

LABORATORY OF POLAROGRAPHIC ANALYSIS

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CHICAGO, ILLINOIS

PHONE:
STEWART 2022

January 21, 1941

HOY A. CRANSTON
DIRECTOR

Robert A. Kehoe, M. D.
Kettering Laboratory of Applied Physiology,
Cincinnati, Ohio.

Dear Dr. Kehoe:

Since the last check of urinary lead which you were so kind as to do, and which, if you remember showed rather poor agreement, Dr. Gant and myself have refined the technique to a point, which we believe will show a perfect agreement with the most accurate present method.

Briefly, the method is as follows; the urine is digested with sulfuric acid. A mixture of ammonia, citric acid, and KCN is added to bring the ph. to 8.5 to 9.5. An excess of dithizone in chloroform is added and shaken. The chloroform dithizone is run into a second separatory funnel which contains five cc 1 to 100 nitric acid and shaken. One to two cc of the nitric acid solution is placed in an electrolytic cell and run as usual with the polarograph.

As you can see in the above outline, the disadvantages of the dithizone single extraction are overcome as the color reaction does not enter into the final results, and any oxidizing agent present in the urine will not interfere. By the use of the KCN everything except lead and bismuth are held back, and the final nitric acid solution will contain only lead and bismuth, and when the specific deposition characteristics of the polarograph are applied the amount of lead alone is easily ascertained.

Dr. Gant and I have checked this method using the photometric dithizone technique as evolved by Dr. Gant, and we find less than 1% disagreement.

As we are most anxious to get a thorough check on this method, would it be possible for you to send us a large number of urine samples that have been run in your laboratory. As I realize that this is asking a great deal, and having no desire to make more work for you, I have thought that if I should send you containers, it would be possible for you to send me 100 cc aliquots of the samples that you would be running in the normal course of your work.

If this method of procedure meets with your approval, I shall be very grateful if you would advise me when and how many containers I should ship to you. If possible, I should like to get a total of 200 or more samples as convenient to you.

If you or Dr. Machle have any suggestions they would be most welcome.

Thanking you for your kindness in the past, and anticipating your reply, I am,

Sincerely yours,

HAC/LC

A handwritten signature in dark ink, appearing to read "Hoy A. Grant". The signature is fluid and cursive, with a long horizontal line extending from the end of the name.

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