coagulation of milk was more rapid and more complete with the organism obtained from Dr. Paine than with the other.

MICROSCOPICAL AND STAINING CHARACTERS.

The organism is a small micrococcus which occurs in the tissues and in cultures in pairs or in short chains. Grown in milk bouillon the chains are more definite, but I have never seen chains containing more than a dozen organisms. In size it is smaller than the ordinary streptococcus, and I have never been able to produce in any media the long chains which one so constantly finds in cultures of the streptococcus pyogenes. Many of the organisms, especially those seen in pairs, are rather oval in shape, and more resemble the pneumococcus than the streptococcus. No capsule could be demonstrated. Degeneration forms are fairly common, the coccus becoming swollen and elongated, but even in cultures of several days' growth the infrequency of degeneration forms as compared with those in a growth of streptococcus pyogenes of a similar period is a very striking feature.

It stains readily with all the ordinary aniline dyes. It retains the stain by Gram and in Weigert's modification of this method.

CULTURAL CHARACTERS.

The media used were all standardized according to Eyre's method to +10.

Bouillon.—In twenty-four hours at 37° C. there was a very slight turbidity in the fluid, with a slight flocculent deposit at the bottom of the tube. In forty-eight hours and still more markedly in three days, the fluid had again become clear, and at the bottom of the tube there was a very distinct deposit. The media became very distinctly acid. There was no formation of indol.

Glycerine Bouillon.—The growth was very slight, and in five days there was a slight flocculent deposit at the bottom of the tube. The fluid remained perfectly clear. The alkalinity was slightly diminished, but no acid reaction was present even after three weeks.

Peptone Solution.—The appearances were very much the same as in bouillon, but the acidity was more marked.

Gelatine (stab).—In two days minute colonies were made out along the needle track—there was no extension of growth on the surface. In five days the growth was slightly more apparent, but at later periods there appeared to be very little increased growth. There was no liquefaction of the media and no gas production.

Gelatine (streak).—In twenty-four hours there were minute whitish colonies. At later periods there was fusion of the colonies at places, but in the main the colonies remained small and discrete, even after three weeks. There was no liquefaction.

Gelatine Plates.—The colonies were small, rounded, and distinctly granular. The edges were quite regular. They attained their maximum size—that of a small pin's head—in five days. There was no liquefaction.

Agar (streak).—Small semitransparent colonies, slightly raised above the surface. There was very slight spread. The appearance in five days was not much altered from the appearance got in twenty-four hours. The growth in agar was rather more abundant at 20° C. than at 37° C.

Deep Agar.—There was no growth.

Blood Agar.—This is one of the most satisfactory media. In twenty-four hours there are minute whitish colonies, slightly raised above the surface. In forty-eight hours the colonies are slightly larger, and at places there may be fusion, giving rise to a uniform mass of growth. However, even after several weeks, at the edges, the colonies are still quite discrete. On this medium the growth gradually produces an alteration in the red blood pigment, producing a rusty-brown or chocolate colour. Not only does the organism grow well on this medium, but it has a very long existence. The culture Dr. Paine sent me was subcultured from a tube after eight and a half months, and I have subcultured from a blood agar tube after six months.

Blood Serum.—On human serum after twenty-four hours there are minute, small, slightly raised colonies. These, however, spread very considerably, and in three days there is a uniform whitish streak on the surface of the medium.

Milk.—In twenty-four hours—no acidity, no coagulation. In forty-eight hours—acid reaction, no coagulation. In three days—acid reaction, coagulation.

Milk rendered distinctly alkaline to litmus paper gave similar results, the acidity being quite marked in forty-eight hours.

Litmus Milk distinctly Blue.—Began to assume a lighter blue in twenty-four hours; in forty-eight hours it was a distinct pinkish tint, and in three days it was a rose pink and was coagulated.

Milk with Bouillon slightly Acidified with Lactic Acid.—With the organism got from Dr. Paine there was distinct coagulation in twenty-four hours. With the organism isolated by me the coagulation was only slight in twenty-four hours but was quite marked in forty-eight hours.

Potato.—No visible growth.

Anaerobic Cultures.

Deep Glucose Agar.—There was a slight growth along the needle track; no surface spread. The medium seemed to be unfavourable.

Formate Bouillon.—No growth was obtained.

RESULTS OF INOCULATION.

