the injection of any fluid, and of course these cells are already present where acute infection has occurred either in the peritoneum or thorax. The cause of the variable eosinophilia which is apparently not reflected in the cells of the blood might possibly be a local response to a host of protozoan organisms in the nearby intestinal tract. With direct inoculation of tubercle bacilli, the eosinophiles completely disappear from the peritoneal fluid. With regard to monocytes and lymphocytes, the animal showing a majority of monocytes has been considered the "normal" type as 65% of the entire group show this picture. Where lymphocytes are in excess, it has frequently happened that subsequent autopsy has demonstrated the presence of a healing or healed infection at some other point in the body, *e. g.*, otitis media, cholecystitis, organized pneumonia, or enlarged mesenteric lymph nodes possibly associated with a paratyphoid infection. This view is supported by the experience with tuberculous infection, since it has been noted that in a given animal there is always a sudden reversal of the lymphocyte-monocyte ratio which occurs a day or so before the skin becomes sensitive to tuberculin. It is possible that this relationship may also apply to other infections and that a peritoneal lymphocytosis is merely a manifestation of the allergic state. Attempts to explain the differences observed on any other basis have proved unsuccessful. Tabulations of the counts in relation to age, sex, color, diet and meteorological conditions have been unfruitful.

As a result of this analysis it is believed that a differential count of the cells from the "normal" guinea pig is represented by the figures in the second column of Table I.

4463

Effect of Daily Transplants of Anterior Lobe of Pituitary on Reproduction of Frog (Rana pipiens Shreber).

OPAL MARIE WOLF. (Introduced by Frederick L. Hisaw.)

From the Zoological Laboratory, University of Wisconsin.

Smith and Engle[1] first showed that daily transplants of the anterior lobe of the pituitary induced precocious sexual maturity in immature female rats and mice and caused superovulation in these animals as well as those sexually mature. However, Riddle and

[1] Smith, P. E., and Engle, E. T., *Am. J. Anat.*, 1927, xl, 159.

Flemion[2] were not able to induce ovulation in immature pigeons using transplants of this gland. The present investigation was undertaken to determine the effect of daily transplants of the anterior lobe of the pituitary in frogs *(Rana pipiens,* Shreber).

In making the transplant the head of the donor was cut from the body with sharp scissors, the brain exposed, and the anterior lobe was quickly removed from the floor of the cranium and inserted into the lateral or femoral lymph sinus of the recipient. Throughout the experiment the animals were not subjected to temperature changes and were neither fed before nor during the experiment.

In November, 9 out of 11 females receiving transplants either ovulated without amplexus or the uteri were gorged with eggs when the animals were killed. One of the 2 frogs which did not ovulate was killed the fourth day after having received one transplant on 3 successive days. The ovary had apparently been stimulated because the oviducts were highly vascularized. When the second frog died on the eighth day, having received transplants for 4 days, no visible change had occurred in the oviducts.

From the experimental work it has been found that the number of transplants necessary to bring about ovulation varies in individuals. One transplant for 3 or 4 successive days will induce ovulation in most cases, however, 2 animals out of 13 receiving only one transplant ovulated. In no instance has ovulation occurred in the untreated frogs or in the controls which received grafts of brain tissue similar in size to the anterior lobe.

Male frogs also became activated following daily transplants of the anterior lobe of the pituitary for from 2 to 5 successive days. In frogs treated the latter part of November a clasp reflex developed which persisted steadily for over a week but in no case did the males fertilize the eggs of the females. This experiment has been repeated and early in March the males shed sperm over the eggs as they were ovulated, fertilization occurred, and normal development followed.

[2] Riddle, Oscar, and Flemion, Florence, *Am. J. Physiol.*, 1928, lxxxvii, 110.