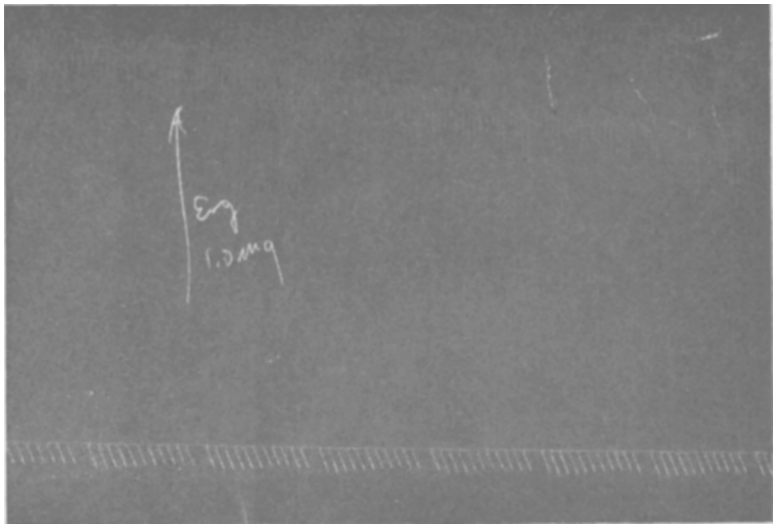

FIG. 1 B

B. Duodenum of rat in Locke's solution containing 0.014% calcium chloride, pH 6.78, Ergotamine 1:100,000 produced depression.

that the response was different in the duodenum and ileum. Higher concentration of calcium—about 0.056% or more—and smaller amounts of ergotamine were required to produce reversal by ergotamine similar to that obtained in the duodenum.

4753

Anterior Lobe of the Pig and the Monkey Ovary.

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The Smith and Engle phenomenon, first demonstrated in the rat, has been extended to other laboratory mammals. E. Allen induced sudden stimulation of the ovaries and genital tract in an immature rhesus female by means of implants of anterior lobe from 3 spayed females of the same monkey species. He also found that dog hypophysis had no effect.[1] It is, therefore, of interest to report a striking effect of pig anterior lobe upon a non-ovulating and amenorheic monkey.

A preliminary experiment was done with the glands implanted

[1] Allen, E., *Anat. Rec.*, 1928, xxxix, 315.

whole and intact. Female No. 22 of the Carnegie Colony of rhesus monkeys had been running irregular cycles as follows: 82, 98, 98, 25, 54, 91 days. These were her only menstrual periods; but minor cycles were reflected in the curve of vaginal desquamation. She was, moreover, blind, with complete optic atrophy, the sequel of a disease a year before the experiment. Laparotomy June 4, 1929, 8 days after the last bleeding of 5 days' duration, showed an infantile uterus and tiny ovaries absolutely devoid of visible graafian follicles, corpora lutea, or corpora albicantia. Two whole interior lobes of castrated male pigs were implanted retroperitoneally at the time of the laparotomy; 2 on June 5, intramuscularly, and again 2 on June 6. The animal was killed June 10 and embalmed with Regaud's fluid: uterus of middle finger size (15x10 mm.); ovaries 9x6.8x6 and 9x6.2x6 mm., with follicles of pin-head and mustard-seed size. The effect of the implants was noticeable but not striking.

An experiment with female No. 31 gave unequivocal results. This rather vigorous female of about 4000 gm. weight passed through the following menstrual cycles: 28, 28, 22, 19, 65, 31, 35, 21, 57, 45 days. She had one spell of sickness, which rendered her temporarily blind. She only partially recovered, for she continued to strike her head against the wire cage causing a scalp wound that refused to heal. May 20, 1928, a few red blood cells were seen in the vaginal lavage, her last menstruation. It was apparent, however, that the last several uterine bleedings were unaccompanied by follicular growth, a diagnosis made from outward signs, corroborated by laparotomy June 10, when the ovaries were found to be of minimal size for an adult animal (8x5x3 mm.) and the uterus the size of a little finger. At this operation the anterior lobes of 2 adult castrated pigs from the slaughter house were placed retroperitoneally and crushed with a mosquito forceps. On each of 3 successive days thereafter 2 further glands of the same kind were placed in the rectus muscles and crushed. Twice the glands were fresh and warm; twice they had been on ice 3 to 4 hours. June 17, four days after the last implant, the vaginal lavage contained red blood cells and their appearance is interpreted as the counterpart of the intermenstrual bleeding in the monkey, the proestrous bleeding of the dog. June 19 the animal was again laparotomized for inspection of the organs in the living state. The ovaries were found to be enormous, with the entire surface studded with graafian follicles 3 to 4 mm. in diameter, bluish in color from their contents of clear liquor folliculi. The uterus was much enlarged and vascular and practically round. After embalming (Regaud's fluid) it measured

16 mm. in diameter on a photograph; the ovaries after removal from the injected animal measured 13x12x10 and 14x12x10 mm., the largest ever seen in any rhesus female at any time, even when containing a corpus luteum of maximum size. The increase in size of the ovaries was due to the growth of numerous graafian follicles. The mammary glands were removed, stained, and mounted whole. They showed a considerable amount of proliferation and are comparable to the stage attained by the specimen shown by E. Allen.[2] Allen's specimen was stimulated by injection of liquor folliculi direct.

The next step will be a study of the relation of the Smith-Engle effect to the menstrual process, for it now appears certain that the follicular apparatus has nothing to do with menstruation, the cause of which is to be sought outside the ovaries.

4754

Effect of Anesthesia on Artificial Production of Pseudopregnancy in the Rat.*

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The condition of pseudopregnancy in the rat was first described by Long and Evans.[1] These authors demonstrated that pseudopregnancy could be produced artificially by the introduction of a small glass rod into the cervical canals at the time when the animal was in stages 1, 2 or 3 of the oestrous cycle, as specified by them. Wang[2] corroborated the findings of Long and Evans and recently Slonaker[3] has made additional contributions to the subject.

Long and Evans showed that there was no direct nervous connection between cervix and ovary. Slonaker suggests that a substance, most likely to be found in the vaginal or uterine mucosa, is responsible for the continued action of the corpora lutea in pseudopregnancy and possibly in pregnancy. He further suggests that this substance could act either directly on the corpora lutea or

[2] Allen, E., *Contrib. to Embryology*, 1927, xix, Fig. 51.

* Assisted in part by a grant from the National Research Council, Committee on Problems of Sex.

[1] Long, J. A., and Evans, H. M., *Mem. Univ. Calif.*, 1922, vi, 82.

[2] Wang, G. H., *Comp. Psychol.*, 1923, Mon. II, Serial No. 6, 1.

[3] Slonaker, J. R., *Am. J. Phys.*, 1929, lxxxix, 406.