1:10,000 or perhaps more safely, 1:15,000 or 1:20,000 concentration of cocaine more closely approximates the concentration found at the iris sufficient to produce dilatation."

At present, we are studying cocaine recovery following clinical application in man.

8253 P

Influence of Hormones on Agglutinin Response to B. Pertussis in Immature Rats.

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The inability of immature animals to respond to active immunization with the degree of demonstrable antibody production found in mature animals has been noted by numerous investigators.[1] Our experiments carried out in infantile, adolescent, and mature rabbits and rats indicated that increase in ability to form agglutinins to *B. pertussis* and *B. typhosus* was approximately coincidental with sexual maturation.

In an attempt to determine more accurately the effect of increasing age on agglutinin production and to correlate this, if possible, with some easily determined index of sexual development, the following experiment was performed. Ten groups of 5 male rats each were selected. The age of the groups increased by increments of 7 ± 1 days, the youngest group being 4 days old. All the rats were injected intraperitoneally with total doses of 9,000 million *B. pertussis* in 6 injections: 1,000 million per day for 3 days, 4 days' rest, and 2,000 million per day for 3 days. On the 17th day of the experiment, the animals were weighed and bled. Seminal vesicles and testes were weighed as an approximate measurement of the degree of sexual maturity. As the rats advanced in age, the results showed a general correlation between the rise in agglutinin titer on one hand, and the increase in testes, seminal vesicle, and body weights on the other. For example, the average body weight, seminal vesicle weight, testes weight, and agglutinin titer of 4-day-old rats were 34 gm., 8 mg., 182 mg., and 120, respectively; whereas those of 74-day-old rats were 211 gm., 511 mg., 2660 mg., and 2480.

[1] See review of literature by Baumgartner, L., *Yale J. Biol. and Med.*, 1934, **6**, 403.

Since sexual development and growth are both influenced by the endocrine balance, it appeared possible that changes produced by administration of gonadotropic and estrogenic hormones to immature animals might be reflected in the response of these animals to active immunization.

Sixteen immature male rats (3-5 days old) were injected with highly purified gonadotropic hormone from pregnant mare serum,[2] 22 with extracts of human pregnancy urine,[3] and 5 male and 6 female rats with crystalline theelin. Adult male rat pituitary glands were implanted intramuscularly in 18 immature male rats. Thirty-one male rats of the same age served as controls. All animals received a total intraperitoneal dose of 9,000 million *B. pertussis* as outlined above.

Administration of the hormones produced marked response as indicated by increase in size of the testes and seminal vesicles, and in the case of the female by increase in size of the uterus and an oestrous vaginal smear. Implantation of pituitary glands produced little if any increase in the size of testes or seminal vesicles.

The average agglutinin titers of the above groups were as follows: gonadotropic hormone from pregnant mare serum, 19; prolan, 19; theelin, 25; pituitary implants, 54; and normal controls, 36. As can be seen from this data, no significant difference existed between the agglutinin titers of normal immature rats and those receiving gonadotropic and estrogenic hormones.

8254 C

Activation of Partially Purified Pepsinogen.

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Pepsinogen can be extracted from the mucosa of the fundus part of pig stomachs by m/10 $NaHCO_3$-solution. Such extracts contain 80-90% of the total peptic activity of the mucosa (as determined after complete autolysis of the mucosa at pH 2) in the form of pepsinogen which is stable at alkaline reaction. The extract is treated

2 Evans, H. M., Gustus, E. L., and Simpson, M. E., *J. Exp. Med.*, 1933, **58**, 569.

3 Katzman, P. A., and Doisy, E. A., *J. Biol. Chem.*, 1934, **107**, 513.

* Fellow of the Rockefeller Foundation.