Dr. William Hunter, of London, has put the dangers of oral sepsis plainly before us. I strongly recommend his papers to any one who is interested in the subject. In closing, I wish to quote some paragraphs from him which will help to establish the idea that alveolitis is of local origin, and that it is the cause of many bodily diseases, instead of its being the result of such diseases.¹

In the foregoing sketch of the chief sphere of the doctor's work and interest, I omitted any reference to one other portion of the body which constantly comes under the observation, indeed, more often than any other—I mean the mouth. This omission was intentional on my part. The cases presently to be described—which could be multiplied by thousands and tens of thousands coming under the daily notice of doctors—illustrate how constant the omission is in practice.

What I desire to impress on you students, and all students entering the profession, and all those already engaged in the practice of the profession is, it is "not a matter of teeth and dentistry." It is an all-important matter of sepsis and anti-sepsis that concerns every branch of the medical profession, and concerns very closely the public health of the community. It is not simply a matter of "neglect of the teeth" by the patient, as is so commonly stated, but one of neglect of a great infection by the profession—a great infective disease for which the patient is not primarily responsible any more than he is responsible for the contraction of typhoid fever or tuberculosis. The condition referred to is that to which I have given the name of "oral sepsis."

The chief feature of this particular oral sepsis is that the whole of it is swallowed or absorbed into the lymphatics and blood. Unlike the sepsis of open wounds on the outside of the body, none of it is got rid of by free discharge on the surface. The effects of it, therefore, fall, in the first place, on the whole of the alimentary tract from the tonsils downward. These effects include every degree and variety of tonsillitis and pharyngitis, of gastric trouble, from functional dyspepsia to gastritis and gastric ulcer, and every degree and variety of enteritis and colitis and troubles in adjacent parts, e. g., appendicitis. The effects fall, in the second place, on the glands (adenitis), on the blood (septic anemia, puerperal fever, septicemia), on the joints (arthritis), on the kidneys (nephritis), and on the nervous system.

The title "oral sepsis" was first introduced into medical literature in a paper entitled "Oral Sepsis as a Cause of Disease." My object in seeking for a special name, and, after consideration, in creating this one, was to emphasize the great fact that it is not the absence of teeth, but the presence of sepsis, that it is not dental effects, but septic effects, that it is not defective mastication, but the infective sepsis associated with such dental defects often present, in conditions of gingivitis apart from such dental defects, that are responsible for the ill health associated with "bad" mouths.

The subject of oral sepsis, as I designated and defined it, namely, the septic lesions of streptococcal and staphylococcal infection found in the mouth, belongs to no one department of medicine or surgery. It is common ground on which the general physician or surgeon, the throat, nose and ear and eye specialist, specialists in children's diseases, in stomach diseases, in blood diseases, in "rheumatic" diseases, in fevers, in skin disease, in nervous and mental disease, and lastly the dental surgeon, all meet on terms of equal responsibility. In its earliest manifestations, no special knowledge is required to deal with it; a sound grasp of the principles underlying antisepsis alone is required. Unfortunately for the patient, it is precisely this grasp which I grieve to say is wanting.

For this is what the practitioners are constantly doing. Wherein consists the pathologic difference between a follicular tonsillitis and a foul, septic, suppurating condition of the gums, with deposition of calcareous "crusts and scabs" (so-called tartar) covering and hiding septic wounds and ulcers, loaded, as microscopic examination shows, with staphylococci and streptococci? None whatever, except that the latter is

exceedingly common and the tonsillitis is comparatively rare. The pathologic condition in both is the same, namely, sepsis. Moreover, it is sepsis as easily recognized and much of it as easily removed in the case of the one as in the other.

Even if the teeth are not subject to a very marked septic infective process, the infective processes in the gums constitute very important septic wounds, and are a great source of sepsis to the body. As a matter of experience this is often the case. The teeth remain intact, or at least free from obvious caries or carionecrosis, but the gums and the periosteum of the sockets are the seat of numerous septic wounds. These are shown by septic suppuration, by deposits of tartar sometimes in great masses on the teeth, on the gum-margin and beneath the gum-margins, by the formation of pockets (septic ulceration of the periosteum—periostitis), absorption of bone, and loosening of the teeth in their sockets.

