PSYCHOLOGICAL LITERATURE.

The Groundwork of Science. A Study of Epistemology. ST. GEORGE MIVART. The Science Series. New York, G. P. Putnam's Sons; London, Bliss, Sands & Co. Pp. xviii+328.

The term science is used in this work with an ambiguous meaning. At times the author employs it in the general etymological sense to cover all forms of systematic knowledge and inquiry. For the most part, however, he means by it the empirical sciences, divided into two classes, those which relate to the physical world and those which have to do with the inner, psychical life. The aim of the work is to investigate the principles which lie at the basis of 'science,' and so the inquiry becomes an essay in general epistemology, with particular reference throughout to the noëtics of science in its more narrow and technical significance.

The psychological foundation of Professor Mivart's theory of knowledge is a sharp distinction between the lower and higher faculties of knowledge. The former belongs to animals as well as man, and the harmonious working of its several subordinate processes ('consentience') enables the brute to manifest phenomena which resemble the results of man's higher psychical activities without in the least being the same as these. The human infant, it is true, in many respects is not unlike the animal, but the likeness is superficial, since, in reality, there is a great gulf fixed between the two orders of consciousness. Latent in the mind of the child lie the germs of his future thought; but the animal is limited to his lower level, with no hope of future development. Moreover, those who maintain that the higher faculty in man has been reached by a process of natural selection are in error; for natural selection has no power in itself to bridge a gap 'in kind,' and the truths which are attained by means of the faculty in question are in the great majority of cases such as 'never could have given their possessors an improved chance of survival' (pp. xiii., 272 ff.).

This higher faculty of knowledge is described in a variety of ways. It is 'intellectual,' in distinction from sensuous, 'perception;' it is the source of 'intellectual conceptions;' it is intellectual intuition; it is

reflex self-consciousness; it is the power of cognizing relations; above all, or rather in all, it is the source whence we derive the primary and self-evident principles which form the ultimate premises of all ratiocination and without the support of which science, like knowledge of every kind, becomes an impossible dream. As these original intuitions are considered by Professor Mivart the foundation of all thinking, he is careful to repeat his summary of them at various points in his work. The briefest statement of the list is as follows:

"The existence of certainty; the existence of an external world; our continuous substantial existence; the validity of the process of inference; the self-evidence of some truths; the principle of contradiction; the evidence of axioms; the principle of causation; the uniformity of nature; and the existence of necessity and contingency" (p. 310).

Chief among these, at least in the amount of energy expended in its defense, is the second, which is stated more in detail on page 106: "An external, objective world exists and is truly apprehended by some of our intellectual acts, an absolutely certain knowledge of objectivity being afforded us through memory, which reveals to us real existence external to all our present experience." The entire third chapter of the book is devoted, in the spirit of this principle, to the refutation of idealism. The argument is vehement and decided, although it is not till a later stage in the inquiry that the Berkeleyan is classed with the insane, for the author believes that physical science is possible for those who accept idealistic views only because a beneficent nature has endowed them with faculties that guide them aright in spite of their speculative vagaries. Nevertheless, it would be difficult to maintain that Professor Mivart's discussion furnishes many new weapons with which to repel the idealistic attack. In fact, it is doubtful whether he clearly distinguishes between empirical idealism and metaphysical idealism; and it is certain that, confident in the *a priori* arguments, he fails to avail himself of the realistic implications with which modern physical science abounds.

In the last two chapters of the work we come in sight of a theistic capstone for the epistemological edifice; while the last of all, with the same title as the whole book, brings a short consideration of the metaphysics of science (force, energy, time, space, etc., p. 297 ff.).

The type of philosophy thus presented is so familiar that no extended critique is demanded. The way in which it is presented, however, calls for rather more attention. The following quotation may serve as an example of the care with which the argument is conducted,

for it is scarcely to be credited that it is a fair specimen of the author's philosophical erudition :

"For the whole of the philosophy of Germany and Holland, from Spinoza to Hartmann, has been a result of the mental seed first sown in men's minds by Berkeley, who explicitly produced what was implicitly contained in Locke" (pp. 40-41).

Here are two examples of accuracy in reasoning about the subtlest epistemological questions :

"Though we are for the most part content to act on reasonable probabilities, yet certainty attends us at every turn. * * * If we find, on returning to our library, that a window which we had carefully closed before starting, is open, we are quite sure that some one must have opened it" (p. 98).

"The first and most important of these" [self-evident] "principles is the perception of the reality of existence—that which we perceive to exist evidently does in truth so exist. This is often expressed by the formula '*A* is *A*' * * *" (p. 242).

Finally, we may cite one or two instances of philosophical humor such as rarely lighten the labors of the epistemological student :

"To the other idealistic extreme, that by Hume, we will sacrifice no space, for, in spite of its author's acuteness and great ability, it does not really admit of logical statement, so utterly incoherent is it, and so confident are we that its ingenious author had no belief in it himself, but was laughing in his sleeve at his inept admirers and disciples" (p. 83).

And this, in criticism of Mr. Spencer's assertion of our anthropomorphic interpretation of physical causation :

"Surely greater nonsense has rarely been written. Let us suppose the partly-sawn-through tree to be not even touched by us, but that a gale has sprung up which, after having swayed it to and fro, breaks it off and prostrates it, just as we have supposed it prostrated by human efforts. Are we not then to say that the wind has exerted as much force as was ours? Can we not say this confidently, without being such idiots as to attribute 'feelings' to the wind?" (p. 261).

These, it is true, are among the most striking illustrations of the style of the work. But they are not isolated cases. And, in spite of the learning and insight which are evidenced in this as well as in the other products of this well-known author's pen, it is to be regretted that the philosophical volume in a scientific series should itself be so unscientific in character.

A. C. ARMSTRONG, JR.

WESLEYAN UNIVERSITY.