

Algebraic Geometry

By Solomon Lefschetz. (Princeton Mathematical Series.) Pp. ix+233. (Princeton: Princeton University Press; London: Oxford University Press, 1953.) 30s. net.

Ideal Theory

By D. G. Northcott. (Cambridge Tracts in Mathematics and Mathematical Physics No. 42.) Pp. viii+111. (Cambridge: At the University Press, 1953.) 12s. 6d. net.

IN the volume "Algebraic Geometry", Prof. S. Lefschetz has presented, in amplified form, his lecture notes of pre-war Princeton days. A concentrated account is given in the first three chapters of the algebraic treatment of the subject. Chapter 4, on formal power series, provides a bridge linking this with the analytical treatment. In this chapter, the theories of algebroid varieties and local rings are treated briefly and applied to a study of the local properties of algebraic varieties. Four chapters are then given to the theory of algebraic curves, and this work provides examples of the preceding general theory. The final chapter treats the theory of systems of curves on a surface.

Prof. Lefschetz has certainly dealt with the 'core' of the subject, but it is a pity that the account is so brief and concentrated. It is difficult to escape the conclusion that the book is a summary rather than an exposition. The treatment in one of the main chapters (4) is "admittedly sketchy and often without proofs", and in several places it is necessary to refer the reader to other books or journals for a more detailed account. This fragmentation in the presentation of information seems to be a feature of many contemporary publications; but the publishing houses rather than the authors probably have more to answer for in this matter.

In "Ideal Theory" we have an excellent account of a subject which has developed with a burst in recent years. It is easily the most important advance in commutative algebra for a generation; and the motive for this development has come from the need of algebraic geometers for a sharper and more powerful tool with which to examine the foundations of the subject. Prof. D. G. Northcott has written a very clear self-contained account, and has emphasized the algebraic and the analytic theory of local rings, the subject-matter of which has only emerged very recently.

L. S. GODDARD

Principles of Radar

By Members of the Staff of the Radar School, Massachusetts Institute of Technology. Third edition, by Prof. J. Francis Reintjes and Godfrey T. Coate. (A publication of the Technology Press, Massachusetts Institute of Technology.) Pp. xv+986. (London: McGraw-Hill Publishing Co., Ltd., 1953.) 55s. 6d.

ALTHOUGH this volume is described as the "third edition", it is in fact the first British publication of the work in normal printed format. In its original form, it was in duplicated typescript, prepared by members of the staff of the Massachusetts Institute of Technology and issued as a classified document in 1944 to students of the Institute's Radar School. An extensive revision of the text was carried out before the material was released for general publication.

The book is essentially a detailed descriptive treatment of the technique of radar, with particular

reference to the use and operation of radar installations on wave-lengths of between 1 and 30 cm. (frequencies of 30,000-1,000 Mc./s.). No mathematics beyond trigonometry and simple differentiation and integration are used; and the text is very clearly presented together with 650 diagrams, many of which are of exceptional quality and interest. The book may be recommended as an encyclopædic work of reference for all students, scientific workers and engineers engaged in this field; and users will be greatly indebted to the small band of experts responsible for the assimilation and collection in a single volume of a large mass of technical information and experience.

Fields and Waves in Modern Radio

By Simon Ramo and Prof. John R. Whinnery. Second edition. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1953.) 70s. net.

THE inclusion in this edition of a chapter on microwave networks is the main change from the first edition. Introductory chapters on oscillations and electric and magnetic fields provide the basic ground for the formulation of Maxwell's equations. Circuit concepts and high-frequency effects are then developed, and lead to a study of wave propagation in guides and along transmission lines. The final chapter on radiation completes the physical picture derived from earlier chapters.

Though written mainly for engineers, there is a good deal of common ground here for the physicist. The lucidity, directness of approach, and skill in presentation make this a most valuable book on electromagnetic theory.

L. JACOB

Inorganic Chemistry

A Text-Book for Advanced Students. By Dr. E. de Barry Barnett and Dr. C. L. Wilson. Pp. xiv+512. (London, New York and Toronto: Longmans, Green and Co., Ltd., 1953.) 35s. net.

THIS book is intended for students who have an elementary knowledge of inorganic and physical chemistry, and many common elements and compounds are only mentioned as "too familiar to require description". The arrangement is based on a particular periodic table, and hence many less familiar elements appear before the commoner members of their groups. The old-fashioned name "first short period" is used, though the periodic table on p. 6 shows this to be the second.

The book begins with a short discussion of nomenclature, then deals with the classification of the elements and the periodic law, the determination of atomic weights, natural radioactivity, artificial atomic breakdown, isotopes, the structure of atoms and valency, stereochemistry and crystal structure. After three pages on ore-dressing, the individual elements, beginning with the inert gases, are dealt with, the rarer elements being, of course, included. Special topics such as the hydrides of boron, the metal carbonyls, peracids and the silicates are discussed; but the treatment of polyacids is unsatisfactory, and there are surprising omissions.

Attention is given to industrial processes, and use is made of official publications on those developed in Germany. Brief, but useful, notes on analytical chemistry are given. There are some references to literature. The book contains information not easily found elsewhere and is likely to be useful to students and teachers.