August 1, 1941.

Dr. David C. Straus,
Department of Labor,
Division of Factory Inspection,
205 W. Wacker Drive,
Chicago, Ill.

Dear Dr. Straus:

In response to your letter of July 25, I hasten to make reply in order to correct any doubt which may be in your mind as to the meaning of my previous letter. What I said therein concerning the danger of confusing the issues in the diagnosis of lead poisoning was not directed at you personally, but rather at the multiplicity of articles which are appearing on this subject. There are a number of aspects to the problem that can only be solved by intensive and extensive investigation and at present the discussion of these problems does not lead us very far. I am glad you are dealing with a number of these matters in a rather conservative manner, and believe me, I shall be very happy to be of any further assistance to you in your efforts, but I have been very slow in publishing data which we have which I know should be in print. I hope to be able to do this soon, for that, of course, is the best way to help in this situation.

With kindest regards,

Cordially yours,

Robert A. Kehoe, M. D.

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STATE OF ILLINOIS
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DEPARTMENT OF LABOR
DIVISION OF FACTORY INSPECTION
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JOHN M. FALASZ, CHIEF

J. T. FAUST
CHIEF DEPUTY

July 25, 1941.

Robert A. Kehoe, M.D.
University of Cincinnati
College of Medicine
Cincinnati, Ohio.

Dear Doctor Kehoe:

Thank you very much for your letter of July 19th., which just reached me yesterday, and for the several reprints, which arrived a few days ago.

I regret that you have not the time to read my article before it is submitted for publication because I would value any suggestions that you might have to make. I had no idea of burdening you with editing it.

Your letter interested me very much especially because the suggestions you have made are in entire agreement with what I have written. I have first explained just what is meant by lead absorption, quoting verbatim(in quotation marks) much that you have published concerning urine levels of lead, blood levels of lead, and stippled cell counts. In regard to the latter I have quoted from your article in The Journal of Medicine, December 1935, and have pointed out that"the findings in normal persons, with no lead exposure, overlap those obtained in actual cases of lead intoxication". Although I have stated the recent attempts to set certain standards in reference to stippling, I have stressed the fact that stippling when due to lead exposure, merely shows lead absorption, and that in order to establish a diagnosis of lead intoxication, the individual must have symptoms and objective clinical findings"characteristic of what is known of the clinical picture of lead poisoning." I have stressed the fact that none of the laboratory findings, in themselves, prove the presence of lead poisoning, but merely are evidences of lead absorption.

I am sorry that you "are a little fearful" about any statements I may make. During my more than thirty years of activity on the faculty of Rush Medical College, the last twenty of which have been in a professorial rank, and having published more than fifty papers during this period, no statement that I have made at medical meetings, or that I have published, has ever been challenged. I have always been extremely careful of any statements I have made.

I want you to know how much I appreciated both your letter and the recent reprints and value the information they contain.

With kindest personal regards,

KE 0002457

Cordially yours

July 19, 1941.

Dr. David C. Straus, Director,
Industrial Hygiene Unit,
Department of Labor,
Division of Factory Inspection,
205 W. Wacker Drive,
Chicago, Ill.

Dear Dr. Strauss:

I am somewhat tardy in replying to your letter of June 27. I set it aside to look up some of the information you requested, but I have not had time to obtain the information, and I realize now that I shall not have the time to do it before I go on my vacation. Accordingly, without resort to the data, I shall answer your questions as well as I can. Before doing so, let me say, however, that I shall probably not have time to look over the manuscript of your article on the diagnosis of lead poisoning before its publication. I would be glad to do it if I had the time, but actually I have not had time to edit my own writing, and I am afraid I can not attempt others.

The type of lead poisoning which did not give rise to stippling by reason of its overwhelming character is a bit unusual. I have seen a few cases of lead poisoning in children brought on by the ingestion of large quantities of lead in one or two doses in which no significant blood changes were seen. Also, I described a series of cases of tetraethyl lead poisoning in J.A.M.A., in 1925, which were unaccompanied by blood changes. These cases may be somewhat different from the others, in that the initial distribution of lead in the body is somewhat different, and, presumably, the bone marrow is spared from injury or stimulation to some degree. I have never seen cases of lead poisoning resulting from industrial exposure to ordinary lead compounds, without stippling. I doubt if such cases occur. There is no relationship, therefore, between cases of this type and lead concentration in the atmosphere.

