that Heiduschka and Lindner[3] found in a *Penicillium* 0.8% of ergosterol colorimetrically, which is the same value that we obtained spectrographically with a *Penicillium* cultivated in one of our media.

In general, we found that for a given fungus a neutral or slightly alkaline medium was conducive to vigorous growth and relatively large ergosterol production. An abundant air supply was not only favorable but essential. Temperature *per se* did not seem to be an important factor, but in connection with time and the available supply of nutrients it exerted an influence. We have so far been unable to observe that salts other than those essential for the vigorous growth of the organisms exert any marked effect; however, we found that the concentrations and combinations of salts had noticeable effects, especially on the amount of growth obtained. A good source of carbohydrate and nitrogen was found in beet molasses, or a mixture of beet molasses with other sugars, or such mixtures with added urea. In most cases high ergosterol percentage was associated with vigorous growth, but not all cultures which grew vigorously elaborated large amounts of ergosterol.

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Effect of Oestrin on Gonad Stimulating Power of the Hypophysis.*

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Smith and Engle[1] showed that the anterior lobe of the hypophysis of the guinea pig in oestrum is less potent in its gonad stimulating power than the hypophysis of animals in the dioestrum. Burch and Cunningham[2] reported that injection of a commercial placental extract, containing considerable amounts of oestrin, into adult, castrate, female rats tends to increase the gonad stimulating power of the pituitaries of such animals, as compared with non-injected castrate controls of approximately the same weight. The period of injection in their experiment was 6 days and the dosage employed was from

[3] Heiduschka, A., and Lindner, H., *Z. Physiol. Chem.*, 1929, clxxxi, 15.

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[1] Smith, P. E., and Engle, E. T., *Anat. Rec.*, 1929, xlii, 38.

[2] Burch, J. C., and Cunningham, R. S., PROC. SOC. EXP. BIOL. AND MED., 1930, xxvii, 331.

5-25 R.U. during the injection period. The potency of the pituitaries was determined by implanting them into immature female mice. This report appeared while we were conducting experiments to ascertain the influence of long periods of administration of the oestrous producing hormone on the ovaries and pituitaries of non-castrate immature rats, and the pituitaries of castrate adult male and female rats. This paper presents the data obtained in these experiments.

Thirty-four immature female rats varying in age from 30 to 40 days were injected with 2 R.U., 0.1 cc., per day of an oil soluble oestrous hormone prepared from the amniotic liquor of the cow.† Twenty-eight litter-mate sisters of these experimental animals were injected with 0.1 cc. of Mazola oil and used as controls. The period of injection varied from 30 to 70 days, after which the animals were sacrificed, ovaries weighed and pituitaries implanted into female rats varying in age from 20 to 30 days. Two pituitaries were implanted simultaneously into each recipient. The criterion of gonad stimulating power of the hypophyseal implants was the time necessary for the opening of the vaginas of the recipients. This method is not satisfactory unless the vaginas of the recipients being compared open 4 or more days apart. The ovaries of the oestrin injected donors weighed 40% less than the ovaries of the control litter-mate donors. The pituitaries of the oestrin injected rats opened the vaginas of the recipients from 9 to 25 days after implantation, whereas the vaginas of control recipients which received pituitaries from the control donors opened 4 to 5 days after implantation.

Evans and Simpson[3] have found that the gonad stimulating power of the pituitaries of castrate males and females is much greater than those of non-castrated males and females. These data led us to study the influence of the oestrous producing hormone on the hypophysis of castrate animals. The gonads were removed from 15 adult males and 19 adult females of approximately the same weight. Of these castrate animals 7 males and 8 females were used as controls. These control animals were not injected with Mazola oil, as we found that it did not influence the gonad stimulating power of the hypophysis. The remaining castrate males and females were injected with 4 R.U., 0.1 cc. of oil soluble oestrin per day for 31 days after which their pituitary glands were implanted into immature litter-mate female rats between the ages of 20 and 30 days. One donor pituitary was implanted into each of the recipients. In this experiment the vaginas of the control, and experimental recipients

† The oestrous hormone was kindly furnished by E. R. Squibb & Sons.

[3] Evans, H. M., and Simpson, M. S., *Am. J. Phys.*, 1929, lxxxix, 371.

opened at about the same time and the ovaries were weighed one day later. A comparison of the weight of the ovaries from animals which received implants from control and experimental male donors demonstrated that the ovaries of the experimental recipients weighed 28% less than the ovaries of the controls. The ovaries of the experimental recipients which received pituitaries from oestrin injected castrate females weighed 35% less than the ovaries of the control recipients.

The data from the experiments on the immature rats demonstrate that the oestrous producing hormone inhibits the normal development of the ovary and decreases the gonad stimulating power of the hypophysis. This suggests that the influence of oestrin on the ovaries of immature animals is due to its action on the hypophysis.

The results obtained in the experiments on the adult castrate males and females, demonstrate that oestrin as administered decreases the gonad stimulating power of the hypophysis and that the hypophysis of the female seems to be more susceptible to the oestrous producing hormone than that of the male. Whether the oestrin inhibits the production or storage of the gonad stimulating substance of the anterior lobe of the hypophysis is now being investigated.

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The Ciliary Systems in the Oviduct of the Pigeon.*

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Over a year ago I described the ciliary systems in the oviducts of the painted turtle.[1, 2] These ducts are lined from the infundibulum to the distal outlet with ciliated epithelium. In the proximal portion of the ducts the cilia form two systems, a general one, the abovarian, which sweeps from the ovary toward the exterior and which covers most of the inner surface of the duct, and a restricted one, the proovarian, a narrow longitudinal band not more than 2 mm. wide, in which the cilia beat toward the ovary. As was pointed out in these earlier publications, the spermatozoa can make no headway against

* This research was carried out with funds received in part from the National Research Council, Committee for Research in Problems of Sex.

[1] Parker, G. H., PROC. SOC. EXP. BIOL. AND MED., 1928, xxvi, 52.

[2] Parker, G. H., *Am. J. Physiol.*, 1928, lxxxvii, 93.