used as sewers, until the substitution in 1885 of the present dry-earth system. Mediterranean fever occurred in the fort during this period, being epidemic in 1870 and 1872, but not excessive in 1885-91. From 1885 to 1891 a quantity of sewage remained boxed up, with the result that the stone became soaked with sewage, even through the walls and flooring to the adjacent rooms. Recent analysis of portions of the walls of the channels and rooms showed not only a larger percentage of chemical constituents of sewage with the presence of much organic matter and large numbers of putrid and non-pathogenic organisms, but also a neutral or faintly alkaline reaction as compared with clean newly-quarried and similar stone, which is highly alkaline, thereby forming theoretically a suitable nidus for the minute micrococcus of this fever. Between September and December, 1891, a thorough overhauling of the drains took place, these channels being cleaned and converted into surface-water drains, gratings being placed at intervals almost on a level with, and adjacent to, or even opposite, the windows of the barrack rooms. Owing to their situation and construction there was a varying yet constant current of air from the sea travelling up these channels and passing out of the gratings into the fort, the porous walls at the same time being wet or dry according to the state of the atmosphere and the amount of rain. There was ample opportunity for miasmata to pass from the rock channels into the barrack rooms, and it is a sufficient fact that these 45 cases slept in beds grouped in close and definite relation to the rock-channel gratings and sewage-soaked walls, and were in direct proportion to the dampness present. The first case was admitted on February 4th, four days after the cessation of the heavy rain. There was no other apparent cause for the outbreak; obvious sanitary improvements resulted in a cessation of the fever, and it has not broken out again this spring.

The drainage of Valletta would seem to have some relationship to the reported increase of this fever among the civil population. The drains originally consisted of very large, deep channels, cut by the Knights in the porous rock, with faulty gradients and no flushing. In these the sewage was semistagnant, keeping a fairly average level during the dry months, at the same time soaking for years into the porous walls. Between 1879 and 1885 new sewer pipes of a suitable size, and well ventilated, were accurately laid at the bottom of these channels, the upper part being used as a surface and storm water drain. This upper part is wet in the rainy season, but dry and suitable during the hot months for the escape of miasmata, which by the way of the ventilators and numerous traps (also at this time dry) must pass into the houses. At the same time, on account of the hilly nature of the ground on which Valletta is built, many even of the more modern ventilators, though carried high above the roof, are yet on a level with the windows of houses across the street. Whether from insufficient flushing or other causes, their smell is often offensively perceptible in summer, and the writer has frequently come across cases of Mediterranean fever occurring in persons sleeping in rooms near such ventilators. This increased prevalence therefore may be due to an increase in the mechanical means of diffusion of the virus. Again in Gibraltar, where the rock is less porous and less absorbent than in Malta, this fever is less prevalent and milder in type.

If the foregoing facts have led us to correct conclusions, there is every chance of our being able in the future to lessen the prevalence of this fever. If we have acted in ignorance of its nature in the past, let us improve in the future, by careful attention to sanitation, by regulated bathing places, by providing suitable air space and ventilation for the diffusion of the poison in old and dangerous barracks, and while cutting off and avoiding old sources of infection, prevent fresh pollution of the rock, harbours, and air dwellings; the last by improving the height and situation of drain ventilators, and possibly by the introduction of modern sewer-gas destructors.

In conclusion, I would point out that this fever, allied as it is to enteric fever, yet belongs distinctly to the mobile group, characterised by an uncertain duration, a tendency to relapses, and a feeble power of conferring immunity from subsequent attacks, and is a link between enteric fever and the so-called malarial marsh fever (intermittent ague).

III.—CERTAIN COMPLICATIONS.

By SURGEON-CAPTAIN SINCLAIR WESTCOTT, A.M.S.

Ordinary Course of the Fever.—The onset may be insidious or sudden, with fever of remittent type, simulating that of enteric fever; but the temperature soon becomes irregular, and, generally towards the end of the second week, the concomitant constitutional symptoms commence to disappear, the tongue cleans, the appetite returns, the mental condition improves, and we hope that convalescence has commenced; but the temperature remains high, and at any moment the

patient is liable to suffer from a complication resembling rheumatic fever; the joints swell and become painful, and the constitutional symptoms of fever return, but the characteristic perspiration of rheumatic fever is absent, and there is evidently no relation to it. This complication, like every symptom of this disease, is of most uncertain duration and degree; it may attack only one or two joints and last only a day or two, or it may cause permanent joint disease.

Local Paralysis and Atrophy of Muscles.—Local paralysis occurs frequently. The extensor muscles of the feet are those almost exclusively affected; the extensor proprius pollicis is more completely paralysed than the others, and the big toe drops in a most characteristic manner. I have seen two cases in which the muscles of the shoulder and arm were affected, but they were exceptional. This symptom is a late manifestation, seldom appearing within four months, but in one case it occurred as early as the end of the second week of the disease. The paralysed muscles atrophy slowly, and recover their proportions long after power has returned to them. The alterations in the electrical reactions are both quantitative and qualitative. Diminution of the muscular response is the only quantitative alteration I have noticed. The qualitative alterations are both modal and serial; the former consists in a sluggish contraction with marked duration of tetanus; in some cases this is the only change, but in those of long duration there is an overtaking of the cathodal closing contraction by the anodal closing contraction. Recovery is generally complete, but it takes place slowly.

Rheumatoid Pains: Neuralgia.—Rheumatic pains, especially in the back and lower extremities, and neuralgia, particularly of the sciatic nerve, accompany the disease, and are symptoms which persist during the long convalescence.

Anæmia.—Anæmia is always present, and it does not seem to be influenced by the administration of iron.

A CASE OF TYPHOID FEVER FOLLOWED BY PERFORATION AND RECOVERY.

