

synchronized in the lower animals, whereas in the human individual ovulation has been abundantly proved to be an inter-menstrual phenomenon occurring probably on the fourteenth day following the beginning of the last menses. The rabbit and ferret only ovulate following copulation or mechanical stimulation of the cervix. Immediately following ovulation in these species, the corpora lutea develop, and as the life time of the corpora is, in the absence of impregnation in the rabbit, about two weeks, the condition of pseudo-pregnancy can be studied to advantage here. Pseudo-pregnancy is apparently entirely a corpus luteum phenomenon. It consists, in the rabbit, of considerable mammary gland and uterine hypertrophy. It also represents a period of sensitization of the uterus because mechanical irritation, as from a foreign body introduced into the uterus, leads to the formation of a tumour-like growth, the deciduomata first described by Loeb.⁹

Following atresia of the corpora lutea retrogressive changes in the mammary gland and uterus occur. Reasoning from such observations it has been suggested that menstruation, which is so markedly a human characteristic, is really the termination of what might be termed a pseudo-pregnant condition, due to atresia of the corpus luteum which develops and flourishes for ten or twelve days following ovulation. In support of this theory there is the evidence that removal of a fresh corpus luteum is followed very shortly by the menstrual flow. Marshall¹⁰ has suggested that menstruation represents pseudo-pregnancy and pro-œstrus degeneration telescoped into one.

There is a certain amount of evidence that the anterior lobe of the pituitary gland may produce a second hormone which has an inhibitory effect upon the ovary. Evans⁴ found that the injection of his alkaline extract of the anterior lobe, which contains the growth principle, caused rat ovaries to become almost completely luteinized with concomitant cessation of periods of œstrus. Teel,¹⁵ by injecting a similar extract during pregnancy, was able in the rat to prolong the gestation period from two to six days

beyond the normal. Wiesner¹⁶ also claims that there is a second and inhibitory factor in the anterior pituitary and also in the placenta, which induces luteinization of follicles and a pseudo-pregnancy reaction in the uterus and vagina.

THE PLACENTA

Zondek and Aschheim found that implants of placenta produced similar effects to anterior pituitary implants or injection of anterior pituitary emulsion. They also found that the urine of pregnant women which had been freed from œstrin by extraction with ether contained anterior pituitary hormone. Similarly, the blood during pregnancy has been shown by them to produce an anterior pituitary effect when injected into immature mice. Wiesner¹⁶ has worked extensively with placental extracts, and claims the coexistence of two hormones therein, one stimulatory to the ovary, the other causing inhibition of œstrus and a pseudo-pregnancy reaction. The placenta is therefore rich in two hormones—œstrin; a pituitary-like ovarian stimulant; and, possibly, a third inhibitory principle.

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