Management Science

Publication details, including instructions for authors and subscription information:
http://pubsonline.informs.org

Book Reviews

To cite this article:
(1962) Book Reviews. Management Science 8(3):371-382. https://doi.org/10.1287/mnsc.8.3.371

BOOK REVIEWS

Programmed Learning, JEROME P. LYSAUGHT, ed., Ann Arbor, Michigan: The Foundation for Research on Human Behavior, 1961, 179 pp., $3.00.

Within the past few months, a number of groups of serious-minded scientists, bent on a proper and careful evaluation of the potential of programmed learning, have met in symposia, in workshops, and in group discussions to realistically analyze and interpret the potential of programmed instruction. One group in particular has met under the auspices of the Foundation for Research on Human Behavior to take a second and closer look at the promise and potential of this technique and have expressed in group discussion their feelings, their concerns, their hopes, and their fears in the application of programming for training purposes. The proceedings of this meeting have been carefully documented by the Foundation and edited by Jerry Lysaught, of Recordak Corporation, and have been published to present these discussions and findings for the benefit of present and future users of the technique. The report has a strong flavor of realism and practicality. It presents a critical analysis of the current state of the art, and in its frank and honest evaluation of the practice and of the potential of the programming art provides a useful and valuable tool for trainers, teachers, managers, and executives considering the adoption of programmed instruction in their own teaching activities. Papers by Lumsdaine, Glaser, Bruce, Lysaught, Hughes, Miller, and the father of programmed learning as we know it today, B. F. Skinner, all represent the finest effort of the recognized experts in the programming field. For anyone considering the potential of this field, its application to their own training problems, or its methodology as a point of academic interest, this volume provides a brief but well presented review of the state of the art today.

GILBERT TEAL
Public Service Research, Inc.
Stamford, Connecticut

Conceptual Foundations of Business, RICHARD EELLS and CLARENCE WALTON. Homewood, Ill.: Richard D. Irwin, Inc., 1961, 533 pp. $9.35.

A couple of years ago the faculty of the Graduate School of Business at Columbia University voted to establish a new course described as:

> . . . a study of the major ideas and institutions that make up an important part of the evironment within which business transactions take place. The ideas would be those philosophical concepts which have helped to shape business and society and which continue to compete for the people's loyalty. The institutions to be covered would include not only business institutions but also those legal and political institutions which have a major bearing on business.

By that description alone, such a course could turn out to be a vapid enterprise or one which was valuable and rewarding. I should think that much would depend

upon the readings employed. The volume under review was prepared specifically for the course. The book should contribute greatly to the academic venture; but it has value for a much broader audience than that.

The opening section sweeps quickly through a history of business in western Europe: the ancient world, the medieval scene, the early modern period (1500–1750 and the influence of Luther and Calvin and the Mercantilists) to the "modern" period since 1750.

In turn, and as a sampling of the actual contents, we then find discussed: freedom of association, the business corporation as a constellation of interests, private property, contract, competition, freedom-justice-law, authority and power, pluralism, innovation, social responsibility, and business and value-forming institutions

In a manner helpful to those who would not use this in its entirety as a text book, each major section of the volume has the format of an independent essay.

References to authors who have contributed to concepts relevant to business and its setting are replete: Aristotle, Aquinas, Bentham, Barnard, the Clarks, de Tocqueville, de Jouvenel, Hobbes, Hobson, and on through the alphabet and up through the years. These are not mere window-dressing, either. Also, the suggested readings strike me as excellent.

I know of no other book quite like this, and I think we are fortunate to have it.

ROY W. JASTRAM
University of California, Berkeley

Training in Business and Industry, W. MCGEHEE AND P. W. THAYER. New York: McGraw-Hill Book Company, Inc., 1961.

It is not surprising that the senior author of one of the first psychologically sophisticated books on industrial training is William McGehee, for McGehee and his associates at Fieldcrest Mills probably have been the heaviest contributors of the past decade to the psychological research literature on the subject. The book reflects concern about theory and yet manages to include practical examples drawn from the authors' operating experiences.

The writers perform a valuable service in drawing together a considerable amount of the available "hard data" on training research in industry. Unfortunately, not enough appears, probably for at least two reasons: 1. Not much has been done compared to the amount of human factors research in other areas like selection and engineering design, and 2. Publishable training research, particularly military, exists only as technical reports.

McGehee and Thayer organize their examination of the problem of training needs with orderliness and logic. Other topics, like evaluation are likewise handled systematically, although for one familiar with standardized texts in industrial psychology, these sections begin to look too much like old wine in new bottles. The authors devote an unfortunately large percentage of this relatively small work to a re-hash of such topics as job analysis, manpower analysis, rating scales and criterion measurement.

