Haskell B. Curry, *Foundations of Mathematical Logic* (NY, McGraw-Hill, 1963, reprinted by Dover, 1977, 1984).

A Review by Jonathan P. Seldin
Department of Mathematics
Concordia University
Montréal, Québec
Canada

This book represents a two-semester course that Curry taught as a first graduate course in logic at the Pennsylvania State University in the late 1950s and early 1960s. The contents differ from today's first graduate course in logic; a better title might be "Foundations of Constructive Proof Theory" or "Foundations of Gentzen-Style Proof Theory". The book was written in 1959-1961, just a few years too soon to incorporate the ideas of Prawitz (1965).

Curry's reason for writing this book when he did are stated in the preface to Curry et al. (1972): after completing Curry and Feys (1958), he felt he needed the results of this book for the then projected second volume of Curry and Feys (1958). As it turned out, proofs of the cut elimination theorem in Chapters 14-16 of Curry et al. (1972) are all based on proofs given in this book.

The main part of the book does not start until Chapter 5. Chapter 1 is a brief discussion of the nature of mathematical logic in very general terms. Chapters 2-3 are introduction to formal systems and "epitheory" (i.e., metatheory) respectively, and are revisions of Chapters 1-2 of Curry and Feys (1958). Chapter 4 is on algebraic logic, and is a revision of Curry (1952). The rest of the book covers the elementary proof theory of the first-order predicate calculus with special emphasis on the techniques of Gentzen, and constitutes a major revision of Curry (1950). Chapter 5 deals with the positive fragment of the propositional calculus (i.e., with $\wedge$, $\vee$, and $\supset$, but without negation). Chapter 6 deals with the full propositional calculus with negation, Chapter 7 deals with first-order logic, and Chapter 8 deals with modal logic.

Chapter 5 is really the most important in the book. It begins with a general discussion of the positive propositional calculus, a discussion which includes Curry's approach to semantics. Since Curry has a reputation as a strict formalist with no interest in the meaning of the