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New Standards for Dental Diagnosis

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EDITORIAL NOTE.—*We continue our famous all-star performance of the dental diagnosticians this month with no less a person than Dr. Weston A. Price. Complying with my request, he writes for us in a rather informal style, much as he talks when one has the great pleasure of sitting at his desk with him, while he tells of his work. Price has not only done distinguished research work himself, but he it was who set in motion, when previously there was no motion at all, the research work of the American Dental Association. This series of papers continues next month.*—H. R. R.

In no department of dental science is there more urgent need for application of methods based on the newer knowledge of the causative factors of degenerative processes within the body than in the methods of study of the patient with regard to the program that should be carried out in the care and treatment of the oral cavity. During the last decade the world has witnessed a radical change in the attitude of both physicians and dentists toward pulpless teeth. Notwithstanding the propaganda to save the waning reputation of the pulpless tooth, general medical and dental practice considers carefully the possibilities of dental involvement as a contributing factor of infection in a very large number of degenerative processes when patients present with definite lesions in any or several organs or tissues of the body. Great harm has been done to an excellent cause by the few who condemned all teeth for fear they were contributing, and largely so because they were uninformed of the means for sufficiently and accurately diagnosing the case and making a less radical program justified. There is no doubt that the fact that oral surgeons do not have the responsibility of making efficient restorations for the individuals for whom they made extractions has in some cases been the reason for the extraction of all the teeth of the lower arch when at least two teeth that could have been kept safely would have been worth more than a million dollars a piece to the patient. It is also probable that physicians in not appreciating the disadvantage of a full lower denture over a partial one, have prescribed very radical programs in some cases. It has been in some respects like the school teacher who always thrashed the right boy when a stone ink bottle filled with water had been thrown into the hot embers of the stove in the contry school during the intermission. If they knew, the small boys dare not tell who did it for they would doubtless fare worse. The teacher forthwith flogged every boy in the school, knowing that, of course, the girls would not do it. Yes, I speak from experience, though I did not throw the bottle in the stove!

This problem of guilt on the part of a tooth is not only one of great importance, but one very difficult in some cases to disclose. Prior to the revolution in the conception of the etiology of diseases which was brought about by the contributions of Pasteur about half a century ago, the host was considered the all important factor and individuals had diatheses, representing a state probably very much like we understand by the term susceptibility with probably more of a positive phase amounting to a tendency or predisposition to disease in the particular organ or tissue in question. With the coming of Pasteur's important contribution there was a marked change in that it was recognized that in many diseases there was an invading organism and for a few decades and up to the middle of the last, the responsibility for disease was very largely placed on the invader rather than the host. With the recognition that large numbers of individuals with ample sources of infection have not broken systemically it has come readily to be recognized that the soil was quite as important as the invading organism. Many groups of data have been presented emphasizing the importance of the physical condition of the host in determining whether

or not a given focal infection will produce a lesion in other parts of the body, whether from teeth or tonsils or some other site of focus. Among these have been reports from great clinics where large numbers of individuals are studied, such as the Mayo Clinic where it has been disclosed by Dr. Charles Mayo that about 60 per cent of individuals die from the same disease that one of their parents died from. In my own studies of approximately 2,000 resistance and susceptibility charts made for individuals in which morbidity and mortality causes have been recorded so far as accessible, it has been disclosed that 90 per cent of the recorded diseases are found on about 25 per cent of the charts, each chart recording on an average about sixteen members of the family and ancestry. Some striking illustrations of these are as follows:

A patient presented for mapping out of her dental program. She looked fairly well and if we saw no further than the conditions of the mouth we would naturally be disposed to temporize and use a conservative treatment. A detailed study, however, of the patient and members of the family showed that six members of the family have had acute rheumatism, including the patient and the patient's daughter; eight members of the family have had heart trouble from which seven have died, including the daughter and both parents. That this patient had not only a heart lesion, but also this bad history, would never have been suspected from her appearance. Since pulpless teeth tend so readily to become infected with streptococcal infection and since in the light of the newer knowledge such a tooth in such a soil can develop a type of streptococcus with an affinity for heart tissue, not only in this patient's body, but on removal from the body its culture will have an affinity for hearts of animals. A new truth is a new sense, for the dentist who has made this detailed study and he will not knowingly take the chance of establishing a condition which may be very disastrous to the individual.