The authors attempt to cull from what is known about organismic learning in

general, usually called "learning theory", principles relevant for industrial training. They do this in a scholarly manner. For example, instead of relying on the elementary textbook platitudes about massed versus spaced practice, they are in agreement with the most recent critical position of Bilodeau, that efficacy of spaced practice varies with the task and the learner. The authors then try to specify some of the task and learner variations of significance.

Perhaps much more could have been offered had the authors turned to the less prestigous but more generally applicable literature from educational psychology. This might have produced a more comprehensive examination of certain topics like the significance of the meaningfulness of material to the learner, as well as introduced other important topics not treated at all, like curriculum design. The text is up-to-date with mention of such important innovations as programmed learning, TV and sensitivity training, but again whereas much space is devoted to traditional issues found in standard introductory texts or industrial psychology books, relatively little detail appears on the various new innovations. Sensitivity training, for example, is given short shrift. Yet after ten years' organizational research, Tannenbaum, Weschler and Massarik believe sensitivity training to be of such importance to industry that the first third of their new book "Leadership and Organization" (McGraw-Hill, 1961) is devoted to the basic importance of sensitivity to supervision, while the second third of the book concerns the rationale and methods of sensitivity training.

Whatever weaknesses appear in the book are no doubt due to a compromise by the authors. On the one hand, they provide a good framework and a considerable amount of useful information to the more advanced reader, who can skim much of what is "old stuff" and "cookbook". At the same time, the novice gets a complete package ranging from a day-by-day outline of a training program to train the trainer, to a simple experimental design for evaluating a training program.

BERNARD M. BASS
Louisiana State University

Queues, D. R. COX AND WALTER L. SMITH. London: Methuen & Co., Ltd., New York: John Wiley & Sons, Inc., 1961, 180 pp., $2.75.

The frontispiece for this book is a quotation from Milton ("They also serve who only stand and wait") and this, though possibly a poor pun, is surprisingly apposite. Teachers of Operations Research have waited long enough for an adequate treatment of queue theory to appear. While this Methuen Monograph is not a textbook for college seniors or graduates, it can serve either as a basis for a semester's work on queue theory or as a supplement to any of the existing textbooks in Operations Research—almost all of which treat queue theory somewhat casually. The authors are to be commended on the form of presentation of their material, and on the order in which new factors are introduced. They are certainly to be congratulated on covering so much in such a short space.

This volume, like others in the Methuen Monograph Series, does not purport to be either a textbook or a complete reference work. It is intended as a short introduction to the theory of queues, written for the O.R. worker who is con-

cerned with practical problems. This purpose is admirably fulfilled, even though few practical examples are treated in detail (except for problems of machine-tending that arise in the textile industry). The mathematical sections of the book require knowledge of elementary statistics and advanced calculus. LaPlace transform methods are frequently used to obtain generating functions, but suitable references to mathematical works are given. While reference to works on queue theory are given in a bibliographical appendix, according to chapter, they may be too few for a textbook. The authors, however, have considered this possibility and state, "A beginner is apt to find such references irritating and is depressed by the thought that he should read them all before he proceeds".

The book consists of five chapters and an appendix (the aforementioned bibliographical notes, interesting exercises, and notes on the theory of probabilities and LaPlace—Stieltjes transforms). The introductory chapter gives some examples and aims of a study of congestion, then proceeds with a discussion of the components of queueing systems. The second chapter is a discussion of simple queues with random arrivals (using the differential-difference equations), with some special emphasis on equilibrium conditions and the distribution of busy periods; probability generating functions and LaPlace-Stieltjes transforms are introduced.

Chapter III discusses the non-equilibrium theory, multi-server queues and queues with priorities within the framework of simple queues. Chapter IV is a short but thorough treatment of machine interference problems. The practical examples and complications introduced by reality are drawn from the considerable experience of the authors in the textile industry. The last chapter, entitled "More Specialized Topics", treats multiple stage systems, the integral equation methods of solution, and simulation models. The last section is entirely new and describes original work. Even though the chapter constitutes about one-third of the book, the list of specialized topics is incomplete. It is here that the list of citations could well be enlarged to aid the student and the scholar.

This monograph may be recommended to O.R. workers and aspiring students. It is certainly the best short introduction to the theory presently available, and will continue to be valuable even after the publication of more extensive treatises.

