March 23, 1967

H. McLeod Patterson, M.D., Medical Director
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Fremont, California 94537

Dear Doctor Patterson:

Having returned to Cincinnati, and having spent some time in getting my office and its affairs in order, I am mindful of my promise to write to you about certain matters that were brought to light by the case of alleged lead poisoning which you brought to my attention. Quite apart from my contribution to the disposition of this case, and from the outcome, there are some matters which seem to me worthy of your consideration.

In going over the records of the case, I was struck by the fact that there was no adequate information in your records concerning the nature (or your interpretation of the nature) of your patient's illness at the time he first presented himself with some type of complaint. On the other hand, whether at this time or a bit later there was the suggestion, both in your notes and the comments of the nurse, that the man thought he had lead poisoning. Perhaps he was a malingerer in the first place, or at least a deliberate trouble maker, but in any case, he appeared to be heading toward a claim of lead poisoning. There was no evidence that I could find in the record, that his illness was taken very seriously. Instead, he was put to the necessity (if he were to obtain treatment for his illness, or serious consideration of his potential claim of occupational illness) of going to a private physician.

We do not find evidence of a thoroughgoing medical investigation of the man until some months later, when Dr. Borson was his physician. The investigation at this time appears, from the record, to have been thorough, and it reveals information which resulted not implausibly in the diagnosis of lead poisoning.

Now let me be quite clear. The grounds for the diagnosis at this time was not convincing to me, for several reasons, but chiefly because Dr. Borson did not see this man at the onset or at the presumptive height of the illness. A definitive differential diagnosis could not be made, in my view of this specific case, at that time. (The neurological lesion in the lower extremity, of which much was made by several physicians, could hardly have been an expression of lead intoxication. Nothing about it was in any way typical, but none of the physicians concerned seem to have known this. Lead poisoning almost never involves the lower extremity of the adult without affecting the upper. The muscular lesion is always - I believe without any exception - an involvement of the extensor muscles. I doubt that it is ever seen in the case of an individual whose length of exposure was as brief as this man's. I don't believe any of these men has ever seen the neuro-muscular lesion of lead poisoning.) But neither could it be excluded. Dr. Borson was compelled to take his information about the onset of the disease from the patient. He accepted this for more than it was worth, I think. But then he

found evidence - quite satisfactory evidence, at least for the record - that the man had absorbed a highly significant amount of lead. He, therefore, put 2 and 2 together and obtained somewhat more than 4. Nevertheless, he had the making of a plausible case. In my view, in the large proportion of compensation actions, this claimant would be given the benefit of any doubt that might exist, as between physicians who have disagreed, and would be given compensation. I still do not know whether or not this man had lead poisoning. Several features of the case suggest that he had; others argue that he had not. But the fact is that he had absorbed a dangerous quantity of lead while at work, according to data supplied by your people. He had (or claimed he had) symptoms that may have been due to lead. And there you are. My doubt that he had lead poisoning springs more from the man's bad personal behavior, than from facts elicited by appropriate clinical procedures. Such doubt is not an appropriate medical consideration in relation to lead poisoning.

Here, that is, in the last two sentences, above, is the crux of the matter. You should have supplied the clinical information, at the right time - that is, at the onset of the illness or claim of illness - that would enable me or, more relevantly, an adjudicator to reach a sound conclusion in the event of an action in law.

Incidentally, I obtained the impression, from the records, that neither you nor the physicians who dealt with this case on your arrangement, believed that this man had absorbed a dangerous quantity of lead. I gathered that you felt sure that when a man with the concentration of lead of 0.08 or 0.09 mg. (80 or 90 micrograms) per 100 grams of whole blood, had been removed from further exposure, that was the certain end of the risk. This unfortunately is untrue. When a man reaches the level of 80 micrograms per 100 grams, he is in danger and may become ill at any time. If he is removed promptly, the concentration subsides and he is out of danger shortly. At 90 micrograms, the danger is greater, but the problem is that he is not always, or even frequently, ill, if this is his first experience in a slightly hazardous environment. Some one of the physicians made the absurd statement that to be diagnostic the level had to be 100 micrograms or more. Here again, the fact is that no level of lead absorption is diagnostic of illness. The diagnosis is made on the sound interpretation of the clinical evidence, and on that alone. The analytical findings merely demonstrate that a potentially hazardous degree of absorption either has or has not occurred. The critical point, below which, in our experience, lead poisoning does not occur, is 80 micrograms. Above this level cases occur, and their frequency and severity mount as the level ascends. I have never seen neuropathy except at the higher levels, i.e., around 150 micrograms or more.