By ANTHONY McCALL, M.B., C.M.,
Conisborough.

MRS. W., aged 34, a thin, "wiry" woman, complained of general *malaise*, headache, muscular tremors, etc., on August 25th, 1892. As she had been nursing her son who was recovering from an attack of typhoid fever she was at once ordered to bed, and a calomel and rhubarb powder given with the usual typhoid dietary, and salol in 5-grain doses every three hours. The fever pursued a typical but mild course until the fifth day, when the temperature reached 104.4°. On inquiry it was found that the salol powders had not been given since the previous evening. 10-grain doses every two hours were then ordered, and by evening the temperature was 102°. The rash appeared on the eighth day.

On the morning of the fifteenth day of the fever the patient's temperature was 101.6°, and she was not visited again that day as her progress was so satisfactory.

Early on the morning of September 10th (the sixteenth day) she was visited in answer to an urgent call, and found in a state of collapse. She was propped up in bed, breathing hurriedly, evidently in great pain, vomiting every few minutes; beads of perspiration stood out on the forehead; the features were pinched and dusky, and she presented all the symptoms of impending death. Her temperature was 97°, the extremities cold; there was marked tympanites, and great tenderness over the cæcum. The collapse was treated by repeated small doses of stimulants, the extremities packed round with hot bricks wrapped in flannel, and a mixture containing tinct. opii $\frac{m}{20}$, spt. ammon. aromat. $\frac{m}{15}$ given every hour. She took fluid nourishment in small quantities and gradually improved. The temperature was 98.6° at 8 p.m.

On September 11th vomiting was still troublesome; there was a considerable area of dulness over the cæcum, and slight dulness in both flanks. The circumference of the abdomen at the umbilicus was 35 inches, 7 inches more than normal. A 2-pint enema of hot water was used, and the bowels acted well.

On September 12th vomiting was less, and she was able to recline slightly; the opium mixture was now given every three hours.

On September 13th sulphate of magnesia 30 grs. and tinct. opii π 20 were given every three hours, and the bowels acted the same day. The circumference at the umbilicus was reduced to 33 inches.

On September 14th the local dullness over the cæcum was becoming more defined, and on September 16th the dullness in the flanks was disappearing and the patient able to lie down. Sulphate of magnesia, iron, and strychnine were ordered three times daily. The bowels were moved twice daily and nourishment was taken well. In the dullness over the cæcum, which was an irregular circle 6 inches in diameter, fluctuation was detected about September 25th, and under the influence of poultices gradually pointed.

On September 27th the patient stated that she passed about an eggcupful of matter *per rectum*.

On October 3rd 18 ounces of a bad-smelling purulent fluid—specific gravity 1026—were drawn off from the area of cæcal dullness with an ordinary aspirator under antiseptic precautions. There was a quantity of gas drawn off at the same time, and this was probably already in the fluid, as the needle was not moved about either before or after the pus began to flow.

On October 9th she was aspirated again and 8 ounces of pus drawn off. After this she made an excellent recovery, has enjoyed perfect health ever since, and is able to look after her household duties, including washing.

REMARKS.

Jenner declared perforation to be always fatal. In this case the perforation was due to some half-dozen unripe plums the patient had surreptitiously obtained from a child, and eaten on the afternoon of September 9th. At 10 o'clock that evening she was seized with violent pain and vomiting, which grew worse during the night. Among other points of interest, the following are worthy of notice:

1. The sudden elevation of temperature when the salol was inadvertently stopped, and the sudden fall when recommenced.

2. The harmlessness of giving sulphate of magnesia with opium three days after perforation and the probable good effects it had on the effusion in the flanks.

3. The abrupt termination of the course of the fever after the perforation, the temperature not reaching 99° after the seventeenth day.

4. The comparative good health and appetite existing even with more than a pint of pus in the abdominal cavity.
5. The good results following aspiration without drainage.

A CRITICAL ANALYSIS OF THIRTY CASES OF DISLOCATION OF THE SHOULDER TREATED BY MANIPULATION.

By JOHN LYNN THOMAS, F.R.C.S. Eng.,
Cardiff.

THE majority of the thirty cases were treated by me whilst house-surgeon at the Cardiff Infirmary under favourable conditions to try various adjuncts when simple means failed. The time it took to reduce the dislocation varied from fifteen seconds to six minutes; when the latter time was exceeded other means had been resorted to. Twenty-four cases were reduced without any trouble at the first attempt on the day of the accident; they were dislocations into the axilla, four in females, and the rest in men of various occupations requiring fairly strong arms—coal trimmers, masons, carpenters, common labourers. The method employed was a modification of that described by Professor Kocher, of Bern, at the International Medical Congress of 1881.

Of the six failures at the first attempt, No. 1 was of eight weeks' standing; various methods under chloroform narcosis failed, and the patient was discharged with a useful movable false joint. Nos. 2 and 3 were recent dislocations in spare non-muscular men; manipulation repeatedly failed, and the heel method was at once successful. In No. 4 manipulation, heel method, and circumduction failed; under chloroform narcosis reduction by manipulation was effected in thirty seconds. In No. 5, after the patient was anaesthetised, manipulation again failed, but the heel method was successful. In No. 6 repeated manipulation failed; traction with the patient's arm round the operator's waist was successful.

Of the twenty-four successes two deserve notice. One was that of a circus performer, and the most muscular man I ever treated. Reduction took place in less than two minutes, although there was much muscular irritability; the other case was of three days' standing, in a man aged 60, with much bruising of the axillary folds from repeated attempts at reduction with the heel in the axilla by competent practitioners. It was reduced in 45 seconds in the first stage of manipulation.

The method employed was the following. With the patient lying on his back the operator grasps the patient's hand in