I submit, then, once more, as I did in the first communication (1900) bearing the title of "Oral Sepsis," that in the interests of the many sufferers from the great group of medical affections which it produces, this condition of oral sepsis, the chief channel of access of all pyogenic affections, is urgently deserving of increased notice and attention. Knowing, as we do, the pathogenic qualities of staphylococci and streptococci, we have not the slightest excuse for allowing the mouth, so easily accessible to local measures, to remain their chief seat, and its open wounds a veritable hotbed for their development and propagation.

11 East Seventh Street.

WANTED: A SENSE OF ASEPSIS*

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Have we, as practitioners of an important specialty of the healing art, a proper sense of asepsis? If a just opinion can be formed from observing the clinical teaching in our dental colleges, the methods employed in the offices of nearly all classes of dental practitioners and the demonstrations at the clinics of our state and national societies, then we must admit that we fall far short of a proper sense of asepsis.

What is asepsis? Asepsis from the surgical standpoint is that condition, maintained during the operation or treatment and the after process of healing or cure, which is the result of any process or method rendering the tissues to be operated on, the hands of the operators, the instruments, dressings, fluids, medicaments and ligatures, which come in contact with them, *germ-free*, and maintaining this condition during the operation or treatment and the after-process of healing or cure.

It would be manifestly unjust to say that dentists as a class are ignorant of the principles underlying asepsis. That these principles are in the lecture-rooms of most of our dental colleges is no doubt; but this teaching is then practically ignored by a very large majority of the students in their clinical work in the infirmaries. This is due in part to the fact that the clinic-rooms are poorly equipped with sterilizing apparatus and that the teachers, demonstrators and professors who oversee and direct the operations of the students are often exceedingly lax in their own technique and do not insist on a faithful carrying out of the didactic teaching on this subject. I have been astonished, yes, appalled, at the utter disregard of all modern, scientific methods of asepsis to be found in many of our dental colleges, in the offices of numerous dental

1. Hunter, W.: Role of Sepsis and of Antisepsis in Medicine, an address delivered at the opening session of the Faculty of McGill University, Montreal, Oct. 3, 1910.

* Read in the Section on Stomatology of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

practitioners and particularly at the clinics of our state and national societies.

Let me particularize as to some of the things that I have seen in the infirmaries of our dental colleges:

1. In one college there were only two sterilizers in the operating-room and one in the extracting-room for the use of more than fifty students. It needs no extensive calculation to prove that this provision for sterilization was entirely inadequate, and as a result the majority of the students contented themselves with simply wiping their instruments on a towel, often a soiled one, before passing to the next patient, rather than wait for their turn at the sterilizers. Furthermore, I have seen nerve broaches that had been used in septic pulp-canals tossed back into the box without sterilization and used again on a patient without even being dipped in phenol (carbolic acid) or other sterilizing fluid. One towel was made to do duty for an entire clinical period lasting from two to three hours and sometimes for two to three patients. Demonstrators frequently passed from one patient to another, examining and criticizing the work of the students, but never thinking it necessary to even wash their hands before placing their fingers in the mouth of the next patient. But worst of all, I have seen a prominent teacher pass through his operating-room with a mouth-mirror in a waistcoat pocket, examining the work of his students and going from chair to chair without once washing his hands or cleansing the mouth-mirror. Verily we do need "a sense of asepsis" and in this case something more.

2. I have visited the offices of many dental practitioners in which there was no provision for sterilizing instruments, and the only cleansing that I saw these instruments receive was a simple washing in warm water. I have been invited to examine a case, and after carefully washing my hands and sterilizing them with alcohol, have been offered a soiled towel to dry them with.

An office may be fitted up in the most elaborate manner with enameled furniture, marble floors and wainscoting and zinc painted walls, but this will prove of no value if the more important matters of local and personal asepsis are neglected or ignored. The charge, often made by physicians, and doubtless true, that infectious diseases such as tonsillitis, diphtheria, tuberculosis and syphilis have been frequently transmitted from one patient to another by unclean and septic dental instruments is a shame and a reproach to modern dentistry, and shows the need of a "proper sense of asepsis."

