all the children who have caught measles from the first case will sicken between the tenth and the fifteenth day—that is, during the time the school is closed. The advantage of the short closure of six days will be apparent to educationalists.

It is evident that full co-operation between the public health and the medical inspector's departments is necessary in order that these methods be carried out thoroughly, and such co-operation will surely lead to the strengthening of the weak points in our defence against the infectious diseases of childhood.

THE MEDICAL ASPECT OF DENTISTRY AND THE NECESSITY OF DENTAL INSTRUCTION FOR MEDICAL STUDENTS.*

By H. PERCY PICKERILL, M.B., CH.B., B.D.S. BIRM.,
L.D.S. ENG.,

PROFESSOR OF DENTISTRY IN THE UNIVERSITY OF OTAGO AND
DIRECTOR OF THE DENTAL SCHOOL.

THE historical associations between medicine and dentistry date from very early times. Hippocrates, besides studying medicine, devoted some attention to dentistry. He invented forceps for the extraction of teeth, observed the necessity for the proper cleansing of the teeth, and for this purpose prescribed the following dentifrice:

A charmed rabbit's head and three charmed mice ground into a powder.

He also recognized the fact that destruction of the bone of the jaws might follow affections of the teeth—and might even end fatally. Celsus also practised dentistry, and in his *Re de Medica* he advocates filling carious teeth with pieces of slate wrapped in cotton. Galen differentiated between inflammation of the pulps of teeth and inflammation of the root membrane, and prescribed a number of tooth-powders and mouth washes. To come down to more modern times, that famous surgeon, Ambroise Paré, in the sixteenth century devoted considerable attention to the treatment of teeth, and invented a splint for holding loose teeth in position, as well as several forms of forceps. The great John Hunter did not omit the teeth in his multifarious researches, and wrote a most accurate treatise upon the *Natural History of the Human Teeth*. But here comes a hiatus. Since the time of John Hunter until quite recent times medical practitioners have taken but little interest in dental diseases, probably because dental practitioners began to spring up and the matter was left to them, but also, alas! I am afraid, because the practice of dentistry was associated for a long time with a certain element of shamefacedness, if not of quackery, and medical men passed it by on the other side. This position is now, however, no longer tenable, because it is now recognized that dental, medical, and surgical diseases are so intimately related that a proper conception and therefore treatment of one is impossible without some knowledge of the other. In order to substantiate the statement I will proceed to give definite instances of the intimate cause and relationship existing between dental and medical lesions.

Quite a lengthy list of ailments, from appendicitis to glaucoma, have been ascribed to the direct or indirect influence of the teeth, but I shall confine myself to those which have been well established, and in which I can to some extent speak from personal experience. These may be classified as being due to:

- (1) Reflex irritation;
- (2) Direct extension of morbid process; or
- (3) Septic absorption.

LESIONS DUE TO REFLEX IRRITATION.

Epilepsy.—Attacks of this disease are undoubtedly set up by peripheral irritation, not the least of which is dental caries; many cases have been reported, and one case is recorded in which the patient always developed an attack of *petit mal* when visiting his dentist. I have had one definite case in which the patient, a little girl, did not

show any marked improvement despite excellent medical treatment until her teeth were treated. The attacks then subsided. Some twelve months afterwards a recurrence of dental pain in another tooth was followed by a further attack of epilepsy, and this did not recur after the tooth was filled. Hysteria has also been said to be due to dental irritation, but I am more inclined to think that odontalgia is more usually a symptom of hysteria.

Neuralgia.—Neuralgia of the fifth nerve and tic douloureux are too often associated with dental troubles to need any verification. Brachial neuralgia may be due to irritation arising from the teeth. I have myself seen three such cases. In all three the pain was confined to the region of the circumflex and cutaneous branch of the musculospiral nerves. It was associated with exposed pulps in lower premolars, twice on the right side and once on the left; in each case pain started in the tooth, and then leaving the tooth became as it were transferred to the shoulder and arm, and only yielded to the devitalization of the affected dental pulps. In one case the pain ceased within half an hour of treatment, despite the fact that the patient had been unable to sleep all night on account of the pain in the shoulder. A considerable number of cases have been recorded of facial paralysis due to dental lesions; this in many cases is undoubtedly due to the close association between the fifth and seventh nerve through Meckel's, the otic, and submaxillary ganglia.

