GULSTONIAN LECTURES

ON

CERTAIN POINTS IN THE STUDY AND CLASSIFICATION OF DISEASES OF THE NERVOUS SYSTEM.

Delivered at the Royal College of Physicians.

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LECTURE III.—ABSTRACT.

FROM the point of view of Tissue-changes, the Lecturer first considered the influence of the kind of lesion on the *condition* of muscles affected. Spasm, and even convulsion, are more liable to occur after or during recovery from hemiplegia, when the palsy has been caused by embolism, than when it has been caused by clot. Then the palsy in epileptic hemiplegia from syphilis, is often varied by fitful jerks, and by movements something like those of chorea. The affection of speech from clot, which usually destroys locally, is generally loss of power to talk; plugging of vessels, which may impair widely, often leads to a disorder of speech; tumour, which squeezes slowly, even when in "Broca's region," may lead to no defect of speech. The age of the patient—saying nothing of the greater "excitability" of the nervous system in early life (greater instability of nervous matter)—makes a difference in the *condition* of muscles affected. Thus contracture, chorea, and paralysis agitans, affect particular periods of life, whilst occasional spasm (convulsion) occurs at any period of life. The nervous organs, especially those governing muscles which have most varied uses, are, doubtless, in different physical conditions at different ages, from different degrees of "education." The less frequency of coarse disease of the brain in children, such as syphilitic disease, effusion of blood, and the absence of particular habits and vices at the earliest period of life, will account for some differences. The occurrence of "infantile palsy" in early life only leads the Lecturer to think that there is incomplete neurification, probably from imperfect arterial integration.

He next mentioned that certain changes seem, so to speak, to prefer particular localities. He had never seen hæmorrhage limited to the cord, to the cerebrum above the ventricles—to the cerebellum, or to the crus cerebri; once only limited to the medulla oblongata, often in the pons Varolii, very often in the corpus striatum and thalamus opticus. He had seen abscess in the cerebrum and cerebellum, but never in any part of the motor tract. The geographical limitation of abscess depends, however, on the fact, that disease of the cranial bones is usually of the vertex, or in the temporal bone. The occurrence, in chronic cases, of occasional vague seizures, often called "epileptic," in association with discharge from the ear, leads the Lecturer to think that minute changes are propagated in venous regions, as are the grosser changes of abscess. Syphilis follows the order of connective tissue, and thus we infer syphilis when we meet with disorderly groupings and disorderly successions of nervous symptoms, such as palsy of the third nerve with a convulsion, or with hemiplegia of the same side. Intracranial tumours grow almost anywhere, and produce symptoms in one or more of three ways. 1. They squeeze, and thus produce palsy of cranial nerves. Tumours of the cerebellum (case related) produce disordered gait by squeezing the pons, crus cerebri, and crus cerebelli. The rapidity of pressure is the important matter. If very slow pressure be exerted, there may be no obvious symptoms when parts are much deformed; and in rapid pressure, as occurs in cases of meningeal hæmorrhage, from bursting of a cerebral aneurism, death will happen very quickly—even in five minutes. He thinks the slowness, or even entire absence of, symptoms in some cases of extensive disease in the cerebral hemisphere, especially such as abscess, may be in part accounted for by the very gradual increase of the pressure. 2. Tumours cause secondary changes, e.g., optic neuritis, and those changes on which convulsion, "brain-fever," etc., depend. 3. Vascular tumours occasionally kill by hæmorrhage. The Lecturer related several cases of this kind. Sometimes, no recognisable symptoms are produced by intracranial tumour. A case of tumour of both cerebellar lobes was related, in which there had been no motor symptoms referable to the cerebellum. The middle cerebral artery is said to be more often plugged than any other cerebral artery. But symptoms of plugging of the other cerebral vessels—excepting the arteria centralis retinae—are not yet known. Symptoms implying *loss* of function, e.g., unioocular amaurosis, hemiplegia, and loss of speech, are often ascribed to plugging, whilst *disorders* of function, e.g., convulsion, chorea, and

mania, are mostly considered to negative plugging of vessels, even when in the latter, as in the former class of cases, the condition for embolism is equally present, and even when the disorder of function is followed by loss of function, as when hemi-chorea becomes hemiplegia. Since plugging of small arteries may cause hyperæmia, the Lecturer thinks it is not unreasonable to expect "increased expenditure" of force to occur when the arteries plugged are small, and have free anastomoses.