There is no relationship between cases of the type I have indicated and such lesions as paralysis, encephalopathy, or other characteristic lesions. In order to be in the category mentioned by me, acute poisoning would have to come on very promptly after a massive exposure. Paralysis does not come on in this fashion, nor does encephalopathy, except in the case of exposure to tetraethyl lead. On the other hand, as you undoubtedly know, paralysis can be pre-

sent as a sequel of lead poisoning long after the lead is gone from the body. Under these circumstances, one would not expect to find stippling, or any other clinical evidence of lead absorption.

I am not quite sure what you mean in your question concerning the resemblance of cerebral symptoms of lead intoxication to those of brain tumor. I should think it rather obvious that brain tumor has to be excluded by differential diagnosis in any type of encephalopathy.

Finally, I think I should say to you that as a consequence of noting the questions you have asked, I am a little fearful that you will be making some statements in your article which may be regarded as somewhat dogmatic on the one hand, and controversial on the other. I hope you will be careful not to do this. From the point of view of compensation and medico-legal cases, this field is already muddy enough. What it needs is clarification and simplification, rather than claim, counter-claim, and controversy. An attempt is being made at the present time to set certain standards with reference to stippling, the lead concentrations in excreta, blood, tissues, etcetera, and these are all being pushed far beyond their proper province. The diagnosis of lead poisoning must be made primarily from clinical observations. The man in question must be sick, and he must have a sickness which is characteristic of what is known of the clinical picture of lead poisoning. All sorts of vague complaints are being regarded in these days as lead poisoning, and are confirmed in the judgment of the examiner by evidence which is not valid. In general, the laboratory evidence is useful in only one way. That is to say, it demonstrates the magnitude of the lead exposure in relative terms, if it is obtained in the right way, and at the right time. In this evidence, blood changes have been exalted far beyond their significance. None of the blood changes seen in lead intoxication are specific, and therefore, no definite level of stippling or reticulocytosis can be set as diagnostic. Moreover, the findings on normal persons with no lead exposure overlap those obtained in actual cases of lead intoxication. For this reason, this type of evidence must be considered with the utmost conservatism and judgment. There are only two things about this which it is safe to say in any categoric fashion:

1. That active symptoms of lead intoxication, except for the rarest cases, are associated with existence of microscopic blood changes, and therefore, the absence of such blood changes may be accepted as substantial proof that the intoxication is not due to the lead.

2. The onset of lead poisoning is usually assocated with a considerable increase in the stippling of the individual above his previous normal level.

The latter statement means, of course, that the absolute level of the stippling of an individual is not necessarily related to his lead absorption.

I trust that what I have said will give you some help in the preparation of your article. I am sending you under separate cover several articles which may be of further use to you. The article "Lead Absorption versus Lead Poisoning" has not been published, and therefore, will be of little use to you in documenting your article, and inasmuch as I do not have mimeographed copies of the article, I am not in a position to send it to you.

Cordially yours,

Robert A. Kehoe, M. D.

RAK ef

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J. T. FAUST
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June 27, 1941.

Dr. Robert A. Kehoe
Kettering Laboratory
College of Medicine
Cincinnati, Ohio.

Dear Doctor Kehoe:

Under separate cover I an sending you a copy of my recent article entitled "Diagnosis of Occupational Diseases by the General Practitioner", which appeared in Illinois Medical Journal, March, 1941, as per your request.

At present I am completing the second article of the series. This one is on the Diagnosis of Lead Poisoning. In preparing this second article I have quoted much of your work and many of your articles, which I feel are the outstanding contributions in the field. I should like to have you look over my manuscript and make any suggestions you feel would be helpful, before I submit it to the publisher. Would you care to do that for me?

I would greatly appreciate receiving a copy of your article,"Lead Absorption versus Lead Poisoning", which I believe is as yet unpublished, and any other of your recent articles which you may not already have sent me.

What are some of the shortest exposures you have seen that were followed by definite lead poisoning, the type you refer to which are so overwhelming that the patient does not show stippling of the erythrocytes? In such cases, what has been the lead concentration in the air?

Looking forward to your reply at your early convenience, I am, with kind personal regards,

Sincerely yours

David C. Straus, M.D.

David C. Straus, M.D.,Director
Industrial Hygiene Unit.

P.S. I would appreciate the following details on the cases with no stippling- (a) the number of such cases, (b) the number with palsy, (c) the number with encephalopathy, and of these the number presenting symptoms resembling those of brain tumor, and finally, the outcome of the members of this group and the