

It therefore appears that Pregnandiol is physiologically inert as far as the female sexual tract is concerned.

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**Influence of Sex Hormones on the Occurrence of Tissue Macrophages in the Rabbit's Uterus.\***

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It has been shown<sup>1</sup> that during pregnancy there is a great increase in the number of mononuclear phagocytic cells in the wall of the rabbit's uterus. This report is of an attempt to determine the extent to which this phenomenon might be attributed to hormonal factors, and is based on results obtained with over 70 female rabbits. In all instances the macrophages were demonstrated by intravital staining. Each animal was given intravenously from 20 to 25 cc. per kilo body weight, of a 1% aqueous solution of Trypan Blue, over a period of 3 days. They were sacrificed on the fourth day, and paraffin sections of the uteri were made using alum carmine as the counterstain.

It was found that (1) in the uterus of the normal unmated rabbit small numbers of faintly-staining macrophages are generally present, while they are completely absent in the atrophic uterus of spayed animals, and (2) the induction of progestational proliferation in the rabbit's uterus by the intravenous injection of urine from pregnant women or of estrin-free ovary-stimulating extracts made from blood of pregnant patients, does not generally cause an increase in the number of macrophages. This, however, was demonstrated in a few instances.

The effect of various hormonal conditions on the response of the uterus to trauma was then determined. The injury was produced by the method of Long and Evans<sup>2</sup> for the experimental production of placentomata, namely by the introduction of a silk ligature

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<sup>1</sup> Fluhmann, C. F., *Am. J. Obstet. and Gynec.*, 1928, **15**, 783.

<sup>2</sup> Long, J. A., and Evans, H. M., *The Oestrous Cycle in the Rat*, Mem. Univ. California, 1922.

through one horn of the uterus. The results showed that: (1) In normal rabbits and in spayed animals large numbers of macrophages soon appeared at the site of the injury, but this response was essentially of a local nature and there was no great increase of the cells at a distance from the ligature or in the opposite uterine horn, but (2) in the animals in which progestational proliferation had been induced, the reaction to an irritant, such as a silk ligature placed in one horn, was greatly increased. In this case large numbers of deeply-staining macrophages were found not only at the site of the injury but throughout both uterine cornua.

It is thus apparent that when the rabbit's uterus undergoes the tissue differentiation and vascular changes induced by the ovarian hormones estrin and progesterin, it acquires the power of responding much more actively with macrophages to traumatic stimuli.

During pregnancy in the human, fixed macrophages are found in large numbers in the uterus (Hornung<sup>3</sup>), and in the broad ligament (Hofbauer<sup>4</sup>), and they are generally considered as important factors in the defensive mechanism against local infection. It would seem justifiable, therefore, to attempt the treatment of pelvic inflammatory conditions with ovary-stimulating hormones, as originally recommended by Klein.<sup>5</sup>

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### Further Studies on Immunity to Diphtheria Among Central and Polar Eskimos.\*

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Inasmuch as immunity to various diseases is often found among persons in whom no previous exposure to infection has been established, several authors have postulated the existence of a physiolog-

<sup>3</sup> Hornung, R., *Zentrbl. f. Gynack.*, 1924, **48**, 2170.

<sup>4</sup> Hofbauer, J., *Bull. Johns Hopkins Hosp.*, 1926, **38**, 255.

<sup>5</sup> Klein, P., *Z. f. Geburtsh. u. Gynack.*, 1929, **95**, 371.

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