

THE PHYSICAL BASIS OF KNOWLEDGE.

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LOCKE, long ago, said that all our knowledge came from experience. Kant, at a later date, said that all our knowledge came by experience, but was not all from experience. There is a wide difference between the two positions. I am not going to trouble the reader on the present occasion with any discussion on what the mind is, but rather how the mind acts, by what channels it receives its knowledge of the external world, and in what way the teachings of Locke and Kant have truth in them, by giving a certain amount of credit to experience,

Astrology was very crude astronomy, but it had its value by directing men's thoughts to the stars. Alchemy and the search for the philosopher's stone were crude notions of chemistry; but they have had their place in turning the attention of bygone observers to the properties of compounds and elements. Phrenology was crude psychology, but it too was not without its value, as it had the effect of fixing the keen eyes of many an anatomist and physiologist upon the shape and actions of the human brain.

The gropings of Goll, Lavater and Spurzheim on the brain should not be rejected with a toss of the head, or a wave of the hand. What they thought and said about certain faculties being located in certain portions of the brain was far astray; yet it had the effect of exciting curiosity and stimulating research that swept away their views and replaced them by the later and scientific teachings of Munk, Hitzig, Ferrier and many others. The views held and taught by the earlier observers, that such faculties, or qualities, as love of home, self esteem, veneration, were located in certain parts of the brain, and that their degree of

development and activity could be determined from certain bumps, or elevations, on the surface of the skull, have been shown to be utterly false to the facts, and to have no foundation whatever to rest upon; but the later views that a certain portion of the brain is the centre for hearing, another for sight, a third for taste, and a fourth for speech, have taken their place, and now rest on a solid foundation of thoroughly attested facts.

The brain, and the nerves passing from and to it, taken together, constitute the physical basis of knowledge, and are the agencies by which the mind is brought into contact with the outer world. The scientists who deny the existence of brain centres endowed with special powers are now very few and fast disappearing. Their teachings are no longer of any weight, and are treated with a smile of ridicule and contempt, if not actually with pity, by those who have taken the trouble to keep themselves familiar with the advances in the anatomy and physiology of the nervous system of man that have been made since the days of Flourens.

Laying it down as a postulate that the nervous system, and especially that portion of it known as the brain, is the organ of the mind, the next task is to ascertain in what way this nervous system becomes the medium for carrying information, so that the words of Emanuel Kant may hold good, "that all our knowledge comes by experience." This is the task that I have set before me in this article. I shall show how impressions of different kinds reach the brain, to what portion of the brain they are conducted, how these different portions of the brain are linked together, and how disease,