I have witnessed at the public clinics given by the dental societies and at the clinics of the National Dental Association the same disregard of aseptic methods as those already mentioned. In fact, the one thing most prominently and indelibly impressed on my mind at the last meeting of the National Association was the reckless disregard of asepsis in many of the clinics, both by the operator himself and those that he permitted to inspect the progressive steps of his operation and its completion. Twice in my professional life I have been a patient at the clinics of the National Dental Association, and I therefore speak with authority and much feeling when I say that I looked with fear and trembling at the dirty fingers thrust into my mouth by the interested spectators. But never more. Personally I have always declined to operate at one of these public clinics for the reason that the facilities for aseptic operations were so meager or absolutely wanting that I dared not risk the health or life of the patient, or my own reputation.

In my work as an examiner of dental surgeons for appointment to the dental corps of the U. S. Army, I have found a lamentable lack of a proper sense of asepsis, and many young men have failed in their practical tests by reason of this fact.

I have always considered it my duty to draw the line very sharply on the question of a proper sense of asepsis, for the reason that great harm may result from uncleanly methods of operating. The remedy for such methods lies with the teachers in our dental schools and with the clinicians at our state and national associations. When teachers of prominence and clinicians of high standing in the profession are indifferent to, or ignorant of, the principles of asepsis, it cannot be expected that the students and young practitioners will be impressed with its value or see the necessity for such painstaking and elaborate preparations to prevent infection. The fact that infection does not always take place when aseptic methods are ignored is no assurance that it will not take place in any case. Resistance to disease is not equal in all individuals, and the virulence of infective organisms is not always the same. Untold suffering and many deaths have been the result of neglect and ignorance of a proper sense of asepsis.

Much of the trouble experienced by so many dentists in the treatment of septic conditions of the teeth and mouth is the result of an imperfect knowledge of the principles of asepsis and a worse than bad technic.

I know of a physician who left the chair of a dentist of high reputation because of his fear of infection on observing the unscientific technic practiced by the dentist. The public generally is also becoming educated along these lines, and many individuals will not expose themselves to such grave dangers from infection at the hands of a careless or ignorant dentist or surgeon.

Is it not time that this question of asepsis in all dental operations should be taken up in a serious manner and that its principles be taught and the technic practiced in the most careful and scientific manner?

There is no longer any excuse for lax methods in asepsis, and the sooner the profession awakes to the fact, the better it will be for the reputation of the profession and the health of the public. *Wanted: a sense of asepsis.*

2519½ Durant Avenue.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. FLETCHER AND MARSHALL

DR. VIDA A. LATHAM, Chicago: These papers show again that we need our laboratories; that we need wise teachers; and also that we must be weak somewhere that it takes twelve or fifteen years before the medical profession, including dentistry, to discover Hunter's work on oral sepsis. The paper read by Dr. Hunter has been lying dormant until some factor brought it out. Was it the attack on American dentistry in regard to bad bridge-work which caused such a furor, or was it the fact that Americans did not like the idea that that came from this side? This paper that has been quoted from was a paper on diseases of the blood, inspired by a paper which Byron Bromwell wrote on anemia, in which he said that there was a peculiar condition of the blood in anemia that nobody seemed to grasp. Dr. Brown presented that subject to us and gave a number of lantern slides, and the question was put to us, what was it that caused this peculiar condition of the blood? That means that it comes very near our field of work, and is very far-reaching in its effects; that it is not only in the mouth, but in the abdominal viscera, the liver, the spleen, kidney, etc., proving that sepsis from streptococcus infection was all through every organ. Dr. Hunter wrote as far back as 1900 on acute kidney sepsis due to streptococcus infection. If you remember I made mention of this at the Portland meet-

ing, and the suggestions made by this Section were put into effect in the Indian jails and the percentage of dysentery was lessened more than 50 per cent. by oral hygiene. It would look to me as though we need postgraduate work in this line, as only a few of the journals have made any mention of this subject, and that only in three or four which are simply rehashes of what we already know.

