incompleteness theorem is mentioned in this chapter, and once again later in the book; but nowhere is Gödel's proof described. This omission, like others, would not be serious if the book contained an adequate bibliography. Unfortunately it does not. Hilbert and Ackermann's *Grundzüge der theoretischen Logik* and Kleene's *Introduction to Metamathematics* are cited in the author's foreword, and papers by Kolmogorov and Gödel on intuitionist logic are cited in the final chapter, but otherwise the book gives the reader no guidance as to sources or further reading. Mr L. F. Boron, who did the translation, or Professor R. L. Goodstein, who contributed a preface and several notes, should have undertaken to provide such guidance. The quality of translation and printing is generally high, but there are several lapses, most of them obvious, which probably should be attributed to Mr Boron or the printers, rather than the author.

R. H. STOOTHOFF

MENDELSON, ELLIOTT, *Introduction to Mathematical Logic* (van Nostrand, 1964), x+300 pp., 56s. 6d.

This book is a compact introduction to some of the principal topics of mathematical logic. Although the text is rather condensed, it is nevertheless quite readable, and the book would be a valuable addition to the range of text books on mathematical logic if it were not spoiled by the editorial faults mentioned later.

The book begins with the propositional calculus and then, under the heading " Quantification Theory ", deals with the first-order calculus. There is a chapter on formal number theory that begins with axioms based on the Peano postulates and then develops recursive functions and recursive undecidability. The last two chapters, on axiomatic set theory and effective computability take up a hundred pages of the book. The set theory is developed very quickly from the von Neumann-Bernays-Gödel axioms: without a good knowledge of informal set theory this would probably be difficult to understand. The chapter on effective computability contains descriptions of Markov productions, Turing machines, Herbrand-Gödel computability and the connexions between them. There is an appendix in which the consistency of the axioms for number theory is proved.

There are no essential prerequisites for reading this book but, of course, much of the point of this subject is lost unless the reader has a fair knowledge of mathematics. The book is clearly written and contains a good deal of useful material; in short, it achieves its object. Unfortunately the book is not at all suitable for " dipping into ". The main reason for this is that the list of notation is useless: what is needed is an index of definitions and axioms, or a summary of them. Furthermore, the reason why this is needed is that the numbering or lettering of statements is inadequate and has no logical pattern. As the author says, in a footnote on page 75, " The numbering here is a continuation of the numbering of the Logical Axioms on page 57."

The layout is poor. The exercises may easily be mistaken for text, and there is no attempt either to make important statements stand out or to use a space between paragraphs. For instance, the Introduction falls naturally into two parts. They should have been separated. Mention must also be made of smaller details. Symbols in roman type are used in certain places. This has the dangerous advantage of a natural mapping into italic type that is used but not made explicit. The result is not a success—especially in the case of integer subscripts! Finally, if we excuse the troublesome problem of punctuation, there is one other interesting point. The abbreviation wf is used instead of well-formed formula: it behaves like an ordinary word except that it does not go into italics (except in error in the appendix).

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