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WEX 7-0227

Nov. 15, 1964.

Dear Dr. Kehoe:

Thank you very much for pushing thru the lead assays of the 40 bone specimens sent, and for your letter of the 11th with its promise of further cooperation. The bill for \$500 is as expected, and I enclose my check.

For my theory the results are fairly satisfactory, even if not yet decisively probative. There are some contrary findings, but that is to be expected. The theory is not one of possibility and impossibility, but of tendency, with some exceptional cases to be expected, and with no possibility that one or a few discordant cases could refute the theory. It would always happen occasionally that some rich man escaped heavy leading, and that some poor man was poisoned, and that there could be an error somewhere along the line of evidence-gathering. The data also need further refinement, as to the which-bone factor, and for age and sex and certainty of the wealth rating, and perhaps for other factors, such as date and country. I especially need more rich cases, and verification of wealth where doubtful, which I shall seek.

I return herewith the top copy of the findings, keeping the carbon, numbering the pages as 1-4 and appending my principal data on each case. Analyzing the whole I would consider the period, and place, contrasting the Athenian market-place with the rest of the Roman Empire. Two Italian and one Athenian case before the period of postulated plumbism show minimal lead, one of them rich; 4 Athenian about the beginning of the period show 3.5 to 23 mg. per 100 g.; all the severe cases are about the postulated period; 3 cases in the post-Roman period, on which I have no theory, show 1.5, 2.8 and 11.7.

Considering now the postulated period in the Western Empire, all the poor and probably poor people, viz. 18, come out with low or rather low led, 8.1 or less, except 4 of the group of 5 from the Vatican hill cemetery, not very poor where they ranged from 4.6 to 12.5--and a case whose poverty I question (Identification number 1956.24.10.1, on page 1, who had 25.8; and another exception with 21.3.

My 7 rich people present the most exceptions, with .43, 1.29, 2.31, 4.16, 7.3, 15.1, and 614. mg. But 3 of the low ones are anomalous cases. Page 3, case V-1, and p. 2, case OB-3 were of early or perhaps-early dates, in backward parts of the Empire (Bosnia and central Gaul), where the Roman cookery might not have reached the rich. Page 1, case 4.1702 is questionable as to wealth.

Thirdly, as to the data from the Athenian market-place on p. 4, the only one identifiable as to wealth, case 72, was rich, little ledded, and before the danger period, fitting perfectly. The rest, in the period or its beginning, show a range from 2.82 to 10.8, with most of them at a dangerous level. This fits perfectly with my supposition that in Athens, from 5 or 400 B.C. onward, there was a good deal of lead poisoning among the poor as well as rich, because the population of Greece declined greatly, and Athens was a major producer of led, from close-by Laurion silver-led mines.

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As soon as you or your assistant have time I hope you can send me some findings from other researches, on the relative amounts of lead stored in the various bones of the body, and the differences we find today according to age and sex if significant. As I mentioned in my letter of Feb. 25 (end of p. 1ff.) I have found various studies giving data for the several bones, but no general table of the proportions going to each bone, such a table as I hope you have. Nor am I enough of a mathematician to know how to average up numerous different ratios, such as the ratios ~~XXX~~, ~~XXX~~ A/B, A/C, A/D, B/C, C/E, E/F, B/F, etc., to reduce them all to a common denominator, on a reliable averaging basis.

I shall be greatly obliged, and publicly grateful, for your assistance on any matters. Would you not like to write a signed chapter for my book, on the methods and accuracy of the analyses, the degrees of morbidity and sterility (incl. infant death-rates & plus mental damage, from induced premature births etc.) indicated for the lead percentages found; and on any other medical and chemical matters that you would like to write on?

Would you like me to send you ~~me~~ a carbon of the 8500-word article I now have out?

I have not heard yet when this article will go to press in *Man-kind* quarterly nor in *Jol. of Occup. Medicine*, but should like to be able to send them some findings of a general nature, mentioning the help of yourself and the Kettering Laboratory, as soon as I do hear, or sooner.

I should also like to hear whether you think that bones remaining from a cremation, like those of V-1 & 2 on p. 3, and OB-1 & 3 on p. 2, are acceptable and whether they should be differently rated. They show no sign of burning. Such bones are about all one can get before 100 A.D. in Rome.

I now have on hand a bag of bone fragments, about a pound, from Bosnia, and am hoping for others from Athens, especially when I can find a sponsor for my requests.

Gratefully yours,

Colum Gilfillan, Ph.D.