

June 29, 1948

Mr. R. E. Wright,
The Electric Storage Battery Company,
Allegheny Av. and 19th Street,
Philadelphia 32, Pennsylvania.

Dear Mr. Wright:

I am sending you herewith two copies of a memorandum on the general situation of the two plants visited some days ago at your request.

I have undertaken to deal in principles and not in details, in the feeling that consideration may be given to the details at an appropriate time if you and your associates so desire. I have been quite direct in my criticisms and in my expression of viewpoint, since I consider that the utmost frankness is necessary, and that nothing less would be acceptable. If I am mistaken in any respects, I shall expect you to recognize that my opportunities for a study of your situation have been brief and inadequate. Indeed you will recognize that my principal recommendation relates to a careful program of fact finding, since no sensible recommendations can be made on any other basis.

I should like to tell you that I am very much impressed with the attitude and interest of Doctor Lanahan. I believe you are very fortunate in having a man with his viewpoint and qualifications. I trust that you will cherish him and implement his efforts. I should be very glad to have him visit us at a mutually convenient time, and I strongly recommend such a visit on his part be authorized for a period which will make it possible for him to make a careful study of the material which we have to offer him. I should feel a week spent in this manner would be highly profitable for him and for your company. Following such a period of study, the ground would be laid for any continuing consulting relationship that might appear to be desirable. In this connection, I feel that you would be much better off if you could obtain advice and help nearer at hand. I am not prepared to tell you that Dr. Heinrich Brieger is adequately equipped to give you such assistance. However, I suspect that this is the case, and I should feel that after a visit to us, Doctor Lanahan would be fully prepared to arrive at his own conclusions on this score. It is disadvantageous to you, as you well know, to have to send materials as far as Cincinnati for analysis, and if this work as well as their hygienic assistance could be provided at the Jefferson Medical School, it would be advantageous to you, and I am sure, helpful to Brieger and his associates. For our part, we are not trying to get out from under, but we have plenty to do, and our efforts are properly devoted, primarily, to helping people help themselves. Such actual service to industry as we may give, can better be devoted to Cincinnati industry, for obvious reasons.

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It was a pleasure to visit your plant and your people, and I had the satisfaction of feeling that it was as useful as well as a pleasurable experience. I wish to make it as useful as possible, and therefore if you care to raise any questions, or if you wish me to amplify my comments in any particulars, please do not hesitate to let me know.

Cordially yours,

Robert A. Kehoe, M. D.

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MEMORANDUM ON VISIT TO THE ALLEGHENY AVENUE AND
CRESCENTVILLE PLANTS OF THE ELECTRIC STORAGE
BATTERY COMPANY (PHILADELPHIA)

These plants were visited on June 10, 1948 in the company of the physicians, the industrial hygiene engineer, and operating personnel, and afterward (at lunch and later) some discussions were entered into with executives of the company including counsel. A hurried survey of this type supplemented by information volunteered and obtained in response to queries cannot be regarded as an adequate basis for a full understanding of the many-sided problems associated with these industrial operations. A careful systematic and critical study of conditions would be required in order to arrive at sound conclusions on which detailed recommendations could be made. Nevertheless certain facts are evident from the observations made at the time of this visit, and from the analyses of the urine and blood of certain men carried out at the Kettering Laboratory from time to time at the request of physicians of the Company, ~~and~~ certain opinions, based on these facts, are offered for consideration.

It is apparent that the lead exposure in these plants is not being controlled adequately. The evidence for this lies in the fact, readily established by ordinary observation, that a number of the areas of the plant are grossly contaminated with dust, and, at least one area, with fume from molten metal. Further and quite obvious and significant evidence may be found in the very poor quality of the housekeeping and in the lack of caution and discipline on the part of workmen in dusty areas in the matter of use of respirators. The latter are worn intermittently, without necessary relation to intermittency in the severity of the exposure, or they are worn about the neck instead of over the nose, or they are omitted entirely. That

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men have serious significance is proved by the occurrence of hazardous lead absorption among the men (as shown^{by} a few analyses of blood and urine of employees) and by the cases of lead intoxication that have been found within recent months.

It is of great practical importance, in connection with this situation, that the state of the plant population in the matter of the actual hazard to which individuals and occupational groups are subjected is not known, and cannot be known by the means being employed at present for this purpose. One does not know what to anticipate as to the incidence of poisoning, nor where to expect cases to occur, except by means which are altogether too crude to be satisfactory. The air analyses may be precise, and for aught one knows they may be sufficiently comprehensive to delineate the order of magnitude of the exposure incident to various operations. However, the variations among the men, with respect to their use of respirators, introduce completely unpredictable factors into the estimation of the actual respiratory exposure. Moreover, the results of the air analyses are not correlated with the results of observations made on the workmen. Indeed the data of air analyses seem not to be regarded as medical information. This lack of the coördination and use of all the available information, and the lack of critical examination of all such assembled results, is evidence of a very serious failure in the composite program and viewpoint of the organization in matters of industrial health. Safety and health in an industry, and especially in an hazardous industry, is a product of an intelligent, skilled, highly coördinated and integrated effort to study men in their working environment. The methods applied in the study of the men differ in detail from those applied to the study of the environment, but these are only parts of one and the same approach. If they do not go along

