

*Summary:* 1. Pilocarpine stimulates intestinal movements in the absence of calcium in the surrounding medium, but tonus is only slightly increased. 2. Excess calcium depresses the effect of pilocarpine on the intestine. 3. Pilocarpine sensitizes the intestine to calcium. 4. Pilocarpine in Ringer minus calcium is without effect on the isolated frog heart. 5. Excess calcium antagonizes the depression produced by pilocarpine. 6. The action of atropine is reversed by calcium deficiency, thus causing a slowing of the heart.

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## The Iodine Values of "Physiological" or "Synthetic" Rat Fat.

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Male albino rats taken at weaning when 21 days of age were fasted for 2 days in order that a partial depletion of the stored fat might ensue, thereby lessening its influence on the later resulting "synthetic" fat. The rats were then fed a diet consisting of 18% casein (extracted with alcohol and ether), 77% sucrose, and 5% salt mixture (Osborne and Mendel), supplemented daily by the following: a hot water extract of pig's liver ( $\approx$  0.4 gm. dried liver), 100 mgm. of yeast concentrate (Harris), 20 mgm. of a non-saponifiable fraction of cod liver oil (a pasty material, Oscodal†—Iodine Number 110), and 0.016 mgm. of irradiated ergosterol (dissolved in alcohol). Four other groups of rats (5 or more in a group) were fed this "fat free" diet modified so that the first group received an addition of 20 mgm. of peanut oil (Iodine Number 84); the second had the non-saponifiable fraction of cod liver oil substituted by 20 mgm. of cod liver oil (Iodine Number 160); the third received the same diet as the second group with the addition of 20 mgm. of peanut oil; and the last had the extracted casein replaced by commercial casein, the yeast concentrate substituted by yeast and the irradiated ergosterol omitted.‡ From the analyses of the die-

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† Kindly supplied by Dr. H. E. Dubin of the H. A. Metz Laboratories.

‡ A paper is now in press in the *J. Biol. Chem.* on the "Growth of Rats on 'Fat Free' Diets."

tary components, it is calculated that the rats on the "fat free" diet received daily probably less than 7 mgm. of fatty materials, other than the non-saponifiable matter from cod liver oil. At stated intervals, the rats were killed and the fat from the entire animal, with the exception of the alimentary tract, was rendered out by essentially the technic used by Anderson and Mendel,<sup>1</sup> modified slightly in order to obtain a more complete extraction of the fat. The fat yielded by the rats grown on a diet practically devoid of "true" fats, which might be designated as "physiological" or "synthetic" rat fat gave iodine values of 64 to 71 by the Hanus method. There was little difference in the iodine numbers of the fats obtained from the rats grown on the "fat free" diet and from those animals whose diets contained a small inclusion of fat.

These experiments indicate that the fat produced *de novo* in the body out of non-fat precursors has presumably a definite characteristic chemical make-up, which is not influenced materially by the inclusion of a very small amount of fat in the diet, as judged by the iodine numbers of the total body fat. An examination of the samples of fat obtained from the rats grown on the diets mentioned, for their constituent fatty acids, and the extraction of the fatty materials from the feces, is now in progress. §

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#### Studies on the Pathogenesis of Endocarditis.

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In view of the well known multiplicity of bacteria isolated from endocarditic lesions, workers in this field have always more or less distinctly felt that the essential question in the pathogenesis of endocarditis is one of bacterial *localization*. Under what conditions will bacteria localize on the endocardium? While early experimental investigators (Wyssokowitsch,<sup>1</sup> Ribbert<sup>2</sup>) succeeded in producing an endocarditis by combining the bacterial infection with a gross trauma to the heart-valves, observations on experimental endocar-

<sup>1</sup> Anderson and Mendel, *J. Biol. Chem.*, 1928, lxxvi, 729.

§ Since this report was sent to press, a paper by H. C. Eckstein, dealing with synthetic rat fat has appeared in the *J. Biol. Chem.*, lxxi, 613. The iodine values reported in the 2 papers are in general agreement.