angular projection, and pain was elicited in the same region on pressing the shoulders together; moderate pressure on the head and movements of the head and neck appear to be painless.

Progress and Treatment.—For three months the patient was kept on his back, and passive extension was applied to the lower extremities by means of pulleys and weights, the shoulders being fixed; at the same time, the legs were massaged daily. At the end of the three months Mr. Cantlie forcibly extended the spine under an anaesthetic, and applied a Sayre's jacket, while the extension was kept up by means of the pulleys. All the night following the operation the patient complained of extreme pain in the knee-joints, and the extension was therefore discontinued, and the child kept on his back in the Sayre's jacket only until the following June, when the jacket was taken off. The patient could now voluntarily move both legs. He could not yet lift them off the bed, but could abduct and adduct them, and bend the knee-joints. Sensibility to painful impressions had increased considerably, and there was also a fair amount of tactile sensation.

In July the patient was sent to a convalescent home, but still kept on his back, and in the open air as much as possible. In August he returned home, and was kept on his back, and in October he went to the convalescent home again, where he was allowed to be out of bed and lie in front of the fire, still being kept off his legs. He was readmitted to the hospital on his return from the convalescent home on November 21st.

A fortnight before admission he began to attempt to walk from the fireplace to his bed, and since then the improvement has been rapid and steadily maintained. His condition on readmission eight months after the operations shows that there is still some angular curvature, though considerably less prominent in the upper dorsal region, but all signs of active disease have completely disappeared. He can now run and jump about, and play with other children. There is also complete recovery as regards tactile and thermal sensations, and pain is correctly appreciated. The knee-jerks are still somewhat exaggerated, but there is no rigidity and no adductor spasm. Babinski's sign cannot now be elicited, and sensation is normal.

REMARKS BY DR. OUTTERSON WOOD.—This is the second case of forcible extension for paraplegia following angular curvature undertaken at the West-End Hospital, which has resulted in complete restoration of motor power. The first case was that of a girl who was admitted under my care in June, 1897, in which there was absolute paraplegia, with unconscious action of bladder and rectum, the result of angular curvature in the upper dorsal region. The case was treated by rest and extension for three months, but no improvement resulted. In September, 1897, the late Mr. Edward Cotterell forcibly extended the spine under chloroform and fixed it up in a plaster jacket. Within a week movement of the legs began, the case continued to improve, and the jacket was removed in February, 1898. The child has continued steadily to improve, and is now attending the Board school. She can run about and jump and "skip" like the other children. This patient was discharged from a London hospital as incurably paralysed. This case was shown at the Medical Society in 1898, and three and a-half years after the operation the improvement has been well maintained. She has been under my observation as an out-patient ever since, and has never presented any untoward symptom.

REMARKS BY MR. CANTLIE.—At Dr. Outtersson Wood's suggestion I applied forcible extension in this case, as stated in the notes. The boy was anaesthetised, turned face downwards, and each of the upper and lower limbs were pulled upon by a nurse. Seeing that the curvature was so high in the dorsal region, traction was also directly applied to the head. Whilst the limbs and head were being thus extended I applied my hand over the most prominent part of the curvature, and exercised gradually increasing pressure until a sensation of something "giving way" was communicated to the hand. The pressure was immediately desisted from and a plaster support applied and the patient placed in bed supine with some degree of extension of the lower limbs. The subsequent history of the case and its successful issue have been related by Dr. Wood and Dr. Simson. The amount of pressure necessary in cases of this kind it is impossible to state. My rule, in the cases of angular curvature I have treated in this manner, is to desist when something is "felt to have given." The sensation conveyed to the hand whilst maintaining pressure is that deep-seatedly, but quite impossible to localize, something of a fibrous nature has been stretched and that it has given way. Nothing more should be attempted; the complete reduction of the curvature, and pressure in the expectation that a crack as if bony structures had snapped, are not to be expected. It is the angularity of the curvature that is the deleterious factor in cases of the kind, and when the projection is treated so that its sharpness is reduced to a curve or arc of a circle, the surgeon should rest content that he has performed all that he ought to do in treating angular curvature. In the case of displacement of vertebrae back-

