Why the difference, described above, in the filling of the tubes should be the cause of differences in sedimentation rate in a particular blood is a question of theoretical interest. It may be due to the momentum of the cells, gained by flowing down the inside of the tube to reach the zero mark, carrying them on downwards. Their momentum might act in certain circumstances as an accelerating factor on the sedimentation of rouleaux forming near the blood surface. As other suggestions can be offered, further work is required on this problem. For the present, however, it is desired to emphasize only the practical aspects.

It seems quite clear from recent papers that there is more than one cause for discrepancy between the readings of the Wintrobe and Westergren methods. Goldberg and Conway (1952) found in two cases that the discrepancy was due to the retarding effect of the oxalate. Goldberg, Glynn, and Bywaters (1952), in a preliminary note, state that the cause of discrepancy in their cases seems to have been the effect of the anticoagulant on the blood pH. In both these series the discrepancy has always taken the form of a high Westergren reading with a normal or near normal Wintrobe reading. Davis (1946) has reported cases in which a high Wintrobe but normal Westergren reading has been found.

It seems that, if the Wintrobe tube is filled so that reflux of blood on to the meniscus occurs, at least one factor causing unexpectedly low Wintrobe readings will be eliminated.

Summary

The Wintrobe and Westergren readings were compared in 40 cases and found to be at variance in four, the Westergren reading being more compatible with the clinical state of the patient.

The effect of reflux of blood on to the meniscus was examined in 28 cases, including the four in which discrepancy was noted.

This factor is of no practical importance in the Westergren method.

In the Wintrobe method it affected the one-hour reading in four cases—the cases in which discrepancy was noted. In these when reflux was present the one-hour reading agreed with the Westergren reading; when it was prevented the reading was discrepant.

One of the factors sometimes causing unexpectedly low Wintrobe readings will be eliminated if the Wintrobe tube is filled so that reflux of blood on to the meniscus occurs.

Grateful acknowledgments are due to Professor Sir John McNee for providing facilities in the Gardiner Institute and for guidance in the preparation of this paper; also to Drs. H. Conway, A. Goldberg, and J. Cochran for their helpful advice and criticism.

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A note on dahlia tubers as a source of food is contributed by Mr. S. G. Harrison to the February issue of the *Journal of the Royal Horticultural Society*. The tubers consist partly of inulin, and though not palatable either to man or domestic animals they could be a useful source of laevulose if a cheap process were devised for converting the inulin into that monosaccharide. The present small demand for inulin is being partly met by a firm which is processing three tons of dahlia tubers a year to produce it; the tubers used are normal horticultural surplus. It is thought that breeding experiments might lead to the development of tubers with a higher content of inulin than the present 9% to 13%, for the sugar content of sugar beet has been increased from about 7% sucrose to about 20%.

A SURGICAL METHOD FOR MANAGEMENT OF PATIENTS WITH PORTAL CIRRHOSIS

PRELIMINARY REPORT OF A CASE

BY

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Ligation of the hepatic artery, alone or together with the splenic and left gastric arteries, has been used in recent years as a treatment for portal hypertension and its complications. Success has been claimed in a number of these cases. Ascites and bleeding oesophageal varices appear to be favourably influenced by a reduction in arterial blood supply to the liver, and liver function seems to improve.

The rational basis for this surgical method can be traced back to the studies of the intrahepatic circulation in portal cirrhosis by Kretz (1904), Herrick (1907), McIndoe (1928), and Dock (1947), and to the more recent demonstration by Montagnani and Paci (1952) of a tremendous increase in the arterial circulation in the cirrhotic liver with widespread arterio-portal shunts of varying size.

Berman *et al.* (1950, 1951) and Berman and Hull (1952) have suggested that the method works by reducing arterial blood flow and pressure in the liver parenchyma so that more blood can pass through the portal bed and portal venous pressure is lowered.

Ligation of the terminal part of the hepatic artery carried great hazard, and as a compromise the artery has been tied proximal to the origins of the gastroduodenal and right gastric branches so that a free collateral circulation is possible. Experimental studies in dogs (Montagnani, 1952) have led to the development of a method of gradual occlusion of the hepatic artery or its terminal branches by wrapping around it a "cellophane" band treated with dicetyl phosphate. This led to a fibroblastic reaction of the surrounding tissues, ending in complete obliteration of the hepatic artery. In the meantime a collateral circulation developed towards the liver through the inferior phrenic arteries and minute arterial branches along the portal vein and the common bile duct. No impairment of liver function or damage to the liver parenchyma was observed after such a procedure. No antibiotics were given at any time.

The favourable results of these experiments encouraged clinical application of the procedure in the following case.

Case Report

A man of 58 was transferred from the medical service with Laennec's hepatic cirrhosis and ascites, which had not responded to medical treatment. His father had died of hepatic cirrhosis and he himself had worked for years in a winery, drank 1.5–2 litres of wine each day, ate little, and smoked much. For two months before admission he suffered from dyspepsia, alternating diarrhoea and constipation, asthenia, and loss of weight.

On admission he was found to be wasted and breathless. The sclerae were icteric. The abdomen was greatly distended by fluid and the lower half of the body was oedematous. Distended veins were present on the lower abdomen. There were no abnormalities in the chest. The relevant laboratory findings were: total plasma protein 5.8 g.% (albumin 2.3 g., globulin 3.5 g.); prothrombin 50%. During

two months of medical treatment the loss of weight continued and ascites recurred after repeated tapping. He was transferred to the surgical side on March 22, 1952. The laboratory findings then were: total protein 6.2 g.% (albumin 2.6 g., globulin 3.6 g.); prothrombin 50%. After treatment with vitamin K and blood transfusion, peritoneoscopy was done on April 1 to confirm the diagnosis. After further fresh blood transfusion the prothrombin rose to 65%.

