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DEPARTMENT OF PEDIATRICS

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Dr. Robert A. Kehoe
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Cincinnati, Ohio.

Dear Doctor Kehoe:

After some correspondence with Doctor Carlson and Doctor Hooker of the Editorial Staff of Physiological Reviews, I am now at Doctor Hooker's request writing to you in reply to your recent criticism of my review on the physiological effects of lead. Constructive criticism is of course always valuable and welcome. I am very sorry that, in your estimation, my contribution falls so far short of being a useful review of so important a subject as the effects of lead.

I am well aware that there are many inadequacies in my review. I think no one feels so keenly the incompleteness of a summary as the person who has just spent many months of reading a large amount of literature on a subject and has then attempted to give in a limited space an impartial and well rounded summary of the outstanding contributions. Probably no two persons would agree entirely in their selections of the material ~~to be chosen~~ for emphasis in the review of a given subject. From the very fact, which you point out, that I have not been engaged in lead investigations for the past ten years, my point of view as I went over the literature was at least an impartial one. If this advantage was more than offset by poor selective judgment as to what work is important and suggestive of further fruitful investigation I am sorry.

However, granting all this, I cannot agree that the worst features of my review are those which you pointed out in your letter to Doctor Hooker. It is true I made no attempt to discuss technical details of the various adaptations of the methods now available, and to which you referred, for the determination of small amounts of lead. However, the title of my paper was "The Physiological Effects of Small Amounts of Lead". I even debated with myself as to the desirability of devoting any of the limited space which I had to the discussion of chemical methods beyond emphasis of the prerequisite that they be specific and accurate. But since the data I wished to discuss had been obtained by a variety of methods and since each procedure is frequently criticized by advocates of some other method, I decided it was only fair to give a bare outline of the basis of methods which have been most used by persons investigating the lead hazard. I made no attempt whatever to evaluate or discuss the more recent improvements in analytical methods, which, while they doubtless offer advantages, have not yet been extensively used in biological studies.

It is true that I personally have not used the newer methods. I was, however, not entirely without the advice of a consultant who is familiar with them. During the preparation of my paper I corresponded with Doctor L. T. Fairhall who as Principal Industrial Toxicologist of the United States

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methods for the determination of lead in biological material. At the same time he is comparing the results of various micro methods with very carefully controlled chemical analyses of large amounts of the same sample of material. Apparently the Public Health Service feels that such studies are still necessary because of the likelihood that errors may frequently occur when minute traces of lead determined in small samples of material by micro methods are calculated in terms of milligrams per liter or per 100 cc. The results of these comparative studies were not ready for publication at the time of our correspondence nor have they yet appeared to my knowledge although Doctor Fairhall stressed some of the inherent difficulties of various micro methods in a paper in the American Journal of Public Health, Vol. 28, No. 7, July 1938. Lacking comparative data of the type which Doctor Fairhall is accumulating, I did not feel that I had adequate justification for giving consideration to the results obtained by one method over those obtained by some other micro method. I therefore tried to give an entirely impartial discussion of the results which I presented from the work of various investigators.

As to your criticism that this impartial type of discussion throws doubt on published data, I cannot but feel that results which vary as widely as do published figures for the lead content of normal blood deserve to be taken with some reservation. They cannot all be correct and an impartial reader can do little else than take the various values for what they are worth and wait until the newer improvements have been applied on a sufficiently extensive scale and with rigid enough controls by macro methods to establish the reliability of some particular range of absolute values.

You took exception to the fact that the figures for the lead content of blood which I quoted from your work were from your earlier papers rather than from the paper in volume 104 of the Journal of the American Medical Association. The reason for this was not that I had failed to read your later paper or to appreciate that the results in that paper were obtained by a method preferable to that used in your earlier work. I chose the figures from the earlier papers because you had with the same method determined the lead content of the blood (a) of primitive people (b) of persons in modern American life (c) of persons with known industrial exposure to lead. The point I was making from the figures which I collected in tabular form was that irrespective of the variation in absolute normal values, the same method in the hands of the same workers showed a considerable difference in the lead content of the blood of the average individual as compared to those with industrial exposure or with signs of lead poisoning.

Summarizing all this discussion I can only say that I grant I made the omissions that you mention and that my judgment may have been poor as to the choice of subjects to be emphasized. However, if I were writing the same review again with the same title and the same allotment of space I should still omit detailed technical discussions of analytical methods and should still feel that the material which I included in my review represents at least some of the more interesting and promising recent work on the subject.

Thanking you for your very frank criticism, I am

Yours sincerely,

Ann S. Minot
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