wards, the result of recent accident and accompanied by paralysis, the treatment is different. In a case under my care at the Seamen's Hospital at the present moment I applied forcible extension to the limbs and pressed the vertebrae—the lower dorsal—completely back into their places; but with angular curvature it is the reduction of the angularity merely that should be attempted, not the complete reduction of the curvature. Were this rule observed, there are but few instances in which, when paralysis is present, forcible extension may not be applied with safety and with every hope of good recovery.

THREE CASES OF PARALYSIS OF MUSCLES OF THE HAND AND FOREARM.

By WALTER BROADBENT, M.D., M.R.C.P.,
Assistant Physician to the Sussex County Hospital.

THE following cases of paralysis of the muscles of the hand and forearm, which are at present under my care at the Sussex County Hospital, are sufficiently uncommon and interesting to be worthy of record.

CASE I.—A girl, aged 16, came to me six months ago with marked wasting of the thenar muscles and interossei of the right hand. She was able to approximate the thumb to the index finger, but not with sufficient strength to pick up anything. The forearm was less developed and softer than the other, but no muscle was definitely wasted, and there were no fibrillary tremors. Sensation to touch, heat and cold, was normal, which excluded the possibility of its being a case of syringomyelia. She stated that two years ago she suddenly noticed that her right hand was weak; there was no wasting at first, but that came on later, and her hand has been in its present condition for over a year. The muscles affected were those supplied by the first dorsal segment of the cord. The diagnosis lay between infantile paralysis and progressive muscular atrophy, but the former seemed the more probable. This was confirmed by finding that the affected muscles did not react to faradism, but the muscles of the thumb contracted slightly to the constant current, and more to the anode closing than the kathode. Treatment by galvanism and massage has improved the condition so far that she can hold a pen and write for a short time, and the forearm has become as well developed as the other, but of course the thenar muscles are still wasted.

CASE II.—A girl, aged 17, had paralysis and wasting of the flexors of the fingers and thumb in the right arm, also of the flexors carpi radialis and ulnaris, thenar and hypotherar muscles and interossei. The skin of the fingers was glossy, and there were bullae constantly recurring at the ends of all the fingers but not of the thumb. There was anaesthesia over the palmar surface of the fingers and over the palm, except over the thenar eminence and the thumb. On the back the anaesthesia only extended over the little finger and half the ring finger, and the corresponding part of the back of the hand. The extensor muscles were not affected. The history given was that three months before she and her sister had had a meal of sausages and mashed potatoes at a shop in Brighton; an hour later she noticed that both her hands were swollen; in the evening her legs and face also became swollen, and she had considerable pain in the arms and legs. Her sister was not ill at all, and the patient had no pain in the abdomen and no digestive disturbance. She was confined to her bed for two months; the swelling began to go down in a month, and disappeared last from the right hand, leaving it in its paralysed condition. The bullae on the fingers did not appear until a fortnight after she left her bed. This seems to have been an attack of acute multiple neuritis, which cleared up, leaving a prolonged neuritis in the median and ulnar nerves of the right arm. Whether the sausages were the cause, as she thinks, is not clear. Treatment by massage, potassium iodide, and strychnine has resulted in steady improvement, the bullae and glossy skin having disappeared, sensation is almost normal, and power of movement is returning.

