In the normal unfed rats, no action of the A. P. extracts was demonstrable, except a slight increase in the muscle glycogen level. The average R. Q. was 0.722, compared to 0.724 in uninjected rats. Since carbohydrate oxidation was already at such a low level under these conditions, the absence of a further decrease was not surprising.

9444 P

Production of Refractoriness to Action of Anterior Pituitary Extracts in Depressing Oxidation of Fed Carbohydrate.*

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In the previous paper, it was reported that anterior lobe extracts caused a fall in the apparent rate of oxidation of fed carbohydrate in both hypophysectomized and normal rats. The decrease, judged by the R. Q. and the glycogen deposition after feeding glucose, occurred within a few hours after the injection of standard alkaline extracts, and was also evident when injections had been made over several days preceding the experimental periods. It was found recently in this laboratory by Mr. L. L. Bennett[1] that after chronic treatment with A. P. extracts, hypophysectomized rats become refractory to the action of these extracts in maintaining fasting muscle glycogen levels. In view of this finding, it seemed advisable to try chronic treatment in conjunction with the experiments described above.

A group of normal rats was therefore injected daily for 20 days with one cc. of the standard alkaline extract. They were then fasted 24 hours, fed glucose, and determinations of the disposition of the carbohydrate were made in the same manner as in the groups described in the previous paper. After this pre-treatment final injections of the A. P. extract, given 2 hours before the glucose was fed, had absolutely no effect on the respiratory quotients or on the deposition of the fed carbohydrate. Evidently, in these normal rats, after prolonged treatment with a beef anterior extract, a refractory state

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†Porter Fellow, 1937-38.

[1] Bennett, L. L., PROC. SOC. EXP. BIOL. AND MED. In press.

developed toward the anterior pituitary factor responsible for the depression in carbohydrate oxidation after glucose feeding. This effect would appear to be quite analogous to that obtained in fasting hypophysectomized rats on prolonged treatment with A. P. extracts.

9445

Inhibition of Somatic Growth in Castrate Rats with Pituitary Extracts.*

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Male and female rats were castrated when 22-23 days old, and intraperitoneal injections of adrenocorticotropic extracts[1] (A-C-T) were given daily beginning on the day following the operation. The growth of hair over the shaved operative areas and over the whole body was very greatly retarded in the animals given large amounts of A-C-T. There was retardation and almost complete inhibition of *somatic* growth when a high level of A-C-T was administered.

TABLE I.
Effect of A-C-T on Adrenal and Body Weights of Castrate Rats.

Rats	Wt. of Adrenals mg.	Total Dose of A-C-T units	Length of Treatment days	Initial Body Wt. gm.	Final Body Wt. gm.	Gain in Body Wt. gm.
3 ♂	60.0	13.2	16	49.9	107.0	57.1
3 ♂	28.0	Controls		51.3	132.0	80.7
2 ♀	50.5	13.0	14	51.5	99.0	47.5
3 ♀	24.5	Controls		51.3	123.3	72.0
3 ♀	107.9	42.0	28	48.3	96.0	47.7
5 ♀	47.8	Controls		48.0	155.2	107.2
2 ♀	152.2	42.2	23	45.0	65.5	20.5
3 ♀	35.7	Controls		47.8	138.3	90.5

There was a noticeable protrusion of the abdomen of the animals treated with the higher levels of A-C-T (42.0 + 42.2 units).† At

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1 MOON, H. D., PROC. SOC. EXP. BIOL. AND MED., 1937, **35**, 649.

† These animals are discussed with regard to their sexual development in the accompanying paper.