THE RELATIONSHIP BETWEEN DISEASES OF THE MOUTH AND GENERAL DISEASES.

By Thomas R. Brown, M.D., Baltimore, Md.

(Read before Odontological Society, Western Pennsylvania.)

IN A SENSE it may be bringing coals to New Castle for a medical man to discuss the relationship between diseases of the mouth and general diseases, and yet at the risk of being trite and uttering many truths better appreciated by you, odontologists, than by me, an internist, I should like to briefly present certain questions which should be of equal interest to dentists and physicians, questions where each is involved in discussing etiology, pathology and symptomatology, while for a rational and successful therapy it is absolutely essential that the two professions attack the problems presented hand and hand and not independently. To me there is no better sign of real medical progress than the obvious tendency of the day for men working in overlapping fields to come together to elucidate the border-line questions presented for solution; the physician and the surgeon no longer look askance at each other, and ipso facto take opposite sides, but each sacrifices some of his extreme views, and the patient is correspondingly better diagnosed and better treated, and no longer falls between the two horns of the dilemma; and so it is with physician and gynaecologist; orthopaedist and laryngologist; internist and physiological chemist, and of very recent years medical man and odontologist. It is refreshing to see our large medical schools recognizing this tendency in the forma-

tion of dental departments in close association with their other services, and to realize that the establishment of an odontological section in many of our larger medical societies is a well deserved appreciation of what we owe, what we have learnt, and what we hope to be taught in the future by our brethren in the dental fraternity. And yet the real wonder of it all is that such a recognition came so late; when we consider the chemical, mechanical, and bacteriological problems bound up in the preliminary preparation of the food stuffs and the enormous possibilities for disease in the body as a whole, altho especially in certain of the systems if any of the functions varies from its normal.

I for one am proud to recognize the debt we all owe to the members of your profession who have so broadened our views in this field, who have taught us its importance in the underlying pathology of many hitherto poorly understood conditions, and I still, as I have always done, begin my lectures on digestion to the students with an exposition of the importance of the study of the teeth and other appendages of the mouth, and the hopelessness of curing many widely different digestive diseases without the active cooperation of a competent odontologist.

And so I come here tonight possibly to bring something new to some of you in my short message more perhaps to re-

fill my flagon at your ever deepening spring.

In this short paper that I shall present to you tonight, I shall discuss briefly certain questions bearing on the relationship of diseases of the oral cavity to general diseases and vice versa, taking up in order—the salivary secretions, the effect of certain treatments on the teeth, the role played by metabolic disturbances or dyscrasias on the condition of the teeth, the bacteriology of tonsils, teeth, and sinuses, the effect of oral diseases upon the body as a whole, notably the gastro-intestinal tract, and certain questions connected with diagnosis, prognosis and treatment.

SALIVARY SECRETIONS.

Far too little attention has been paid to a careful study of the salivary secretions, and yet the health of the oral cavity depends largely upon the normal functioning of the salivary glands, both as regards quantity and chemical constitution of the secretion. One often forgets the important role played by the normal stimuli of salivary secretion, notably substances stimulating to the gustatory nerves, especially organic acids and certain of the sugars. The notorious tendency of the present day to treat oral diseases with alkaline mouth washes, and gastro-intestinal diseases with various alkalies must perforce have a harmful influence upon salivary secretion. Pickerill has shown this in animal experiments, and many clinicians have noted similar effects upon human beings, while if the alkalies contain bismuth, calcium, or magnesium there is always the chance of a deposition of these salts as concretions upon the teeth and gums, which may in turn act as distinct irritants leading to gingivitis and pyorrheal abscesses. Increased salivation has its interest too, tho far too little is known of this outside of that group produced by certain drugs, notably mercury and pylocarpine. In our digestive studies we have been partic-

ularly impressed by the sialorrhoea met with in certain cases of duodenal ulcer, and the diminution of salivary secretion in pancreatic disease, notably pancreatic carcinoma. For the past two years with one of my associates, Dr. Freeman, we have been determining the effect of variations of gastric secretion upon the amount, alkalinity, and diastatic-ferment content of the saliva, but our results seem to show that the influence is practically nil, and that with hyperchlorhydria, normal digestive contents, subacidity and achylia a normal salivary secretion is the rule. Many years ago certain observations were made upon the effect of changes in the saliva upon the gastric secretion, that is, the reverse of the picture, but these results were inconclusive. Thus we feel that the care of the secretions of the mouth, and the food and the drugs placed therein are of fundamental importance to the production of a normal salivary secretion—a condition of paramount importance to both motor and secretory functions of the stomach and intestines, and this again accentuates the necessity of a proper realization of the role of prime importance played by the dentist in preserving a healthy gastro-intestinal tract, by removing causes of mechanical irritation, by bringing about a proper occlusion, in fact by doing everything to promote a normal salivary secretion.

