

were collected with minimal stasis. The erythrocytic sedimentation rate was estimated by Westergren's modification.

We are indebted to Miss Ruth Jillson and Mrs. E. B. Gutman for the analyses, and to Dr. W. Curth and Dr. C. V. Burt, who kindly placed these cases at our disposal.

8513 P

Effect of Oestrus and Certain Gonadotropic Hormones on Life-Span of Adrenalectomized Animals.

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A. *Effect of oestrus on the life-span of the adrenalectomized dog not receiving adrenal cortical hormone.* Rogoff and Stewart¹ first demonstrated that the bitch, if adrenalectomized when in heat, could survive in normal health and without treatment of any kind, for as long as 65 days. This observation has been repeatedly confirmed in this laboratory by withholding hormone from the animal in heat.²

During the past 2 years we have studied 5 dogs in heat. The span of normal health varied, but in all cases it was greatly in excess of the longest time interval we have observed to intervene between cortical extract withdrawal and onset of adrenal insufficiency. The dogs were maintained without cortical hormone as follows: One dog 60 days; one 57 days; one 47 days; one 45 days; and one 40 days. At the end of these intervals adrenal insufficiency symptoms were evident and cortical hormone was injected. The arterial pressure, serum sodium, chloride, blood urea nitrogen, hemoglobin and glucose remained within normal limits throughout the period of good health.

Oestrus was experimentally induced in one adrenalectomized bitch by injections of extracts of menopause urine containing follicle-stimulating hormone of the anterior pituitary, followed by Follutein (pregnancy urine extract, E. R. Squibb & Sons). The animal

¹ Rogoff, J. M., and Stewart, G. N., *Am. J. Physiol.*, 1928, **86**, 20.

² Piffner, J. J., Swingle, W. W., and Vars, Harry M., *J. Biol. Chem.*, 1934, **104**, 701.

came into heat 10 days following the first injection. Cortical hormone was then withheld while the injections of gonadotropic factors were continued. The dog remained free from symptoms and in good health for 25 days.*

One adrenalectomized male dog injected daily with 50 units of menopause urine extract plus 100 units Follutein was maintained in normal health for 18 days. An ovariectomized adrenalectomized dog was injected intraperitoneally daily with 15-20 cc. of fresh Seitz filtered pregnancy urine. The animal survived in excellent health for 19 days.

B. *Experiments on adrenalectomized cats injected daily with anterior pituitary hormone.* Wilder³ reported that the growth hormone of the anterior pituitary could be employed with advantage in the treatment of Addison's Disease as a supplement to adrenal cortical extracts. The material used by him was a growth hormone preparation made by E. R. Squibb & Sons. We investigated the effect of this material upon the life-span of the bilaterally adrenalectomized cat not receiving cortical hormone.

The animals were maintained in normal health for several weeks following adrenalectomy by adequate cortical hormone. The hormone was then withdrawn and the cats allowed to develop severe insufficiency. They were then injected with cortical hormone and restored to normal health. Growth hormone in daily doses of 1 cc. per kg. of body weight was substituted for cortical hormone. One male cat was maintained in excellent health for 150 days on anterior pituitary extract. At the end of this period the injections were stopped and the animal developed severe adrenal insufficiency 4 days later. One female cat survived 35 days, one female 28 days, 2 females 21 days, and one male 21 days.

The growth hormone preparation employed is known to contain considerable quantities of gonadotropic and thyreotropic factors. In the light of the observations on the bitch in heat, and the effect of injecting gonadotropic factors (*e. g.*, F.S.H. and Follutein) and the negative results reported with growth hormone by Evans, *et al.*,⁴ on adrenalectomized rats, it seems reasonable to assume that the growth hormone *per se* is not the factor responsible for prolongation

* Normal oestrus can be induced in both adrenalectomized and immature unoperated dogs by merely injecting extract of menopause urine. The heat period is as prolonged as that characteristic of spontaneous oestrus. Follutein appears to shorten the interval.

³ Wilder, R. M., *Proc. Staff Meetings Mayo Clinic*, 1934, 9, 689.

⁴ Evans, H. M., Pencharz, R. M., Meyer, K., and Simpson, M. E., *Memoirs of the University of California*, 1933, 41, 347.

of life in the adrenalectomized animal. The gonadotropic principles contained in the material are probably the active agents.

8514 C

Comparison of the Corner-Allen and Clauberg Tests for Assay of Progesterin.

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At the present time two methods for assaying progesterin are in use, one involving the use of mature female rabbits, and the other, immature female rabbits. In connection with their work which showed that progestational proliferation is due to a specific corpus luteum hormone, Corner and Allen¹ developed a method for the standardization of corpus luteum extracts. The test devised consists of injecting the extract over a period of 5 days into a sexually mature doe castrated 18 hours after mating. A rabbit unit (Corner-Allen unit) is then defined as the minimum quantity of progesterin which, divided into 5 equal daily doses, produces on the sixth day a state of the uterus equal to that of the eighth day of a normal pregnancy. A uterus in this state shows a +++ or ++++ proliferation.

Allen² discovered that, in the immature rabbit weighing from 575 to 1647 gm., progestational proliferation can be induced in the uterus by injections of progesterin, provided the uterus is first influenced by a series of oestrin injections. Only a small percentage of the immature animals responded to the progesterin treatment when it was not preceded by the oestrin injections. Clauberg^{3, 4} confirmed the findings of Allen² on immature rabbits and established the Clauberg unit which is measured in the same way as the Corner-Allen unit except that 600 gm. rabbits are used and are primed with a total of 80 international units of oestrin, administered in 8 daily injections of 10 international units each, preceding the 5 daily injections of progesterin.

¹ Corner, G. W., and Allen, W. M., *Am. J. Physiol.*, 1929, **88**, 326.

² Allen, W. M., *Am. J. Physiol.*, 1930, **92**, 612.

³ Clauberg, C., *Zbl. f. Gynäk.*, 1930, **54**, 2757.

⁴ Clauberg, C., *Klin. Wschr.*, 1931, **10**, 1949.