The Midwife.

THE CENTRAL MIDWIVES BOARD.

The First Examination took place on February 14th, 1945, when the candidates were advised to answer all the questions.

1.—Describe the structure and functions of the ovary.

2.—You find albumin in the urine of a patient 34 weeks pregnant. What may be the cause of this condition? What action would you take in such a case?

3.—What may be the causes of the death of the child during labour? Describe the treatment of a child suffering from asphyxia pallida (white asphyxia).

4.—A patient delivered eight days ago is found to have a uterus 4 inches above the symphysis. What may be the causes of this condition? Briefly indicate the treatment in each case.

5.—In what ways may a baby be fed other than from the breast or from a bottle? What may be the reasons for adopting one of these methods, and how would you carry it out?

6.—What do you understand by the following terms? Write a *few* lines about each: (*a*) succenturiate placenta; (*b*) opthalmia neonatorum; (*c*) spina bifida; (*d*) inevitable abortion; (*e*) diagonal conjugate diameter of the pelvis; (*f*) secondary post-partum haemorrhage.

HAEMOGLOBIN.

THE VALUE OF HÆMOGLOBIN DETERMINATIONS IN PREGNANCY.

By JOHN HATCHER, F.I.M.L.T.

Hæmoglobin is an iron bearing substance present in the red blood cells, it is formed in the bone marrow, probably within the actual red cells. The primary function of hæmoglobin is to carry oxygen from the lungs to the tissues of the body, it also removes carbon dioxide and has an important buffering action on the blood. Many investigations have been made in different parts of the world to determine the normal hæmoglobin level, the figure usually accepted in this country in the case of men is 113 per cent. on Haldane's scale, or 15.6 grammes of hæmoglobin per cent. In the case of women a somewhat lower figure is usual, 98 per cent., or 13.7 grammes. On the grounds of convenience a figure of 100 per cent., that is 13.7 grammes per cent., is taken as normal for both sexes. Infants at birth have a raised hæmoglobin, usually about 140 per cent., this high level sinks fairly rapidly in the first few weeks of life. The drop continues until at the age of three months a level of 70 to 80 per cent. Haldane scale is reached, then the level rises until at the end of the first year of life the hæmoglobin may be in the region of 90 per cent. It is not uncommon for the hæmoglobin to be unduly low during the first year, and it is thought that this may be due to the low content of iron in milk. Investigation has suggested that this deficiency tends to be increased in artifically fed infants, as against breast fed babies.

Colour Index.

This is a simple calculation based on the red blood cell count and the hæmoglobin estimation, which expresses the ratio of hæmoglobin to red cells. In normal persons the relationship is constant, the theoretical normal is 1, but figures within the range of 0.85 to 1.05 are regarded as normal. An alteration in the colour index has considerable clinical value, principally as a means of establishing the type of anæmia the patient is suffering from. For example, a high colour index figure of 1.2 or over, coupled with the appropriate blood picture, is a point strongly in favour of a diagnosis of pernicious anæmia. Alternatively a low colour index, such as 0.6 would indicate a microcytic or anæmia of the iron deficiency type. In practice laboratory findings are of course collated with the clinical picture.

Hæmoglobin in Pregnancy.

While pregnancy is a normal physiological condition, which in the case of a reasonably healthy individual has no undue effects on the blood forming system, it must not be overlooked that deviations from the usual hæmoglobin figures must be expected. This is firstly due to an increase in the blood volume, in 1934 Dieckmann and Wegner made very extensive investigations into this subject. They found that the plasma volume, the red blood cells and the hæmoglobin were all increased. The important point is, however, that the plasma volume increase is greater than the other two, in other words though the red cells and hæmoglobin are increased, in proportion to the blood volume they are decreased. On this basis it is suggested that between the 26th and 35th weeks of pregnancy an hæmoglobin estimation should show an apparent lowering of roughly 15 per cent. from normal. On Haldane's scale this would give a reading of 85 per cent., in practice a figure below 70 per cent. is taken as constituting an anæmia. The blood forming system of the average woman is well able to make up for the increased needs brought about by pregnancy. In the case of the individual who before pregnancy was barely able to maintain her hæmoglobin level, an anæmia, often severe, may very easily come about as a result of the increased demands.

Methods of Estimation.

There are very many methods of hæmoglobin estimation, varying from the simple but far from accurate Tallquist's scale, in which a drop of blood is placed on filter paper and compared with a coloured paper standard, to the accurate chemical method of Van Slyke.

In ordinary clinical work the methods most usually employed are those of Haldane or Sahli, and this brings to light an important point. The different methods of estimation all have different values, for example, 100 per cent. of Haldane's scale equals 13.8 grammes per cent. of hæmoglobin, while 100 per cent. on Sahli's scale equals a figure of 17.3 grammes per cent. It is therefore essential that estimations must have indicated the method used or the grammes per cent. of hæmoglobin represented by the figure given. A statement that the patient has an hæmoglobin of 70½ per cent. is of little value unless one knows the method employed.

previous page next page