DENTAL INFECTION IN THE CAUSATION OF NERVOUS AND MENTAL DISEASES.*

BY CHARLES K. MILLS, M. D., LL. D.,
Philadelphia.

The subject for presentation is that of dental infection in its relation to various important diseases. The old question of focal infection in its etiological relations has recently received unusual applications. Dental infection in particular has largely interested the profession—and the laity also. This is not strange when the methods of advertising the views promulgated are considered. Its propagandists have advanced their views stoutly and with cheerful faith.

Fortunately the mind of the profession is tending towards a healthy discussion of the possible fallacies of this and of many other correlated and zealously exploited views, as, for instance, those regarding colonic infection. A few months ago (1) I took occasion to recall some of my experiences in neurological therapeutics and especially directed attention to various fads and fallacies which have come under my notice during several decades. These need not be recalled here. The criticisms were in some instances as much directed to myself as to my professional colleagues.

Perkinism and Burqism, the suspension treatment of locomotor ataxia, the various surgical treatments of epilepsy, craniectomy for the relief of idiocy and imbecility, nerve stretching, glandular therapy, and the rôle of dental infection in the

*Read before the Philadelphia County Medical Society, January 14, 1920, as an introduction to a symposium on The Rôle of Dental Infection in the Production of Disease.

Mills: Dental Cause of Nervous and Mental Diseases.

psychoses and neuroses received reminiscent attention. Since the publication of this paper (1) other articles along similar lines have appeared showing that the profession is becoming alert in regard to such questions. One of the most interesting of these papers is that of Dr. Frederick Peterson (2), of New York. One point justly emphasized is that the medical profession, at present as in the past, has shown itself quite as credulous as the laity which it severely criticizes.

Let me, in the first place, say a few words about newspaper propaganda regarding causations and cures. Newspapers are sometimes potent for harm by playing upon the credulity of the public at large—lay as well as professional—through the publication of articles of medical and surgical import. No doubt the public at times should be informed through the press on eugenic, hygienic, sanitary, and even therapeutic problems, in order that the health of the community may be better protected. Limits, however, should be set to such publications when they take the form of ill considered exploitation. Shortly after the death of Colonel Roosevelt, an article appeared in a Sunday edition of one of our Philadelphia papers and probably in other publications throughout the country, which illustrated one of the most dangerous forms of medical propaganda. The writer told the world that one of Colonel Roosevelt's teeth was the indirect cause of his death, accompanying the disquisition with a photograph showing the prominence of Roosevelt's teeth. The death of the colonel was said to have been directly due to a pulmonary embolism, weakening of the blood vessels which caused this affection having accompanied an attack of inflammatory rheumatism. The infection of a tooth dating back twenty years was stated to have been the original cause of the affections which resulted fatally. The strenuous life of Colonel Roosevelt, including his experiences in the jungles of Africa and especial-
Devitalized teeth and crowned teeth came in for anathema, but I must leave the consideration of these matters to my dental confrères in this symposium. Presumably, from the reading of this article, most of the ills that flesh is heir to are attributable to dental infection.

Why should so much attention be given before a medical society to an analysis and review of a newspaper article? When one considers that such a contribution may be read by hundreds of thousands, or even a million readers, the reason for calling attention to it is clear. In dental and medical journals subjects of this sort may be discussed without harm because of the training and supposed capacity of readers of these periodicals. Credulity, however, as was stated at the beginning of this article, is one of the striking peculiarities of our race. The people may be sceptical in matters of religion, politics, or business, but are inclined to swallow almost any fallacy relating to the human organism, especially if it holds out to them hope of relief from some ache or pain or mental distress. Literally bushels of teeth of excellent quality doubtless have been sacrificed throughout our land as the result of the wide dissemination of this misleading article about Colonel Roosevelt.

In refreshing contrast to the newspaper screed regarding the death of Colonel Roosevelt is a paper by Dr. Percy R. Howe. The article calls for particular reference in connection with the paper on Roosevelt as in one instance, at least, it makes use of the same data to enforce exactly opposite views to those advanced by the lay journalist. The item to which I refer is only one of many which might be adduced to show how an erroneous hypothesis can be bolstered by the use of collected material. Reference was made in the Rooseveltian article to the fact that at the Forsyth Dental Infirmary for Children in Boston in 50,000 cases examined there were more than 40,000 abscessed teeth, often ten abscesses in one mouth. The newspaper writer, however, refrained from mentioning what Doctor Howe stated in his article that there was no record whatever of the most frequent and entirely obvious affection attributed to the teeth, such as arthritis deformans or rheumatism. Howe punctures many of the fallacies regarding the potency of dental infection in the production of systemic diseases.