E. KOENIGSBERG
C-E-I-R, Inc., San Francisco and University of California, Berkeley

Dynamic Optimization and Control, A Variational Approach, WALERIAN KIPINIAK. New York: John Wiley & Sons, Inc., 1961, 220 pp. $4.95.

This book is devoted to the study of important classes of feedback control processes, of both deterministic and stochastic type. It contains interesting analytic and computational results in connection with the determination of optimal trajectories and with the solution of two-point boundary-value problems in general.

Unfortunately, its value is almost completely destroyed by a barbarous and impenetrable notation. Since the monograph was originally a Ph.D. thesis and thus represented a first attempt at sustained scientific writing, the author should not be unduly reproached for the profusion of new and unnecessary symbols and for equations where particular quantities bear simultaneously *four* iterated superscripts and *three* iterated subscripts. But certainly a press such as Wiley which contributes so many excellent books to modern mathematics, and to control engineering in particular, should be reproached for allowing this unedited version of a worthwhile research effort to appear.

RICHARD BELLMAN
The RAND Corporation

Prediction and Optimal Decision. By C. W. CHURCHMAN. Englewood Cliffs, New Jersey: Prentice-Hall, 1961, 394 pp., $9.00.

A philosopher interested in value theory decided that the decision making process in business provided an exceptional opportunity for observing the impact of values on action. He became a management consultant and a leader in the emerging discipline of management science. Some time later he prepared a report on what he had found out about values by observing business men, designing this report for a mixed audience including those he had left behind him in academic philosophy. One way to characterize *Prediction and Optimal Decision* is to say that it is such a report.

Churchman himself, characterizes his book in a number of ways. It seeks a scientific method for verifying ethical judgments (page 2). It is a book about human happiness (page 47). In a general sense the book is a discussion of managerial accounting (page 67). A recurrent theme of the book is the decision process in science (page 78). It is an attack on crude distinctions between fact and theory (page 129). The chief interest is in the measurement of the value of objectives (page 304). The book deals with man as a problem creator rather than a problem solver, as seeking conflict rather than consensus in his relations with his fellows (page 376).

One way to review the book would be to match it against each of these characterizations in turn. Another would be to take as point of departure the subtitle of the book, "Philosophical Issues of a Science of Values". Instead the reviewer will consider the book in terms of his own characterization which is never formulated in quite these words by the author. It is an essay in the philosophy of management science in which the boundaries of management science as an aid to the decision maker are expanded to deal with ethical issues as well as with the economic and technical issues. Seen in this perspective it can be confidently stated that *Prediction and Optimal Decision* is a major trail-blazing effort in a new dimension of management science.

One view of management science is that it is wholly concerned with the techniques of optimization once the values to be optimized have been specified by management. The individual comes to executive responsibility with his value system already established. The chief hope of inculcating a disciplined sense of

values, some educational theorists would say, is through training in the liberal arts. One of the propositions which Churchman is challenging indirectly is that management science should forego any interest in ethical conduct, leaving that problem to the humanists.

It would be consistent with the spirit of the book to say that there are major transfer problems in applying principles of conduct generalized from one set of situations to another context which was substantially different. A minimum claim of management science might be to provide techniques of analysis which would facilitate this transfer. Churchman would doubtless go much further toward asserting that the guiding principles for executive action should be derived in the first instance from a study of situations reasonably similar to those in which they are to be applied. The executive may have been an enthusiast for Greek tragedy while at college and been deeply moved by the anguish of Oedipus on discovering that he had married his mother. There is no obvious application if the ethical issue facing the executive now is that of equitable treatment of two classes of customers such as drug and grocery wholesalers. One sociologist attributes the decline of business ethics in Germany after the first world war to the fact that so many former army officers entered business to earn a living. Their preconception of business was that it was a competitive jungle in which ethical principles could not apply.

Churchman makes out a very persuasive case that the same kind of analysis which would permit the scientist to advise management as to what is expedient could also support admonitions as to what is ethical. In one case the executive is being told what means he ought to employ and in the other what ends he ought to pursue. This discussion of the meaning of the word "ought" leads to the statement of several imperatives formulated in ways which are intended to facilitate scientific analysis. The prudential imperative says that X ought to do A if he wishes to maximize certain specified values. This is the type of recommendation with which management science has generally dealt. Such recommendations are derived by a variety of formulas for optimization applied to data which the executive has been able to furnish or the consultant has obtained from other sources. It is at least theoretically possible to test the validity of this type of recommendation. As to the state of the art of verification there was sobering discussion at a special meeting recently organized by West Churchman and Roger Crane. Management scientists in active practice confessed that they had experienced great difficulty in showing that their recommendations had contributed in any measurable degree to maximizing the desired outputs. The scathing treatment in the book under review of measures of profits and values suggests that practical verification of prudential recommendations is still years away.

