February 8, 1940

Dr. C. F. Yeager
Remington Arms Company Inc.
Bridgeport, Connecticut

Dear Doctor Yeager:-

I have been very dilatory in replying to your letter of January 25th by reason of the pressure of a great deal of work. We have received the samples which you sent to us, and in due time they will be analyzed. However inasmuch as we have a great deal of analytical work ahead of us, they will be worked in as circumstances will permit and we shall not have the results for you as promptly as I should wish.

As to the treatment which we have used in cases of lead poisoning, I can cover the situation very briefly by saying that we know of no successful specific treatment. We treat our patients symptomatically. There are just three things which I am sure it is very useful to do. First the complete elimination of all exposure. Second the maintenance of adequate alimentary evacuation in order to prevent the re-absorption of lead. Within the limits which are feasible, the more rapid the emptying time, the more complete will be the elimination of lead and the less will be the opportunity for re-absorption from the alimentary tract. The third is the promotion of the ingestion of an adequate diet. We have found that if we can get our patients to eating well, their appetites improve with the eating and they recover fairly promptly.

The only further suggestion which I can make is that adequate fluids should be given to maintain elimination at as high a level as possible, and a salt balance should be maintained so far as it is possible. I am very dubious of the value of large doses of salt of any kind except for the cathartic effect. I am convinced that any great distortion of the salt balance in the body, including that of calcium, is likely to be disadvantageous. Therefore large quantities of calcium salts are probably contra-indicated, although we have no certain evidence that this is true.

Among some common symptoms which have to be treated are those of colic, constipation, and in some instances, paralytic lesions. The colic may be relieved, when sever, by intravenous calcium chloride and calcium gluconate. In some instances morphine has been used for this purpose, but we should prefer not to use morphine in any case. If sedatives are required, we use the barbituric acid preparations. If the colic is relieved by calcium chloride, it is usually prevented from recurring by the maintenance of alimentary evacuation. For the constipation I prefer the saline cathartics, especially magnesium sulphate in moderate doses. The neuritic lesions are treated like any other neuritic lesion, although I should be disposed, for general theoretical reasons, to use rather large doses of thiamin in the hope of offsetting the worst effects of the paralysis as speedily as possible. Apparently very dramatic results have been obtained by this means in a number of instances of non-specific neuritis. It is just conceivable that the same mechanisms are involved in lead and arsenic paralyses as are concerned in the production of beri-beri. I have no official brief for this hypothesis, but it is at least plausible and justifies therapeutic study.

Most of the recent discussion in the literature has had to do with the supposedly specific role of calcium or phosphorus, or both, on the distribution of lead in the body. I am not surprised that you are confused at the studies in the literature on this point. There has been much to much supposition and much too little precise experimental work on this point. I hope we shall soon have some sound basis for an opinion on this aspect of the matter.

With kindest personal regards, I am

Sincerely yours,

RAK:is

Robert A. Kehoe, M.D.