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Book Reviews

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Book Reviews

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In response to the interest expressed by many members of TIMS, we shall list working papers by title and author at the end of the Book Reviews Section. Any interested author of a working paper should send a copy of it to the Book Reviews editor. Any working paper which is received by the editor will be listed without comment. It is hoped that this will provide better communication of the kind of work which is in progress and will permit direct contact among various persons who may be pursuing similar directions in their research.

LAWRENCE, JOHN (Editor), *OR69: Proceedings of the Fifth International Conference on Operational Research*. London: Tavistock Publications, 1970, 981 pp., £8. (Distributed in the United States by Barnes and Noble, Inc., New York, New York, \$25.00.)

Few fields have developed as rapidly as operations research and management science. Keeping up with the most recent developments in these fields is one of the major problems facing both students and practitioners. The timely publication of the proceedings of the tri-annual International Conference on Operational Research has contributed significantly to the solution of this problem. In addition, the five *Proceedings* volumes containing the papers presented at the 1957, 1960, 1963, 1966, and 1969 International Conferences represent a convenient and useful chronicle of the evolution and development of operations research applications and techniques and of the impressive progress that has been made since 1957.

The present volume contains an interesting collection of material presented at the Fifth International Conference on Operational Research held in Venice, Italy, in June 1969. This material includes 64 conference papers, 9 introductory remarks, 4 short reports from working groups, and a short closing statement. With few exceptions the papers are quite short (over half are ten pages or less), but are well written.

The organization of the material reflects the structure of the Conference sessions. In addition to the normal prologue and epilogue sessions, the Conference included six sessions on specific application areas, four sessions on specific methodological areas, a general interest session, and a session devoted to working group reports.

The six applications sessions considered the application of operations research techniques to problems encountered in corporate planning and objective setting (3 papers), activities within the public sector of the economy (5 papers), studies in the social and political sciences (5 papers), the analysis of transportation and traffic systems (6

papers), marketing and the development of marketing strategy (5 papers), and the design of information systems for improved decision making (5 papers). The topics covered in the four methodological sessions are stochastic processes (5 papers), mathematical methods of optimization (6 papers), network flows and graph theory (5 papers), and decision analysis (4 papers). The general interest papers session includes 14 miscellaneous papers covering a wide range of subjects from the development of a distribution system for a brewery to the churched of urban England. The working group reports session presents four very short reports on operations research, the management of innovation, operational research in developing countries, and cost-effectiveness. I was disappointed that these working group reports were not longer and more complete.

This volume is a must for every serious operations research and management science reference library. It is a book that all management science professionals should review; however, considering its high price, I would suggest examining a library copy before buying it for personal use.

COCHRAN, E. B., *Planning Production Costs: Using the Improvement Curve*. San Francisco: The Chandler Publishing Company, 1968, 736 pp., \$16.50.

This book provides more knowledge than anyone would need to know about theory and application of the improvement curve. In his preface, the author lists a large group of intended readers ranging from manufacturing company executives to government cost estimators to university students of corporate planning. With this wide intended readership, a hodgepodge of subjects are discussed, most of which would be of interest only to very specialized and limited audiences. A good table of contents and index are provided. The book pulls together most of the important work on the subject, and an extensive bibliography cites numerous books, articles and reports on the improvement curve.

A capsule history of the development and use of improvement curves is followed by fifteen chapters on such subjects as manufacturing time and the learning process, the S-curve pattern, the cost effect of manpower changes and the cost effect of design changes. Twenty appendices amplify the fifteen chapters. Proofs and demonstrations tend to be simplistic number manipulation or graphs. In fact, the book actually is directed toward someone who would make all of his calculations by hand. For example, a plastic template is included for the determination of the slope of a curve for which the plot points are determined by approximation. Although discussions are clear, they are not complete in that they cloak some of the more obvious computer applications, such as midpoint approximation, by emphasizing table usage or approximation. In this age of computers this is a serious failing.

Editorially, the book is unfortunate. For your \$16.50 you get 736 pages of reproduced typing with little or no thought given to layout. A one hundred page improvement curve table is provided with accuracy to eight decimal places. However, these numbers are printed about twenty to the inch and are unreadable after five minutes use. Even at this, the range of production units in the table from one to ninety-nine is too small to be of convenient use for the long cycle improvement trends described in the text.

Planning Production Costs would be most useful in providing an improvement curve orientation to the nontechnical executive or student. There is too much detail

for the practicing management scientist. For example, five pages are devoted to the use of log-log paper.

JOHN L. HAMILTON
Anheuser-Busch, Inc.

BARTON, RICHARD F., *A Primer on Simulation and Gaming*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1970, 249 pp., \$8.95 (cloth), \$4.95 (paper).

Professor Barton has prepared a highly useful introduction to simulation and gaming for business administration, the behavioral sciences, and general education. *A Primer on Simulation and Gaming* is written for people with little mathematical or computer background. Readers should gain sufficient understanding and appreciation of both computer and noncomputer simulation that, combined with the specifics from their own fields, they will be able to organize and execute actual simulations for themselves.