Similarly, a young woman comes with a history of acute rheumatism and heart involvement, a recurring endocarditis. A study of her family shows that her parents both died at middle age from acute heart trouble, and that there is a history of eight cases of acute rheumatism in the family, two in her brothers and sisters, three on her father's side of the ancestry and two on the mother's. Associated with these there have been four cases of endocarditis, including the patient and brothers and sisters, three on the father's side of the ancestry with two deaths and two deaths on the mother's side of the ancestry. As a matter of fact this young woman had many carious teeth which ordinarily probably would have been crowned or an effort made at root filling, notwithstanding the roots were extremely crooked. In view of her very small factor of safety the program that was carried out was a very careful one and for eight years since she has been able to carry on her work with no return of either the rheumatism or the acute heart trouble, though by inheritance her factor of safety is still small.

In a recently made history of a young woman who was in bed a great deal of the time, I find that there are six cases of nephritis in her family with five deaths on the father's side and on the mother's side there are two cases of cancer and two of tuberculosis, two of them being terminal. Note the distinct difference in the hereditary tendency that will have to be combatted from the two sides of the ancestry in this case, or in another case the history of which was made a few days ago of a boy eleven years of age whom the visiting school doctor suggested should be put to bed for a year because of his extreme nervousness. We find that the boy's dental development and skeletal development are both greatly disturbed. Five of his joints have slipped, a condition in which the epiphysis is very poorly calcified and without very great strain becomes detached from the diaphysis. In this case a study of the family shows there have been five cases of protracted nervous breakdown, in-

cluding the father and one of his brothers. The mother and her mother have both broken severely in early middle life. My observations show that in such cases the break comes earlier in succeeding generations where the defect has been transmitted from both sides of the ancestry. In this case the boy has already developed acute stomach trouble. The father and father's brother who had a succession of nervous breakdowns beginning at middle life suffered acutely with stomach trouble. The mother's father died of tuberculosis of the stomach.

I have presented much data on this phase of the diagnostic problem in several of my communications, particularly in my two volume work on dental infections, Volume I, "Dental Infections Oral and Systemic," and Volume II, "Dental Infections and the Degenerative Diseases," the Penton Publishing Company of Cleveland, and in several papers, including one on "Some Systemic Expressions of Dental Infections," which was read before the American Congress on Internal Medicine, Detroit, and published in the Annals of Clinical Medicine, Vol. IV, No. 11, May, 1926. It is a matter of great importance and exceedingly significant that notwithstanding the very critical reception that my two volume work on dental infections received, so far as I know, not one of the important deductions that I made in that work has been successfully challenged and very large numbers of the profession have communicated with me advising that they have found those deductions to work out in clinical practice. I find myself evaluating the relative importance of focal infection from the mouth at this time very much as I did when I completed those volumes.

These data emphasize one expression of the predisposition or susceptibility of the soil of certain individuals. Our diagnosis then should very clearly include the results of a study of evidence that may be available if we will take the trouble to collect it and should indicate somewhat of the probability that if a focal infection did occur how it would likely express itself in certain tissue which would be serious.

Since resistance and susceptibility to disease are relative factors we have immediately the responsibility of making an intensive study to determine the susceptibility of the soil or tissues of the individual in question, as well as to determine whether or not there are possible sources of focal infection. The difficulties involved in this phase of the problem have no doubt been largely responsible for the almost complete neglect of this important approach to the study of individuals. Acute infections are quite readily disclosed by changes from normal in body temperature, percentages of different types of blood cells and changes in function of certain organs and tissues. A study of the blood pressure, the patient's temperature and differential blood counts have all been made as routine procedure. These factors, however, may throw very little light upon a chronic focal infection that is completely wanting in the clinical expressions found in the acute process.

