PSYCHOLOGICAL LITERATURE.

JUDD'S PSYCHOLOGY.

Psychology; General Introduction. CHARLES HUBBARD JUDD, Professor of Psychology and Director of the Psychological Laboratory at Yale University. New York, Scribner, 1907. Pp. 382.

This book is announced as 'volume one of a series of text-books designed to introduce the student to the methods and principles of scientific psychology.' The author lays stress upon four features: first, that his treatment is functional rather than structural; second, that it is genetic; third, that the physiological conditions of mental life have been given conspicuous emphasis; and fourth, that proper significance has been given to ideation as the 'unique and final stage of evolution' and the most striking fact in mental development.

Following the introduction are two chapters dealing with the nervous system, one tracing its evolution at large, the other describing the human nervous system in more detail. The first of these chapters will be valuable for the student, the second is less clear and likely to prove difficult. These chapters are illustrated by some twenty cuts, many of which are, however, like those elsewhere in the book, too much reduced in size to serve their purpose well. One notes here, too, an indiscriminate use, now of English, now of metric units of measurement.

The general analysis of consciousness (ch. iv.) is brief, but important because it gives the cue to the development of Judd's system. Five main types of conscious processes are distinguished, viz.: sensation factors, relations between sensations (perceptual fusions), attitudes (including feeling, interest, and attention), memory contributions, and ideational relations.

The treatment of sensation (ch. v.) is characterized by insistence upon the distinction between physical, physiological, and psychological processes. It seems to me that this distinction is rendered needlessly difficult, and that a correspondingly needless time is consumed in its clarification. A number of dubious or incorrect statements may be found in this chapter. For example, it is stated that the color-blind see violet as violet (p. 91); contrast is erroneously attributed to after-images (p. 97), and no effort is made to show the relation between

after-images and adaptation. The color circle (p. 77) is certainly inferior to the color pyramid as a representation of visual qualities. Middle *c* of the piano is said to have 512 double vibrations per second (p. 103) but is correctly given as 256 later (p. 114); noise is explained as due solely to complex vibrations (pp. 104-5); each member of a tonal complex is declared to retain its independent value for experience in contrast to the fusion of colors (p. 113); beats are said to be heard in addition to the two fundamental tones (p. 113); difference-tones are explained simply as beats too numerous to be separately apprehended (p. 114); tonal deafness is apparently confused with the phenomena of tonal 'gaps' and tonal 'islands' (p. 115); pain spots are 'defined as specially sensitive pressure spots' (p. 124), while the evidence for specialization of end-organs in the skin is declared not to be conclusive (p. 126). Again, the dismissal of the important group of subcutaneous sensations in a portion of one paragraph (p. 126) with the statement that 'in the normal course of life they come into experience with a great mass of skin sensations,' and that 'they never are intense except when they are abnormal' does scant justice to the contributions of sensation from the tendon and the joint; so, too, the analysis of the factors which enter into tactual space percepts (p. 142). Introspection would, on the contrary, lead one to see in these sensations an important element in tactual space and the source of many of the 'attitudes' which are so prominently featured in Judd's treatment.

Chapter vi., which discusses the functional relations between sensations (really the perception of space and time), is one of the most interesting in the volume. Judd's fundamental principle is that one must always distinguish between a sensation and its function; that the function of a sensation 'can be defined only by considering the use to which the sensation is put' or the 'relation into which the sensation enters'; that 'these relations are just as much a part of experience as the sensation qualities.' The relations between sensory qualities are termed 'fusions'; the relations of sensations to activities are termed 'attitudes.' Henceforth, these attitudes loom large, so much so that consciousness is said to be 'characterized chiefly by the attitudes of which it is made up, sensation serving merely to initiate these attitudes' (p. 135). In what sense the perception of objects can be said to be an instance of fusion while the constituent tones in a chord can be said not to fuse (p. 113) is difficult to understand. The balance of the chapter traces the organization of the more important perceptual fusions, viz.: tactual, auditory, and visual space, the unity of objects, and time. In-

cidentally, I note that the point system of writing for the blind is seemingly regarded as a recent invention (p. 141); but Braille had perfected it in 1835.