DR. A. J. FLANAGAN, Springfield, Mass.: Of course, some here present know that in the minds of fully 90 per cent. of the people in America, who are having dentistry done to-day, the great thought as they enter the dental office is this, that they are paying for a material, and that the fee that is to be collected is usually computed on account of something material which they have received. In medicine and surgery that does not enter into consideration. People think to-day, when they go to physician or surgeon, that they are to pay for the knowledge and the ability of the operator, and the dangerous condition of the operation, and many other things which we have not the time to mention. Now, if 90 per cent. of the people can be educated to understand that dentistry is a part of the healing art, the great problem of sepsis in the average dental practice will have been solved. It is an economic question because of the condition that exists in the minds of the people. Now, what are we to do about it? I would like to ask Dr. Fletcher, or any man here, if the tooth which has lost two-thirds of its hold in the jaw is the equal of one which has its three-thirds. In proportion as we lose a proportion of that hold in the jaw, in that proportion do we lose a certain usefulness of that tooth. If we take into consideration the stress and the fact that there is going to be decay of the tooth, and the liability of the tooth to disease and all that, we need to recognize the fact that the tooth can never be retained in the mouth without some method of increasing or bringing back the hold which has been lost. Has any man ever been able to recreate pericemental tissue? Many young men are led astray by the idea that we can recreate that two-thirds or half of the attachment of the pericemental tissue.

DR. M. L. RHEIN, New York: The hygienic preservation of the mouth with the septic foci left in the mouth is of course to us an absurdity, and yet a careful investigation of what 90 per cent. of the dentists of this country consider this sort of treatment will show just such a condition of affairs. I am a very earnest advocate of mouth cleanliness among the poorest classes of children. I believe that if dental dispensary service to poor children were confined to this one feature much more benefit would ultimately accrue than by the use of questionable methods of dental repair and construction. I have seen much harm perpetrated and damage done to the human body by makeshift or cheap constructive dental service; nothing has tended more to produce unhygienic conditions. Operative dentistry in its true sense is more or less of a luxury; it is impossible to make it a necessity. We can teach oral hygiene in its real and true sense; but when it comes to the repair of the ravages of dental disease, anything that falls short of what should be done should be criticized as malpractice. It is not a benefit; it is a curse. That is the true picture of dentistry as performed by the mass of dentists for the people who cannot afford to pay for dentistry properly performed. The excuse that these dentists give for that kind of malpractice is that it is impossible for them to provide the proper kind of dentistry and earn a livelihood. My point has always been in this matter that the people who cannot afford to pay for the preservation of the tooth so that it shall be preserved in an aseptic condition from further possible infection hereafter, would be far better off if they never had anything done to that individual tooth. It remains for a Section like this to establish some form of education that will bring the practice of stomatology out of such a condition. The one way is to make the general medical man understand what aseptic dentistry means and to be able to distinguish the difference between aseptic dentistry and septic dentistry. When the physician understands that that dentistry is taking away years of the life of that patient by the septic methods of work pursued, he is going to protest against that thing just the same as he would protest against some form of maltreatment of the patient's ears or eyes, or any other part of the body.

DR. E. S. TALBOT, Chicago: The first part of Dr. Fletcher's paper is rather labored. Dividing up the different degrees of the disease does not appeal to me as being a point well taken. If we understood more clearly the nature of the structures under discussion we would be better able to grasp the pathology and be much more clear I think in the aggregate. If we understood that the alveolar process is a transitory structure; that it is simply there for the purpose of holding the teeth in place, and when disease attacks the alveolar process, or a tooth is extracted, it is natural for that process to be destroyed, then we would more readily understand the nature of the disease that attacks the gum margin. Again, the alveolar process is an end-organ, and end-organs are more easily involved in disease than any other structure of the human body. So that having an exceedingly sensitive structure, a double transitory structure and an end-organ, when disease once attacks the gum margins it becomes chronic and the tissue is very rarely restored to health. In lower vertebrates we have continuous sets of teeth; they come and go throughout the life of the individual, and as we ascend in the scale up to man, and some of the lower vertebrates, we have only two sets of teeth, and all of the vertebrates that have only two sets of teeth have what I call interstitial gingivitis. Animals in captivity, cows and horses, if fed on food that is not natural, or animals put in cages and forced to live unnatural lives, have this disease, because the teeth are only intended for a short period of time. The first teeth come into place and are lost, the second come into place to remain only a short time. As soon as man or animal get their growth, the alveolar process begins to absorb away to shed the teeth. It is an atavism, and so this inflammation is not easy to treat. If the individual has any disease, if his system is out of order, if his blood is in poor condition, and he has a local irritation about the teeth, that irritation affects these transitory structures and end-organs, and as the result sooner or later they lose their function and the teeth drop out. In 1886 I read a paper, (I think in the *Cosmos*), making the statement that dentistry was producing more disease of the gums than any other one thing, and I have worked on that line for forty years. The principle of saving teeth is wrong. Every time we put the rubber dam or a clamp on a tooth, or wedge the teeth apart for the purpose of filling, or injure the gum margin with an instrument, we set up an irritation that eventually, whenever the system is out of order, that is to say, when the blood is not perfectly pure, will affect the alveolar process. If we cannot treat a tooth and save it without irritating the alveolar process and the gum margin, it is much better to remove that tooth; it is a quicker way of getting rid of it and the patient would have a healthier mouth, then he could possibly have under our present methods of operation.