Perhaps we should follow Grieves in his differentiation of mouths into three types according to the character of the salivary secretion—the normal, the hypoaacid, and the hyperacid; this is a step in the right direction, and opens up a very fruitful field of research work on the chemistry of the oral secretions, a field which I trust will be actively cultivated by some of you as we of the medical profession must depend upon you for our knowledge of this, the chemical side of oral pathology quite as much as the histological and bacteriological, all, of course, indubitably linked together if

we wish to develop what is so much needed, a broad and comprehensive oral pathology.

THE EFFECT OF TREATMENT.

There is a very interesting chapter to be written upon the effect of various forms of treatment upon the teeth and salivary glands. With the undoubted increase of hyperacid dyspepsia due to our more intensive mode of life with its increased rapidity of eating and poorer mastication of food, and perhaps also due to a better appreciation of the underlying cause of this form of dyspepsia, there has been a marked increase in the use of both alkalies and belladonna. Of the former, as mentioned before, soda unquestionably tends to lessen salivary secretion, while the salts of the heavy alkalies may by their deposition on teeth or gums lead to definite inflammatory changes, and subsequent gingivitis and pyorrhea, as we have noted in a number of cases. With belladonna therapy there is always the tendency to diminution of salivary secretion with its subsequent influence upon both motor and secretory functions of the digestive tract, altho in many of those in whom belladonna is especially indicated, the true vagotonic, it is surprising what enormous doses may be taken with no apparent disturbance in salivary secretion. In the administration of acids, notably hydrochloric acid for gastric sub-acidity and achylia, even with the greatest care etching of the teeth may occur with interstitial and even purulent gum changes as a possible sequela. One must also call attention to the effect of various other drugs used for different purposes, such as mercury, iodide of potash, iron, etc., each of which is liable to cause definite changes in the oral cavity, which may be provocative to more serious disease. In all these cases the true recognition of the pathological possibility should lead by the appropriate method of treatment to a minimization of the oral changes produced.

EFFECT OF VARIOUS DISEASES UPON THE TEETH.

In the pursuit of pyorrheal pockets as foci of systemic, infection far too little attention has been paid to the reverse of the picture, that is, the influence of diseases elsewhere upon the mouth and its appendages. Many careful odontologists have insisted upon this point, and have stated as their belief, that local trauma and constitutional disturbances or diatheses are necessary to the development of gingivitis, pyorrhea and periapical abscess. The tendency towards diseased teeth in diabetes, arterio-sclerosis, pregnancy and senility is too well known to need repetition, but unquestionably in many other conditions, notably chronic arthritis and chronic cardiopathies, pyorrhea is the effect not the cause. How many cases can each of you remember, with but a moment's thought when after the removal of many or all the teeth of the cure of such chronic diseases, it has finally dawned upon the physician that he has done the patient far more harm than good in removing one of his few remaining sources of comfort, and often it has not only helped the general disease, but has made it decidedly worse by removing one of the prime factors in the normal digestion and assimilation of food.

To turn to another phase of the subject, severe toothache without apparent local cause, we published a few years ago a long series of observations on neuritis, neuralgia, and myalgia, where undoubtedly the underlying cause was a disturbance of metabolism, probably originating primarily in the intestine, and characterized by a marked overproduction of acid in the body, which could be demonstrated by a tremendous increase in the urinary acidity, and which yielded with great success to the elimination of acids, and acid-forming foods from the dietary and the administration of large enough doses of soda or other alkali to neutralize, or nearly neutralize

the urinary acidity, and von Noordon reported a similar group of cases three years after the publication of our article. This point I feel sure is one of great importance in the diagnosis of various neuralgias and neuritides in the mouth, and in all such cases if no local disease can be demonstrated by the most careful and complete examination the treatment we have suggested should be tried, especially if the patient has noted a marked exacerbation of his symptoms after the indigestion of acids, sweets, acid fruits, etc.

