trations reported by McEuen and Selye[8] and Lewis[9] to accompany this tumor, but consists primarily of an increase in the cytoplasm and number of cortical cells and an increase in lipoid content. This would correspond to the "prolonged activity" type of Zwemer.[4]

Higgins and Cragg[10] have reported hyperplasia of the adrenals similar to that observed by us in rats chronically poisoned with carbon tetrachloride. This was associated with atrophy of the gonads. These authors were not able to determine from their experiments whether this was due to a pituitary effect or to direct toxic actions. If the effect is similar in origin to ours we must assume that pituitary secretion is involved.

Conclusion. The presence of the hypophysis is necessary to adrenal hypertrophy in animals bearing Walker No. 256 tumor. This finding suggests that the pituitary may be essential to any adrenal cortex hypertrophy. Either certain toxins or metabolic processes sensitize the adrenal tissues to the pituitary adrenotropic hormone or they act directly on the hypophysis itself to cause an increased output of this substance. Work is now in progress to determine which process is involved.

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Atrophy of the Thymus in Normal and Hypophysectomized Rats Following Administration of Cortin.

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Moon[1] noted atrophy of the thymus in rats following administration of the adrenotropic principle of the anterior lobe of the pituitary glands. His observations have been confirmed by Lyons and Simpson of the same laboratory.[2]

This investigation deals with the effect on the thymus of administering massive amounts of cortin to normal rats and to rats which had been hypophysectomized. Forty male rats, each having an

8 McEuen, C. S., and Selye, H., *Am. J. Med. Sci.*, 1935, **189**, 423.

9 Lewis, M. R., *Am. J. Cancer*, 1937, **30**, 95.

10 Higgins, G. M., and Cragg, R. M., *Proc. Staff Meet. Mayo Clinic*, 1937, **12**, 582.

1 Moon, H. D., PROC. SOC. EXP. BIOL. AND MED., 1937, **37**, 34.

2 Evans, H. M., personal communication to the author.

initial body weight of 180 g, were used. Ten normal animals were untreated and 10 normal animals each received 10 cc of cortin daily in their drinking water (each cubic centimeter of cortin represented 75 g of adrenal glands). Twenty hypophysectomized rats each received an amount of adrenotropic hormone daily which previous assay had proved adequate to maintain the adrenal cortex in hypophysectomized rats. This adrenotropic hormone was prepared and furnished through the courtesy of Dr. H. D. Moon. Ten of the hypophysectomized animals were given 10 cc of cortin daily in their drinking water; the remaining 10 did not receive cortin. In this experiment the intake of food of the 2 groups of hypophysectomized rats was regulated in order to equate the loss of weight. It was necessary to restrict the intake of food in the case of the rats which did not receive cortin to a definitely smaller amount than was consumed by those which did receive cortin. At the end of 7 days all of the animals were killed for necropsy by exsanguination.

The administration of large amounts of cortin causes marked involution of the thymus in the intact rat. The loss of weight which occurred in these animals cannot be satisfactorily accounted for by the small reduction in the intake of food. Similarly, in the hypophysectomized rat in which the adrenal cortices have been maintained at normal size with adrenotropic hormone, additional treatment with cortin hastens atrophy of the thymus (Table I).

TABLE I.
Atrophy of Thymus Following Administration of Cortin.

	No. of rats	Body wt, g		Thymus wt, mg	
		Avg.	Range	Avg.	Range
Normal, no cortin	10	196	184-210	377.1	325-485
Normal, 10 cc of cortin daily	10	151.7	142-162	53.7	40-76
Hypophysectomized, 0.5 cc adrenotropic hormone daily, no cortin	10	141.4	136-147	187.5	140-280
Hypophysectomized, 0.5 cc adrenotropic hormone daily, 10 cc of cortin daily	10	137.7	125-143	49.4	39-64