"Spurious" Tetanus.—Many cases of this condition, which is quite common, were formerly supposed to be due to the teeth. It is now known as trismus, and in some cases may be due to irritation of the branch of the fifth nerve supplying the masseter, but is more frequently due to a local cellulitis about the angle of the mandible caused by the suppuration at the apex of a lower third molar.

Cardiac Irregularity.—Sir R. Douglas Powell¹ records a case of "excessive" cardiac irregularity and spasmodic heart pains "which a course of Naubheim baths and resistance exercises only slightly relieved," but was completely cured by attention to the teeth, which were "extensively decayed and surrounded by tartar."

Pelvic Pain, etc.—Instances of leucorrhoea and uterine pain synchronizing with dental pain and ceasing on the removal of the tooth have been recorded. Conversely, dental pain is often associated with uterine disturbance; several such cases have come under my notice, one quite recently, in which the severe dental pain occurred every month at the menstrual period in quite healthy teeth (second upper molars), and was not relieved by any dental treatment, not even by extraction, but was "transferred" to the first molars.

Ear Disorders.—Affections of the ear are frequently associated with dental irritation. Neuralgia of the ear is very frequently merely referred pain from a carious tooth; many of us must have had subjective experience of this, especially if we have had the misfortune to bite suddenly upon an exposed pulp. Hilton, in *Rest and Pain*, mentions a case of persistent purulent discharge from one ear which only yielded to treatment after removal of a carious molar, and he suggests that "the reflex irritation had led to interference with nutritive function of the nerves supplying the external meatus."

Eye Disorders.—This interference with the neurotrophic function is undoubtedly present in many obstinate cases of conjunctivitis; I have seen several such cases. Many cases of spasm and paresis of the ocular muscles have been recorded as being due to dental irritation.

Local Cellulitis.—Among diseases due to direct extension of the morbid condition of the teeth may be mentioned cellulitis of the face and neck, of which I have seen two fatal cases, one in a man aged 40, another in a woman aged 35, both arising from lower third molars. In another similar case the patient barely escaped with his life owing to the exceedingly high temperature, septic absorption, and inability to take sufficient nourishment on account of the severe trismus present. I remember Mr. Levason, with whom I was associated for some years, treating a case in which an abscess arising from a mandibular molar had tracked down beneath the cervical fascia, and was eventually opened in the axilla. Empyema of the antrum occurring through dental infection is too well known to need any verification. The *Streptothrix actinomyces* occasionally finds a way into the jawbone through

* Read at the Otago Section, New Zealand Branch, of the British Medical Association. For many references in this paper I am indebted to Messrs. Smale and Colver's excellent work on *Diseases and Injuries of the Teeth*, chapter xix of which I would suggest might be published as a separate pamphlet for the use of medical students.

a carious and septic tooth, and gives rise to the characteristic "lumpy jaw." One such case which I saw gave rise to considerable difficulty in treatment, having been treated for cellulitis, alveolar abscess, and non-eruption of the third molar, until I was fortunate enough to find the organism.

Myeloid sarcoma frequently originates from the fragment of a buried root. Mr. Jordan Lloyd is a firm believer in this, and I have on two occasions seen him find the bit of tooth which caused the growth; and to satisfy him I made sections of the fragment to verify its dental structure.

Epithelioma.—It is common knowledge to all how epithelioma of the jaw or tongue may follow irritation from a rough tooth. But there are cases of burrowing epithelioma of the jaws which I believe arise from the irritation (by a septic tooth) of embryological remains of the epiblast, which are nearly always present—and known as the epithelial sheath of Hertwig—in the periodontal membrane. Many cases of ulcerative stomatitis, which may develop into cancrum oris, unquestionably arise by infection from septic teeth, and it is impossible to successfully treat the stomatitis without attention to the teeth. It is just possible that some cases of acute septic endocarditis may trace their origin to infection from the teeth and mouth. At least, in one such case I found the same organisms—a staphylococcus, *Streptococcus brevis*, and a short bacillus (? the *Bacillus necrodentalis* of Goadby)—present *post mortem* in the mouth, bronchi, the alveoli of the lungs, and on the valves of the heart.