CASE III.—A man, aged 50, a painter by trade, came complaining of inability to extend the two middle fingers of the right hand and inability to raise the right arm above the

shoulder. He had first noticed this after a bad attack of lead colic five weeks ago. There was a faint blue line on the gums round his few remaining teeth. On extending his hand, the index and little fingers were straightened out but the two middle fingers hung down; the power to resist flexion of the wrist or of the two extended fingers was very slight. The left wrist and fingers could be all extended, but required very little pressure to flex them. Tremor was marked in both hands. In both forearms the supinator longus was the most

Fig. 1.—Case III.

prominent muscle; in the right there was a deep hollow to the ulnar side of it, where the extensor communis digitorum lies; in the left there was not the hollow, but very pronounced fibrillary contraction of the muscle. Fibrillary contraction was also evident in both forearms, nearer the wrist, in the region of the extensors of the thumb, and wasting was also noticeable in the right extensor secundi internodii pollicis. The cause of the inability to raise the arm above the shoulder was found to be an extensive atrophy of the deltoid, which also showed fibrillary contractions. The left deltoid was much larger than the right, but there was constant fibrillary contraction in it; he could raise his left arm perfectly.

The selection by the lead of the extensor communis digitorum while the extensor indicis and extensor minimi digiti are left functioning is a condition which does not seem to have been recorded.

A RARE FORM OF MUSCULAR DYSTROPHY.

By JAMES E. H. SAWYER, M.A., M.B., B.Ch. Oxon.
Birmingham.

By the kind permission of Dr. Hawkins I am enabled to publish the following case of a peculiar form of muscular dystrophy, associated both with atrophy and pseudo-hypertrophy of certain muscles.

CASE.—A. B., male, aged 44, was admitted to St. Thomas's Hospital on July 19th, 1901.

History.—There is nothing of importance in the family history to relate, and no other member of the family appears to have suffered from this disease. The patient was the only child, his mother dying when he was very young. He has always been healthy and strong, and his occupation has been that of a coal porter, which necessitated at times very heavy work. The patient said that, about two years before admission to the hospital and six months before the onset of the present illness, he had a sunstroke, while driving a water cart, which made him feel dizzy for about one week afterwards. At the end of this time he suddenly became maniacal, and was taken to Camberwell Infirmary, where he stayed about

one week, and was discharged apparently well. He seems to have taken a large quantity of alcohol in the form of beer. No history of syphilis could be obtained. The present illness began, with a very gradual onset, about eighteen months before admission to the hospital, and was marked by increasing weakness of the right arm, accompanied by slight wasting. Shortly afterwards the left arm became similarly affected, and also a little weakness in the grasp of the hands was noticed. About this time he occasionally felt a painful sensation, which he compared to that of cramp, starting in the back of the right hand, and which travelled upwards, on the outer side of the arm, to the shoulder. This was also present, but to a less degree, in the left arm. The weakness and wasting gradually and steadily increased; the right arm was always more affected than the left, so that the patient endeavoured, as far as possible, to continue his work with his left arm. Four months before admission to the hospital he was obliged to give up his work, as he was unable to raise up even light weights to the level of his shoulders. The weakness soon became so great that he could not place either hand upon his head. He also noticed some slight loss of power in his left leg.

State on Examination: Nervous System: Motion.—The patient was unable to place his hands upon his head, and could not raise his arms from his sides to the horizontal position. Many individual muscles and portions of muscle were found to be atrophied, while others, and, in a few places, even portions of others appeared to be hypertrophied. When the muscles

Fig. 1.—Showing atrophy of the pectoral, sterno-mastoid, biceps, and triceps muscles and hypertrophy of part of the deltoids. From a photograph by Mr. H. S. Harris.

Fig. 2.—Showing hypertrophy of infraspinati, upper portion of trapezii, and lower portion of left deltoid, also winged scapulae. From a photograph by Mr. H. S. Harris.

were contracted these hypertrophied portions did not feel to be of such a firm consistence as the healthy muscles. The deltoid muscle on each side presented rather a peculiar appearance, which was produced by the lower half of the muscle being hypertrophied, and the upper portion so atrophied as to cause an obvious depression below the acromion process. The clavicular portion of each deltoid was also atrophied, so that the