

March 14, 1941

Dr. R. J. Ness
354 Metropolitan Building
Denver, Colorado

Dear Jack:

It was very nice to hear about [redacted] improvement. The sample of urine that you sent is in, but because of painting and repairs here, it has not yet been run. It should be completed, however, in a few days and I will report it to you. For future samples, I believe it would be better if you used our containers, and I am accordingly sending you today, 3 bottles for collection of urine samples, 6 test tubes for blood and 3 of our special needles for drawing the blood directly from the vein.

There will be a set of instructions for collection of the samples included in the package, and since [redacted] blood and urine lead values will be decreasing toward normal levels, it would probably be wise to follow them in detail. With the lower ranges likely to be encountered, the effect of contamination will be disproportionately great and we accordingly like to have the blood sample divided into two portions which we analyze in duplicate, thus enabling a check upon accidental contamination.

I had a letter from Cummings about his case and dare say that more will crop up as long as these undercover activities continue. I believe the samples on [redacted] could be taken at one or two week intervals. If in the meantime, you see any other cases, samples can be obtained on them in these containers and we will forward you additional ones.

Your idea of presenting [redacted] case to the local medical society impresses me as a very good one. If these cases are going to crop up without warning, steps should be taken to acquaint the medical profession with that possibility and some information given them on the clinical picture and treatment. The most effective way I know of, of doing this is by presentation. You are quite welcome to use any or all of the data which we have,

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and I am accordingly sending you copies of all my clinical records, together with an abstract that I made of [REDACTED] hospital record. This may require amplification from the detailed hospital record which I am sure is available to you. In so far as the discussion of his progress report is concerned, I believe you could make a very effective graph out of it, on which would be plotted temperature, pulse, respiration, urinary output on a time base, that is by days, and the essential clinical symptoms for these periods included. Since we have several urinary samples, a curve could also be made for these levels. I believe the wide variation in urinary output will account for the variation in concentration of lead in urine at the different times these samples were taken. One point that should be mentioned is that in these plants the exposure is limited entirely to tetraethyl lead and inorganic lead compounds, whereas, in those cases that have arisen from the cleaning of tanks, as you will find mentioned in the reprint sent you, there is also a possible exposure to ethylene dibromide which you may know is used as a carrying agent for tetraethyl lead in gasoline.

The formation of lead bromide in the automobile cylinder enables the expulsion of lead from the exhaust and prevents the accumulation on the pistons and cylinder walls (in those cases that might arise from tank cleaning, it would be a questionable practice to use Avertin (tribromo ethanol) as an anesthetic agent, due to this potential double exposure, at least until such time as we have had opportunity to study the bromide excretion on men exposed in this fashion.

Another point that should be brought out, and which may require delicate handling is the difficulties in which Griffith found himself. I gathered from discussions that I had that most of the cases of diabetic coma in Denver, die in jail. Griffith's case was very clear-cut and may offer you an opportunity to put a stop to these practices of the police. However, the manner in which the thing is handled is probably more important than the facts in the case; I would not presume to advise you as to whether or not this point should be emphasized.

Another point that suggests itself is in relation to our continued use of pentothal sodium. In a recent issue of Anesthesia and Analgesia mention is made of the fact that pentothal sodium may be quite toxic on repeated administration. Some experimental work that was done on cats indicated that while the initial dose was metabolized in about 20 to 30 minutes, subsequent doses tended to have a more prolonged

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anesthetic effect and were broken down much less well, so that after one-half dozen or so doses had been given, amounts that previously did not cause anesthesia, were sufficient to cause death, even though the time interval that had elapsed between the individual doses was at least as great as that following the first dose. While we observed no such effect in [redacted] case, it is a point worth keeping in mind and it might be well in your suggestions for therapy to limit the recommendation for the use of pentothal sodium to 3 or 4 repetitions of anesthetic doses. Some cases that will be encountered will almost certainly have some degree of liver damage, not due to their lead exposure but to perhaps other causes, and in these instances repeated use of pentothal sodium might be very dangerous. Another point in therapy that could be stressed would be the use of oxygen in those cases that do not ventilate well, due to their tonic state. You may remember that there was a period just before Loehr received his anesthesia in which breath sounds were not audible much below the second interspace, due to the rigid contraction of his chest muscles. This may perhaps best be dealt with by anesthesia. On the other hand, the possibility of oxygen administration in most cases where some cooperation can be obtained, should be considered.

In view of A. L. Cooper's high excretion, if it is possible for you to get your hands on him, I think it would be a good idea for you to check him over again before getting your material together for presentation. I have a suspicion that he is fooling around with either a lead plant or tetraethyl lead in some fashion, as this level of excretion indicates recent severe exposure.

Too little is known about the normal levels of lead in the spinal fluid to make much of the results of the spinal fluid analysis. They could be mentioned; they are about twice our normal level, but I do not consider them to be of much significance. The blood-cerebrospinal barrier seems to be very effective against lead, as has been found to be true for many arsenic compounds.

I believe it will be a relatively simple matter to piece together the interpretation of the analytical results from the above and my previous letter. If any question arises, please let me know and I will add to the above. In any event, I shall be very happy to look over your paper prior

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to either its presentation or publication if you wish
me to do so.

Best regards to Ruth and your associates.

Cordially,

WM:vr

Willard Machle, M. D.

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