82[Z].—CLARENCE B. GERMAIN, *Programming the IBM 1620*, Second Edition, Prentice-Hall, Inc., Englewood Cliffs, N. J., 1965, 191 pp., 28 cm. Price $4.95 (Paperbound).

This publication presents a comprehensive treatment of all aspects of programming the IBM 1620 and apart from some of the exercises, no knowledge of college mathematics is assumed. Chapter I serves as an introduction to the uninitiated. Chapter II presents a subset of machine instructions. A description of the operation of the machine in Chapter III is followed by a general discussion of programming (flowcharts, round-off errors, etc.) and an introduction to FORTRAN in Chapters IV and V respectively.

The author permits the student to communicate with the machine as soon as a minimum of instruction is presented. Upon completion of Chapter V, it is possible to program and run simple problems utilizing either absolute or FORTRAN coding. Subsequently, in Chapters VI and VII additional FORTRAN statements are discussed; in Chapters VIII and IX, additional machine instructions (including address modification) are presented; advanced operating techniques are discussed in Chapter X. The remaining chapters and appendices discuss disk storage, SPS (assembly language), and miscellaneous odds and ends. The problem sets at the end of each chapter are quite challenging and make a complete check of the level of competence reached. Numerous examples are given to clarify the functioning of the hardware for various instructions (TFL, FSL, etc.).

Two criticisms should be made at this point. One concerns the substantial number of misprints which abound throughout the text. In addition, there exists no glossary of terms, a deficiency shared by other manuals of this type. However, on the whole, the book is well organized and complete.

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83[Z].—JAMES T. GOLDEN, *FORTRAN IV—Programming and Computing*, Prentice-Hall, Inc., Englewood Cliffs, N. J., 1965, 270 pp., 26 cm. Price $6.00 (Paperbound).

"This book is written as a college-level introduction to computing and programming in FORTRAN IV. Its two major objectives are to develop the reader's ability to generate algorithms and to guide him in creating strategies for problem solving on a digital computer. This book may be used as either a self-study text or as a text on programming to supplement a numerical methods course. . . ." This quotation (written by the scientific marketing manager of IBM Corporation) is taken from the book.

During the last few months a number of books, having the same scope and intention, have appeared. One hesitates to say that this is the best of them. In venturing this opinion I do not wish to impugn the author's technical competence: he clearly has a vast experience in programming, and all that he has to say upon general matters is well considered and eminently wise. But the balance which is struck in this book has clearly been chosen in such a way that the computational exercises serve only as a vehicle to promote the programming language. No normally con-

stituted college student will be prepared to digest such a large and detailed text devoted to a subject which represents a relatively minor part of his curriculum. Furthermore the text is at the moment quite unsuitable for use in conjunction with a course of lectures. It would, in the reviewer's opinion, have to be reorganized considerably for this purpose.

Perhaps the most appropriate rôle which might be allocated to this book is that of a text and reference work for relatively junior staff serving a computing installation which uses FORTRAN IV as its principal machine language.

The book is rather shoddily put together; for example, in the reviewer's copy two pages are interchanged.

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84[Z, X].—INSTITUTO GULBENKIAN DE CIENCIA, Centro de Calculo Cientifico, *Sistema de Programacao, Fortran 2*, Lisbon, 1964, 150 pp., 25 cm. Price Escudos 65 (Paperbound).

In the recent past, English literature has been graced by a number of texts which expound the programming language FORTRAN and show, by means of worked examples, how this language may be used in scientific computation. We are now offered such a book in Portuguese.

The book is brilliantly successful. In the first part (seventy-eight pages) we are introduced to the elements of the language and shown the various constructions of which it is capable; in the second part (seventy pages) some thirteen complete programs are given, together with specimen numerical results. In order to impart to the reader some idea of the scope of this text, let me list the subjects of some of these programs: Euler's transformation of a series, integration by Simpson's rule, the Runge-Kutta method, inversion of matrices by Jordan's method, Gauss-Seidel iteration, largest eigenvalue of a matrix, summing a Chebyshev series by Clenshaw's method, curve fitting by means of orthogonal polynomials, calculation of the gamma-function, and Bairstow's method for finding the roots of a polynomial.

The entire book makes a most pleasing impression. The material is elegantly subdivided, the examples are skillfully placed, and the exposition has been handled with a competence of the highest order.

Undoubtedly this book will do much to promote scientific computation in Portuguese speaking countries.

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