BACTERIOLOGY OF MOUTH.

There is no more fascinating subject that I know of than that of the bacteriology of the mouth in health and disease and the various sequelae ascribed to pathological conditions in the oral flora, and yet the subject is still very far from solved, and offers enormous opportunities for intensive research work. Let us briefly review some of the work along these lines much of which we owe to the dental profession.

TO QUOTE LESCOHIER.

"Hartzell's work, perhaps the most convincing of any that has been reported, points strongly to the importance of the streptococcus in pyorrhea. His observations have indicated that approximately three-fourths of the bacterial content of pyorrhea pus pockets is made up of pyogenic cocci of the streptococcus viridans, and staphylococcus types, and the remaining one-fourth of other organisms. Hartzell's animal inoculations have shown that following the intravenous injection of pus from pyorrhea pockets streptococci of the viridans type are usually recovered, occasionally staphylococci.

"Personal observations relative to the occurrence of streptococci, staphylococci and pneumococci in pyorrhea would place streptococci first in frequency, staphylococcus next, pneumococci being

observed in only a small percentage of cases."

Certainly in the light of our present knowledge the entameba buccalis must be regarded as simply a phagocytic scavenger of no fundamental importance in the etiology of local or systemic conditions. No work, of course, has been more alluring than that of Rosenow, his finding of various streptococci and pneumococci in the mouth, their marked increase in pathological conditions, notably in cavities with low oxygen tension, the singularly advantageous conditions presented by the mouth, notably the gums and peridental tissues, in the growth of such organisms, the transmutability of the various forms of streptococci and pneumococci, the specificity of the bacteria isolated in individual cases as shown in the reproduction of the disease in animals, be it endocarditis, other cardiac changes, arthritis, sciatica, gastric or duodenal ulcer, cholecystitis, or appendicitis, the rapid loss of such specificity under repeated reinoculations, all these views of Rosenow, subscribed to by Billings and many others are singularly stimulating, and open up vistas of enormous possibilities. But the fact that these observations have not as yet been completely verified by other investigators, and to borrow a metaphysical argument that these findings seem almost too good to be true, while receptive should make us still scientifically somewhat skeptical of these findings in their entirety until the subject is further elucidated. Here indeed is a field of most fascinating research for those of you bacteriologically inclined, a field worthy of the best and most intensive work. If it should be ultimately proved, as already claimed by the few, that teeth, gums, tonsils and sinuses harbor the bacteria which specifically produce many of the diseases most difficult to diagnose and hardest to treat your labors would have added another debt which the medical will owe to the dental profession.

TONSILS.

In regard to the tonsils as portals in infection I cannot do better than refer to the monumental work, just published of Crowe, Watkins and Rothholz reporting the results of one thousand operations on the nose and throat done with the best hospital care, and subsequently followed for a considerable period of time to determine the late results.

INDICATIONS FOR TONSILLECTOMY.

The conclusions of Crowe and his co-workers are:

I. Local disorders in the upper air passages:

1. Hyperplasia of the tonsils causing difficulty in swallowing, articulation or breathing. One should always bear in mind the possibility of a "status lymphaticus."

2. Frequent tonsillitis or quinsy. In these cases a careful examination must be made of the teeth, accessory nasal sinuses, nose and ears. Infection in any one of these situations may be primarily responsible for the frequent tonsil attacks.

3. A chronic laryngitis or bronchitis may be benefited by a nose or throat operation.

4. A chronic catarrhal or suppurative otitis media or an Eustachian tube affection.

5. Chronic diphtheria carriers. Some of these cases will clear up after removal of the tonsils and adenoids. Often a pure culture of the Klebs-Löffler bacillus, virulent for guinea-pigs, may be obtained from the bottom of the crypts of the excised tonsils in cases that have no clinical manifestation of their presence.

6. Any of the various "reflex neuroses" in children; such as asthma, paroxysmal nocturnal attacks of coughing, enuresis nocturna, and sometimes convulsive seizures resembling petit mal. These are sometimes due to tonsillar or nasopharyngeal disease.

