October 9, 1962

Dr. Kieffer Davis
Phillips Petroleum Company
Bartlesville
Oklahoma

Dear Kieffer:

I enclose herewith a somewhat hastily written (but not hastily considered) memorandum of my interpretation of the case of your Mr. [redacted]

I may not have included every small point that could have been made, but I have presented a fairly complete clinical analysis of the case. I have been influenced somewhat, in the matter of my recommendations, by the attitude which you expressed as the Medical Director of Phillips Petroleum Company. I tend as you do, to lean toward a kindly and generous disposition of such cases. In this instance your employee has been misled by a physician who appears generally to be competent, but who knows nothing about lead poisoning (except, of course, that there is such a disease). Your Company is at a disadvantage in dealing with such a situation. However, in my view, you should explain the matter to the man, after dealing with his problem as generously and effectively as possible, and then see to it that a watch (clinical supervision) is maintained of his future course.

This case is typical of a fair number that come to my attention of which the prominent feature is that of mishandling at the outset. The only means of heading these off lies in their initial handling by experienced and knowledgeable physicians in industry, who know where and how to obtain the right information promptly. It is important to recognize in this and in many other instances of alleged occupational illness, that the diagnosis is not made by a sleight-of-hand trick in a laboratory, but by the proper use of a laboratory by a physician consultant.

Just to save time for both of us, I am sending a bill to cover the cost of this professional service.

Sincerely yours,

RAK:ss

Robert A. Kehoe, M.D.

Enclosure: 4 copies of Memorandum.
Bill of costs.

N 5284

Review and Interpretation of
the Records in the Case of
[redacted]
an Employee of Phillips Petroleum Company

The review of the available information has led to a feeling of deep dissatisfaction, in that the diagnosis arrived at was almost certainly incorrect, while no other more apt diagnosis can be substantiated.

With respect to the diagnosis that was made - that of lead intoxication - not a single clinical criterion for such a diagnosis was fulfilled. It is to be remembered and stressed, that the diagnosis of lead poisoning is made on clinical grounds i.e., on the recognition of a characteristic syndrome. No such syndrome has been observed or described in this case.

1. There was no history of a significant degree of occupational - or other - exposure to lead. The opportunities for the absorption of lead as described were trifling and in the quantitative sense negligible. The lead-containing materials handled by this man are incapable of being absorbed through the skin; exposure by inhalation, while hinted at, was purely theoretical and of no practical significance: the ingestion of lead, because of uncleanly habits, might have been of some significance if it had occurred constantly, i.e., regularly, but it was not, and so must be dismissed as of highly improbable significance.

2. The symptoms and physical signs were certainly not characteristic of lead poisoning, but were vague, unconvincing and inconstant. There was no colic suggestive of lead colic, no suggestive digestive disturbance, but rather a vague type of indigestion that had occurred off and on for years, without definitive or acute episodic onset. The neurological picture was equally uncertain in its type, origin and

persistence. There was no extensor paralysis of the upper extremities - which is almost the only striking characteristic of plumbism affecting the nervous system. There was in fact no tenable diagnosis, no clinical pattern that, of itself, provided a diagnosis. There were simply abnormalities, mostly functional, that did not lend themselves, at that time, to a definite diagnosis.

3. The findings of the laboratory, generally speaking, were not suggestive of lead poisoning. A moderate degree of anemia, without a noteworthy degree of basophilic granulation, and with no abnormalities of the porphyrin metabolism, can hardly give rise to the likelihood of lead poisoning.

The single finding which resulted in the abandonment of further questioning and further clinical investigation was that of the

apparent presence, in a "small" specimen of urine, of a relatively high concentration of lead. Such a finding is never a justification for the diagnosis of lead poisoning, and in this instance, associated as this finding is, with no description of the manner of sampling the urine and with no indication of the clinical or technical competence of the analyst, this single result cannot be taken seriously. (It seems likely that the physician in charge of the clinical investigation of Mr. Pierce's illness was generally competent. It is equally apparent, from the record, that he had no familiarity with the clinical problem of lead poisoning. This is not a serious criticism of the physician, but it is a fundamental issue in connection with both the diagnosis and the therapy, which were not dealt with properly. The analysis of one sample of urine is utterly inadequate in such a case, for several reasons; the blood should have been analysed. The therapy of lead poisoning by the administration of

