making of rich blood. This is precisely the risk which the early adoption of a varied and progressive diet seeks to obviate.

At the same time some share in the prevention of relapses has probably been due to the steady continuance of the mercury and iron treatment not only throughout the attack, but for at least a week and a half after defervescence. These views, and further details of treatments, were published in my paper on the Therapeutic Indications in Typhoid Fever in the *Medical Press and Circular* of May 15th, 1895.

In conclusion it is claimed for this modified dietary that it is a distinct improvement on an exclusive milk diet in respect of the nutrition of the blood, of the heart, of the nervous system, and of the bowel; and that it has over the solid alimentation which Dr. Barrs advocates—and of which it supplies the essential constituents—an important advantage in the avoidance of any dangerous stress on the gastric and intestinal digestion, and of any accumulation within the bowel of insoluble and of putrescible residues. Its nutritive success is attested by the aspect and sustained strength of the patients, by their shortened convalescence and greater freedom from sequelæ, and by the absence of that craving which is not only a discomfort but a sign that they are relatively underfed.

REFERENCE.

¹ BRITISH MEDICAL JOURNAL, 1894, i, p. 1126.

REMARKS ON METHOD IN SERUM DIAGNOSIS.

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THERE have now been nearly as many ways devised of applying as there have been observers on serum diagnosis. Some are good, others bad; some macroscopic, others microscopic; some simple, but liable to introduce error; others a little more complicated, but far more accurate. For the present, at any rate, the test will generally have to be carried out in laboratories or in hospitals. It is not well adapted for personal application by the practitioner; hence the more accurate and scientific even if a little more complicated processes are to be preferred.

The macroscopic methods may be dismissed in a few words, since they either require a comparatively large quantity of blood if for use in a test tube (Widal¹) or are not completely reliable if applied in a capillary tube (Wright²), and in any case an interval of nearly twenty-four hours must elapse before the diagnosis can be made.

In the microscopic methods two points are of importance: (1) sufficient dilution, which should be effected without bringing undiluted serum into contact with the bacilli, (2) a time limit. As regards the first point, one observer (McWeeney³) made his tests apparently without any dilution, and others (Widal,⁴ one of the earliest workers in this field, Delépine and Sidebotham,⁵ Wyatt Johnston and McTaggart⁶) dilute from equal proportions to about 1 in 10, with such accuracy as their various procedures permit. That this dilution is insufficient was pointed out in my first communication on the subject,⁷ and Stern,⁸ Du Mesnil de Rochemont,⁹ Bates Block,¹⁰ and others have confirmed my statement. Of course the number of normal serums which react well in a dilution of 1 to 10 is small; but it introduces a source of error, although, some may think, on the right side.

I have not yet come across a case in which the serum would not react at some time in the course of the disease in the dilution of 1 to 32—namely, diluting the serum to 1 to 16, and then mixing a drop of diluted serum with a drop of the culture; and even the most enthusiastic observer, Widal, in his earliest communications, remarks that if the reaction does not succeed on one day, it must be tried again during the following days, and that a negative result does not therefore exclude the diagnosis of enteric fever. On the other hand, I have not yet met with a serum other than that of a typhoid patient which would react in this dilution. A few observers have come across such cases, without, however, positively excluding a previous attack of enteric fever. It is

of course obvious that a day longer may elapse before the serum will react 1 in 32 than for 1 in 10, but in the latter case it may be only a normal reaction. The question therefore put shortly is, Is it better to make a positive diagnosis of enteric fever, which in a small percentage of cases may be wrong, or to postpone the diagnosis for a few days, with the nearly absolute certainty of having it right? It appears to me that the latter alternative is preferable from the standpoint of both practical and scientific medicine.

The question of time limit has, curiously enough, not received much attention. It is, nevertheless, of some importance; for in the course of twenty-four hours a good number of serums will show the reaction, especially in a warm room.

It is desirable to use an attenuated culture of the typhoid bacilli, since it seems to be less often affected by normal sera. Also an emulsion from an agar culture presents some advantages over a bouillon culture, especially for comparative and quantitative experiments.

