BOOK REVIEWS

STOLL, ROBERT R., *Set Theory and Logic* (W. H. Freeman and Company, San Francisco and London, 1963), xiv+474 pp., 64s.

This beautifully written and presented book is an expanded version of the author's *Sets, Logic and Axiomatic Theories.* It proceeds from the intuitive to the formal, always with adequate motivation and a sensible degree of rigour and technical detail, and provides a good selection of exercises. It would therefore serve excellently as an introductory textbook to such topics as logic, set theory, and the construction of the real number system, or as an introduction to standard works which are not suitable for first courses.

The material covered should perhaps be included in all undergraduate honours courses in pure mathematics. The chapters on set theory include, in addition to the usual elementary topics and the construction of the real numbers using Cauchy sequences, the basic theory of ordinal and cardinal numbers presented in the framework of the Zermelo-Fraenkel system. After a leisurely treatment of informal logic and axiomatic theories in earlier chapters, a long final chapter provides a good introductory account of mathematical logic, culminating in a readable, non-technical account of the incompleteness and undecidability results of Gödel and Church.

In the Preface and the introductory paragraph of the final chapter, one of Gödel's famous theorems is incorrectly described as asserting the unprovability of the consistency of any consistent system of arithmetic—although the later statement of the theorem is correct and reference is made to Gentzen's consistency proof for such a system! This is an isolated inaccuracy, however, which helps to emphasise the thought and care that has gone into the rest of the book. The few misprints noticed were relatively minor.

A. A. TREHERNE

SZÁSZ, GÁBOR, *Introduction to Lattice Theory* (Academic Press, 1963), 229 pp., 68s.

This is a revised and enlarged edition of the book which was first published in Hungarian in 1959 and appeared in German in 1962.

This book offers a thorough introduction to the theory. Practically no previous mathematical knowledge is assumed for the logical development, but, in the author's words, it is advantageous if the reader has a good knowledge of abstract algebra.

The style is detailed and painstaking; footnotes, passages in small type and references abound. There is a bibliography of 232 items. Proofs are given in full and there is plenty of discussion of results. There are many exercises and, at the end of the book, hints to the solution of the more involved exercises.

Although many examples of the application of Lattice Theory to other branches of mathematics are given, the emphasis is on Lattice Theory for its own sake rather than as a tool for applications.

Anyone reading this book carefully and following up the references to work outside the scope of the book should be well placed for beginning research.

The contents are as follows: I. Partially ordered sets, II. Lattices in general, III. Complete lattices, IV. Distributive and modular lattices, V. Special subclasses of the class of modular lattices, VI. Boolean Algebras, VII. Semimodular lattices, VIII. Ideals of lattices, IX. Congruence relations, X. Direct and subdirect decompositions.

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