

From a survey of the book, as a whole, it would appear that Professor Bechterew had set himself the task of writing a new system of psychology in which the biogenetic development of the individual would be studied by the expressive method. But in reality the work embodies under new titles the systems of classification and modes of procedure which many dynamic psychologists are finding inadequate. Psychiatrists, teachers, and other students of the individual are calling for a system of psychology that will throw new light on the underlying complexes in personality, of the normal as well as of the abnormal individual. The present work reveals no acquaintance with the recent studies of individual types and the studies of volitional attitudes, both of which are pointing in the desired direction. The book, however, presents in an attractive style many of the recent ideas that are worked out in greater detail in the writings of Professors Baldwin, Woodworth, and others. Many of the fundamental ideas of the book, such as the conception of an objective psychology, can be traced back to Herbert Spencer, but in urging us to study the behavior of personality as a whole, Professor Bechterew is encouraging a forward movement in psychology. This movement is paralleling the evolution of biological study which began with the study of isolated elements, but to-day emphasizes the study of the whole personality—that is, the psycho-physical individual. The detailed accounts of experiments conducted in the St. Petersburg laboratory under the author's supervision constitute an interesting feature of the book.

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The Principle of Relativity in the Light of the Philosophy of Science.

PAUL CARUS. Chicago: Open Court Publishing Co. 1913. Pp. 105.

This venture of a broad scholar into a field for the detail of which he has only a general interest is perhaps no less pretentious than the augmented title of his discourse. Certainly the light of the philosophy of science is rather feeble if it can shed no better illumination on this important problem of physical science, some phases of which must be still obscured in Dr. Carus's mind, for we read: "We will here at once and dogmatically state that the relativity physicists are perfectly right; what they claim is really and truly a matter of course, and if they only would present their proposition without dressing up their theory in paradoxical statements, nobody would in the least hesitate to accept the new view" (p. 3).

However, we also find: "The new conception, sailing under the flag of the principle of relativity which has been so noisily advanced to replace the old notions, does not prove quite satisfactory and presents too many difficulties to be acceptable to the average mind. . . . The names of Einstein, Lorentz, Minkowski, are the stars of first magnitude among the founders of the new world-conception. Their arguments, mathematically excogitated and worked out with subtle exactness, seem to carry everything before them, and we are not prepared to say that their contentions

are wrong. Their propositions decidedly contain truths of great importance, referring mainly to calculations of minute precision in complicated phenomena. Yet common sense rebels against them and would not be convinced. *Prima facie* the new doctrine seems *ingeniosius quam verius*; it is ingeniously contrived, but there is a hitch in it" (p. 77).

To the physicist there is a hitch in the author's *a priori* reasoning which accepts the principle of relativity as offering nothing new in science except paradoxes, and would solve those paradoxes by means of the "philosophy of science" rather than by a clearer understanding of the subject.

The founders of relativity, the cogency of whose arguments Dr. Carus admits, claim nothing new for that part of the theory which is based on the first postulate, the relativity of classical mechanics. A better understanding of the second postulate—which Dr. Carus admits presents great difficulties, yet which he is inclined to pass over lightly as belonging to the field of physics and not philosophy—would clear away the mystifying shadows which give rise to as many paradoxical statements in Dr. Carus's own article as he finds in the contentions of the relativists.

The second postulate, that the velocity of light is constant in a field where the gravitational potential is constant, is the basis of Einstein's definition of simultaneity; and it is upon the two postulates of the theory that the so-called variations in time and space lengths, mass, etc., as viewed by an observer from varying viewpoints, are based. These variations can be measured or at least illustrated by models in the laboratory, and to the reviewer offer nothing for common sense to rebel against.¹ Dr. Carus's difficulties seem to be due to the fact that he does not appreciate the difference between a Galilean and a Lorentz transformation, much less realize the necessity that forces the latter upon us.

As "the details of the physical problems and their solution have only a slight interest for philosophy" (p. 82) Dr. Carus willingly leaves them to the physicist and formulates for himself a philosophy of science which "is simpler than the world-conception of the relativity physicists, . . . rests on a more solid foundation and is absolutely free from paradoxes" (p. 61), a philosophy which, if properly understood, would have enabled leaders of thought not only in relativism, but also in pragmatism, Bergsonianism, and other modern tendencies to avoid at least some of their aberrations (p. 84).

This philosophy is not overaccurate in the use of scientific terms; for instance, the terms activity (power), energy, and force seem synonymous in the author's thinking. But the booklet is readable and will doubtless be very useful in opening up the subject of relativity to a larger circle of readers. Before considering it seriously one should master Einstein's first paper² which, by the way, is too historic to have been omitted without reference.

The reprinting of Bradley's original memoir as an appendix is as appropriate as it is thoughtful, especially in view of the fact that a number

¹ R. A. Wetzel, *Science*, 38: 466 (1913).

² *Annalen der Physik*, 17: 905 (1905).

of text-book writers have followed the example of Schuster's "Optics" and refrain from mentioning such a misfit as the aberration of light.

It is not surprising that a philosopher should experience difficulties in grasping the ideas of thinkers in another field; the difficulties of the theory of relativity are not insurmountable, however, as Dr. Carus and his readers will find if they give the subject further attention.

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Outline of a Study of the Self. ROBERT M. YERKES and DANIEL W. LARUE. Harvard University Press: 1913.

The authors of this Outline Study have found that a study of ancestry, development, and present constitution is an extremely profitable task for most students, and they present this guide as an aid to systematic and thorough study of this kind. The purpose of such study is threefold: (1) To help the student understand himself or herself; (2) To help the student understand and sympathize with others; (3) To arouse interest in the study of heredity, environmental influence, eugenics, and eugenics. Many of the questions propounded, it is stated, can not be answered fully, but are given by way of suggestion.

The book is put together on the loose-leaf system, with blank pages for records and replies. Under the heading "Ancestral History of the Self" are given the "Record of Family Traits" of the Eugenics Record Office, and many supplementary questions concerning physical, mental, moral, and social traits of near relatives, with suggestions as to their classification and evaluation. Under "Development or Growth of the Self" and "The Self of To-day" the periods prenatal, infancy, childhood, adolescence, and the present time are each provided with questions concerning characteristics, influences, growth, temperament and inclination, habits, capacities, and social relations. Under "The Significance of the Characteristics of the Self" are given questions concerning vocational demands, equipment, and ambitions; marital propensities and fitness; responsibilities and preparation for parenthood; and the "Index to the Germ Plasm" of the Eugenics Record Office. A final section invites reflection on "The Duties of the Self as a Member of Social Groups" in the light of physical and mental constitution, moral and religious tendencies, vocational abilities, and marital and parental relations and duties.

This attempt to present a suggestive outline for intensive study of the individual should be recognized as both commendable and timely. That it is but a step in the right direction its authors will no doubt cheerfully agree. The Outline raises many questions which neither "the self" nor anybody else can answer,—as "Has heredity anything to do with your vocational leaning?" "Are you an improvement on the family type?" "What is your chief desire in life?" "Should you marry a 'similar' or a 'dissimilar' individual?" "Do you inspire confidence?" "Make clear your philosophy of life," etc. Observant students can hardly fail to note the suggestive humor of such memoranda as "Habits of Father (alcohol, tobacco, coffee, drugs). Habits of Mother (work, rest, recreation)." It