DR. W. C. FISHER, New York: The appurtenances provided at most dental meetings for giving clinics certainly are deplorable, and everything that Dr. Marshall has said is true in more than nine out of ten state and national meetings. I agree most decidedly with Dr. Talbot that many of the cases are extremely difficult to treat. I frequently take skiagraphs taken of the patient almost immediately after presentation for treatment in order to learn if there is anything to prevent a cure, and if I am convinced that there is, I do not hesitate to remove the tooth. In referring to the character of bridge-work, and the unclean mouths that result from the character of work done by 90 per cent. of dentists to-day, I do not blame the dentist, but I blame the patient for going to the man who is doing the kind of dentistry that is done to-day in the dental school and in the public clinic. I am not inclined to think that 90 per cent. of American dentists have been so careless as they have been pictured. There are more than 10 per cent., I believe, who do good work and do not do patients harm.

DR. M. I. SCHAMBERG, New York: I would like to emphasize further the point brought out by Dr. Talbot in connection with the fact that the gingival border of the gum tissue might be properly styled an end-organ, and that that portion is more susceptible to disease during conditions of poor peripheral circulation than other parts. We might take as an analogy, the

drying up of a leaf, the manner in which it dries up on the edge as a rule more particularly than in the center and the manner in which the majority of fruit rots or decays at the point of a bruise. There is a tremendous amount of harm done through the bruising of the margin of the gum, whether it is done by improper brushing of the teeth, poor dental work, or the impaction of food in the interdental spaces. These are the exciting causes of pyorrhea. Dr. Flanagan's question, "Is there a man who can restore lost tissue?" must necessarily be answered in the negative. I have had several very severe cases during the past winter in which there appeared to be a gum flap lying over the tooth, with no tendency toward attachment at any point. I snipped that off with scissors, in some cases exposing the tooth almost down to the apex. It is astonishing in many of these cases the amount of firmness that is regained after the source of irritation and accumulation of filth has been removed. I believe that the tooth even though it be exposed for one-third the length of the root might be retained, as many temporary teeth are at times retained, and remain very firm with practically no root remaining, as is frequently noticed.

DR. H. S. HASLETT, Pittsburgh: The statement was made a moment ago that the fault of poor dentistry lies with the teaching in the colleges. The fault lies more with the following out of the teaching after the student gets into practice himself. We find in many instances that young men going into practice will neglect the most intricate part of their work, will forget technique, and take short cuts across lots in order to reach a conclusion rather than to go by the beaten path through which they were led during their college course. Not more than three weeks ago a young man who had been in practice for three years, brought a piece of bridge-work to me and asked me to criticize it, and he walked out of the office because I said he was never taught to make a bridge such as that, and that as soon as he could forget this kind of work, just so soon would he begin to progress in the profession and not until then. That was the case of a young man who had been in practice a short time. Last week a student just finishing his freshmen course came to me to ask if he had failed. I told him that he had; and he said, "I believe that dentistry is a big graft game, and I am sorry that I cannot go on." "If that is the way you feel," I said, "now is the best time to get out; we do not want you, if you feel that dentistry is a graft." What would you expect of that man if he went on? How would he prepare cavities, how would he fill teeth, how would he treat any conditions that he came in contact with, with that idea of graft before him? Now, we do not teach graft; we teach dentistry, and if they become grafters after that, it is not the fault of the college, but the fault of the student.

