

thing apart from but are inseparably bound up with sensory complexes. It is probable that the difficulty or impossibility of the psychological analysis of emotional states is due to the fact that their synthesis is effected in the physiological field below the threshold of consciousness, so that consciousness can deal only with the net result of inherited physiological co-ordinations—a view which is, again, in full accord with Mr. Marshall's own conclusions.

We must pass over the interesting discussion of "a group of co-ordinated activities tending to bring about attraction of other individuals," which Mr. Marshall terms the art-impulse, artistic creation having this end in view, though not cognised as the end. His contention is to some extent corroborated by that thirst for appreciation and recognition which forms part of the artistic temperament, and it harmonises with many observations on animal activities.

Coming now to the field of *æsthetics*, the author seeks to find some criterion by which *æsthetics* may be differentiated from *algedonics*. The conclusion to which he is led is as follows:—"That object is to be considered beautiful which produces a psychosis that is permanently pleasurable in revival," while "that object is to be considered ugly which produces a psychosis that is permanently disagreeable in revival." Thus "only those pleasures are judged to be *æsthetic* which (relatively speaking) are permanently pleasurable in memory." We believe that the author is here on the road to, but falls somewhat short of, the true criterion of *æsthetics*. The key of the problem, we think, lies in the recognition of the *algedonic* tone of *perceived relations*. It is this super-added element which raises the *algedonics* of sensory experience to the level of *æsthetics*. The *æsthetic* effect of the geometrical tracery in the chapter-house of Wells Cathedral is due to the emotional tone associated with perceived relationships. And it is just because in memory the relationships with their emotional tone are more abiding than the sense-elements, that to be permanently pleasurable in revival becomes a criterion of *æsthetics*. This criterion is, however, secondary. The primary criterion is the perception of relations with its associated emotional tone.

It is difficult to do justice, in the short space which remains to us, to the author's views as to the physical basis of pleasure and pain. These primitive qualities of psychical states are conceived to be "determined by the relation between activity and capacity in the organs, the activities of which are concomitants of the psychoses involved." When an organ during rest has stored up energy, the response of the organ to stimulus is pleasurable. But when the organ is spurred to activity beyond the limits of its stored up energy, its functioning is painful. "Pleasure thus results when the balance is on the side of the energy given out, and pain when the balance is on the side of the energy received. Where the amounts received and given have equivalence, then we have the state of indifference." We have seen that Mr. Marshall does not accept the hypothesis that there are separate end-organs, nerve fibres, or cerebral centres for pleasure and pain. Unless, therefore, there is a qualitative difference in the impulses transmitted from an organ according as it is well-stored with energy or exhausted,

a position which is hardly tenable, the *algedonic* tone must be due to quantitative difference—that is to say, difference in the intensity of stimulus. Hence it would be better, so far as the organ is concerned, to lay the primary stress on the intensity of stimulus therefrom, and to make the state of the organ a condition of this intensity. Mr. Marshall ought also, we think, to supplement his view by reference to the condition of the cerebral centre concerned. The condition of the centre is possibly of even greater importance than the condition of the organ from which afferent impulses are transmitted. We cannot, however, further discuss the question here, and must refer our readers to the author's own treatment of the question in the fourth and fifth chapters of his work.

Although we do not agree with all his conclusions, we have no hesitation in saying that the book is written in the right spirit and on right lines. Fully aware of the necessity for careful introspection, he sees that the results so reached must be correlated with the conclusions arrived at through the investigations of the physiologist. It is only where the two modes of investigation thus go hand in hand that progress in psychology can be secured.

C. L. M.

#### OUR BOOK SHELF.

*Physiology Practicum*. By Burt G. Wilder, Professor of Physiology, Vertebrate Zoology, and Neurology in Cornell University, U.S.A. (Published by the Author, 1893.)

THESE consist of a series of twenty-seven plates, with accompanying descriptions (large octavo), said by their originator to embody "explicit directions for examining portions of the cat, and the heart, eye, and brain of the sheep, as an aid in the study of elementary physiology." The author is well known in anatomical circles as the founder of a notoriously ambitious terminology, not wholly destitute of useful points. The present venture has furnished him a new peg upon which to hang this, and his title savours of the kind of treatment which the subject receives at his hands. Plate xviii. Fig. 19 (which deals with the "pelvic viscera, etc." [*sic*], of the female cat), and Plate xiii. Fig. 14 (which is said to represent the "head and neck of cat partly dissected"), may be taken as fair examples. With their faulty delineation of things which may be at once determined from descriptions alone, their ugly letters sprawling over them, and their apologetic descriptions, they are useless and uncalled for; and the matter is the more nauseous, as more than one finished anatomical treatise happens to deal with this animal. We put the plates down with the feeling that they are calculated to repel rather than encourage the student, and that although they may be of service in the work of the Cornell University, in connection with which they have arisen, there would be cause for alarm should they be adopted elsewhere.

*The Fauna of British India, including Ceylon and Burmah*. Published under the authority of the Secretary of State for India in Council. Edited by W. T. Blanford. "Moths." Vol. ii. By G. F. Hampson. Pp. xxii. 609, (325 woodcuts). (London: Taylor and Francis, 1894.)

THE second volume of Mr. Hampson's important work on the moths of India includes the *Arctiida*, *Agaristida*, and the bulk of the *Noctuidæ*, and considerably exceeds the first volume in bulk, 1545 species being described in vol.