

ABSTRACTS AND REVIEWS.

FREDERICK ELMER BOLTON. *Principles of Education*. New York: Charles Scribner's Sons, 1910. Pp. xii, 790. \$3.

This book, which deals with the biological and psychological phases of educational philosophy, will aid materially in promoting a better appreciation of the fundamental principles and presuppositions underlying a science of education. The book is comprehensive and eclectic, concrete and expanded. It aims to assemble the main results of the scientific study of education in a somewhat informal way, and is designed for a "textbook of college grade for beginners in the study of educational science." The authorities most frequently quoted are Hall, James and Ribot, and the point of view is primarily that of the Clark school of educational psychologists. There are twenty-eight chapters, which cover so many subjects that it is impossible to find a few central educational principles developing throughout the book or to discover in several cases continuity between the chapters.

The first chapter is more general and abstract than those which follow, and discusses the new interpretations of education in relation to the home, institutions, farm life, environment and primitive occupations of the school. The most general theme throughout the book may be summed up as follows: The center of reference of modern education is the child, and his prepotentiality must be studied in the light of evolution, heredity and posterity, for "education is thus recognized as a manifold process of aiding the individual to come into full possession of all the desirable features of his heritage, to minimize the undesirable ones and to initiate new tendencies" (p. 11).

Nine chapters which follow deal essentially with the phylogenetic and ontogenetic aspects of education. After a discussion of adaptation, adjustment and specialization of function in lower organisms and the anthropological and biological adaptation of human beings, the development and specialization of the nervous system are traced, with a final conclusion that the processes of evolution have not

ceased. The theory of recapitulation is then expounded from a biological point of view, and an attempt is made to establish a psychic recapitulation. Chapters V and VI explain the educational significance of recapitulation and the culture epochs theory, and insist that "at every stage the school should be correlated with life's dominant legitimate interests" (p. 107).

A somewhat general treatment of the topic from "fundamental to accessory" follows, which asserts the entire expression means "that the development proceeds from that which is relatively simple, fixed, stable and indispensable to that which is less so. Usually that which is the more fundamental is earlier developed than the accessory" (p. 120). Instincts in animals and man are then treated with some detail, and stress is laid on grasping, locomotion, expression, constructiveness, play and social reaction. There are also some speculations in regard to nascent periods, with occasional references to "paleo-psychic records of race growth and their educational significance." A study of nature and nurture follows, with an account of hereditary disease tendencies and inherited mental characteristics as evidenced by a list of noted characters who presumably inherited such traits. The chapter closes with a comparative study of the Jukes and Edwards families and a discussion of acquired characteristics.

Chapter X, on the correlation between mind and body, includes also a study of psychotherapeutics, and chapters XI and XII discuss work, fatigue, hygiene, and individual variations and differences. These chapters, as do others, contain a few original experiments.

Memory and association form the material for the following three chapters, and imitation, sensory education, imagination, apperception and motor expression in relation to education follow, with a subsequent treatment of the concept, the inductive and deductive method, the emotional life, interest, volition and moral education. The final chapter consists of a discussion of general discipline and educational values. The comprehensive field outlined is again broken up into a multitude of subordinate problems, including such interesting topics as methods of teaching, the curriculum, educational values, the daily program, examinations, mental deficiency, retardation, medical inspection, school hygiene and school excursions.

Professor Bolton's book will be of great educational and scientific significance in marking a step forward in the accumulation of educa-

tional data. The criticisms against such a book are, in the main, those of scope of material and method of presentation. The subjects are numerous and varied, but do not draw sufficiently, in the mind of the reviewer, from the fertile field of recent experimental educational psychology. Though some of the principles underlying the technique of the school subjects of reading and spelling are discussed, for example, no mention is made of the experimental work of Dodge, Judd, Dewey, Huey, Dearborn or Cornman. Search's early work forms the basis for the discussion of retardation, and no account is given of the work of the Russell Sage Foundation. Many helpful suggestions occur on mental deficiency, but the movements started by Witmer and Goddard are not cited. Though the evolution of animals is treated somewhat minutely, no mention is made of the experimental investigations in animal psychology by Yerkes, Watson, Jennings, Porter, Carr and others.

