

62[Z, P].—WALTER HERBERT BURROWS, *Graphical Techniques for Engineering Computations*, Chemical Publishing Co., Inc., New York, 1965, xiii + 435 pp., 24 cm. Price \$15.00.

It may seem strange to the digital computer expert that new books on graphical techniques are still being written. But it is not strange to the engineer who has always used graphs and slide rules, and who expects to use them indefinitely. Their accuracy is adequate for most of his problems; moreover, they are readily available, rapid, and economical. Even the more accurate and extensive data obtained from digital computers may be compressed into a simple graphical device for ready reference.

This book is a graph designer's handbook on the detailed methods of preparing accurate graphs and special slide rules, using drafting, photography, mechanical methods, and the use of special graph papers. Various methods of calculating with graphs are described, including differentiation, integration, and the solution of equations in two or more variables.

The largest part of the book is devoted to nomograms and alignment charts. A brief discussion of the general analytic procedures is given. The synthetic methods are given in great detail, using both straight scales and curved scales, uniform and irregular graduations. The use of the author's hyperbolic scales is emphasized. These enable simpler and more efficient constructions for many functions. Many practical examples are displayed, and these serve as suggestions for new problems that may be encountered by the designer. The possibilities of three-dimensional nomograms are discussed. The reduction of empirical tables and graphs to nomographic form is described and displayed.

Several of the earlier workers in the field are mentioned in the preface and in the text. However, the book could be improved by the addition of a selected bibliography from the vast literature of American and foreign sources.

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63[Z, X].—JOHN G. KEMENY, *Random Essays on Mathematics, Education and Computers*, Prentice-Hall, Inc., Englewood Cliffs, N. J., 1964, ix + 163 pp., 22 cm. Price \$4.95.

The title describes this little book very well. Written at various times between 1957 and 1963, the essays deal with such diverse topics as circuit-riding as a Mathematical Association lecturer, rigor vs. intuition in mathematics, education of the well-rounded man, and the computer topics listed below. The author chairs the Mathematics Department at Dartmouth College, and has taken the lead in changing the undergraduate mathematics curriculum. Dartmouth is also a leader in creating computer time-sharing systems for staff and students.

Except for occasional remarks, the material on computing consists of four essays:
Machines as Extensions of Human Brains,
Games of Life and Death,
A Library for 2000 A.D.,
Computing Center at a Liberal Arts College.

The author is a charming and convincing salesman for the Computer Revolution. He discusses the diagnosis of disease, the simulation of traffic, formula manipulation, war games, etc. very well at a popular level. His final essay (written in April, 1963) is a convincing case for remote consoles and time-sharing. The longest essay of the book, and the most daring forecast, is the one on future libraries, reprinted from Martin Greenberger (Editor), *Management and the Computer of the Future*, Wiley, New York, 1962. (Reviewed in *Math. Comp.*, v. 17, 1963, pp. 97-98). This is a proposal for largely replacing university research libraries by a national library of information, linked by communication networks to major centers of learning. If the proposal were taken literally, journal articles would normally be transmitted from a national center to each requesting scholar at the rate of 20 pages \div (4×10^6 bits) per second. The communication costs would be extremely high at present rates. The author observes that one way of reducing costs would be to have a central abstracting and searching service, with widely dispersed copies of the library material which is frequently read.

The book was a delight to read.

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