pophysis of cattle,[10] (b) acid extracts of dried anterior hypophysis rich in adrenotropic factor, and (c) heated acid extracts of anterior hypophysis containing only active adrenotropic hormone (present communication).

The decrease in natural resistance that follows hypophysectomy in the rat to a poison such as histamine may be due to withdrawal of the adrenotropic hormone and the consequent insufficiency of the suprarenal cortex.

8781 P

Functional Pituitary Grafts in Rats.

R. O. GREEP. (Introduced by Frederick L. Hisaw.)*

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Recent experiments by Hohlweg and Junkmann,[1] Haterius, Schweizer and Charipper,[2] and Hill and Gardner[3] have indicated quite conclusively that pituitary tissue will function as a graft.

It is the purpose of this report to present summarily a series of experiments in which the empty sellae of hypophysectomized 28-day-old male and female rats were utilized immediately after the operation as sites for grafting pituitary tissue. The types of grafts included: 1. male hosts bearing (a) their own pituitaries as grafts and (b) the pituitaries of 28-day-old female rats; 2. female hosts bearing (a) their own pituitaries as grafts (b) the pituitaries of other 28-day-old female rats (c) the pituitaries of 1 to 5 newborn male rats; (d) the pituitaries of male rats 20 to 40 days old. Hosts and donors were taken from an intensively inbred strain of rats. In a group of 37 such hosts (5 males and 32 females) which were observed for 14 weeks, 73% takes occurred as judged by marked body growth and attainment of a functional sexual capacity.† The growth curves of these animals ascended much

10 Perla, David, PROC. SOC. EXP. BIOL. AND MED., 1935, **33**, 121.

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1 Hohlweg, W., and Junkmann, *Klin. Wchnschr.*, 1932, **11**, 321.

2 Haterius, H. O., Schweizer, M., and Charipper, H. A., *Endocrinology*, 1935, **19**, 673.

3 Hill, R. T., and Gardner, W. U., PROC. SOC. EXP. BIOL. AND MED., 1936, **34**, 78.

† In a group of 70 operative controls 69 proved to be completely hypophysectomized as determined by growth stasis, severe cachexia and macroscopic examination of the sella.

more gently and flattened out at one-half to two-thirds the heights of similar curves for normal non-hypophysectomized controls.

The sexual development and history of the grafted females were similar in all groups regardless of the source of the transplanted tissue. Vaginal smears and exploratory examinations of the ovaries established the fact that typical cyclic oestrous phenomena occurred. The cycles in different animals varied in length from 4 to 14 days, the majority having a 5- to 7-day rhythm. The elongated cycles were due in every instance to a prolonged dioestrous interval. Ovulation was spontaneous and the resultant corpora lutea appeared normal. Thirteen pregnancies were recorded, 8 occurring among the females bearing male pituitaries. Living young were delivered at term and lactation was normal.

Females bearing a single newborn male rat pituitary grew very slowly and never became sexually mature while 5 such pituitaries per host proved very effective.

Reproductive function was sustained in males by grafts of either male or female anterior lobe tissue in the sellae, thus confirming the observation of Hill and Gardner,[8] who found that pituitary tissue of the female mouse grafted into the testis of a male would maintain the male system.

8782 C

Influence of Potassium and Calcium on Motor Discharges.

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Physico-chemical factors within neurones must be important in controlling their activity, both spontaneous and evoked. Impinging nerve impulses are the main secondary control in the latter case; the condition of the fluid milieu of the cells in the former. The prolonged motor discharges which give maintained rebound postures following stimulation of the deep cerebellar nuclei[1] are a favorable case of evoked activity grading slowly into spontaneous activity. Since K+ and Ca++ are able respectively to increase and decrease potentials in the brain,[2] these ions were tested for effects on inten-

[1] Magoun and Hare, *Am. J. Physiol.*, 1936, **116** (in press).

[2] Gerard and Dubner, *Arch. of Neurol.*, 1936, **36** (in press).