Local Conditions not Dental.—Conversely there are many local conditions of the mouth which are liable to be mistaken for dental affections. For instance, I have seen a whole roomful of medical students mistake a primary chancre of the lip and jaw for an alveolar abscess, and a case of bilateral odontomata was for months treated as alveolar abscesses. A man whom I saw not long ago suffering from epithelioma of the superior maxilla was treated for some time for a simple ulcer of the mouth. Some four years ago I remember seeing a case in which during life the only symptom was constant odontalgia of the left side; the teeth were all perfectly sound, the patient felt ill and depressed, but there were no signs whatever. *Post mortem* a glioma about the size of a pigeon's egg was found just over the left Gasserian ganglion.

Chronic Lymphadenitis.—But to turn to a more frequent and more overlooked class of cases—those due to septic absorption from the teeth and mouth. The association of chronic lymphadenitis with carious teeth is now quite recognized. Several series of statistics have been compiled, but those of Odenthal of Bonn are perhaps the most conclusive, and are as follows:

Children examined	...	987
No glands and no carious teeth	...	28.6 per cent.
Glands enlarged	...	70.7 "
Glands and caries	...	50.0 "
Caries and no glands	...	0.5 "

I am unable to say whence these statistics were obtained, but, even if it were from a very "tuberculous" district, the fact that only 0.5 per cent. showed caries without gland enlargement is very significant. A chronically inflamed gland is one which probably is tuberculous or is likely to become so, and in carious teeth associated with tuberculous cervical glands tubercle bacilli have been found.² (I have found them in the saliva, but have not succeeded in demonstrating their presence in the teeth.)

Pyorrhoea Alveolaris.—The condition known as pyorrhoea alveolaris, "Riggs's disease," or more correctly marginal periodontitis, is even more closely associated with general systemic conditions than is dental caries. This disease may be defined as a suppurative condition of the upper part of the periodontal membrane due to an upset of the balance between the resistance of this latter tissue and the ordinary organisms of the mouth. The latter may become more virulent or the oral tissues may become less resistant, owing to: (a) The local accumulation of salivary calculus material, or (b) the presence of some general systemic disorder, such as gout, rheumatism, chronic alcoholism, chronic heart, kidney, or lung disease, diabetes, syphilis, or plumbism. When once established it is difficult to treat. The patient usually complains of

malaise, dyspepsia, loss of appetite, and constipation, accompanied by a malodorous breath, disagreeable taste in the mouth, and occasional expectoration of pus, or purulent saliva. Some amount of anaemia is always present, and loss of body weight is marked in prolonged cases. The teeth are always more or less loose, the gums red, swollen, and glazed, and pus can be extruded from the space between the gum and the tooth. Strange to say, the teeth are not always tender, and this latter fact often misleads the patient, and sometimes his medical adviser, as to the cause of his trouble. Mr. Rickman Godlee records three such cases.³

One, a lady aged 40, who was treated for two years for lung trouble with no cessation of symptoms. Pyorrhoea was then found to be present, was treated, and the expectoration (which had consisted, to use the patient's own words, of lumps of green and yellow stuff) completely stopped.

Another patient, aged 25, presenting symptoms similar to the last, but with marked loss of body weight, was treated in the same way, with the result that, in her own words, "Life was again worth living."

In the third case, Mr. Godlee ascribes several attacks of acute trouble, accompanied by stomatitis and glossitis, to an exacerbation of a previous suppurative periodontitis.

It cannot now be doubted that this condition of pyorrhoea alveolaris is responsible for a large proportion of the cases of pernicious anaemia. Dr. W. Hunter goes so far as to say that he believes that the infection arises in nearly all cases from the mouth. It is, however, generally conceded that this condition arises from toxic absorption from some part of the alimentary tract, and of the latter, the mouth is, *a priori*, the most probable part. I have had two definite cases, both in men about 40 years of age. They both suffered from marked suppurative periodontitis.

The first was a typical case—"anaemic," lemon yellow complexion, muscular weakness, malaise, loss of appetite, etc. A blood count showed only 1,700,000 red corpuscles per c.mm. and haemoglobin 41 per cent. The patient was seen early, the pyorrhoea treated and arsenic given in increasing doses. He made a gradual recovery.

The second case did not come under treatment until both the local and general conditions were very advanced. The only hope of eradicating the disease was by extraction of the teeth, and to this course the physician with whom I saw the case would not agree, thinking the risk of haemorrhage too great. In spite of local and general treatment the man died.

