32[Z].—PHILIP M. SHERMAN, *Programming and Coding the IBM 709-7090-7094 Computers*, John Wiley & Sons, Inc., New York, 1963, xiv + 137 p., 24 cm. Price $1.95.

This is a small booklet to be used as a "workplan" in learning the material in the author's book *Programming and Coding Digital Computers*, and relating it to the IBM 709-7090-7094 computers. Chapter headings are as follows: Basic Operations, Symbolic Coding, Program Loops, Index Registers, Sequencing in Memory Subroutines, Input-Output Operations, Numerical Problems, Algebraic Languages, Non-numerical Problems, Data Processing Macro-instructions, Interpreters and Simulation, Program Debugging and Testing.

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33[Z].—MARVIN L. STEIN & WILLIAM D. MUNRO, *Computer Programming: A Mixed Language Approach*, Academic Press, New York, 1964, xiv + 459 p., 24 cm. Price $11.50.

With the market so richly supplied with books on computer programming, each new entry in this field must, first, display a unique or arresting feature in order to capture attention and, second, meet exacting standards of excellence in order to gain acceptance. The book under consideration successfully negotiates the first hurdle and, in the opinion of the reviewer, possesses the necessary merit to surmount the second.

The feature that sets Stein and Munro's *Computer Programming* apart is its use of the Control Data 1604 as the model in terms of which machine language is discussed. It takes courage to eschew the easier path of inventing a fictitious machine on which to carry out the indispensable process of illustration. The authors have elected to meet the problem head on by going to a machine actually in use, thereby limiting their appeal to a highly selective market and also risking obsolescence of the book as the computer is inevitably superseded. These built-in obstacles to widespread circulation are partially offset by the obvious care that has gone into all phases of the production of the book.

The first two chapters, together about 70 pages in length, deal with number systems and the organization of a computer. The treatment of number systems, in particular, is exceptionally thorough and lucid. Programming proper, using the "mixed-language approach," begins in Chapter III. As suggested by the authors' determination to base their exposition on a flesh-and-blood machine, their point of view places them in the camp of those who believe that an initial grounding in machine code is essential for the student of computer programming, whether he is destined to be a professional or only a casual user. The progression is from machine code through symbolic machine code to FORTRAN. The step-by-step unfolding of programming, both as an attitude toward problem solving and as a corpus of techniques, occupies the remainder of the book. There are many carefully worked-out examples, some extending over several sections in episodal form. Numerous exercises, mostly drills for solidifying technical skill, are found at the end of each chapter. Special mention should be made of the end-papers, which contain a most convenient listing of the 1604 instruction repertoire.