

Two experiments in which inactivated (boiled) extracts were used showed that extracts so treated were without effect on uterine motility. Therefore, the "response" we have obtained is probably specific for active extracts. The significance of these results may possibly be indicated by the close similarity in action of anterior lobe therapy and of human pregnancy-urine, but it may be no more than a coincidence that quiescence of uterine motility normally takes place following coitus and prior to ovulation in the intact animal<sup>4</sup> and under the conditions just described.

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### Suprarenal Cortex and Temperature Regulation.

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(Introduced by F. H. Pratt.)

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The presence of the suprarenal cortex is necessary for proper temperature regulation in the rat. Wyman and tum Suden<sup>1</sup> found that suprarenalectomized rats having gross masses of cortical tissue, transplanted or accessory, maintained their body temperature as well as normal rats during 2 hours in a moderately cold room (40° to 50° F), but that rats having cortical insufficiency suffered a decline in body temperature and did not recover their original temperatures in a warm room so soon as those having cortical tissue. It was suggested that a disturbance in physical heat regulation, i. e., increased heat loss, as well as metabolic disturbance might account for this disability. Hartman, Brownell and Crosby<sup>2</sup> found that the administration of cortin enabled suprarenalectomized rats to produce heat and maintain their temperature in a cold environment almost as well as normals, and suggested that inadequate heat production is responsible for the disability of suprarenalectomized animals.

The importance of the sympathico-adrenal system in temperature

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<sup>4</sup> Reynolds, S. R. M., and Friedman, M. H., *Am. J. Physiol.*, 1930, **94**, 696.

<sup>1</sup> Wyman, L. C., and tum Suden, C., *Am. J. Physiol.*, 1929, **89**, 362.

<sup>2</sup> Hartman, F. A., Brownell, K. A., and Crosby, A. A., *Am. J. Physiol.*, 1931, **98**, 674.

regulation is well known. Cannon, Querido, Britton and Bright<sup>3</sup> concluded that excitation of the suprarenal medulla constitutes a primary line of defense when there is a disturbing heat loss, the extra output of adrenin increasing heat production, while a secondary line of defense would be increased muscular activity, i. e., shivering. Hartman, Brownell and Crosby<sup>2</sup> pointed out that shivering is a weak reaction in the rat as compared with other animals, and suggested that the reduction in voluntary muscular activity seen in suprarenalectomized rats, especially in a cold environment, might in part explain their inability to maintain their temperature when threatened with heat loss. The suprarenal cortex, therefore, would be an important part of the secondary line of defense.

Inasmuch as Wyman and tum Suden could not detect any severe disability in suprarenalectomized rats with transplanted cortical tissue but no demonstrable medullary tissue, in the moderately cold environments used, they suggested that a critical temperature might be found at which, lack of the medulla in rats would result in difficulty in temperature regulation. It was thought that exposing the animal suddenly to a very low temperature in a restricted space might throw some light on the subject. This has been done with 5 normal rats, 5 rats with one suprarenal removed and from one-half to three-quarters of the other resected, and 6 suprarenalectomized rats having transplanted cortical tissue but no medullary tissue. Three of the latter group were tested twice. All were males, operations performed 71 to 76 days of age, and temperature experiments 112 to 142 days after operation. The control rats were of the same age as the experimental animals. Rectal temperatures were taken with a certified clinical thermometer. Exposure to cold was carried out in a small tin box surrounded by a cooling mixture (ice and  $\text{CaCl}_2$ ). Three temperature readings were taken, one at room temperature, one after one hour in the cold box, and again after one hour at room temperature, to test recovery. The results are given in table 1. These results were practically the same for all 3 types of rat with respect to fall of temperature in the cold-box and recovery after removal to room temperature. The marked decline in body temperature at the lower temperatures and the falls greater than those previously observed at the higher temperatures may be accounted for by the facts that the rat is not a perfectly homoiothermic animal, and that the small size of the cold box restricted voluntary muscular activity. This further emphasizes the suggestion

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<sup>3</sup> Cannon, W. B., Querido, A., Britton, S. W., and Bright, E. M., *Am. J. Physiol.*, 1927, **79**, 466.

TABLE I  
Temperature change after 1 hour in cold box.

Type of Rat	No. of cases	Body temp. at room temp.	Temp. of cold box	Fall in body temp. in cold box	Diff. from original body temp. after 1 hr. at room temp.
		°F.	°C.	°F.	°F.
Control	2	98.0, 98.4	4, 5	3.6, 5.9	-1.0, +1.4
Partial suprarenalect.	1	96.5	5	3.5	+1.7
Transplant Normal	6	97 to 99.2	4 to 10	0 to 5.2	
Partial suprarenalect.	3	97.4 to 98.4	-6 to -9	7 to 7.6	-0.2 to -3.3
Transplant	4	96.6 to 99.8	-5 to -10	6.6 to 8.8	+2.2 to -1.8
	3	97.8 to 98.4	-3 to -10	6 to 8	0 to -2.2

made by Hartman<sup>2</sup> with regard to the importance of voluntary activity in the rat.

The absence of any difference in behavior with regard to the maintenance of body temperature between normal rats and those lacking the suprarenal medulla but having cortical tissue, in this and in previous researches, indicates that evidence of the operation of the primary line of defense, *i. e.*, medull-adrenal secretion, in heat loss must be sought by other means. It is possible that loss of the medulla is compensated for by the activity of the rest of the sympathico-adrenal system in heat regulation in this animal. The importance of the suprarenal cortex in the secondary line of defense appears to be well established.

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Cholesterol Ester Percentage in Diabetic Plasma.\*

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Since the advent of insulin there has been a marked change in the relative causes of death in diabetics. Whereas formerly 15% of the patients died from arteriosclerosis and 60% from coma, now 47% die from arteriosclerosis and only 20% from coma. Insulin has rescued the diabetic from death by coma only to have him die

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