The social imperative leads to recommendations asserting that X should do A because a social group Y wants him to do it. This type of recommendation is in a sense more verifiable than the last. In some instances an opinion poll may provide a valid estimate of what Y, the electorate would want X, a presidential candidate to do about a certain issue. In another case X, a business executive,

may be advised by his legal counsel concerning the attitude of Y, the U. S. Congress, concerning price collusion.

Both the prudential and the social imperatives can be stated in hypothetical form. One says: "If you want to maximize certain desired values, perform the action A". The other says: "If you want to conform to the wishes of a specified social group, perform the action A". It does not touch the more fundamental question of when and why the individual should conform to the will of the group. Take the case of the executive reacting to legal advice. He may choose to ignore it on the ground that his lawyer is excessively conservative and that there is very slight probability that the courts would rule that his proposed action is illegal.

In deciding whether he shall follow legal advice the executive is doubtless concerned with the sanctions or penalties which may be imposed upon his company or himself. He may have a strong bias against going to jail even though he considers the law unjust. He might be said to be dealing with a problem in expected disutilities or in attempting to verify the analysis of this problem presented by his attorneys.

The ethical imperative leads to recommendations asserting that X should do A because future mankind wants him to do it. Here there appears to be a sharp break with the social imperative because of the lack of any external sanctions to be taken into account by X. Future mankind can scarcely impose sanctions to determine the conduct of X today unless X postulates an active Deity who is looking out for the interests of future mankind. The reviewer prefers to think that ethical judgments come from some internal discipline by which X shapes his conduct in conformity to some ideal concerning his present or prospective self. Since considerations concerning the wishes of future mankind are beyond the reach of external sanctions the anxiety generated by an ethical issue can only spring from the fear of falling short of the accepted ideal. While a noble ideal may be ultimately unattainable what the ethical individual requires of himself is that he approach it as closely as his natural capacities and the constraints imposed by the environment will permit. A religious statement of a rather embracing ideal is that X wishes to do the will of God. Perhaps the secular parallel is that X wishes to do the will of future mankind.

The interesting question is how the inner urge, or discipline, develops which drives the individual toward trying to approximate an ideal. It is an odd appetite in a way and certainly varies in intensity as much as the taste for olives. Quakers claim that a bit of this urge is to be found in every human being. Perhaps in some it exists at such a low level as to be below the threshold of effectiveness.

Churchman is confident that science can help in the solution of ethical problems. He would doubtless agree that science cannot help a man with a problem unless he has one. Certainly that is true for technical problems. Science could not possibly produce a cigarette filter which would be helpful to the reviewer. He has no intention of starting to smoke again after giving up cigarettes twenty years ago. Similarly the most scientific analysis of ethical issues would not be useful to an individual who had no drive whatever toward approximating an ideal.

The reviewer has been preparing a flank attack on one implication which gave him a great deal of trouble and which seemed to run through the first three quarters of the book. That is that the person being advised ought to follow the consultant's recommendations concerning ethical issues. Churchman is willing to wait, of course, until some progress has been made in the most difficult of all scientific problems namely the measurement of values. He also recognizes that an almost intolerable analytical burden is imposed by taking the wishes of future mankind as the point of reference for ethical values. At the present time there is substantial uncertainty as to existence of mankind a few years ahead to say nothing of its wishes if it survives into the 21st or the 25th century. Given some solution to these analytical problems, the author seems to be asserting that there is no difference in the logical content or the status in the action system of the scientists' recommendation and the executive's decision. The reviewer urges that there is at least one important exception as suggested above, namely that in which the individual cannot use any advice to make an ethical decision because he is incapable of having an ethical problem.

More important is the reverse situation in which a man of great capacity and depth of concern for the future of mankind has ethical problems which are beyond the range of the ethical vision of the scientist who happens to be advising him. It may be repeated again that future mankind does not set the ethical problem or impose sanctions on the individual with an ethical problem to solve. The individual sets the problem, using the wishes of future mankind, his subjective sense of his own ideal-seeking proclivities and his estimate of his powers of achievement as his points of reference.

