relation between the ability of the filtrate of a given microorganism to elicit the phenomenon of local skin reactivity in rabbits and the inhibitory effect of an infection with the microorganism upon the development of sarcoma 180 in mice.

Attempts are under way to determine the effect of infections with certain avirulent microorganisms upon the growth of animal and human spontaneous tumors.

8196 P

## Changes in the Hypophyses of Castrate and Cryptorchid Guinea Pigs.*

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Engle[1] has shown that the anterior hypophysis of the castrate rat is more potent in gonad-stimulating hormone than that of the normal animal. Evans and Simpson[2] confirmed this and demonstrated that glands from cryptorchid rats have more than normal potency. Severinghaus[3] showed that the same holds for the castrate guinea pig.

In the present experiments anterior lobes from normal and castrate (4 to 12 months) adult male and female, and experimental cryptorchid (6 to 14 months) guinea pigs were implanted intramuscularly into immature female rats and mice. In all, 235 animals were used as donors and 83 as hosts. The relative impotency of the guinea pig pituitary in gonadotropic hormone made it necessary to implant considerable amounts in the rat. The amount of guinea pig anterior lobe (fresh gland weight) required to induce a significant increase in the immature rodent ovary was found to be approximately 4 times that of rat pituitary. In the case of the five types of guinea pig pituitaries mentioned above from 3 to 5 times as much, by weight, was required in the rat as in the mouse. Similar

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1 Engle, E. T., *Am. J. Physiol.*, 1929, **88**, 101.

2 Evans, H. M., and Simpson, M. E., *Am. J. Physiol.*, 1929, **89**, 371.

3 Severinghaus, A. E., *Am. J. Physiol.*, 1932, **101**, 309.

results have been seen following the administration of sheep pituitary extracts.[4]

It was shown that the ovarian response following implantation of equal amounts of normal male and female pituitaries is approximately 50% greater in the case of the male. Pituitaries from castrate and cryptorchid males and spayed females were of equal potency, about 70% greater than normal male glands, in each instance. Pituitaries from females subjected to extreme partial castration were only slightly less potent than those from totally spayed animals. Glands from gonadectomized males and females receiving daily injections of estrin (25 to 100 R.U.) and from castrate and cryptorchid males bearing functional ovarian grafts were somewhat less potent than normal pituitaries.

The cytological changes in the guinea pig hypophysis following castration are not as clearly delineated as in the rat where a marked increase in the basophiles and an appearance of signet-ring castration cells occurs. Fichera,[5] and others, reported an increase of acidophiles in the castrate guinea pig. Severinghaus,[3] and Nelson[6] on the basis of a series of two-month castrates, found no noticeable increase in basophiles. In the present study pituitaries from castrates of longer duration have shown slight, but unmistakable increases in the percentage of basophiles. This increase does not attain the magnitude observed in the hypophysis of the castrate rat and is not accompanied by the appearance of vacuolated castration cells. The closest approximation to such cells which has been observed is the finding in some of the long time castrates, both male and female, of a few small vacuoles in the cytoplasm of the basophiles. Perhaps the most striking change seen in the hypophysis of the castrate guinea pig is a marked occurrence of cell nests arranged in a manner strikingly similar to the follicles of the thyroid gland. These "follicular" nests regularly contain a colloid-like coagulum. Although a tendency toward the occurrence of these structures is occasionally seen in the normal gland it is far less pronounced than in the castrate cryptorchids.

Hypophyses from cryptorchid were found to be similar to those of castrates, the changes developing somewhat more slowly. This has previously been shown to be true in the rat.[9] Castrates and

[4] Nelson, W. O., and Overholser, M. D., *J. Pharm. and Exp. Therap.*, 1935, in press.

[5] Fichera, G., *Arch. Ital. Biol.*, 1905, **43**, 405.

[6] Nelson, W. O., *Am. J. Anat.*, 1933, **52**, 307.

[9] Nelson, W. O., PROC. SOC. EXP. BIOL. AND MED., 1934, **31**, 1192.

cryptorchids bearing functional ovarian grafts have essentially normal pituitaries although many of the basophiles show evidence of degranulation. This degranulated condition of the basophiles is more pronounced in castrates and normals receiving daily injections of estrin. These findings confirm the earlier work[7, 8] concerning the effect of estrin on the basophiles of the rat hypophysis.

The changes in the guinea pig hypophysis in castrate, cryptorchid, and estrin-injected animals are seen to be of the same character, although less marked, as those found in the rat. This study serves as a basis of interpretation for the results following ovarian transplantation in guinea pigs of both sexes.

## 8197 P

## Presence of Anti-Pernicious Anemia Principle in Normal Human Urine.*

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In a previous communication[1] we reported a significant modification of the pigeon method of Vaughan, *et al.*,[2] for the laboratory assay of anti-pernicious anemia preparations and showed that normal human urine contains a principle which significantly increases the reticular material in the red blood cells of the pigeon in a manner analogous to the anti-pernicious anemia principle present in liver. At the same time, we reported the preparation of a urinary extract which had a similar effect. In order to test for the identity of the urinary and liver principles, we indicated our plan to study the effect of the urinary extract in pernicious anemia. Due to the well-known present difficulty in securing pernicious anemia patients suitable for assay work, this preliminary report deals with the results obtained with the extract in one patient.

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7 Nelson, W. O., *Anat. Rec.*, 1933, **55**, 70 (suppl.).

8 Nelson, W. O., PROC. SOC. EXP. BIOL. AND MED., 1934, **32**, 452.

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1 Wakerlin, G. E., Bruner, H. D., and Kinsman, J. M., *Proc. Am. Physiol. Soc.*, 1935, pg. 136.

2 Vaughan, J., Muller, G. L., and Zetzel, L., *Brit. J. Exp. Path.*, 1930, **11**, 456.