treatment. There was also loss of flesh, muscular weakness, loss of memory, mental depression, and bad dreams. He reported sick on account of the tremor increasing and persistence of paralysis of his forearm.

He has now had six treatments by cerebro-spinal galvanism. He is sleeping well, and has only slight headaches occasionally. The tremor has disappeared, his memory is good, and he is quite cheerful. Some voluntary movement returned to the extensors of the hand and wrist after treatment of the spine by labile galvanism, and the power of movement is increasing although he has had no local treatment for these muscles.

The conclusion I have arrived at from the trials I have carried out of this treatment is that nearly all cases of the neurasthenic type of shell shock would derive great benefit from it, and the majority of cases, excepting those of the most severe type, would be cured in under three months.

TREATMENT OF MENINGITIS.

BY

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PNEUMOCOCCAL meningitis is still considered so universally fatal that it seems useful to put on record cases of recovery.

My first successful case occurred a few years ago in a child between 3 and 4 years old, who had a severe attack of bronchopneumonia lasting a fortnight. The lungs began to clear up, but the temperature remained between 102° and 103° F., and the child became drowsy. When admitted to hospital there was almost complete coma; the neck was retracted, and there was strabismus. By lumbar puncture a thick white fluid flowed off under pressure; it looked like pus from an empyema, and gave an abundant growth of pneumococci. The child was put on urotropine gr. 3 every four hours, and was given 5 c.cm. of Pane's antipneumococcal serum by the mouth; no food was given for two hours before or two hours after. The Pane's serum was given every twenty-four hours on an empty stomach for three days, then every other day, and later twice a week. Lumbar puncture on the third day gave a less thick fluid. After the third day there was slow but steady improvement. The temperature did not settle to normal for six weeks, but at the end of three months the child was perfectly well.

Since then I have had two recoveries in children treated in the same way. I give Pane's serum by the mouth in children, preferably when waking in the early morning, as the stomach is then at its emptiest. In pneumonia it has always acted well taken in this way. The dose by the mouth is double that necessary hypodermically, but the child is saved the pain of the injection.

The only case in an adult which I have treated was a soldier admitted to hospital in April.

He had had headache for eight or nine days, with a temperature from 99° to 101° F. for a week, and vomiting independently of meals. On admission the temperature was 101°, the pulse 90. He complained of severe headache and frequent vomiting. There was a large crop of herpes on his lips, the tongue thickly furred, and the mouth very foul. His head was not retracted, but it could not be moved forwards beyond the vertical. Kernig's sign was present. Knee-jerks were absent, and the plantar reflexes were flexor. Cloudy fluid was obtained by lumbar puncture. Nothing abnormal was found in the chest. He was given urotropine gr. 20 every four hours.

Next day the cerebro-spinal fluid was reported to give a growth of pneumococci, and 10 c.cm. of Pane's serum was injected in the flank; this was repeated every other day for four doses, then every third day for three more doses. Improvement began about the fifth day, the headache being less severe, and the temperature falling in the morning to 98°, though still 101° in the evening, instead of keeping consistently high. Vomiting was less frequent also. As the general condition improved the pulse-rate became faster, 100 to 120. For the first three days it had not risen above 90, though the temperature was 100° to 101° all the time.

The temperature definitely began to fall on the twentieth day after admission, and became normal by the twenty-third. Urotropine gr. 20 was given every four hours up to this date without any urinary symptoms. The patient became very emaciated during the illness, and was a long time regaining flesh and strength, but he is now at a convalescent home feeling quite well.

Lumbar puncture is much simplified if a hypodermic syringe of eucaïne and adrenalin solution is injected under the skin at the selected site, and also down between the arches of the vertebrae, in adults as deeply as the hypodermic needle will reach, in children of course not far enough to risk entering the spinal canal. After waiting

five minutes, lumbar puncture can be done painlessly and without any movement on the part of the patient.

An interesting case of streptococcal meningitis, again a soldier, was admitted under me in February.