Capillary tubes of not too fine a bore rather than capillary pipettes are advisable for collecting the blood since they can be centrifuged if desired (and this is always to be recommended), or, after a short time, the string of clot and serum can be blown out on to a glass slide, and the serum, containing however some corpuscles be taken up in graduated capillary pipette and suitably diluted. Capillary tubes are perhaps rather more easily broken than capillary pipettes, but this disadvantage care in use can easily obviate.

The method here recommended is, I claim, at any rate not inferior to any other proposed: it is almost as simple, and considerably more accurate, and this opinion is endorsed by its having been adopted for purposes of serum diagnosis in the Johns Hopkins Hospital at Baltimore.¹⁰

Finally it may be as well again to emphasise the fact that, owing to the inherent agglutinative power of the serum of many normal individuals, it is more easy to obtain a positive than a negative result unless suitable precautions are taken, so that it cannot be assumed, as Professor Delépine¹¹ would have us do, that negative results or quantitative estimations imply inferiority of method.

REFERENCES.

¹ Widal, *La Presse Médicale*, 1896, p. ccviii. ² Wright, *BRITISH MEDICAL JOURNAL*, i, 1897, p. 139. ³ McWeeney, *ibid.*, p. 147. ⁴ Delépine and Sidebotham, *Lancet*, ii, 1896. ⁵ Johnston and McTaggart, *BRITISH MEDICAL JOURNAL*, ii, 1896, p. 1629. ⁶ Grünbaum, *Lancet*, ii, 1896, p. 326. ⁷ Stern, *Centrab. f. inn. Medicin*, 1896, No. 49. ⁸ Du Mesnil de Rochemont, *Münchener med. Wochenschr.*, 1897, No. 5. ⁹ B. Block, *Johns Hopkins Hospital Bulletin*, 1896, Nos. 68-69. ¹⁰ *Ibid.* ¹¹ *BRITISH MEDICAL JOURNAL*, i, 1897, p. 529.

A CASE OF RUPTURE OF SPLEEN; SPLENECTOMY; DEATH.

BY

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A. B., aged 51, a labourer, was brought to the Hampstead Hospital at 10.30 on the morning of March 8th. About half an hour before admission, whilst driving a cart, he was caught between the shaft of his own and the wheel of a passing wagon. He stood up and was taken to a neighbouring inn, where brandy was administered, and he was then driven to the hospital.

On admission, he complained of pain in the abdomen, especially on the left side, and looked extremely ill. His face was pale, his lips blue, respirations rapid, and pulse very collapsing. There was no evidence of fractured ribs. The abdomen was almost motionless, and the left side was exceedingly tender, there being distinct dullness in the flank, which did not alter with change of position. The right flank was resonant except towards the extreme back. He passed urine which did not contain blood, and the bowels acted twice naturally.

He seemed to be in great pain, and to alleviate this tincture of opium $\text{m} \times$ was given. A diagnosis of internal hæmorrhage with probable rupture of spleen was made.

At 11.30 the condition of the patient was decidedly worse.

Pallor had become intense, and the pulse was extremely rapid and almost imperceptible; the dullness in the left flank now extended almost to the middle line. He was quite conscious, and readily consented to operation, which, however, it was explained to him gave him but a slight chance of recovery.

After consultation with our colleagues, we decided to operate, and previously transfused into the median basilic vein $2\frac{1}{2}$ pints normal saline solution at a temperature of 105° F. This had a marked effect; the pulse became full and regular, 80, and the patient began to again complain of severe abdominal pain.

Under ether, administered by Dr. L. Glover, an incision over the linea alba, reaching from about 1 inch below the tip of the ensiform cartilage to the umbilicus, was made by Dr. Ware. On opening the peritoneum there was a gush of blood, clearly indicating positive pressure. The liver was first explored, and found to be intact, and after clearing out and tearing through large quantities of blood clot, the spleen was felt extensively ruptured on its anterior border. On attempting to bring the organ forward it was found to be firmly fixed, and to be of abnormal size. Adhesions were discovered between the convex surface of the organ and the adjacent thoracic wall, and, with considerable difficulty these were torn through—a procedure which necessitated a transverse incision extending to the costal arch at right angles to the vertical incision. At one spot on the convex surface the splenic substance was torn. The spleen was now brought forward, traction on the pedicle increasing markedly the already much collapsed condition of the patient. The pedicle having been tied with silk in three parts, and the spleen removed as rapidly as possible, the peritoneal cavity was cleansed by sponges of the immense quantity of clot and blood, and at the same time transfusion was again resorted to, and strychnine administered hypodermically. The patient, however, did not rally, and succumbed before the abdominal wound was entirely closed.

