and those who presented signs of dehydration. The results are seen in Table I.

7905 C

Cholesterol of Maternal and Fetal Blood at the Conclusion of Pregnancy.

DAVID ROSENBLOOM. (Introduced by F. H. Falls.)

From the Department of Obstetrics and Gynecology, University of Illinois, Chicago.

This paper concerns the relative concentrations of cholesterol in the maternal and in the fetal circulations. By determining the quantity of a certain substance on both sides of the placenta, evidence can be presented concerning the transmission of that substance through the placenta. Fetal blood is not a simple dialysate or filtrate of the maternal blood, but the placenta exerts a specific and definite selective power over certain of the substances which pass into it and which might conceivably enter the fetal circulation.

The amount of cholesterol in human blood is 150-190 mg. per 100 cc.[1, 2] It is increased in the blood of pregnant women.[3-9] Several investigators have studied cholesterol in maternal and in fetal blood.[10-13]

The modified method of Bloor[14] was used for the cholesterol determinations. Stoppered one-ounce blood bottles containing a small amount of sodium oxalate were included in the sterilizer

1 Hawk and Bergeim, *Practical Physiological Chemistry*, 9th ed., Philadelphia, P. Blakiston and Co., 1926, p. 357.

2 Mathews, *Physiological Chemistry*, 4th ed., New York, Wm. Wood and Co., 1927, p. 29.

3 Barsony, *Zentralbl. f. Gynak.*, 1930, **54**, 1811.

4 Hellmuth, *Zentralbl. f. Gynak.*, 1931, **51**, 802.

5 Strauss and Schubardt, *Zentralbl. f. inn. Med.*, 1922, **43**, 425.

6 Rosen and Krasnow, *Am. J. Obs. Gyne.*, 1927, **14**, 321.

7 Chauffard, Laroche, and Grigaud, *Obstetrique*, Paris, 1911, **4**, 481.

8 Benda, *Arch. f. Gynak.*, 1923, **116**, 508.

9 Fluhmann, *Am. J. Obs. Gyne.*, 1926, **12**, 774.

10 Slemons and Stander, *Bull. Johns Hop. Hosp.*, 1923, **34**, 7.

11 Slemons, *Bull. Johns Hop. Hosp.*, 1916, **27**, 343.

12 Slemons and Stander, *Trans. Am. Soc. for Advancement of Clin. Invest.*, 1918.

13 Slemons and Curtis, *Am. J. Obstetrics*, 1917, **75**, 569.

14 Bloor, *J. Biol. Chem.*, 1922, **52**, 191.

drums containing the sterile linen and instruments for each obstetrical delivery. Immediately after the birth of the baby the umbilical cord was clamped between hemostats and cut. One of the hemostats was released and 5 cc. of blood were placed in the bottle, which was then stoppered and shaken. As soon as the mother was returned from the delivery room (usually within 15 minutes), 5 cc. of her blood were taken from the median basilic vein by a hypodermic syringe and put into an oxalate blood bottle. The cholesterol determinations were run simultaneously on both infant and maternal bloods. By carrying out the procedures in the manner described, the blood specimens represented the maternal and fetal bloods at the very end of pregnancy.

In all, 65 cases were studied (by "case" is meant a cholesterol determination on both maternal and fetal blood). Care was taken to include in the series only normal, full term pregnancies, with normal, healthy infants. No operative cases were included. In all of the cases, light obstetrical ether anesthesia was used at the end of the second stage of labor, and deep narcosis was never necessary. At the time the maternal blood samples were drawn, the patients were already conscious.

TABLE I.
Maternal Blood Analyses.

Mg. cholesterol per 100 cc.	No. cases in this range
100-125	3
126-150	7
151-175	7
176-200	8
201-225	12
226-250	12
251-275	5
276-300	7
301-325	1
326-350	3

Aver. of 65 cases: 222.7 mg. per 100 cc.

TABLE II.
Infant Blood Analyses.

Mg. cholesterol per 100 cc.	No. cases in this range
50- 75	8
76-100	6
101-125	30
126-150	9
151-175	10
176-200	1
201-225	0
226-250	0
251-275	1

Aver. of 65 cases: 120.4 mg. per 100 cc.

In Table I are listed the results of cholesterol determinations upon the maternal bloods. These have been tabulated, within restricted ranges of cholesterol, in terms of mg. per 100 cc. In Table II are listed in similar manner the results obtained from determinations upon the infant bloods. The average of the 65 cases for the maternal blood is 222.7 mg. per 100 cc. For fetal blood, the average is 120.4 mg. per 100 cc.

In conclusion it can therefore be said that there is a far higher cholesterol content in maternal blood than in fetal blood at the conclusion of pregnancy. Even if the placenta transmits substances by simple diffusion,[15, 16, 17] it must also have a selective control over the passage of cholesterol from mother to fetus, or if the placenta is impermeable to cholesterol, it must be assumed that the fetus is able to synthesize in its own body a considerable amount of cholesterol.

7906 C

Duration of Estrus in Ovariectomized and Adrenal-Ovariectomized Rats Before and After Theelin.

FREDERICK E. EMERY AND EDWARD L. SCHWABE.

From the Department of Physiology, University of Buffalo.

Within the last few years numerous papers have appeared on several phases of the adrenal problem without adding, as Rogoff[1] has recently discussed, any very definite contribution. The literature on the sex-relationship has been especially confusing; and the many references cited by Kroc and Martin[2] indicate that total adrenalectomy may cause no change, a slight modification or complete inhibition of the estrus cycles. These authors made a point of the fact that the weight-loss of adrenalectomized rats must be restored before normal estrus is again established following injections of the cortical hormone. Yet this same result, as to normal estrus in adrenalectomized rats, may be obtained by allowing the animals to drink salt solutions (Kutz, *et al.*[3]).

15 Schlossman, *Der Stoffaustausch zwischen Mutter und Frucht durch die Placenta,* Munich, J. F. Bergmann, 1933.

16 Sinclair, *Am. J. Physiol.*, 1933, **103**, 73.

17 Masciotta and de Hoz, *Presse Med.*, 1933, **41**, 293.

1 Rogoff, J. M., *J. Am. Med. Assn.*, 1934, **103**, 1764.

2 Kroc, R. L., and Martin, S. J., *Am. J. Physiol.*, 1934, **108**, 438.

3 Kutz, R. L., *et al.*, PROC. SOC. EXP. BIOL. AND MED., 1934, **32**, 331.