

the task of disproving some of the contradictions discovered by Mr. F. H. Bradley in the "appearances" with which both popular and "scientific," as distinguished from philosophical, thought do their work. Dr. Stout's paper is specially important, as it deals with the concept of "relation," which is central for all discursive thinking. Mr. G. E. Moore discusses at great length and with considerable acuteness, though not, perhaps, without a tendency to *ignorantia elenchi*, the argument for human immortality put forward in Dr. McTaggart's recent "Studies in Hegelian Cosmology." Mrs. Bryant's paper on the relation of mathematics to general formal logic, though far from easy reading, should be valuable to all who are interested in the problems of general scientific method. Unfortunately, it is disfigured by several misleading errors in the printing of symbols. Dr. Bosanquet supplies a most instructive defence of the ethical doctrines of T. H. Green against recent criticism. For the reader who is interested in topics of a more general kind, there are Mr. Boutwood's "Philosophy of Probability" and Mr. Goldsborough's essay on "The Ethical Limits of Method in Philosophy." A. E. T.

*Directions for Laboratory Work in Physiological Chemistry.* By Holmes C. Jackson, Ph.D., Instructor in Physiological Chemistry, Bellevue Hospital Medical College. Pp. 62. (New York: John Wiley and Sons; London: Chapman and Hall, Ltd., 1902.)

THIS little book is intended especially as a guide to the author's own students, and it is a little difficult to understand why it should have a wider circulation. Every teacher has necessarily his own methods, and if all of them were to publish their own rough notes, the number of text-books would be endless. If there is marked originality in any particular teacher's methods, or if he has anything new and important in his material, there would be an excuse for publication, and other students and other teachers would then derive benefit from the book, but in the present case it is impossible to find any such reason. All one finds are directions for performing the stock elementary experiments commonly performed in practical classes. There is no pretence at completeness. The only spark of originality the work possesses is its incompleteness; each exercise is studded with marks of interrogation or terminated by a question or two. These, we imagine, are to be filled in or answered on the blank pages with which the book is interleaved. The student will, therefore, require a second book, or a very inquiring mind, in order that he may give the present note-book any semblance of completeness.

We imagine that the purpose of leaving out so much needful information is to stimulate the pupils to inquire for themselves. Such a method only appeals to the better class of student. It is the rank and file that a book such as this should aim at educating; the best students will find things out for themselves whatever method they are taught by.

The style of the book is as rough as its matter is incomplete; it is written in the note-book or blackboard manner, of which brevity is the soul, and in which such parts of speech as articles, nominatives and verbs are not regarded as essential constituents of a sentence. We have not come across anything in the shape of serious error, but that is hardly to be expected from a teacher of some experience; and doubtless many a first-year's student could write notes of his practical work which would be equally free from mistakes of this nature.

*Die Zersetzung stickstofffreier organischen Substanzen durch Bakterien.* By Dr. O. Emmerling. Pp. 151 + plates. (Braunschweig: Friedrich Vieweg u. Sohn, 1902.) Price 4 marks.

THIS book is the outcome of a series of lectures delivered by the author before a chemical audience, and is primarily intended for chemists, but is also adapted for all

interested in the subject from a physiological standpoint. The treatment is in nature, but not in form, that of a lexicon, being a compilation which is intentionally incomplete, and practically devoid of critical observations and considerations of theory or method.

The work is divided into six sections—(1) fermentations accompanied by oxidation; fermentations yielding (2) lactic acid; (3) mucilage (*Schleim*); (4) butyric acid; (5) fermentation of cellulose; and (6) partly-unexplained fermentations. The fermented substances considered are practically entirely carbohydrates.

Of the 132 pages of text, sixty-one fall to lactic fermentation and, roughly, fifteen each to fermentations accompanied with oxidation, those yielding mucilage and butyric acid respectively, while that of cellulose receives seven.

The general mode of treatment in each section is enumeration of the more important organisms, with a short account of their characteristics, the subsidiary products of the fermentations and substances other than the specific one fermented by the organisms.

In the sections on lactic and butyric fermentations, two acceptable tables occur. These are divided into sections according with the compound fermented. Each section is divided into three columns, giving respectively the names of the organisms, the subsidiary products and the names of the authors responsible for the statements. In the case of lactic fermentations, the photogenic nature of the resulting acids is given.

The economic aspect of lactic fermentations is considered somewhat briefly, but comprehensively. The section devoted to partly-explained fermentations is practically only an enumeration.

The author constantly uses the word fungus (*Pilz*) as equivalent with Schizomycete, a fault that is botanically inexcusable. He also states that respiratory processes, in which small amounts of sugars are decomposed with production of natural gases, are to be strictly separated from fermentation. This is physiologically erroneous.

Seven photographic plates occur at the end. The figures are, on the average, good, although the focus of some is not perfect. The book will be useful to all who desire a partial summary of recent work on this subject within a small scope. F. ESCOMBE.

*Das Motor-Zweirad und seine Behandlung.* By Wolfgang Vogel. Pp. vii + 154. (Berlin: Gustav Schmidt, 1902.)

A NOTICE of Herr Vogel's "Schule des Automobilfahrers" appeared in NATURE of July 31, 1902 (vol. lxxi. p. 313), and reference was made in it to the motor cycle. In the little manual before us, the same author describes concisely the theory and action of the motor bicycle, and provides in text and illustration just the kind of information which the motorist will find of service. To readers familiar with German, the book will give many useful particulars on the construction of the machine and hints on its care and use.

*A Course of Simple Experiments in Magnetism and Electricity.* By A. E. Munby, M.A. Pp. xvi + 90. (London: Macmillan and Co., Ltd., 1903.) Price 1s. 6d.

THE careful instructions for the eighty-five experiments contained in this little book, together with the useful hints for the construction of apparatus, should serve very well to introduce young pupils to the practical study of magnetism and electricity. The author gives just enough guidance in the form of statements and suggestive questions to ensure that the experiments will be performed intelligently.