

Effect of Hypophysectomy upon Pregnancy and Lactation in Mice.

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In the rat, hypophysectomy during lactation leads promptly to cessation of milk secretion;¹ hypophysectomy during the second half of pregnancy does not usually prevent the birth of living young nor the development of the mammary glands, in fact milk secretion begins normally at parturition but ceases within 26 hours.² Caesarian section shortly before term regularly induces lactation, but fails to do so if the pituitary is removed.³ Mammary development in virgin rats under the influence of ovarian hormone secretion stimulated by the anterior-pituitary-like hormone leads to milk secretion when the luteinized ovaries are removed, but this reaction also does not occur in the absence of the pituitary.⁴ These findings are in accord with the view of Riddle,⁵ Turner,⁶ and others that a specific hormone of the anterior pituitary is responsible for the actual initiation of lactation, and that a sudden decrease in the amount of ovarian hormones in the circulation is a stimulus for the production of this hormone (Nelson and Smelser⁷), but they also indicate that the contents of the pregnant uterus may take the place of the anterior pituitary in this reaction.

We have recently succeeded in hypophysectomizing albino mice by a parapharyngeal operation, almost identical with the modified Smith procedure used by us in rats and described elsewhere.⁸ In the mouse the pituitary is situated somewhat more caudally, relative to the sphenoccipital synchondrosis; the bone is therefore drilled exactly over this synchondrosis. We have experienced no trouble from

¹ Collip, J. B., Selye, H., and Thomson, D. L., *Nature*, 1933, **131**, 56.

² Selye, H., Collip, J. B., and Thomson, D. L., *PROC. SOC. EXP. BIOL. AND MED.*, 1933, **30**, 589.

³ Collip, J. B., Selye, H., and Thomson, D. L., *PROC. SOC. EXP. BIOL. AND MED.*, 1933, **30**, 913.

⁴ Selye, H., Collip, J. B., and Thomson, D. L., *PROC. SOC. EXP. BIOL. AND MED.*, 1933, **30**, 588.

⁵ Riddle, O., Bates, R. W., and Dykshorn, S., *Am. J. Physiol.*, 1933, **105**, 191.

⁶ Gardner, W. U., and Turner, C. W., *Mo. Agr. Exp. Sta. Bull.*, 1933, **196**.

⁷ Nelson, W. O., and Smelser, G. K., *Am. J. Physiol.*, 1933, **103**, 374.

⁸ Collip, J. B., Selye, H., and Thomson, D. L., *Virchows Arch. path. Anat.*, 1933, **290**, 23.

hemorrhage, no mice have been lost during the operation, and the post-operative mortality has been somewhat lower than in rats.

Six mice, 3 months of age, were hypophysectomized on the second or fourth day of lactation. All recovered from the operation and attempted to rear their litters, but milk secretion failed and within 24 hours the stomachs of the young were empty.

Six mice, 3 months of age, were hypophysectomized during the second half of pregnancy. Abortion did not occur; as the date of impregnation was not known, it could not be ascertained whether parturition was delayed; however, it took place normally in every case, and the litters were normal in size and gross appearance. The young were born dead, or at least were dead when first observed a few hours after birth, whereas 22 out of 24 rats hypophysectomized during gestation bore living young.² The mice resembled the rats in that milk secretion occurred; this was shown by the escape of milk when the gland was incised, and confirmed by histological study.

These experiments in general confirm our previous work on the rat. We intend to describe the effects of hypophysectomy in the mouse in more detail elsewhere; it may be mentioned here that the corpora lutea regress rapidly after hypophysectomy, whereas in the rat they preserve their normal appearance for a considerable time.

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Susceptibility of Eels and Dogfish to Diphtheria Toxin; Toxicity of Eel Serum and Dogfish and Skate Plasma.

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The action of the bacterial toxins depends upon tissue susceptibility; but the mechanism by which they act and the conditions in the tissues determining their action are quite obscure, despite many years of experimental investigation with susceptible laboratory animals. In contrast, the susceptibility of the higher marine animals has been little studied.¹

The Marine Biological Laboratory at Woods Hole provided

¹ Metchnikoff, Elie, *Immunity in infective diseases*, 1901. Translated by F. G. Binnie, 1907. London, Cambridge University Press.