[After the present paper had been written the record of a very interesting successful case, by Dr. E. C. Taylor, appeared in the *Lancet* for June 6th, 1903.]

What has been said will serve to point the moral that unrelaxed vigilance must be observed in every case, and during every stage, of a radical cure of hernia, whether inguinal or femoral, the bladder, as already stated, being occasionally found in the sac of a femoral hernia.

REFERENCES.

¹ *The Radical Cure of Hernia, etc.*, 1893. ² *Med.-Chir. Trans.*, 1894, vol. lxxvii.

THE NECESSITY OF SHORTENING LARGE NERVES WHEN AMPUTATING.

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It is usual after tying the vessels, to draw out the large nerves from the surface of the stump and cut off a piece. The following brief notes of cases which have been under me in the Westminster Hospital show that when this procedure has been omitted, there has been an indefinite delay to the patient's recovery. The patient has been hindered from wearing an artificial limb and from returning to work, has had continuous pain in the stump, and has had to submit to minor operations and finally to a resection of the affected nerves.

Amputation is done nowadays only as a last resource, and the patient's condition is generally bad. Therefore, haste is essential, yet the minute or two required for shortening large nerves is indispensable.

In some of the cases described below the flaps were doubtless in a bruised condition owing to the accident, or had beforehand been undermined by suppuration, so that healing by first intention could not be obtained. Nevertheless, all the cases at length definitely healed, and when seen, no case showed a pointed or ulcerated stump. The whole of the chronic trouble was connected with the nerves. Besides the primary amputation scar, all the cases presented several secondary scars, of which the patients could not give an entirely clear account. Some may have been the result of making counter openings, or for removing fragments of bone, or have followed ulceration and sloughing. But others, according to the patients, were made to relieve the pain, presumably attempts to dissect out the ends of the nerves. If so, these operations had failed from being too limited. In all the cases it was clearly necessary to expose the nerves well above the mass of scar tissue in which they were most intimately involved.

CASE I.—A man, aged 54, had had a Chopart's amputation done for a crushed foot two years before. Healing was delayed until two fragments of bone escaped. He had not been able to put the foot to the ground. The stump was extended on the leg, the main scar and several small scars were excessively tender. A Syme's amputation was done and the nerves well shortened. In the stump the posterior tibial nerve and its branches were enlarged and matted together in the scar tissue. Later on I saw the man walking well with an artificial foot.

CASE II.—A young man was playing football when he fractured his patella. The patella was wired, the knee-joint suppurated, and pus extended up into the thigh. The thigh was amputated about the middle, and subsequently the bone was resected. When first seen the man was highly excitable; attempts to handle the stump sent him off in painful convulsions. One could see the main and several secondary puckered scars. I resected the sciatic nerve at the lower border of the gluteus, and dissected its large bulbous end out of the scar. The man's nervous symptoms disappeared, the stump could be freely handled, and an artificial limb could be worn, although I am afraid that it was not of much assistance owing to the shortness of the stump.

CASE III.—A man was shot through the ham and developed a popliteal aneurysm, for which, about ten days after the injury, the popliteal artery was ligatured in the upper part of its course. Gangrene followed, and the thigh was amputated through the lower third. Very shortly after healing he was supplied with an artificial limb. Having been a very muscular man the stump wasted, so that on admission he was wearing full-length trousers doubled up and wrapped round the stump within the excessively large bucket of the artificial limb. This may have aided in the development of the nerve end-bulb, for the scar had become gradually painful, and the pain had spread up the sciatic nerve. About 4 in. of the sciatic nerve was resected; a large bulbous end was densely connected with the amputation scar. After waiting six months the man was refitted with an artificial limb which he could use well.

