Correspondence.

"Audi alteram partem."

THE DEPENDENCE OF ARTHROPATHY ON NERVE INFLUENCE.

To the Editor of THE LANCET.

SIR,—In THE LANCET of March 7th (p. 699) you have again an interesting annotation referring to the dependence of arthropathy on nerve influence, and, as you remark, "the case reported is an excellent example of the localisation of an infection to an area of which the nerves are injured." May I be allowed to amplify the illustration.

In 1864 Dr. Weir Mitchell, Dr. Moorhouse, and Dr. Keen, in their work on "Gunshot Wounds and other Injuries of Nerves," called attention to the effect of nerve injuries on the nutrition of the joints. The symptom occurs within a few days after the injury of the nerve.

It consists essentially in a painful swelling of the joints, which may attack any or all the articulations of a member. It is distinct from the early swelling due to the inflammation about the wound itself, although it may be masked by it for a time; nor is it merely a part of the general cedema which is a common consequence of wounds. It is more than these—more important, more persistent. Once fully established it keeps the joints stiff and sore for weeks or months. When the acute stage has departed the tissues about the articulations become hard, and partial ankylosis results. Were we asked to state in what essential respect these lesions differ from subacute rheumatic disease of the same parts we should certainly be at some loss to discern a difference.

In 1872 Dr. Weir Mitchell, in his work "On Injuries to Nerves," p. 168, describes the arthritic changes which may follow dislocations, ball wounds, contusions, or even compressions of the nerves:—

We may have one articulation—and if only one, a large one—involved, or perhaps all the joints of a finger, or every joint in the hand or of the entire limb may suffer. The swelling is never very great, the redness usually slight, and the tenderness on motion exquisite. This condition of things remains, with little change, during weeks or months and then slowly declines, leaving the joints stiff, enlarged, and somewhat sensitive, especially as to movement. A small proportion of such cases find ready relief, but in many of them the resultant ankylosis proves utterly unconquerable. It is quite clear that injuries of the spine, diseases of this organ and of the brain, and wounds, or any form of lesions of nerves, are capable of developing in the joints inflammatory conditions usually subacute and which so precisely resemble rheumatic arthritis in their symptoms and results that no clinical skill can discriminate between them.

In THE LANCET, 1846, Vol. I., p. 278, Dr. Scott Alison, and in THE LANCET of July 13th, 1861, Dr. Brown-Séquard called attention to the arthropathies of hemiplegic patients

limited to the paralysed limbs and mostly occupying the upper extremities. They supervene, especially after circumscribed cerebral ramollissement, and more rarely as a consequence of intracerebral hæmorrhage. They usually form 15 days or a month after the attack of apoplexy—that is to say, at the moment when the *tardy contracture* that lays hold on the paralysed members appears, but they may also show themselves at a later epoch. The tumefaction, redness, and pain of the joints are sometimes marked enough to recall the corresponding phenomena of acute articular rheumatism.

Professor Charcot,¹ in referring to the views of Scott Alison and Brown-Séquard, says:—

It is characteristic of the affection to remain confined to

the paralysed limbs and not to extend to the sound members. This form of arthritis seems to show itself chiefly in cases where the hemiplegia is consecutive on encephalitis or on brain softening. The arthritis supervenes in hemiplegic patients as a more or less direct consequence of the cerebral lesion, quite apart from all influence of gout, rheumatism, or other diathetic condition.

Again, Professor Charcot has placed on record two most instructive cases of locomotor ataxia complicated with arthropathy which I may be allowed to quote. He says:—

It is not very rare to find the spinal grey matter affected in locomotor ataxia; but the lesion is then generally found in the posterior cornua. Now it was quite different in two cases of locomotor ataxia complicated with arthropathy, in which a careful examination of the cord had been made; the anterior cornua were, in both cases, remarkably wasted and deformed, and a certain number of the great nerve cells, those of the external group especially, had decreased in size or even disappeared altogether without leaving any vestiges. The alteration, besides, showed itself exclusively in the anterior cornua, corresponding to the side on which the articular lesion was situated. It affected the cervical region in the first case, where the arthropathy occupied the shoulder; it was observed a little above the lumbar region in the second case, which presented an example of arthropathy of the knee. Above and below these points the grey matter of the anterior cornua appeared to be exempt from alteration. From what precedes I hope to have made it appear at least highly probable that the inflammatory process, first developed in the posterior columns, by gradually extending to certain regions of the anterior cornua of the grey matter was able to occasion the development of the articular affection in our two patients. If the results obtained in these two cases are confirmed by new observations we should be naturally led to admit that arthritic affections connected with myelitis, and those observed to follow on cerebral softening, are likewise due to the invasion of the same regions of the grey matter of the spinal cord. In cases of brain softening the descending sclerosis of one of the lateral columns of the spinal cord might be considered as the starting point of the diffusion of inflammatory work.

In an article in *Brain*, vol. 'xxv. (1902), entitled, "Some Observations on Primary Degeneration of the Motor Tract," by Dr. F. W. Mott, F.R.S., and Mr. A. F. Tredgold, they describe a case of chronic rheumatoid arthritis with muscular atrophy with pronounced deformities of all the limb joints, &c., and give the results of the microscopical examination of the spinal cord as follows:—

Grey matter.—In the cervical enlargement there are very important alterations in the large cells of the anterior horns. There are fewer such cells present than in the normal cord in this region, and a large number of them are seen to be undergoing a chronic degenerative change with the deposition of a large amount of pigment. In the dorsal segments examined there is not anything like the same amount of change in the anterior horn cells; here and there degenerated cells occur, but they are comparatively rare, whereas in the cervical and lumbar parts of the cord the reverse is the case, and healthy cells are in a decided minority. In the lumbosacral portion of the cord exactly similar changes occur as in the cervical enlargement—that is, many cells in various stages of degeneration are scattered throughout all the cell nests. In the cervical and lumbar enlargements there is also very considerable decrease in the fibres composing the network of the anterior horns, especially in the central portion. This change does not occur in the dorsal region.

These observations, I submit, confirm the results arrived at by Professor Charcot, and therefore support the view I have advanced as to the pathology of rheumatoid arthritis and the plan of treatment which I have based thereon.

I am, Sir, yours faithfully,

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St. James' Court, Buckingham Gate, S.W., March 17th, 1914.

¹ Lectures on Diseases of the Nervous System, New Sydenham Society, 1877, pp. 92-95. Translated by Dr. Sigerson.