marked hypertrophy of the vagina and hyperæmia and distension of the uterus will be noted. Prolonged treatment with œstrin injections is said to cause enlargement of the breasts and even the secretion of milk subsequent to the withdrawal of the treatment. Stimulation of milk secretion is denied by some workers. The effect on the male is probably anti-masculine in the main, but the hypertrophy of breast tissue in male guinea pigs has been noted.

If œstrin is injected into young and immature rats or mice the phenomenon of œstrus is induced as it is in the castrate, also the same effect is obtained in the öophorectomized immature animal. A point of great interest in the physiology of œstrin is its *apparent non-effect upon the intact normal ovary.* The injection of œstrin during pregnancy results in abortion if the dosage administered be adequate. The amount required in the later stages is much greater. Œstrus may also be induced by œstrin in the lactating animal. It is claimed that œstrus changes may be induced in the senile animal by injection of the hormone. The ovary, however, is not stimulated and ovulation does not occur.

THE PITUITARY GLAND

It is apparent that since the hypertrophy of the genital tract at each period of œstrus is due to a specific stimulus afforded through the functioning of the hormone œstrin, the ovary must liberate this internal secretion at periodic intervals. The question therefore arises as to what controls the periodicity of the ovary in this one respect at least. This question has been largely answered by the conclusive demonstration in the work of Smith and Engle,[14] and Zondek and Aschheim[17] that the phenomenon of ovulation is in large measure controlled by the secretion of the anterior lobe of the pituitary gland. The question as to how the pituitary gland functions as it does remains for the present unanswered.

Smith and Engle, and Zondek and Aschheim, by means of fresh intramuscular implants of anterior pituitary substance, succeeded in demonstrating intense stimulation of the immature ovary of rats and mice. The effect consisted in marked hypertrophy of the infantile gland due to the rapid growth of Graafian follicles. The development of the follicles appeared to follow a normal course, and normal but superovulation resulted. But of even greater interest was the production of premature puberty and all the phenomenon of œstrus, opening of the vagina, cornification of the vaginal mucous membrane, enlargement, engorgement and distension of the uterus. This latter result was undoubtedly due to the liberation of œstrin from the ovaries of the immature animal, stimulated to activity by the anterior pituitary hormone.

The recent experiments of Parkes[13] in which follicular ablation was produced by means of x-rays supply evidence that the periodicity of œstrus is not necessarily governed by the periodic maturation of follicles.

Further evidence that the pituitary gland has a profound influence on the gonad is found in the results of hypophysectomy. Removal of the hypophysis causes cessation of ovarian development and activity.

If one considers the normal ovarian cycle (maturation of the Graafian follicle resulting in rupture and escape of the ovum, to be followed immediately by the development of the corpus luteum from the old follicle) and the subsequent history of the corpus luteum, depending as it does on the fate of the shed ovum, one sees presumptive evidence, at least, of endocrine activity other than that thus far discussed. Many of the presumptive functions of the corpora lutea have of late years been definitely proved as entities. Functioning corpora lutea have been shown to inhibit ovulation and œstrus changes in the genital tract. The recent work of Corner[3] has demonstrated that the progestational proliferation of the uterine mucosa is a function of the corpus luteum and he has succeeded in producing this effect by means of extracts. He has also shown the importance of the corpus luteum in maintaining the nutrition of the uterus of the impregnated animal by carrying rabbits through pregnancy which had been öophorectomized following impregnation.

The development of the mammary glands from the condition in which they are found at œstrus to that at the end of the luteal phase is another function of the "yellow body".

Since there is a great deal of species difference in regard to the phenomena of sex, it is rather difficult to correlate the conditions as found in the human female with the œstrus cycle as manifested in the various lower species. For example, ovulation and œstrus are as a rule