The two fields of colour are given by cylindrical lenses, which are some distance apart instead of being uniform, and separated by a theoretical partition. Moreover, it has been shown that variations in the quality of the light during the colour comparisons do not affect the two readings *pari passu*, so that varying values may be found for a blood partially saturated with CO and of constant composition.

The curve of dissociation of carboxyhaemoglobin in presence of air determined by the colorimetric method is a rectangular hyperbola giving a value to $K = 0.0032$. But Hüfner, by means of his spectrophotometer, obtained a different curve, which is also hyperbolic and giving a value to $K = 0.0064$, or double that obtainable from Haldane and Smith's curve.

2. That no account has been taken in Haldane and Smith's calculations of the action of the counter diffusion of gases which was first demonstrated by Wretschko in 1870. A repetition of Wretschko's experiments was made in which CO₂ and O₂, each containing the same percentage of CO, were allowed to diffuse into each other in a closed system which ensured that the quantities of CO₂ and O₂ diffusing in unit time would be approximately equal. It was found, in accordance with Wretschko's experiments, that the CO₂ during the diffusion heaped up the CO in the direction of its diffusion. One can, therefore, state that in the lung the outward drift of CO₂ hinders the absorption of CO more than the inward drift of oxygen helps the absorption of CO.

The conclusion arrived at is, therefore, that Haldane and Smith were not justified in concluding from their experiments that the lung was a secreting organ doing work by forcing oxygen inwards, and in consequence raising the tension of the oxygen in the arterial blood above that in the alveolar air.

A criticism is also given of Haldane's later form of gas analysis apparatus, and some possible sources of error described.

Towards the expenses of this research a grant has been made by the British Medical Association, on the recommendation of the Science Committee of the Association.

REPORT CIV.

A CLINICAL METHOD FOR ESTIMATING THE COAGULATION TIME OF THE BLOOD.

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In applying the method to be described the following apparatus are required:

Capillary glass tubes of certain dimensions.

A pricker.

A file or glass knife.

A flame for fusing the capillary tube.

A thermometer.

In case of accurate scientific determination, a chamber regulated to the temperature required for the observation.

The bore of the capillary tubes is 1.5 mm., is uniform throughout, and the length of the tubes is about 6 in. The tubes are blown by a skilled glass-blower to as near the above dimensions as possible, and cost 2s. per 100. The other requisites require no explanation.

To Test the Coagulation-rate.

The hands are thoroughly washed with soap and water, and then held below the tap to wash off the last traces of soap. They are then dried on a clean towel. The minute from which the coagulation time is to date is then noted down, as well as the temperature of the room. With the watch marking seconds close at hand, the observer waits till the seconds hand is about ten seconds from the minute noted down. A rag is then bound tightly round the finger, and when the seconds hand reaches the exact minute, the finger is given a good sharp stab with the pricker. The capillary tube is then seized and applied to the drop, inclining it or keeping it horizontal according to the flow of blood, thus maintaining a continuous column in the capillary tube. About 4 in. of the tube can easily be filled in 10 seconds from the moment of pricking. The column of blood is then allowed to run down the tube to such a distance that it will not be injured by applying heat to the end into which the blood was received. This

end is then fused (alternatively it may be closed with sealing wax or paraffin). The fusion keeps the column of blood steady, and care must be taken not to seize the tube between the sealed end and the end of the column of blood nearest it, otherwise the expansion of the air causes a movement of the column. The tube is then laid down with the thermometer beside it, and at the end of each minute a file mark is made on the capillary tube $\frac{1}{2}$ in. or less from that end of the column of blood remote from the sealed end of the tube. This piece of the tube is then broken off, care being taken in breaking it to keep the two ends of the glass approximated. The two ends of the glass are then drawn apart, and the first stage of coagulation visible to the naked eye is shown by a minute thread of fibrin stretching between the two broken ends. When this is reached the other parts of the tube are similarly broken to confirm the first observation. A further confirmation can be got by holding up the capillary tube to the light and noticing that when coagulation has reached the stage of the formation of the thread, the column of blood in the tube, instead of having the regular contour it had before, has a ragged, irregular, whitish outline.

Points to be noted are that the hands must be clean and free from soap. The pricker must be cleaned after each prick with clean water; the finger must be similarly treated, and blood must not be drawn twice from the same prick. These latter precautions are necessary to avoid sucking up formed fibrin ferment into the tube with the blood and thus increasing the coagulation-rate. The only other point is with regard to the breaking of the tube. The tube must be broken and yet the ends kept together, otherwise the fibrin thread may be broken. One can suspect that this has happened by the blood column bulging out at the broken ends, as contrasted with the almost concave appearance one gets when the blood is fluid. If the thread has been broken, another piece should immediately be broken from the tube, a proceeding also undertaken, as noted above, for corroboration when the fibrin thread has been got.

