

**ON SOME DISORDERS OF  
NUTRITION RELATED WITH  
AFFECTIONS OF THE NERVOUS  
SYSTEM: NEUROTIC  
DYSTROPHIES**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649275267

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Dystrophies by William M. Ord

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Cover @ 2017

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**WILLIAM M. ORD**

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NEUROTIC DYSTROPHIES**





ON  
SOME DISORDERS OF NUTRITION

RELATED WITH

AFFECTIONS OF THE NERVOUS SYSTEM

(NEUROTIC DYSTROPHIES).

BY

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AN ADDRESS IN MEDICINE DELIVERED AT THE BRITISH MEDICAL ASSOCIATION  
AT BELFAST, 1884.



LONDON:

HARRISON AND SONS, ST. MARTIN'S LANE,

*Printers in Ordinary to Her Majesty.*

L343  
065  
1885

## ON SOME DISORDERS OF NUTRITION

RELATED WITH

### AFFECTIONS OF THE NERVOUS SYSTEM.

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SUBJECTS of discourse are assuredly not lacking when an Address in Medicine is to be delivered. To me, thinking of many—for example, of subjects historical, of subjects ethical, of subjects polemical—has come the final selection of a subject which, appertaining as yet very little to any one of these categories, has for some years very largely occupied my thoughts. A few minutes after I received the honour of being invited by your President to deliver this address, I happened to meet a friend whose advice I value very much. He at once suggested that I should talk about some subject to which my thoughts had been much directed, and specified certain disorders of nutrition related with affections of the nervous system, which had certainly interested me very deeply, and were capable of general discussion. I took the advice, and set to work to write the paper. Presently I found that one subject with which I proposed to deal, the subject of chronic arthritis, was to be handled in the Section of Medicine by my able friend, and colleague in the last International Medical Congress, Dr. Dyce Duckworth, and that the influence of the nervous system on normal and abnormal nutrition was to be introduced in the Section of Physiology and Pathology by Dr.

Alexander. On reflection, I decided not to depart from my first intention. The fact that the subject which I had chosen was also in the thoughts of others promised me a critical audience ; and in the multiplying of observations, probably all regarding the questions from different stand-points, there was offered, so far, greater probability of apprehending the truth.

Let me invite you, then, to follow me in considering some perversions of nutrition of the body, or its parts, brought about, or appearing to be brought about, by the morbid agency of the nervous system.

I will ask you to let me put a sort of label on the matters of discourse, and to speak of them as Neurotic Dystrophies. They will include conditions of over-nutrition, and of under-nutrition, where the variation is of quantity rather than of kind ; conditions of misdirected or eccentric nutrition, where the variation is of kind as well as of quantity.

The little used, or scarcely recognised term, dystrophy, will, for my purpose, cover these various perversions, and the adjective neurotic will indicate the aspect from which I wish for the moment to regard them. They will not be exhaustively dealt with. This is inconsistent with the limits of an Address. I shall only discuss some three or four instances, and in discussing those shall rather review than attempt to prove. The general direction of my thoughts in relation to this subject may be best illustrated by certain neurotic dystrophies of joints and muscles.

#### MUSCULAR ATROPHY, PRODUCED BY JOINT-LESIONS.

—M. Charcot, in last year's *Progrès Médical*, has treated, with that marvellous lucidity which belongs to him, of certain effects upon the nutrition and contracture of

muscles, determined to all appearance by affections of joints. That the nutrition of the muscles of limbs in which the joints are affected by chronic and painful disease is often subject to impairment, has, as M. Charcot in his paper indicates, been long ago observed. But M. Charcot's method of treatment of the correlation gives to it a new etiological aspect. Let me quote two of his cases.

A man, aged 23, in the telegraph-service, having been previously healthy in all respects, had, about a year previous to examination, struck his right knee in jumping over a fallen tree. It is important to notice that the injury at the time did not appear to be severe, and that he walked afterwards several miles without difficulty. At length he stopped for a time, and then found himself unable to walk without a stick. For a week afterwards he kept his bed; the joint was swollen, but not very painful; and there ensued a remarkable loss of motor power in the limb.

At the time of M. Charcot's lecture on the case, the patient presented a weakness of the extensors of the legs, almost amounting to paralysis, associated with some loss of power and wasting of the rest of the muscles of the limb. While the whole limb was smaller in volume than the opposite limb, it was obvious that the anterior aspect of the thigh was most affected; the muscles of that region were limp, and presented no projection even at the moment of exertion.

