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Experimental Hypertrophy of the Adrenal Glands.

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The relationship between the hypophysis and the adrenal glands which has long been known to exist in clinical cases,[1] has not been well understood. Experiments in animals have thrown considerable light on this subject especially in regard to a pituitary substance necessary for normal adrenal function.[2] Many studies on pituitary implants and extracts in relation to the reproductive system have been made in recent years but the effects on the adrenal glands, when reported, were not significant. In immature rats implanted with pituitary glands of castrated rats some hypertrophy of the adrenals was noted at autopsy but the results were not outstanding.[3] Recently we have continued these studies and have arranged the experiments to show the effects of the cortico-adreno-tropic substance of the pituitary. The results have been very striking and consistent.

Albino rats weighing about 150 gm. were divided into 2 groups of equal weight; one group consisted of 35 controls which were not injected; the other group consisted of 35 rats which were injected daily for 10 days with an extract of the pituitary gland. On the eleventh day the rats were killed and the adrenals weighed. The hypertrophy of the adrenal glands produced in the injected group amounted to as much as 150% and as little as 20% in the individual rats. Accurate determinations show that this hypertrophy is largely confined to the cortex which consists of cells larger than normal and more filled with lipoid material. Experiments with the growth hormone of the pituitary showed some enlargement of the adrenals but the effects were slight in comparison with whole pituitary extract.

The thyroid gland was not increased in size.

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[1] Calder, R. M., *Bull. Johns Hopkins Hosp.*, 1932, **50**, 87.

[2] Evans, H. M., *J. Am. Med. Assn.*, 1933, **101**, 425.

[3] Emery, F. E., *Endocrin.*, 1933, **17**, 64.