There is abundant evidence in medical literature of the connexion between pneumonia and meningitis, dating from the publication by Immermann and Heller in 1868 of 9 cases of purulent meningitis found in a series of thirty pneumonic sections, and yet it cannot be said that the subject has received the attention it merits.

It would appear that our present knowledge does not justify any positive statement with regard to the frequency with which meningitis complicates pneumonia, as the statistics of writers vary within wide limits. Netter, for example, quoted by a writer in the *Lyon Médical* (1909), reports numerous statistics varying from 43 per cent. to 1 per cent. Beddard¹ suggests 1 per cent. above the age of 10 years, and from 1 per cent. to 2 per cent. below that age. Holt² met with meningitis four times in 500 cases. Osler³ gives 8 per cent. of fatal cases.

But it is manifest that these findings cannot be relied upon, and I suspect that when the question has been gone into more carefully in the light of more extended statistics and improved methods of diagnosis, and latent cases are recognized, it will be found that meningitis, especially in children, is more common than is generally supposed.

An important paper by Liebermeister⁴ on the frequency of meningitis with pneumonia makes the fact clear that the meningitis may easily be overlooked. In three out of eleven consecutive fatal cases of pneumonia occurring in adults ranging from 45 to 71 years, he found reliable microscopic evidence in the brains and spinal cords of acute meningitis, without any gross naked-eye appearances suggestive of membrane involvement; in none of these did the clinical symptoms and signs justify the diagnosis of meningitis. This author alludes further to the connexion between pneumococcal meningitis and outbreaks of cerebro-spinal meningitis, an association to which Immermann and Heller had already called attention, and which has not escaped the notice of other writers. Additional evidence of the frequency of meningitis in cases of acute pneumonia is to be found in the record by Hugo Meyer (to which Liebermeister refers) of 5 cases of latent purulent meningitis in 11 pneumonic necropsies.

The importance of Liebermeister's observation that the meningeal lesion was often microscopic is corroborated by the records contained in a paper on meningitis and meningo-encephalitis by Ludwig Kirchheim,⁵ who refers to 500 cases of pneumonia, all in young people; in 13 there was, in his opinion, clinical proof of meningitis, but ending in recovery; and in 4 only were there signs of purulent meningitis. In the case of the thirteen he was apparently content with the diagnosis of meningeal irritation (*meningiale Reizung*).

The opinion obtains very widely that cases of pneumonic meningitis are nearly always fatal, and probably very few would venture upon a favourable prognosis. Against this opinion may be set Kirchheim's contention that the milder cases recover; and without any desire to minimize the risk or to call in question the correctness of the common belief that the prognosis is grave, I may quote the following case recorded by Dr. Hemenway⁶ as affording some ground for the more favourable view.

A child aged 2 was admitted to the "Babies' Hospital," New York, with complete consolidation of the left lower lobe, but without cerebral symptoms. On the twelfth day of the illness twitchings were noticed with some retraction of the head. Lumbar puncture was performed and 1½ oz. of clear fluid at high pressure were withdrawn. There was no deposit, but cultures of the fluid showed an abundant growth of pneumococci. The signs of meningitis continued, but on the fifteenth day of the illness the temperature suddenly fell, and the infant rapidly improved and left the hospital cured after an illness lasting twenty-four days.

I venture to think it would not be difficult to procure further evidence in this direction, for the contention that meningitis is not really a rare phase of pneumonia would seem to warrant the deduction that the milder cases recover, but this naturally raises the question how far we are justified in including cases without naked-eye pathological changes in the category.

REFERENCES.

- ¹ Beddard, *Allbutt and Rolleston's System of Medicine*, vol. v, p. 229. ² Holt, *Arch. of Ped.*, 1893, vol. x, p. 1112. ³ Osler, *Modern Medicine*, vol. ii. ⁴ Liebermeister, *Muench. med. Woch.*, 1909, p. 750. ⁵ Ludwig Kirchheim, *Med. Klin.*, 1908, p. 1461. ⁶ Hemenway, *Arch. of Ped.*, 1906, vol. xxiii, p. 276.