The author begins with a brief introductory chapter defining the general nature and purposes of the simulation process. This is followed by a series of illustrations of the four techniques used in studying object systems: (1) analysis, (2) man-model simulations, (3) man-computer simulations, and (4) all-computer simulations. Chapters Three and Four discuss models for simulation and man-model simulation. Chapter Five introduces the reader to the computer, and Chapters Six and Seven consider man-computer simulations and all-computer simulations. Chapter Eight presents a highly readable introduction to Monte Carlo techniques. Chapter Nine compares five levels of computer languages with actual illustrations, then compares these languages by rewriting a single example in GPSS III, SIMSCRIPT II, and DYNAMO.

Chapter Ten presents a concise survey of simulation applications with short discussions of the simulation of computer systems, educational gaming, simulated counseling, educational administration, life and health applications, man-machine systems, experimental games, the simulation of human thought, communications networks, the analysis of organizational relationships, the simulation of social systems, civil, political, and community simulations, the simulation of regional, national, and international systems, war and crisis gaming, operational gaming, management games, the simulation of queueing systems, the uses of simulation in operations research and management science, simulation aids to business decision making, the simulation of personnel problems, the simulation of physical systems, the simulation of continuous systems, defense and military applications, and flight and space simulations. A short bibliography listing important books and papers on simulation follows Chapter Ten.

A Primer on Simulation and Gaming is one of the best introductions to these subjects published to date. The author's presentation is lucid, and his topics are skillfully developed by varying one example that is carried through the first nine chapters. The skillful use of flow diagrams eliminates the need to use computer programs in developing the examples, thereby simplifying the presentation considerably without losing the essential ideas and concepts.

Three books on Manpower Planning:

WILSON, N. A. B. (Editor), *Manpower Research in a Defense Context*. New York: American Elsevier Publishing Company, Inc., 1969, 463 pp., \$19.50.

LEWIS, C. G. (Editor), *Manpower Planning: A Bibliography*. New York: American Elsevier Publishing Company, Inc., 1969, 96 pp., \$7.25.

Industrial Relations Counselors, Inc., *Manpower and Planning*. (Industrial Relations Monograph No. 31), New York: Industrial Relations Counselors, Inc., 1970, 171 pp., \$4.50 (paper).

Today's social and economic pressures have intensified senior management's interest in the field of manpower planning. More and more industry, government, and institutional executives are becoming increasingly concerned with problems of estimating future manpower and training requirements and the more effective utilization of human resources. The tools of management science can be extremely useful in solving many of these problems.

One of the major obstacles hindering progress in the application of management science techniques to manpower planning problems has been the limited exposure management scientists have had to manpower problems and the limited exposure personnel and manpower executives have had to management scientists. *Manpower Research* is a book that goes a long way toward eliminating this obstacle.

This important new book is the proceedings of a conference held in London in August 1967 under the aegis of the NATO Scientific Affairs Committee. While the conference papers focus on manpower research in a military context, many of the approaches discussed are equally applicable in an industrial context. The papers are classified into four broad categories:

(1) Papers dealing with manpower planning including discussions of manpower planning for the national economy; manpower planning in major organizations; recruitment, training, and redeployment planning in industry; the uses of cost-benefit analysis; and the use of mathematical models.

(2) Papers discussing the working of military systems including the role of manpower research; establishing manning requirements; the uses of attitude research; the problems of marginal manpower; task analysis, skill classification, and cost effectiveness in training; and leadership.

(3) Papers concerned with the interaction of the civilian and military occupational systems including civilian vocational competence as a military responsibility; the relationship between active duty and post-retirement careers; and the convergence of the civilian and military occupational structures.

(4) Papers dealing with the future of the military systems discussing the military profession in transition and the kind of organization necessary to allow flexibility for change.

The papers are uniformly good, and the supplementary discussion material often included adds to their value. On the plus side, *Manpower Research* is one of the most attractive and useful books on this subject published to date. On the minus side, the book is produced photographically as a reduced typescript which at times becomes difficult to read.

Manpower Planning: A Bibliography is a highly useful little reference source. The major portion of this book consists of a comprehensive listing of 706 references to works on manpower planning. This bibliography is preceded by three short chapters discussing manpower planning at the national, industrial, and individual firm levels. These chapters consider specific approaches that are useful in handling the problems that arise at each of these levels and refer the reader to various works included in the bibliography. The introductory chapters serve as a useful guide to the litera-

ture in the context of actual problems. Any reader interested in manpower planning should own a copy of this valuable bibliography.

Manpower and Planning is a collection of nine papers presented at an Industrial Relations Counselors, Inc. Symposium held in Morristown, New Jersey, in September 1968. The papers consider (1) the necessity of developing manpower planning programs, (2) the United States Bureau of Labor Statistics' approach for projecting occupational manpower needs, (3) a technique for estimating future manpower requirements used by the Standard Oil Company of New Jersey, (4) an approach to the problem of accommodating short-term fluctuations to long-term manpower planning used by the Quincy Division of the General Dynamics Corporation, (5) the problems of dealing with imbalance in the labor market for scientists and engineers, (6) IBM's approach to the problem of fulfilling requirements for specialized manpower, (7) the evolution of career paths within the General Electric Company, (8) a program followed by the Lockheed Aircraft Corporation to convert hard-core unemployed into productive workers, and (9) the use of the task force approach to effective manpower utilization.

The papers are nontechnical and will serve as a useful general introduction to the kinds of problems that manpower management executives face.

All unsigned reviews are written by the Book Reviews editor.