

of the subjects studied. This reduction was considerably more in the obese subjects, in whom the resting quotients went highest, than in the normals.

As the butter was given in 150 cc. of clear, hot broth; and the mayonnaise with 50 gm. of lettuce, the effect of the hot broth and lettuce alone was observed in 1 of the obese subjects. Under these conditions the quotient fell from 0.84 to 0.71 but during exercise rose to 0.88. There was no specific dynamic action.

In general we found that when the respiratory quotient was high, exercise caused it to fall and when it was low, exercise caused it to rise. The fall at high quotients, however, was greater than the rise at low quotients. In this respect these results are similar to those found by Krogh and Lindhard,<sup>1</sup> whose subjects, however, were studied in the post-absorptive state.

The CO<sub>2</sub> capacity of the plasma in many of the subjects was determined in the basal state and after the fat meal before the rest periods. No significant change was found. Also we found that the exercise did not affect the CO<sub>2</sub> capacity in one of the obese subjects studied.

There was no essential difference in the maximum specific dynamic action in the normal individuals and in the obese. The average was about 13%.

## 5049

### The Hormone of the Adrenal Cortex.

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We have previously<sup>1</sup> demonstrated that an extract which will definitely prolong the lives and ameliorate the symptoms of adrenalectomized cats can be made from the adrenal cortex.

We have proposed the name of cortin<sup>2</sup> for this hormone, which is essential to life.

Heat (80°C. for 5 minutes) destroys it. It is lost upon repeated

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<sup>1</sup> Krogh, A., and Lindhard, J., *Biochem. J.*, 1920, xiv, 290.

<sup>1</sup> Hartman, F. A., MacArthur, C. G., and Hartman, W. E., *PROC. SOC. EXP. BIOL. AND MED.*, 1927, xxv, 69.

<sup>2</sup> Hartman, F. A., Brownell, K. A., Hartman, W. E., Dean, G. A., and MacArthur, C. G., *Am. J. Physiol.*, 1928, lxxxvi, 353.

precipitation with NaCl. Therefore some other method of concentration must be employed.

An extract of any desired concentration can be obtained by extracting the cortex with ethyl ether. After removing the ether *in vacuo* the residue is extracted with warm 80% alcohol. Chilling precipitates much inactive material. Removal of the alcohol *in vacuo* is followed by extraction of the residue with water to make the desired concentration, or extraction by alcohol is repeated for further purification.

Completely adrenalectomized cats treated with this extract not only live indefinitely in good condition but are able to meet unusual demands apparently as well as normal animals. They undergo major operations. Wounds heal promptly. They seem to resist infections to which untreated adrenalectomized cats often succumb. One cat had an abortion following the removal of the second adrenal and bled for several days afterward. Yet, by the use of this extract she recovered. Another cat was etherized and thoroughly explored for accessory adrenals 136 days after the removal of the second adrenal, with recovery as prompt as would be expected in a normal cat.

If adrenalectomized cats are given more extract than is necessary to keep them in fair condition they eat more and gain in weight. Blood urea remains within the normal range.

One adrenalectomized cat has been rescued from the final stage of prostration due to an inadequate supply of cortin 3 times by injection of extract. The last time dyspnea and convulsive twitchings had developed. Seventy minutes after the injection of the extract the cat was sitting up. In 85 minutes she was shivering. In 100 minutes she was eating, not merely tasting but taking her usual quantity of food.

Individual animals show great differences in the amount of cortin which they require as well as the frequency of injection needed.