of urine were drawn off; there was dribbling incontinence. There was a large burn on the right buttock about 1 in. in diameter. Nervous system: Mental vacuity and incoherence in speech. He slept well; the paraplegia of lower limbs was almost complete. Over the lower dorsal area there was a diffuse hyperaesthetic area, but nowhere was there any abolition of sensation and handling his lower limbs caused much pain. His superficial and deep reflexes were present but not exaggerated. He had dribbling incontinence of urine and involuntary evacuation of faeces. There was tenderness over the last lumbar and first sacral spines. The grip of both hands was very feeble, but no absolute paralysis. The left pupil was larger than the right, but both responded to light and accommodation. Respirations 22, slight cough and tough mucous expectoration, expansion of chest fairly good and percussion clear, a few coarse rales over right lower lobe. Pulse 78, regular in time and force, tension fair, arteries contracted. The cardiac area is normal, apex beat diffuse, in fourth and fifth interspaces 1 in. internal to nipple line. Occasional doubling of both sounds but no murmur. Teeth bad, tongue clean, no pain after food, stomach somewhat dilated, hepatic and splenic dullness normal, urine alkaline, specific gravity 1015, no albumen, blood, or sugar, chlorides excessive. His temperature, on admission 100.4°, rose the following day to 103° F. He was placed in the prone position, had an icebag applied to the spine, and was ordered urotropin and a milk diet.

Progress.—May 24th. During the last twenty-four hours 86 oz. of urine were drawn off. His pulse was small, firm, and vessels much contracted; extremities very cold. His temperature was 99.2° this morning, and rose to 101.6° F. in the evening. Lumbar puncture was performed, and clear cerebro-spinal fluid drawn off, which on microscopical examination and on culture was found to contain staphylococci. R Quinine sulphatis 36 gr., acidi hydrobromici dil. 3ij, liq. trinitrini mxij, aq. ad. ʒvi. ʒss every four hours. R Hydrarg. subchlor. 4 g.; to be taken at once. May 25th. He had four involuntary motions; 78 oz. of urine drawn off to-day. Temperature, 99.2° and 101.8° F. May 16th. To-day over the whole upper lobe of right lung the percussion note was impaired, breathing harsh and tubular. The sputum contained diplococci, but no tubercle bacilli; 107 oz. of decomposing urine were drawn off. Temperature 98.4° and 99.6° F. May 17th. Patient had a good night, and feels much better to-day. The upper lobe of right lung is solid, expectoration thick mucopus and tinged with blood; 67 oz. of foul ammoniacal urine drawn off; bladder now washed out with a solution of chinosol. Temperature, morning 98°, evening 99.6° F. Return of power in lower, and increased power in the upper limbs. May 20th. His temperature has been subnormal since the 17th, and the icebag to the spine has been discontinued, the vocal fremitus and resonance are still rather increased over the right upper lobe, but the solidity is much less, and the expectoration is diminishing. He takes his food and sleeps well. May 21st. There was a slight rigor to-day, no doubt due to the bladder trouble, when his temperature rose to 100° F. From this time to the 25th there was a slight evening rise of temperature from 99.2° to 99.8° F. The urine was foul and decomposing, and the bladder often contained gas, distending it up nearly to the umbilicus. May 25th. He is much better, and has gained considerable power in lower extremities, so that he now "feels able to walk." The band of hyperaesthesia in thoracic region has disappeared and there are no painful sensations. May 28th. For the last twenty-four hours he has been able to micturate. His urine is now neutral, shows a deposit of phosphates with superjacent layer of bloodstained mucus. He is rapidly improving. Temperature normal, weight 92 lb. June 5th. He is rapidly convalescing, and has now good power in all his limbs, but the cystitis is still troublesome. Weight 100 lbs. June 7th. He is rapidly gaining flesh and strength, but his circulation is still rather feeble; with Oliver's arteriometer his radial artery measures 3.2 mm. in recumbent and 3 mm. in the sitting posture. The blood pressure in the brachial artery with Hill and Barnard's sphygmometer measures in recumbent posture, mean 100, obliterating pressure, 132 mm. of Hg.; in sitting posture mean 100 mm., and obliterating pressure 118 mm. Hg. His temperature has been subnormal since May 30th; the burn on the right buttock will soon be healed. You now see him walking about, and in a short time he will be quite well. The temperature chart during the febrile period is shown (p. 1639).

