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Carbohydrate mobilization in body temperature regulation.

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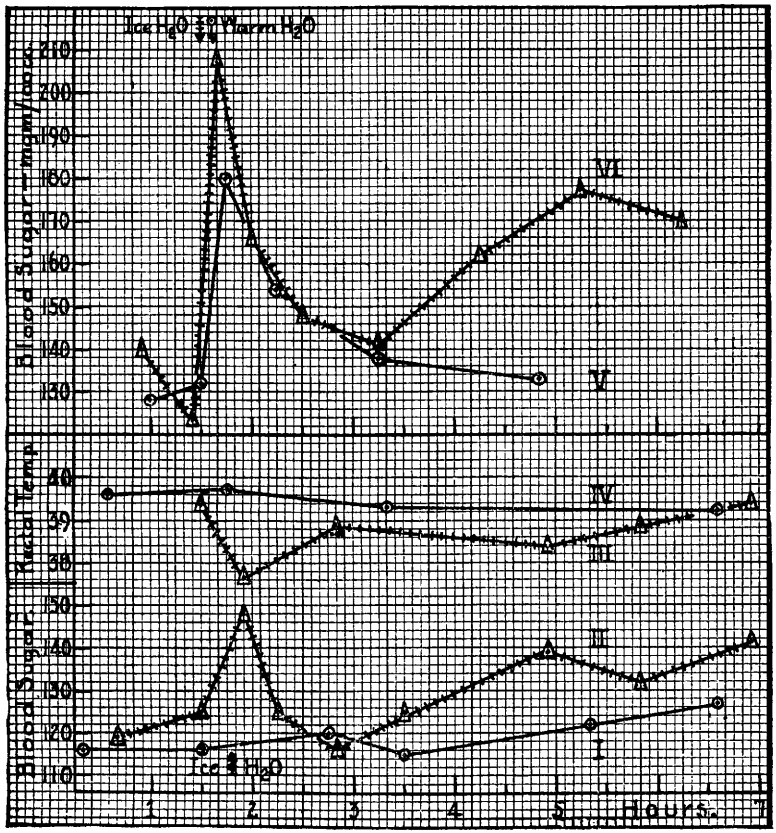

Cat, ♂, wt. 3.4 Kg.

I and IV, the normal fluctuations in blood sugar and body (rectal) temperature, respectively, throughout the usual duration of these experiments. (March 4, 1925.)

V, the effect of 200 cc. warm water (temp. 38-39° C.) on the blood sugar value (Dec. 18, 1924). This serves as a control for the effect of the excitement and struggling attendant on passage of the stomach tube.

II and III, the effect on the blood sugar and body (rectal) temperature, respectively, of 200 cc. ice water (0.5-1.0° C.) by stomach tube (Feb. 28, 1925).

VI, the effect on the blood sugar level of 200 cc. ice water by stomach tube, Dec. 11, 1924.

This is to report the effect on the blood sugar level of cats of a "heat liability," produced by giving ice water by stomach tube, according to the method devised by Cannon. Eight animals have been used and all have given concordant results, of which those for one cat shown in the figure are typical. From inspection of the curves (and deducting the effect of the similar procedure in which water at body temperature was given), it appears that such a heat liability induces a pronounced mobilization of carbohydrates and increase of blood sugar value. In spite of the fact that the fall in body temperature is immediate, this mobilization of sugar seems to get under way slowly and is only noticeable after an hour or more. From then on it rises slowly to a maximum during the next hour or two and then, even more slowly, falls; in only two cases out of the eight did the blood sugar value return to normal within the five or six hours during which the animals were kept under observation.

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Experiments with adrenal insufficiency.

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More than two years ago we began experiments to determine whether it would be possible to prolong the life of adrenalectized animals by the administration of adrenal preparations.

Adrenalin injected intramuscularly or subcutaneously every hour or two after the removal of both adrenals did not prolong life. The average length of life for the 7 cats studied was 19.7 hours. The amounts injected at one time were from 0.25 cc. to 0.5 cc. of 1:1000 adrenalin intramuscularly or subcutaneously. The adrenals had been removed from these cats at one operation.

The remainder of the experiments were conducted upon cats whose adrenals had been removed at different operations from two to ninety days apart. The operation was through the lumbar path.