time; one very important matter is the consideration of the Dental Law of the state. The question: "Is it accomplishing all that was expected when it was enacted;" and if not, what can be done to make it better?

The subject of Association work in Ohio is another that certainly demands serious consideration; other States are outstripping Ohio in this matter, and it certainly ought not to be so; and will not if the State Society does its duty.

The officers having its interests especially in charge should be promptly on the alert; a large and active meeting is at this time all important.

Bibliographical.

A MANUAL OF CHEMISTRY. A guide to lectures and laboratory work for beginners in chemistry. A text-book specially adapted for students of Medicine, Pharmacy and Dentistry. By W. Simon, Ph. D., M. D., Professor of Chemistry in the College of Physicians and Surgeons of Baltimore, in the Maryland College of Pharmacy and in the Baltimore College of Dental Surgery. Fifth Edition. Thoroughly revised. With forty-four illustrations, and eight colored plates representing sixty-four chemical re-actions.

This edition has been prepared with great care so that it now meets the needs of the student better than ever before; many changes and additions have been made, such as have been suggested by the general advance of the science and the enlarged experience of the author.

The work is presented in seven parts and arranged in such a manneras to lead the student on in a progressive method, from the more elementary subjects to those more advanced and complex.

The arrangement and presentation of the subject is most admirable and is well adapted to the needs of the student. Chemistry, as here presented, will certainly not be the dry and uninteresting study it is so often thought to be.

The author is thoroughly fitted for the preparation of such a work, not only by his familiarity with the subject, but from his experience as a teacher; thus learning the real needs of the student and the difficulties he has to meet.

The work is one that we can heartily commend to all dental students, as one especially adapted to their requirements. Every dentist, who aspires to the possession of a library, should have this volume, at least for reference, if not for study.

The work is published by Lea Brothers & Co., of Philadelphia, and is obtainable of any bookseller.

THE DENTAL REGISTER.

VOL. XLIX.] DECEMBER, 1895. [No. 12.

COMMUNICATIONS.

Four Requisites in Development.

BY M. F. AULT, M.D., D.D.S., KOKOMO, IND.

Mr. President and Members of the Tri State Dental Association:

It has not been my privilege to be among the incorporators of a Dental Society, but I am grateful to the pioneers who introduced the idea of associate work and thereby have kept alive the spirit of our vocation and enforced the respectful consideration of society. My hope is that we may have sufficient courage to be loyal to the truth as it is in dentistry, and by our devotion subdue the empiric and convince those who have been led into the jungles by the wily promises of the impostor. These remarks bring us face to face with the fact that the god which presides over dental destiny has triumphed in but few hearts, that the process of true education has yet wonders to perform and that the conflict of the future will be as the conflict of the past—a struggle between truth and falsehood, intelligence and ignorance, honor and depravity.

To prove that the conflict of the future will be as the conflict of the past, let us review briefly our present situation and compare it with a practical ideal. The elements which enter into our experience and influence our opinions and consequent actions are as follows:

1. The Novice or embryo.
2. The College.
3. The Profession.
4. The Professional.
5. The People.

Now, the inharmonious relation of the elements has made bitter the experience of the past, and the substitution of an harmonious relation will be the occasion for controversy and upheavals, as well as to inspire us with the sweetness of ultimate success.

1. The novice of the past, with his crude notions, knocked for admission. He moved on the low plane of a money basis. Sought the most for the least service and, with few exceptions, passed an uneasy life and finally closed his office to be hurried through the Eternal gate clothed in that mantel which the caprice and selfishness of the world is prone to weave.

The novice of the future will be of the same character except the modification which we expect through the direct and reflex influence of true education. We want him to know that when he knocks at our door he is asking admission into a sacred dominion. That he is helpless, on account of his ignorance. That he is dust and soon to mingle with the elements. That he is in distress and needs some one to show him the true way.

2. The colleges of the past and present while maintaining an apparently innocent front have worked too much on a revenue basis—have too often prostituted themselves for money and thereby augmented the ranks of those whose motive is impure, whose action is demoralizing and whose touch is fatal.

I anticipate that the college of the future will not disappoint us in the fulfillment of its mission. The future college will say to the aspirant we know you seek the truth and it shall be opened unto you. We know you are timid, but confidence, courage and ability shall be yours. We know you know nothing about the exacting and inflexible laws of dental practice, but the inspiration within these walls will quicken you into new life and pave the way for a prosperous career. The future college will address the applicant in this manner: Do you think you possess the natural ability to become a desirable member of our profession? Do you love learning to the extent that we may expect an earnest effort to obtain knowledge? Is your ideal sufficiently elevated to make your desire the dignity of a cultured character? Can you think for yourself? Have you the concentration that enables one to surmount great difficulties? And do you possess patience and humility and realize your own littleness sufficiently to be teachable?

The future college will say to its faculty: A teacher's preparation must be determined by the nature of the subjects to be taught and the end to be accomplished by the recipient of the instruction. If you are able to teach, you realize that the true thought of a subject, is God's thought and your task is to make the pupil's thought the same. You will see in the pupil an immature judgment, inaccurate observation, uncertain memory, perverted imagination, dishonest intentions, and feeble will, and as a teacher you must correct the misconceptions by the educational process. Do you know what is meant by chaos? that is the pupil's mental condition and your mission as a faculty is to illuminate the mind, train the hand and lead your students back to God. The dental college of the future will say to all the students and teachers: I am the way and my way is aggressive unto development and purification. Take up your cross and follow me.

3. Among the elements which enter into our experience one is faultless and that one is the profession. I refer to the profession not as so many individuals but as a list of entities which constitute the grand total of discovered and undiscovered dental knowledge. It contains the truth of the past and future. The truths of a profession are of a divine origin—they constitute the relentless laws which are not penned by human hands—laws which are abiding as the eternal throne, because they are not characterized by human frailty and lobbied through a weak and vascilating legislature. Who is it that is not aware of the law of inspection in the human eye, the law of touch in the human mouth, the law of pain in the human teeth, and of speech in the human tongue? What man does not quail when he undertakes to reproduce nature and introduce his handiwork to the delicate sensibility which prevades the oral organs? These laws were enacted on that day when it was said. "Let us make man in our own image." This is the imperial edict before which all must bow and in it we see the safety of our profession. These statutes may appear merciless but their truths touch a cold heart and transform it into a center of sympathy, touch a benighted mind and reveal the knowledge of divine power, touch the eye before which flit ignoble visions and open it to the light which shines

from a pure throne, touch the ear in which has lodged the notes of beastly composition and make it sensitive to the pure song, and righteous instruction.

4. Professional is an appellation which we apply to those already in practice and without making the past professional the subject of comment we will say that the practitioner of the future will correspond in character to the college which sends him forth —taking as our premises the law that like begets like, or that the face and character grows into harmony with the life that we live. I am aware that we are disposed to talk much about blood, title and pedigree, but I feel at this juncture that environment, association or personal contact is entitled to more consideration, and that the institution which gives the learners the best environment and closest personal attention will send men forth who are able to perform the miracle of teaching the truth and can honorably say that they have faithfully attended the required course of instruction and passed satisfactorily examinations upon all branches incident to a dental curriculum.

5. The people are a heterogeneous mass which will be elevated in proportion to the reflex from the college. In the description of the people we can use many terms without doing violence—such as fake, mountebank, deceit, suspicious, unsympathetic, selfish, ignorant, also consistency, self-denial, charity, faith, fidelity, and love.

Notwithstanding the fact that our vocabulary description of meanness may far surpass our list descriptive of goodness, I have great faith in human nature, treacherous as it may sometimes seem. Let no man deceive himself by thinking that honor is obsolete and as he passes through the wavering assemblage he must suffer the swallowing of both soul and body. Much as we may fancy our profession to be demoralized through the efforts of the impostor or the alleged demands of the multitudes we cannot afford to have the future exegesis read: He denied his identity—he lost his individuality—he ceased to be positive—he laid down his instrument one fatal day and sought his abode to die and this is his epitaph: "He was a panderer—He was treacherous to his calling, championed no theory which looked to advance-

ment and leaves the record of a misguided life—He surrendered —had the capacity for a great life—knew it, but did it not."

To recapitulate: The novice, college, profession, professional and people constitute the elements of dental experience and foregoing comment places the college in the very responsible position of determining the future status of dentistry. A port, if properly fortified, prohibits the landing of an enemy, but if the walls are low and the garrison small and poorly-equipped plunder and devastation are sure to follow. This is the relation of the college to the domain occupied by our brethren. Every one who entered the French pavilion at the exposition was certainly impressed with "The Guardian Spirit of the Secrets of the Tomb," and each as he looked upon the powerful arm which embraced the urn of ashes had his own revery and made his own application. After placing myself in full sympathy with the sentiments of the sculptor I thought how truly also is this a symbol of educational institutions. The guardian spirit is the faculty and the urn the receptacle of God's mysteries, but in this the spirit must lift the lid and invite the inquirer to view the beauties within.

Now, so far as I have observed, it is the belief of not only the pessimist but of optimist that our ports need strengthening and to do this let us turn our attention. Three essentials must be considered before the college can meet the expectations of the times:

(*a.*) Specific Scientific Instruction.
(*b.*) Specific Manual Instruction.
(*c.*) Specific Soul Instruction.

We wish to place particular emphasis to the first, because we are wandering in the scientific department and the pupil is failing to see the relation of much of our scientific instruction to his development.

