for a chemical method of detecting vitamin A. The methylcholanthrene-treated animals were found to have hepatic vitamin stores equal to those of the lard controls and stock animals. After 9 months the remaining animals were still normal as to both vitamin A stores and liver histology.

The purity of the hydrocarbon used was confirmed by the manufacturer, and a new rechecked lot was furnished, with which the experiments were repeated on 10 animals with 5 lard controls. The dosage was 20 mg methylcholanthrene divided into 3 portions given during 30 days. Weight gains were resumed about 90 days after the first injection. At 120 days the livers of the 15 animals were alike as to normal stores of vitamin A[8] and absence of liver pathology; complete blood counts were normal as established for the colony.

All of the animals in the 3 experiments were on a stock diet of Purina Dog Chow. No exceptional loss of appetite was ever noticed. No tumors ever appeared; and no animals died except of internal injury at injection.

Conclusion. Methylcholanthrene will deplete rat livers of vitamin A in 3 to 6 weeks; phenanthrene or lard injections will not. Some strains of white rats are not readily susceptible to tumor production by intraperitoneal injections of the drug and regain their ability, after discontinuance of injections, to store vitamin A in the liver.

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Non-Effect of Ovariectomy on the Twenty-fifth Day of Pregnancy in the Rhesus Monkey.

CARL G. HARTMAN. (Introduced by George W. Corner.)

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It was demonstrated[1] that the pregnant Rhesus monkey is able to carry its fetus to term despite surgical removal of the ovaries. Five cases were cited which were castrated on days 95, 89, 46, 35, 31 of gestation, respectively. To these it is now possible to add another and more crucial case castrated 25 days after ovulation and fertilization.

[1] Hartman, Carl G., *Anat. J. Obst. and Gynec.*, 1939, **37**, 287.

The twenty-fifth day was selected for this experiment because of the following theoretical considerations. First and foremost is the fact that in the monkey at this period the corpus luteum involutes in every normal pregnancy, assuming a smaller volume and more compact internal structure characteristic of the greater part of pregnancy.[2] At this time, too, the definitive vascular relationship between mother and fetus is fairly well established, the destruction of maternal tissue by the invading trophoblast has nearly ceased, and the chorionic hormone is about to disappear from the urine[3] and the blood.[4] Finally, the pregnant female, from this point on, gradually loses all sex interest, in which behavioral state she remains throughout pregnancy.[5]

The new case concerns monkey No. 637 of the Carnegie colony, which was received on May 19, 1938, weighing 4010 g. At the time of ovariectomy she weighed 8 kilos. The recorded menstrual cycles were 28, 28, 26, 35, 26, 29, and 22 days in length, all ovulatory. She was hysterotomized twice: On January 16, 1939, an 11½-day embryo was recovered and the right ovary removed; on January 21, 1940, a similar embryo was expected but not found in the excised endometrium.

The next ovulation, mating and conception occurred on November 21, 1940, day 10 of the cycle. On December 6 the placental bleeding first manifested itself. On December 16, the twenty-fifth day of pregnancy, the surviving ovary and fallopian tube, together with as much of the ovarian mesentery as possible, were removed and it was made certain that no ovarian tissue was left behind. The ovary was serially sectioned and seen to contain the typical corpus luteum of this stage.

By rectal bimanual palpation the course of pregnancy was followed and found to proceed normally except for a considerable blanching of the sex skin in the second week after castration and the appearance of a few erythrocytes on January 2. No "therapeutic" treatment, in view of this "threatened abortion," was, however, instituted. The sex color gradually returned to the brilliant hue of pregnancy, which persisted to term. A 440 g female baby (about average weight for the Rhesus monkey) was born on May 5, 1941, after a gestation period of 165 days, the exact average for the Rhesus monkey. The postpartum involution of the uterus proceeded

2 Corner, G. W., Bartelmez, G. W., and Hartman, C. G., *Anat. Rec.*, 1936, **59**, 433.
3 Hamlett, G. W. D., *Am. J. Physiol.*, 1937, **118**, 664.
4 Delfs, E., *Anat. Rec.*, 1941, **79** (Suppl. 2), 17.
5 Ball, J., *Anat. Rec.*, 1937, **67**, 507.

as in unoperated cases and the baby nursed and developed according to expectation up to the time of this report (July, 1941).

Strangely enough, nursing, like pregnancy, proved an efficient stimulus for the maintenance of bright red color of the sex skin even in the absence of ovarian tissue. For about 2 weeks postpartum the color was distinctly less intense (6 on a scale of 10) but after that rose to 8 and 9, at which it was being maintained at the time of this report, 2 months after parturition. This raises the question: Whence comes the hormone conditioning the sex color? One thinks of the placenta as substituting for the ovary during pregnancy, but during lactation we must look elsewhere for the source of "ovarian" hormones. As a matter of fact the monkey sex skin may be experimentally reddened by all the estrogens, by androgens, by desoxycorticosterone[6] and even by progesterone[7] alone. It is quite possible that adrenotropic hormone of the hypophysis is involved, stimulated in pregnancy by placental hormones, in lactation by the act of suckling. Other facts also point to extragonadal, synergistic factors in the maintenance of the sex color of the Rhesus monkey. This problem will be discussed in another place.

Summary. Theoretical considerations predicted and the experiment here recorded have proved that in the rhesus monkey the ovaries are not necessary from the twenty-fifth day of pregnancy on for normal gestation, parturition at term, postpartum involution of the uterus and lactation. Surprisingly, the bright red color of the sex skin was maintained, in the absence of the ovaries, not only during gestation but also during lactation.

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Absorption of Sulfathiazole from the Gastrointestinal Tract, Pleura, and Peritoneum of Dogs.

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The recent literature contains many reports describing the use of sulfonamide drugs locally, particularly in the treatment of traumatic and operative wounds. Since these drugs have also been used locally in such highly absorptive areas as the pleural and peri-

[6] Speert, H., *Bull. Johns Hopkins Hosp.*, 1940, **67**, 189.

[7] Hartman, Carl G., and Speert, H., in press.