the sensory loss was greater than before, and on the foot corresponded remarkably with the sensory loss in the hand, following section of the radial branch in the forearm. The external popliteal was evidently the analogue of the musculo-spiral in the arm. Over an area on the outer portion of the leg prick was preserved, but touch and cold (ice) were absent. Similar dissociation areas had been found by Head and by the speaker on the hand after section of the radial branch in the forearm.

Dr. Taylor said that external dislocation of the knee was the probable diagnosis, as no fracture of the upper end of the tibia was now indicated by X-ray. The nerve damage was for one inch, just behind the head of the fibula. It was imbedded in scar tissue. One inch of the nerve was resected. The knee was kept sharply flexed for a month to allow complete nerve union.

Dr. Terriherby asked if, when the surgeon took out one inch of the nerve, was there not considerable traction upon the remaining portion?

Dr. Taylor said that the nerve could not have been brought together without a little tension, but in doing nerve suture one had to get as good anatomical union, without forming scar tissue, as was possible. It was necessary to get good apposition before suture.

INJURIES OF THE PERIPHERAL NERVES, PRODUCED BY MODERN WARFARE (WITH EXHIBITION OF LANTERN SLIDES)

By C. Burns Craig, M.D.

This paper was based upon ten months' observations at the American Ambulance Hospital at Neuilly sur Seine, and upon impressions gained by some visits to the Salpêtrière and other Paris hospitals. It should be stated that, in a large base hospital, the proportion of injuries to vital parts, as compared to those less serious, did not represent the proportionate varieties of wounds occurring in battle. The majority of men wounded in brain, abdomen, heart, or large arteries, died on the field. Thus 70 per cent. of wounds in base hospitals were in arms or legs. All these wounds had a neurological aspect. Various kinds of pain and paresthesia, the cutaneous anesthesia surrounding some large wounds, and effect of weather upon pain were worthy of attention. In this paper, by injuries to peripheral nerves, was meant only those wounds in which some marked paralytic effect was produced, distal to the wound, indicating that one or more of the principal nerve trunks had been damaged. Varying degrees of disability were observed, and the lesion might be motor, or sensory, or both. Mild cases of loss of function in hand or foot cleared up rapidly, provided the part was not kept motionless. One of the greatest lessons learned in the war in taking care of wounds on a large scale was to avoid immobility of a wounded extremity. Even when fracture existed this might be avoided. In the early days of the war there resulted a number of cases of "causalgia," so styled by Weir Mitchell, and stated by him to be frequent during the Civil War. This was due to immobilization of the arm and hand by the use of splints and slings. It could be avoided by an overhead suspension device, used extensively in Dr. Balke's service. It provided elevation of the part, and permitted sufficient movement to afford exercise. This, in conjunction with early massage, prevented causalgia and shortened convalescence. Considering the enormous number of wounds of the extremities, both of the bones and soft parts, the infrequency of completely severed nerves was quite remarkable. This was accounted for by the resiliency and elasticity of the nerve trunks, which permitted a certain degree of displacement without rupture. Ten per

cent. of peripheral nerve injuries were completely severed nerves. However, all symptoms of completely cut nerves might be simulated by severe contusion or compression of the nerve, and only direct examination at the site of injury could determine the nature of it. The proportion of peripheral nerve injuries to the total number of wounded was: musculo-spiral 12 per cent., sciatic 10 per cent. Dr. Craig gave instances of the following injuries: (1) Injury to the glosso-pharyngeal nerve with persistent paralysis of the uvula. (2) Contusion of the facial nerve with recovery. (3) Injury to the lumbar sacral plexus, with considerable improvement. (4) Isolated injury to the median from rifle wound in forearm, outcome unknown. (5) Peripheral paralysis of right facial nerve from rifle-ball wound, unimproved after four months. (6) Small sciatic completely severed and contusions of greater sciatic; six months after the patient was able to walk alone with normal gait. (7) Injury of median and musculo-spiral nerve by contusion; two months after, no improvement in resultant paralysis. (8) Injury to entire brachial plexus; nine months after, only incomplete restoration of function in arm and hand. (9) Complete division of both musculo-spiral and great sciatic, with no improvement in paralysis four months later. (10) Almost complete severance of sciatic with no return of function after seven months. (11) Injury to the internal saphenous, with anesthesia and paresthesia persisting after six and a half months. (12) Case of compression of the popliteal with complete recovery. (13) Injury to the posterior tibial nerve with compression and atrophy due to dense cicatrix, patient observed for two months with no alteration of sensation. (14) Olecranon almost blown away by shrapnel and elbow joint exposed. Diagnosis of lesion of ulnar nerve and damage to median nerve. Patient operated on by Dr. Blake and radial border of ulnar nerve found severed with formation of neuroma at the site. The contused median was almost completely recovered after five months. The partially severed ulnar showed faulty recovery. (15) Sciatic nerve completely traversed by fragment of shell; even with this slight damage, without severing of the nerve, six months elapsed before approximately complete recovery.

