

PSYCHOLOGICAL LITERATURE.

A Course in Experimental Psychology. By EDMUND C. SANFORD, Assistant Professor of Psychology, Clark University. Part I.: Sensation and Perception. Boston, D. C. Heath & Co. 1898. Pp. 449.

The final appearance of Dr. Sanford's 'Course in Experimental Psychology,' even though the volume is to be known as Part I., is an event which psychologists, and particularly American psychologists, are certain to greet with pleasure and approval. Nothing of this kind seems to have been attempted as yet in any other land, and, although Professor Cattell has for some years announced the preparation of a similar handbook, and Dr. Scripture has recently published some laboratory directions, the honor of producing the pioneer work in this field belongs to Dr. Sanford. The need for such a laboratory manual is probably a distinctively American need, for in this branch, as in others, American educational methods insist much more thoroughly upon systematic guidance and direction of the student than is customary in other lands. The practice course which aims to give an intimate acquaintance with the methods and material, the fundamental facts and demonstrations of the science; in brief, the use of the laboratory as a pedagogical influence rather than as a research-room, is an institution which promises to become increasingly popular and useful in our colleges and universities. It is gratifying to record that the psychological laboratory is now recognized as worthy of equal consideration with those connected with other sciences, both in intrinsic interest and in educational value. The same can hardly be said regarding completeness and appropriateness of equipment, or a highly desirable consensus as to what is fundamental in method or content. The recentness of the establishment of the psychological laboratory as an educational factor is a sufficient excuse for this shortcoming; but the defect cannot be outgrown by time alone. It requires time and wisely directed effort. It is as the most distinctive contribution to such effort, wisely directed, that Sanford's 'Course in Experimental Psychology' merits widespread recognition.

The volume consists of upwards of three hundred pages devoted to the senses, with an additional hundred pages containing a chapter

on the psycho-physic methods and a chapter on apparatus. Each chapter is supplemented by a well-selected list of references for further study. The senses are taken up in the order of 'The Dermal Senses' (20 pages); 'Kinæsthetics and Static Senses' (18 pages); 'Taste and Smell' (5 pages); 'Hearing' (31 pages), and 'Sight' in three chapters, containing in all 224 pages. The three chapters are devoted to an account of the mechanism of the eye (38 pages), to the sensations of light and color (45 pages) and the several factors of the visual space perceptions (141 pages). The second part of the volume is to contain chapters on 'voluntary movement, memory, attention, emotion and other complicated mental states, in so far as they are open to experiments of moderate difficulty.' This distribution of topics is interesting as reflecting the perspective of the experimental aspects of the subjects considered. It indicates that it is in regard to the fundamentally acquisitive mental functions, connected in many cases with well-determined physical and physiological processes, that experiment must ever find its most suitable material. The student will hardly derive from this emphasis an exaggerated notion of the importance of sensation in the mental life, for it is the instructor's province to profusely illustrate and interpret the experiments in the light of the perceptive and assimilative processes which they so largely involve; for, as the author remarks, "it is evidently impossible to take out any sort of mental phenomenon for entirely independent examination," and the instructional course which accompanies the laboratory practice is the place where the original setting of the sense experiences must be properly delineated. The point of view determines the result quite as much as the composition of the scene, and whether these experiments become mainly a special physiology of the senses, or a detailed course in the peculiarities of human sensation, or a general illustration of psychological processes, will depend upon the skill of the artisan. The material has been judiciously selected, well arranged and intelligently presented; different builders will use it very differently.

The author himself acknowledges that it is likely that he offers 'a superfluous liberty of selection;' the *embarras des richesses* is in itself no disadvantage unless it leads to confusion and an obliteration of fundamental principles by a multitude of details. The simplest apparatus that illustrates the principle (considerations of accuracy are disregarded for the moment) is the best, and the simplest experiments should in some way be assigned a more fundamental place than the others. In the pursuit of fifty pages of optical illusions even a very discriminating student may lose his way without careful guidance between the

highways and the byways. This defect, if defect it be, increases the responsibilities of the instructor, and urges the necessity of differentiation between fundamentals and accessories, as well as between a mere description of an experiment and its interpretation.

Viewed in its entirety the volume must unhesitatingly be pronounced to be a highly successful achievement of a highly difficult task. It is doubtless a much simpler as well as more agreeable undertaking to prepare a text-book in psychology than it is to sift out from endless sources and combine into a substantial compilation the facts upon which so much of psychological interpretation rests. It is particularly difficult to undertake this without guides or precedent; the successful achievement is the more notable by reason of the inherent difficulties. The present writer has used the manual in various stages of incompleteness as it appeared in the *American Journal of Psychology* and in advance sheets, for about five years in practical class-work and demonstrations, and is thus able to add to his appreciation of the scholarship of the compilation his verdict of its practical utility.

JOSEPH JASTROW.

Handbuch der physiologischen Optik. H. VON HELMHOLTZ. Zweite umgearbeitete Auflage. Hamburg und Leipzig: Leopold Voss. 1896.

This is a very difficult book to review. Whenever one takes it up it is impossible not to be struck by some fascinating page which one has either not read before or not fully felt the meaning of, and that is an end of the critic's state of mind. But, in fact, there is no need of putting oneself into the critical frame of mind in noticing the new edition of the *Physiologische Optik*. With the completed volume before one, nothing but admiration can be felt for this model of the scientific method and the scientific spirit which has set a standard not easy to be reached again by the master of any science. Professor James has given expression to the common feeling in regard to this great work when he speaks of it as "a book which, on the whole, I imagine to be one of the four or five greatest monuments of human genius in the scientific line." The term genius is well chosen, for genius may be taken as connoting not simply great intellectual powers but a fusion of the quality of greatness in every element of the human being to whom the epithet is applied. It has lately been said by an acute observer that there is a common quality in the work of Darwin and that of Helmholtz, and a quality which is not only of the intellect, but of the spirit as well. Both writers have not only a complete mastery