

February 25, 1963

John H. Raach, M.D.
The Journal of the American Medical Association
535 North Dearborn Street
Chicago 10
Illinois

Dear Doctor Raach:

I have had difficulty in finding the time to review the paper of Dr. Christian and his associates, but I hasten to say that I am glad you sent it to me. I trust that my delay in returning it to you with my comments will not have occasioned any embarrassment to the editorial staff of the Journal.

The paper should not be published in the Journal of the American Medical Association, nor is it suitable for publication anywhere in its present form. Moreover, I do not believe the authors can make it suitable for publication in the Journal or elsewhere, for the simple reason that they are badly confused as to the facts which they are attempting to present, and are unaware of the true characteristics of the problem which they have been investigating from the aspect of what needs to be learned. Incidentally, I have met Dr. Christian, and after talking with him and realizing his lack of understanding of this subject, have tried to set him straight on some of the facts. When I saw the title of this paper, I was interested and I hoped for the best. Unfortunately my hope was unrewarded. The paper is a marvel of misinformation and misinterpretation, and the authors should be told by someone that their methods of investigation are quite inadequate. I am uncertain as to how this could be done, but certainly at this point in time, one should not add confusion to this subject.

Now to be somewhat more specific and to document the general conclusion arrived at above:

1. The discussion of the nature of lead poisoning, page 1, Part I, contributes to bad diagnostic procedure and to the thinking behind such procedure. The diagnosis must, first of all be based on the nature of the illness. It is absurd, therefore, to talk in riddles about the modes of absorption, and the vague character of the disease. The manifestations of lead poisoning in the child or the adult do not vary with the mode of absorption, but only with the quantity absorbed. They are not "protean" or "vague" in either case. There is, of course, variability of response, but only within certain fairly well-defined limits. These men do not know what they are talking about, for the reason that most of the vague departures from normal which they have been concerned with were not lead poisoning. They have no clear idea of diagnostic

criteria, as I shall indicate later on a more technical basis, and, therefore, they accept all kinds of aberrations as being due to lead. They are almost wholly naive and uncritical as investigators.

2. The discussion of the physiology of lead absorption in paragraphs 2 and 3 of page 1 is very weak in that it goes beyond our knowledge in some matters, and misses the point of much presently established fact, in other directions.

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The last paragraph on page 1/concentrated in two sentences three grossly incorrect statements. (a) Exposure to lead in (the air of) urban areas is not common, as they say; on the contrary, it occurs^{only} under the most unusual circumstances. The very situation to which this statement refers here and later was investigated and found to be insignificant. (I refer here to the contamination of the air by certain blast furnaces in Chicago. We were called in to investigate this problem which had been grossly misinterpreted, because of the unfamiliarity of this group with the available information as to the lead content of the air. The lead content of the air of the area was of the order which is common in American cities, and was an insignificant source of lead absorption.) (b) Evaluation of the lead levels in the blood and urine is not difficult, as the authors claim, but is, in fact, the method by which the extent of the absorption is learned. (c) The quantitative estimate of the severity of exposure, as given in the next sentence and over on page 2, is wholly incorrect. The figures given for the feces and urine are the threshold values, above which there is danger. These were taken from our data and misinterpreted. (The search of the literature of this field was woefully inadequate.)

In the very next sentence is a statement which is not only untrue, but, which, if it were, would completely invalidate our best, diagnostic, criteria. Blood levels of 0.06 to 0.07 mg. per 100 grams are not considered to be normal by anyone, while the figure of 0.6 mg.% (by which is meant 0.6 mg. per 100 grams of whole blood) is a value so high as to be rarely found. It is clear that this value has been confused in the mind of the authors with 0.06, who, therefore, say that there is no "safe" level. Apparently they do not know that all people, even under primitive, natural conditions have lead in their blood.

I shall not continue on through the paper. This I think is sufficient. One further comment, however, will serve to show that no one in this group of authors has any understanding of the quantitative relationships that have been brought into this field and substantiated by careful investigation by a goodly number of investigators. If you will turn to Table IV in Part II, you will note a column marked "Pb" which is said in the "Key" at the end of the table to be "blood lead levels in u/100," (that is, presumably, micrograms per 100 grams of whole blood, although it is not so stated. I doubt that these fellows really know the difference between micrograms and milligrams. These are simply figures, with the meaning of which they are unfamiliar).

However, to return to a look at the data, the highest result in Table IV is 20 micrograms per 100 grams (presumably whole blood; it could not be serum). This expressed in milligrams is 0.02, which is a low normal value (mean normal 0.026 or thereabouts. And yet, cases of lead poisoning occurred, allegedly, within this group, and were treated according to the table.

The same situation is found in Table VII except that here one higher value (25 micrograms or 0.025 mg)was found. In both tables, X-ray shadows in long bones were considered to be indicative of lead absorption. (The authors fail apparently to realize these contradictory things in their data.)

There is no indication of how the analyses of the blood were carried out, and this, of course, is crucial in determining the specific significance of the "normal", "safe" and "dangerous" levels of lead concentration in the blood. It is entirely possible that the decimal point, as employed in the Tables, was different from that employed by the analyst, but again the authors seem not to know that their data stamp all of their findings as normal, and thereby exclude any diagnosis of lead poisoning among these children.

I hardly believe that the clinical work done in this investigation was as bad as it sounds from this report. I have no doubt that there were cases of lead poisoning, and that Chicago is not unlike many other American cities in this respect. In fact, I know, from direct consultations with physicians there that cases occur. Almost all of these cases come about from the ingestion of lead by the small child, usually that in paint. Some few, mentioned here, come from the fume of burning battery boxes, scavenged from dumps and used as fuel by poor people. Lead in the ambient (outside) air, has never been known to cause lead poisoning.

The point is that Dr. Christian is (I believe) an honest, well-meaning physician, who went about this without knowing his way around, and without having the well informed guidance of persons who would know how to proceed. He has come out with a mish-mash of fact and falsity, which instead of helping the bad situation in Chicago (with respect to the hazards of old housing, mostly in slum areas) has confused the issues so that the work will have to be done over, or at the least looked at critically by a knowledgeable person.

I am quite sure that you will not be interested in all of these details, and would prefer to have a brief and pointed letter. On the other hand, I've been trying to bring some order into this confused field for more than three decades, and it is high time that abortive efforts like this be identified for what they are. Accordingly in my view, you should not merely refuse this article, you should attempt to kill it or to cure it of its gross faults, so that it will not seek (and perhaps find) another outlet. I have given you the ammunition with which to make this attempt, and you are at liberty to use it as

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you think best, with due regard for the professional amenities,
since I have been more blunt and much less considerate of Dr. Christian
in my criticism to you than I would be to him.

Sincerely yours,

Robert A. Kehoe, M. D.

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Encl: Dr. Christian's paper on Lead Poisoning in Chicago