In the second or manual department the difficulty is in keeping each section profitably employed and the third or soul instruction usually ignored.

[*To be Continued.*]

Report of Special Committee on Dental Nomenclature.

BY S. H. GUILFORD, D.D.S., PHILADELPHIA, PA.

Abstract of report read at the American Dental Association, Aug., 1895.

The nomenclature of any science or art, like a language, is not a creation, but a growth. It starts with a small beginning, and is developed gradually.

Frequently the growth of a science or art is so rapid that the terms selected to convey the necessary ideas are chosen without a proper regard to their fitness. Such has been the case with many sciences, and such has, unfortunately, been the case with our own.

We must move slowly and carefully, and advance only as rapidly as we succeed in convincing our fellows of the advisability of the change. Terms that are scientifically incorrect should be discarded at once and correct ones substituted; those that are not absolutely incorrect may be tolerated for awhile longer, but for the new ones which must necessarily be introduced from time to time, this association should establish a standard or code and use its great influence in securing its approval and adoption by the profession in this country at least.

While the establishment of a system of nomenclature of international character would be most desirable, the present does not appear to be the time in which to attempt it, but if we can devise and adopt a system for our own country that has a scientific basis and is well adapted to our wants, we believe that it will eventually be adopted in whole or in part by other nations. The framing of a code is a task of considerable difficulty, for no one language contains all of the elements from which to construct a perfectly correct and convenient nomenclature. A living language will not do, because it is constantly changing. The choice, therefore, would seem to lie between one of the two dead languages, Latin or Greek.

In the science of electricity, and indeed physics in general, in geology and mineralogy, in theology, in medicine and sur-

gery—especially in the departments of bacteriology and pathology—almost the entire list of recent terms is constructed from Greek roots. If, therefore, these sister sciences have deemed it best and most satisfactory to base their newer terminology upon a Greek foundation, can we do better than follow their example and keep in scientific accord?

In case we decide to accept the Greek language as a basis for our terminology, however, it does not follow that we must adhere to it rigidly in all cases, for in many instances, no doubt, the Latin, English, or other languages will furnish us with terms that are equally as good and probably simpler in form than corresponding ones derived from the Greek.

Very many of our present terms have a Latin derivation, having been borrowed from our sister profession, medicine; and where these have proven satisfactory and are not etymologically incorrect, we may allow them to remain. Many also have their foundation in Greek, as "gypsum," "asbestos," "prosthesis," "technics," etc.: while a few, like "celluloid," "centimeter," etc., are half Latin and half Greek. In the descriptive anatomy of the teeth, your committee is well pleased with the plan and terms proposed by Dr. Black two years ago, but some modification of that plan will probably be necessary.

Inasmuch as the terms used by common consent to indicate four of the surfaces of the crown of the tooth end in the Latin adjective terminal "al," your committee favors the adoption of a word having the same ending for the fifth or antagonizing surface. Whether this shall be "occlusal" for the bicuspids and molars, and "incisal" for the incisors, as suggested by Dr. Black, or "morsal," for all, as proposed by Dr. Kirk, remains to be determined. Your committee believes that the use of the single term "occlusal" for this surface of all of the teeth will serve our purpose best. As between the words "gingival" and cervical," we recommend the adoption of the latter, because it is exact in its meaning, and has the sanction of long use.

In naming the teeth themselves we strongly condemn the use of such unscientific terms as "sixth-year molar," "twelfth-year molar," and "wisdom-tooth," and urge instead designating them first, second, and third molars respectively.

We also believe it to be more harmonious and appropriate to use the word "cuspid" instead of "canine" to indicate the single-cuspid teeth, just as the term "bicuspid" is applied to their adjoining neighbors. So, also, in indicating a particular tooth, it is more methodical and correct to proceed from the general to the particular, naming first the jaw, then the side, and lastly the tooth, as: "superior, left, second molar."

The elision of the final vowel in such words as dentin, iodin, etc., as approved by such authorities as the Century and Standard dictionaries, your committee heartily concurs in and recommends.

Your committee would beg to remind the association that this report marks but the beginning of its labors, and that much time and effort will be required to obtain anything like a complete or satisfactory result.

Nomenclature.

BY GRANT MOLYNEAUX, D.D.S., CINCINNATI, O.

Abstract of report read at American Dental Association, Aug. 1895.

The report that I have is supplemental to Dr. Guilford's report, and is in the same line, but pertaining to prosthesis.

The department of prosthesis differs in its nomenclature from the other departments of dentistry in the fact that it contains a great many common words to which we have given a distinctive meaning, and to which the definitions, as found in the dictionaries, would not be applicable. For example, the words "cast" and "model" are often used by dentists as synonyms. The former is found in one dictionary only. "Model" is not recognized in any of the dictionaries to which I have had access.

The accepted meaning of "model" is, "a mechanical imitation or copy of an object; something to be patterned after; anything of a particular form or shape to be imitated."

The word "cast" is given a special meaning in only one dictionary. In all others it is given the general meaning, as "anything formed in a mold; a mass of plastic material which has taken the shape or form of some cavity."

Many dentists use these words interchangeably, while others give them a distinctive meaning, as follows:

A "plastercast" is a fac-simile of a mouth, in plaster of Paris, upon which a denture of celluloid or vulcanite base is to be molded; a plaster cast for vulcanite; a tin cast for molding celluloid; a marble dust and plaster cast for Watt's metal.

When the plaster cast is to be used for making a mold for dental dies to be used for swaged work, it is then called a "model," because it is then to be imitated in metal, and then only is it to be called a "model."

This certainly seems to be a very excellent method, for, by using these terms with a distinctive meaning, description is abbreviated by doing away with explanatory sentences. When we refer to a "cast," we know exactly what it is. When we refer to a "model," we mean that it is to be imitated in metal.

"Vulcanite" and "rubber" are often used as synonyms, the former certainly being the proper term. Caoutchouc or rubber is a definite hydro-carbon. When this substance is combined with sulphur and other ingredients and is vulcanized, or hardened, by subjecting it to a definite temperature for a definite time, it forms a different compound, which in no manner resembles rubber, but is an ivory-like substance which we call vulcanite.

"Velum" and "obturator" are used by many interchangeably. It seems to the committee, however, that such terms can be given a distinctive meaning, even if the function of these appliances be one and the same. By applying "obturator" to vulcanite appliances used in the treatment of cleft palate, and "velum" to flexible vulcanite, the terms seem to be sufficiently suggestive to be retained.

In the metallurgical department we have many terms used improperly, such as "white metal," "platinized silver," "platinized gold." It is not infrequent to hear the term "platinized gold" used when referring to gold alloyed with platinum, often called "clasp metal" and "spring metal."

The most modern information on this subject says: "A metal *covered* by platinum is platinized; preferably by electrolysis."

I will refer to the definitions of the Century and Standard dictionaries: "Platinize: to coat with platinum in a fine state of division; platinized, by dipping in a solution of platinum chloride and then heating in a closed chamber until the metal decomposes."

According to the Standard: "Platinize: to coat with platinum, preferably by electrolysis."

In order to get an idea of this matter from a goldsmith, I sent for a piece of platinized gold of definite gauge, and received a piece of metal, one side being gold and the other platinum, equal weights of the two metals, welded so as to be inseparable.

We have the same combination in the supply-houses, known as "platinized gold" or "crown gold," "platinum" and "gold crown-metal."

The best authorities say "platinous" is the proper word, as "platinous silver," silver *containing* a small percentage of platinum; "platinous gold," gold *containing* a small percentage of platinum.

It also seems that "platinous silver" is to be preferred to the term "white metal," as the latter term is vague and inexpressive, for there are many combinations of nickel known as "white metal."

By adhering to the use of "platinous alloy," "platinous silver," "platinous gold," we have a term that means exactly what it says. It is strictly in line with chemical nomenclature, and is susceptible of improvement. We have now one combination of platinum and gold which we know as "clasp metal." We call it "platinous gold." If for any reason the proportion of platinum in an alloy needs to be increased, we can then have a platinic alloy. If we need to have more compounds, the word is susceptible of improvement by the prefixes "hyper" and "hypo," so that we can always designate the compound by a definite term. While it does not seem that these improvements are necessary, the word "platinous" is the proper one, according to all authorities, and should be adopted when referring to clasp metal or spring gold containing a small amount of platinum, instead of the term "platinized gold."

There is at the present time a good deal of discussion as to the words "aluminum" and "aluminium." A rule has obtained for fifty years or more which designates the rarer metals by an extra "i," such as "palladium," "osmium," "rubidium." When the metal comes into common use, the extra "i" is dropped, as in the case of aluminum. This would seem to be an excellent rule to follow, because it distinguishes the rare metal from the metal in common use.

Dr. Black has suggested substituting the name "occluding frame" for the word "articulator," in order to be in harmony with the nomenclature of the dental anatomy. Your committee suggest the continuation of the term "articulator:" First, because of its long usage; second, because it is a single word; third, because it is a word more suggestive of the operation to be performed, and we cannot see that it will in any manner interfere with the nomenclature of the dental anatomy.

"Autogenous soldering" is a term often applied to the process which we know as "sweating." The best authorities tell us that it is used erroneously in this sense. It is not quite decided what word would be best, "welding," "sweating," or whether to adopt the term "autogenous soldering." It is still under consideration.

