

The Phycomycetes, not so long ago the least-known class of Eumycetes, now appear to be the best known throughout the world. They also appeal to the teacher and to the student of phylogeny; hence the five chapters. The Basidiomycetes have been revised in the light of much recent work. At last the Fungi Imperfecti have something approaching adequate treatment.

A useful new departure by Prof. Bessey is the provision of keys to the orders, families, and many genera of the Eumycetes (including the Imperfecti). The author cannot be blamed if the best or only keys he could find for some groups are fifty years old, nor because some recent keys (for example, to the Polyporaceae) are being superseded.

After a student has mastered the morphology and taxonomy of fungi, and forgotten many of the theories as to their phylogeny, he will still keep this book at his elbow for the literature references. Each chapter is followed by a good list of references, and finally ninety-five pages give a most useful classified guide to the literature for the identification of fungi.

Prof. Bessey's excellent book is a product of long experience that gives the student a balanced and up-to-date survey of basic mycology. It is inevitable that each specialist may find some feature he would like to alter; few could cover the vast field so well.

G. R. BISBY

ALGEBRAIC CURVES

Algebraic Curves

By Robert J. Walker. (Princeton Mathematical Series, 13.) Pp. x+201. (Princeton, N.J.: Princeton University Press; London: Oxford University Press, 1950.) 25s. net.

THE object of this book is to give a simple introduction, on modern lines, to the subject of algebraic curves. While giving prominence to recent algebraic methods, Prof. R. J. Walker has avoided the faults of several modern authors, who have let the algebra get out of hand to such an extent as to obscure the fact that the subject treated is meant to be geometry.

Prof. Walker confines most of the algebra needed to his first chapter, on 'algebraic preliminaries'. Like the rest of the book, it is almost entirely self-contained; the principal exception is that the matrix theorems needed are quoted without proof, for which the student is referred to Bôcher's 'Introduction to Higher Algebra'. This chapter also includes a brief but lucid explanation of such terms as set, homomorphism, isomorphism, reflexivity, transitivity, field, integral domain, ring and group. The second chapter deals with projective spaces as far as is needed later.

After these two introductory chapters, the real subject of the book begins, with the third chapter, on plane algebraic curves. This includes a discussion of intersections, linear systems, rational curves, conics, cubics and the analysis of singularities. The fourth chapter, on formal power series, starts by recalling some theorems of analysis, for the proofs of which the student is referred to the treatises of Picard or van der Waerden. These theorems are then applied to the properties of curves, and culminate in the theorems of Bézout (whose name is given without the accent), Plücker and Nöther. The fifth chapter deals with transformations of curves, in space as well as in a plane. As a preliminary it develops the properties of rings and fields rather further than was done in the

first chapter. It contains a good deal about rational functions and transformations, and includes a proof of Lüroth's theorem. The sixth and last chapter deals with linear series, which play a principal part in the investigation of such properties of a curve as are unaffected by birational transformations. The notion of a cycle is used to discuss intersections. The chapter includes the Riemann-Roch theorem and also the chief properties of the non-singular plane cubic.

The book is written in an attractive style and presents the most important theorems of modern algebraic geometry clearly and concisely. It contains an index and numerous exercises, which would be even more useful if some answers were given.

H. T. H. PIAGGIO

MONOGRAPH ON IONIZATION COUNTERS

Ionization Chambers and Counters

By Dr. D. H. Wilkinson. (Cambridge Monographs on Physics.) Pp. xi+266. (Cambridge: At the University Press, 1950.) 25s. net.

THE needs of those users of counters who work with commercially produced tubes and circuits, and who need a background knowledge of the theory of the operation of the devices and a guide to the best way of using and applying such tools, are already fairly well met by existing text-books. The present volume is deliberately written for the more advanced user who designs his own ionization counters or associated equipment and who requires all the information which an intelligently used counter or chamber is capable of furnishing. Such a reader would do well to study this volume from cover to cover.

The methods of constructing and using counters have now definitely emerged from their somewhat alchemical beginnings, but much of the information why a particular geometry or material or procedure is good or bad has not before been collected and analysed, certainly not in book form. The development has been a very rapid one: less than a third of the references quoted in this book belong to the pre-war period. One's impression on reading Dr. D. H. Wilkinson's monograph is that anything about a counter or ionization chamber which lends itself to a mathematical analysis has been so analysed here. This makes the book a difficult one to read; it contains a mass of formulae and curves, and one often has to refer to a previous section for the meaning of a certain symbol which is used for many pages without being re-defined. However, this slight defect is understandable in a book in which, in addition to compressing so much published information, the author has the experience of a large laboratory, namely the Cavendish, in the forefront of the development, to draw upon.

After examining the relations between the energy, range and amount of ionization produced by different radiations, the amount of ionization produced inside a chamber is discussed and the profile of the pulse produced at the electrodes and at the recording device is then dealt with. The three types of ionization counters—ionization chamber, proportional counter and Geiger counter—are then treated in detail in successive chapters, there being a final chapter on the statistics of counting. There are a full bibliography and a good index.

U. W. ARNDT