

PSYCHOLOGICAL LITERATURE.

JUDD'S PSYCHOLOGY.

Laboratory Manual of Psychology. CHARLES HUBBARD JUDD, Professor of Psychology and Director of the Psychological Laboratory at Yale University. New York, Scribner, 1907. Pp. 124.

Laboratory Equipment for Psychological Experiments. C. H. JUDD. New York, 1907. Pp. 252.

These constitute volumes two and three of 'a series of text-books designed to introduce the student to the methods and principles of scientific psychology.' Volume one has been reviewed in this *BULLETIN*, April 15, 1908.

Volume two contains directions to students for the performance of twenty-five typical exercises in experimental psychology. Volume three, which is virtually an instructor's manual, contains an account of the apparatus which may be employed for this purpose, and a list of demonstrations to accompany volume one. The two laboratory volumes have been purposely dissociated because the same exercise may be conducted with a variety of apparatus, and the selection of this apparatus is left, in the main, to the instructor.

The general plan for the use of the course is as follows: the exercises are undertaken only after an introductory course in psychology, and are executed preferably by the group method, *i. e.*, small classes or sections of large classes work, usually in pairs, upon the same problem at the same time, and meet subsequently for the comparison and discussion of their results. Each exercise is designed to occupy one laboratory period of two to two and a half hours. The student finds in his manual a brief statement of the purpose of the exercise, and a very general account of the conditions under which the observation is to be made. The instructor supplies the needed materials and explains the use of the apparatus. After the exercise is concluded, the student attempts to answer a number of questions found in his manual. He may also undertake related problems which are sketched for each topic, and may seek further enlightenment on the problem by use of the one or two reading references which conclude the exercise.

The twenty-five exercises fall roughly into four groups — ten exercises upon sensation and perception, of which the first five deal with

vision, seven exercises upon movement and action, one of which is devoted merely to the acquisition of technique, three exercises upon practise, distraction and fatigue, and five exercises upon the 'higher' mental processes, such as memory, attention, esthetics, etc. In contrast with most laboratory manuals, the first exercise is a *quantitative* study of visual *perception* — the Müller-Lyer illusion: this exercise is put first because it is judged to be typical of laboratory psychology, to be well adapted to quantitative work, and to be productive of closely similar results for all observers. The remainder of the exercises upon vision deal with indirect color vision, after-images, color mixture, the monocular estimation of size and distance (accommodation), and binocular space perception (double images, stereoscopy, fusion and rivalry). There follow two exercises in audition (binaural localization, fusion, pitch discrimination, 'interval sense'), two exercises with cutaneous stimulation (punctiform stimulation, localization, and esthesiometry), and an examination of sensation intensities (Weber's law and the limen for auditory acuity) during which the student is introduced to the more familiar psychophysical methods.

The second group of experiments begins with the technique of the graphic method, and then treats of the alteration of circulation and of muscular tonicity and coördination under various conditions. Attention is given chiefly to pulse, respiration, tremor, the planchette, strength of grip, tapping, line-drawing, simple and complex reaction-times, and an analysis of writing movements. The last-named experiments constitute a novel feature in a drill-course: like several other exercises, these reflect the author's personal interests and the trend of research work at Yale, but necessitate the use of rather elaborate apparatus. It may be doubted whether the average student will get much psychology from them.

The third group is designed to reveal the nature of certain important factors which condition all experimentation, viz., practise, distraction of attention, and fatigue, and, incidentally, to show how the experimental method may be applied successfully to the more general aspects of mental life. Practise is studied, first on the side of impression, by showing the importance of sensory control (reproduction of a drawing, target-practise, singing a given pitch), and secondly on the side of expression, by experiments with mirror-drawing, rapid tapping, and card-sorting. Tapping is also employed, in conjunction with other activities, simultaneously executed, to study the nature of distraction.

The last section gives directions for the study of memory after

Ebbinghaus' method, of the fluctuation of attention by the use of equivocal figures, retinal rivalry and Masson's disc,¹ of the range of attention, curiously by the complication experiment, tachistoscropy, etc., and of visual esthetic appreciation by exercises with the golden section and the balance of forms; it closes with a brief statement of Külpe's experimental study of the discrimination between subjective and objective visual experiences by the method of faint illumination.

In appraising these manuals, it must be said at the outset that they are bound to be of service in the advancement of experimental psychology; of how much service is another question. We now have available in English the simple exercises of Witmer in his *Analytical Psychology*, Seashore's recent *Elementary Experiments in Psychology*, Sanford's well-known *Course in Experimental Psychology*, Judd's two-volume *Manual*, and Titchener's exhaustive four-volume *Experimental Psychology*. These books vary in scope and general type of treatment: each has its sphere of usefulness. It will depend upon the instructor, the length of the course, the maturity of the student, and the laboratory equipment, just which one of them is employed. The expert instructor is likely to select his experiments, apparatus, and methods from several of these books, as his judgment dictates; the poorly trained instructor will, I suppose, follow as closely as he can the policy and precedent of the laboratory in which he himself worked.