I have done a good number of series of consecutive coagulation tests on myself. These were done in the evening. The time for the first appearance of the fibrin thread in all of them ranged from 7 to 9 minutes, the bulk of the readings being at 8 minutes. Of these series I shall give one, consisting of 8 consecutive readings done in my rooms from 8.3 p.m. to 9.18 p.m. (1½ hours):

My finger and the pricker were washed in a tumbler of water and dried on a clean rag, and the capillary tube was fused in an ordinary fish-tail burner. The temperature of the room ranged from 16.5° C. at the beginning to 17.5° C. at the end of the observations. Coagulation times in this series: First = 7 minutes; second = 8 minutes; third = 7 minutes; fourth = 9 minutes; fifth = 8 minutes; sixth = 8 minutes; seventh = 8 minutes; eighth = 8 minutes. Four other normal individuals gave at the same time the following readings: No. 1 = 6 minutes; 2 and 3 = 7 minutes; 4 = 8 minutes (twice).

I next give readings taken in the morning (9 a.m. to 11 a.m.) of 5 normal individuals with myself as control. The temperature of the room was 15° C.:

A = 10 minutes; B = 9 minutes; C = 11 minutes; D = 11 minutes; E = 11 minutes; myself = 11 minutes.

It will be seen that the coagulation-rate is much slower in the morning than in the evening, and Bürker, confirmed by Buckmaster, states that according to the time of day, amount of exercise, or kind of food, the coagulation-rate may be as low as 5 minutes or as high as 14.5.

The object of this note has been to demonstrate the possibilities of this method for clinical purposes. For clinical purposes, the providing of an apparatus for keeping the blood at a uniform temperature seems to be superfluous, as from all my readings done at room temperature, which varied from 15° C. to 20° C., there was no change in the coagulation-rate corresponding to elevation or lowering of temperature within these limits. This might be expected, considering that the blood is drawn at 37° C., that glass is a non-conductor of heat, and that the coagulation time is so short. It might be a factor to be considered in the case of bloods of long clotting time. In such cases a control with the observer's blood could be done and the result expressed as an index. This control would also correct any error from differences in roughness of the inner surface of the glass tubes in different samples of glass.

This method can also be used for the determination of

the time of complete coagulation by breaking pieces off until, on pulling the two ends apart, the whole column of blood is pulled out from the broken-off piece. The separation of the serum from the clot can also be observed in these tubes and the differences in time of separation noted.

MEMORANDA: MEDICAL, SURGICAL, OBSTETRICAL.

CASE OF RIGOR MORTIS IN A STILLBORN CHILD.

THE following case occurred in my practice in August last:

Mrs. M., aged 22, a thin, active woman, not very well nourished, and who had only returned from fruit picking a few days before, was attended by me in her third confinement on the evening of August 28th. It was premature. She did not expect for another month. She had felt the child moving vigorously about eight hours before its birth. She had an easy and straightforward time, and was in labour about four hours. I was with her about one hour.

The child, a female, when born was dead and in a state of well-marked rigor mortis, the legs and arms were flexed and quite rigid, the child seemed to be well nourished, and did not appear to be of more than eight months' development. Her first child was born alive. The second was born dead. I could get no particulars of that. Her husband is a weakly man, with synovitis, probably gonorrhoeal, of his knee-joint.

Iron Bridge, Shropshire.

D. W. WHITFIELD.

INTENSE HEPATIC CONGESTION IN AN INFANT.

THE occasional occurrence of cirrhosis of the liver in children warrants the publication of the following case: An infant, aged 5 weeks, in apparently good health from birth, died suddenly without any obvious cause. There was no history of cough, rash, feverishness, sickness, diarrhoea, or convulsions, and at death there was oozing from the nose bright red frothy blood. I conducted a *post-mortem* examination by order of the coroner, Dr. Danford Thomas, and the results were as follows: The body was well nourished and weighed 9 lb. 12 oz.; the brain, stomach, and heart were normal; there was intense general congestion of both lungs; the liver weighed 6½ oz., there was a large subcapsular haemorrhage, and the liver substance was friable and deeply congested. At the inquest a verdict of "Death from natural causes" was returned.

