theory, indicating, as they do, an instability of the nervous system. It is curious that the extent of the paralysis in both cases is almost identical—the same side affected, at the same occupation, and the same history of previous chorea. Unfortunately there is no record of the mental state of either patient just before the attack, as it would have added much interest to the cases; but as neither can throw any light upon their thoughts at this time any speculation would be useless.

That the thumb in Case I has remained partially paralysed may be accounted for by supposing that the special artery to the thumb centre (such a centre is recognized) has remained in a state of spasm for a longer period and produced a weakness of the ganglia by insufficient nourishment. In Case II the theory of spasm is very greatly supported by the intense headaches, the great complaint of the patient being, "Give me something for my head." I have been unable to find any record of similar cases, and so can quote no authorities upon the causation of this strange affection.

TWO CASES OF TETANUS TREATED BY SUBDURAL INJECTIONS OF MAGNESIUM SULPHATE.

BY OLIVER SMITHSON, F.R.C.S.I.,

MEDICAL SUPERINTENDENT, MOUNT MORGAN GENERAL HOSPITAL,
QUEENSLAND.

As this form of treatment may be said to be in the trial stage, the following notes may be of interest.

CASE I.

On September 28th, 1911, Ronald R., aged 9 years, complained of feeling ill, and did not go to school. The following morning, as his condition was unchanged, the parents called in Dr. Morris, of Mount Morgan. Just after the doctor arrived the patient had a violent tetanic seizure, and was ordered to the hospital. He was admitted at 1 p.m., the temperature then being 99.4° and the pulse 112.

The boy had been in the habit of running about barefoot, and there were several small cuts and abrasions on both feet. The cuts were carefully cleaned, and then swabbed with tincture of iodine, and a gauze dressing applied. Although the patient lived some miles out in the bush he had no further convulsions during his journey to hospital.

As soon as the wound had been dressed the boy was put to bed and 1,500 units of antitetanic serum (P. D. and Co.'s) given subcutaneously. At 3 p.m. the patient had a tetanic seizure which lasted two or three minutes; risus sardonius was well marked, and from this time on there was great difficulty in opening the mouth.

Similar attacks occurred at 4 p.m. and at 5.15 p.m., and a second dose of 1,500 units of serum was then given. The temperature had risen to 100.2°. The attacks now recurred with increasing frequency, until they were almost continuous.

At 2.30 a.m. I injected a third dose of 1,500 units of serum, and under chloroform anaesthesia punctured the spinal canal between the third and fourth lumbar vertebrae and withdrew 2.5 c.cm. of cerebro-spinal fluid, and slowly injected in its place a like amount of sterile 25 per cent. solution of magnesium sulphate. A small pustule had developed in the sole of one foot, and I excised the surrounding tissue and swabbed with pure carbolic acid. In this tissue I subsequently identified the tetanus bacillus. I learnt afterwards that the boy had wounded his foot with a rusty nail some days before, and this was probably the site of the wound.

After the injection of the magnesium sulphate the patient slept quietly for an hour, and then quite suddenly the breathing became embarrassed, and the temperature fell to 97°. As the breathing became steadily worse, a small hypodermic of strychnine was given, and repeated in half an hour's time. The boy's condition distinctly improved, and he took liquid nourishment well.

At 10 a.m. on September 30th the temperature rose rapidly to 104.6°; cold sponging was resorted to, and the temperature fell to 100°. The boy slept all the afternoon, and seemed on the high road to recovery, until the early hours of October 1st, when the temperature again rose to 104°. Cold sponging now had no effect on the temperature, and the breathing again became very embarrassed. Strychnine was administered and oxygen given, but the boy's condition gradually became worse, and he died at 10.40 a.m., the temperature immediately before death being 107°.

From the moment the magnesium sulphate was injected to the time of the boy's death no trace of tetanic spasm occurred.

The dose recommended is 1 c.cm. of a 25 per cent. solution for every 25 lb. body weight, but from the effect of the drug in this case I am inclined to think this dosage too large.

CASE II.