7. New growth. The carcinomas are

best treated by operative measures. The sarcomas, however, usually respond promptly to radium treatment. We have so far had six cases of primary lymphosarcoma of the tonsil or in the nasopharynx, with involvement of glands, that have remained well for two years or longer after radium treatment.

II. For local trouble in the cervical glands draining the tonsils:

1. Simple hyperplasia of the glands at the angle of the jaw. This condition is very common in children and young adults, and is an evidence of a chronic tonsil or nasopharyngeal infection.

2. Tuberculous cervical adenitis. We believe these cases are best treated by: (1) putting the nose and throat (the portals of entry for the tubercle bacilli) in normal condition; (2) removal or local incision and curettage of the caseating glands; (3) the judicious administration of tuberculin; and (4) general hygienic measures—with especial emphasis on the necessity of rest.

III. For general systemic disorders secondary to a focus of infection in the tonsils.

1. Infectious arthritis is which the periarticular changes predominate.

2. Myalgia of myositis.

3. The early stages of a glomerulonephritis.

4. The various nervous symptoms designated as "neurasthenia."

5. Occasionally, an iritis, refractive to all treatment, may be benefited by a tonsillectomy; but in these cases lues or tuberculosis should be first considered as an etiological factor.

6. The rare conditions, in which the chief symptoms are septic temperature; leucocytosis; general muscular and joint pains; general intoxication with negative findings on physical examination except for large, succulent tonsils.

PYORRHEA.

To make one realize the importance attributed to the teeth and peridental tissues as foci of systemic infection let me

quote my friend, Dr. Barker, who has allied himself peculiarly intimately with this phase of the subject, and who says in his Monographic Medicine "gingival and periodontal infections are among the commonest causes of disease in people past middle life. The physician who fails personally to inspect the gums and teeth of his patients under good illumination and to call skilful dental specialists to his aid in many cases, will surely fall behind in the race of medical practice." Billings has even more completely identified himself with the view that diseased conditions of the mouth are of fundamental importance as specific foci of systemic infection, and in his book recently published he gives the results of many years of careful observation and study, referring, of course, very extensively to Rosenow's work with which he is in perfect accord. His book represents undoubtedly the largest single contribution to this subject, covering as it does the observations of himself and of many assistants for the past twelve years. The number of diseases which he thinks in certain instances at least can be regarded as due to focal infection usually originating in the mouth is very large—acute rheumatic fever, rheumatic endocarditis, myocarditis, and pericarditis, chorea, nephritis, malignant endocarditis, appendicitis, gastric and duodenal ulcer, pancrea atitis, erythema nodosum, spinal myelitis, osteo-myelitis, thyroiditis, iridocyclitis of the acute diseases, and of the chronic, chronic infectious arthritis, chronic infectious nephritis, chronic peptic ulcer, and chronic infectious endocarditis. I have been perhaps peculiarly impressed with the unquestionable etiological role played by such foci of infection in acute infections in comparably young people, such as acute joint conditions, acute thyroiditis with hyperthyroideal manifestations, and acute choroiditis, but I have seen very few cases of the more chronic diseases where the removal of what was

regarded as the primary focus of infection showed more improvement than could be expected from the *general* improvement to be expected therefrom. When we remember that at least 25% of all people have gingival disease, either simple, ulcerative, interstitial, or true pyorrhea, that the cultures in these cases without any apparent systemic involvement are practically the same as in those with such disease we cannot escape from the fact that there must be at least two elements to be considered, tendency, susceptibility, diathesis, or lowered resistance on the part of the patient (which may be general, altho more often local), and the bacterial element. Many at least go so far as to absolutely deny any specificity of action, ascribing the good results undoubtedly produced by the removal of foci of infection to the subsequent improvement in the general health of the patient with its associated increased resistance to disease, a view however, which while easy to harmonize with the results obtained in the more chronic cases, certainly cannot explain certain of the acute cases mentioned above, where there must be a true specificity of action. Let me quote in this connection the views of one of your profession who is peculiarly opposed to the local theory—Schumann of Chicago.