This discussion of the organization of sensory experience into functionally operative complexes would, in my opinion, be much clearer if it were prefaced by a development of the principles of retention, attention, and association, and of the nature of centrally excited sensations (memory images). Throughout the chapter, one can scarcely avoid the feeling that Judd, while seeking to avoid an explicitly structural treatment, is making extensive use of introspective analysis of the structural type. A similar comment may be applied to other sections of the book.

I find, personally, great difficulty in understanding how sensation qualities constitute only the content of experience, while a large part of conscious experience is formed merely by the forms of functional relation, contentless attitudes, etc.

Factual statements of doubtful character are that sensory impulses from the semicircular canals enter every perceptual combination (p. 171), and that a uniform sound 'will be broken up into a succession of rising and falling accents by the listener himself' (p. 177).

The peculiar interest of chapter vii. (experience and expression) lies in its description of attention, feeling, and emotion as functional attitudes. An attitude is not a sensation, in Judd's system, but one's reaction to the sensation; the term is to be applied 'to both the bodily reaction and the mental process' (p. 188). The immediate conditions of attitudes are found in 'the central processes which determine the motor discharges into the muscles' (p. 188). Attention, which is 'the most general attitude in mental life' is an individual attitude, not determined by external conditions, not a new factor or content or form of arrangement in experience (p. 189), but 'merely a name for various phases of selective arrangement within experience' (p. 193). It is an attitude 'of concentration upon certain factors of experience and rejection of others.'

"Feelings are unique phases of experience which depend for their character upon the congruity or incongruity of the different active tendencies of any given moment; they are attitudes, never to be confused with contents" (p. 202), and are not, as in the Lange-James theory, related to sensations of movement (p. 195). Disagreeable feeling is due to a conflict of motor tendencies; pleasurable feeling to coöperation of motor tendencies (p. 197). Here, again, the formulation can be acceptable only to one who can envisage the process by which a

conscious experience may arise, without content, merely from the existence of conflicting or non-conflicting motor tendencies.

The development of the direct forms of consciousness is concluded in an interesting chapter on instinct and habit. Here the concept of organization, implicit in the preceding discussion, is given explicit treatment, and, in Judd's hands, becomes thereafter a principle of far-reaching application. This use of organization seems to me one of the most valuable features of the book. Organization appears primarily in 'coördinated activities of the muscles, provided for in the inherited structure of the nervous system,' *i. e.*, in instincts. Further organization appears in the formation of habits. Habits spring from two main sources, (*a*) out of instincts themselves, especially from the selection of conflicting instincts or the modification of instincts in the light of experience, (*b*) out of a condition of unorganized 'diffusion' through the selection and combination of successful elements of movement, *e. g.*, in learning to write. The question naturally arises: what determines this selection? Judd argues that the selection is not determined, as commonly asserted, by pleasantness-unpleasantness, since this is not a cause but a result of organization. But he does not indicate very clearly just what does determine the organization, save to attribute it to 'success,' 'attainment of end desired,' 'adaptation,' 'advantage,' or meeting stimulation 'in a way which is natural and compatible with the total organization of the individual.' If the concept of 'need' were more elaborately developed, it might serve a useful purpose in this discussion. In the illustration (p. 217) of conflicting instinctive tendencies, it seems to me that curiosity is a much more likely antithesis to fear than is the instinct of social contact.

With the discussion of memory and ideas (ch. ix.), including the function of memory images, we are introduced to what Judd terms the 'indirect' phases of experience and forms of arrangement. The laws of association, the nature of retention, and the possibility of memory training are treated incidentally in this connection. The most important contribution here seems to me the development of the relation of memory images to the organized forms of response. Judd shows clearly (p. 239) how memory images supplant perception as a guide of behavior, and how these memory contents 'degenerate,' if I may use the term, with use, and finally disappear entirely when habit is established. "Content is here used for a time in building up a habit and the content is dropped and the function is retained" (p. 240). Such organized habits of response are very difficult to modify or reorganize, hence the conservatism and stability of our individual attitudes toward the more familiar experiences of life.

