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DR. PHILIP BOYD
Chief Medical Officer

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YOUR REF.

August 17, 1956.

Dr. R.A. Kehoe,
The Kettering Laboratory of Applied Physiology,
University of Cincinnati,
College of Medicine,
Eden Avenue,
CINCINNATI 19,
Ohio,
U.S.A.

Dear Dr. Kehoe,

It was good to hear from you again. I hope that when you receive this you will both have returned much refreshed from a really good vacation.

I am very happy that Moffat was able to refund you the cost of the gamma globulin, and apart from renewing my thanks I think this completes that particular story. I would also mention that your proposal to let the matter "go" was a really generous and thoughtful one.

My interest in diurnal urine variation stems from thoughts about the possibility of the standardisation of urinary spot lead results by means of a creatinine correction factor. I have indeed read the articles you quote, but this is by and large all that has usefully been written on the subject. As far as I can see, always accepting that creatinine is in fact excreted constantly in time to within a 10% error, one could only use this fact for correction purposes if lead is also excreted in some overall consistent fashion; the main object being , I feel, to assess what fraction the spot sample would be of the total volume in a 24-hour period, calculated from the spot sample's creatinine content, and the previously known 24-hour excretion of creatinine of the individual case. (Perhaps there is another method of creatinine correction?) Of course, I realise that lead excretion is in fact variable, but am not sure how much has gone into the investigation of the variability.

Faecal variation is of course another matter. It would obviously be extremely difficult to pursue diurnal variation

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er pointless. But the faecal faecal "evacuation" of lead is an own account. In some recent cases of tetraethyl lead poisoning in tank cleaners that we have had here, men with high urinary lead output who are hospitalised also show a high faecal output out of all proportion to what could have been taken in the diet, and after a period of time which would discount old faecal remnants. We can but assume that in these cases the lead in faeces represents a true and marked increase in excretion, which incidentally we found, if anything, to be enhanced rather than reduced by intravenous and oral versene. Over short periods of course it is extremely difficult to correlate faecal excretion with corresponding urinary excretion in respect of the time factor, a twenty four hour "delay" being only a crude interpretation of the situation. I feel perhaps that recent publications with regard to versene in this respect are a little glib, but approve of the attempt to make the correlation which is, I think, all important in terms of treatment with deleading agents; results in urinary mg. per litre being too simple an expression, and total daily lead output the only valid criterion for judging the deleading effects of such agents.

While on the subject of deleading, I wonder if you have yet had occasion to try out penicillamine (ββ dimethylcysteine).

With regard to lead intake and output studies, we are now thinking of certain small and short term lines of investigation, making use of say three hospital patients (metabolically fit) in the first place. These are not easy to come by, and as yet our own employees are insufficiently well settled for any demanding favours of this kind. There is a chance soon of my getting a physiologist (Ph.D. Manchester) on my staff who I thought could help in these and other studies as well as perhaps initiate a section of hygiene within the Medical Services. We are even thinking now in terms of basic chemical research into the quality of lead transportation in tissues and tissue fluids, a rather nebulous and ambitious dream, perhaps, but one which I think deserves attention here if possible. I shall need whatever guidance you can spare me in all this type of work.

I have mentioned to Ray Bevan that you will probably be attending the Congress in Finland, and he and I both hope sincerely you will spare "England" some of your overseas time. As far as my getting to the States is concerned, I really am keen to get over next summer, and stay a short time in Cincinnati, Baton Rouge and possibly with the Dupont organisation as well, to undertake a more mature study of the medical activities of

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the tetraethyl lead industry, especially as developed in the last five years and in the light of my better knowledge of the subject. My first visit can only have been very naive and I believe much can be achieved by keeping in direct touch with a problem of this order, however obvious are the fundamentals of its solution.

With regard to the fatty salts of lead, I enclose a chemical survey done by one of our more brilliant chemists (an American by origin, but now naturalised British) but this is as far as I have been able to get. Toxicologically, I drew a blank. Occupationally, I fully appreciate the significance you mention of the relative unimportance of toxicity per se, compared with the extent of absorption of lead compounds in general.

The American Public Health Association report I have already read, and ordered a supply for use by our overseas consultants. It is a most useful booklet, but of greater value to those less consistently concerned in this work than to our own chemists, who are of course, (or should be) up to date on these techniques. The earlier snags encountered on the rapid screening method are being ironed out, but in terms of individual lead assessment the method still leaves much to be desired by virtue of the physiological variables involved in so small a specimen. I am convinced of the need somewhere in the control procedures of working with larger samples on a regular basis, but this is supremely hard to work out.

As far as air pollution is concerned, I am a little lost in the latest developments. This is really something to be discussed at length, I imagine, as you suggest at a later date.

I am meeting Hunter in Harley Street next week, as an independent witness to the medical examination of two of these tank cleaning cases. It will be interesting to find out what he thinks and to get first impressions of this apparently famous doctor!

I was very glad to hear that Katy was home again with you. I hope she is enjoying her visit very much. I envy her the chance. Please give her mother and her my fondest good wishes.

Sincerely,

Philip