The words "prosthesis" and "prothesis" are used as synonyms. The meaning of the prefixes being slightly different in the original language, "pro" meaning "to put before or to stand before;" "pros" meaning "to place, or to put to place or position," the committee has adopted the word "prosthesis" as being the proper term to use.

A Basis for Dental Nomenclature.

BY A. H. THOMPSON, D.D.S., TOPEKA, KAN.

Abstract of paper read at American Dental Association, August, 1895.

It is generally conceded that our nomenclature is greatly in need of correction and codification, and to that end the first thing to be considered is a starting-point. To all students of the subject it would seem that this is furnished already to our hand

by Dr. G. V. Black, in his admirable study and *resume* of the subject given before the World's Columbian Dental Congress and published in the Transactions (vol. ii. p. 825). This great paper is a landmark in the history of dental nomenclature, and may well serve as a starting-point for a new departure. Without wasting time in the discussion of the desirability of having an established nomenclature, on which we are all agreed, we might as well proceed at once to formulate a code arbitrarily. This can best be done by the American Dental Association, which is the national representative body of the profession in this country, the exponent of the opinion and policy of the profession, and as having authority in deciding questions of general interest to the profession. A decision emanating from this body would be held in respect by the profession, and the code of terms of nomenclature would be final and would gradually come into acceptance and use.

A list of the terms in general use should be submitted this year, to be known as "The Code of 1895," and lie over for one year to allow time for discussion and criticism by the profession at large, and then be adopted, with whatever corrections and amendments may seem desirable, at the ensuing annual meeting. Lists of terms in all departments can be added to this code from year to year as may seem desirable, by being proposed and submitted, laid over for one year for criticism and discussion, and then adopted. Newer terms in regard to some disputed points will provoke discussion, but they must be decided, and decided finally. A year's discussion will probably result in satisfactory terms for the points in dispute.

The writer is disposed to think that terms can be borrowed from the naturalists in naming the parts of teeth, that will dispense with many cumbrous combinations now in use in our literature. Some are offered in the list, and others will be included in the list of names for comparative dental anatomy.

A systematic dental nomenclature should be founded on the zoological system of names of the teeth of mammals employed by naturalists as a basis; on this should be placed a professional nomenclature, like Dr. Black's for the use of dentists, and on

this a still more minute mapping system for the localizing of cavities, something like that prepared by Dr. Kulp. The three systems are indispensable. First, the gross description of teeth; second, the detailed descriptions; and third, the minute localization of areas on the surface of the teeth. Some arbitrary system of localizing cavities, like Dr. Kulp's, is desirable to avoid the cumbrous combinations of compound words which would otherwise be necessary. Dr. Kulp's plan of mapping the crown is the best of the kind, perhaps, yet offered. This is a matter that must be considered wisely before the final adoption of any system of minute description, such as is required in locating cavities.

DISCUSSION.

Dr. G. V. Black suggested that we formulate words and rules so far as we can, and then enforce the teaching of so much as has been determined in the schools. Then by keeping up the work of study and adoption as fast as definite conclusions shall have been reached, we shall have in a few years a nomenclature of which we may be proud. * * *

This association cannot alone establish a nomenclature, but it is the starting point through which it should be controlled.

The bast way for us, as has been done in other sciences, is to find some one with sufficient capacity, qualifications and the taste for the work, with a knowledge of the various languages, to take it up and be the leader. It requires not only one who has the necessary educational qualifications, but one also who has the inclination to work continuously.

Dr. T. C. Stellwagen suggested for students' use a small book in which is written the terms used, with their meanings. They are thus taught to use the words exactly as they are intended to be used, and so keep their edges keen. Only two hundred to three hundred words suffice for the ordinary uses of life among the uneducated.

Dr T. E. Weeks said that the question just replied to emphasized the fact that in our pronunciation of terms, as well as in their proper use, there is still room for improvement. If the movement that has been set on foot is carefully and persist-

ently followed out, great good will result. He hoped the committee would be continued, and that the association may adopt the work of an honest and earnest committee.

Dr. W. C. Barrett wished to call attention to certain solecisms and barbarisms which are very offensive, as "wisdom-tooth" for the third permanent molar, and "fangs" for roots of teeth. There is where, in his opinion, the work of reforming the nomenclature of dentistry should begin; these exceedingly gross violations of propriety and accuracy should first engage our attention.

Dr. A. H. Thompson: This matter of expunging objectionable and meaningless terms is a work of which the committee recognizes the importance, and they will do it as fast as they can; but they cannot do it all at once. Instances might be multiplied, almost without limit, of variations in the use of pronunciation of words. Thus of "alloy," two pronunciations are in use; of "cement," the same. We must have a distinct basis of understanding of all these matters, and the committee hope in time to have all the errors corrected.

Dr. John S. Marshall moved that the report be accepted and the committee continued, and that the list of words upon which they agree be submitted to the association for criticism and suggestion before final action is taken upon them. So ordered.

Dr. Guilford: Steele compared words to tools. It was an excellent comparison. Words are tools. Driving nails with a hammer, with a monkey-wrench, and with a rude piece of iron, this is analogous to what the dental profession has been doing in its use of words. This report was made to show what the committee had done. Every dental society ought to take up the work, and every man ought to constitute himself a committee of one to look the matter up for himself, and the next year we shall be prepared to act. Then, if the teachers in the colleges and the editors of the journals will use the terms agreed upon, a desirable change will soon be brought about.

Dr. Guilford then moved that Dr. Black be placed upon the committee in place of Dr. Stubblefield, who had been unable to act with it.

Whither are We Drifting?

BY W. C. BARRETT, M.D., D.D.S., BUFFALO.

Abstract of paper read at American Dental Association, Aug., 1895.

Dr. Barrett in his paper showed how, from the time of the Revolutionary war, when there was an average of one hundred and seventy-five thousand people for each dentist, there had been a proportionate increase of both population and dentists, until in 1895 it averaged one dentist for every two thousand six hundred of population. "Yet," he said, "the amount of work done by each individual dentist is very much greater than when there was but one practitioner for each 175,000 of the population. * * *

"It is true that dentists have greatly multiplied in number, and we constantly hear the wails of pessimists who declare that the colleges are turning out graduates at a rate that must soon make their number more than that of their patients. The prophesies are usually heard from old-time practitioners, who have not broadened their practice with the advance of modern ideas, or kept pace with the progress of professional events. To them the greater part of the dentistry of to-day has no existence, for their horizon has not been pushed back during the last five decades. With their restricted conception of dental practice, it is no wonder that they cannot see where room shall be found for the constantly augmenting number that come thronging through the gates, and they condemn the colleges in no gentle terms for launching such hordes of practitioners into a stream that, to their conception, now seems absolutely turbid with them. They forget that these same colleges are year by year digging that stream deeper and making it wider in a much greater ratio than they are peopling it with occupants."

Further, the writer inquired what should be done to get more dentists into our American Dental Associations. He cited the fact that the country was so large that each year some would have to go so far to reach the place of meeting that they staid away. There was an inconstant attendance, in the majority, and

therefore acquaintances were not so thoroughly formed. As a remedy he said it would seem to him that we naturally tend toward four aggregations: one for the east, one for the west and northwest, one for the south and southwest, and one for the trans-montane portions of our common country.

Should not the Increase of Dental Schools be Restricted?

BY LOUIS JACK, D.D.S., PHILADELPHIA.

Abstract of paper read at American Dental Association, Aug., 1895.

In this paper the writer referred to the rules passed by the Faculties' Association regarding the requirements of Colleges applying for membership in that body. He said that the tendency to rapid increase of dental schools is shown by the statistics since 1891. In 1893 there were eight unrecognized schools; in 1894, fifteen. Of these, three have been recognized this year, making thirty-one recognized schools, while there are now eighteen unrecognized. The diploma of an unrecognized school has a legal value in the State where the school is located; it gives no *prima facie* right to practice elsewhere without examination by the state board, and in some States the holder would not have the privilege of being examined.

He spoke of the prevailing mania for forming dental schools in connection with medical colleges and pointed out the dangers of over-production that might be brought about unless some restrictions were made. One prominent difference between dental colleges in connection with medical schools and those in universities was that the latter were founded on a broader basis.

Unless some brake is put upon the addition of dental schools which are not of high order, the prejudice against the dental institutions of this country must further increase. The States have no principle which can be exercised to regulate the quantity of schools. We have to depend upon the development of opinion to assist and support such bodies as the Faculty Association or

the Dental Examiners, in the formulation of such rules as shall guard the interests of all concerned, and to aid in checking the degradation of a profession.

Report of Section II.

BY LOUIS OTTOFY, D.D.S., CHICAGO.

Abstract of report presented at the American Dental Association, Aug., 1895.

At the close of the session of 1894 the total number of dental colleges in active operation, and granting degrees was forty-seven. There has been established since that time one dental college, the Dental Department of the University of Omaha, making a total of forty-eight now in active operation, and granting degrees.

Dr. Ottofy then gave statistics regarding the number of students in the schools during the year past. There were matriculated as students of dentistry during the past year 5,277 persons, upon 1,226 of whom the dental degree was conferred. Four years ago, twelve of the thirty-three colleges then existing graduated three-fourths of the entire number. Three years ago, ten colleges graduated 851 students, while the remaining twenty-eight graduated 632. This year six colleges graduated 525, the remaining forty-one, 701.

