Southern Section.

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Suppression of Strychnine Convulsions by Barbiturates.

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Zerfas and McCallum[1] have found amytal (ethylisomyl barbituric acid) an extremely effective and life-saving antagonist to strychnine in man and the rabbit. Our observations on unanesthetized rabbits show that this property is also possessed by barbital (diethyl barbituric acid), phenobarbital (ethyl-phenyl), nembutal (ethyl-secondary amyl) and pernocton (B-bromallyl secondary butyl).

In a first series of redbrown rabbits, of 1.05 to 1.87 kg., we induced tetanic convulsions by injecting subcutaneously 0.6 mg. of Merck's neutral strychnine sulphate per kg., using 1:1000 solution. Two controls died in 18 and 13 minutes respectively. All the others, 11 in number, returned to a normal reflex state following treatment with Na phenobarbital or Na barbital, given by ear vein immediately on onset of convulsions and repeated as judged necessary to control their recurrence. The minimal total amounts per kg. necessary to secure this result were found to be, Na barbital 40 mg., and Na phenobarbital 1 to 5 mg., indicating a much greater activity of phenobarbital. All of the "treated" rabbits were apparently normal next day, and were later used for other purposes.

In a second series of short haired albino rabbits of 1.24 to 2.03 kg., 0.6 mg. strychnine sulphate per kg., similarly given, was followed by spontaneous recovery in 3 animals, but 0.9 mg. per kg. killed 3 other animals in 27, 30 and 55 minutes respectively. In the antagonism experiments 1.2 mg. per kg. was used. The results were similar to those in the first series except that doses of the

[1] Zerfas, L. G., and McCallum, J. T. C., *Curr. Res. Anesth. and Analg.*, 1929, **8**, 349.

hypnotic barbiturates closer to the "general anesthetic" level were necessary. The suppression of convulsions required in individual animals total doses in mg. per kg. as follows: Na nembutal 4, 14, Na amytal 15, Na phenobarbital, 30, (32 days), 60, pernocton 40 (25 days), 40 (16 days), Na barbital, 150; for comparison, chloral hydrate, 220, of which 30 subcutaneously (31 days). The periods given indicate a survival to time of report; the other animals died in 2 to 11 days, possibly due to incomplete asepsis.

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Use of the New Born Mouse in the Study of Kidney Function.

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A search of the literature has not revealed any satisfactory method of studying, by direct observation, the passage of dye through the mammalian kidney. The principal difficulties seem to be that the capacity and density of the kidney are so great that it has been impossible to see any appreciable distance into the kidney. The kidney of the new born white mouse is small and relatively transparent and appears to be a favorable subject for use in the study of kidney function. With proper illumination it is possible to see the various functional units in the living kidney.

The mice used in this work were from 2 to 24 hours old. They were injected subcutaneously, in the back, with a small amount (0.1 cc.) of some vital dye, such as 0.5% Indigo Carmine and immediately placed in a warmed cotton lined box. If the mouse is left undisturbed the dye appears in the urine in about 20 minutes.

Fifteen minutes after the injection the mouse is quickly etherized and a dissection made exposing one of the kidneys. The mouse is then placed in a special warm stage heated to 37°-38° C. and the kidney is kept moist with warmed Ringer's solution.

With a binocular dissecting microscope it is possible to distinguish if the injection is successful, the glomeruli and the presence of the dye along the tubules from the capsule to the pelvis.

In the same preparation it is possible to make a very pretty demonstration of peristalsis in the ureters. Clumps of dye can be seen passing down the lumen of the ureter propelled by its peristaltic movements.