gums. In lead, the gums became blue; in brass, yellow; in mercury, red, etc. The metals accumulating in the tissues because of the end-organ nature of the structure gave the color to the gums, and also as an irritant caused inflammation.

Perhaps the most interesting symptom of bone absorption is that produced by anemia or some form of heart lesions in which the blood supply of the alveolar process is diminished. Nourishment is cut off and the alveolar process rapidly absorbs away without pain or pus. These people attend to their daily affairs and are not ailing enough to call a physician. The conditions referred to above are all called constitutional causes.

The local causes are all irritants, such as tartar, bad dentistry, excessive use of the tooth brush, tooth picks, etc. These irritants cause the blood to flow into the gums and alveolar process resulting in stasis. Nourishment is cut off and altered metabolism occurs, resulting in bone absorption.

The constitutional and local causes produce what I have called interstitial gingivitis (sometimes the irritation, inflammation and absorption begin at the apex or at another part of the root, but oftener at the gum margin, depending on the cause; hence the name). In their milder forms they have now been explained. There is no pain or soreness attached to this pathologic process. There is simply first absorption of lime salts, after which the fibrous tissue may remain, holding the loose tooth in position for an indefinite period, after which fibroid degeneration takes place and the tooth drops out.

If there is the least soreness, it does not occur until after the lime salts have been removed and the tooth has become loose.

The fibrous tissue may hold the tooth in position for years. The "cement membrane" (peridental), therefore, must be present for the attachment of these fibers to the tooth. The alveolar process, including the fibrous tissue, must first be destroyed, and not the "cement membrane," as stated in the editorial, after which the membrane disappears.

With these simple forms of pathologic conditions of the alveolar process explained, the action of the more severe forms of disease, such as scurvy, on the gums and alveolar process can be better understood.

The constitutional changes due to want of proper diet, altered metabolism, malnutrition, and want of resistance both in the system and in the alveolar process, together with stasis or impoverished blood, as well as poisons (irritants) in the blood, set up a violent inflammation with bone absorption and pain.

My researches do not admit of infection as a cause in any of the conditions cited. The infections, such as actinomycosis, Vincent's angina and trench mouth, which produce the same pathologic condition, are interesting but have no place in this communication.

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NEED OF GOVERNMENT ACTION TO CHECK BOTULISM

To the Editor:—I have just read with much interest your timely editorial on "The Relation of Forage Poisoning to Botulism" (THE JOURNAL, Aug. 23, 1919, p. 611), in which you refer to my recent contribution on this subject (*Am. J. M. Sc.* 158:57 [July] 1919). May I venture to make a few comments partly in emphasis of what you have said, and partly additional thereto, hoping thereby to accelerate a movement toward government action, which I deem absolutely essential to the protection of the public health?

You refer to the recovery of one desperately ill patient under the use of the serum furnished by Professor Graham of the University of Illinois. I wish to say that I have never seen a more direct and striking rescue of a patient from an apparently hopeless condition by a single therapeutic agent on clinical trial for the first time. I should like to call attention to one very instructive point in another case (Case VI), in which Dr. Smith observed bor-

borygmus as the first indication of recovery from the intestinal paralysis.

The neutralization of the botulinus toxin by fats cannot be too strongly emphasized, and clearly demands the prompt and energetic use of castor oil or some other laxative fat, for the double purpose of clearing out the ingested toxins, which are largely preformed under saprophytic conditions, and of lowering or destroying the virulence of the toxins by combination with fats. *This must be done quickly*, as intestinal paralysis rapidly supervenes, after which laxatives are, of course, entirely inert.

Another point which cannot be too strongly emphasized is that boiling not only kills the germ but also *destroys the toxin*. Thorough cooking is the most important prophylactic measure against this very widely distributed pathogenic saprophyte.

In this connection I am wondering whether economy of fuel in continental Europe, and the consequent less thorough cooking, which may of course be a matter of taste and habit as well, might not account for the apparently greater prevalence of botulinus outbreaks there. Their frequent and economically serious occurrence in this country among horses and other valuable animals is also suggestive, owing to the absence of cooking in ensilage food. Of course the latter, in the deeper layers of the silo, furnishes typical anaerobic conditions for the growth of this organism. So far as I know, animals are no more susceptible than man to this toxin.

I wish to urge that the machinery of the great American Medical Association be set in motion, in order that it may bring its influence to bear on the proper governmental departments, that there may be provided the greatest degree of protection both by way of prophylaxis and the prompt availability of a curative serum, the efficacy of which has been fully demonstrated experimentally on animals and to a very limited but apparently satisfactory degree on human subjects.

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"CONDUCTIVE ANESTHESIA BY INTRA- SACRAL INJECTION OF PROCAIN"

To the Editor:—In THE JOURNAL, July 26, 1919, p. 298, appeared an abstract of an article of mine in the *British Medical Journal*, under the title of "Conductive Anesthesia by the Intracanalicular Extradural Injection of Procain." Allow me to point out an inaccuracy in this abstract. I did not say that the method described is a new one. It was attempted nearly twenty years ago by Cathelin, and has been used from time to time since then by different French and German surgeons, with varying degrees of success. It has given best results in the hands of Americans, among others Dr. W. E. Faulkner of Boston, from whom I learned the technic in 1914. My statement was that, so far as I had been able to discover, the method was not in use anywhere in this country (England). I find that I am mistaken in this, and that Mr. Percival Cole has been using it recently at the Cancer Hospital, London.

I should be grateful if you would publish this letter, that I may not appear to claim indirectly a priority which does not belong to me.

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The Profession in the War.—We have passed through a time which, thank God, we shall never see again, under a strain which we perhaps did not really appreciate till it was relaxed. Looking back upon it all, we can say, first, that without any doubt whatever the medical work of the army was extraordinarily well done; second, that those at any rate who were connected with hospitals learned more than they ever learned before; and, lastly, that perhaps the greatest lesson of all was that over this wide area and throughout this immense body of men there was a unity of effort and a fellowship of spirit such as we had never before imagined could exist.—Major General Sir Wilmot Herringham, C.B., M.D., *British Medical Journal*, Jan. 4, 1919.