We venture to publish this case inasmuch as, owing to the condition of the patient, operative interference seemed urgently demanded, unlike the cases reported by Messrs. Pitts and Ballance in the *Clinical Society's Transactions*, vol. xxix.

Moreover, the adhesions present, which were an unexpected complication, rendered the operation unduly long. They were probably due to malaria, which the patient had contracted in India whilst in the army.

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, ETC.

A NEW METHOD OF LOCALISING BRAIN LESIONS.

I WAS very much interested in seeing in the *BRITISH MEDICAL JOURNAL* of April 3rd a paper by Mr. Robert Cox on what is there called a cerebro-graphometer. But I am afraid the instrument has been forestalled, for I have possessed for the last ten years an instrument so exactly like his that the illustration might have been taken from it, even to the extent of a tape measure with it. This was made for me by Messrs. Maw and Son (December, 1886) for the same purpose as Mr. Cox had in view.

But I thought the piece which is carried over the head from side to side would be more conveniently arranged as a soft metal, bougie-like rod passed through a swivel eye so as to indicate the position of the "fissure of Rolando." From this rod measurements could easily be taken, as also from the upper and from the circumferential parts of the instrument.

I called the instrument a "brain mapper," and this name I certainly prefer to "cerebro-graphometer" or to encephalograph. The distances along the main lines I also preferred to divide into hundredths rather than measuring by the fractions Mr. Cox uses.

This instrument was at the time submitted to my friends Professor Anderson, Dr. Sharkey, and Professor Reid, who were all interested in brain topography; and I should no

doubt have completed my observations had my health been spared.

My idea of using the instrument was to fit it over the patient's head, and measure the distance from the main lines to the various motor points, important vessels, etc., having at the same time by one's side a skull upon which had been marked out the important convolutions, fissures, vessels, etc. In this way it would be possible to localise any important points on the brain surface.

Mr. Cox seems to have drawn up a very useful scheme by which measurements can be made to particular points. But it will be very much easier to take these measurements from a soft metal rod representing the fissure of Rolando, than to measure from a lattice work crosspiece, as there is a tendency for the hairs to catch in that structure of the instrument. Whether a flat map plan of the surface of the brain would be a help is a question, but I think a marked skull would be preferable.

The accompanying illustration shows the instrument placed over a marked skull (though hardly arranged as it should be), and I think it will be obvious how very similar that of Mr. Cox is to it.

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IMPERFORATE ANUS AND HYDROCEPHALUS COMPLICATING BREECH PRESENTATION.

ON January 14th I was called to Mrs. E., who was expecting her third confinement about the middle of February. Irregular pains had been recurring at intervals of about three-quarters of an hour, and there had been a slight coloured discharge. Abdominal examination was rendered difficult owing to the large quantity of liquor amnii. The os had not commenced to dilate, and was almost out of reach.

I directed Mrs. E. to remain in bed, and prescribed ol. ricini $\frac{3}{4}$ ss and tabellæ tr. opii gr. x (B. and W.) every four hours, which led to an action of the bowels and cessation of pains. Next morning the pains recommenced at shorter intervals, and soon produced dilatation of the os and bulging of the membranes, the latter rupturing soon after examination and a great rush of liquor amnii taking place. The anus was imperforate, the buttocks being well rounded and the perineum rendered tense by the pressure of contained meconium, etc.; the sensation to the examining finger was very similar to that presented by the rounded occiput and fontanelle. After a long delay, however, the breech was born, and then, the forceps having been applied with considerable difficulty, a markedly hydrocephalic head was delivered.

The scrotum was much distended with fluid, and the cord