Before quitting this aspect of my subject I might refer to a recent newspaper dispatch with regard to the production of serious diseases of the eyes through dental irritation and abscess. One of the most distinguished of foreign ambassadors who has suffered for a considerable time from failure of vision and accompanying distress was reported to have received from an American ophthalmologist strong encouragement that he would obtain progressive relief, if not absolutely restored vision, through the treatment of an abscessed tooth to which his partial blindness was attributed. Every lover of his kind would be delighted to know such relief or cure had been effected in the way indicated or in any other, but just what the result has been in this case the public is not in a position to know. Even just what was said by the ophthalmologist cannot be assuredly indicated as I have not seen any endorsed statement regarding the matter, either in writing or as the result of an acknowledged interview. Here lies one of the great evils of newspaper reports on medical subjects. It does not matter whether a cure or partial cure was effected, or whether failure more or less complete has awaited upon the treatment prescribed, thousands of people accept the view that blindness or partial blindness has for one of its frequent causes an abscess at the root of a tooth.

The dispatch referred to failed to state what was in all probability true that the distinguished statesman had had critical examinations made and careful methods of treatment applied by ophthalmol-
ists of his own country; in fact, at least by inference, the report was a severe criticism on the home physicians of the ambassador. Let us patiently await authorized information regarding therapeutic results, and let us trust that until such information is forthcoming the sufferers from defective vision will not have their teeth, good, bad, and indifferent, recklessly immolated by the exodontist.

Turning now to some of the more technical aspects of the question before us, let us consider for a moment one or two points regarding the part played by the x ray examinations in the determination of the presence of dental infection. I have frequently had my attention called by dental friends and others to the presence of what are designated as abscesses at the roots of teeth, these having been determined by x ray observations and indicated on the plates handed over to the dental surgeons and physicians. The argument for the removal of teeth has usually been based on these so-called abscesses. A röntgen ray investigation may show absence or less density of a part when compared with surrounding healthy tissues, as has been shown by Doctor Burr and myself in discussing the question of cerebral cysts. Such an observation, however, does not determine the nature of the part under investigation, but merely enables us to discriminate between areas of differing density. In a strict sense an abscess cannot be demonstrated by a röntgenological investigation.

This position is taken and is presented as a result of experimentation by Talbot (4). His paper which is largely experimental proves that the alveolar process goes through advancing conditions of absorption as the result of organic irritation, by wedging teeth or by using burs, and by injecting irritative liquids like arsenic and glycothymoline. The paper is highly instructive as showing how cavities can be produced with or without resulting infections.

The particular subject assigned to me is the question of dental infection in the causation of nervous and mental diseases, and to this I shall more specifically direct attention. Not fully believing in the theory on which the dental procedures are based, it is not likely that I have had the opportunity to study many cases which have been treated under my suggestion by the methods referred to in this contribution. Nevertheless, a score or two of cases have passed through my hands or have come to my knowledge in which important mental and nervous diseases have been attributed to dental infection. In these with the united support of physicians, röntgenologists, and dental surgeons, the teeth in small or large numbers have been removed with results not only so unsatisfactory but often so harmful as to impress me with the futility, if not the criminality, of the procedure. In a preceding paper (1), to which I have already referred, I spoke of a few of these experiences, first discussing my personal observations of patients who had obsessions regarding the mouth and teeth, which are not uncommon. I emphasized the fact that too much attention paid to the teeth sometimes resulted in the increase of obsessions regarding them. Some of the diseases referred to as having come under my observation in connection with the question of dental infection are dementia praecox, manic depressive insanity, epilepsy, neurasthenia, hysteria, and psychasthenia. The teeth in these cases were freely sacrificed on the altar of focal infection and without a single result of convincing value.

Since the presentation of this paper in June, 1919, I have had other opportunities, directly or through the kindness of personal friends in the profession, to learn of the fruitlessness and harmfulness of treatment by what might be designated as dental violence, especially when this is unguarded
by careful clinical consideration. The presentation of cases in detail might be tiresome and I will refer to only a few of the affections for the relief of which the service of the exodontist has been called in, or threatened, usually with the advice or concurrence of the practicing physician and röntgenologist.

One of my objects is to call attention to the wide diffusion of what might be justly called the craze for the removal of teeth in order to relieve nervous and mental affections, these not infrequently being organic diseases readily determined by proper clinical study. In not a few of the cases the organic diagnoses were made by competent neurologists and notwithstanding this, teeth were removed on the suggestion of other physicians or, more rarely, on the initiative of the patients themselves.