DR. M. H. FLETCHER, Cincinnati: In answer to Dr. Flanagan, I do not think that the physiologic repair of tissues can be measured by halves or quarters. One tissue may repair more than another, and I believe with Dr. Fisher, that when there is nothing left that will bring about repair, that teeth should be removed for the purpose of asepsis. Nevertheless, after study of the conditions, if I can distinguish any tissue left in the socket of the tooth, it is worth an effort to try and save that tooth. I have seen many cases in which teeth have become useful regardless of stress. I can show any number of radiographs taken one, two or three years after the case had been in hand in which there has been repair. An artificial substitute of itself would be more or less a continual cause for sepsis. How many people who have removable pieces in their mouths keep them as clean as they should be? Now, it is up to us to know enough about the laws of physiology of repair and about pathology to be able to distinguish these conditions when we see them. If the doctor's degree does not give that knowledge what is the degree for? I object to Dr. Talbot's use of the term "end-organ." His condemnation of the alveolar process, saying that it is transitory, does not mean to me what it does to him, for in an animal which has progressively growing teeth, the alveolar process is continually reforming as long as that animal has that tooth, and as long as it lives. Why does that animal not

have this disease around the teeth? Look at the ruminants, there is a hard tissue developed around their teeth, which when wounded heals as the skin would heal. It heals because of the physiologic principle for the organism to repair itself. That is the law of repair and growth, and it cannot be changed no matter what we think or try to do. It is my endeavor to teach every patient and I tell them that they cannot be my patients if they do not want to learn this. What I undertake to do is to replace with the tooth-brush in the hands of the patient everything that creates healthy gums and healthy connective tissue around the necks of the teeth. I do not see any difference between the method of repair of the tissues around the alveolar process and that in any other part of the body. The cementum will repair itself to a certain degree. They have originally the same process of forming bone. As far as the transitory conditions are concerned I do not see any difference excepting in environment which brings about the necessity for the animal to shed the teeth. Take the pachyderms, the elephants; elephant's teeth are continually shedding—until the time of death, as far as I know—and the physiologic process of building bone around each tooth is a natural histologic process in consequence of the demand of the animal for the teeth. The alveolar process is found in all ruminants, and the process is perfectly normal as far as I see.

DISEASES OF THE FALLOPIAN TUBES *

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The belief that all diseases or pathologic conditions of the fallopian tubes cause symptoms is fallacious. Pathologic changes in the tubes may be present for some time without giving rise to disturbing symptoms. It is important, therefore, to examine carefully, for the possible existence of pathologic conditions of the fallopian tubes, all women who consult us about diseases of the generative organs. This is particularly exemplified, for instance, in cases of catarrhal and interstitial salpingitis caused by gonorrheal infection, in which the tubal inflammation causes no marked symptoms and the physician is consulted only as to the cause of sterility. Should the physician, in such a case, make use of intra-uterine treatment, without realizing what the true condition is, a pelveoperitonitis is liable to result.

It is likewise fallacious to suppose, as many do, that women whose fallopian tubes are the seat of gonorrheal infection, particularly so if it be suppurative, are permanently sterile therefrom. So long as the inflammatory process has not caused an occlusion in a part of the tubal lumen, a cure of the inflammation is possible, and subsequent conception as well—this latter, however, only if the husband be entirely cured and if a restoration of the tubal mucosa to its normal condition take place. But, knowing of such possibility, we must be guarded, not only in our prognosis, but also in our therapeutic measures. We should not, in such cases, advise a surgical intervention which would prevent the possibility of a future impregnation, unless, after carefully weighing the subjective and objective symptoms, an intervention of such serious nature seems imperative.

We may lay at the door of gonorrheal salpingitis the cause of most tubal pregnancies. Any tubal inflammation which destroys the tubal epithelium to such an extent that the fertilized ovum is not conveyed to the uterine cavity will cause that mishap.

If we find the fallopian tubes objectively in a pathologic condition, and the patient complaining of dys-

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