This case was also difficult to label. The paraplegia, incontinence of urine, and involuntary evacuation of faeces pointed to grave disturbance in the lumbar enlargement of the cord. The hyperaesthetic band in the lower dorsal region and the burn on the buttock strongly supported the view of transverse myelitis, but, as I pointed out to you at the time, there was no loss of tactile sensibility and painful impressions were readily transmitted. The patient could distinguish heat and cold. Of course there must have been considerably impaired sensation when he burned his buttock without being aware of the fact. In a transverse lesion there would have been vasomotor paralysis, whereas his lower extremities were very cold and his arteries contracted.

I told you that the case more closely resembled one of Landry's paralysis than anything else. There was the same primary motor paralysis of the lower extremities, which was evidently spreading, as there was marked paresis of the upper limbs. There was no impairment of sensation, and the deep reflexes, though diminished, were not abolished. In other cases of Landry's paralysis which I have seen the knee-jerks remained till near the end, but in no case was there such paralysis of the bladder and rectum, and there is not usually any febrile temperature.

In acute multiple neuritis we get the same painful sensations and rapid spread of the paralysis which were present in this case, but then the knee-jerks disappear early. The hyperaesthesia, pain on handling, and bladder trouble occur in

meningitis, but the absence of rigidity and over-action of the flexors disposed of any actual inflammatory lesion of the meninges. The temperature might have been supposed to be due to the bladder trouble, and formerly cystitis was looked upon as a cause of the so-called reflex paraplegia. Whether such a sequence occurs or not, we know that in this case the paraplegia preceded the cystitis, which only developed after admission. The whole syndrome of symptoms pointed to acute ascending paralysis with involvement of the nerves, but I was unwilling to adopt such a diagnosis which involved a prognosis of the greatest gravity. I then told you that whatever name we gave the disease it was undoubtedly one of toxic origin, and due to some agent of a curare or physostigmine-like character. The discovery of staphylococci in the cerebro-spinal fluid supported this view. It would seem as if the patient's low vitality did not afford sufficient reaction to establish a meningitis, but their toxins had a paralytic effect on the motor centres of the cord. In a severe case of cerebro-spinal meningitis in the same ward we found by lumbar puncture staphylococci in the cerebro-spinal fluid, and no other organisms.

In the BRITISH MEDICAL JOURNAL of May 24th, 1902, Dr. Judson Bury related an interesting case of complete and temporary paralysis of the limbs in a child which he supposed to be a case of recovery from the initial stage of acute anterior poliomyelitis, but his diagnosis was purely hypothetical, and it is difficult to conceive of complete recovery in a case of anterior poliomyelitis in any stage. He made no examination of the cerebro-spinal fluid. His case in many respects resembled this one.

Treatment.—In order to relieve any congestion of the cord and to lower his temperature, he was placed in the prone posture and an icebag applied to the spine. His cold extremities were wrapped in cotton-wool. He got a mixture of quinine and nitro-glycerine; the good effect of the latter drug was at once apparent in the relaxation of arterial spasm and in the increased warmth of the extremities. The internal administration of urotropin and lavage of the bladder with a solution of chinosol cured the cystitis. Rest and a liberal diet have completed the cure. He will be detained and afterwards sent to the convalescent home until he is quite strong.

HEREDITARY CEREBELLAR ATAXY IN TWO BROTHERS.

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Bristol General Hospital.

This affection is such an uncommon one, and its position in nosology as yet so far from being finally determined, that it seems desirable to record the following well-marked cases, although the observations are not completed by a necropsy. The exact relation of hereditary cerebellar ataxy to Friedreich's disease is still uncertain; if it be true, as in the view perhaps most generally accepted, that both diseases depend upon a degeneration of the cerebello-spinal system of fibres, beginning in the former at the cerebellar, and in the latter at the spinal end, it is to be expected that cases would be occasionally met with in which the signs of the two diseases were to a varying extent present in combination. In this connexion it is interesting to note that in the younger of my two patients, in whom the disease was of longer duration and more advanced, two signs were present, which are generally regarded as pathognomonic of Friedreich's disease, and distinguishing it from hereditary cerebello-ataxy, namely, lateral scoliosis and a characteristic pes cavus, and in a much slighter degree were also indicated in the elder brother.

FAMILY HISTORY OF THE CASES.

The patients were two brothers; the parents were living, healthy, and temperate. There were three other children; one, a boy, died quite young of some congenital deformity at the back of the neck; two girls also died young, one of convulsions, the other of scarlet fever. Otherwise the family history was good, and careful inquiry detected no other case of this or any other nervous disease amongst the relatives. Neither of the brothers showed any evidence of congenital syphilis, and the mother had had no miscarriage.

