

the "product" of the nervous mass of the brain in any sense of the word corresponding to that which we rightly apply to the various secretions of the body, involves us at once, it is held, in the grossest absurdities; while the theory that claims that *all* mental phenomena, whatever their varied characteristic shading, have exact equivalents, as it were, in specific forms of the nerve-commotion of the living brain is marked by its "surprising audacity." "Standing on a slender basis of real fact, it makes a leap into the dark which carries it centuries in advance of where the light of modern research is now clearly shining." The author, however, by no means rejects, he strongly contends for, a causal nexus as existing between brain and mind. He regards the term organ (or instrument) of the mind, as applied to the body, as particularly calculated to emphasize the relation of the ideas and volitions which arise in consciousness to the control of the muscular apparatus. He will have nothing to do with monism, but contends that psycho-physical science, simply observing the facts and building on them, establishes the dualism of brain and mind. "We affirm, then," he says, "that we are entitled to say: The changes of the brain are a *cause* of the states of consciousness; and the mind behaves as it does behave, *because* of the behaviour of the molecules of the brain." "We affirm also that we are equally entitled to say: The states of consciousness are a cause of the molecular condition and changes of the nervous mass of the brain, and through it of the other tissues and organs of the body."

So far, in dealing with the third part, we have perhaps made it appear that, in the author's view, the correlation is complete. And the passages we have quoted seem to justify this view. But many other passages reject such an interpretation with scorn. "In investigating the correlations which undoubtedly exist between the nervous mechanism and the phenomena of consciousness, it is found that some of these phenomena imply activities of the mind which do not admit, in any sense of the word, of being thus correlated." "Judgment itself is a form of mental phenomena for the essential part of which no physical equivalent can be discovered or even conceived of." "To account for this boundless expansion of the activities of consciousness (in the early years of childhood), with its surprising new factors and mysterious grounds of synthesis and assumption, by proposing an hypothesis of 'dynamical associations' among the particles of nervous substance in the brain, is a deification of impotency." "Not one of the higher acts of feeling, knowing, or willing, so far as its *sui generis* character is concerned, admits of being correlated with, or represented under, any of the conceivable modes of the motion and relation of molecules of nervous substance."

It would seem, then, that the author plays rather fast and loose with this correlation, as indeed is apt to be the fashion with dualists. We doubt whether he is justified in saying that psycho-physical science establishes the dualism of brain and mind. Here, it seems to us, the writer's usual caution forsakes him. Idealism, materialism, occasionalism, dualism, monism, are none of them theories that are in any likelihood of being "established" for many a long day. They are of the nature of *beliefs*; and strong as is his advocacy of the dualistic creed the

author falls into error if he dreams of its speedy establishment. We could wish that he had squarely faced the difficulties which the acceptance of the dualistic hypothesis entails, a few of which are but barely mentioned on page 597. These and many others may not be difficulties to him; but surely he who would establish a doctrine should meet half-way such difficulties as are likely to trouble unbelievers. We could wish, too, that he had given us a more detailed criticism of the monistic creed which he rejects. To ask *why* the double-faced unity (the human being) manifests itself both in physical and mental states—"one being, in two wholly incomparable modes of manifestation"—and to say that monism has to undertake the task of showing *how* the one reality can appear under these two phenomenal forms of being—matter and mind—is surely not a very powerful or acute criticism. There are many *hows* and *whys* which can only be answered by quietly pointing to the facts. We do not say that monism can in this way be "established"; but we regard the criticism as weak.

Nor are we impressed with the force of the argument upon which so much stress is laid, that for certain higher mental activities no physiological correlate can be conceived. It seems to us that, if anywhere, the inconceivability comes in at the very beginning. If once the conceivability of a correlation between a nerve-commotion of any kind and a state of consciousness be admitted, there need be no further talk of inconceivability in the matter. *There* lies the rub: elsewhere we only find questions of degree and of relative complexity.

We cannot take leave of this valuable and important work without expressing our sense of its ability, its thoroughness, and its candour. There is no other book in the English language that covers its ground.

C. LL. M.

OUR BOOK SHELF.

The Essentials of Histology. By E. A. Schäfer, F.R.S. Second Edition. (London: Longmans, Green, and Co., 1887.)

THIS edition is, in several respects, an improvement on the first. The volume is less bulky, and there are some useful additions to the text so as to bring this up to date, especially as regards the methods of histological study. There are seventeen valuable illustrations added. The omission in the first edition of references to the authors of the illustrations has, we are glad to see, been corrected in this edition.

On the whole, we think the book a clear exposition of the present state of human histology, and, as such, it will prove useful to students and teachers. E. KLEIN.

Aluminium: its History, Occurrence, Properties, Metallurgy, and Applications, including its Alloys. By Joseph W. Richards. 12mo, pp. 346 (Philadelphia: Band. London: Sampson Low and Co. 1887.)

THIS volume is mainly a compilation based upon the late H. St. Claire Deville's treatise published in 1858, and the newer work by Dr. Mierzinski in Hartleben's "Chemisch-Technische Bibliothek," which appeared in 1883. As no special work on aluminium had previously appeared in English, we agree with the author that no apology is necessary in presenting it. The subject has been systematically treated both from the scientific and