These two cases serve to illustrate many similar cases which have been recorded, and establish the necessity of at any rate eliminating oral sepsis in all cases of pernicious anaemia. Dr. Dauber, of the Women's Hospital, Soho, has recently come to the conclusion⁴ that septic teeth have a distinct influence upon uterine and ovarian conditions, and gives many instances in which the gynaecological lesion has only yielded to treatment after the oral conditions have been corrected. Mr. Kenneth Goadby in the Erasmus Wilson Lecture for last year records a number of cases of pyorrhoea alveolaris wherein marked improvement and in some cases absolute cessation of both local and general symptoms ensued after raising the opsonic indices of the patients to the organisms found in the periodontal discharge.

Prevention.

Even when these conditions are treated by the only means often available or possible—that is, the extraction of the teeth—we do not arrive at a much better state of affairs, for how large a proportion of the chronic gastric and intestinal cases filling the medical wards and the out-patient department of our hospitals is formed by prematurely toothless middle-aged men and women!

The only rational hope lies in the preventive treatment of dental disease, and therefore the next stage in my argument is a brief reference to the causes of dental caries. This, like many other diseases, is not the outcome of one single and specific cause, but is the resultant of several coincident forces which may be summarized as:

1. A lowered resistance on the part of the buccal and dental tissues.
2. The action of certain organisms.
3. The presence of fermentable carbohydrates.

These three factors must be coincident. The total elimination of any one factor would prevent the occurrence of caries. The first stage of the formation of a carious cavity is chemical, and the first step is obviously all-important. Many mouth organisms are capable of

fermenting carbohydrates with the production of acid, chiefly lactic but occasionally butyric acid. A reference to the accompanying table will show that monosaccharides are the most readily fermentable. Disaccharides require to be first inverted to monosaccharide by an enzyme formed by certain of the mouth organisms before lactic acid is produced. Starches require a double inversion, the first stage brought about either by ptyalin or organisms, before fermentation to an acid can occur, but in all cases it is seen that lactic acid is the end product unless, as occasionally happens, this lactic acid is again split by the action of organisms to yield butyric acid.

Monosaccharide:

Disaccharide:

Polysaccharide:

Thus it is very evident that if carbohydrates remain in contact with the tooth for a sufficient length of time an acid is tolerably certain to be produced (because the necessary organisms are practically always present), and this acid dissolves the lime salts of the enamel, and a cavity is originated at the point of action.

Bearing in mind these facts, it is obvious that anything which favours the lodgement of carbohydrates on or around the teeth very much increases the risk of caries. Certain carbohydrate foods, such as biscuits, chocolates, caramels, soft white bread, cakes, and scones, are of themselves very adhesive. Milk, too, tends to leave a film upon the teeth, which readily yields lactic acid.

It is, perhaps, interesting to observe at this point the comparative consumption of sugars in the various countries as shown in the following table:

Sugars Consumed per Capita, 1905.

New Zealand	...	...	...	108.64 lb.
United States	...	...	...	92.46 "
Great Britain	...	...	...	77.83 "
Excess of New Zealand over Great Britain	...	...	...	30.81 "

Without reference to statistics, I should say that the incidence of dental caries in these three countries is roughly in the same proportion as the above figures.

But just as important as this is the configuration and structure of the teeth. Teeth irregularly disposed and crowded together will retain more foodstuffs in inaccessible positions than teeth normally placed. The same is true of teeth showing numerous pits, crevices, and other developmental defects in the enamel. Some of these irregularities are hereditary, some are due to accidental causes and habits; but the vast majority are due to one cause—non-development of the mandible—and this in turn is due to improper diet. It is significant that all these irregularities arise between the ages of 6 and 12. It has unfortunately become the custom of civilized people to feed children between these ages upon comparatively soft and pappy food which does not exercise their muscles of mastication. It is a well-known fact that those bones having the strongest muscles attached to them are developed most, and vice versa. The tongue also is one of the most important organs of mastication, and has a direct moulding and expanding influence upon the mandible. If the tongue does not develop, the mandible does not fall in, but it never expands; and the teeth, having been already formed, when they erupt adopt irregular and misplaced positions. Figs. 1 and 2 represent the shape of the mouth and the disposition of the teeth when this has occurred, and this is becoming so frequent an occurrence that these shaped arches are becoming the "normal" condition.

