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Spectrographic Studies of Lead in Human Blood.*

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It is of some interest to know the normal distribution of lead in bloods of persons not known to be definitely exposed to lead contamination. We have been able through the courtesy of Dr. J. T. Jean to obtain samples of blood from 89 incoming students. This series, because of probable absence of industrial or occupational hazard, formed a good random sample of the population. This is especially true in view of the fact that the samples were obtained shortly after the vacation period. As might be expected our series contained a larger number of St. Louis inhabitants than one would ordinarily select for such a study. The group being medical students was predominantly male. Only 6 females are represented in the series.

Blood was drawn into pyrex test tubes which had been cleaned with nitric acid. After the blood had clotted small pieces of the clot were placed on the ends of carbon electrodes and dried by moderate heat. The residue was then burned in the flame of an intermittent arc. Ordinarily the samples ignited without difficulty. Since 100 flashes consumed nearly all the material on the electrode it was necessary to prepare 3 separate samples. With the flashes occurring at 80 per minute, 300 flashes gave the proper exposure. A Bausch and Lomb medium quartz spectrograph with a slit width of 0.015 mm. was used.

For the quantitative estimations the intensity of the 2833.07 Pb line was compared with the 2831.56 Fe line (Scott and McMillen[1]). The relative densities of the iron and lead lines were interpreted in terms of absolute values by a series of blank runs of rabbit blood to which known amounts of lead had been added. Our measurements of line density were made with a recording microphotometer.

Of the 89 members of the series 45 showed definite traces of lead in quantities of 1×10^{-8} gm. or more per cc. of whole blood. There

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1 Scott, Gordon H., and McMillen, J. H., Proc. Soc. Exp. Biol. and Med., 1936, **35**, 287.

were 11 with from 1 to $3x10^{-8}$ gm. of lead; 20 from 4 to 6; 5 from 7 to 9; 4 from 1 to $1.2x10^{-7}$; 3 from 1.3 to 1.5; 2 from 1.6 to $1.8x10^{-7}$. It will be noted that the greatest number of the cases showing lead fell around $6x10^{-8}$ gm. None of the members of the series show an amount of lead greater than $1.9x10^{-7}$. By way of comparison it may be pointed out that a definite case of plumbism contained $3.2x10^{-6}$ gm. of lead per cc. of blood. This case falls within the limits of the pathological range of $2x10^{-6}$ to $1x10^{-5}$ gm. of lead per cc. of blood set by Blumberg and Scott.[2]

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Initiation and Maintenance of Lactation in Hypophysectomized Guinea Pigs.*

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The somewhat purified preparation of the lactogenic hormone (galactin), unlike crude pituitary extracts, failed to initiate or to maintain lactation in hypophysectomized guinea pigs.[1, 2] These observations were not taken to indicate the inadequacy of the lactogenic hormone in stimulating secretory activity of the mammary epithelium but rather as a result of the general physiological disturbance in the hypophysectomized animal which invariably reduces to a low level the available precursors of milk in the blood.

There is an increasing amount of evidence that the pituitary secretes hormones which directly or indirectly through their action upon other endocrine glands, regulate the composition of the blood and therefore play an important indirect rôle in milk secretion. Graham[3] and Gaunt and Tobin[4] have indicated the importance of the thyroid and adrenal cortex in relation to milk secretion.

Nelson and Gaunt[2] reported that the administration of Swingle-

2 Blumberg, H., and Scott, T. F. M., *Johns Hopkins Hosp. Bull.*, 1935, **56**, 32.

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1 Gomez, E. T., and Turner, C. W., PROC. SOC. EXP. BIOL. AND MED., 1936, **34**, 404.

2 Nelson, W. O., and Gaunt, R., PROC. SOC. EXP. BIOL. AND MED., 1936, **34**, 671.

3 Graham, W. R., Jr., *J. Nutrition*, 1934, **7**, 407.

4 Gaunt, R., and Tobin, C. E., *Anat. Rec.* (Supp.), 1936, **64**, 18.