August 9th. The siphon drainage was stopped last night and the end of the tube clamped. On applying aspiration this

in universal use for the treatment of septic abscesses are not necessarily the best for dealing with suppuration produced solely by a protozoal organism.

In conclusion I desire to thank Sir Havelock Charles for the very strong support he has given to my contention that post-operative sepsis plays an important part in the mortality from tropical liver abscess. Coming from a surgeon of such unique experi-

morning, to obtain some pus for microscopical examination, none could be got, showing there had been no accumulation during the cessation of drainage throughout the night.

August 10th. Tube clamped as before at night, but no pus could be obtained by aspiration this morning, so the cannula was withdrawn, and a dressing applied over the long sinus which remained. The cannula had been in position for just fourteen days.

August 13th. The wound was dressed this morning and found to be "practically healed," only a minute surface wound, and no sinus, remaining.

August 20th. Dressings removed and the wound found to be soundly healed. He was now getting up, had no pain or tenderness, and declared himself to feel perfectly fit, and at his own request was discharged from hospital to go to friends in Calcutta, this being twenty-five days after the operation. He was seen several times during the following week, and on examination with x rays his diaphragm was found to be moving perfectly on both sides. He remains quite well and will report his condition from time to time. The tube of the cannula stripped during its removal. It has been sent to Messrs. Down Bros., so that they shall be made stronger in future.

I saw the patient every day and can testify to the correctness of the above notes. Dr. Murray authorizes me to say that the instrument perfectly fulfilled the objects of the inventor, and that he will most emphatically use it again at the first favourable opportunity. He had never seen such a rapid recovery in a liver abscess of this character and size. The sterility of the wound is clearly shown by the healing by first intention of the sinus, which must have been 3 or 4 in. in length. The cannula caused much less pain than the large rubber drainage tubes combined with resection of a rib, which are necessary in the ordinary open method for such an abscess. The drainage might probably have been shortened by a few days, but it was thought better to err on the safe side in this respect. The temperature chart shows a normal line as soon as the discharge became thin as a result of the daily quinine irrigations to destroy the causative amoeba. Unfortunately, by this time no pus could be obtained by aspiration, and that mixed with carbolic acid or quinine would have been useless for examination, so the exact date of disappearance of the amoebae is uncertain, but probably it was when the pus became thin, as in many other cases I have been able to find them in scrapings taken at dressings as long as typical thick liver abscess pus continues to be discharged. Post-operative sepsis, unfortunately, does not kill the amoebae, as I recently found them in unusually large numbers in liver abscess pus which contained many thousand streptococci, staphylococci, and bacteria in every field of a stained smear.

It would, of course, be absurd to draw any wide conclusions from even such a remarkable success as the above in a single case, as it will require much further experience and a long period of time before the exact limitations of my method can be ascertained. Every new instrument, especially when it aims at introducing a new principle, must have a beginning, so in view of the criticisms of an experienced Indian surgeon already referred to, it seems well to put this case on record without delay, as it so conclusively demonstrates that the flexible sheathed cannula does fulfil the purpose for which it was devised, and may be safely recommended to the notice of those surgeons who realize that the methods

of the disease this pronouncement must carry great weight, and will materially hasten the further trial of my instrument, the main purpose of which is to produce rapid aseptic healing of the cavities, and thus prevent secondary bacterial infections, which, when not rapidly fatal of themselves, at least much prolong the healing process and the consequent sufferings, and put a great and unnecessary strain on the powers of already much-enfeebled patients.

AN OUTBREAK OF AN ACUTE INFECTIOUS ERUPTIVE DISEASE (RUBELLA).

By MILES B. ARNOLD, M.D., D.P.H.,

ASSISTANT TO THE MEDICAL OFFICER OF HEALTH FOR THE COUNTY
BOROUGH OF BLACKBURN; LATE SENIOR ASSISTANT MEDICAL
OFFICER AT THE MONSALL FEVER HOSPITAL,
MANCHESTER.

I do not describe this outbreak because I myself think further evidence is necessary to prove the specific nature of rubella, but because opportunities of studying localized epidemics and observing the "incubators" do not seem to have been frequent.

