23, filamented forms 8, lymphocytes 0, monocytes 1, eosinophiles 2, basophiles 1.

Leukemic whole blood + bacteria: no phagocytosis of bacteria seen.

Leukemic blood cells + serum of individual containing immune opsonins + bacteria: all filamented forms showed ingestion of more than 50 bacteria; the ingestion capacity of stab forms varied from zero to more than 50 bacteria per cell; their activity appeared to depend upon the age of the cell. None of the cell forms younger than the stab were observed to take up bacteria.

The inference to be drawn from these observations is that, in infections where mature neutrophiles are being rapidly destroyed, the bone marrow in an attempt to replace the cells destroyed, forces out into the peripheral blood a high percentage of young forms which play little if any part in the protection of the individual against the infection. It would appear, therefore, that a too rapid or continuous shift to the left in peripheral blood cells of the myelogenous series is not a desirable condition. Its continuance impairs one of the important defensive mechanisms of the body during infection.

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## Effects of Synthetic Progesterone on Female Genital Tract of the Monkey.*

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The corpus luteum hormone corporin as obtained from the corpus luteum will produce premenstrual development of the endometria of castrated monkeys and traumatization of such uteri stimulates the formation of epithelial proliferations characteristic of normal implantation sites.[1, 2] It is also known that oestrin will promote growth of the uterus, cornification of the vagina, development of the sex-skin, and metaplasia of the cervical glands.[3, 4]

* Aided by a grant from the National Research Council Committee on Problems of Sex.

1 Hisaw, F. L., *Am. J. Obst. Gyn.*, 1935, **29**, 638.

2 Engle, E. T., Smith, P. E., and Shelesnyak, M. C., *Am. J. Obst. Gyn.*, 1935, **29**, 787.

3 Overholser, M. D., and Allen, E., *Surg. Gyn. Obst.*, 1935, **60**, 124.

4 Engle, E. T., and Smith, P. E., *Anat. Rec.*, 1935, **61**, 471.

When effective doses of oestrin and corporin are administered simultaneously oestrin does not prevent the action of corporin on the endometrium nor does it prevent epithelial proliferation following trauma. Corporin, however, minimizes the effects of oestrin on the sex-skin and vagina, and prevents metaplasia of the cervical glands.[5, 6]

Experiments have been conducted to determine whether or not the synthetic corpus luteum hormone, progesterone, possesses the above physiological properties known for the natural substance. The material used was prepared synthetically from Stigmasterol by the method described by Butenandt and furnished by the Schering Corporation, Bloomfield, N. J.

The type of experiment employed is illustrated by the following protocol: Monkey Al. 54, adolescent, body weight 4075 gm., was given pituitary extracts resulting in marked ovarian development without luteinization. The animal was castrated and given 100 RU of oestrin daily for 15 days, followed by a combination treatment of 100 RU of oestrin plus 4 international units of progesterone daily for 16 days. The uterus was traumatized on the eighth day of oestrin-progesterone treatment and the animal was killed at the termination of the experiment.

Histological examination of the genital tract of this animal showed a premenstrual endometrium approaching secretory exhaustion, marked epithelial proliferations surrounding the traumatic areas, an absence of squamous metaplasia of the cervical glands, and a reduced oestrin effect on the vaginal mucosa as indicated by relatively few mitoses, subepithelial leucocytic infiltrations, and the absence of Dierk's layer over extensive areas. These results agree with those previously reported for experiments in which combinations of oestrin and corporin were used,[5, 6] and indicate that synthetic progesterone has the same physiological properties as the progestational hormone extracted from corpus luteum tissue.

[5] Hisaw, F. L., *Anat. Rec.*, 1935, **64**, 54, sup. No. 1.

[6] Hisaw, F. L., and Lindrun, F. C., *Endocrinology*, 1936, **20**, 228.