

May 31, 1961

B. H. Landing, M.D.
Pathologist
The Children's Hospital
Cincinnati 29, Ohio

Dear Doctor Landing:

I have gone over the paper on the lead content of children's teeth with considerable interest and with the hope, against my view of the likelihood, that some practically useful relationships would be established by the data, with particular reference to evidence as to the body burden. We made a small number of observations, with this idea in mind, but gave up the idea before proving or disproving its worth, largely because of the apparent impossibility of determining the extent of the exposure to lead sustained by the individual child. Without this evidence, the correlationship could not be established. The present data are more numerous and therefore more informative, but they have not yielded conclusive evidence. As has been pointed out, the observations would have to be extended considerably, and in certain other directions, to establish the facts. I think there are better and more precise ways of doing this, in terms of the pattern of the metabolism of lead, and the relationship of the lead in the blood to the body burden as influenced by time. This relationship needs to be put on a wider scale of time, with particular reference to the extremes, i.e., very short and very long periods after the termination of exposure.

In this connection I would be cautious about the use of such terms as "release of lead from depots" as used in the introduction, and that of "mobilization" as used on page 5, not because these are misleading terms, in themselves, but because they have an unfortunate connotation in relation to lead. I know very little about the metabolism of teeth, or whether there is any appreciable difference between that of deciduous and permanent teeth. I cannot doubt, however, that it follows much the same course as that of the bones. It is evident that the idea of inert deposits of lead in the skeleton is false - except in the quantitative sense, that the metabolism of skeletal lead is relatively slow and that it varies within the skeleton from "slow to slower". It has also been established that the metabolic release of lead from the skeleton occurs in an orderly and predictable manner, and not in response to changes in the metabolism of calcium (except perhaps in grossly pathologic states in which bone is disintegrating, concerning which evidence is lacking). It is unlikely that the teeth differ radically from bone. The metabolism may be so slow, however, with respect to the locus of lead in the tooth structure, as to give the semblance of retention for considerable periods of time. Here, our evidence is too scanty to be adequate. In any case, however, referring again to the

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remarks in the Introduction, there is at present little room for doubt as to the meaning of an increase in the lead content of the blood or urine, after an interval in which normal or nearly normal and decreasing values are found. This means renewed absorption of lead. I have never seen a recurrence of clinical plumbism in an adult after the disease had once subsided and the blood and urine levels had fallen to the safe zone, until after exposure had been resumed and the values had climbed back up to dangerous levels.

I have only one other comment. Much of our evidence appears to indicate that the "normal" individual, aside from the "ups and downs" associated with the considerable variability of the intake of lead, especially in food, from time to time, reaches an approximate equilibrium with his environment in early childhood, after which he accumulates only negligible quantities of lead in his body. The new-born child of a normal (with respect to lead intake and absorption) mother has very little lead in the body. With the shift of the infant to the varied diet comparable to that of the adult, the lead content of the food increases and that in the body moves gradually upward, for a time, after which the metabolic pattern reaches a virtually steady state. It is by no means certain that you may apply the time-accumulation factor to the teeth after the early years of life. It is much more likely that the great variability of the exposure to lead on the part of children who are poisoned and survive, is responsible primarily for the variability of the lead in their teeth is disclosed by later analyses. That the variability of the exposure is very great indeed has been clearly established.

I have no strong feelings about the matters of title, acknowledgments, authors and site of publication. I prefer the second, without the subtitle. Any mention of The Kettering Laboratory should relate it to the Department of Preventive Medicine and Industrial Health (since for some strange reason it is sometimes dissociated from the Medical College). The authors should be reduced to a minimum - certainly not more than three - because of the problem of indexing. The journal should be in the field of pediatrics.

Sincerely yours,

Robert A. Kehoe, M. D.

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