He had been ill for a fortnight and complained of intense headache, which kept him awake at night. His pulse and temperature were normal for the first four days. He did not vomit, his tongue was very furred, and his breath offensive. There was no retraction of the neck and no Kernig's sign. No drugs had any appreciable effect on the headache. Four days after admission he had a sore throat and his temperature rose to 100° F. There was then for the first time some difficulty in making the chin touch the chest. A day later rigidity of the neck was definite. There was also oedematous swelling of both temporal and preauricular regions, more marked on the right side. Next day there was oedema of the eyelids as well as of the temporal regions. Kernig's sign was present for the first time in slight degree.

The cerebro-spinal fluid was cloudy. After examining this a bacteriologist declared the case to be one of spotted fever, and had him removed to the sanatorium, where he came under the care of Dr. Duncan Forbes, who, when the man died a few days later, kindly showed me the results of the *post-mortem* examination. There was pus at the base of the brain containing a Gram-positive streptococcus. The body of the sphenoid bone was extensively diseased.

It seemed evident that the disease was primarily of the bone, and that the meninges were affected later. The most interesting feature of this case was the swelling of the temporal and orbital regions with definite signs of meningitis, coming on after the throat became infected. There was no nasal discharge nor any indication that the ethmoid was diseased.

The most severe case of meningococcal cerebro-spinal meningitis in which I have seen recovery take place was the following:

A boy aged 14 was seen in consultation several times with Dr. H. J. Pulling in January, 1915. He got up well one morning; at dinner time he refused his food, and complained of headache. When I saw him, at 8.30 p.m., he was lying on his side with his legs drawn up. He was quite comatose, with marked strabismus and paralysis of the left arm. There was evidence of pain on pushing the head forward, but no real retraction of the neck; Kernig's sign was very marked, the knee-jerks were weak, the left plantar reflex extensor; temperature 103° F. Lumbar puncture gave milky fluid under great pressure; over a test tube full was allowed to flow before the stream became of normal pace. There was no rash that day. He was given 8 grains of urotropine every four hours through a nasal tube, and was also fed in that way; 10 c.cm. of Pane's serum were injected as it was at hand. The cerebro-spinal fluid gave an abundant growth of meningococcus, after which Flexner's serum was obtained and injected subcutaneously. By the third day he had improved remarkably, being quite conscious and taking food well, but he relapsed though not to unconsciousness. Later there was incontinence of urine and faeces, but vomiting was not troublesome. He became extremely emaciated, and always lay on his side curled up and often moaning. It was very difficult to prevent the formation of bedsores. He took urotropine for a long time, and opium was given for the relief of pain and to promote sleep. He was very ill for two months, but Dr. Pulling ultimately pulled him through, and he is now quite well mentally and physically except for slight stiffness of the left arm.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

COLLOSOL ARGENTUM.

I HAVE been using collosol argentum lately, and I think the results may interest others.

The first case in which I used it was a lady who had had pyorrhoea for several years. I gave her 15 minims of the drug hypodermically in the arm. One injection cured her.

A young girl, aged 18, came to my house with acute inflammation of one eye with an ulcer on the cornea. Two drops of collosol argentum were dropped in the eye at 7 p.m., and a pad placed over the eye. When she came next morning the eye, to my astonishment, was quite well; the ulcer had disappeared, and there was no inflammation.

A man in poor health was admitted to hospital and I removed his appendix. He did very well till the fourth day when he developed acute intestinal obstruction. He was opened again and a twisted intestine was put straight, but although he had good relief from the bowels he did not do well. The wounds suppurated, and he got septic diarrhoea which nothing seemed to relieve. In despair I injected 20 minims of collosol argentum every day. The diarrhoea soon stopped, the pus dried up, the wounds took on a healthy aspect, and he made a good recovery.

A child, aged 3, had tuberculous glands of the neck, and was very emaciated. The glands were removed and the wound did badly. Collosol argentum (10 minims) was given by the mouth