REPORT ON DENTAL LITERATURE.

The most important work of the year, and the most valuable additions to dental literature in its history, is the Transactions of the World's Columbian Dental Congress, which appeared in December last, in two volumes. There has been a movement for some time to introduce the term "stomatologist" in place of the word "dentist," and during the past year one periodical dental journal has taken this step.

EQUAL parts of glycerine and castor oil, to which is added a little oil of cinnamon, makes a pleasant purgative for children.

American Dental Association.

We here present an abstract of the remarks of discussion on the papers of Drs. Stainton,* Jack, and Barrett:

Dr. Thos. Fillebrown said there was a general impression that the Faculties Association could prevent the establishment of new dental schools, but this is an error, for they have no power to prohibit them. He thought the number of physicians given in the report was underestimated. That, instead of there being already too many dentists, more were needed, and the graduates, from year to year, did not supply the normal increase. The holder of a diploma looks upon it as a great hardship to be required to pass an examination before an examining board, before being permitted to practice in some of the other States; but that is all right. In Massachusetts they have a law of this kind for lawyers and he thought physicians as well as dentists. It seems to be a good whip to hold over the schools, and he would like to see this requirement in every State.

Dr. Jas. McManus spoke of a bill being passed in the Legislature of Connecticut, to incorporate a dental college in Connecticut. The Board of Examiners knew nothing of the movement and there were not twenty dentists in the whole State that wanted such a college, for there was no demand for it. The State Society took the matter in hand and succeeded in getting the Senate to defeat the measure. They did not want a dental school incorporated that in the nature of things could not be a success.

Dr. C. S. Stockton asked if it was not possible for the colleges to turn out graduates that were gentlemen and reputable dentists? So many all over the country are advertising, and it is a great detriment to the profession. He thought that the colleges could remedy this evil to a certain extent by giving the graduate to understand that if he practiced unprofessionally his diploma would be recalled.

Dr. M. L. Rhein spoke about the enormous amount of poor timber there is among men who call themselves dentists. How

*See Dr. Stainton's article Nov. No. page 536.

are we going to elevate the character of the profession by putting a Chinese wall about us and endeavoring to keep out practitioners, as has been done by a great many States in this country by the laws that have been enacted, and some of which will not bear judicial inquiry? He denied the idea of there being already too many dentists to meet the demand. Even if there were no increase in our pupulation, he believed that the enlightenment of the people alone would keep up a demand for all the dentists that the colleges turn out. It would be a great blot on this association to let it go out to the masses that they had taken the position advocated in some of the papers. The vital question is, can we make better dentists out of the mass of men already in our profession? The administration of an oath will not help matters. What we need is the establishment of better institutions than we have to-day.

Dr. J. Foster Flagg said that dentistry with him was first, greatest, best all the time. He referred to Dr. Jack's speaking of a great danger threatening our profession. Are we a profession? Are we united in regarding ourselves as a profession? A few minutes after that he, Jack, spoke of the great facilities which universities have to educate men for our specialty. Dr. Flagg said we are all striving to better our profession, and he believed that the university was the very thing to educate men for the profession, but not through the medical physiologist, anatomist, chemist, etc. Regarding State boards, he said they were the foundation for the progress of dentistry, and for a man to be examined from State to State appeared to be the proper thing.

Dr. C. P. Lennox thought the difficulty was more with the people than with the schools. We have for years talked about educating the people, but it is a difficult thing to do. He believed that dentists should be thoroughly educated themselves, but this alone will not remedy the evil of cheap dentistry. The only way to overcome it is to educate the masses.

Dr. E. A. Bogue said that he agreed mainly with what Dr. Flagg had said. It is in vain for us to apply to the colleges to recall their diplomas after they have been given out, unless there is a great moral force brought to bear on the subject. He thought

that between the National Association of Examiners and Faculties, together with the moral weight of the American Association, this question could be settled. If there is formulated one standard of education then the States can properly accept diplomas, one from the other.

Dr. J. N. Crouse thought that colleges should not charge a fee for clinical work. This would, to a certain extent, have its influence, for many of the colleges being started are run for the money that can be made out of them.

Dr. Louis Jack said that the purpose of the second paper was to make apparent the necessity for care in the admission of new schools. This is necessary to bring about a higher standard of dental education than now exists. He spoke about the plan of requirements for the recognition of dental schools as adopted by the National Board of Examiners. (See proceedings in the October issue of this journal page 504.)

These requirements will not only bring up the standard of the new schools, but will influence the old ones as well.

Dr. L. D. Shepard said that Dr. Crouse had presented the only solution to the problem. The general impression was that the colleges charged only the actual cost of material for the work done in the infirmary. This was absolutely a falsehood. If the infirmary is a source of great revenue, and he had been informed by good authority that in some instances it netted thousands of dollars, then the solution offered by Dr. Crouse was an admirable one. He spoke of the idea that the dental profession was a liberal one, and yet there was not one dental hospital where the poor could get dental service for nothing. How many are giving a half day a week to the service of the poor? With the medical men it was different. They had their free hospitals, and gave their services free. What to do for the teeth of the poor was a vital question, and he hoped to see the day when these hospitals would be established.

Dr. James Truman said: There is not a year that somebody does not assail the colleges. When a man stands up before this great representative body of dentists and says that there is not a dental college in the land that is not a fraud, it is time to stop

and consider what we are doing. The charge that the dental colleges are making large sums of money annually out of their infirmary practice, which is supposed to be largely gratuitous, is not true—at least it is not true of the school with which the speaker is connected, and, he believed, not true of the majority of them. They are doing a great service for the poor in caring for their teeth at the lowest possible cost. It is a disgrace to this body that its members will sit and listen to such charges, made in a general way, against the institutions which have been building up dentistry for forty years. There is one thing which must be borne in mind in connection with this matter of caring for the teeth of the poor, and that is that you cannot get at the very poor. The exigencies of their lives are such that they have not the time to come to the infirmary—cannot spare it from the necessities of earning their living. Those who do come must frequently wait for three or four hours to be served. Again, there can never be any comparison of the dentist with the medical man in the matter of gratuitous service to the poor, because of the total dissimilarity of the services which each has to perform.

Dr. H. A. Smith said that the institution with which he was connected did have a hospital in which it was doing gratuitous work. They treated the teeth of children in charitable institutions, and gave them not only free service but made no charge for material used. He mentioned this merely to show that there were some of the colleges doing charitable work, and the charges made that they were not was untrue.

Dr. W. W. Walker thought there was room for more colleges if the standard was raised high enough.

Practical Notes.

BY L. C. BRYAN, BASEL, SWITZERLAND.

Abstract of paper read at American Dental Association, Aug., 1895.

NEW MAT GOLD.

This gold has been brought out by Dr. De Trey, and has been given the name of Selila. It is a mat gold of superior qualities. It welds with remarkable facility, and it is said a filling can be

made in one-third the time required with any other gold. Dr. Bryan passed around some samples of gold for inspection.

SPONGE HOLDER WITH MIRROR.

This invention consists of a round mirror soldered to the outside of one point of a pair of pliers. With the pliers a piece of wet sponge is held on the filling or tooth to be ground, and when desired to look at the work with the mirror, it can be done by simply turning the pliers over and thus exposing the face of the mirror. It is used to moisten the corundum or any other grinding wheel, and at the same time protects the tongue and lips. It catches the gold that falls when polishing, and keeps the corundum cold, sharp and clean. The White moistening pads or any other moisture holder may be used with it. Sponges are preferable, as they do not catch in the grinding wheels. Sponges or pads should be kept ready moist in a dish of water, and after use should be preserved in a dish to burn and recover the gold scraps.

After grinding down and burnishing the filling, dip the wet sponge or pad into the polishing powder desired and convey it to the filling and buff or wood wheel or point to be used.

MIRROR WITH SHELL-SHAPED RIM.

This is very useful when filling the upper teeth, as it conveys the filling material to the cavity and catches all the fragments which may drop during the operation.

It throws light upon the tooth and reflects the operation and the cavity at the same time. Moreover, it is useful in catching chips and old fillings or any other small object removed from the teeth or cavities.

THE CERVICAL CLAMP

May be described as a bow clamp soldered to a spring cravat-holder. It is very easy to hold, as the fingers and thumb get a good grip of the roughened handle or ends. By pressing the back, the clamp can be made to slide up or down, so as to fasten it at the back. The front bow having been cut, it can be bent in all directions, so that it can be fitted to the most irregular cavity.

Antiseptic Dental Surgery.

BY A. W. HARLAN, M.D., D.D.S., CHICAGO.

Abstract of a paper read by title at the American Dental Association, 1895.

It is not the normal pulp we are called upon to treat surgically, except in rare instances, but the uncovered pulp, or the pulp which is receding, or the one exposed at the apex of a root, or the pulp which is gradually being transformed into spurious dentine, or one with a fungus growth upon it. * * * *

What constitutes true antiseptic surgery of the pulp? First, the understanding of antiseptic surgery. It is no longer surgery which only excludes the causes of putrefaction; we may now include, rather, in the term all those methods of wound treatment in which the growth and fermentative action of the lower forms of organisms (bacteria) are more or less impeded. Instruments used are to be sterilized by heat or by use of agents which will not fail to destroy all particles from the air or moisture that they are brought in contact with.

