Short Reviews

Théorie des fonctions algébriques et de leurs intégrales. Par Paul Appell et Prof. Édouard Goursat. Deuxième édition, revue et augmentée par Pierre Fatou. Tome 1 : *Étude des fonctions analytiques sur une surface de Riemann.* Pp. xxxv + 526. Tome 2 : *Théorie des fonctions algébriques d'une variable et des transcendantes qui s'y rattachent ; fonctions automorphes.* Pp. xiv + 521. (Paris : Gauthier-Villars et Cie, 1930.) 200 francs.

VOL. 1 of the present treatise is a revised edition of Appell and Goursat's well-known " Théorie des fonctions algébriques et de leurs intégrales ". The second volume, contributed by the late M. Pierre Fatou, is an introductory but fairly comprehensive treatise on automorphic functions. One of the most valuable features in the early part of this volume is a new and remarkably simple proof of the theorem, that a group of real linear transformations which has no infinitesimal transformation is properly discontinuous. A determination of the fundamental domains of Fuchsian and Kleinian groups follows, and then the chief known properties of Fuchsian and Kleinian functions, and an account of the theta functions. The only example of a group considered in detail, however, is, as in many previous treatises on automorphic functions, the modular one. No insuperable difficulty exists in the way of extending this list considerably. The whole treatise is written in clear and masterly style ; it forms an admirable introduction to the classical work of Klein and Poincaré.

The Soil and the Microbe : an Introduction to the Study of the Microscopic Population of the Soil and its Rôle in Soil Processes and Plant Growth. By Prof. S. A. Waksman and Prof. R. L. Starkey. (The Wiley Agricultural Series.) Pp. xi + 260. (New York : John Wiley and Sons, Inc. ; London : Chapman and Hall, Ltd., 1931.) 17*s.* 6*d.* net.

" THE Soil and the Microbe " is a difficult book to review, for, knowing how much soil microbiology owes to the researches of the two authors, one is led to expect a high standard of excellence in a book from their pens ; and this, unfortunately, is not the case. Though apparently written for the elementary student or inquiring farmer, yet there is a doubt as to whether such readers would find the way smooth for a real understanding of the principles of soil biology. To illustrate the unevenness of planning, the carbon dioxide cycle is first discussed in the foreword, then the nitrogen needs of the plants are mentioned on p. 14, where it is stated that these needs are furnished by the addition of inorganic substance or organic forms of nitrogen such as urea or guano ; but it is not until much later in the book that there is any mention of the reason for supplying nitrogen in the form of urea or guano, or precisely what rôle microbes play in the transformation of such substances.

The volume, however, should not be condemned out of hand, for undoubtedly it has its points, in that it summarises a great deal of our knowledge concerning the chemical changes going on in the soil and is well illustrated ; though Fig. 5 should undoubtedly be suppressed in any future edition, for it is either unintelligible or, if intelligible, incorrect.

Einführung in die Zytologie. Von Prof. Lester W. Sharp. Mit Genehmigung des Verfassers aus dem Englischen übersetzt und vollständig neu bearbeitet von Prof. Robert Jaretzky. Pp. 733. (Berlin : Gebrüder Borntraeger, 1931.) 52·50 gold marks.

SHARP'S " Introduction to Cytology " was first published in 1921. The present work is a translation and amplification of the second edition, which appeared in 1926. The considerable additions made by the translator, Prof. Robert Jaretzky, refer chiefly to the more recent literature, and are indicated by a ' J ' on the margin of the page. Discussions are added on protoplasmic inheritance, genic changes, mitogenetic rays, and various other topics, leading in some cases to a revision of the original author's point of view on such matters as the nature of the spindle fibres. Some three hundred additional cytological papers are considered.

The present work is a very good account of modern plant cytology, with reference not only to flowering plants but also to all the other plant groups. By way of comparison, numerous references are made to the conditions in animal cells in connexion with such topics as Golgi apparatus, gametogenesis, syngamy, parthenogenesis, and chromosome structure. This useful work for students and investigators ends with an extensive bibliography and a carefully compiled index.

La téléphonie. Par Robert Dreyfus. (Collection Armand Colin : section de physique, No. 125.) Pp. 199. (Paris : Armand Colin, 1931.) 10·50 francs.

ALTHOUGH the use of the telephone in everyday life is continually extending, yet the theory of its working is known to very few of its users. Some of them know that it is connected with the name of Graham Bell, but beyond this their knowledge does not extend. The object of this little book is to fill up the gaps in the knowledge of an otherwise well-educated man. The subject is much wider than is commonly understood by the public. In a book of this size, therefore, it is only possible to give a very brief account of the physical and mathematical difficulties that had to be overcome before the telephone attained its present perfection.

To anyone with a knowledge of differential equations, the few mathematical formulæ given will be readily understood. Other readers can omit the mathematics and yet gain quite an accurate knowledge of the telephone and of the transmission of electric signals through wires. The description of automatic telephony is good, and so also is the account of the great advances made in long-distance transmission. The purchaser of this book gets excellent value at a very small outlay.