From the results of the autopsy two important questions arise—Where, and when, did the congestion originate? I feel confident it did not begin in the lungs, because of the absence of the symptoms mentioned above. It is well known that a slight inflammation of one lobe of the lung in a child gives rise to unmistakable symptoms, such as cough and feverishness, and these, if present, would have attracted the mother's attention. I think the pulmonary congestion was secondary to the hepatic. As the child was only 5 weeks old, breast-fed, and the mother was a woman of temperate habits, alcohol must be ruled out of court, and I have no hesitation in stating that, from the evidence, the congestion of the liver must have originated *in utero*, cause unknown. It is probable that, had the infant lived long enough, typical cirrhosis of the liver would have developed.

London, W.

JOHN ALCINDOR, M.B. Edin.

TREATMENT IN OCCIPITO-POSTERIOR CASES.

THIS subject came into prominence in the JOURNAL during the discussion on Meddlesome Midwifery some time ago, but was only mentioned as a case in point in favour of instrumental labour. I have had a run of these cases lately, and thus wish to give my experience and draw, if possible, the experience of other practitioners.

Diagnosis.—One may be able to diagnose the presentation by vaginal examination if the os is dilated and the membranes ruptured, but my experience is that these

cases give much trouble before either of these happens. I made a diagnosis in most of my cases by the character of the pains—sharp and short—combined with abdominal palpation and non-engagement of the head in the pelvis. In several of my cases I was called in several days before confinement for pain, and diagnosed false pains; but as the pains continued in spite of treatment I came to the conclusion, after abdominal palpation, that the presentation was occipito-posterior. I found that, on vaginal examination during these pains, there was no alteration in the os and no bulging of the membranes. I was taught that early rupture of the membranes happens in these cases, but it did not in the majority of my cases; in fact, I have had to rupture to apply instruments.

Treatment.—I have tried pushing up the forehead to bring on flexion, and rotation of the occiput, but have never had a successful case. The pains are so very short and the intervals so long that one cannot keep the hand in the vagina till the next pain comes. A medical friend of mine said he always put up his hand and turned the head. I have no experience of this, and would be afraid of twisting the child's neck. The treatment I adopted in all my cases was early instruments. I have waited on certain cases twenty-four hours to get a dilated cervix, and at the end had to dilate with the fingers and apply instruments. Some of my cases had the lower uterine segment dilated, and all that was wanted was to pull the head down on to it. There is no doubt that considerable force must sometimes be used to displace the head from the spine of the ischium, but afterwards the instrumental part is easy. The head tends to rotate after this, and I do not reapply the instruments, and have had no bad results from not doing so. I have delivered several primiparae without reapplying, without even the slightest tear of the perineum. Hospital treatment may differ from general practice, but I fail to see where it can do so in the interests of the patient. The patient very soon gets exhausted; vomiting, temperature, and quick pulse give warning that it is time artificial labour was commenced, even before full dilatation of the cervix. In conclusion, I think 50 per cent. of occipito-posterior presentations which commence as such remain so.

Anniesland.

JOSEPH STARK, L.R.C.P. Edin.

A CASE OF GALL STONE IN THE COMMON DUCT.

THE patient in the following case, a sick nurse by occupation, sought admission to the Victoria Hospital on January 2nd, 1906, with distinct signs of gall stones, and with a history of having passed a small-sized stone per anum with faecal matter. On January 15th, 1906, it was decided to explore the gall bladder; accordingly the patient was anaesthetized with chloroform, and a vertical incision in the abdominal wall was made from the costal cartilage of the eighth rib (right) down to the level of the umbilicus in the mammary line. The gall bladder was exposed, and on exploration it was found to contain no stone. The cystic and the hepatic ducts were then explored, with a negative result. The common bile duct was then manipulated between the index finger and the thumb, and a small stone was felt. An incision was made and the stone removed. The incision in the common bile duct was sutured with fine silk. The patient made an easy recovery, and was discharged from the hospital on the forty-second day after operation. The patient is at present in very good health, and has exhibited no signs of any more gall stones since the operation, and is attending to her usual occupation of sick nursing. The weight of the stone was 7 grains, and the size about that of a pea.

Victoria Hospital, Bangalore. T. V. ARMUGAM, M.B., C.M.

A SUGGESTION FOR A BONE BOBBIN OR BUTTON FOR ENTERORRHAPHY.

THE following description explains a suggestion for a decalcified bone bobbin or button for enterorrhaphy, which is on the principle of and was suggested to me by the boxwood drum commonly used for testing eye knives. It combines the rapidity of the Murphy button, the principle involved in Maunsell's operation, the cheapness of all decalcified bone apparatus, and the certainty that within half a minute or less the contents of the bowel shall be shut off from the general peritoneal cavity; it