The clinical evidence of lead intoxication in industry is largely confined to characteristic symptoms - and believe me the sequence here is highly characteristic,* with only rare exceptions - and to certain physical, anatomical, and biochemical signs. (You mentioned the "lead line," seeming to suggest that it is somehow diagnostic. The truth is that all this means is that lead has been absorbed in greater than normal quantities, but not necessarily dangerous quantities. You already know much more than the "lead line" can tell you by the analysis of the blood.) I shall not go into the symptomatic picture at this time, nor discuss the physical findings. I'll send you a booklet which describes these, and I'll mark the parts that are relevant. (This booklet is out of date in a number of

* This man's symptoms and their sequence were not at all typical, as he described them.

respects, and should not be regarded as the last word in either diagnosis or therapy.) There are certain hematological changes, both histological and chemical. The histological changes (stippling, etc.) are well known but often misinterpreted. They are discussed in the booklet. The biochemical changes are modern in their development, and are among the most useful diagnostic signs, especially and fortunately in the early stage of intoxication. While we do not know all we need to know about them, we do know that lead inhibits the synthesis of hemoglobin (or haem), thereby leading to a build up of delta-amino-levulinic acid (and perhaps certain other intermediate substances) and of coproporphyrin III. When, in an employee, known previously to be in a normal state in this regard, these phenomena develop in association with a significant elevation of the lead in the urine, or more precisely in the blood, the probabilities are that the employee is actually suffering (even if he doesn't know it) from lead intoxication. For my purposes, when the clinical findings are weighed carefully along with sufficiently precise analytical findings (as specified above), a diagnosis of lead poisoning can be made or excluded, with satisfactory clinical precision and with adequate medico-legal certainty. But this has to be done at the onset of illness or complaint, and it has to be done with care, objectivity, and precision. The industrial physician is the person to do it, and he is concerned primarily with his responsibility to the employee as patient, rather than to the employer with economic liability. If the physician is not certain of his ability to do this, he should learn what he needs to know. If he hasn't time to do it, he should have a consultant at his side who can.

And one more thing should be said. We have continued to hear a lot of nonsense to the effect that the industrial physician should not study his patients with the idea of making definitive diagnoses. In the dangerous trades it is not enough to say that an employee does not have an occupational disease. One must establish what it is from which he is suffering, if it is not, say, lead poisoning or mercury poisoning, or whatnot. We are supposed to be the most skillful of diagnosticians in the special fields that are our daily work. If we do not and cannot achieve such skill, we are in the wrong field. Medical administration is not enough, for it is not medical competence; it is rather medical laziness or <u>laissez faire</u>.

I am being completely frank and severe in expressing the foregoing views in both procedure and policy. Moreover, I am not accusing you of any fault, since I am not sufficiently familiar with your purposes and activities. These are the principles to which I adhere in teaching and practice. They are not beyond the grasp of our graduate physician students; nor are they beyond the competence of our better industrial physicians. What has happened, however, is that many of our fellow practitioners have accepted a definition of their role in industry, that has been created by industrial management rather than by the physician. They have also accepted a medical philosophy within the industrial organization that has derived from industrial objectives, rather than medical (professional) purposes. In all professional sincerity, I must maintain that the relationships of the industrial physician to the employees to whom he is responsible for advice and guidance in all of the medical and hygienic matters that relate to their employment, is precisely the same in principle, as that of the private physician to his patients. We stand between the employee and his employer and on his side in relation to the hazards of his work, so as to urge his employer to protect

him by suitable environmental facilities, and to protect him, ourselves, in any manner that we can; and if we fail, as we do sometimes, we help him obtain some redress for his injury in the form of compensation, as required by law but also in the best medical care we can command out of professional ethics.

I speak of the above matters not so much to preach, as to point out, that only through such relationship between physician and employee-patient, is it possible through mutual confidence, to interpret and act fairly on symptomatic evidence of illness. I was not born yesterday, and I know that the physician in industry is suspected of being partisan (against the employee); that the conflict between management and unionized employees is extremely difficult to escape, and also that cynicism among men in all walks of life in our time is widespread. But I've been a physician in industry for a long time, and I have found it possible often (not always) to maintain satisfactory relationships with ordinary men, and almost always to be regarded, primarily, as an honest physician.

Let me say, by way of concluding this letter, that it was a pleasure to meet you, that Mr. MacLean in the offices of Hanna and Brophy seemed to me to be a very sound and decent man. If I can be of further assistance to you, I shall be pleased, and I hope we shall meet again.

Cordially yours,

Robert A. Kehoe, M.D.
Professor Emeritus of
Occupational Medicine

RAK:wp