

this and that group of muscles into action. Much light is at present being thrown upon this subject by the researches of Hitzig, Fritsch, Ferrier, Goltz, and others; but we must pass on to consider that function of these great nerve-centres with which we shall henceforth be exclusively concerned, the function, namely, of being associated with the phenomena of Mind.

As the cerebral hemispheres pretty closely resemble in their intimate structure ganglia in general, there can be no reasonable doubt that the mode of their operation is substantially the same; and as such operation is here attended with the phenomena of subjectivity, there can be equally little doubt that such phenomena must constitute a sort of obverse reflection of ganglionic action. Looking, then, upon this obverse reflection, can we detect any fundamental principles of mental operation which may reasonably be taken to correspond with the fundamental principles of ganglionic operation?

The most fundamental principle of mental operation is that of memory, for this is the *conditio sine quâ non* of all mental life. But memory on its obverse side, or the side of physiology, can only mean that a nervous discharge, having once taken place along a certain route, leaves behind it a molecular change, more or less permanent, such that when another discharge afterwards proceeds along the same route, it finds, as it were, the footprints of its predecessor. And this, as we have seen, is no more than we find to be the case with ganglionic action in general. Even long before movements involving muscular co-ordination have been repeated with sufficient frequency to become consolidated into one organized and indissoluble act, they become, in virtue of the principle which I have termed the principle of use, more and more easy to repeat; in all but in the absence of a mental constituent the nerve-centre concerned *remembers* the previous occurrence of its own discharges; these discharges have left behind them an *impress* upon the structure of the ganglion just the same in kind as that which, when it has taken place in the structure of the cerebral hemispheres, we recognize on its obverse side as an *impress* of memory. The analogy is much too close to be attributed to accident, for it extends into all details. Thus, a ganglion may *forget* its previous activity if too long an interval is allowed to elapse