My results have been absolutely confirmatory of those pub-

lished by Paine and Poynton and others. These have already been published elsewhere,¹ and I need only say that intravenous injections in animals produces endocarditis, polyarthritis, and chorea. The polyarthritis usually develops in about three days after the inoculation. With subcutaneous injections, even in large doses, I have not seen any suppuration, but Beaton and Walker have twice seen the formation of a subcutaneous abscess, and have produced a suppurative peritonitis. They do not, however, state whether or not from the pus they recovered the micrococcus in pure culture.

It will be seen from the above that, except in some minor points, my results correspond with those got by Beaton and Walker.

As to whether this organism is to be classed as a streptococcus or not is a matter of very little practical importance. If we use the term in its generic sense, then no fault can be found with it, but, fortunately or unfortunately, the term streptococcus has to most people a specific meaning, and the organism which we find in acute rheumatism produces by inoculation results which are entirely different from those produced by an inoculation of the 'streptococcus' in its ordinarily accepted sense. Therefore it seems to me it is essential to designate this organism by a special term, such as the 'micrococcus rheumaticus,' as proposed by Beaton and Walker. This seems all the more important since it has been maintained that this micrococcus which we have isolated is not causal of acute rheumatism, but is probably a streptococcus causal of the terminal infection.

Besides, there are points in the cultural characters and vitality of the organism which seem to distinguish it as absolutely from the streptococci as the pneumococci are distinguished from them. The growth on gelatine appears earlier, and is more abundant in the micrococcus rheumaticus. Its more abundant and earlier growth on ordinary agar at 20° C. than at 37° C. is quite unlike what is seen with the streptococci. The very marked acid production in bouillon and in milk, the early coagulation of the milk, and the length of time the organism lives in suitable culture media are features which distinguish it absolutely from the streptococcus.

The results of inoculation in animals are, as I have already indicated, entirely different. Even if we admit that the organism can produce suppuration, though I feel considerable doubt on this point, yet ordinarily it does not give rise to pus, but causes in rabbits non-suppurative polyarthritis, endocarditis, etc. These conditions have not been produced by inoculation of what we ordinarily call streptococci. We do not claim that because this organism produces endocarditis therefore it is the causal organism of morbus cordis. What, however, we do claim, is that it can be isolated from cases of typical acute rheumatism; that it can be grown outside the body, there showing characters which are in some respects specific; that in inoculation in animals it produces a combination of lesions which are similar to those of acute rheumatism in the human subject sometimes specially affecting the joints, sometimes specially the heart, sometimes producing chorea, sometimes producing a combination of these conditions, and that from these lesions the organism can be recovered in pure culture.

On these grounds there seems but one conclusion, that this 'micrococcus rheumaticus' is a special organism, and is causal in acute rheumatism.

REFERENCE.

¹ *Journal of Pathology and Bacteriology*, March, 1904.

AFEBRILE ENTERIC FEVER.

By GEORGE JUBB, M.D.,

Physician, Glasgow Central Dispensary.

THE following notes of a case of this variety of enteric fever which was complicated by thrombosis of the left femoral vein may be of interest. The patient was a young woman, aged 20, who was nursing her married sister during a sharp attack of enteric fever. I saw her on the fourth day of illness, when she complained of headache and pains in her limbs, loss of appetite, and lassitude. There was also slight abdominal pain. On examination her tongue was moist and coated, pulse 90, and temperature 98.4° F. Her abdomen was slightly distended and tender. The spleen was not markedly enlarged, and there were no rose spots. The mucous membranes of the lips and eyelids were well coloured. The bowels were constipated. The heart and lungs were normal. A provisional diagnosis was made that the patient was probably suffering

from enteric fever, and she was sent to bed and kept on milk diet. On the seventh day of illness the typhoid serum reaction gave a positive result. The spleen was now distinctly enlarged, though the morning and evening temperatures still remained normal. The patient

was ordered to stay in bed and remain on strict diet, though she stated that she felt quite well, and thought it a hardship to be kept in bed.

On the morning of the seventeenth day the temperature, which so far had been normal, rose to 101.6° F., and she complained of pain in the left leg, which appeared slightly swollen and tender. In the evening the temperature was 102.4° F., and the oedema of the left leg was more pronounced. The temperature was febrile for the next four days, but settled to normal on the twenty-second day of illness, and thereafter the patient made an uninterrupted recovery. No rose spots were seen at any time during the course of her illness.