But not only is the horizontal plane of the bones affected, but also the vertical. This in the maxilla becomes "V" shaped as shown in Fig. 3. Fig. 4 shows what should be the normal shape of the oral and nasal

cavities. This "V" shaped arch does not arise from lack of development, but from insufficient expansion, for it has been shown by measurements of these cases that the distance between A B and A' B' remains the same. The effect on the nasal cavities is obvious—their vertical and horizontal measurements are greatly diminished; further, if the nasal septum has an inherent tendency to growth, this can only occur by its becoming deflected. The result is that nasal breathing becomes more difficult, and, in any slight inflammation of the nasal mucous membrane, impossible; the patient acquires the habit of mouth breathing, adenoids develop in the stagnating cavity, and the tonsils enlarge. A vicious circle is thus established,

Fig. 1.

Fig. 2.

for persistent mouth breathing leads to further irregularities of the teeth, and deficient expansion, especially of the maxilla.

These statements may be summarized as follows:

Lack of any hard or fibrous food causes under development of the tongue and other masticatory muscles. A weak, small tongue fails to expand the mandible, which in turn does not expand the maxilla, and therefore the nasal cavities remain small and ill-developed.

The dependence of the upper alveolar arch upon the lower is obvious upon reference to Figs. 3 and 4, where it is seen that the teeth articulate by means of inclined planes, and that the inner cusp of the lower teeth always closes inside that of the upper tooth, and thus any outward

Fig. 3.

Fig. 4.

movement of the lower teeth must be followed by a similar movement of the upper teeth. This system of double inclined planes ensures the parallel movement of the whole of each tooth, and prevents the mere outward movement of the crown swinging upon the apex of the root as on a pivot. This is experimentally proved by the fact that most cases of the type of irregularity of the upper teeth seen in Fig. 1 can be remedied by an expanding or other device inserted on the inner aspect of the lower teeth; and this practice I have adopted for some time with success.

Foodstuffs also play an important part in the development of the teeth. If the mother during the period of gestation exists upon a diet poor in lime and phosphates, the child's teeth will probably be poorly developed. The same thing applies to the diet of the child between the ages of 12 months and 12 years, when the permanent teeth are developing.

There is a popular idea that it does not matter what happens to the deciduous teeth—one frequently hears the

expression, "Oh, but they are *only* his first teeth." Consequently the child is given all sorts of rubbish to eat under the belief that it does not matter. But it *does* matter, for two very important reasons:

1. An exceedingly bad habit is thus contracted by the child most difficult to eradicate when the permanent teeth arrive.
2. Broadly speaking, carious deciduous teeth mean carious permanent teeth.

Caries of the deciduous teeth causes contraction of the alveolar processes by allowing the teeth to come closer together, and thus leads to crowding of the permanent teeth and all its attendant evils. Caries of the deciduous teeth most frequently leads to alveolar abscesses, which infect the underlying permanent tooth germs and arrest their development, with the result that the teeth are erupted in a hypoplastic condition, and fall an easy prey to caries. A soft diet also impairs development of the permanent teeth by not exercising the jaws, and therefore not stimulating a sufficient blood supply to the ameloblasts and osteoblasts of the dentine papilla. We are therefore driven to the conclusion that from whatever standpoint the subject is considered, the prime factors in the causation of dental caries are errors of diet—chemical and physical.

What, then, can be done? That something should be done is gradually coming to be recognized on all sides; that so little has been done up to the present is most astonishing when one considers that dental disease of some kind is present in 80 per cent. to 90 per cent. of the people of civilized races. It is thus indubitably the most widespread of all diseases, and, as I have attempted to show, is far-reaching in its effects. But, unfortunately, cause and effect are not always associated.

There has been in the past, both in dentistry and medicine, too great a tendency to regard the teeth as isolated parts of an organism, as organs which exist of themselves and for themselves, and not intimately linked up in function with the rest of the body. Pawlow showed that mastication was the natural, and therefore the best, stimulus for gastric and saliva secretion; and efficient mastication implies an absence of caries. The teeth, it must be recognized, are an integral and inseparable part of the alimentary system, physiologically and pathologically. It is this fact, together with all that it implies, which should be impressed upon a medical student. I have heard abdominal surgeons express the opinion that, in view of the increasing number of gastric and intestinal cases, there is "a something" at work which is appreciably lowering the resistance of the alimentary tract. In my opinion this something is to be found in the enormous strain thrown upon it by the constant ingestion of improperly masticated food, incorporated with organisms (more or less virulent), toxins, and pus from diseased teeth; and also because of the avoidance of hard food, in part secondary to the tenderness of the diseased teeth. The intestines become atonic, having to deal only with non-fibrous easily-digestible substances. Any organ or organism which is overstrained or is atonic falls an easy prey to the attacks of micro-organisms.

