

B suggested an attempt to determine whether increasing amounts of fat in the ration would influence the incidence of infant mortality on a maternal diet deficient only in vitamin B or the vitamin B complex. The lactation efficiency index was studied on rations containing 3 levels of fat intake, namely 10, 20, and 30. The fat used was lard. Two types of yeast were used as a source of vitamin B complex for the control diets, *i. e.*, Northwestern dehydrated, and Fleischman's dried.† The same types of yeast, autoclaved, were used as a source of vitamin G for the pathological animals. Of the former 10% was used in the ration and of the latter, 15%. A total of 72 mothers with litters were employed. It was realized that, because of the large amounts of vitamin B required for lactation compared with that for growth, nothing like normal rearing of young could be anticipated by virtue of such a modification in the diet as the introduction of additional amounts of fat, since the basal rations were deficient in either the B vitamin or B vitamins. Yet, if large amounts of fat produce a sparing action on vitamin B requirements, the young should have been reared for a longer term before collapse ensued. The results, however, indicate no benefits derived in lactation from the additional increments of fat available to the nursing mother.

A critical examination of the data of Evans and Lepkovsky does not, in our opinion, justify the interpretation that fats have any sparing action on vitamin B requirements. We are, therefore, at present subjecting this problem to a severe test, using growing animals, the results of which will appear elsewhere in detail.

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**Effects of Pitressin on Water Interchange in Normal and Decapitated Frogs.**

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Recently it was shown<sup>1</sup> that the permeability of the frog's skin is very much increased by injections of pitressin. Heller<sup>2</sup> also reported that frogs, previously decapitated, showed a smaller increase

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† Supplied by the Standard Brands, Inc., New York.

<sup>1</sup> Steggerda, F. R., *Am. J. Physiol.*, 1931, **98**, 255.

<sup>2</sup> Heller, J., *Arch. f. exp. Path. u. Pharm.*, 1930, **157**, 298.

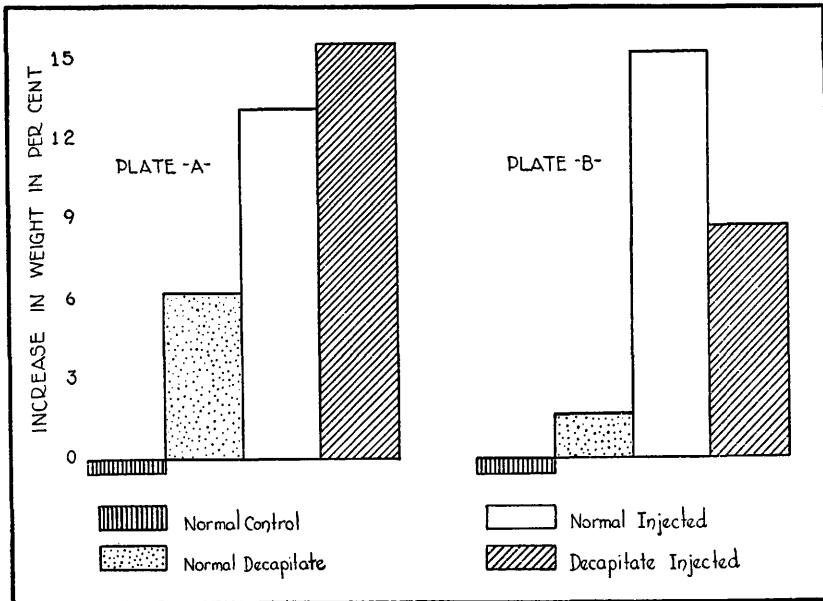
in weight than normal frogs after pitressin injections. Since Adolph<sup>3</sup> and others have reported pronounced increases in water uptake after pithing, it was of interest to repeat some of Heller's experiments with special reference to the effects of pitressin on decapitated frogs at various intervals of time after the decapitation. All of Heller's experiments were performed from 4 to 64 hours after decapitation. Our experiments can be separated into 2 groups—those done immediately after decapitation and from 26 to 48 hours after decapitation.

A complete experiment consisted in placing 4 normal frogs (30-40 gm.) in a glass container with enough water to nearly submerge them. The temperature was kept slightly below room temperature by the occasional addition of ice cubes. After weighing each frog accurately to 0.1 gm., on a triple-beam balance in a previously weighed container, 2 were decapitated according to the technique of Heller, which consists of placing one blade of the open scissors in the frog's mouth and making a sharp cut across the head at the level of the ears. The loosened head was then held in place by 2 stitches, which assisted in preventing severe hemorrhage. Pitressin (Parke-Davis) was then injected into the dorsal lymph sac of a normal and decapitated frog (0.1 cc. per 10 gm. body weight). The remaining 2, one a normal and another decapitated frog were kept as controls in the same container. Weighings were made at half hour intervals for a period of 6 hours. Six such experiments were carried out immediately after decapitation, and 6 others from 26 to 48 hours after decapitation. The accompanying graph represents the average of the results obtained in these two series. Plate A shows the effect of pitressin on the water interchange immediately after decapitation, while plate B shows the effect 26 to 48 hours later.

The normal control remains quite the same in both cases; but the normal decapitate shows a considerable increase in weight immediately after decapitation; whereas the rate of increase is very much less when a certain period of time has elapsed between decapitation and the time of the experiment (see plate B). Likewise, the rate of increase in the decapitated injected frog immediately after the operation is more pronounced than that of the control injected frog, and similarly when observations are made from 26 to 48 hours after the operation the weight increase of the decapitated frog is less than that of the control injected.

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<sup>3</sup> Adolph, E. F., *Am. J. Physiol.*, 1931, **96**, 569.



Although our results as indicated in plate B are nearly a duplicate of the results of Heller, our interpretation is quite the opposite of his. He asserts that decapitation decreases skin permeability to water, while our results indicate that decapitation increases skin permeability to water, and that the reason for the decrease in water uptake resulting from pitressin injections after a certain period of time, is that the frogs have already reached a state of edema.

Although these experiments do not offer much information as to the exact function of pitressin in its relation to skin permeability, we feel that the immediate results of decapitation show that the brain may serve as a regulatory mechanism for skin permeability.

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Vagus Stimulation and Rate Changes in the Turtle Heart.

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Observations previously reported<sup>1</sup> showed that stimulation of either vagus nerve of a turtle might be adjusted to produce some slowing of the rate of the sinus beat although only a part, if any, of

<sup>1</sup> Gilson, A. S., and Irvine-Jones, E., *Am. J. Physiol.*, 1929, 90, 361.