My own observations lead me to the conclusion that the pulp to be preserved must be kept from contact with saliva or mixed fluids of the mouth. If water is used upon the surface of a pulp it must be sterilized before such use. Filtration is not sterilization. The water must be boiled, and all instruments to be thoroughly sterilized must be cleaned and afterward boiled in a sodium carbonate solution, two to three per cent., or silico-fluoride, a saturated solution, 1–144.

The pulp being in a closed cavity, after exposure by disease or intentionally, is to be removed surgically with all necessary precautions, to insure freedom from infection of the pericementum at the apex of a root; the general principle being that no septic matter should be allowed access to a pulp canal after the surgical or mechanical removal of a pulp.

All operations on roots of teeth under the gum and between the tooth root and the alveolar process will be more uniformly successful when they are made with surgically clean instruments.

No syringe point should be introduced into the pericementum or the opening that is not surgically clean. Dirt, dried blood, mucus, paste, or any septic matter adhering to a needle will not be rendered aseptic by washing in a chemical disinfectant in any strength solution, unless it destroys such substances as fire will, or superheated steam in an oven.

Such dressings as are used in the mouth should be made of gauze impregnated with boracic acid, iodoform or iodin solution. Such dressings should be as dry as possible. * * * Moisture, which is hard to exclude from the mouth and around the jaws, is a *bete noir* for the dentist. It is on this account that the teachings of aseptic surgery cannot be fully utilized in oral operations.

It is the duty of every surgeon to practice antiseptic surgery to the fullest possible extent and to make and keep records of such work to encourage others to do likewise for the benefit of our fellow-men.

Resolutions Passed by the American Dental Association at the Last Meeting.

(1.) That this association believes the conferring of honorary degrees in dentistry to be detrimental to the profession of dentistry, and hereby expresses its disapprobation of the practice.

(2.) That this association formally adopts the Army Medical Museum and Library as the National Museum and Library of the dental profession of the United States.

(3.) That a committee of five be appointed by the chair to co-operate with the Army Medical Museum and Library Managers in enriching its stores of dental literature and museum specimens, especially by appealing to dental societies and individual members of the dental profession for material assistance.

The committee appointed consists of Drs. Wm. Donnally, Washington, D. C.; J. Taft, Cincinnati, O.; H. J. McKellops, St. Louis, Mo.; Frank Abbott, New York City; and Henry W. Morgan, Nashville, Tenn.

(4.) That the American Dental Association condemns the use of secret preparations known as "local anæsthetics," as well as all other secret preparations.

(5.) That it is the sense of this association that the National Association of Dental Faculties can largely control the formation of dental colleges by passing a resolution refusing to admit any college to their association of which the organizers did not first apply and obtain permission from the National Association of Dental Faculties to organize such institutions.

(6.) That at the session of the American Dental Association to be held in 1896, the general sessions shall be held every morning and at such other times as may, at the pleasure of the association, be designated;

That the sections shall be required to hold separate meetings simultaneously during the day, and that all papers pertaining to the sections shall be read and discussed in the sections;

That at the *general sessions* one hour each session shall be devoted to the president's address, the general addresses prepared by appointment, and such other papers as embrace the results of original investigations as may be recommended by the appropriate section;

That at the general sessions reports embracing only a syllabus shall be made of the papers which shall have been accepted at the individual sections, these reports to be presented by the representative of said section: meaning hereby that the work must be done in the sections;

That all papers which have been accepted by the several sections shall be published in the transactions of the association, with the discussions thereon.

The Æsthetic Correction of Facial Contours in the Practice of Dental Orthopedia.

(*Continued from Page* 561.)

DISCUSSION.

GEORGE H. CUSHING, Chicago: I am not aware that there can be much discussion upon a paper of this character. I do not know that there are any technical objections to the position that the paper assumes, as to the possibility of moving the teeth *en phalanx* bodily, the sockets as well as the teeth. If there are any

such objections, they must fall before the positive evidence of clinical observation.

I think the paper shows conclusively that, as Dr. Farrar remarked, "this demonstrates an era of advance in orthopœdic surgery." I think we are most indebted to Dr. Case for an intelligent study of the mechanical principles which govern the movements of the teeth by applied force, in connection with the fact which he has demonstrated, of the possibility of moving the teeth and the processes together. You have seen what he has accomplished, and these models and drawings speak more eloquently than any language can express.

Two of these cases I have seen under treatment from the first. I cannot begin to tell you the extent of the improvement in the facial expression of No. 4. The maxillary bone and the process were so receded that there were depressions each side of the median line so deep that you could lay your finger in them. Those are now very nearly two-thirds obliterated, I should think, and though this mask shows a wonderful improvement, it does not show fully the great change which has been effected, although, as he told you, that was one of the cases so difficult to manage because of the rapid absorption of the process from the pressure of the roots. I think he hopes in time to entirely obliterate the deep depressions under the alæ of the nose. From my observation, so far as the case has progressed, I have no doubt that he will succeed.

Of the other case, No. 9, I may say that these casts especially do not begin to show the improvement that has taken place in the short time in which the patient has been under treatment. The boy presented a very disagreeable aspect, as you see here. There is one feature of the case which the author of the paper did not refer to; it is a feature which is very striking. The boy had the habit of dropping his mouth open continually. He does not do this at all now. I do not know why the movement of these teeth and the contouring of the face by this application of force should have produced that change, but it is a fact that it has. The boy now keeps his mouth closed as other people do. With his chin apparently protruding, owing to the lack of de-

velopment of the superior maxillæ, and the mouth open all the while, you may imagine how very unpleasantly he must have presented himself to his friends. He is now a pretty respectable looking boy, and he was very far from that when he first went into Dr. Case's hands. His family are exceedingly delighted, as they may well be.

Dr. James G. Reid, Chicago: I suppose a few of you will go home imbued with the idea of being able to accomplish what has been shown here to-night by Dr. Case—who is master of the situation; attained only by years of experience and a close study of the physical forces employed and their application, how to direct those forces to the moving of teeth bodily in their sockets. Dr. Case will sit down and figure out on paper, by geometrical and mathematical processes, the direction and magnitude of force at the different points of a regulating appliance and the probable influence it will exert. When you understand that, you will appreciate the success of which he has shown you evidence by these models. It looks easy, when you hear him explain it, but if you attempt it you will be deceived, if you suppose it to be easy. I have seen many of these cases from time to time every few days. Possibly you may feel inclined to doubt some of the results, but I say, as Dr. Cushing has said, that these models do not begin to show you the improvement, and in order to appreciate it you should see the individuals themselves.

Dr. Louis Ottofy, Chicago: The first thing which arrested my attention in listening to the excellent paper of Dr. Case was the introduction of the word Orthopedia into our dental nomenclature. I presume that when Dr. Case commenced the practice of Orthodontia, he did it on the same lines in which it was generally practiced; that is, the only aim of the operator was to straighten the teeth, principally the anterior teeth, so that when the mouth of the patient is open, they appear regular.

As Orthodontia advanced, an effort was made to also make the teeth more useful for the purposes of mastication, and attention was directed to the attainment of that result as much as to improving the appearance. That is the point to which it seems to have been carried, until Dr. Case took up the subject. He

has certainly carried it far beyond that, and the term he has applied to it seems to me to be one that is very well adapted for the expression of what he really accomplishes. Aside from what has been referred to to-night, more is realized than any of us comprehend; and that is, in giving character to comparatively characterless faces. Take, for instance, the case of the boy who has been mentioned. A man with any noticeable defect must battle against more odds than the man who is without defects. Because the face looks characterless is not necessarily an indication that the individual lacks character, or that he may not develop more than ordinary ability. The fact that a man is crippled does not detract from his mental ability. He may be just as able as the man who is not crippled; but when this idea is applied to the face, it is a more serious question. We judge much by the countenance of the individual. So the addition of the appearance of character to the face is important. In the case of a woman there is also the creation of beauty. I have seen a number of the cases used for illustration by Dr. Case, and I am satisfied that the casts which we have before us do not give an adequate idea of the improved appearance. When we look at the models of a set of teeth, showing the condition before and after treatment, we are able to appreciate the change, if the model is correct; but in taking the impression of a face a different factor is involved. Take, for instance, Case 1. Just as soon as the mind of that individual becomes active and the muscles of the face play, every deformed and defective feature is more strongly brought to the attention of the beholder. The individual appears homely or repulsive. This is generally true of deformity, but not necessarily of *homely, regular* features. When the cast is taken, that homeliness is largely obliterated because the face (during the making of the cast) must of necessity be in repose. On the other hand, after the face has been beautified you have in the cast a cold, emotionless face, regular in appearance, but lacking the beauty which mirrors the emotions of the mind as the face is in motion.

The apparatus which Dr. Case employs seems complicated, but, like all complicated things, is simple when understood.

However, that matters little. The point which I wish specially to mention is, that the patients wear these appliances without any apparent annoyance, with far more comfort than appliances made earlier and which were supposed to be very simple.

I would suggest to the essayist that, in connection with the preparation of his models and casts of faces, he also take actual measurements both of the expansion and retraction of the jaws, and of the faces themselves, so that we may have for future reference some absolutely tangible and indestructible evidence of what progress has been made in this line.