CASE I. Personal History.—The younger of the brothers, aged 23, had never had any previous illness, had always been strong, temperate, and denied syphilis. He was a railway porter, and stated that his illness

begin two years previous to admission immediately after a fall from the top of a signal post 20 ft. high, during a storm. He was picked up insensible, and remained unconscious for half an hour; he was then able to walk home, apparently uninjured. He went to bed at his usual hour and slept well. Next day at breakfast he found his hands shook so much that he was obliged to carry the cup in both hands in order to bring it to his mouth. This tremor of the hands and arms, which was most marked on the right side, was followed by tremor of the head and body; and these tremors, which increased on voluntary movement, lasted one year before the next symptom appeared, namely, stiffness in the right knee and foot followed by cramps in the calf, and a feeling of weight, as if the foot were very heavy, in walking. The foot was dropped. There was also some giddiness, especially in turning round. Six months later the right foot became numb, with feelings of pins and needles after walking, relieved by rest. A few days before admission he suffered from frequent micturition, otherwise the bladder was normal. The mother stated that he was getting weak-minded, but he appeared to be quite intelligent, though somewhat childish and loquacious.

State on Examination.—The patient looked healthy, but was thin, and the muscular system not well developed for a working man. He kept his mouth open, and had a somewhat fatuous expression. He was excitable and was constantly smiling, the smile showing exaggeration of the nasolabial folds. In speaking the eyes were widely opened, giving him a staring appearance. His speech was jerky, explosive, but also muffled in character, with an occasional break into high notes. The heart's apex was in the sixth space, half an inch outside the nipple; the cardiac dullness was slightly enlarged, and there was a systolic murmur at the apex and right base, loudest at the former. The other thoracic and abdominal viscera were healthy, and the urine normal. When sitting slight choreiform movements of the limbs occurred almost constantly, with tremor of the head, arms, and trunk. This tremor of the arms increased on movement, but did not resemble the typical tremor of disseminate sclerosis, consisting rather in a lateral, swaying, or oscillating movement of the hand from side to side when grasping, followed by a coarse tremor when the object was seized or reached. The movements of the legs appeared to be stiff. The gait was irregular (most of the cerebellar than of the ataxic type), and was worse when he closed his eyes; there was then some stamping of the feet when walking. He was especially unsteady and apt to lose his balance on turning round. He was not able to stand still. No difficulty in swallowing. No affection of sensation. No muscular atrophy or hypertrophy. No paralysis of facial muscles. Hearing and smell normal. Eyes: Pupils equal, somewhat dilated; reacted to light, accommodation, and consensually. There was lateral nystagmus (oscillations towards the side to which the eyes were directed) when the eyeballs were moved to either external canthus. The optic discs showed moderate but distinct atrophy. Slight ptosis was present on either side. Reflexes: Knee-jerks exaggerated. Achilles-jerks increased; no ankle clonus. Babinski's sign present in right foot, not in left. Cremasteric and abdominal reflexes absent. Elbow and wrist jerks normal. There was slight lateral curvature of the spine, with the convexity to the right in the dorsal, to left in the lumbar region. Pes cavus was present on both sides, most marked on the left, the foot being hollow, the arch greatly increased, and shortened from before backwards. Hard and tender corns were present on the soles of the feet. Under treatment in hospital for six weeks, with rest, graduated exercises, electrical baths, and arsenic he showed some degree of improvement in co-ordination of movement of the arms and legs.

CASE II. Personal History.—The elder brother was by occupation a clerk, aged 26; in his case the disease had not been so long in existence, and was less advanced in some respects. There was no history of any previous illness, except measles when a child. He was a married man, and had never had syphilis. He thought his illness might possibly be due to a blow received on the right knee at football. Twelve months previous to admission the patient noticed that his feet used sometimes to come heavily to the ground when walking. Soon afterwards there was stiffness of the right knee, and the right foot felt so heavy that he could hardly get along on rough, uneven ground. The feet were turned inwards. Later he suffered from a throbbing pain over the sacrum. The difficulty in walking steadily increased. He now complains of unsteadiness in walking, of "reeling like a drunken man," so that he has several times fallen down; of difficulty in lifting his legs, especially the right; of a numb feeling in the legs and hands; of some pain in the back; and of failure of sight. He had had no pains in the limbs, and no affection of the bladder.

