

99[Z].—FRITZ REUTTER, *Die nomographische Darstellung von Funktionen einer komplexen Veränderlichen und damit in Zusammenhang stehende Fragen der praktischen Mathematik*, DK 518.3:517.53. Forschungsberichte des Landes Nordrhein-Westfalen, herausgegeben durch das Kultusministerium, Nr. 912, Westdeutscher Verlag, Köln and Opladen, 1960, 123 p., 30 cm. Price DM 35.40.

This volume is primarily a collection of material given by the author in a series of previously published papers. The first part of the book deals with methods to represent the analytic function $w(z) = u(x,y) + i v(x,y)$ by a nomogram with two parallel nonlinear scales and two "sliding" curves. For example, a reading-line tangent to the curves $u(x,y) = c_1$ and $v(x,y) = c_2$, where c_1 and c_2 are constants, intersects the parallel scales in points from which x and y may be read. Variations of this technique are also considered. For instance, the parallel scales may represent u and v while the sliding curves represent x and y .

Examples include the elementary functions $w = z^3$, $z = w^{1/3}$, $w = \sin z$ and $w = \ln z$. Considerable attention is devoted to the Jacobian and Weierstrassian elliptic functions. The 30 illustrative nomograms which make up the second part of the volume are very neatly drawn and easily read. The author also includes on each figure at least two numerical problems so that the reader can quickly become familiar with their use.

Y. L. L.

100[Z].—MARSHAL H. WRUBEL, *A Primer of Programming for Digital Computers*, McGraw-Hill Book Co., Inc., New York, 1959, xv + 230 p., 24 cm. Price \$7.50.

As a good professor presents a new topic through ideas which are already familiar to his students, Professor Wrubel, in the introductory chapter of *A Primer of Programming for Digital Computers*, smoothly leads his reader to a basic understanding of the electronic digital computer and of the nature of programming. The potential programmer is cautioned not to attribute superhuman powers to the computer, and he is advised to consider carefully the value of a computer solution to each individual problem.

Written for "scientists, engineers and their students who are planning to use computers as tools of research," the primer is divided into two sections: Elementary Programming and Advanced Programming. The first section instructs the novice in the elements of programming as illustrated by the Bell Laboratories interpretive language. The second section trains the more experienced programmer in advanced techniques and in the use of a machine (IBM 650) language. Chapter subheadings in both sections follow the same sequence, enabling the reader to easily apply his basic knowledge to the more complex programming concepts.

In his approach to the elements of programming Professor Wrubel defines and builds on each component from the basic digit through the word and the language, until he completes his construction of the computer program. Arithmetic, logical, and input-output control instructions are taught with clarity. Taking advantage of his readers' familiarity with mathematical notation, the author employs symbolism freely in explaining such aspects of programming as conditional transfers, address modification and looping, and subroutines. Professor Wrubel also describes and

stresses the importance of drawing the flow diagram, of code-checking, and of preparing the written report of each problem.

The presentation of the Bell code and of the elementary programming concepts is lucid, and provides adequate information to enable the novice to program his problem. In this part of the text, particularly, most of the reader's questions are anticipated, and it is obvious that the author speaks with a great deal of practical experience. The chapter of instructions for problem testing probably should be supplemented by IBM publications related to this phase of programming.

In the final chapter of this section, Professor Wrubel speaks briefly on the subject of automatic programming, and then immediately re-introduces the elementary concepts in the language of FORTRANSIT, an automatic programming system for the IBM 650. This chapter might have been more meaningful to the reader had the author's commentary on the general nature of automatic programming been more fully developed.

The Advanced Programming section of the text treats the basic functions of the computer through the machine's own code of instructions and through SOAP, the Symbolic Optimal Assembly Program. The reader becomes acquainted with the use of error conditions for program control, with double-precision arithmetic, with the scaling of variables and constants, and with many more advanced topics.

The primer includes many practice problems and a useful glossary of programming terms.

Although the primer's discussions are primarily concerned with programming for the IBM 650, they cover the concepts of programming in such a way as to be valuable to all newcomers to the field.

RITA HORBETT BURNS

Research Computing Center
Indiana University
Bloomington, Indiana