A patient, N. J., was admitted as a case of scarlatina to Ward A (acute) on January 4th. Three days later he had a rash without rise of temperature, and was isolated for three days, but then returned to Ward A. It was the custom to transfer cases from Ward A (acute) to Ward B (convalescent), cases going to Ward B in small batches twice weekly. On January 24th a case, L. H., which had been transferred from Ward A to Ward B on January 15th, showed signs of the disease which I shall presently describe. There followed during the next few days eight similar cases, all occurring in patients transferred from Ward A. But in Ward B there were patients transferred from other acute scarlatina wards. Later the eruptive disease appeared amongst them. The shortest periods were in L. B., who was transferred from Ward C to Ward B on January 22nd, and developed the rash on February 10th, and in J. A., transferred the same day, and having the rash on February 12th. We thus get nineteen days as the longest possible incubation period in L. B. More cases occurred in Ward B up to the number of fifteen. In other wards receiving patients from Ward A four cases occurred. No other such cases were observed in the hospital.

I shall now describe the disease as it occurred, using my experience of all the cases to make a picture of a typical case.

I never succeeded in identifying the cases before the eruption appeared, although several times I went round the wards examining for enlarged glands, etc. In no case was there any prodromal symptom. A rash appeared suddenly on the face of a child apparently in good health. It was made up of pink macules with frequently a slight general facial oedema, best marked about the eyelids. I could never see any injection of the conjunctiva, and never saw any extension of the rash to the mucous

membrane of the mouth or to the palate. Nothing even resembling Koplik's spots was seen in any case. I failed to satisfy myself that the injection of the fauces seen in about half the cases was greater than might easily have been seen in patients convalescing from scarlatina. There was no sneezing; coryza was present in one case. The tongue in most patients remained clean; they denied feeling any nausea, headache, or other pains, and their appetites were certainly good. No abnormal physical signs were found on examination of the heart and lungs. No case had a cough.

At this stage, then, there was a rash on the face, including the circumoral triangle, and extending down the neck, sometimes behind the ears to the upper part of the chest. The glands of the neck were found moderately enlarged, firm, and discrete, but not tender, both in the anterior and posterior triangles, but more constantly in the latter. Though there did not appear to be any pain associated with the enlargement, there was some disinclination to move the head on the shoulders. I found the axillary glands enlarged in only one case, but the glands in the groin were invariably enlarged. This condition increased during the succeeding twenty-four hours, and then slowly subsided during the next four or five days. The spleen was not palpably enlarged. The rash generally remained visible on the face for rather less than twenty-four hours, but in the meantime had spread down the trunk and down the limbs towards the distal extremities. As seen on the trunk, it was a general erythema, never intense, through which there appeared a coarse punctation. Occasionally there were localized areas with macules. The rash faded very definitely from above downwards, and at the end of forty-eight hours usually nothing could be seen but a coarsely punctate rash on the legs above the ankles, and perhaps on the arms. I never noticed any appearance later like that of Caiger's papules.

In 17 out of the 19 cases the temperature, which was being taken night and morning in all, and four hourly in some, remained normal throughout the whole duration of the disease. In one case, in which the rash and facial oedema were well marked, the temperature remained slightly raised for thirty-six hours, reaching 101° F. In another there was a slight post-scarlatinal adenitis, so that it is impossible to say whether the intercurrent disease affected the temperature.

Although the cases were scarlatinal convalescents no albumen was found in the urine, though each was examined several times. I tried for Ehrlich's diazo-reaction throughout, but failed to obtain it. My own experience is that the reaction occurs whilst the rash is out in practically all patients suffering from measles, and in a small percentage of scarlatinal cases. The so-called partial reaction must, of course, be quite disregarded. Any one used to the test will not often be in doubt.

In 6 of the cases I made a white cell count. There was no leucocytosis. Bacteriological examination of swabs from throats of these cases did not yield anything more than the usual micro-organisms of the mouth. No sequelae were observed, and the only treatment used was isolation in bed. Although special attention was paid to the point, no desquamation was noted following the eruption, but, of course, nearly all the cases had just desquamated after scarlatina.

Seen once and at a certain stage it would be quite possible to confuse these cases with the mildest type of scarlatina, but no case in this outbreak could have been taken at any time for measles by an experienced observer.