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together with substantially equivalent degrees of precision, and if the information of the one type is not critically balanced against the other, neither serves a fully useful purpose. It is precisely for this reason that the methods currently employed in many of the lead trades in carrying out one or the other and sometimes both of these activities, are ridden with prejudice, misconception, inaccuracy and futility. It is high time that some of the older and more backward of the lead industries, (for most of the older groups are definitely backward), should awaken to their archaic status in matters of industrial hygiene, and put into effect the coordinated, properly organized and adequately implemented techniques that are now available. This matter is stressed, for, unless the viewpoint is changed and implemented by a radical change in organizational procedure (not necessarily organizational structure) whereby all of the forces of industrial hygiene work together, nothing worthy of note will be accomplished. This is a highly expert technical problem, just as is production. The task of obtaining the necessary facts and of assembling these in such manner as to lead inevitably to remedial measures and to the critical examination of remedial measures before and after they are applied, is a composite technical job requiring the expert skill of the physician on the one hand and the experienced and critical judgment of the industrial hygiene engineer on the other, but with the two types of information set beside each other as clearly and as completely as possible. Accomplishment of the task requires the support of management in implementing decisions reasonably and evidentially arrived at, and the corresponding cooperation of the workmen, who must understand what they are being asked to do for themselves and why they are being^{so} asked. The housekeeper must be part of the team, since effective and technically expert housekeeping must be maintained at all times. The responsibility

for the performance and coördination of the technical work of industrial hygiene, including the housekeeping, should be put squarely on the shoulders of the people who can do this work, and if, when their efforts are properly backed and implemented, they are unable to achieve the desired goal of controlling the occupational hazard, they should be supplanted by persons who can. As things now exist, the responsibility for decisions on technical matters appear to be shared by too many people whose opinions on such matters, if not worthless, are not sufficiently well grounded. Thus the choice of the medical techniques to be applied to the study and professional handling of personnel is the responsibility of the doctor, and it should not be made by anyone else, except insofar as the basic social and economic policy of the industry, as established by its top executives, may put metes and bounds upon such activities. The adoption of this medical and hygienic philosophy will save much of the wear and tear of the day's work, especially in those matters in which decisive action is required of persons who, themselves, have not the means of making intelligent decisions on technique and procedure.

If the foregoing comments are not entirely just in relation to the specific situation under consideration, they are at least pertinent in some respects, and they can be taken where they apply and discarded where they do not. In principle, they represent advice based on more than twenty years of intensive study of the lead trades, and they seem fundamental to the problem of why, when all the techniques for effective control of the hazards of the lead trades are available, they are applied only rarely in American industry. In the specific instance, the impressions of this consultant, gained by casual and not obviously leading questions throughout a day's visit, are to the effect that the entire procedure of industrial health activities in

this organization require wholesale overhauling, and that a first-class and comprehensive survey of the environmental conditions in every part of these plants, as well as a comprehensive clinical study of the physical and hygienic status of the employees, are absolutely imperative. The latter should be accompanied by the gathering of ample data on the extent of their absorption of lead. The current activities, except for minor but notable exceptions, are inept in their concept, ineffectual in their practical application, and archaic in terms of their achievements. That, for example, the now discredited technique, (monthly counts of stippled erythrocytes), by which the doctor is supposed to obtain information on the extent of the lead exposure of a workman, is prescribed and limited in an agreement between management and workmen, is an expression of a viewpoint and policy that fail utterly to recognize the professional character and the technical nature of the doctor's work. That this has an historical background that necessitates great care and patience in its correction is admitted. Nevertheless it has come about in large part, if not wholly, out of reprehensible medical practices in the industry. If the doctor cannot earn and deserve the confidence of the workmen that his efforts on their behalf are fairly and competently executed, such agreements are inevitable. If the medical work is conducted in true professional spirit and in keeping with the best knowledge and skill available, such agreements are unnecessary and indeed are absurd. Medical care and clinical study in the hazardous trades are continuous evolutionary processes that are learned and modified by experience, by critical consideration of their short-comings and achievements, and by the results of medical research. It is our impression, that the present medical and hygienic staff is conscious of its needs and opportunities, and that it can meet the challenge of the present situation, if it is

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given backing, authority, and the tools required for the purpose. In this connection it is believed that Doctor Lanahan would profit greatly by an opportunity to study the techniques and results of an adequate regimen of hygienic control. This could be achieved in a minimum of time by a visit on his part to the Kettering Laboratory and perhaps, also, to an industrial plant at Baton Rouge, Louisiana, in which the measures of industrial hygiene have evolved out of a critical, investigative choice of the clinical, physiological and environmental techniques that yield an effective control of lead hazards that are much more serious, potentially, than those of the storage battery industry. We hereby invite him to make such a visit at a mutually convenient time.

The Crescentville plant, so far as battery manufacture is concerned, is obviously better, from the aspect of design and present control of lead exposure of its workmen, than is the older and larger Allegheny Avenue plant. However, on this plant site, the small structure housing what is presumed to be a booster fan connected to the smelter stack, is (or was on the day of this visit) the source of a very large volume of uncontrolled fume. Apparently the fan was not operating. The smelter building for the most part could only be described as incredibly dirty, poorly ventilated and generally lacking in any evidence of housekeeping. Smelters are apt to appear disorderly, but it was all too apparent that this smelter had not had the benefit of careful planning from the aspect of industrial hygiene in the first instance, or of good maintenance for hygienic purposes, since. This condition was in striking contrast to the battery manufacturing plant, proper, and thereby it gave evidence that a hygienic program is not carried out consistently and effectively. In retrospect, it is this lack of a concerted and well organized effort, this evidence that

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what is being accomplished generally is not in keeping with what seems to be regarded as good practice in certain parts of both plants, that is so strongly indicative of the weaknesses of the present regimen of industrial hygiene in this industry. There seems little doubt that some responsible and authoritative direction of these activities, as a continual and unrelenting effort, implemented by executive mandate and support, and effectuated by detailed inspection of all premises, critical supervision of control measures, and instruction of foremen and workmen, is urgently needed in this organization.

Signed:

Robert A. Kehoe
Robert A. Kehoe, M. D.

June 28, 1948

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