Although the presentation in general reads easily and is aided by many illustrations, the author has a very unfortunate habit of mentioning briefly important concepts in the form of a single sentence or a paragraph, without ever trying to explain these remarks further—a habit which leaves the reader with many questions unanswered. Altogether, the text is certainly only a very elementary primer, which could serve at best as a first introduction to the field of programming. However, it may well find some appreciative readers among high-school students and others interested in learning something about computers and the problems of programming for them.

WERNER C. RHEINBOLDT

University of Maryland
College Park, Maryland

104[Z].—CHARLOTTE FROESE, *Introduction to Programming the IBM* 1620, Addison-Wesley Publishing Company, Inc., Reading, Mass., 1964, vii + 72 pp., 28 cm. Price $2.50.

This is a short and elegant programming manual for the IBM 1620 Model I with the automatic-division feature, indirect addressing, and either paper tape or card input-output. The last of the seven chapters in this book outlines the features of the discpack. The first six chapters cover the 1620 central processor, principles of programming, input/output, and the Symbolic Programming System (SPS). The author is to be commended for a clear and particularly well-organized presentation and for having managed to include so many basic programming concepts in a manual devoted to a particular machine. Her explanations of symbolic addressing, macros, monitor systems, subroutines, iterative procedures and recursive techniques, though elementary, are remarkably lucid and to the point. They make this soft-covered little book much more than its title suggests.

E. K. BLUM

Wesleyan University
Middletown, Conn.

105[Z].—GERALD A. MALEY & EDWARD J. SKIKO, *Modern Digital Computers*, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1964, xiv + 216 pp., 23 cm. Price $10.00.

This book is intended as an introductory text to the field of digital computers. It is composed of ten chapters, whose contents range from a discussion of the binary number system to a discussion of various features of advanced computers such as "instruction look-ahead." The greater part of the book is devoted to engineering details of large digital system. Specific computers, the IBM 7090–94 and 7080 systems, are described and used as models of scientific and business computers, respectively.

Because the authors believe that "a complete comprehension of computers cannot be obtained without a basic understanding of programming," they have included two chapters on "Fundamentals of Programming" and the "Fortran System." The reviewer cannot agree that "these chapters are substantial and will enable the reader to write working programs." The latter chapter is abstracted from the IBM 7090 Fortran manual and does not add very much to the contents of that manual.

These chapters are preceded by chapters entitled "Binary Arithmetic Operations" and "Floating Point Arithmetic Operations," in which the discussion of round-off is entirely omitted. In fact, this topic is not listed in the index, and, although the instructions "Round" and "Multiply and Round" are listed (cf. p. 94), they are never discussed. The reviewer agrees with the authors when they say, "The competent programmer knows how his computer system operates and the best computer designers know programming." He would like to add that both programmers and designers must know of the necessity of introducing round-off procedures in computers and the implications of a particular procedure on the accuracy of various computations. These topics are not even mentioned in the book. The reviewer feels that the book suffers greatly as a result of this omission.

A. H. TAUB

University of California
Berkeley, California

106[Z].—PETER WEGNER, Editor, *Introduction to System Programming*, A.P.I.C. Studies in Data Processing, No. 4, Academic Press, Inc., (London) Ltd., London, England, 1964, x + 316 pp., 23 cm. Price $11.50.

This is the fourth volume in a series published for the Automatic Programming Information Centre, Brighton College of Technology, England. It contains the papers presented at a one-week symposium on programming held at the London School of Economics in July 1962.

The papers are generally well written and mark some sort of departure in style from the usual jargon which mars so many papers on programming. There are three expository papers on Fortran and Algol, which serve to introduce two papers on Fortran-like compilers and four papers on Algol-like compilers. The other papers cover commercial languages and their compilers (Cobol and Fact), aspects of programming systems (time-sharing, Atlas Supervisor) and advanced programming techniques. Subtopics in the last category include "syntactic analysis in compilers," "addressing," "list programming," "stacks" and "continuous evaluation." As in all previous publications of this sort, there is no attempt to formulate a theory or to define the problem. As the editor states in his preface, this volume is "experimental, seeking to develop a nucleus of material which might in the future become the basis of a science of programming."

E. K. BLUM