vealed any indication of plumage reversion, having retained the luxuriant male plumage throughout.

The part of the gonad containing spermatozoa was carefully removed from the rest and placed in a sterile dish with about 6 cc. of Locke's solution and thoroughly mashed. Equal parts of the sperm suspension were then introduced by means of an ordinary medicine dropper into the cloaca and distal end of the oviduct of 3 virgin brown Leghorn laying hens. All eggs laid were collected for 18 days and incubated. No fertility was found. A similar technique, previously developed, in which spermatozoa were obtained from the vasa deferentia of sexually active cocks yielded fertile eggs.

It is highly probable that the sperm suspension was not sufficiently dense to bring about fertility under the conditions involved. It is also probable that the spermatozoa of the fowl may undergo an ageing or ripening process in some part of the reproductive system other than the seminiferous tubules which is essential for fertilization. If this were true then spermatozoa taken directly from the seminiferous tubules would be decidedly inferior to those, for instance, found crowded in the vasa deferentia of a sexually active cock. According to Young[2] such a condition actually prevails in mammals, though it has not been demonstrated in the bird.

5289

A Quantitative Study of Ovulation in the Rabbit.*

J. M. WOLFE. (Introduced by R. S. Cunningham.)

From the Department of Anatomy, Vanderbilt University School of Medicine, Nashville, Tennessee.

Evidence presented by Smith and Engle[1] points to the fact that there is a correlation between the amount of gonadal stimulating hormone of the anterior lobe of the hypophysis and the stages of the oestrous cycle. These investigators found that only a slight response was secured from glands taken from donors during the oestrous period, while a marked reaction was secured when glands were taken from animals which were in dioestrous.

---

[2] Young, Wm. C., *Anat. Rec.*, 1929, **44**, 252.

* This investigation has been aided by a grant from the Committee on Research in Problems of Sex of the National Research Council.

[1] Smith, P. E., and Engle, E. T., *Anat. Rec.*, 1929, **42**, 38.

We have tested the capacity of the anterior lobe of the hypophysis of the sow, taken at different periods of the oestrous cycle, to induce ovulation in the rabbit. Using the work of Corner[2] as a basis, it is possible to select sows at the different periods of the oestrous cycle. The head and the entire reproductive tract of these sows were brought to the laboratory from the killing floor within 30 minutes after the death of the animals. The hypophysis was removed and the anterior lobe dissected out and carefully weighed. It was ground up very thoroughly with sand in physiological saline, and centrifuged for 30 minutes. The supernatant fluid was drawn off and diluted to a point where 1 cc. of the fluid represented 5 mg. of anterior lobe tissue. These manipulations were carried out under sterile conditions. The follicles and corpora of the donor's ovaries were carefully measured and the ovaries were fixed in Bouin's fluid for histological study. Blocks from the uterus and the vagina were also fixed.

The saline suspension obtained from the anterior lobe tissue was injected intravenously in sexually mature female rabbits in various amounts. On the basis of 144 experiments, the following conclusions have been reached:

1. Injections of anterior lobe tissue in amounts as small as 1 mg. induced ovulation in rabbits when the ovaries of the donor contained inactive corpora and follicles measuring from 6-8 mm. in diameter. 2. Injection of 20 mg. were required when the ovaries of the donors contained inactive corpora and follicles measuring up to 10 mm. 3. It was necessary to inject 40 mg. of anterior lobe tissue when the ovaries of the donors contained large active corpora and small follicles in the resting condition.

On the basis of these experiments, it seems possible to conclude that the anterior lobe of the hypophysis of the sow undergoes cyclic physiological changes.

Ovulation has been induced in pregnant rabbits by the intravenous injection of anterior lobe suspension. These experiments have not as yet been quantitated.

[2] Corner, G. W., *Contributions to Embryol.*, 1921, **13**, 117.