Dr. W. H. Jackson, Ann Arbor, Mich: As to the moving forward of the process, I know it can be done as the doctor has said. I have in my own practice produced the same results, not in exactly the same way, but effectually, even where the intermaxillary process developed out of place, so that it left both cuspids standing out prominently and the incisors setting back even with the first bicuspids. The whole process, with those four teeth, was moved forward as a body, so that they came out even with the cuspids. There was a depression of the upper lip. The patient had been advised to have the lower bicuspids extracted and the lower teeth drawn back; but I told her that would still leave the expressionless upper lip. If you drew the lower lip back even with it, it would leave a still worse condition, with the prominence of the chin and the very great prominence of the nose; I proposed to her that, although it would take a long time to do it, it would be much better for her to have the superior incisors carried forward. It took between ten and eleven months to move them forward, without doing it so fast to cause absorption, as Dr. Case has said. If you move them too rapidly, you may cause absorption in almost any case; and if you apply too great force, you may even cause a separation of the process between the teeth and crowd the front bony plate forward.

A great many times in regulating the teeth we come across cases where they are so rigid that it seems impossible to move them. You will find the rapidity with which you can move teeth depends upon the amount of connective tissue between the tooth and the alveolar process. If you have a considerable portion of

connective tissue between the tooth and the alveolar process, it will move faster. If, on the other hand, there is very little, with little blood-supply, it is very difficult to get up irritation enough to cause absorption and the moving of the tooth.

Dr. J. Taft, Cincinnati: I wish to ask Dr. Case if he has not found that there is frequently a change in speech as the result of these changes in contour?

Dr. Case: Yes.

Dr. Taft: And that the speech is always improved and never made worse?

Dr. Case: I think that is true.

Dr. Taft: Sometimes in the regulation of teeth, difficulty will arise because of irritation, or inflammation. I presume, however, after listening to the paper, that the process is not pushed by Dr. Case to the extent of inducing irritation. I should like to ask him, if he has found that there is a disposition in the tissues, and does he not find it necessary sometimes to regulate the movements and the adjustment of the appliances because of that predisposition?

Dr. Case: Yes.

Dr. Taft: Is it ever the case that special diseased conditions arise in the ordinary performance of this work?

Dr. Case: I have never had any experience in that direction.

Dr. Taft: I presume your work has been so well regulated that results of that kind have not occurred. I know that oftentimes in the regulation of teeth, when the pressure is great and the movement rapid, inflammation is set up, and I have known cases of teeth being devitalized, in that way. But I have no doubt that Dr. Case's appreciation of conditions that might arise would be so delicate that every difficulty of that kind would be avoided. A dentist sometimes says "I moved that tooth a distance equal to its whole diameter in eight or ten days." "Did you have any trouble?" "Yes, it was sore, but what of it, it got along." That occurs sometimes by the pressure of the tooth against the socket. But here the whole tooth is moved bodily and in its vertical position, from one position on to another, carrying with it the outer plate of the alveolus, the

inner plate of the alveolus either following or the space being filled up—the space that is made by the movement of the tooth. If that process was pushed very rapidly, I can conceive that in some cases there might be irritation. Then again, here are the vessels, the tissues entering the end of the root, that move, and the question occurs may not that sometimes be affected by this movement? You have moved the tooth a quarter of an inch, moved the foramen a line or two from the original position, and all that must be carried along with it, the tissues must be distended to accommodate this movement. I suppose that is the case where they are carried along in that manner.

DR. CASE: Not exactly that. If the entire bone is bent forward with the end of the root, then the point of the root is not carried through the bone, and the foramen that comes down, carrying the vessels to the tooth, is also carried forward, is not left in the original position. That only occurs in those instances where the movement occurs only by absorption of the socket; and whenever that occurs, as I said before, the movement is always very slow; and I do not think I have moved the roots of a tooth—unless in one case—over an eighth of an inch. But where the entire bone can be bent forward, then the movement is always very rapid and quite extensive. The entire vessels and the bone itself seem to be carried along together, and that also is a reason for not expecting so much inflammation as you speak of. And one of the great reasons why inflammation does not occur is, that the method of attaching the appliances and the method of applying the force hold these teeth firmly in their grasp. The force usually applied by those who regulate the teeth is a screw force, which carries the tooth forward. I used to have the same terrible condition of inflammation you speak of when I used the old methods, the pressure and ligatures and rubber bands, but now I do not experience that trouble so often.

DR. TAFT: I can readily see that you have a grasp upon the whole tooth, and it is carried along so that the force is distributed throughout the parts.

DR. CASE: Yes.

DR. TAFT: The whole moves along together.

DR. CASE: Yes.

Dr. Taft: And the vessels, and the tissue attached to the body of the tooth, accommodate themselves to the movement of the tooth.

Now, some cases seem to invite an operation of this kind. How often a bicuspid, or sometimes a first molar, may be removed early in life, and the second molar will move bodily right up to the posterior surface of the second biscuspid. That is the same thing. It moves up from its original position and sets right against the bicuspid. Not always, but often-times there is a successful effort of this sort by nature. And whenever nature makes an effort for repair of this kind, the aim should be to aid it. There will oftentimes, of course, be obstacles in the way that are difficult to overcome; but there often seems to be an inclination on the part of nature to help in these things, and in the case of deformities, a tendency to work to a certain type, to repair a deformity.

The presentation of these cases and methods by Dr. Case has been of great interest to us all, though probably but few of us will ever attempt to do just the things he does, and in the same way; but it presents to us all a striking lesson, and the query will naturally arise in the mind of every practitioner, "Can I not do something to help the afflicted patients?" Dr. Case restores beauty. "Can I not help this deformity a little, by this or that arrangement?" And sogradually, I have no doubt, if this subject is kept before the profession, as Dr. Case is doing by the presentation of these cases at our meeting here, and then throughout the country, the result will be, not only the presentation of what Dr. Case and few others can do, but it will be helpful to us all, by showing what can be done. And then the question will arise, "Can I not also do something to relieve this suffering patient." And so it will be helpful to every earnest, progressive dentist, and to our patients.

Dr. J. G. Templeton, Pittsburg: I should like to hear from Dr. Case in reference to the use of retaining applances, and what he thinks is necessary in this line.

Dr. Case: Retaining the teeth in the position to which you bring them is quite as important as the regulation of them, and is, I have sometimes thought, the most difficult part of the whole

operation. I wish I had time to describe some of the new appliances for retaining teeth which I have recently thought out. Patients object very much to wearing appliances that show in the mouth. They want to get rid of the whole thing as soon as possible, and I have invented some new things that hold the teeth perfectly in place and yet do not show any more than a gold filling between the teeth. At some future time I shall fully describe them, so that you will all understand.

Dr. Garrett Newkirk, Chicago: I wish simply to add a word of testimony and of appreciation, concerning the work of Dr. Case. I have paid considerable attention to the regulation of teeth, and my work in that line has been a source of great satisfaction to me and to my patients. I wish to call attention to the principle of the appliance for which, it seems to me, Dr. Case is entitled to the exclusive credit. The advisability of moving the end of the root has been understood for a long time, but just how to construct an appliance which would accomplish that result, and give the operator perfect control of the whole matter of the movement of the teeth, is something which no one has been able to accomplish satisfactorily heretofore. But Dr. Case has certainly solved the problem through a recognition of the mechanical principles involved. So far as I know, no one ever thought before of banding the tooth and having a lever carried from that band up to this point (referring to the model) in order to give him the proper direction of force. He controls it by this traction bar or wire. It is simply a study of the principle of the lever as variously applied. By this traction wire he controls the point of the tooth absolutely. By this nut he controls his force positively. He knows just what he is doing.

Now, a word as to the production of inflammation. With this kind of an appliance the danger is reduced to a minimum, because the tooth is held firmly. There is no action and reaction. There is no uncertainty of movement. On a No. 18 wire there are about ninety threads to the inch, I think, so that you know absolutely, if you give the nut one revolution, that you have a forward motion of one-ninetieth of an inch, while a half-turn gives one one hundred and eightieth of an inch. In almost any

case you can control the amount of force, so that there is no possible danger of exciting inflammation. There is no more comparison between this sort of an appliance and our old regulating devices than there is between a nice watch and the old-fashioned threshing-machine. This is scientific, delicate, and positive. You know just what you are doing. So far as I am able to apply mechanical principles, in the few cases that I undertake, I am doing it on the same line with Dr. Case's scheme.

Dr. J. Taft, Cincinnati: One thing which ought to be noted in connection with these appliances is that the movement is positive. The tooth is moved up to a certain point and retained there until the parts accommodate themselves to it, until the tissue impinged upon has accommodated itself to the new condition. It is very different from the spring, or the rubber bands so often used in the correction of irregularities, and there is not anything like the liability or irritation that there is from the spring. It is a positive movement and then a rest, allowing time for accommodation of the parts.

Dr. S. N. Hoff, Ann Arbor, Mich: As I sat here to-night listening to this paper, I wondered if Dr. Case had not fixed these things up aand brought them over here to make us believe that he was doing something in the line of art rather than practical dentistry. Now, I believe he is doing both. It looks to me as though he was cultivating art, trying to assist nature to develop among his patients the beauties of art; and it would not be surprising to me, if after a while, to dentistry should be given the credit for a great advance in art, in a way that will take the laurels from the old masters.