Dental caries is largely due to errors of diet commencing before birth and extending over the first twelve years of a child's life. It is just during those periods that a medical man's advice is most often sought as to the suitability or otherwise of articles of diet, or, at least, he has opportunities of pointing out authoritatively the deleterious effects of common dietetic errors; and on account of this, in my opinion, a large percentage of the prevalence of dental disease lies at the door of the medical profession. We should therefore do all in our power to remove this stigma. A medical student, before he qualifies, should have some knowledge of what diet is beneficial and what deleterious to the teeth, and he should be taught to put this into practice; in doing so he will only be fulfilling the general principles of correct dietetics, for it might be stated in general terms that "what is best for the teeth is best for the rest of the alimentary system." He should also know something of how to aid natural resistance to caries by artificial prophylaxis; he should be able to write suitable prescriptions for various mouth washes, dentifrices, etc., for varying conditions of the mouth; he should be able to instruct parents in the care of their children's teeth. All this and more he should know. He is taught along similar lines with regard to the eye, and ear, and

throat; why, then, should the teeth and mouth be omitted?

Medical men are often so situated as to be compelled to relieve dental pain, and I do not think I shall be hurting the feelings of any member of this Association when I say that this relief is most usually afforded by the extraction of the offending molar. But this is not as it should be. Therefore I would have the medical student to know the value of a tooth—to know when it can be lost and when it must be saved. The mere extraction of one tooth will often ruin a patient's articulation.

A medical student, too, should be able to recognize the difference between dental myelitis,* periodontitis, and alveolar abscess, and be able to relieve the pain of each of them without extracting the tooth should this be desirable. A medical man is often asked by a patient for an opinion as to dental treatment, or may be called in consultation with a dentist; in either case he will find such knowledge extremely useful, and it will obviate those awkward *contretemps* when the doctor says one thing and the dentist another. I am not suggesting that the dentist is always right; he is apt sometimes to take a narrow view of things, and forget that the teeth are necessary to the proper functioning of the rest of the body, and I have known a patient's general nutrition and health seriously impaired by injudicious dental treatment. It may be thought and said that I would make every medical man a dentist. That is not so, but, even if it were so, it would be only fair to the public, since every medical man is entitled legally to practise dentistry, irrespective of any dental training. On the other hand, in passing, I may say that I should like to see the converse true—that is, every dentist with a medical qualification. A medical student should also recognize the effects of measles, scarlet fever, rickets, and syphilis upon the teeth. He should be thoroughly imbued with the absolute necessity of close attention to the oral hygiene of patients whose treatment necessitates a prolonged milk diet, as in typhoid and surgical abdominal cases. He should know something of the treatment of fractures of the jaws by interdental methods.

The necessary amount of knowledge could be acquired by a medical student in a very short time; it would add no time to the length of his curriculum, and he himself would, I think, be the first when he got into practice to appreciate its value.

The medical inspection of school children is looming ahead, and it is highly improbable even if it were expedient that dentists as well as doctors will be appointed, yet it is very necessary that an efficient and reliable examination and report on the children's teeth should be made, as well as of other organs. Therefore on this account also it is desirable that medical practitioners should have some accurate knowledge of dental matters. This can be obtained in two ways: First, by making it necessary for every student before sitting for his final examination to present a certificate showing that he has received instruction in dental surgery, including a few lectures and practical instruction in the extracting and dressing of teeth. Secondly, to ensure that students should take this seriously by occasionally setting a dental question in the medical examination papers.

In order to facilitate the practical part of this scheme and in order to render the possible treatment of many medical and surgical cases more logical there should, of course, be an efficient dental department attached to every public hospital and dispensary.

In conclusion I would appeal to you, if I have convinced you of the desirability and practicability of these suggestions, that you will not be content with mere expressions of opinion but that you will take some active step towards the attainment of this object—that it may ever be the proud boast of the medical profession that it strives to the best of its power to eradicate those diseases from the incidence of which it derives its livelihood.

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* Called sometimes "pulpitis."