Two things were then evident; paresis of the muscles of the limb generally, most marked in the triceps; a wasting of the muscles of the limb generally, again most marked in the triceps. Tested by electricity, the muscles and their nerves gave so little reaction, both to galvanic and faradic currents, that, to use M. Charcot's expression;



one would have thought that the muscles were absent. There was a simple quantitative modification of both reactions, giving rise to the conclusion that the condition was one of simple atrophy, and not of a degenerative atrophy, with which the well known "reaction of degeneration" would have been associated. To these tests M. Charcot added a third, namely, the application of the electric spark. He placed the patient on an insulated table, and connected him with a frictional electricity machine. A spark being drawn from the front of the thigh, or from the region of the vastus internus, an energetic contraction of muscles followed. Percussion of the right triceps produced an evident contraction, and percussion of the patellar tendon determined marked shocks, not only on the side of the percussion, but also in the two upper limbs, particularly in the left. There was no ankle-clonus. The muscles of the front of the right leg and calf contracted less forcibly under electrical stimulation than the muscles of the opposite side. M. Charcot states that, at the time of his demonstration, much of the loss of power had already disappeared under the steady use of electrical stimulation. Discussing the bearings of the case with the most delicate refinement of analysis, M. Charcot grasps at once the fact that the wasting and loss of power exhibited by the muscles was out of all proportion to the severity of the injury and the amount of suffering. He dismisses theories of propagation of articular inflammation to the neighbouring muscles. He dismisses the theory of atrophy from prolonged inertia; and finds himself reduced to admit the existence of what he calls a deuteropathic spinal affection, giving rise to the paralysis and to the atrophy. In the absence of the "reaction of degeneration," he finds himself unable to recognise any

indication of a serious change in the anterior horns of the grey matter of the spinal cord, and is reduced to the suggestion of a kind of stupor or inertia of the nerve-cells. He is also reduced to the explanation of the exalted tendon-reflexes by the hypothesis that, while the cells of the affected region are in a state of torpor, there is a condition of exaggerated reflex excitability in the rest of the spinal cord.

The second case is that of a hairdresser, aged 51. Here a chronic rheumatoid arthritis had affected, in succession, the wrists, the shoulders, the ankles, the knees, the hips, the elbows, the fingers to a slight degree, and the cervical articulations. There was neither pronounced inflammation nor pain; but there followed a rapid wasting and a great loss of muscular power. The wasting of muscles was unequal, falling chiefly in the extensors of the limbs. These showed the same loss of sensibility to electrical stimulation which had been observed in the other case, with one exception: the right vastus externus presented the reaction of degeneration. Many of the atrophied muscles were the seat of fibrillar contractions. Some of them, the left deltoid in particular, were excitable by simple percussion. The loss of power was in excess of the wasting. The tendon-reflexes were again strongly accentuated. To the conditions here enumerated M. Charcot adds, from observation of other cases, "contracture," tonic contraction of certain muscles, chiefly of flexors.

Summing up these and other cases, M. Charcot argues that the paresis, wasting of certain muscles, contractures of certain muscles, and the other associated symptoms, indicate an influence propagated from the affected joint or joints, incident on the spinal cord, and thence reflected

to the muscles, giving rise in the one set of cases to contracture, where exaltation of function must be supposed, in another set of cases to wasting, where depression of function must be supposed.

If we accept M. Charcot's conclusions, we have in this group of cases a dystrophy of muscles, brought about by irritation commencing in joints more or less related with those muscles, propagated through centripetal nerves to the spinal cord, and reflected thence by centrifugal nerves to the muscles.

M. P. Berger has related for us some cases presenting the converse of the observations of M. Charcot just related. In M. Berger's cases, fracture of the upper part of the femur near the hip-joint was followed by arthritis of the knee; not attributable in any way to extension of inflammation through the intermediate tissues. M. Berger's observations would lead to the establishment of the possibility of a reflex influence reversing the path of the influence just quoted. In other words, we have before us observations suggesting that joints being inflamed may, by a reflex influence, give rise to dystrophies of associated muscles; and that bones and surrounding textures being injured may give rise to dystrophies of the neighbouring joints. Such considerations carry us on to search for the middle term; to examine if there be any evidence indicating a direct morbid influence of the spinal cord on the nutrition of the component parts of limbs in common; and secondly, they may lead us to inquire whether the nutrition of joints and other parts of limbs may be affected by influences propagated from viscera; that is to say, from parts which are not components of limbs.