

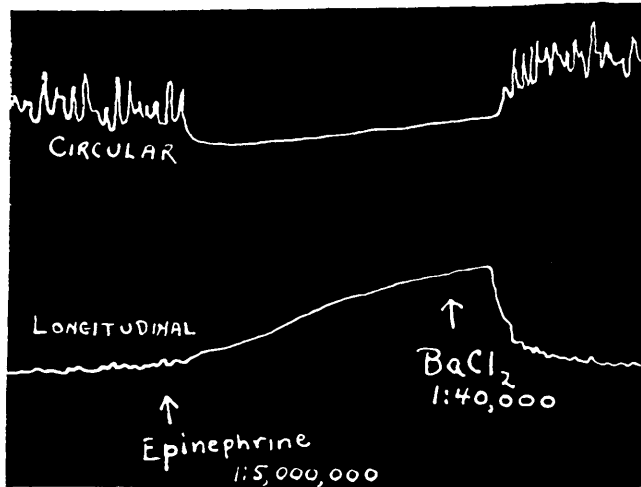


FIG. 1.

Reciprocal response of the muscle coats of the intestine to epinephrine and barium.

ride. For example, epinephrine relaxed the circular muscle and increased the tone of the longitudinal muscle; barium chloride and pilocarpine produced relaxation of the longitudinal muscle and contraction of the circular. The action of epinephrine and of barium chloride is shown in Fig. 1.

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A Study of the Blood of the Mother and New Born.

H. RAY ALLUMBAUGH. (Introduced by Dr. G. E. Burget.)

*From the Department of Physiology, University of Oregon Medical School,
Portland, Oregon.*

Reports on the red cell count and hemoglobin content of the blood of the new born are at considerable variance. Williamson¹ gives the hemoglobin as 23.25 gm. per hundred cc., while others have placed the figure as low as 15.6 gm.² Red cell counts vary almost as widely with different investigators. This may be explained by the fact that many different methods of hemoglobin estimations

¹ Williamson, *Arch. Int. Med.*, 1916, xviii, 505.

² Haden and Neff, *Am. J. Dis. Child.*, 1924, xxviii, 458.

have been used, and, further, to the fact that the blood of the new born changes rapidly. The steady fall in both red cells and hemoglobin in the first 2 weeks is well known. Lippman³ pointed out a rapid rise in the blood count in the first 6 hours of life. Consequently, we considered that blood taken from the umbilical cord would give more accurate information than the common method of drawing blood at any time during the first 24 hours, especially since we desired to compare the blood of the baby with that of the mother.

Red cell count and hemoglobin estimations were made on 50 pregnant women at term, using oxalated venous blood obtained from a few minutes to 5 days before delivery. None of these women presented any recognized pathological condition. The baby's blood was collected in sterile oxalated tubes (dry) at the time the cord was cut. Check estimations were done and the average is the figure used. The hemoglobin was estimated by the Sahli method, using Haskin's permanent inorganic standard.

Of the 50 babies, 27 were males and 23 were females. The results were essentially the same for both sexes, so we do not report them separately.

The average red cell count of the new born was 5.52 million per cmm., with minimum count of 4.45 million and a maximum of 6.52 million. Lucas⁴ reports an average of 5.51 million for 36 cases and Sanford⁵ found an average of 5.8 million in 200 cases counted during the first 24 hours. The hemoglobin average of the babies was 16.85 gm. (122% Sahli). The highest in the series was 19.87 gm., the lowest 14.08 gm. A white cell count was made on 37 of the cord blood specimens. Our average count was 17,110, which does not vary widely from counts previously reported.

The red cell count on the 50 mothers gave an average of 4.21 million. The women with the lowest count had 3.29 million, and the highest had 5.23 million. The average mother's hemoglobin was 10.9 gm. (79%). The maximum was 14.9 gm. and the minimum was 7.04 gm. In a recent report, Lyon⁶ found an average hemoglobin of 10.4 gm. (75.3% Sahli) on 177 women at or near term. He does not report a simultaneous check on the child's blood.

Osgood's⁷ average for normal non-pregnant women was 4.8 million reds and 13.7 grams of hemoglobin. By comparison we find the mothers are deficient 600,000 red cells, or, 13% below normal.

³ Lippman, *Ibid.*, 1924, xxvii, 471.

⁴ Lucas, *et al.*, *Ibid.*, 1921, xxii, 525.

⁵ Sanford, *Ibid.*, 1928, xxxv, 9.

⁶ Lyon, *J. Am. Med. Assn.*, 1929, xcii, 11.

⁷ Osgood and Haskins, *Arch. Int. Med.*, 1927, xxxix, 643.

The hemoglobin is lowered 2.8 gm. or 20%. This is the secondary anemia type.

The blood of the average baby contained 1.31 million red cells and 5.95 gm. of hemoglobin more than the blood of the average mother. Comparison of individual cases seems to present 2 types. In the case of the new born with 14.08 gm. of hemoglobin, the lowest of the babies, the mother had 9.11 gm. That is, the child is 17% below the babies' average and the mother is 14% below the average for the mothers. The child with the highest hemoglobin (19.87 gm.) is 12% above the average, and the mother of the child is 11% (12.56 gm.) above the average of the pregnant women. This suggests that the blood quality of the child may be expected to be in rather direct proportion to that of the mother. We find a similar condition in 29 (58%) of the cases. On the other hand, the mother with the highest hemoglobin (14.9 gm.) is 14% above average, whereas the child is 11% below average with 15.04 gm. In 24% of the cases there was such a change in the balance in favor of the mother. The woman with the lowest hemoglobin (7.04 gm.) is 30% below average for the mothers and almost 50% below normal. Her child, however, has a normal hemoglobin of 16.7 gm. Cases in which the balance is in favor of the child make up 18% of the series. These comparisons suggest that the "placental barrier" may function in one instance to conserve blood building elements for the mother at the expense of the child, and in another the child may be favored with material loss to the mother. This is not established by this experiment, but we hope to report further studies to clarify this point. Particular attention will be paid to cases which vary widely from the average or normal here established.

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Effect of Lithium, Ammonium, Strontium and Barium Ions Upon the Heart Rhythm of the Crayfish.

V. F. LINDEMAN. (Introduced by O. M. Helff.)

From the Zoological Laboratory, State University of Iowa.

The experiments on which the present observations are based are a continuation of a previous investigation (Lindeman¹) on the effect of various ions upon the heart rhythm of the crayfish *Cambarus*

¹ Lindeman, V. F., *Physiol. Zool.*, 1928, i, 576.