

how extremely sensitive the enzymes are to antiseptic and toxic substances; we have not heard of magnetism or electricity being affected in a like manner. But whatever the truth may be, it cannot but be admitted that our present knowledge as to what diastatic action really may be is incomplete and vague in the extreme. Possibly the elucidation of many of the difficulties will follow the preparation of a pure enzyme.

One difficulty encountered in studying the enzymes is the multitude of names which a single enzyme may possess, e.g. on p. 51 we are told that sucrase is variously called "glucose ferment, cytozymase, zymase and invertin." The chief reason for this diversity of names is that different investigators, having obtained from different sources a diastase capable of transforming cane sugar into invert sugar, have often been under the impression that they have come across a new diastase and have therefore invented a name for it.

Chapters v. and vi. deal with sucrase from a theoretical aspect, and chapter vii., on the fermentation of molasses, introduces us to the technical portion of the work. Although sucrase is not prepared commercially, it plays a very important part in fermentation, especially in the manufacture of alcohol from molasses.

Dr. Effront has evidently studied the technical part of the question with the same care which he has devoted to the scientific side. As a consequence the chapters on the technology of the enzymes should be very valuable to those interested in this branch of the subject. The space at our disposal forbids us to more than briefly notice some of the important applications of enzymic fermentation. There is an interesting chapter on "Panary Fermentation," and here one cannot but be struck by the fact that although the art of bread-making is one of great antiquity, yet we know very little as to what really does take place in the process of bread-making.

Chapter xviii. deals with the industrial application of "maltase" (the ferment of maize, which also occurs in small quantities in yeast) and the manufacture of glucose.

Chapter xxi. should be of great interest to chemists, as it treats of the "Ferments of Glycerides and Glucosides." Among the various enzymes here discussed, we notice "lipase," the active principle of the pancreatic juice, "emulsin," which occurs in almonds, and "erythrozyme," the ferment contained in the madder root. This chapter might with advantage have been extended, but, unfortunately, our knowledge of these very interesting substances is not yet very far advanced.

In conclusion, we must not forget the translator, Mr. Samuel C. Prescott, who has carried out his labours in a most satisfactory manner. F. MOLLWO PERKIN.

OUR BOOK SHELF.

Astronomischer Jahresbericht. By Walter F. Wislicenus. Band iii. Pp. xxxi + 671. (Berlin: Georg Reimer, 1902.)

THE value of this work to astronomers and others interested in astronomical matters is now so well known, in spite of this being only its third appearance, that the present issue will be warmly welcomed. In the compilation of such an undertaking as this, Dr. Wislicenus and his co-workers are to be heartily congratulated, for they

have brought together a very great number of most useful references and excellent brief extracts of all the more important publications of the past year. The volume now contains 671 pages, and the compiler informs us that this will probably be about its normal size. The second volume contained 552 references more than the first one, and the one before us shows an excess over the second by 193 references. This latter excess was chiefly due to the great number of papers on Nova Persei, which required 228 references alone. In future, to keep down the number of such references, the compiler proposes to include under one reference all those publications which appear during a year under the same heading and by the same author. This seems a very rational suggestion.

It may be mentioned that references are not only given to all the original publications, but also to all translations of such publications and astronomical articles which have appeared in various quarters. Thus, to take a case in point, we find that the communication by Dr. J. Hartmann to the *Sitz. der Kgl. preuss. Akademie der Wiss. zu Berlin* on "The movement of the Pole Star in the line of sight" was translated into English in the *Astrophysical Journal*, and was noticed in *Sirius*, *Die Natur*, *Astronomische Rundschau*, *Das Weltall* and the *Revue Scientifique*, their respective references being added in each case.

The book concludes with a capital index of names and brief tables of errata to the second and present volume. In addition to those mentioned in the present volume, which, by the way, are remarkably few in number considering the work involved, may be added "Norman" instead of "Normann" in references Nos. 1454 and 2131, and "nächste Maximum" instead of "jetzige Minimum" in reference number 1510.

In conclusion, it is hardly necessary to point out that no astronomical observatory or similar institution should be without this volume, which embodies in it all that relates to the recent progress of astronomical science, not only in this country, but over the whole world. That the work has in its third year become so complete is due to the untiring labours of Dr. Wislicenus and his co-compilers, and it is hoped that such may in the future be lightened by the endeavour of all interested in such a useful undertaking to remember to send them separate copies, reprints, &c., of published papers.

W. J. S. LOCKYER.

Elements of Metaphysics. By J. S. Mackenzie. Pp. xv + 172. (London: Macmillan and Co., Ltd., 1902.) Price 4s. 6d.

PROF. MACKENZIE is to be congratulated on having produced an exceedingly useful little book of a kind which has no precise counterpart in our current philosophical literature. Within the compass of less than two hundred small pages he deals very suggestively with the nature of the metaphysical problems, the methods of metaphysical science and its relation to the rest of our theoretical and practical interests, science in general, art, ethics, and religion. The aim of his discussion is not so much to indicate conclusions as to lead his reader to comprehend the nature of the problems to be solved and the methods of solution which are at our command. Hence the beginner in philosophy could hardly have a better introduction to what is, after all, the main business of philosophy, the practice of thinking intelligently for himself on the ultimate problems of knowledge. So far as the author's own conclusions in philosophy are put forward, they indicate a rare catholicity of view with a certain bias in favour of the line of thought, represented by Aristotle and Hegel among the great names of metaphysics, which insists upon development as the key to the understanding of the forms of existence. As might be expected from his choice of philosophical masters,