7621 C

Epinephrine and the Blood Sugar Level.

M. CAROLINE HRUBETZ. (Introduced by H. B. Williams.)

From the Department of Physiology, College of Physicians and Surgeons, Columbia University, New York City.

Bang[1] presented curves for the blood sugar level of rabbits after both intravenous and subcutaneous administration of epinephrine The rise after intravenous injection was less than 100% and reached its maximum in ½ hour, that after subcutaneous injection around 300% and reached its maximum between the second and third hour after injection. One-tenth of a milligram was administered per animal.

In the present study, all injections were given subcutaneously. Abbott's "adrenalin" was diluted so that 1 cc. contained 0.4 mg., making the full dose of 0.4 mg. per kilo, or, 0.1 mg. per 250 gm. body weight. For the ½, ¼, ⅛ doses corresponding dilutions were made. The animals used were normal-fed rats. We obtain curves similar to those of Bang except that our maximum rise occurred at the 1½ hour interval after injection. This discrepancy may be explained by our larger number of observations where variations of individual animals are smoothed out, and also, our smaller dosage.

Approximately 50 observations were made at each of the intervals: 5, 15, 30, 45 minutes, 1, 1½, 2 and 4 hours after the full dose and also after the ¼ dose. In addition, 50 observations were made at the 30-minute interval for both ⅛ and ½ the full dose. Two series of controls of 50 observations each were made, the determinations of which were dispersed throughout the period of experimentation. The 0.2 cc. Somogyi modification[2] of the Shaffer-Hartmann[3] blood sugar method was used.

There is a steady rise in the blood sugar level until the 1½-hour interval is reached, the greatest change occurring during the first 20 minutes. After 1½ hours the blood sugar level is gradually reduced but does not reach the normal level in 4 hours. The mean deviations are smallest for the shortest intervals (6 to 11 mg. for 5 minutes) and become progressively greater and more variable until the 4-hour interval is reached (17 to 46 mg.). Eadie and Macleod[4] found it impossible to standardize insulin by the Epine-

[1] Bang, *Der Blutzucker*, Weisbaden, 1913, 113.

[2] Somogyi, M., *J. Biol. Chem.*, 1926, **70**, 599.

[3] Shaffer, A. P., and Hartmann, A. F., *J. Biol. Chem.*, 1920, **45**, 349.

[4] Eadie, G. S., and Macleod, J. J. R., *Am. J. Physiol.*, 1922, **46**, 285.

phrine Equivalent Method because of the great variability in the results. However, they took their blood samples at ½, 1 and 2 hours after the injection, intervals where the mean deviations are the greatest.

The blood sugar level after ⅛, ¼, ½, and the full dose ½ hour after the injection shows a steady rise in the blood sugar until the ½-dose is approached, after which the curve flattens out. Apparently, there is a maximum amount of stimulus to which the system will respond. Beyond this point, there is no increase in effects. The mean deviations vary from 13 to 29 mg., the smallest deviation occurring with the smallest dose.

Summary. 1. 1000 observations were made at 5, 15, 30, 45 minutes, 1, 1½, 2 and 4 hours after given doses of epinephrine. 2. The blood sugar reaches its highest level in 1½ hours and has not returned to normal in 4 hours. 3. With doses varying from ⅛ to the full dose, the blood sugar increases proportionately with the dosage until ½ the dose, where the curve flattens out. 4. The smallest deviations are obtained after the shortest interval after the injection, or, after the smallest dose.

7622 P

Perimetry with Stimuli of Minimal Duration.

LEO L. MAYER. (Introduced by L. J. Pollock.)

From the Departments of Ophthalmology, Nervous and Mental Disease, and Experimental Surgery of the Northwestern University Medical School.

The utility of field defects as outlined by perimetry in localizing disease along the optic pathways is fully discussed by Traquair[1] and Peter.[2] With the advent of the McHardy[3] self-registering perimeter and its electrical test objects a comparison between white and colored lights became available.

During the course of some experiments upon the chronaxia of the optic nerves projected by Davis and Pollock, a method of perimetry with a light stimulus of very short duration has been developed.

[1] Traquair, H. M., Introduction to Clinical Perimetry, American edition, St. Louis, C. V. Mosby Co., 1927.

[2] Peter, L. C., Principles and Practices of Perimetry, 2nd Edition, Philadelphia, Lea and Febiger, 1923.

[3] McHardy, M., *Ophth. Rev.*, 1882, **1**, 107.