CASE IV.—A farm labourer, aged 64, had had an amputation through the middle of the right arm three years before. The knives of a chaff-cutter had sliced off the hand and forearm up to the elbow, and the rollers had bruised the arm. The bone was afterwards resected. The stump had been throughout painful, and latterly attacks of pain seemed to

spread from the stump across the chest at the level of the second and third intercostal spaces. The stump presented secondary scars besides the main one, the soft parts were rather in excess and oedematous. The whole was very tender. There was no tenderness above the clavicle. An incision was made along the anterior axillary border, the axillary artery and vein well separated and ligatured, and then the three cords of the brachial plexus were resected just below the clavicle. Tracing them downwards, they ended in a mass of scar tissue, but were quite free from the bone, and all was removed by an oval incision. After healing the stump was painless, and there was no tenderness above the clavicle. But he continued to have paroxysms of pain in the chest, which were relieved by inhalations of nitrite of amyl. The patient had a high pulse tension, and his arteries were tortuous, but not specially so, not more than might be expected in a man of his age and class. There was nothing to be found abnormal in his heart. These attacks were regarded as angina pectoris. As to their connexion with reflex irritation from the stump or with ascending neuritis I remain doubtful.

CASE V.—A girl, aged 19, had injured her knee when about a year old, and eighteen months later an amputation through the upper third of the leg was done. Subsequently, she said, eight further operations were done, and there were numerous small scars on the stump, one in particular was over the course of the sciatic nerve in the lower third of the thigh. The stump had always remained painful, and she had got about on a kneeling pin. I made a Stephen Smith's amputation through the knee-joint, and followed up the sciatic nerve to the middle of the thigh, where it was resected. If the highest scar above mentioned was made in order to expose and divide the sciatic nerve, then the nerve had completely reunited, but was surrounded by fibrous tissue adherent to the scar. Following the nerve down, the external and internal popliteal nerves were traced into the scar tissue, the external popliteal ended in a large bulb about the level of the head of the fibula, and was closely adherent to the primary amputation scar, the internal popliteal nerve ran into a mass of scar tissue continuous with some of the secondary scars.

CASE VI.—A man, aged 20, had a Syme's amputation done for a foot crushed on the railroad about nine months ago. After some ulceration definite healing occurred at the end of fourteen weeks from the operation. The stump had remained painful, and it was impossible to bear weight on it. Besides the main scar, there was a bluish irregular scar from ulceration of the heel flap. Tenderness was felt in the course of the posterior tibial nerve as high as the middle of the leg and up the anterior tibial for 2 in. After amputating through the lower third of the leg by lateral flaps, I shortened the posterior tibial as high as the middle of the leg, and dragged out the anterior tibial for 2 in. In the part removed the much enlarged posterior tibial could be followed down into a mass of scar tissue attached to the scar at its inner end, where it formed a large bulb. On the anterior tibial was a small bulb, and this adhered both to the scar and to the lower edge of the tibia.

The result in Cases v and vi is good, in both a useful painless stump.

BRACHIAL NEURALGIA.

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Up to within the last few years I have never seen or heard of a case of this description, but, since a personal experience, I have met with some half-dozen cases, though I have been unable to find in any book anything like an adequate description of the disease. Neuralgic pains affecting some of the branches of the brachial plexus are sufficiently common in aneurysm, cancerous growths in the thorax or axilla, and in aortic disease; but brachial neuralgia not symptomatic of these causes is a rare condition, and one of such extremely painful nature as to demand more than the very perfunctory attention it has received. It is questionable, however, if the term "neuralgia" is a proper one to employ, for the majority of these cases are not cases of neuralgia, but rather of perineuritis and secondary pain. The brachial plexus is derived from the four lower cervical and the greater part of the first dorsal nerves, and occupies a position amongst the muscles of the lower part of the neck and the upper part of the arm which renders it especially liable to suffer from injury to these muscles or to the fibrous tissue which surrounds them, and in all my cases, without exception, there has been history of some such injury. According to the textbooks, brachial neuralgia may occur in the course of ill-health, especially when associated with a rheumatic or gouty tendency; but I have been unable in my own experience or on inquiry from others to learn of such a case. It is quite possible that a depressed condition of health may predispose to its occurrence, but some violence is always necessary to its development.

CASE I.

An intimate friend of my own—a doctor—who had been much overworked and was in consequence in a bad state of health, became conscious, after playing rounders with some children, of a slight amount of pain near the bicipital groove of the humerus; the pain was not very