By a similar line of argument, the author finds the 'meaning' of words (ch. x.) to consist far more in the attitude which they arouse than in the imagery which was possibly associated with them when first acquired. "The content of experience arises rather from the total phrase or sentence" (p. 267). "General ideas are in essence nothing but dispositions toward activity" (p. 268). Such a disposition usually lies "in a bodily movement which is a much reduced resultant of earlier direct attitudes" (p. 269). "Ideas are the characteristic marks of the human type of life and development" (p. 273).

Imaginations (ch. xi.) are memory images which are radically changed in process of recall. When used for practical purposes, imaginations are tested critically either by empirical methods, or, when these are inapplicable, by reference to their internal coherency. Products of constructive imagination in which the image factor has become attenuated and the relational factor all-important are termed conceptions. This close connection of imaginations with concepts has some advantages, but it seems to the reviewer to lose sight of the distinction between imagination as dealing with concrete experiences and conception as dealing with generalized experiences, or at least to confuse the student's notions of conception. Judd has done service in calling special attention to the delay in motor discharge which accompanies these higher forms of reorganization (p. 296): the simple reflex-arc concept has been too often forced to do duty as a general expression for all forms of response.

The discussion of the concept of the self (ch. xii.) is so abstruse and difficult that it is hard to see how the average student of psychology can profit from its perusal.

The earlier discussions of action are completed in chapter xiii., which deals with impulse and voluntary choice. Aside from an excellent presentation of the psychology of reaction-time, this chapter deals for the most part with the problem of determinism and free-will. While the classification of the forms of action is helpful, it is to be feared that the issue of the problem is not made very clear to the student.

Opposed to the general processes of organization, of which so much capital is made, Judd finds certain tendencies toward what he terms 'dissociation' (ch. xiv.). Under this concept are subsumed such varied phenomena as illusions, hallucinations, sleep and dreams, the effects of drugs, dual personality, hypnosis, and insanity—a collocation that appears somewhat artificial. A paragraph upon hysteria, following the lines traversed by Janet in his *Mental State of Hyster-*

icals, might well have been added to complete this picture of dissociative tendencies.

The final chapter deals with the applications of psychology. Reference is made to art, esthetics, literature, sociology, anthropology, education, logic, ethics, and metaphysics. The particular phases of psychological study which Judd adduces as evidence of the application of psychology to the problems of teaching are the genetic studies of individual development, the nature of habit and of the process of learning, the recognition of expression as of greater importance than impression.

This volume, taken as a whole, impresses me as an exposition of the author's system of psychology which is calculated more to interest and challenge the attention of his brother psychologists than that of his students. The author's style is expository and argumentative, straightforward, but not easy and varied enough to hold the attention of immature readers. This general impression is heightened by the closely printed pages, the rather narrow margins, the complete absence of foot-notes, analytic tables of contents, chapter-end references, suggestions for supplementary reading, or questions or topics to promote discussion. Many chapters are decidedly difficult, and in some cases the order of exposition within the chapter is confusing. Very likely these seeming deficiencies become points of merit under the instruction of so skillful a lecturer as the author, but I should personally hesitate to use this text in any but the most advanced classes of mature students. Its use, as contemplated in the announcement, as a text-book 'designed to introduce the student' to psychology will demand a high grade of student and a high grade of instructor.

From the point of view of the psychologist rather than of the teacher, I find myself highly interested in the book. I suppose no psychologist is likely to find himself in complete agreement with another's system, but in the present instance he will be bound to admire the consistency with which the author has developed his system, and will find himself forced to take the defensive whenever he fails to agree with the presentation of the book.

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