

patients with angina pectoris were discontinued because of the hazard involved. More detailed studies along this same line are, therefore, being carried out in animals.

This study suggests that the complete removal of the thyroid gland alters the response of the cardiovascular system to adrenalin and that this effect is independent of changes in the basal metabolism or the rate of blood flow. We also believe that it is the alteration of this mechanism which may in a measure be responsible for the relief of anginal pain in these patients.

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Loss of Sensitivity to Anterior Pituitary-like Hormone of Pregnancy Urine.

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It has been shown that the greatly enlarged ovaries of rats injected with extract containing the anterior pituitary-like hormone of pregnancy urine (A.P.L.) will decrease in weight after a certain period even though administration of the hormone be continued. Such ovaries will finally return to a normal weight level.^{1, 2, 3}

We have recently repeated these experiments on a series of 12 rats, continuing the A.P.L. injections for a longer time, and we found that after prolonged administration of the hormone the ovaries of some of these rats became actually subnormal in size, weighing as little as 7 mg. after 4 months' treatment (increasing doses of 25-200 units of A.P.L. daily). The ovaries of 8 out of 10 rats, however, were still normal in size at this time (30-45 mg.), but they lost their sensitivity to A.P.L., for 200 units per day of this hormone did not have any luteinizing effect upon them. Histologically they showed numerous corpora lutea in retrogression, but no mature follicles.

In 4 similarly treated rats we performed a laparotomy, inspected the ovaries after 4 months of treatment with A.P.L. and found them normal or subnormal in size. We then injected these rats over a

¹ Collip, J. B., *Internat. Clinics*, 1932, **4**, 51.

² McPhail, M. K., *J. Physiol.*, 1933, **80**, 105.

³ Zondek, B., *Die Hormone des Ovariums und des Hypophysenvorderlappens*, Julius Springer, Berlin, 1931.

period of 14 days with an aqueous ammoniacal gonadotropic extract of pig pituitary in addition to A.P.L. At autopsy all of these ovaries were greatly enlarged and contained numerous fresh corpora lutea. Their weights ranged from 99-170 mg.

These experiments show that even if the ovary loses its sensitivity to the anterior pituitary-like hormone of pregnancy urine, it still responds readily to extracts obtained from the hypophysis.

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Influence of the Uterus on Ovary and Mammary Gland.

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While Caesarian section normally initiates lactation in the rat, it has been found that milk secretion does not occur if the uterus is filled with paraffin immediately after the foetuses have been removed.¹ Furthermore, no oestrus is usually observed in such rats for several weeks after the operation; while in the controls, the uteri of which have not been distended, normal cycles set in 3 days after the interruption of pregnancy. We have recently repeated these experiments, and it is the object of this paper to describe the morphological changes observed in the ovary, pituitary and mammary gland.

In 10 pregnant rats, the uteri were emptied through a small incision during the second half of gestation; then each horn of the uterus was injected separately with melted paraffin (melting point 42°C.) after tying the lower end with silk. When the uterus was well distended, the upper end, through which the injection was made, was also tied.

During the 6 weeks following the operation, only 2 of these animals came into oestrus—one had 2 cycles, the other, 4. At autopsy it was found that the ovaries were greatly enlarged (75-110 mg. as compared with 40-45 mg. in the normal controls), and contained many large corpora lutea similar in appearance to those observed during gestation (Fig. 1).

In a control series where the foetuses were removed, but the uterus was not filled with paraffin, the corpora lutea of gestation shrank

¹ Selye, H., Collip, J. B., and Thomson, D. L., *Endocrinology*, in press.