Dr. Ramsay Hunt said that they were all very much interested in the neurology of war and it was gratifying to hear from someone who had had actual experience of this kind at the front. The treatment of injuries of the peripheral nerves would be one of the great medical advances which this war would develop. When such masters as Marie, Dejerine and Oppenheim were concentrating their efforts on nerve injuries, no doubt great results would be achieved. It was interesting to note what a large number of irritative conditions from compression were amenable to treatment, by simple dissection of the sheath, and relieving the nerve trunk from pressure and adhesions (neurolysis). Another type full of interest was the partial lesion of a nerve, the dissociated syndrome. Dr. Craig had mentioned such cases where the projectile caused partial or isolated injury of certain fasciculi. Such lesions were very rare in civil life. Dejerine had devoted especial attention to the "syndrome dissocié." Neurological surgeons seemed to be in harmony as to the treatment of injuries of the peripheral nerves. Practically all recommended conservatism. One French surgeon, Delorme, had advocated radical procedures, excising large sections of the nerve trunk, but his views had aroused considerable discussion, and most agreed that the nerve should not be sacrificed, but only the scar tissue removed, and that any normal fibers and fasciculi should be preserved.

Dr. Goodhart said that the German surgeons made it a rule not to interfere with fresh wounds at all. After the infection was passed they did not hesitate to cut into the tissue months afterwards. In sheath surgery the nerves were sutured, using fat and fascia and arterial tissue. This protected the nerve. In resection of neuromata defects of nerve tissue were filled in

by segments of other nerves. Von Hofmeister recommended the method devised by him of double nerve grafting. Both ends of a divided nerve, which could not be directly resected, were implanted into a parallel nerve which acted only as the bridge. A healthy motor or sensory nerve could be utilized for this purpose.

Dr. William Leszynsky said he had been much impressed with the pictures representing the degree of trophic disturbance after injury of the sciatic nerve. It was almost identical with that after an ill-advised injection of the nerve with alcohol. The patient had been seen by several members of the society.

Dr. Craig said that the point of discussion this evening seemed to be as to whether these cases should be operated on, and if so, when. In France it was universal to wait until signs of infection had cleared up and then every case which presented evidence of serious nerve lesion was opened up. Many were cases of infiltration of connective tissue, which became exceedingly hard and blocked the nerve. Cases of compression of the fiber had a favorable prognosis but where the nerve was partially or wholly severed he was very pessimistic after ten months' observation, but it would take years for a nerve like the sciatic to grow again.

DECEMBER 7, 1915

The President, DR. WILLIAM LESZYNKY, in the Chair

BRAIN, SHOWING TUMOR OF THE PONS, INVADING ONE CRUS CEREBRI, WITH UNUSUAL SYMPTOMS

By Walter Timme, M.D.

The history of the patient was as follows: In July, 1913, a boy, 14 years old, was hit on the head by a playmate. He fell, rose unassisted, though dizzy for a moment. In August, five weeks later, he fell again and struck the back of his head, though without apparent after-effect. One week later the father noticed the boy's speech was affected and about that time the gait became unsteady. Coincident with these changes headache began, chiefly occipital, and there was nausea though no vomiting. The father noticed priapism for two or three hours every night. By September 15 his sight was affected and his sight became progressively worse. Since August his stature increased markedly and he showed marked drowsiness. On September 25 he was admitted to the hospital, where shortly he became so unruly and restive he had to be sent home. His status on admission was: Gait staggering, swaying, chiefly to the left, but occasionally to the right; occipital headache; nausea; no vomiting at first and no tremor; right facial tremor when smiling, *i. e.*, emotional. Examination of the eyes by Dr. Holden on September 25 showed the following: Diplopia, due to weak external rectus; nystagmus L. R.; vision 20/30, with white and red fields normal; discs pink, veins slightly dilated. October 26 there was beginning papilledema with hemorrhage in both fundi with normal color fields. There was then found incoördination with ataxia of hands and feet; R. L. Reflexes gave a greater right knee jerk, a double Babinski and Oppenheim, more on right; right abdominals sluggish; left absent; epigastric absent; cremasteric equal; right elbow jerk exaggerated; left doubtful; asynergia marked; hearing normal; Weber and Rinne tests gave normal conduction; adiadochokinesis of the right hand. The cerebrospinal fluid was normal. A general diagnosis of tumor was