State on Examination.—He was well nourished and of a good colour; the muscular system not strongly developed, but no muscular atrophy. The chest was small and expansion deficient; the thoracic and abdominal organs were healthy. His gait was cerebellar in type, much more so and less ataxic than in his brother's case; he reeled in walking, but at the same time he walked with a stiff movement of the knees and a jerking forwards of the thighs. The right foot turned inwards and was brought across the left in walking, and the left foot was not well lifted off the ground. The gait was worse with the eyes shut. He stands with legs wide apart; with feet together and eyes shut he swayed to a moderate extent. He could stand on his right leg alone, but not on the left. There were no choreiform movements, and no tremor or inco-ordination of the arms or hands, except that with the eyes closed the movements of the left hand were not quite exact. There was no loss of the sense of position. He readily recognized the nature of objects when placed in his hands (without aid of sight). The tongue was slightly tremulous. Speech, swallowing, hearing, smell, and taste normal. Face symmetrical. Eyes: No ptosis in this case. Some loss of power of convergence. Well-marked fine vertical nystagmus on looking upwards, and in looking to either side lateral nystagmus of that eye only which moved into the external canthus. Pupils small, equal, react to light, accommodation, and consensually. Commencing atrophy in each optic disc, most marked on the left side. Arms: Elbow-jerks present, increased on the right side. Legs: Slight rigidity of the leg muscles, especially about the knees; knee-jerks and Achilles-jerks exaggerated, ankle clonus on both sides; Babinski's sign present on the right side, plantar reflex normal on the left. The right foot showed a slight degree of pes cavus, with overaction of the long extensors of the toes. There was slight lateral curvature of the dorsi-lumbar spine, with the convexity to the right. No affection of

sensation was anywhere detected. The patient was quite intelligent; mentally he seemed normal, and was fully sensible of his sad condition. No improvement was obtained from treatment.

To the above account I have only to add that except with regard to the points mentioned at the beginning of this paper, the differences from the ordinary clinical type of Friedreich's ataxia are well marked, and the disease began in both patients after the age of 21. Two points seem to me worthy of notice; first, the history of injury in both cases, which was very definite, and succeeded at once by symptoms in the first case, less pronounced and therefore more uncertain in the second, but in him also the symptoms appeared within a few months of the accident, and first in the injured leg; secondly, that in each of the brothers the early symptoms were nearly identical.

CASE OF HEREDITARY OR HUNTINGDON'S CHOREA.

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THE following case of this disease may be of interest, as, to the best of my knowledge, not many cases have been recorded in England. I have no new facts to relate concerning the malady, but the hereditary nature of it and the great tendency to mental failure in it is fully in accord with the description as given by Huntington, of New York, in 1872. A serious point as to the management of these cases arose in regard to this.

The family history is imperfect. The father of this patient suffered from chronic adult chorea for many years, and was in the workhouse, where he developed insanity after the administration of chloroform for the amputation of a finger; he did not live long after his removal to the asylum. The mother's mother committed suicide, and the mother herself became suicidal and died in an asylum; there is no distinct history of chorea in these cases. A sister of the father's suffered from chronic chorea and was married and had two children—a son, aged now about 30, who has developed chorea during the last two years, and a daughter who is married and is said to be suffering from it. The patient is a labourer, aged 46, married, with one daughter, 13 years of age, who is quite well at present. About twelve years ago his wife noticed that his hands and arms twitched very much, and this was soon followed by twitchings of his shoulders and face; his legs were not much affected, and until just lately he has been working on the roads, but has had to give it up owing to the great difficulty in holding his tools. For several years his temper has been getting very bad, and he flies into a great passion on the least provocation; he has threatened suicide. When the patient is sitting quietly and, as he thinks, unnoticed his mouth is continually moving from side to side and his brows up and down, his face going through continuous involuntary grimaces, and his shoulders rotating backwards and upwards as he he was going to fall sideways off his chair, his hands and arms meanwhile going through irregular movements of flexion and extension, pronation and supination; he answers questions quite rationally, but his speech is thick and indistinct, and occasionally he swallows with difficulty; he emits grunting noises when sitting quietly or when in bed. There is no tremor of his tongue on protrusion, and the movements of his eyeballs are not noticeably affected. He can keep his body and face quite still for a short time if told to do so, and he can hold out his hands quite steadily, with the thumbs adducted under the palm, but all the movements recur when he fancies he is unnoticed and when his voluntary efforts to steady himself no doubt get tired out. He can write his name fairly well. He walks like a man more or less intoxicated, but there appears to be no loss of power in his limbs, his knee-jerks are normal and he can stand alone with his eyes closed and feet together; he has no bowel or bladder trouble. His arteries are thickened and tortuous, but his general health is good, and he would be able to work if he could hold his tools. His wife states that his movements continue during sleep, and that she frequently wakes up quite uncovered owing to his continuous movements dragging off the bedclothes.