TRANSIENT HEMIPLEGIA FOLLOWING PARTURITION.

By HUGH GILLIES, M.R.C.P. EDIN.,
NEW ABBEY, DUMFRIES.

THE following cases of hemiplegia following confinement occurred with such a short interval between them that they could not fail to arouse attention, and a desire for an explanation of the very interesting phenomena they presented.

CASE I.

Mrs. M. H., aged 22, was confined of her second child on June 6th. She had "fitted" on the preceding day from a farm distant thirty miles from her new home; the journey had been done perched upon a quantity of household furniture on an open cart. About 8 p.m. on June 5th she felt her first pain, and I was sent for at 4 a.m. I found the head on the perineum, and the child was born in a few minutes; the placenta was expelled ten minutes afterwards. The whole confinement was perfectly natural; the child was a poor thing, at about the seventh month. The course of after-events was normal. I paid my last visit to the mother on June 14th, and allowed her up the next day.

On July 2nd, nearly a month after the birth, while sitting at the fireside nursing the child, the mother "was seized with a fit, her face was working, and she was all twisted to one side, her eyes were rolling in her head." I found her in bed; the face was pale and covered with a cold perspiration, the breathing was stertorous; the head, face, and eyes were drawn to the right side (conjugate deviation); the left arm and leg were flaccid, and when lifted dropped on to the sheet heavily. The pupils were dilated, and the conjunctival reflex was not quite abolished, though lazy. The sounds in the heart areas were normal, and there was no sign of any valvular trouble. The pulse was 78, the vessel wall soft, and the wave full and regular.

Next day she was completely conscious, and four days after the power had to a great extent returned in the affected parts, the hand being the last part to recover. A month after, the recovery was perfect in every part, with the exception of the thumb, which is to-day weak and shrunken.

On inquiring into the history after her recovery, the only thing of any importance was a story of chorea when she was 9, otherwise there was no neurotic history. There was no albumen in the urine either then or at the confinement.

CASE II.

J. W., aged 25; her second child was born on August 1st; the confinement perfectly normal, and the puerperium uneventful.

On September 27th, while sitting by the fire with her baby, she fell off the stool, dropping the baby beside her on the floor; in this position she was found by a neighbour, who procured assistance and had her lifted into bed. She never lost consciousness, but remembered all that happened quite well. Paralysis affected the left arm and leg, the face and eyes being quite normal. She complained of most intense headache, which seemed to be of maximum intensity over the right side and above the right ear. The heart impulse was in the fifth interspace and powerful; a murmur was heard, of greatest intensity in the aortic area and systolic in rhythm; the pulse was 90.

The paralysis of the limbs lasted for three days, and then quickly recovered. She is now quite well. In this case also there was a history of chorea during girlhood, but nothing else of any importance.

Here we have two very interesting cases of something producing a sudden and powerful temporary effect upon the brain, and almost as quickly being withdrawn, with complete restoration of function to the parts involved; and it may be permitted to indicate briefly the probable causation of the attacks. In Case I, though the patient made a complete picture of a cerebral haemorrhage, yet there was an indefinable something which made me hesitate to give a too grave prognosis—it may have been the symptoms of haemorrhage into the brain with a tranquil pulse; it is not easy to say. After the first case the second was much easier to define.

That it was neither an apoplexy nor an embolism is proved by the almost complete restoration of function in either case, and, though local palsies and unconsciousness are not uncommon in uraemia, yet the known good health of the patients, the absence of albumen, and of all other signs of kidney trouble, make it necessary to exclude it also.

It seems to me that both cases were caused by a spasmodic contraction of the cerebral arteries—an angiospasm—such as is known to occur in migraine (in which case the retinal arteries on ophthalmoscopic examination can be seen as thin threads). The occurrence of previous attacks of chorea in both cases adds to the soundness of the

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