Plugging of arteries occurs from syphilitic nodes of arteries (Wilks), and thus, syphilitic hemiplegia so arising, is only indirectly syphilitic. For the *real* change on which the palsy hangs in such cases is not the syphilitic disease of the vessel, but softening of the corpus striatum, consequent on blocking of that vessel's channel. Two other kinds of syphilitic hemiplegia—the second from growth of a nodule in the motor tract, the third "epileptic" occurring with disease of the surface of the hemisphere—were considered, as also syphilitic palsies of cranial nerves and "syphilitic epilepsy," in order to shew that the therapeutics of syphilitic affections of the nervous system are markedly successful only in *recent* cases of "effusion of lymph," e.g., recent palsies of cranial nerves, and rarely in the several varieties of hemiplegia and of convulsion. He instanced a case of recovery, without drugs, from hemiplegia, due to blocking of the middle cerebral artery at a point where the vessel was narrowed by an encircling node. Recovery from convulsions, or from epileptic hemiplegia caused by syphilis, is, he thinks, doubtfully due to the iodide of potassium administered. He thinks the bromide of potassium keeps off the fits better than the iodide in "syphilitic epilepsy;" yet iodide of potassium should be given for at least six months whenever a patient suffers from any kind of syphilitic nervous affections, in order to stop any new changes which may be, for instance, slowly damaging the vessels without at first causing any obvious symptoms.

He instanced cases of recovery from hemiplegia, presumably owing to embolism from heart-disease, and to clot. He thinks that rapid recovery from, and frequent variation in, symptoms occur with limited organic disease of the motor tract, and very often with extensive organic disease of the cerebral hemisphere.

PROFESSOR HUXLEY'S HUNTERIAN LECTURES ON THE ANATOMY OF THE VERTEBRATA.

Delivered at the Royal College of Surgeons of England.

LECTURE III.

THE two distinct layers (serous and mucous), together with the intervening so-called "intermediate layer", having thus come in the place of the cicatrícula within twelve hours of incubation, the next process is the formation of what is called the "axis-band." This appears at about fourteen or fifteen hours after incubation has begun, and is produced by a coalescence or fusion of the several layers along a line traversing the oval space or lamina, in a direction at right angles to the long axis of the egg. From the serous layer are undoubtedly formed the epidermic structures and the cerebro-spinal nervous centres. From the mucous layer is formed the epithelium of the alimentary canal, and of all the glands directly connected with it. From the intermediate substance (termed vascular layer by Baer) are formed the muscles, the structures formed of connective tissue, and the vessels.

The first obvious indication of the future embryo is a faintly marked longitudinal groove traversing the outer surface of the oval lamina, in the direction of the axis-band. This primitive groove is, moreover, the first sign of the future embryo in every vertebrate animal, without exception.

While this longitudinal depression is being formed, its margins are simultaneously elevated; and the elevation not only of the serous, but also of the intermediate layer, on each side of the groove, continues until the two rising folds (dorsal laminae) meet above in the middle line, and thus gradually convert what was a groove into a closed canal. As the serous layer extends continuously over these elevating folds or laminae, it comes to pass that, when the latter coalesce, that part of the serous layer which was on the inner side of each fold comes to form a lining membrane to the canal produced in the way just mentioned. This lining membrane thickens, and here is produced the cerebro-spinal axis; the cavity still left within such thickened lining of the longitudinal canal being, in fact, the canalis centralis of the cerebro-spinal nervous axis. While these ascending folds (dorsal laminae) thus rise and form the superior cylinder of the vertebrate structure, the other folds (ventral laminae)