A young lady was brought to me by her father, who later came with a newspaper clipping advocating teeth pulling for all manner of nervous and mental disease. The patient was illegitimate, had a history of insanity in one line of descent, and the patient presented a constitutional psychosis. Her teeth were in good condition and laboratory examinations were made of her stools, urine and blood, the results all being negative. She was about to be taken to an institution where dental violence was much used for the relief of mental disorders. I succeeded in temporarily stopping the pilgrimage, but have little doubt that she later journeyed to one of the meccas of exodontia.

In a case of a patient with psychasthenia sent to me by a surgeon, the woman had all her teeth removed, some of these on advice and others on her own initiative. She had also had a minor operation on her jaw, but was still suffering or obsessed and wished to have some further surgical procedure. I advised against this and the patient went out of my hands.

In a case of dementia praecox the patient had reached the forties, steadily losing ground. He suffered from marked hallucinations and delusions of suspicion and persecution, was sometimes aggressive and dangerous, and showed marked general mental disintegration. After clinical and X-ray investigations a physician advised teeth pulling, but I was able to prevent this as long as the patient remained in my hands.

In two cases of spinal tumor, the clinical histories of which were clear and in both of which the diagnosis was confirmed by operation and removal, extraction of teeth for the relief of the symptoms was suggested. In one of these cases five or six teeth were removed. In the other, the services of the exodontist were declined.

In a case of myxedema all the teeth with the exception of the canines of the left lower jaw were removed without any improvement in the patient's condition. Under the use of thyroid there was gradual improvement.

In an adult patient with cerebellobulbar encephalitis with marked Romberg symptom, paralysis of the superior rectus on left side, anesthesia of left side of the face and cornea, and other symptoms of a destructive lesion, the patient steadily improved simply under a waiting treatment, but continued to have some numbness and occasional attacks of vertigo. The patient's husband was strongly advised to have her teeth examined with the idea of the removal of some of them. She came to see me about this matter. She had no trouble with her teeth—no pains or aches—but had a few small bridges and small fillings. I advised her to have nothing done to her teeth, writing strongly to this effect to her husband.

For a patient with epilepsy advice was given to extract all the teeth left in the mouth, some of which were in poor condition. This was done. Recovery did not ensue and in short time the patient
died. Whether the resulting death was *propter hoc* or simply *post hoc* I am not prepared to say. The epilepsy, however, was not ameliorated.

In another case, psychasthenic in character, the patient was literally operated upon from heel to head. Some surgical procedure was first used on her foot; she was next curetted and the cervix was dilated; then her appendix was removed; her gall-bladder and mastoid were operated upon; and finally several teeth were extracted, but all in vain. She is at present in a rest house, submitting to the tender mercies of one of my neurological friends.

A man about forty years of age complained of pain in the right lower incisor. His jaws were x-rayed and dental abscesses reported. Pain continued and the man had every tooth in the right lower jaw removed. Then he began to have teeth in the upper jaw extracted. About this time the dentist made up his mind that the patient had *tic douloureux*. Neurological examinations showed that while the pains were present, they were not exactly like those of *tic douloureux*, and in addition it was found that the man had a four plus Wassermann reaction. The case was doubtless one of syphilis with involvement of the root of the right fifth nerve and treatment was ordered in accordance with this view.

A woman, forty-five years old, lost her husband, an undertaker, during the influenza epidemic of 1918. She continued his business, doing the embalming and most of the other work connected with it. She had delusions and was much depressed, neglecting her business; in other words, she passed through a phase of manic depressive insanity. She was taken to a sanatorium and a parotid abscess developed which was drained and healed. She remained in the sanatorium for three months in the same depressed mental condition. She was then removed without the consent of one of my colleagues to an institution where dental infection was regarded as the chief etiological factor in various forms of insanity. The teeth were x-rayed, several teeth were removed, cultures were made of the so-called abscesses, and the woman was given about twelve injections—one every week. In spite of the removal of the teeth and the injection treatment the patient showed the same symptoms that were manifest when she was admitted to the hospital, but at the expiration of three months she became better overnight, and in two weeks was discharged. Her history, in brief, was that of similar cases of manic depressive psychosis which have received no dental treatment.

