these unusual pituitary findings is withheld pending completion of further experimental data.

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Effect of Injections of Pituitary Whole Gland Extract on Immature Alligator.

T. R. FORBES. (Introduced by R. K. Burns, Jr.)

The efficacy of the anterior hypophysis in producing precocious development of the reproductive system in lower vertebrates has been shown by the recent studies of Burns and Buyse,[1, 2, 3] and Burns,[4] who used as subjects larvae and recently metamorphosed salamanders. Reptiles have rarely figured in pituitary investigations. Herlant[5] found that injections of anterior lobe extract caused a general hypertrophy of the reproductive system of *Lacerta,* Noble and Bradley[6] state that hypophysectomy delays moulting in *Hemidactylus,* Schaefer[7] reports testicular atresia in *Thamnophilis* following hypophysectomy, with a partial restoration of the testes to the normal condition following several hypophyseal implants, and Houssay[8] produced ovulation in a single female snake, *Xenodon,* after similar implantations. All of these experiments were carried out with mature animals.

In the present work, the immature alligator, *Alligator mississippiensis,* was chosen for study. The average total length of the first group of animals used was 24 cm., and their approximate age at the beginning of the experiment was 4 months. Intraperitoneal injections into 10 animals of 0.5 cc. per animal of the Parke, Davis & Co. sheep whole gland alkaline aqueous extract were made 3 times a week, a similar group of 10 animals serving as controls. Gross examination after 6 weeks of injections, showed a great hypertrophy of the testes of the single male member of the experimental group. A slightly less, but still striking, hypertrophy of the gonads

1 Burns, R. K., Jr., and Buyse, A., *Anat. Rec.,* 1931, **51**, 155.
2 Burns, R. K., Jr. and Buyse, A., *Anat. Rec.,* 1933, **58**, 37.
3 Burns, R. K., Jr., and Buyse, A., *J. Exp. Zool.,* 1934, **67**, 115.
4 Burns, R. K., Jr., *Anat. Rec.,* 1934, **58**, 415.
5 Herlant, M., *Arch. de Biol.,* 1933, **44**, 347.
6 Noble, G. K., and Bradley, H. T., *Biol. Bull.,* 1933, **64**, 289.
7 Schaefer, W. H., PROC. SOC. EXP. BIOL. AND MED., 1933, **30**, 1363.
8 Houssay, B. A., *Compt. Rend. Soc. Biol.,* 1931, **106**, 377.

of the injected females was observed, together with lengthening and increased convolution of the oviducts. Due to lack of external evidences of sex in the immature animals, the ratio of males to females in this series was purely fortuitous, but a second series (see below) showed a preponderance of male animals, thus approximately equalizing the total number of males and females in the two series.

Histological study revealed an increase of the medullary cord region of the testes of the experimental male as compared to the controls. Germ cells were present in considerable numbers. The size of the persistent mesonephroi was in inverse proportion to the gonadal hypertrophy, and the mesonephric glomeruli had almost entirely disappeared. The injected females showed similar acceleration of development, with enormous proliferation of the germinal epithelium over the surface of the ovary and a very definite change in the thickness and cytology of the oviduct mucosa. The vestigial Wolffian ducts persisted in both normal and experimental females.

In a second series of animals, averaging 48 cm. in length and approximately 11 months in age, an injection of 1.0 cc. of the same extract was given 6 times per week for 6 weeks. Nine animals (7♂:2♀) were injected, and an equal number served as controls. An even greater hypertrophy of the gonads and oviducts was obtained in the experimental animals. Histological studies of the second series showed that the vestigial Wolffian ducts in the females and Müllerian ducts in the males had disappeared, except in 2 instances in which short segments of the latter were seen in control animals. The possibility of a bisexual stage of gonad development, comparable to that reported by Risley[9] in *Sternotherus,* as well as other histological details, will be discussed at length in a later paper.

[9] Risley, P. L., *Zeit. f. Zellforsch. u. mikr. Anat.*, 1933, **18**, 493.