As I looked at these drawings and as the discussion was going on, the question came to me, "How is all this beautiful development of the face accomplished?" As I understand from the paper, it is not accomplished by moving the tooth through the alveolar process, but by moving the bones themselves; and if it is accomplished in that way, what bones are moved? You can, not move the bones of the face around without leaving spaces and the question arises, what fills the spaces, and where is this separation made? It occurred to me that, possibly, the cuspids

were moved but little, and that this movement—especially where the process and the contour were developed—came about from the separation of the intermaxillary bone from the maxillary. But how can that be? The intermaxillary bone is united to the maxillary bone at a very early age, before the permanent teeth are developed, and the doctor states that many of these cases are fifteen, sixteen, or seventeen years old, and some older. At that period the intermaxillary and maxillary bones are certainly united, so that there must be a fracture or stretching of this union of the maxillary and the intermaxillary bones between the lateral incisors and cuspids. The casts and models clearly indicate that it is the intermaxillary bones that are moved forward. I think if that is the case, if that is what is done, it will explain largely the way in which the force should be applied to develop this contour. The forcing out of the intermaxillary bones bodily would account for the lack of irritation and injurious effects to the blood-vessels and nerves, because we know that the blood and nerve-supply of the cuspids is different from that of the incisors or the bicuspids. It seemed to me that this moving-out process is one comparatively easy to explain, on the theory of fracturing or separating the bones along this original developmental fissure. How can we explain the contrary process—the forcing back of the bone? There could be no fracture of the bones in that way. In that case you must certainly move the teeth. I cannot see that anything could be accomplished in condensing the bones, but that you must certainly in that case move the teeth into the bone, or, by the continued pressure, produce absorption of the entire bone-matrix or condensation of its cells. Certainly, by making continued pressure upon the teeth in this direction, you do not produce displacement sufficient to accomplish what you evidently have done. Have you any explanation as to what change takes place in the bones structurally or anatomically?

Dr. Case: It is certainly very gratifying to me to hear so much said in praise of that which I have been able to accomplish, and it is especially pleasant to receive in this public manner the indorsement of my efforts, and the verification of the truthfulness of these models which I have presented for your inspec-

tion, from men who are well known in the profession, and who have been intimately connected with a number of the cases I have treated.

When I asked your committee to invite Drs. Cushing and Reid to open the discussion of my paper, it was because I learned they were to be here to attend your convention, and because they were eminently qualified, as eye-witnesses, to speak of the practicability of the treatment I have employed in a number of cases.

The suggestions made by Dr. Hoff, in relation to the exact movement that really takes place, is something that it is impossible for me to answer. In the proceedings of the World's Columbian Congress, I mentioned the relation of the intermaxillary bone and its development, and, without giving any special opinion myself, I said that it was possible that that had something to do with the ease with which the four anterior teeth could be moved forward and, possibly, back. The subject of the movement of the roots of the teeth, even in a lateral direction, is one upon which there has been, for years, a great difference of belief among leading specialists in this department of dentistry; while the forward or backward movement of the roots of the anterior teeth with the entire bone in which they are imbedded is a subject so new and of such a radical advancement over former accomplishments in this line, it isn't strange that the profession are surprised and slow to accept or practice it.

[*To be Continued.*]

Some Incompatibilities.

BY J. S. CASSIDY, COVINGTON, KY.

Fashions in the exhibition of medicines, as in other things, have their periods of change. This fact obtains in the selection of drugs for either local or internal use.

Thus, there are many physicians yet living who in their earlier years of practice gave calomel, *ad libitum*, to the point of mercurial saturation; it was the distinctive fad in those days, possibly because of a vague idea, an adumbration, as it were,

of the present accepted theories of bacteriology, that big doses would be destructive to the materials involved in both the causes and consequences of the disease in question.

A few Samsons, as they were called, were regarded as the principal individual "bases" of various combinations, which also usually contained multitudes of auxiliaries and correctives that were pretty sure to "catch the coon either comin' or goin'."

In these combinations there naturally and unwittingly were too frequent association of decided incompatibles; and although it is still quite proper to make a judicious selection of effective drugs in a given formula, the strong tendency now-a-days is to write prescriptions that include but few ingredients.

Indeed, it is becoming more and more the style to order only one article, but of recognized utility, a habit due doubtless to the many pharmaceutical preparations which have become official, and which, although multiform in their composition, have been given each an individual name, thus simplifying matters very much; so much so that possibly even now, to say nothing of the immediate future, a paper of this sort may be somewhat out of place, and yet man is not and will not be perfect; if he were so, no suggestions would be needed, and no meetings of this kind would be held. Were it possible for George Eliot to have described the character of a man like Adam Bede, and at the time impress upon his mind the existence of the unconscious weakness of Hettie Sorrell, that pathetic story of the incompatibility in the moral nature of these two every-day examples of poor humanity would not have been written; neither would this paper have been conceived and inflicted thus upon you had I known in advance that all of us were still acquainted with the antagonistic qualities belonging to some of the drugs in common use.

I have known a patient who successively and repeatedly visited two specialists during the same half-hour; one of them would wash out the antrum and nares with solution of common salt—a good medicine—and then the other would effectually swab the throat and contiguous parts with solution of silver chloride. Another case somewhat similar—passive hemorrhage

of the gums, treated locally by free application of tannin.

In a few hours another doctor applied perchloride of iron. Enough ink was manufactured by this process to convince doctor No. 2 that a good thing in the wrong place might be worse than a negative quantity. These two homely illustrations are in evidence against the evil tendency of too much subdivision in the field of practice; that although medical men, including dentists, are rapidly adopting mono-pharmacy, the specialists are increasing in number, and inasmuch as each specialist is a law unto himself in regard to his favorite medicines, there must be many cases of a separate and successive reception of incompatibles by the same unfortunate patient. It is well known that when two or more of the major number of soluble salts are mixed together in solution they are prone to exchange their radicals, and thus lose their former identity. Sometimes, however, they are given with this object in view, as, for instance, to obtain in a pleasant way the benefits of potassium citrate, potassium bicarbonate and hydrogen citrate are mixed, and the result secured.

There are, of course, exceptions to this rule of salts thus suffering mutual decomposition. Equal quantities of sodium chloride and potassium permanganate in aqueous solution produce an excellent disinfectant and antiseptic wash for either suppurating or simply inflamed surfaces; to these effects the practitioner might wish to add a stimulant; if alcohol, for instance, is the one chosen, it will violate the virtue of the others, and a dark magma, explosive when dry will be the paincipal issue of the union. The number of illegltimate births that may occur by union of a few apparently useful, if not harmless, bodies are illimitable. The characteristics of some of them are rather absurdly inconsistent in the light of their intended vocation, and others somewhat serious.

Potter says that "catechu potassium chlorate in a dentifrice have exploded in the mouth from the friction produced by a dry toothbrush." We all know of the colorless tincture of iodine developed by ammonia, which, instead of being what its name indicates in point of activity, ammonium iodide, a very

dangerous substance. Electrozone, a new disinfectant produced by partial electrolysis of sea water, is incompatible with the same substances that antagonize Labarraque's solution, its chief active principle being sodium hypochlorate.

Analogous compounds of iodin and bromin are also present, and although in limited quantities, their virtues are not to be overlooked if we wish to receive the full benefits of this new candidate for professional favors, and, therefore, should be guarded against the many incompatibilities that necessarily affect the good influences of anything, medicinal or otherwise, which lays claim to Uncle Sam's motto "many in one." A number of authors could be quoted on this subject, and many instances selected from dental and medical journals to prove that the prescriber is too often carelessly forgetful of his duties in this respect; but I wish to make this paper brief, and to mention, merely in the way of a text, only a few examples of those incongruities which have come under my own observation. The fact is, since thinking over this matter, I am disposed to modify my indignation against a very dear friend, one of the most successful dentists of Cincinnati, for the statement he made in a paper read at a recent meeting of the Odontological Society of this city, "that the only medicines a dentists really needed, in order to prepare for a long and successful career in practice, are a barrel of carbolic acid and a pound of arsenic."

The Dentist in His Profession and Among the People.

BY S. B. HARTMAN, FORT WAYNE, IND.

Without doubt, to many persons the subject of the few remarks I am to make on this occasion may seem strange, and the question may be asked in what way it has any relative connection to "How to make a Dental Bridge," or "The Preparation of a Cavity for a Gold Filling," or "The Diagnosis of Dental Disease?" as it may seem far remote from what one would expect an essayist to choose as the basis of a paper at an association assembled for the consideration of questions of interest to persons

engaged in the treatment of dental tissue, and the artificial replacement of portions of the same lost through chemical or mechanical action. The boy who applied for admtttance as a dental student to a college, when informed an examination would be required in the branches usually taught in the public schools, in reply asked : " What has geography, arithmetic and algebra to do with filling teeth?" The answer, to many persons may seem to have been the right idea, and no doubt he could become as proficient in that direction as the ancients of many countries were in the art of carving and the construction of masonry, who knew nothing beyond the mechanical formation of their work, and were satisfied with the little circle in which they moved. But as time advanced the people organized and formed nations, and each individual was a component factor, and nations became in knowledge what its people were disposed to make them. While as individuals they each followed some avocation peculiar to himself, yet this influence was felt by his fellow-man.

Thus has our civilization been advancing until we must reach out to others and come in contact with them, and fulfill our duty as a citizen.

