determination of δ . Thus a specimen which has a true freezing point, -0.61°C ., indicating an advanced state of disease, may appear to have a value $\delta = 0.58^\circ \text{C}$., a normal value, if the zero has shifted 0.03°C ., a by no means unlikely amount in warm weather.

SUPPURATIVE APPENDICITIS IN A PATIENT WITH TRANSPOSED VISCERA.

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INSTANCES of transposition of the viscera are sufficiently rare to be of interest, and the following notes on a case of appendicitis in the left side are worthy of record on account of the rarity of the condition and the lack of symptoms pointing to the severity of the disease.

A tall, thin, fair-complexioned boy, aged 16. With the exception of mild attacks of the usual exanthemata had never had any illness worthy of mention, and to the day prior to my seeing him had been at school, apparently in good health.

On physical examination it was at once seen that the position of the internal organs was abnormal. The heart apex was felt in the fifth intercostal space, $1\frac{1}{2}$ in. to the right of the sternum, and the heart dullness was all on the right side. The

Transposition of viscera (Kelly's vermiform appendix).
a, Heart; b, liver; c, stomach; d, gall bladder; e, transverse colon; f, descending colon; g, caecum; h, vermiform appendix; i, rectum; j, bladder.

Liver could be palpated on the left, and the resonance of the stomach elicited on the opposite side. The heart sounds corresponded to the unusual position, the second sound being loudest in the second left interspace.

On May 17th, 1906, he returned from school complaining of sickness and pain in the abdomen. On examination the following day the abdomen was tense but not very tender; the bowels were constipated and he had vomited a portion of his breakfast; the temperature was 100.5° and the pulse 70. He said that he did not feel very ill, nor did his looks indicate any severe condition. In twenty-four hours, however, the pain returned and the abdomen was distended. Both flanks were very painful on pressure but distinctly more on the left side. The probable transposition of the appendix into the left iliac fossa led me to suspect that organ to be the cause of the trouble. Mr. Moynihan, of Leeds, in consultation, agreed with this opinion, and we treated the case on expectant lines with a view to an operation when the acute symptoms passed off. For the first forty-eight hours the patient was not allowed any food, and for some days after only egg albumen solution and very light food, the bowels being acted upon by glycerine or simple enemata. During the next fortnight the symptoms somewhat abated, and occasional pain on the right side, as of peritonitis, was relieved by turpentine stupes; the general malaise did not quite subside; there was occasional vomiting; the temperature was subnormal and the pulse 60 to 70. Deep-seated pain was produced by pressure on the left iliac region, and there was a want of resonance on percussion.

An operation was performed by Mr. Moynihan on June 12th, ether being the anaesthetic. A preliminary incision 5 in.

long in the central line, to locate the appendix definitely, revealed an unexpected condition. The whole peritoneum showed signs of old peritonitis; the intestinal coils were adherent, and numerous bands were felt. These were broken as much as possible before closing the wound. The abdominal viscera were found to be transposed. A second incision extending from a point 3 in. to the left of the umbilicus downwards and inwards for a distance of 7 in. to the central line was then made. On opening the peritoneum it was found that the left iliac region was occupied by an abscess containing foul pus; the appendix was in a gangrenous state, and a perforation of the caecum communicated with the abscess. A counter opening was made in the loin, two large drainage tubes were inserted in the wounds, and the cavity left to drain.

The patient rapidly recovered from the shock of the operation. The temperature, which had been subnormal for nearly three weeks, rose to 100.5° on that evening. It kept afterwards about 99° , and slowly sank to normal.

The abscess cavity was irrigated twice daily with sterilized water and peroxide of hydrogen. Faecal matter appeared in the dressings until the end of July, and the sinus finally healed in the last week of August.

Points of interest in the case are: First, the very slight inflammatory symptoms preceding so large a collection of pus; secondly, the absence of any history of previous illness to account for the extensive adhesions over the whole peritoneum, and the rapid and complete healing of the perforation from the sloughing appendix.

THE SCIENCE COMMITTEE

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British Medical Association.

REPORT CIII.

THE HALDANE-SMITH METHOD OF ESTIMATING THE OXYGEN TENSION OF ARTERIAL BLOOD.

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[ABSTRACT.]

THE theory of the method depends upon the fact that both oxygen and carbon monoxide form dissociable compounds with haemoglobin. If haemoglobin be subjected to a mixture of both O_2 and CO , the haemoglobin will be distributed according to a law which may be expressed in the form of an equation:

$$\frac{p_{\text{CO}}}{p_{\text{O}_2}} = K \frac{C_{\text{COHb}}}{C_{\text{O}_2\text{Hb}}}$$

where p_{CO} and p_{O_2} are the pressures of carbon monoxide and oxygen respectively, C_{COHb} and $C_{\text{O}_2\text{Hb}}$ the concentrations of carboxyhaemoglobin and oxyhaemoglobin respectively, and K a constant.

If the amount of haemoglobin unattached to either O_2 or CO be negligibly small, as it is in the experiments in question, we may write this equation as follows:

$$\frac{p_{\text{CO}}}{p_{\text{O}_2}} = K \cdot \frac{a}{100 - a}$$

where a is the percentage saturation of the haemoglobin with CO . In the experiments of Haldane and Smith an animal breathed a definite percentage of CO in air giving therefore p_{CO} . The percentage saturation of the blood was determined by a colorimetric method. The constant K can be calculated if we know the curve of dissociation of carboxyhaemoglobin in the presence of a fixed pressure of oxygen. In these experiments of Haldane and Smith the blood of the animal was found to contain less carboxyhaemoglobin than if the blood was shaken *in vitro* with the same gas mixture. If the experiments were correct, and no purely physical explanation of the fact forthcoming, and if it be granted that the lung does not do work by keeping CO out, then we must assume that the lung does work by forcing oxygen into the blood against pressure. From these experiments of Haldane and Smith calculated that the arterial blood of man contained oxygen at a pressure of 38.5 per cent. of an atmosphere.

In criticizing these researches it can be shown:

1. That the colorimetric method cannot give reliable results, as it violates two fundamental laws of colorimetry.