Were the present writer conducting a laboratory course, he would find Judd's *Manual* useful mainly as an accessory treatise for consultation and for occasional suggestions as to variations of apparatus and method, though certain of the experiments in groups three and four might be selected for use: the remainder have been more extensively and more carefully treated elsewhere, notably, of course, in Titchener's *Manuals*. Incidentally, no one versed in modern experimental psychology can fail to note the almost studied manner in which Judd avoids reference to, or acknowledgment of, the service which these volumes are rendering in the development of the science.

It is Judd's policy, as we have noted, to discuss apparatus in a separate volume. The reviewer has been puzzled to know just whom this volume is to benefit. In the case of a young teacher who has had the benefit of the Yale training, it is to be assumed that general

¹ None of these methods affords an adequate and objectionless illustration of fluctuation: even Wundt, the most ardent champion of fluctuation, has referred the demonstration by equivocal perspective to peripheral factors; retinal rivalry gives merely an alternation of two supraliminal stimuli; while Masson's disc has been superseded by Ferree's arrangement.

familiarity with instrumentation and technique have already been acquired, and the volume on equipment would therefore serve merely for the refreshing of his memory. In the case of the teacher who has had no adequate training at Yale or elsewhere, one is tempted to say at the outset that he has no business teaching experimental psychology: but suppose, as sometimes occurs, this duty has been thrust upon him, as in a case which recently came to my notice in which an assistant in physics was appointed professor of experimental psychology in a normal school, and given \$300 to start a laboratory, will Judd's book on equipment enable such a man to purchase and manipulate the requisite apparatus? My own opinion is that it will not. My point is that Judd would have done the struggling teachers of the science more benefit if he had prescribed a definite piece of apparatus for each experiment, and had carefully discussed the use of this piece, and shown wherein lie its difficulties.

Let me illustrate by reference to Exercise VII. This exercise prescribes for one period (it seems to me enough for two weeks' work), tonal fusions (13 combinations), fusions with variations in the intensity of the components (6 combinations), pitch discrimination (2 standard pitches), and mistunement of intervals (3 standard intervals): to these are added as investigations which 'should be undertaken,'—difference tones, counting beats, the pitch of noises, the highest and the lowest audible pitch. When, now, our poorly trained instructor consults his equipment book, he is told that the prescribed exercises *may* be done with Quincke's tubes, with a chromatic pitch pipe, with organ pipes, with the Appunn tonometer, the Stern variator, the sonometer, or with weighted tuning forks, including accessory resonators and tubes. Of the many pits and snares that confront the users of any one of these instruments or of their less obvious defects, little or nothing is said. Thus, the chromatic pitch-pipe which is mentioned for the production of tones of desired pitch (probably following the work of Gilbert) has an error of four or five vibrations. On the other hand, the series of simple discrimination forks, which Seashore has found so serviceable and which is perhaps the best simple apparatus for this test, is not mentioned at all.

Both of the volumes are freely illustrated, but many of the cuts are so reduced in size that the lettering cannot be deciphered, *e. g.*, Fig. 51 in Volume two. There are a few typographical errors, *e. g.*, 'one tone' for 'two tones,' Vol. III., p. 115, Bergströme for Bergström, p. 226 and elsewhere.

The dismissal of experiments in taste and smell with the bare

statement: "investigations of taste and smell have also been made. These senses are of so slight importance in human life that these investigations have more physiological importance than psychological" (p. 53) is rather startling, for smell embraces more sensory qualities than vision and audition combined; smell and taste have obvious functional significance, and their investigation is full of psychological interest.

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WITASEK'S PSYCHOLOGIE.

Grundlinien der Psychologie. STEPHAN WITASEK. Leipzig, Dürr, 1908. Pp. viii + 392. Mk. 3.

This book is well described in its preface as a 'kurze . . . dabei aber doch streng wissenschaftliche Gesamtdarstellung' of the present status of psychology. It is written from the well-defined standpoint of the Meinong school; and its greatest significance is that it strenuously upholds and carefully formulates the non-sensationalist theory of consciousness. Professor Witasek distinguishes between 'Psychologie des Geisteslebens' and 'Psychologie des Gemütslebens.' Under the latter head he gives fifty pages to the discussion of feelings and desires (*Gefühle* and *Begehrungen*) as against the two hundred odd devoted to sensational complexes (*Vorstellungen*) and thoughts. His important teaching that judgment, comparison, recognition and the like include unsensational factors is enforced by over-elaboration of detailed analyses which are often questionable.

A thoroughly helpful general distinction is that between the description and the explanation of the psychic fact. Witasek recognizes both the physical or physiological and the psychological explanation. In the opinion of the writer of this notice, he makes good his useful contention that the psychologist may discuss physical and physiological facts without espousing any one of the metaphysical theories of parallelism or of interactionism. (Cf. p. 103 *et al.*) Other significant teachings of the book are the following: the distinction (pp. 171 *seq.*, 187 *et al.*) between the sensational consciousness of space (*Raumempfindungen*) and the consciousness of space in general (*Raum überhaupt*); the distinction (p. 229) between the *Selbständigkeit*, or self-sufficiency, of sensations and the *Unselbständigkeit* of unsensational elements of consciousness; the teaching (p. 337) that there are no objectless emotions; the observation (p. 306) that abstraction is a form of attention.

In the opinion of the reviewer the book has one radical defect of