"Of course, the proof offered hardly justifies us at this time to accept *prima facie* the positive statement which is so frequently made, namely, that direct interrelationship of systemic diseases to oral foci of infection has been conclusively and scientifically proved, but it does seem that we may accept this theory, at least to the extent that oral foci of infection have a decided influence on general health and diseased conditions. Many physicians besides Hunter, Goadby, Rosenow, and Billings have proclaimed this direct interrelationship and etiology more or less definitely. That the absorption of pus germs or their toxins thru the lymphatic system from the

mouth and throat is of a nature to favor the production of adenitis and lymphatic tumors is a well established fact. Acute and chronic polyarthritis are affections well within the possibilities of being considerably influenced by oral infections, and in many cases this is definitely claimed to be the actual and sole productive cause by Judson, Donald, and Medalia."

"In conclusion, I believe that oral foci of infection are harmful, and I believe that they create a low-grade secondary infection, which permits other infections easily to obtain entrance and a firm hold on the host. I do not believe that these foci of infection contain organisms directly responsible for distinct secondary diseases. I believe that the toxins and organisms absorb from pus surfaces in the mouth may so undermine the resistive power of the organism in general that it is laid open to easy infection, and that such foci create a condition favorable to the development of other diseases. I believe, in addition to local treatment in certain cases, the use of autogenous vaccines, as recommended by Medalia, tends to overcome this low-grade secondary infection."

My friend, Dr. Buckler, from his large experience with the children in the public schools in Baltimore, feels quite convinced that with the filthy, streaming mouths met with so frequently in the children of the poor, exuding pus and bacteria by the millions he has practically never seen any signs of distant focal infection, altho all of these were below normal, were thin, anaemic, had some gastro-intestinal disturbance, and all were remarkably improved by the cleaning up of the mouth and special treatment of the tooth, by extraction, specific pyorrheal treatment, and various plastic treatments, removal of the tonsils, etc. Certainly it is not so much in that group of cases with obviously foul teeth that so much danger to special organs and tissues is to be expected as it is in

those cases where the focus of infection is impossible to recognize by the ordinary modes of examination, and where the radiogram alone, if properly interpreted, can reveal the closed pyorrheal pus pocket, or occluded periapical abscess with its far greater potentialities for systemic infection. It is in this group of cases that the really brilliant cures have been obtained—acute arthritis, hepatitis, pericarditis, choroiditis, thyroiditis, etc. Whether again immunity may be produced by these foul mouths, which may lessen the chance of systemic infection is another question, which may play a considerable role in this connection.

After all there must be truth in both sides of the question; too many cases of acute infection have been immediately cured by the removal of the focus of infection in the mouth to warrant us in denying that in some cases at least there must be specificity of action, but yet again there is too great a variability in the result of treatment of such systemic infections, and too many—notably case of the chronic type, where removal of supposedly primary focus is followed by absolutely no improvement to keep us from realizing the very large role that lowered resistance, diathesis, or metabolic disturbance may play in such cases—in fact, in many it may play the only role. I feel quite sure for example that there are many cases of arthritis which have been regarded as infectious, but which are in reality cases of atypical gout—I have had several such cases in my practice, and here the Eppinger uric acid test has been of really great service to me. Yet again the analysis of the chronic cases is very difficult, for when permanent changes have occurred, when secondary foci of infection have been established, when general resistance has been irretrievably lowered it is chimerical, to say the least, to expect removal,—even wholesale removals of various foci of infection—teeth, tonsils, sinuses, gall-bladder, appendix, etc., to produce very

marked influence on the general disease even if in its early stage it was due fundamentally to a primary focus of infection with its specific bacteriology.

GASTRO—INTESTINAL TRACT.

No conception of the gastro-intestinal tract is complete that does not regard the mouth as an integral portion thereof. Malocclusion and deficient teeth play quite as important a role as caries and pyorrhea in developing pathological conditions in the lower levels of the digestive tract. The swallowing of poorly chewed food, or improper food because of the patient's inability to chew the food stuffs which he needs is bound to cause marked disturbance of the stomach, and if to this is added the swallowing of pus and bacteria from diseased teeth as well we have the basis for the development of many gastro-intestinal disorders. In many cases this simply causes loss of appetite, a moderate anemia, and other evidences of malnutrition, and in this connection there is no more brilliant chapter in therapy than the marvelous general improvement wrought by the dentists in their wholesale renovation of the mouths of the poorer class of school children in the larger cities. In regard to the stomach and intestines themselves we have made numberless observations over a long period of years. As a rule at first we have a subacute hyperacid gastritis, then a general diminution of acid until the last stage is reached, a true chronic achylic gastritis with complete absence of hydrochloric acid, while towards the later stages, partly due to the patient pylorus associated with the gastric subacidity, partly to lack of proper disinfection of the stomach, there develops an enterocolitis of increasing severity, with probably a quite abnormal bacterial flora, with the possibility of the development of the various symptoms, local or general, of intestinal autointoxication. With the achylia gastrica, or disappearance of acid in the stomach juice there may develop a persistent diarrhea, and it is our

