

In a series of hibernating animals (woodchucks) it has been found that during the dormant period the pituitary gland not only diminishes in size but undergoes extreme histological alterations, chiefly evident in the cells of the pars anterior, which completely lose their characteristic differential reactions to acid and basic stains. At the end of the dormant period the gland enlarges and the cells regain their characteristic staining reactions.

On the basis of this observation hibernation may be ascribed to a period of physiological inactivity, possibly of the entire ductless gland series, but certainly more especially of the pituitary body, not only for the reason that the changes in this structure are particularly apparent but because deprivation of the secretion of this gland alone of the entire series produces a train of symptoms comparable to those of hibernation.

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The pars anterior and its relation to the reproductive glands.

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We wish to report briefly some of the results obtained thus far by the feeding of dried extract of bovine hypophysis to young rats of pure breed and known pedigree. The animals were taken as soon as weaned at the age of three or four weeks. In each instance the experiments were controlled by observations on other rats of the same litter, kept under similar conditions without glandular administration. A known weight of dried extract (.1-0.5 gm.) was given daily in a bread and milk pill, and over varying lengths of time, after which the animals were sacrificed and the reproductive glands examined. Both anterior and posterior lobe extracts were used and in several instances ovarian or corpus luteum extract was given in equal dosage to the control animals, to rule out the effect of administration of glandular extracts in general.

In a limited number of instances pairs of young rats of the same

litter were taken, one pair being given small quantities of extract of pars anterior, the other pair used as a control. The animals fed with the extract bred sooner and oftener than the controls. Posterior lobe extract of pituitary gland had no such effect.

Conclusions.—The following conclusions seem warranted:

I. Pituitary extract, and particularly extract of pars anterior, has a markedly stimulating effect upon the growth and development of the reproductive glands in young rats of both sexes, as evidenced by histological examination.

II. Extract of pars anterior tends to cause early and frequent breeding. Posterior lobe extract has no such effect.

III. Posterior lobe and ovarian (corpus luteum) extracts apparently do not stimulate sexual development.

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On the correlation between the number of mammæ of the dam and size of litter in mammals. I. Interracial correlation.

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In his breeding experiments with sheep at Beinn Breagh, Alexander Graham Bell² found that as the number of nipples of the ewes increased there was a tendency towards a more frequent production of twins and triplets. Regarding this point he says (*loc. cit.*, p. 383): "The indications are that our six-nippled stock will ultimately turn out to be twin bearers, as a rule, when they become fully mature."

In reporting a case of unusually high, and probably inherited, fertility in the cow I have³ noted that the individual exhibiting this high fertility bore two supernumerary mammæ.

There is an obvious teleological aspect to this matter. In a general way it is clear that as the number of young born in a litter increases there must be a compensating increase in the number of

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² *Science*, N. S., Vol. 36, pp. 378-384, 1912.

³ *Me. Agr. Exp. Sta. Ann. Rept. for 1912*, pp. 259-282.