Group "a" remained larval for the period of the experiment; Group "b" needed an average of 41 injections of thyreoactivator to metamorphose; Group "c" (pilocarpin) needed an average of 12 injections of thyreoactivator and Group "d" (adrenalin) an average of 20 injections of thyreoactivator.

Further work is in progress to show whether the sensitizing effect of pilocarpin and adrenalin is due to a stimulation of specific thyroid secretory nerves or to other effects.

7578 P

Effects of Estrin upon Gonads, Mammary Glands and Hypophysis of the Rat.*

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It is generally agreed that injections of estrin cause an atrophy of the gonads[1] and an increase in the weight of the hypophysis with a decrease in its gonad-stimulating power.[2] Wade and Doisy,[3] however, state that Theelin, in dosages up to 6.6 gamma daily, in the male does not cause an interruption of spermatogenesis, and in the female similar doses do not interfere with normal reproductive processes.

Adult normal males and females and female castrates were divided into 2 series, A and B. In Series A, 5 R.U. of estrin[4] were given daily for 3 weeks and 20 R.U. daily the fourth week. In Series B, the same dosage was given as in Series A but injections of 20 R.U. daily were continued for 4 weeks more. Each series included 3 groups with 10 rats in each group: 1, normal males, 2, normal females, and 3, ovariectomized females. An adequate number of controls was used.

Results. I. Effect of estrin on body weight. Normal males and

* This investigation was aided in part by a grant from the National Research Council, Committee on Problems in Relation to Sex.

[1] Moore, C. R., and Price, D., *Am. J. Anat.*, 1932, **50**, 13.

[2] Leonard, S. L., Meyer, R. K., and Hisaw, F. L., *Endocrinology*, 1931, **15**, 17.

[3] Wade, N. J., and Doisy, E. A., *Abst. Proc. Am. Fed. Biologists*, 1934.

[4] Estrin prepared from pregnancy urine according to the method of D'Amour, F. E., and Gustavson, R. G., *J. Pharm. and Exp. Therap.*, 1930, **40**, 4.

castrate females showed a progressive loss of weight while normal females maintained their weight.

II. Effect of estrin on sex organs. A. Male. The testes in Series A weigh only 65%, those of Series B only 23% of the control weights. In the animals of Series B no spermatids or spermatozoa were found, and the tubules contained no secondary, and only a few primary spermatocytes. However, numerous mitotic figures were present in the spermatagonia. The interstitial tissue was considerably reduced. The last breeding in which females were impregnated with these males occurred 19 days after commencement of the injections.

B. Female. The ovaries in Series A are 66% and those of Series B 28% of the control weights. The uterus of the normal female showed a progressive increase in diameter and weight. The uterus of the castrate was restored to approximately the size of the normal female. There was, however, considerable variation in size of the individual uteri and the measurements are not entirely accurate because of contractions and consequent thickening. The weight cannot be used for comparison in this group because at ovariectomy a variable length of the uterine horn had been removed along with the ovary.

III. Effect of estrin upon the hypophysis. In the male and castrate female of Series B the hypophysis is approximately 100% heavier than that of the control weights. In the normal female the hypophysis is about 200% heavier than the control.

Histologically, the pituitaries of females who were ovariectomized 8 months before and injected with estrin for 8 weeks contain very few castration cells. These cells never equalled in size the large "signet ring" cells seen in the untreated animal.

In the anterior pituitaries of normal males and females that received estrin there was an increase in the number of chromophobe cells with a corresponding increase in the number of cells transitional between chromophobes and basophiles. Both the "transitional" cells and the basophiles contain a markedly hypertrophied Golgi apparatus and nucleolus, and numerous enlarged mitochondria, all of which suggest abnormally secreting cells. Many "degranulated" basophiles are to be noted. The connective tissue and vascular elements are also increased.

The pituitaries of Series A resemble somewhat the pituitary of pregnant animals confirming Baniecki's[5] observations on the guinea pig.

[5] Baniecki, H., *Arch. f. Gynak.*, 1928, **134**, 693.

All animals in Series B possessed actively secreting mammary glands. The extent of this development as far as the size of the gland is concerned was greatest in the males, somewhat less in the ovariectomized females, and least in the non-castrate females. A white, fatty fluid (milk?) flowed freely from cut portions of these glands. Histological examination showed a flattened epithelium, prominent vacuolization and alveoli distended with fluid containing many fat droplets and numerous free vacuolated cells.

The effect of long continued injections of estrin upon the mammary glands and hypophysis suggest that the hypophysis is functioning abnormally. Whether this lactation is the result of estrin administration *per se* or whether it resulted after the cessation of the injections is not known, as the animals were sacrificed 4 days after the last injections. This question is now being investigated.

7579 C

Fibrinolytic Activity of Hemolytic Streptococci on Blood of Cases of Recurrent Tropical Lymphangitis.

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Tillett and Garner[1] have recently shown that broth cultures of hemolytic streptococci of human origin rapidly dissolve normal human fibrin clot. Tillett, Edwards and Garner[2] demonstrated the development of resistance to dissolution in the plasma clot obtained from individuals following acute hemolytic streptococcus infections. They also showed that this antifibrinolytic property is absent in the fibrin clot derived from a group of patients convalescing from other infections. Likewise, the blood from the great majority of healthy adults and from persons with other acute diseases was found to be susceptible to fibrinolysis. The authors believe that this insusceptibility to dissolution is specifically induced and that "the fibrinolysin of hemolytic streptococci, in the body, makes a definite response directed against the lytic action of the bacteria."

While studying the probable relationship of hemolytic strepto-

[1] Tillett, W. S., and Garner, R. L., *J. Exp. Med.*, 1933, **58**, 485.

[2] Tillett, W. S., Edwards, L. B., and Garner, R. L., *J. Clin. Invest.*, 1934, **12**, 47.