

*Erkenntnistheoretische Grundzüge der Naturwissenschaften.* Von Professor Dr. P. VOLKMANN. Leipzig, Teubner, 1896. 8vo, xii + 181 pp.

For centuries the study of the various forms of knowledge was not differentiated. When the division was made the natural tendency was to go to an extreme. It must be acknowledged that the history of philosophy, in particular metaphysics, is a propædeutic to the study of all science. Until quite modern times mathematical reasoning was in nearly every case bound up with physical reasoning and it is only in most recent days that the idea has prevailed that mathematics forms a subject which is more intimately connected with logic than with other divisions of knowledge. From the connections with physics and logic it is obvious that the terminology of mathematics can only be understood by one with at least a certain knowledge of the methods of reasoning of the natural sciences and of the connotation of the words used in those sciences. This is so well understood that the language of several of the leading mathematicians of Germany and France has been enriched by words drawn from mechanics. The relation of mathematics to both metaphysics and physics justifies the mathematician in taking an interest in the book in hand, as in fact in every book of the kind since the time of Mill.

Dr. Volkmann, professor of mathematical physics at the University of Königsberg, is particularly qualified to set forth the principles of the middle ground between science and philosophy. Two quotations will indicate the scope of the book: "The discussion here is directed less to colleagues in one department than to the cultured public with scientific interests." "We may be the best logicians without progressing a single step in knowledge; possibly exactly this wish to be such good logicians prevents us from making progress in knowledge. The difficulty of a cognition does not at all lie in the difficulty of correct reasoning, it lies rather in the mode and manner of acquiring and sifting truly appropriate material, it lies also in the management of the inflexible material with which our praised and omnipresent logic has to work."

In a terse and interesting way Professor Volkmann leads up to the treatment of induction and deduction. He then takes up what he calls "Isolation" and "Superposition." Each phenomenon of nature is a composite made up of elements. The ability to isolate these elements so that they may be studied separately, and then the ability to