experience that the majority of cases of diarrhea in the aged are of this type, that is, are primarily due to deficient or diseased teeth, secondarily to the achylia produced thereby, and that most of them are tremendously helped by the administration of muriatic acid, and by having their mouths put in the optimum condition, dentally speaking. As to the specificity of action of pathogenic bacterial in the production of gastric and duodenal ulcer, cholecystitis, and appendicitis, as insisted upon by Rosenow, we cannot help but feel that the matter is still subjudice. While it is unquestionably true that such bacteria have been found in ulcer base, gall-bladder, or appendix, it is possible, and in fact we cannot help feeling highly probable, that in the majority of cases there must be some other primary reason for the disease, and that in many instances these bacteria are but secondary invaders.

PYORRHEA OF GENERAL DISEASE.

One must never forget, however, at the expense of reiteration, that we must differentiate cause from effect, and that frequently pyorrhea is not so much a primary local infection as a secondary manifestation of some general disease, and this, of course, is of fundamental importance in determining the proper treatment. I fear many of you odontologists suffer frequently from this form of malinterpretation of symptoms by members of the medical profession, and have been persuaded to extract many teeth which might have been saved by more conservative treatment by the insistence on the part of the physician that he had found the true cause of the general disease, when you in your heart of hearts knew full well that in reality it was the general disease, with possibly a certain local diathesis, that was the cause of the pyorrhea. This is a mournful group of cases and each of us can visualize many of these unfortunates, sacrificed to the prevailing tendency of the day, that local

infection in teeth or tonsils is probably the specific cause of almost any general or special disease of possible infectious origin.

Grieves says in this connection:

"It is the writer's firm conviction that a true pyorrhea cannot occur without some predisposing cause, no matter what the local primary lesion may be, malocclusion, local irritation, etc. It must be remembered that every one of us have, some time in our lives, suffered gingival lesions of no greater import than those described as the cause of this disease, by the "localists," and yet all of us are not suffering from pyorrhea, altho we have been told so by the pyorrhea specialist."

"Michaels, Kirk, Black, Howe, Ferris, and many others insist on the dietetic and neutritional balance as related to all dental disorders. Aside from actual systemic disease, which, of course, has its effect on the mouth, all oral pathology has for its predisposing cause the nutritional and malnutritional element. Accordingly no mouth classification is complete that does not recognize the mouth as an integral part of the gastro-intestinal tract both in its secretory and excretory function."

"It is easy to follow a fashion and jump to the conclusion that practically all of our obscure diseases may be and are due to the small foci of infection. There may be, as the result of a fad, a too wholesale cutting out of tonsils and extracting of teeth. While we should recognize that there is truth in this important lesson as to focal infections, we must not, in an extravagant manner, think that this accounts for all our chronic diseases. It means that in every single case we must individualize."

UNERUPTED TEETH.

Every one, of course, recognizes the very deplorable effects both local and systemic of malocclusion and of deficient teeth, but there is in addition a peculiarly interesting chapter to be written upon the reflex symptoms due to unerupted teeth,

usually unerupted wisdom teeth, often with absolutely no local signs or symptoms to guide us in our diagnosis. Let me mention a few of such cases that I have seen—first, a student in our medical school, who suffered with intractable nausea and vomiting, in whom the physical examination, including a dental examination, was negative; first a rest cure was given with no result, then a surgeon was called in, and on general principles removed the appendix, and then when the symptoms persisted a brain specialist was called in, who saw many signs of brain tumor, and whose radiograms of the head were regarded by him as suspicious. The student went home sick and discouraged, and there her own dentist had careful X-rays taken of all the teeth, and all were healthy but the plate showed a deep unerupted wisdom tooth, absolutely devoid of local symptoms, which was extracted with considerable difficulty, with the immediate and permanent disappearance of all symptoms.