On November 9th, 1911, Vera H., aged 8 years, whilst running about barefoot, cut her foot on a stone. The wound was treated at home until November 22nd, when the child, who appeared to be out of sorts, was brought to the hospital.

On admission temperature and pulse were normal. The foot was soaked for twenty minutes in 1 in 4,000 solution of mercury perchloride, and then dressed with a boric acid fomentation.

The patient was put to bed and slept well all night, but at 7 a.m. on November 23rd she had slight muscular twitchings and complained of pain in the back and of difficulty in opening the mouth; 1,500 units of antitetanic serum were given subcutaneously, and the wound on the foot swabbed with tincture of iodine. Five grains of potassium bromide were given every three hours.

The muscular twitchings continued at intervals all day, and the temperature rose steadily until at 5 p.m. it had reached 104°. Under chloroform anaesthesia I injected 1,500 units of antitetanic serum into the subdural space, having previously withdrawn an equal quantity of cerebro-spinal fluid.

The tetanic symptoms persisting, I gave a hypodermic injection of $\frac{1}{4}$ grain of morphine. As the bladder was becoming distended, the catheter was passed, 20 oz. of urine being withdrawn. The patient passed a restless night, and the following morning (6.30 a.m.), under chloroform anaesthesia, I injected 1 c.cm. of a 25 per cent. sterile solution of magnesium sulphate into the subdural space.

This procedure was followed by a distinct improvement, and the muscular spasms ceased until noon, when they recurred with increased violence and frequency. A second hypodermic injection of morphine was given with great benefit, the child becoming quieter, getting a fair amount of sleep, and taking nourishment well.

At 10 p.m. the convulsions returned, the attacks coming on about every hour till 4 a.m., when they ceased, and the child slept till 7 a.m. Severe attacks of tonic and clonic convulsions then came on, recurring every few minutes throughout the day. More morphine was given, but had no effect.

At 4 p.m. a frightful attack of convulsions took place, the body being violently jerked about the bed, and death ensued ten minutes later.

The patient suffered from retention of urine the whole time she was in hospital, and the catheter was passed as required. During the forty-eight hours preceding death the temperature was high, and cold sponging was resorted to frequently, and seemed to have a very soothing effect. Immediately before death the temperature rose to 108.2°.

From the above notes it will be seen that magnesium sulphate used in this way is a particularly potent drug, and to find the correct dosage seems to me to be the great difficulty. The two patients were about the same age and weight, and I feel sure that the dose administered in the first case was too big, whilst I fear I erred on the other side in the second case.

We see a good deal of tetanus in this part of Queensland, and from my own experience I am inclined to think the above treatment is the one most likely to bring a case to a successful issue.

A SUPPOSED CASE OF HEAT-STROKE: REMARKABLE RECOVERY.

BY ALEXANDER STOREY ST. JOHN,

M.R.C.S. ENG., L.R.C.P. LOND.,

ELTHAM, KENT.

The following case seems to me a most notable one, and, as far as my experience goes, is quite unique. It presents many difficulties with regard to the exact pathological condition that was involved, also as to the diagnosis.

A man, aged 53, was crossing a road during one of the hottest days of last summer, when he suddenly found himself on the ground, with a "horse's hoof right on top of him"; this was his description of what happened. He picked himself up and ran across the road to his son, who was waiting for him on the pavement, and who brushed the dust off his clothes. He complained of no pain or discomfort of any kind, but his son took him into a chemist's shop, where he was given a dose of sal-volatile. He then went home by train (a distance of eight miles), sat down and made a good tea, feeling quite well all the time. Towards the end of this meal he became a "little queer," went upstairs and felt very ill indeed, and remembered nothing afterwards. This attack came on about five hours after he had fallen down in the road. I was sent for and attended about half an hour later.

I found his condition extremely grave; he had vomited profusely, was very pale, slightly conscious, with cold and clammy sweat, a slow regular pulse of fairly good volume, pupils reacting to light, and conjunctival reflex present. I was told that he had been much worse before I came, and had been quite unconscious.

I had him placed in bed, and after hearing his recent history, carefully examined him for signs of injuries, but beyond a