NOTE ON "TOXIC DEGENERATION OF THE LOWER NEURONES SIMULATING PERIPHERAL NEURITIS."

BY R. T. WILLIAMSON, M.D.LOND., F.R.C.P.

Physician to the Ancoats Hospital, and Assistant Physician, Royal Infirmary, Manchester.

IN an interesting article in No. 100 of *BRAIN*, vol. xxv., 1902, Dr. Stanley Barnes furnishes clinical and pathological evidence of a clinical type of paralysis, which resembles the paralysis seen in multiple neuritis, but which is associated with great atrophy of the hand muscles. The disease is stated to begin usually about the second or third week after a febrile affection; sensory symptoms are present, but slight in degree; the condition is said to resemble somewhat progressive muscular atrophy, but the etiology is different, and there is a "constant tendency to improvement." Dr. Barnes thinks the condition "is one of toxic degeneration of the lower neurones, the motor neurones being more particularly affected, and the pathological examination of one case which he records supports this view.

The following notes of a case which was under my care in 1899, at the Ancoats Hospital, Manchester, may be of interest in connection with this article. The case was shown at a meeting of the Manchester Medical Society in 1899, but no record of it has been published. The symptoms appear, however, to correspond to those of the clinical type which Dr. Barnes has so clearly described.

Atrophic Paralysis of the Muscles of the Hands and Forearms following an Acute Illness.

Isabella M., aged 40, was admitted as an inpatient at the Ancoats Hospital, October 10, 1899.

History.—In June, 1899, she suffered from an acute illness, in which the chief symptoms were pains all over the limbs and trunk. She was very ill for eight days, and then slowly recovered; but for three weeks she felt unwell. She returned to her work, and continued in good health until August, 1899. At that date she had a second attack of a similar nature. The symptoms commenced acutely, and consisted chiefly of pains in the limbs and back, along with a feeling of general illness and loss of appetite. There was no skin rash. The pains were most severe at the bottom of the back; in the limbs the pain was in all parts and not specially localised to the joints. (The ailment was thought to be influenza by the patient.) The acute symptoms continued for a few days, and then disappeared, but she felt very weak for several days afterwards. A week or a little longer after the pains disappeared she noticed that the hands were becoming feeble.

The right hand was first affected; she noticed difficulty in extending the little finger and ring finger; later all the fingers became affected, and gradually the whole hand became weak. Two weeks after the right hand was first affected, she noticed the commencement of similar symptoms in the left hand. The fingers of the left hand gradually dropped like those of the right; the little finger and ring finger were first affected, and then the whole hand became weak. The weakness of the arms gradually increased, but was not associated with tenderness, pain, or numbness. The legs and the bladder were not affected.

There was no history or indication of alcoholism, nor of poisoning by lead, or any other substance; also there was no history of diphtheria. The patient was almost a total abstainer from alcoholic beverages.

On admission to the hospital (October 10, 1899), the patient complained only of loss of power in both arms. There was considerable wasting of the forearm muscles and *marked atrophy of the thenar and hypothenar eminences and of the interossei muscles of each hand.* (The appearance of the hands corresponded to that shown in Plate I., second photograph in Dr. Barnes's paper.) There was "dropped" wrist on each side, and the patient was unable to extend either the fingers or the wrists. Also the grasp was very feeble on each side. She was unable to oppose the tips of the thumbs and fingers, and she was unable to separate the fingers. There was paralysis of the interossei, thenar and hypothenar muscles on each side, and of the extensor muscles of the fingers and wrists. The flexors of the fingers and wrists were

feeble, but the supinator longus and upper arm and shoulder muscles were not affected.

Electrical Examination.—The extensors of the fingers and wrist, and the thenar muscles on both sides did *not* react to a strong faradic current. The flexors of the fingers and wrist reacted to a weak faradic current, the interossei to a strong current. The reaction to galvanism was good, a weak current produced a contraction readily in the extensor muscles, and KCC was greater than ACC.

There was no pain, no tenderness, no numbness in the arms. Sensation to touch and painful impressions, and to heat and cold, was quite normal on the arms and hands. The intercostal muscles were not affected. There was no pain in the neck or back. She was able to walk quite well and there was no affection of the legs. The knee-jerks were normal, there was no ankle-clonus, no rigidity of the legs, and no abnormality in the gait. The cranial nerves were unaffected and there were no bulbar symptoms. The bladder and rectum were unaffected. The heart, the lungs, the digestive system, and the urine were normal. There was no blue lead line on the gums, no history of lead colic, and no evidence of any indication of lead poisoning. I examined the drinking water but found no evidence of the presence of lead.

The patient remained in the hospital for six weeks and improved gradually. She then attended as an outpatient and steadily regained power in the arms; but there was a little feebleness in the grasp of the hand and difficulty in buttoning the clothes, in threading a needle, and in picking up small objects, long after she was able to perform all the coarser movements of hands and arms. Also, the wasting of the small muscles of the hand could be detected for several months after leaving the hospital. In May, 1900, the motor power in the arms had completely returned; afterwards all signs of atrophy of the hand muscles disappeared. She was seen in February, 1901, in 1902, and March, 1903; there has been no return of her paralysis, and the woman remains quite well.

REMARKS.

Briefly stated, the case was one of paralysis of the small muscles of the hands, and of the extensors of the fingers and wrist, with paresis of the flexors of the fingers and wrist. There was atrophy of the affected muscles, especially the

hand muscles. The paralysis followed an acute illness, the chief symptoms of which were pain in the limbs and trunk (? influenza). The legs were not affected and the knee-jerks were always present. Alcoholism and poisoning by arsenical beer could be excluded definitely, also there was no evidence of lead poisoning or diphtheria.

The diagnosis appeared to rest between acute anterior poliomyelitis at the lower cervical and first dorsal segments, and peripheral neuritis, of an unusual motor form, localised to the arms. But the symmetrical distribution of the paralysis, and the *complete* recovery, were against the diagnosis of uncomplicated acute anterior poliomyelitis in its usual form. In some respects the symptoms resembled those of a peripheral neuritis of the motor form, such as is seen in lead paralysis. But it was not possible to obtain any sign or indication of lead poisoning whatsoever; also the small muscles of the hand were markedly atrophied and paralysed at the *early* period of the disease, and the affection appeared to be directly related to the attack of acute illness (? influenza), which it immediately followed.

The foregoing account is an abstract of my notes of the case, made in 1899. At that time I recognised the peculiarities of the clinical features, but was not able to arrive at a definite diagnosis. I think there can be now little doubt that the case belongs to the clinical group, to which Dr. S. Barnes has drawn attention in his recent article, and to which he has given the name of toxic degeneration of the lower neurones.