

or intellectual. In short, we are following out the almost necessary consequence of Broca's one fact, to wit.: that if one function be isolated in connection with one centre, then the others must be also.

Do not misunderstand this isolation of functional connection. The simile has been well used that the skull contains, like the abdomen, not one organ, but many; yet the fact should not be lost sight of that these many organs are related to each other in the most intimate manner. Consider the enormous mass of white matter which a transverse section of the brain just at the level of the corpus callosum shows; this white matter represents an infinite number of nerve fibres, of connecting paths; a moment's consideration will prove to you that only an insignificant portion of these paths can be for the purpose of conducting impulses either from the cerebrum to the body, or from the surfaces of the body to the cerebrum; for, note, what a little mass of white substance is revealed in a cross section of the medulla oblongata. Now, this mass of white substance called the centrum ovale represents the enormously complex means by which the various centres are related each to each other; so that while we rightly designate certain tracts as motor, others as sensory, or others as psychic or mental, yet each centre acts, influenced by some other, in a greater or less degree.

When the burned child dreads the fire, his mental condition called "dread," involves the centres of sensation which were once so pungently excited by contact with the stove, the centres for sight still retain the impression of red-hot iron, and the motor centres, I doubt not, retain enough of memory that they would on a second occasion withdraw the hand more rapidly than on the first occasion. All of these centres and more, are probably bound together when the child dreads the fire.

These preliminary thoughts upon cerebral localization lead, not unnaturally, to the subject in hand, that of cortical (or, as it is often, and, as I conceive, unfortunately, called Jacksonian) Epilepsy. Various experiments had led up to a very exact localization of the centres for the arm, hand, leg and face, and these experiments, necessarily performed upon the lower animals, awaited further proof before the results could be held true of the

human brain. The proofs were soon afforded by pathological experiment. Nature performs the experiment which we could not at first do. If along the fissure of Rolando, in man, there are motor centres like those proven to exist in the monkey or dog, then if these isolated areas are diseased, we should find corresponding evidences of alteration of function; or if destroyed, a corresponding loss of function. A mass of such evidence demonstrates the truth of the theory. The especial characteristic of cortical Jacksonian Epilepsy is this, that the convulsion is a partial or local convulsion. (The term epilepsy is here restricted to its original meaning of a motor disorder.) In some cases the convulsive movement is, and remains limited to a small group of muscles; the convulsions recur after the periodical manner of epilepsy; they are frequently preceded by a sensory discharge or aura, as in ordinary epilepsy, although the sensory discharge like the motor in such cases, tends to be of limited area; consciousness is frequently unimpaired, so that the patient is an interested and intelligent spectator of his own involuntary performance. Such is a typical limited cortical epilepsy; from this there are all grades in the extent of the symptoms up to a complete epileptic seizure with general convulsion, total unconsciousness and subsequent transient coma. It is both interesting and instructive to note how in some individuals the convulsions, may vary. For instance, a robust young woman under my care has at times, a convulsion in her leg only. If the discharge is more severe the convulsive movements of the leg are more pronounced, and the arm of the same side is involved; if still more severe, the opposite side of the body is involved; there seems always to be a proportion between the intensity of the discharge and the extent of brain matter involved; but even in severe and widespread seizures it can be distinctly traced how the convulsion always begins in the same leg.

Here let me give you, in passing, this suggestion; you will constantly see in your medical journals, and will, I have no doubt, yourselves, publish curious, rare or unusual facts which come within your observation. It is quite right and helpful that these "curiosities" should be recorded, but always remember that it is not simply because a thing is strange, or, according to a favorite phrase, "unique," that it deserves publication,