Second, several patients presenting the classical symptoms of hyperthyroidism, who had been temporarily helped by rest cures and radiations of thyroid or thymus, but always with a rapid return of symptoms after the cessation of treatment, whose teeth were absolutely normal to the usual dental examination, but where the radiogram demonstrated unerupted wisdom teeth with no local signs or symptoms, and yet with the removal thereof a rapid, steady and consistent improvement.

Third, a child with agonizing nocturnal pains in both hips at night lasting for a period of six weeks with a negative physical examination, including X-rays of the spine and hip joints, apparently normal teeth, but again an unerupted tooth discovered in the radiogram, and immediately disappearance of symptoms with its extraction.

Each of you can probably add other interesting cases to this group; it is a phase of the subject to me peculiarly interesting, and should certainly make one

always think of this possibility in cases of doubtful etiology, notably those in which abnormalities of the innervation play an undoubted role in the production of the symptoms—in these cases complete radiograms of the mouth should always be made by an expert in this line, and should be interpreted by one who is skilled in this very difficult form of plate reading.

TREATMENT.

As regards the question of treatment the odontologist should be far more competent to judge what should be done than the physician, and yet there are certain medical thoughts in this connection perhaps worthy of mention—the importance of removing single foci of infection in all cases of diseases of doubtful origin in the hope that we may find that our case falls in the group of specific focal infections. The great danger in capping in dental infections in its possibility of allowing the infection to remain occluded with its low oxygen tension, and its greater possibility of systemic dissemination. The extreme foolishness in waiting too long in trying to save obviously diseased teeth in cases of increasing or recurrent general disease, for if the primary focus is in the mouth it should be removed early, while even if it is not in the mouth, the general resistance of the patient must be steadily lowered by the local infection; for in focal infections early removal is absolutely fundamental if success is to be expected. While vaccine therapy is still on far from a scientific basis and the results in many cases have been very disappointing, nevertheless, the preparation and use of autogenous vaccines are justifiable in cases not yielding successfully to other forms of treatment.

“Professor Medalia, in particular, has shown the tremendous improvement in conditions such as rheumatism, boils, furuncles, interstitial nephritis, and acne by the use of autogenous vaccines for the treatment of alveolitis in conjunction with these diseases.” (Schumann.)

The absolute necessity of recognizing the underlying diathesis or constitutional tendency not only in systemic disease but in pathological conditions of teeth and gums as well, and the necessity of paying quite as much if not more attention to the treatment based on this conception as to the treatment of the focal infection itself—certainly the more one studies these cases the more one feels the great importance of this in the majority of cases. One should always remember the danger of closing possible foci of infection for a closed pus pocket with no drainage offers unquestionably a chance for a lymphatic or a hematogenous infection. That this occurs so often is not to be wondered at when we realize that in this whole country there are only about two hundred odontologists who are real experts in the local treatment of pyorrhea. Camac says:

1. The first factor against the proper care of these cases can be best removed by the direct consultation between dentist and internist and their continued co-operation in the care of the case.

2. The second factor is the tenacity with which men and women alike will insist on retaining rotten fangs in the mouth. The dentist regards the loss of a tooth as the internist does the death of a patient, and in this opinion the dentist has the insistent support of the patient. It is not an exaggeration to say that in saving certain teeth the dentist may be condemning the patient to a living death thru subsequent crippling arthritic infection or actual death thru septic invasion of some vital organ. This factor can be removed by educating the public, thru the medium of the internist and the dentist, to the realization of the seriousness of these conditions.

To quote Brun, “the two great mouth diseases and that group of gingival lesions beginning as simple gingivitis, and ending as pyorrhea alveolaris are both we believe the expression of a diathesis

or dyscrasia predisposing to or actually producing metabolic changes, while the gingival lesions are the product of some localized trauma in most of the cases. All theories for a specific organism for pyorrhea have fallen of their own weight.