I might continue this record of organic and functional cases, but enough has been given to illustrate the point that the diagnosis of dental infection and the therapeutics of teeth removal are used without reason or result in a variety of widely differing diseases of the nervous system. I have had the opportunity of listening on several occasions to the presentation of this subject of dental infection in its relations or supposed relations to mental disease by one of the leading psychiatrists of the country. Many and diverse forms of insanity have been attributed to dental infection by this alienist, although the large intestines and other channels of infection have not been disregarded. Diseases long recognized by most authorities as of teratological origin, of which dementia praecox is a good example, and other affections traceable to causes like syphilis have been given some place in the list of the disorders caused by dental infection.

The late Dr. August Hoch, in a critical review (5), pointed out the logical defects in the presentation of the subject in one of the articles referred to. As the critic says, one has the feeling that the author of the paper reviewed believes that such infections are the real cause of the mental disorders discussed. He places heredity and constitution in a minor rôle and, in short, he appears to
hold that extrinsic factors like focal infection are the real causes of such psychoses as manic depressive insanity. It is not my purpose either to review the reviewer or the paper under discussion, which I have read, but simply to refer to some of the points brought out by the former.

The author under review had eleven patients, five of whom died. The first case was one of delirium beginning after acute articular rheumatism. Streptococcus meningitis was discovered at autopsy. In the second case streptococcus viridans was found, the patient having become manical after influenza. In a third, the history of which suggested paresis, the patient had mania after grippe and pleurisy. Streptococcus longus was found, the patient having died of general septicemia. In the fourth case, staphylococcus was discovered, manic symptoms having been present after an ischiorectal abscess. The fifth case was similar as regards history, result, and findings, and, as Hoch remarks, the five cases proved nothing as regards the diagnosis of manic depressive insanity. The sixth case was apparently one of manic depressive insanity with cycles of depression and hypomania. Organisms were found and teeth were extracted, after which the patient calmed down somewhat.

The seventh case was also one of hypomania, but in spite of treatment by rectal injections and rest, depression followed the disappearance of hypomanic symptoms. In another case mania occurred after pneumonia and the patient recovered after lumbar puncture. A woman with suicidal tendencies recovered five months after admission, colonic irrigations having been used in her case because of unusual quantities of Streptococcus viridans isolated in the stools. In the tenth case, one of prolonged depression, although infected teeth were extracted the patient did not improve and equal lack of success resulted from the use of vaccine from Streptococcus viridans. In the eleventh case the patient, who had suffered from mania, depression, stupor, and delirium for six years gradually recovered after the extraction of one infected tooth! The evidence in favor of the views advocated has little support in the histories recorded.

It is not my intention in this paper to deny that focal infection, tonsillar, dental, or of other local situation, may not in some instances cause systemic disease like arthritis or endocarditis or even, in rare instances, some form of nervous or psychiatric affection. I am convinced, however, that this etiology has been greatly overworked, this being especially true of the dental infection hypothesis. Just as in a former generation the medical profession went beyond all bounds in applying the theory of reflex causation of uterine, ovarian or other origin, so now the tendency to attribute serious systemic diseases, including forms of insanity, has gone beyond all reason and has led to serious and even disastrous mistakes. We seem to be passing through another of the periods of fad and fallacy which have so often misled the profession and the public. How far commercial considerations have been influential in diffusing the hypothesis of dental infection I am not prepared to say, although consciously or unconsciously they sometimes may have played a part.

One might almost feel that the teeth like other portions of the human organism, which throughout centuries have been considered of value and not simply necessary evils, might be disposed of without any great loss to the race. Under the influence of the propaganda of focal infection, to use the expression of my facetious, but learned friend, Doctor Peterson, the colons of epileptics bid fair to be reduced to semicolons by operation. The appendix will soon be no longer left even as a vestigial illustration, and the tonsil, protrusive and sub-
Mills: Dental Cause of Nervous and Mental Diseases.

merged, is sharing the fate in recent years of the ovary in our early experience.

A nose and throat specialist not long ago gravely informed me that he thought of preparing a statute to be presented to the State legislature making compulsory the extirpation of the tonsils of children after reaching a certain age on the theory that prevention is better than cure. Why, he argued, should we not get rid of an organ which may some day be the source of focal infection? Why on the same principle may our exodontist friends not be called in for their exterminating activities and free the rising generation of teeth which in the process of time may have their roots infected? In this way might we not happily forestall the development of rheumatism and gout, duodenal ulcers, and nervous and mental maladies? In conclusion, I would fain protest against the too free use of the therapeutics of organic mutilation. If the craze for violent removal goes on it will come to pass that we will have a gutless, glandless, toothless, and, I am not sure, that we may not have, thanks to false psychology and surgery, a witless race.

REFERENCES.


1909 Chestnut Street.