The first thought as to what relation a dentist sustains to his country and profession is his first step as a student of our noble calling, and very often if a boy can make a good kite, or his grandfather was a manufacturer of wheelbarrows, or if the boy could make a good joint with two boards in a carpenter shop, his future life should be that of a dentist. While mechanical skill is of great importance, and I would not in any way depreciate the same, yet if our profession wishes to occupy a position on a high plane, and to stand side by side with those professions whose society it strives to associate with, it must of necessity form its young and coming members, not only of those with an inclination to mechanics, but of those that combine these attainments with a knowledge of scientific and physical laws and a general understanding of those studies that will tend to an education that will admit the student to the society of the learned professions. I rejoice that many of our colleges are making the exam-

ination for admission of a high standard, more, I think, after having given the question much thought from all standpoints, that the better the general education of the student, the better will be the dental practitioner, not only as a dentist but as a citizen. In addition to the student possessing an education, I would make morality a consideration of his admittance to our profession, for if in any profession or calling it should be insisted upon, it is that of dentistry.

Coming in contact often with those of a sensitive nature, how important for his welfare and the community in which he lives that his character be above reproach ; hence I may say that character is paramount in the admittance of a student.

After having passed the portals of our profession and advanced from step to step to its various branches, and having met the approbation of his instructors, and been awarded their testimony thereof, our next consideration will be the practitioner.

This is often a position that will make a lasting impression ; his idea of what will advance his practice will cause him to be recommended in the community with a welcome, or, otherwise, his ability not only in the mechanical line, but his position as a citizen will be consdered. It is of great importance that he possesses an education outside of his chosen profession, that he may be admitted, and not only admitted, but sought after, to mingle among the best of society of the place where he may reside.

Not long since, a dentist of great ability and an advocate of a higher standard for his profession, and whose life-work has been in this direction, remarked that it was greatly to be regretted that in our profession we had so few men of attainments beyond that required in the care of teeth. While to some extent this is too true, yet I am happy to say that there are many who are taking advanced standing and are endeavoring to raise dentistry into that sphere it should occupy.

Dental associations have much to accomplish to broaden one in thought ; the mingling of persons of like interest incites a zeal to advance ; local societies have salutary influence on each member, and I would that not only questions pertaining to dentistry be considered, but that history, biography, current events, and

similar subjects be the topics for papers and discussions; thus would be presented a field for thought and research.

We all have a peculiar influence on others; we may feel that in our little personality no one is changed, but we are little aware how each day some one is elevated or depressed. Science teaches that no force is lost, but goes on and on. A great writer and a man greatly honored says: "The meeting of persons on the street has an unexplainable influence, and little do we know to what extent it may extend."

Several years past a gentleman said to me: "While I was in Cleveland attending a microscopical association I met a dentist from Detroit who had made the study of microscopy one of his pleasures outside of his professional duties and was a great student along that line." Some time after when visiting in Detroit, it was my privilege to call on this gentleman, and one of my greatest enjoyments of the visit to the city was this call. Little, if anything, was said in reference to dental practice but much of the conversation pertained to the great depths of those things not visible to the naked eye. And it seems to me that great fountains of knowledge had opened to me during the time of my conversation with him.

In our profession we need not be circumscribed, and need not and should not live entirely within the four walls of our office. Not only dental journals should be found in the office of a dentist, but the leading magazines of the day. Far better, a dentist should have one dental journal and two literary magazines, than two dental journals and no literary journal or magazine.

A young man quite proficient in operative dentistry, and in this respect one of the best of his class in college, who stood high in his examination in clinical work, was deficient in chemistry and physiology and failed to graduate with his class. Yet it was noble and manly when he said: "I do not wish my diploma until, in every particular, I am worthy of it." He was not satisfied to receive a diploma, although he stood high as an operator, and be deficient in other studies, although those studies made him not any more proficient as a filler of teeth, but as a scholar were of importance. Years after merit won, and to-day he enjoys the fruits of his labors, and is an honor to his alumni.

How can the attendance of our association be increased? This question is often asked. In my opinion the small attendance is not caused entirely from outside causes. Dentists, not members, desire its privileges and enjoyments, but through the fear of becoming a member, certain restrictions will conflict with their preconceived ideas of conducting their practice. In one of these States represented here to-day are five hundred dentists and the entire membership of its State Association is only about eighty, and an attendance of fifty members would be considered large. The four hundred and twenty dentists, not members, are largely composed of men from the same schools as the association members, and during college life stood side by side, passed the same professors, and have good standing in society.

What is needed is a great out-reach to those outside of our association, and it may be that some of those minor regulations of its management should be changed; let it be done. Dental colleges graduate students as worthy, why do not the associations receive them? The question has come to this: that the colleges are graduating men whose manner of practice is not in accordance with dental ethics, or the associations are at fault. When the time comes that this important question can be adjusted, and that talent and ability can be commingled, and each to himself derive a personal benefit therefrom, then will good-will and a citizen worthy of respect from his fellow practitioners and the admiration of those in whose midst he lives, be the result.

In conclusion, I would thank the Committee on Programme of the State of Indiana for kindness and courtesies. And may the meeting of this, the Clover Leaf Association, be of great enjoyment, and should we meet again may we not add one more leaf for good luck and include our sister State, Illinois, and thus add the fourth leaf, having the four-leaf clover, emblematic of good-will and prosperity.

It is said that the tendons found in the tail of a dog make better sutures than either catgut or kangaroo tendon, when properly prepared in sublimate.

SELECTIONS.

Treatment of Cicatrices Pressure and Friction.

When scars are situated on exposed parts of the body they are very unsightly, and when of large size are often productive of much deformity because of the strong tendency of cicatricial tissue to contract powerfully for many months after the healing process has been completed.

By means of friction and pressure persistently conducted, as here directed, the red shining surfaces of scars may be made to resemble the texture of the surrounding skin. When portions of the scar projeet above the surface these may be smoothed down, and in extensive cicatrices when tendinous bands connect the scar with underlying muscles or even with the periosteum, they can be absorbed and the natural mobility of the parts restored; moreover, the contractile tendency of extensive cicatrices may be successfully resisted and when deformity has already occurred because of such construction, it can always, at least measurably often, be quite removed by the same apparent simple means.

The treatment should be conducted as follows: If the scar be a small one, place the ends of two or three fingers on it, the hand being at an angle of thirty degrees with the surface; press firmly and vibrate the surface on the tissues beneath. The surface of the scar itself must not be subject to any friction, all the motion must be between the integument and deeper tissues.

The location of the vibratile motions and pressures should be changed every ten or fifteen seconds until the whole scar has been treated, if it be of moderate size; but if the cicatrix be large the margins only should be subjected to treatment at first; advances toward the centre must be deferred until the nutrition of the margins has been decidedly improved.

Only a little treatment should be applied to any one spot at the same time, but the pressures and vibrations should be repeated ten to fifteen times every day provided that pain and

tenderness are not produced; when these are developed treatment must be suspended until they subside.

In the course of two or three weeks of such treatment the surfaces of such scars of moderate size become more mobile and will begin to form wrinkles like true skin when pressed from side to side.

The tenderness usually present will gradually subside and the natural tactile sensibility will be at least measurably restored.

All the changes are due to improved nutrition consequent on better blood circulation aided by the development of entirely new sets of blood-vessels in the parts. But no matter how successful this treatment may be in restoring the integument, hair will never grow in cicatricial tissue. — DAVID WARK. M.D., in *National Board of Health Magazine.*

How Cocaine Kills.

Maurel says that cocaine kills by first, dilating the small vessels; second, paralyzing the leucocytes; strong doses taken by the stomach act in this way. The toxic effect is proportional to the number of leucocytes paralyzed. Small doses, hypodermically, or in the veins, may act by paralyzing some cells which then become emboli. Large doses may be injected into the arteries without killing.—*Omaha Clinic.*

EDITORIAL.

Dentistry in Japan.

Japan is regarded as *one* of the most, if not the most, progressive nation of the East. While this is true of almost every thing else, it has not generally been known that dentistry has received much attention; but they have not been idle in respect to dentistry, as is shown by the fact that they have two dental

journals, a large dental society and a dental college. "*The Shikagakukai Journal*" is the organ of the dental society and publishes the proceedings of that body in full. This journal was established about six years ago. The form is the same size of the REGISTER and each number contains about one hundred pages.

The other "*The Shikwa-igaku-sodan.*" "a medical journal devoted to the investigation of dental science."

The first number of this was issued October, 1895. It is the organ of, and is published by the Takayama Dental College in Tokio. It contains one hundred and twenty pages, and is published quarterly.

The dental society was organized in November, 1890. "The objects of the society is the improvement of the profession, and the exchange of dental knowledge."

"The meetings are held twice a month, when the members deliver speeches, open debate or answer questions on professional matters; and all these transactions are published in the mouthly journal, which is distributed to the members. The total number of members is five hundred and twenty. They are composed of the following: 1st. Those who have passed the dental surgery public examination, which is exacted twice a year by the government; of this class of members there are two hundred and eighty-one. 2nd. The graduates of foreign dental colleges who are now actually engaged in the practice of the profession. 3d. Those who have certificates for the profession given from the government on account of their practice in the Japanese system of dentistry. 4th. The students of the art."

The college was founded in 1890, and is the only one in Japan. "It aims to promote the cause of dentistry, by treatting all matters in regard to it, practical as well as theoretical."

It is remarkable that all this should have been done within the last six years. All the agencies for development and growth put into active operation within that time. Our dental associations must bestir themselves or be outstripped by our Japanese friends.

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