"In regard to treatment my rule is first the extraction of all loose and swaying teeth and this is good dentistry for it prevents the destruction of the adjacent alveolar walls. If there be no pyorrheal specialist and the pyorrhea is general, better, extract all but a few of the firmest teeth, and make a plate not a bridge, altho there is always danger of septic pneumonia if this be very extensive in old people. The mouth should be examined in every patient by a dentist skilled in diagnosis for the examination by the internist if bound to be superficial. Ethically the patient should be referred to his dentist who should be told to rule out every possible portal of infection in the mouth. Whether you will get results depends entirely upon the skill and the attitude of the dentist. All that has been said of the gingival lesions can be repeated with emphasis of the peri-apical hidden area on firm teeth unknown to the patient."

CONCLUSIONS.

What conclusions then may be drawn from this very cursory review of this subject of ever-increasing interest?

1. It is the duty of the dental profession to study scientifically the pathology of the mouth, including its bacteriology and chemistry and to put it upon such a firm scientific basis that in place of the chaotic state which exists at present we shall have a concrete, comprehensive, and concise oral pathology in the broadest sense. This would be of incalculable benefit to both odontologists and internists in elucidating many of the unsolved problems in oral and general pathology. We already owe much to you of the dental profession—we will be much more in your debt if you can pre-

sent to us the proper conception of the normal and pathological anatomy, histology, chemistry, and bacteriology of the mouth and its secretions.

2. Far too little attention has been paid of late to the question of idiosyncrasy or diathesis in systemic disease, and yet this must be done in determining the underlying factors of many systemic diseases of doubtful origin if we wish to have a complete picture of its pathology. We are far too prone to ascribe off hand disease to focal infection, far too loath to admit that an underlying constitutional peculiarity may play an equally if not more important role.

3. Nevertheless, while realizing this we must recognize the danger of foci of infection, not necessarily always as the primary cause of any especial disease, but as a cause of lowered body resistance, and lessened immunity to disease, and it is worse than folly to postpone too long radical measures.

4. On the other hand, it is quite unjustifiable especially in chronic diseases of long duration in older people, notably certain of the arthritides to indiscriminately remove teeth, tonsils, gall-bladder, appendix, or other possible foci of infection. In most of these cases the harm done by the lowered resistance inevitable to the operation is rarely compensated by the removal of the possible focus of infection in the stage of the disease which is presented, and to take away the comfort of chewing or of smelling from these patients, many of whom have already practically lost the power of locomotion is indeed poor comfort.

5. In acute systemic infections, on the other hand, the chances of a complete cure by early removal of infected tooth or diseased tonsil is much greater, and these furnish the really brilliant results—the acute cases of arthritis, myalgia, neuritis, etc., of young people treated thus radically before the tissue changes have become too great to allow

subsequent repair, and before secondary foci of infection have been firmly established.

6. In all doubtful cases it is most important that careful and complete radiograms of the teeth be taken, and that they be interpreted by some one skilled in their reading—in some few cases an unerupted tooth with no local symptoms may be discovered as the true underlying cause of the disease picture presented.

7. One should always realize the fact that metabolic disturbances, as for example, various forms of an increased acid production of intestinal origin may produce types of neuritis or neuralgia quite as severe as those due to infection—these cases show marked urinary hyperacidity, and are markedly helped by alkaline therapy.

8. No conception of gastro-intestinal pathology is complete if it does not include the conception that the mouth with its appendages and its secretions is an integral part thereof, and many cases of most stubborn digestive disease can be better cured by the dentist than by the internist.

I want to once more insist upon the

ever increasing importance of a closer reapproachment between the dental and medical professions for each may learn much from the other. This should not mean simply sending the patient from internist to dentist, and vice versa, but should mean a real consultation between the two on each case of doubtful diagnosis and therapy. From the general knowledge of the one and the intensive knowledge of the other, the proper treatment would be approximated in a far greater proportion of cases, the view point of each would be immensely broadened, the chances of too great delay or too radical treatment materially lessened, and the welfare of the patient materially improved.

I wish to sincerely thank you, Mr. President, and the members of the Odontological Society, for the honor you have conferred on me in asking me to be present tonight, an honor which I doubly appreciate because I take it that it means that you feel as I do, that an immense field of partially explored pathology and half baked therapy may be put upon a far more scientific and successful plane by a closer union between your ever broadening profession and that of internal medicine.