According to the histories given by parents or guardians fifteen of the patients had had measles and four had not. No case was reported either as having had scarlatina before, nor as having had measles twice. I note this as it has been pointed out that possibly some histories recording two attacks of a specified eruptive fever really refer to one of rubella and one of another.

Owing to the frequent transference and discharge of patients it is rather difficult to estimate the numbers exposed to infection. In Ward B (convalescent) about fifty, of ages varying from 1 to 8 years, and of both sexes, would be exposed in the course of the epidemic, and fifteen of ages from 2 to 8 years are known to have contracted the disease. In Ward C about thirty, of ages from 7 to 30, were exposed, and two, aged 10 and 13 years, were affected. In

Ward D about thirty, of ages from 5 to 10, were exposed, with an incidence of two.

No spread took place in Ward A, which, if one may hazard a guess, is due to the absence of infectivity in the early stage of incubation and in the later stage of the disease. A certain number having been infected by the primary case were then unwittingly transferred to Ward B, before they were capable of infecting others, whilst the originating case in the meantime lost the power of infecting. No account has been taken of the possible existence of immune subjects amongst those exposed, nor of the occurrence of the disease in those who had been discharged during the period of incubation. Both these factors would tend to raise the true percentage of incidence. The low infectivity noted by Dr. Goodall hardly seems to be corroborated. As to the cause of the spread in Ward B, as contrasted with the other wards, I confess myself at a loss. The medical treatment was exactly the same. The nursing was exceedingly good, and carried out by people thoroughly trained in the antiseptic conduct of case from case isolation. *Pulex irritans* as a carrier was out of the question. Its presence was very unlikely, and on special search no evidence of it could be found. The time of the year precluded flies as carriers. The only observed difference between the wards was the lower age average in Ward B. The majority of the cases occurred in children between three and six years of age, but as the numbers are so small a table of age incidence would be worthless. However, as far as the evidence goes, it is against the belief, which I have seen expressed, that adults are more liable than children.

In proof of the specific infectious character of the eruption, one may say that it occurred in Ward B at first only in patients who had been transferred from Ward A. After the lapse of eighteen days from the outbreak it began to occur in other patients. There was no numerical preponderance to account for this. The diet and treatment of the patients were on the same lines as in other wards which remained free. The food for all wards was prepared in a central kitchen. The same kind of soap was used for bathing throughout the hospital. Only a small proportion of the infected patients had had enemata. It occurred in patients who had all been seen shortly before at some stage of scarlatina; the outbreak was not in the least like measles, and, moreover, three-quarters of those affected had a history of previous attacks of measles. Lastly, it agrees with the recent description of rubella by Dr. E. W. Goodall.¹

Not seen till the second day of disease, the appearance in several of the cases would have been that of the scarlatinal type of rubella, which is called by Cheinisse "epidemic pseudo-scarlatina," and is said to be identical with the "fourth disease." The preceding macular rash is in some cases slight, and, in the complete absence of malaise, might easily be overlooked.

Personally I agree with Dr. H. E. Corbin² that only those refuse to grant to rubella a separate existence who have not had an opportunity of observing many cases. I have not yet seen clinically any proof of the existence of the "fourth disease."

It is difficult to estimate the frequency of a disease which thousands of patients and guardians probably notice and then content themselves with its denomination as a "heat rash" or a "nettle rash." Dr. Corbin, at the London Fever Hospital, drawing from a limited but nervous class, received a considerable number, but I am inclined to think that in Manchester it must at least be much rarer than the common infectious diseases, as in my own experience it was much more rarely in evidence as having been incubating in a patient admitted for another disease.

I have to thank Dr. A. Knyvett Gordon, the Medical Superintendent of Monsall Hospital, for his kind permission to publish these notes.

REFERENCES.

- ¹ *Proc. Roy. Soc. Med.*, vol. i, No. 4, February, 1908, Epidemiological Section, p. 101. ² *Idem*, p. 117.

THE two hundredth anniversary of the birth of Albrecht von Haller, anatomist, physiologist, botanist, physician, and poet, was celebrated at Berne on October 16th. A memorial of Haller was unveiled in the presence of representatives of a large number of universities and learned societies.