Since the completion of my two volume work, the intensive researches that I have been conducting on the analysis of the systemic factors which make the difference between the safe and unsafe individuals with regard to dental focal infections, have continually emphasized the need for the consideration of the quality of the soil, or otherwise expressed, the level of the defensive factors of the individual under consideration both with regard to an inherited defensive mechanism with its evidence of incomplete defense or susceptibility to invasion of some organ or tissue, together with not only the exposures or overloads that have tended to break that individual, but also the intake of substances commonly called activators, some of which are vitamins. These activators or vitamins by their presence in the body largely influence, and in many cases actually determine whether that individual's factor of safety will be high enough to maintain a condition of immunity against the possible sources of infection, only part of which will be of dental origin. This systemic phase which relates to the use

of the activators is too extended a discussion to introduce at this point.

Another phase of this problem which should be emphasized has to do with the inability of the roentgenograms to disclose more than 80 per cent of the dental infections. I have emphasized in much detail that the granuloma is a defensive organ when it is functioning properly and that the organisms in the tooth do not make the chamber in the bone at the apex of the tooth, but that this is the result of a reaction on the part of the patient and that the granuloma's tissue is an effective quarantine station and only those individuals who carry infected teeth are relatively safe who can maintain quarantine stations about such teeth. But a good quarantine station may lose its efficiency. These cases with large apical areas are largely disclosed by the roentgenograms. However, as a group, these patients are not in so great danger from a given dental infection (by which, let us say, all the infection that the tooth may contain in its porous structure in the dental tubuli and cementum and also that infection which may be present in a putrescent pulp) as are those patients who do not make this favorable reaction and into whose bodies organisms or toxic material or both find ready access even without the tooth becoming sore. Note that this condition may obtain without any or very little roentgenographic evidence of structural change about the teeth. We probably have no condition which is so serious as that of degenerating pulps of which there may be no roentgenographic evidence possible, largely because that individual has lost the capacity to make a defensive reaction.

I will illustrate with a single case; a patient was sent from another city by her physician for a special study of the possibility of dental conditions being related to a persistent kidney infection. The patient had recently had a radiographic examination of her teeth and five had been extracted. The remaining teeth showed no roentgenographic evidence of abnormality. My studies included in addition to the roentgenographic studies, extensive blood, saliva and urine chemical analyses and careful testing of each individual tooth. Two teeth were found with putrescent pulps (they were so-called X-ray negative) and an imbedded root beneath a bridge which root had never been filled. Space does not permit including the detailed data developed in the blood chemical studies. Several important improvements were noted within two weeks' time after the last extraction. The patient's general physical condition improved and she gained two and a half pounds in weight. During this time the albumin was reduced from 391 to 326 milligrams per 100 c.c. The white blood count reduced from 9,200 to 7,400. The hemoglobin increased and the ratio of the polymorphonuclears to lymphocytes improved. The Arneth Index and urinary calcium improved as did also the sedimentation time of the blood. The patient changed from a negative to a positive phase of the calcium and phosphorus product. This was brought about partly by the removal of the obscure dental infections that had been previously overlooked and no doubt in part by the use of activators in capsule form to improve the mineral metabolism of the body. She has continued to improve month to month according to reports. I have not had an opportunity to make a recent blood and urine study.

As I carry on my intensive studies with more and more attention to the physical factors pertaining in the patient's body, particularly imbalances in the patient's blood, saliva and urine together with an intensive study of the nature of the structure of the family tree, for it is not an accident that the chips about the stump are like the tree. I am impressed that individuals do not die so much because they have degenerative diseases as that they get degenerative diseases because they are dying. Dental infections have a danger usually in proportion to the quality of the soil of the host.

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