The case is of interest as showing:

1. The value of the typhoid serum reaction, as without it, and on the clinical symptoms alone, there would have been some hesitation in confining the patient to bed and milk diet for a prolonged period.
2. The fact that there was no disturbance of the temperature till a complication took place—in this case thrombosis of the left femoral vein.

CASE OF CONGENITAL ABSENCE OF CONTINUITY BETWEEN THE LARGE AND SMALL INTESTINES.

By C. H. SOUTER, M.B., C.M.ABERD.,
Balaklava, South Australia.

History.—J. W. M., a male infant, stated to be 48 hours old, was brought to me on May 2nd, 1903, from a distance of twelve miles. It was said to have vomited some foul-smelling dark stuff as soon as the head was born. The parents were healthy; the mother's next youngest child was 6 years old, and she had had no miscarriages. There was no history of congenital abnormalities in the family. The patient was reported to have passed a small dark-coloured motion shortly after birth, and to have vomited everything he swallowed.

State on Examination.—When seen by me it was yellow in colour and much swollen in the abdomen. The tongue was bright yellow and the superficial veins engorged. It vomited large quantities of faecal-smelling fluid of a greenish colour. The little finger could be passed freely into the rectum for two inches, but the gut was felt to be small and empty. A rectal injection of water was returned, and brought with it some clear colourless casts of mucoid matter. A lump could be felt per rectum and through the parietes in the right iliac region. There was no blood or "slime" in the passage. The stomach was washed out. Vomiting, still faecal, continued. The pulse was feeble, the temperature subnormal, and the whole condition indicated immediate operation.

Operation.—I opened the abdomen over the site of the iliac swelling, and some much-distended bowel presented. I did not, in view of the general condition, think it justifiable to explore, but stitched the bowel to the edge of the wound and opened it. Over half a pint of foul-smelling greenish fluid escaped. The gut was then washed out with saline solution, and the artificial anus dressed with iodoform gauze every two hours. Artificial feeding was commenced, and the child did well for a week, the wound healing at the edges. Some local erythema occurred about the third day, probably owing to the constant moisture with bilious stools. After a week dyspepsia set in, and all efforts to control digestion failed. There was no rise of temperature, and no swelling of the abdomen. The patient died ten days after the operation.

The parents permitted a partial *post-mortem* examination.

Necropsy.—The edge of the incision in the gut had healed firmly to the edge of the parietal opening. A few fine adhesions surrounded the wound, but there was no appearance of general peritonitis. The small intestine was traced

from the wound to the stomach. It was normal but of greater calibre than usual, and contained green bile-stained grumous matter. Downwards it extended 1½ in., where it ended in a *cul-de-sac* (seen in the photograph). There was no Meckel's diverticulum, nor any trace of an opening other than that made at the operation. The large intestine was traced from the sigmoid flexure round the usual course and down the right side of the belly cavity, where it ended in a small caecum and vermiform appendix, and a diverticulum of about ½ in. in length, having no opening. These two blind ends were situated in about the normal position with respect to each other but not in contact. Some loose mesenteric tissue

existed between them. The colon was empty except for a little mucoid matter similar to that passed with the enema. Its lumen was about of sufficient calibre to admit a slate pencil. I was able also to note that the edge of the liver occupied a line parallel to and about 1½ in. from the costal margin. The gall bladder was distended with bile, and projected ½ in. beyond the edge of the liver. The rest of the abdominal contents were normal.

The photograph shows the specimens reduced about one-third of their actual size, and, seen from the front, as nearly in their proper relations as possible. No dissection was made. The artificial opening may be seen near the middle of the sac of ileum.

REQUESTS TO MEDICAL CHARITIES.—The executors of the late Mr. Arthur Ocran Crooke have made a grant of a sum of £3,000 to the East London Hospital for Children and Dispensary for Women, Shadwell, for the naming of a ward in the new building now in course of erection; and a sum of £1,000 for the endowment of a bed in the Charing Cross Hospital Convalescent Home. The Earlswood Asylum for Idiots receives £200 under the will of the late Dr. Francis Bossey of Redhill; and the Huntingdon County Hospital £100 under the will of the late Mr. Charles Percival Rowley of St. Neot's. The Royal Dental Hospital, Leicester Square, has received £500, which were bequeathed to it by the late Mr. George Willis Penson, who was for many years a trustee of the charity.