As already indicated, the subjects are not arranged in a manner which tends toward continuity of thought, or the development of correlated principles, which stand out clearly and forcibly. This is true, to a marked degree, in several chapters. At least eight chapters end with extended quotations, which leave the reader in doubt as to what specific principles or conclusions are to be derived. The topics treated are so numerous that statements introducing them sometimes become conclusions without evidence, aside from a general statement or a direct quotation. For example, "we know that the exercise of the brain causes change in the size. This is demonstrated through such experiments as those of Venn in measuring the heads of Cambridge students" (p. 324). This is based on a statement earlier in the book, which is as follows: "It is also thoroughly demonstratable that education will tend to produce this development, or lack of it cause degeneration and atrophy. Venn studied the growth of the heads of Cambridge students, and found that the heads of the best students grew longest and largest. Measurements secured before and after their university course showed their cranial growth was greater than in non-students at corresponding periods" (p. 60). Again, the difficult and complex problem of mediate association is dismissed as follows: "Inasmuch as so many ideas are continually coursing through our subconsciousness, it is not difficult to understand why curious and apparently unrelated ideas frequently arise" (p. 351). Many similar illustrations could be given, but these

will serve to indicate that it will take a great deal of experimentation and observation to verify some of the generalizations made.

There is one general method used by this author, and many others in education, which, to the mind of the reviewer, does not tend to help establish an accurate science of education. It is the method which consists in naming a list of exceptional individuals in order to prove or disprove certain supposed general principles. For example, "a few instances may be cited to show that the world's leaders in all lines of progress have either become illustrious early in life or have done the thinking which they have reserved for later expression" (p. 702), because Dickens, Ruskin, Shakespeare, Shelling, Edison, Caesar, Michaelangelo, Beethoven, etc., did this. Similarly, after citing a list of the great scientists and writers in general, it is concluded that "the high-grade intellectual ability necessary to these callings is determined by heredity" (p. 391). The same method of listing cases of agreement is applied to hereditary imagination, families of statesmen, jurists, etc. This method, which involves the logical fallacy of taking too few instances, taking only cases of agreement and involving the fallacy of accident, is then carried over to a study of the Jukes and Edwards families, where the number of vagabonds in the one and the noted descendants in the other are listed, and the conclusion reached that these differences are due to heredity, and not to environment. The following uncritical conclusion is then appended: "The rejoinder should be made that the environment in a large way was practically the same for the Juke family as for the Edwards. The periods are synchronous, and there was no great difference between New York and Massachusetts. It could have been no chance of environment which made nearly all of one family differ from all of the other. If environment were really so potent as many claim, the sameness of environment should have brought the two families as a whole to the same level" (p. 194).

The book would have been more valuable if a classified bibliography had been included, if all references to quotations had been given (cf. pp. 65, 256, 491, 521, 570, 594, 596, 660, 731), if titles of articles from which quotations are derived had been included in the references, and if the initials of authorities, especially the less prominent ones, had been given.

The mechanical construction of the book is good. The print is excellent, the tables clear and concise, and there are few typograph-

ical errors in the main text (cf. p. 34, line 6; p. 108, line 13; p. 166, line 16). The index is brief and does not contain a very elaborate system of rubrics. The following errors have been noted incidentally: The reference to Oliver Wendell Holmes should be p. 167 in place of 166; Hanus, 741 in place of 74; O'Shea, 741 in place of 743; Russell, 93 in place of 95, and no mention is made of Darwin on page 23 as indicated in the index.

On the whole, this book is indicative of much careful work and extensive reading. It is the most comprehensive treatise on the principles of education thus far published.

BIRD T. BALDWIN.

The University of Texas.

E. GAUPP. *Ueber die Rechtshändigkeit des Menschen*. Jena: Gustav Fischer, 1909. Pp. 32.

Righthandedness, which is a specifically human characteristic, has an organic basis in the superiority (Uebergewicht) of the left cerebral hemisphere over the right, probably due to the asymmetry in the arrangement of the vascular system developed in connection with the erect posture, but is usually developed as a habit.

M. J. LAURE.

University of Iowa.

JAMES PETER WARBASSE, M.D. *The Conquest of Disease Through Animal Experimentation*. New York and London: D. Appleton & Co., 1910. Pp. xiii, 176.

"The general lack of information upon the biologic sciences has been responsible for much harm. Outside of the schools of science the teaching of these subjects is but meager. * * * At present the public is so poorly informed that much of its supposed knowledge concerning health and disease represents the traditions which one misinformed person transmits to another or is absorbed out of the ubiquitous literature of charlatanism."

To correct some of the current gross misapprehensions the author was moved to deliver a series of popular addresses to New York City audiences on the subject of animal experimentation. These lectures are here collected in book form and presented to a larger public. Among the topics treated are the meaning and technique of animal