per 100 grams (Report of August 21 by letter from R. D. Haines, M. D. of the Scott-White Clinic.) There is no indication, in the report, of the analytical method, or of the "normal" base line values of this laboratory. One cannot be certain, therefore, of the comparative significance of the findings. If, however, these results had come from the Kettering Laboratory, the finding in the blood is highly significant. This is a "low normal" finding, by our standards, and one which can hardly be obtained in a man who only seven months earlier had had enough lead in his body to cause lead intoxication. It might be argued that the therapy would have reduced the lead in the body to negligible proportions; this, however, is untrue. Even if the therapy had been applied adequately, this would not have occurred so promptly, since, during such therapy, lead is removed from the soft tissues without influencing the skeletal lead. Little is accomplished

Edathamil (Disodium-Calcium Versenate) orally, is generally recognized to be an inadequate, if not dangerous, procedure, in that it may contribute to the absorption of lead from the alimentary tract). Once there was a suspicion that this man had absorbed an unusual quantity of lead (despite the negative occupational history) the facts should have been substantiated by the analysis of at least one sample of blood, and the further analysis of the urine.

The further findings in the urine (reported by Jack Neal) contribute little to the solution of the problem because of their timing. Here again the responsibility of the clinical analyst is that of obtaining definitive evidence if such is available. This was not done. It was not until August that there is a report of a satisfactory analytical investigation of the blood and urine, at which time the concentration of lead in the urine was 0.03 mg. per liter, and that in the blood was 0.019 mg.

toward "deleading" by the oral administration of the chelating agent Disodium-Calcium Versenate.

## Summary.

The foregoing discussion indicates the weakness of the diagnosis of lead poisoning from the clinical and physiological viewpoints. It does not, however, dispose of the practical problem presented by the following facts:

1. A diagnosis of lead poisoning has been made, and while it has not, and cannot now be substantiated, it is a matter of record.

2. No other plausible or convincing diagnosis has been made. The making and substantiation of the correct diagnosis will require further clinical investigation and the determination of the subsequent course of this man's illness. It is improbable that it has run its course; it is highly probable that it will develop further or continue as a type of persistent, or perhaps slowly progressing disability. This is not a well man, but a chronically ill man, who did not have lead poisoning, in all likelihood, and who, therefore, cannot be expected to recover from lead poisoning and thus overcome his illness.

3. It is probably impossible, at this time, certainly, to disprove the original diagnosis. Only time can be expected to clarify the diagnostic issue.

## Recommendation.

The best outcome of this case, from the aspect of the welfare of a deserving employee (if he is deserving) of Phillips Petroleum Corporation, is to resolve the economic issues in the simplest possible manner, and to

undertake to employ this man in a productive job. This can be done by a presentation of the facts, without contesting the awarding of compensation, on the basis that the sequence of events and facts have made it impossible to dispel the doubt as to the diagnosis. Such a disposition of the present issue will make it possible to follow the future course of this man, while giving him every hope of recovery and rehabilitation.

If this were a case involving a dangerous and costly precedent, it should be contested to the ultimate end. Under present circumstances, and in view of the purposes and policies of Phillips Petroleum Company in relation to its employees, a gentler procedure seems to be indicated.

Inasmuch as the issue of occupational lead poisoning has been raised, it seems likely that similar cases will be presented. It would be advisable, therefore, if and when a case of illness occurs which offers this possibility in the judgment of Phillips medical staff, that samples of blood and urine be obtained for analysis at once, and that these be handled and analysed in such a manner, under the responsibility of the Medical Department, that no doubt can be entertained with respect to the significance of the occupational exposure to lead. It is likely that, after the lapse of some time, this situation will have died a natural death, if it be ascertained that no significant type of occupational exposure to lead exists.

Robert A. Kehoe, M. D. Director.

From The Kettering Laboratory in the Department of Preventive Medicine and Industrial Health, College of Medicine, University of Cincinnati.

THE KETTERING LABORATORY
COLLEGE OF MEDICINE
EDEN AND BETHESDA AVENUES
CINCINNATI 19, OHIO

October 9, 1962

TO: Phillips Petroleum Company
Bartlesville
Oklahoma

Attention: Dr. Kieffer Davis.

FOR: Report [redacted]ation of the case
of Mr. [redacted] by Dr. Robert A. Kehoe.

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