Operation was performed on April 16. The abdomen was entered through a right rectus incision. About a litre of clear fluid was evacuated. The liver was small and hard, with rounded borders and grossly granular surface. The gall-bladder was small and thick-walled. The hepato-duodenal ligament was carefully dissected and the hepatic artery was found and freed. Three branches were identified: the right branch, and two smaller ones directed to the left and middle (quadrate) lobes. The portal pressure measured from an ommental vein was 365 mm. of heparinized saline. After occlusion of the three hepatic branches with bulldog clamps the portal pressure fell to 254 mm. The two branches to the left and middle lobe were ligated with No. 1 linen ligatures and the larger branch to the right lobe was wrapped with two turns of a cellophane band treated with dicetyl phosphate. The arteries were buried in the hepato-duodenal ligament with three stitches of 000 silk, and the abdomen was closed without drainage.

The post-operative course was uneventful except for a haematoma of the wound followed by a small dehiscence which was repaired on May 28. The abdomen was tapped once, on May 20, to avoid the danger of a post-operative hernia, and 800 ml. of fluid was withdrawn. The patient had a normal diet from the sixth post-operative day, and by the time of his discharge from hospital on June 23 he was eating well, had normal bowel movements, and a slight amount of fluid was present in his abdomen. He had gained 1 kg. in weight.

He was seen again on September 25, when he was feeling well, had gained 5 kg. in weight since discharge, and was eating well. He had slight constipation, which he corrected with some laxatives. No jaundice was present and the venous collateral circulation on his abdomen had almost completely disappeared. He had not been tapped since his discharge from hospital, and a small amount of fluid was detectable. The plasma protein at this time was 7.39 g.% (albumin 2.97 g., and globulin 4.42 g.).

The favourable result of this first case supports the belief that the method, which was developed experimentally, is worthy of further clinical application.

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The physiology of vision is the subject of a dozen articles in the current issue of the *British Medical Bulletin*. Sir John Parsons, F.R.S., consulting surgeon to the Royal London Ophthalmic Hospital, contributes a preface which draws attention to some of the implications of modern research into vision. A mechanism that corrects the lens system of the eye so as to overcome chromatic aberration is the subject of an article by Professor H. Hartridge, F.R.S. Professor A. Sorsby discusses the nature of refractive errors, and Dr. Hugh Davson some problems of the formation and circulation of aqueous humour. In this connexion Sir John Parsons suggests in the introduction that further knowledge of the production of aqueous humour may have a bearing on the formation of cerebrospinal fluid and of lymph production in general. A useful bibliography of British books and periodicals concerned with the physiology of vision is included. The *Bulletin* is published by the British Council; the price of the current number is 15s.

TRICHLORETHYLENE IN LABOUR

BY

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Browne *et al.* (1951) described the use of Steel's inhaler for administering trichlorethylene in labour. Commenting on this, the *British Medical Journal* (1951) stated: "The argument over analgesia in labour creaks on . . . Steel's inhaler . . . unfortunately does not contain all the safeguards generally considered necessary for its use . . . by a midwife." I wish, therefore, to describe the results obtained with a "Tecota" inhaler (manufactured by Cyprane Ltd.), which contains many of these safeguards and apparently fulfils most of the specifications laid down by the Medical Research Council. The machine used is readily portable and delivers a concentration of vapour of 0.45% trichlorethylene in air with

Trichlorethylene

PATIENT'S NAME.....	DATE.....
TIME COMMENCED.....	CERVIX.....dilated (PR/PV)
TIME FINISHED.....	
DURATION.....HRS.....MINS.	
USED FOR BIRTH OF HEAD { YES NO	EFFECT: Satisfactory Unsatisfactory
BABY: First cried.....minutes after birth.	
Resuscitation needed by MIDWIFE { YES NO	
DOCTOR { YES NO	
F. Hts.....Regular.....Irregular.....	
MOTHER: Co-operation: Average Fair Poor	
Ill-effects (e.g., irregular pulse, giddiness, or anaesthesia)	
After-effects:	
RELIEF: Patient's opinion: Very good Good Fair Poor	
Attendant's opinion:	
REMARKS:	

a variation of about 10% with temperature and normal breathing rates. The concentration is within these limits in all working positions and after shaking or inversion of the apparatus. The concentration falls to about 0.4% for breathing rates below a minute volume of 7 litres.

The investigation was instituted primarily to ascertain if the machine could be used safely by unsupervised midwives, and, secondarily, to attempt to assess its efficiency and detect its disadvantages. There are many drawbacks to such an investigation. On the one hand, the subjects are often extremely impressionable, and, on the other hand, one has to allow for the varying standards and enthusiasms of different observers. The present series of 400 cases is a personal one. All the patients were seen by me during labour and/or interviewed by me 24 hours later. The form reproduced here was completed for each patient by the supervising midwife immediately after delivery. The main points were that the administration was not begun until the cervix was dilated at least three fingerbreadths and was discontinued after six hours. The machine was charged with 30 ml. for each case and not refilled during that time. Chloral and bromide, and pethidine, were often used as premedication, but no drug was given once