24 hours, or over 1000%, and remained at about 800% of the normal during the drug period. Two days after the purge, the nitrate excretion was back to normal.

Bismuth was never detected although the method used measures 0.01 mg. in 100 cc. of urine. All of the samples gave negative nitrite tests with the Gries method, which gives a positive test with less than 0.0001% of nitrite nitrogen. The Fearon test, however, was positive throughout the period of drug ingestion. This was due to the fact that the test is not specific for nitrite. Nitrates, in concentrations such as were found in the urine during the experimental period, will give a green color which more or less resembles the test for nitrites.

A repetition of this experiment with another individual gave similar results. Blood pressure readings on 2 dogs given 2 gm. each of bismuth subnitrate per day over a period of some weeks showed no significant change.

This study neither supports nor opposes the Stieglitz theory. It indicates that the bismuth subnitrate is partially broken down in the intestinal tract, that little, if any, bismuth is absorbed but that the anion is absorbed in appreciable amounts in some form. If the absorption is as nitrite as Stieglitz believes, the ion must be fully oxidized before excretion. The opposite finding of Stieglitz might be explained either as the result of an infection of the urinary tract which would cause a reduction of the nitrate by bacteria in the bladder[8, 10] or from the use of a non-specific test such as we found the Fearon test to be. Stieglitz did not mention the test used by him.

6170

Time of Appearance and Duration of Pregnancy Cell Types in Hypophysis of the Rat.*

H. O. HATERIUS. (Introduced by Eric Ponder.)

From Washington Square College, New York University.

Numerous observers have reported the presence of peculiar cell types ('pregnancy cells') in the pars anterior of the hypophysis during pregnancy. Despite their rather distinctive appearance little is

[10] Salén, E. B., *Acta med. Scandinav.*, 1926, **63**, 369.

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known regarding their allocation with respect to the reproductive cycle. Data are lacking on the time of their appearance following copulation, their persistence, and the effect of parturition and lactation upon their survival.

To determine these points, a large number of carefully selected female rats, with no previous reproductive history, was utilized. The procedure consisted in obtaining material from (1) a series of timed pregnancies, dated from actual copulation or from the discovery of a vaginal plug; (2) a series of *postpartum* animals sacrificed at definite intervals throughout the period of lactation; (3) a series of daily stages following premature withdrawal of litters; and (4) a series of stages throughout pseudopregnancy.

Pituitaries, ovaries, and uteri of all stages were fixed with Zenker-formol-osmic fixative for histological study. Pituitaries were sectioned at 3 microns, other tissues at 5 and 7 microns. The mounted tissues were stained with Delafield's haematoxylin and eosin or with Mallory's triple connective tissue stain.

Time of appearance and duration post coitus. Material from animals of 5 hour, 12 hour, 1 day, and daily stages thereafter throughout the gestational period (22 days) was studied in this series, from 3 to 5 animals being used for each stage in the preliminary work. In the pituitaries of these animals pregnancy cells became discernible on the 3rd day following copulation. The large ovoid cells, with an eccentrically located vesicular nucleus and with a clear, homogeneous cytoplasm, stained deeply with eosin. These cell types were readily apparent by the 4th day. An increase in number and to some degree in size followed until the 12th day, after which time the pregnancy pituitary appeared to undergo no further change. Pregnancy cell types persisted throughout gestation. The pituitaries as a whole appeared to be more loosely organized and more hyperemic than the non-pregnant gland.

Postpartum incidence. In suckling, pregnancy cell types persisted until 3 or 4 days after weaning. This has been tested experimentally, *i. e.,* by premature withdrawal of litters, at the time of parturition and on the 7th, 9th, and 15th days *postpartum;* a normal histological picture was found on the 4th—occasionally on the 3rd—day following removal of the young. In all cases thus far studied the disappearance of pregnancy cell types has coincided with the resumption of the oestrous cycle, as checked by vaginal smears and by histological examination of ovaries and uteri. Pregnancy cells were not found in pituitaries from animals which were in pro-oestrus or oestrus when killed on the 3rd or 4th day after weaning.

Incidence during pseudopregnancy. Data are incomplete and based upon instances wherein copulation did not result in impregnation. A number of pseudopregnancies induced in this manner have been obtained, and a study of cases representing various stages of the pseudopregnant period indicated that pregnancy cells persisted throughout (about 12 days), identical in nature with those occurring during normal pregnancy. They diminished in size, became more granular, and disappeared just before the cycle normally should have re-established itself. However, more cases are necessary to justify definite conclusions on this point.

The fact that pregnancy cell types occur at all during pseudopregnancy would indicate that their presence is independent of embryonic influence. Influence of litter size, moreover, appears to be negligible, since the protocols reveal 2 instances (15 and 17 days *post coitus)* in which only 2 embryos were found *in utero;* nevertheless the pituitaries were characterized by the presence of pregnancy cell types apparently as well defined as in instances of larger litters.

The ovaries of all stages in which pregnancy cells were found were characteristically luteal, and, in view of previous work from this laboratory,[1] it appears probable that the appearance and duration of these cell types are under the influence of the functional corpora lutea of the reproductive cycle.

6171

Calcium, Phosphorus and Cholesterol in Cataractous vs. Apparently Normal Lenses from Human Eyes.*

HELEN UPDEGRAFF. (Introduced by E. P. Joslin.)

From the Chemical Laboratory, New England Deaconess Hospital, and the Massachusetts Eye and Ear Infirmary, Boston.

Lenses used in this study were, for the most part, obtained at cataract operations. A few, however, were obtained at autopsy and in one instance a dislocated lens which was apparently perfectly normal was obtained at operation. Calcium was determined by the method of Fiske and Logan,[1] phosphorus by a modification of the

[1] Haterius, H. O., and Charipper, H. A., *Anat. Rec.*, 1931, **51**, 85.

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[1] Fiske, C. H., and Logan, M. A., *J. Biol. Chem.*, 1931, **93**, 211.