Given these subjective factors in the situation calling for ethical decision the reviewer feels that the scientist should continue to stick to his last which is generalization. The management scientist would appear to be dealing with a unique situation confronting an individual client but he cannot embrace it in all its uniqueness. His recommendation should always be interpreted as a generalization even though it may not be explicitly cast in that form. The explicit form of the recommendation is "Assuming that the problem confronting X belongs to class K he should do X in order to achieve specified results." In current consulting practice the client sometimes states that the situation is of class K and asks the consultant to proceed from there. At other times this characterization of the situation is tested through the consultant's investigation. In either case the scientist as consultant constructs a model of the actual situation. Any analytical conclusion derived from it must be valid for all situations of class K if it is valid for any.

There are practical limits on the extent of the investigation behind any recommendation. Perhaps the given situation did not fall in class K after all. Some vital aspect was never disclosed which would place it outside that class. Something may have happened to change the situation between the time the consultant received his assignment and came back with his recommendation. The client may have set the wrong problem in the first place and the consultant proceeded on that basis. Meanwhile, the client has been stimulated to redefine the problem

and see the answer for himself. If the consultant now comes in with a recommendation, the client is under no obligation to act on it because he now knows that it does not even pertain to the right problem.

These difficulties arising when the client is seeking prudential advice are compounded when he is faced with an ethical problem. Often the best that any adviser can do is to help him clarify the issues and to visualize a wider range of alternative solutions than might have occurred to him without prompting. In the end he may have to close his ears to further counsel as Job spurned his three consultants. The sanctions to be applied are only internal. In the last analysis no one but the individual seeking an ethical value can say how severe he should be upon himself in the given situation.

Finally, the reviewer was somewhat disturbed by the treatment of conflict in the book. In one section, Churchman suggests that conflict might turn out to be a positive goal of action in itself. He quickly qualifies what may have been a somewhat playful suggestion and agrees that conflict is much more desirable in some areas than others. Specifically he approves of conflict among proposals as to the means of obtaining an objective. Here he does not appear to be talking about conflict in the ethical sense.

The reviewer accepts Churchman's general formulation that ethical problems arise out of the ideal-seeking proclivity of the individual. The emergence of the specific problem as something requiring attention is usually associated with conflict. The executive who would like to think of himself as an honest businessman is suddenly confronted with conflicting claims which have to be reconciled. He has made promises to two different persons or groups and now finds that he will not be able to keep them both. The expedient solution may point toward keeping his promise to the person who can do him most good in the future and ignoring the other. Ethical considerations may require him to try to determine which party has the better claim by some objective standard of equity. He may come up with a compromise solution which may not leave either party feeling too frustrated. If the situation is important enough in relation to the ideal self-image he wishes to maintain, he may somehow find the means of satisfying both completely. This may mean mobilizing all of his capacity for creative action and perhaps lead him to set a new and higher level of aspiration.

The resolution of conflict appears to be an essential concept for ethical analysis. In the opinion of the reviewer, Churchman's discussion of conflict is not adequately related to the ideal-seeking proclivity underlying ethical considerations. Neither is the power to act integrated sufficiently with the urge to act in an ideal way. Churchman for years has professed a peculiar notion of personality in which individuality stems from the defects and lapses of a person rather than his powers and capacities. There is an attempt to deal with the concept of power in Chapter 13 (Assets and Transactions) but it is not yet fully integrated with his root ideas for a science of ethics.

There is another dimension to Churchman's comments on the social function of conflict. What he really seems to be pushing for is free and rigorous competition in the realm of ideas. Perhaps he would say that it is better for ideas to fight for

existence in the classroom and in the technical journals than for people to lose their dollars or shed their blood fighting for them in the market place or on the battlefield. He may simply feel that direct and candid struggle among the advocates of alternative propositions is part of the essential process of scientific advance.

The reviewer has taken him at his word in trying to find the weaknesses in some propositions in the book which he finds unpalatable in their present form. But conflict at this level is not inconsistent with basic agreement. The disciple attacks the words of the master at only those points which pose obstacles to the full agreement he would find more congenial. Perhaps there is no greater testimonial to the significance of an author's book than to say that insofar as he disagrees with it he finds this conflict more useful than any other.

WROE ALDERSON
Wharton School of Finance and Commerce
University of Pennsylvania

Economic Theory and Operations Analysis. WILLIAM J. BAUMOL. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1961. Pp. 438. Text Edition $9.00, Trade Edition $6.75.

The relationship now and in the future between economic theory and operations research is not clear, but there can be no doubt that many students, teachers, and practitioners in both fields, particularly the former, are striving with varying degrees of enthusiasm and success to expand their horizons into the other of the two fields. That these two areas of study have much to offer one another is abundantly clear. Equally clear is the conclusion that the correlativity of the efforts and workers in these fields will eventually lead to new groupings of various parts of these disciplines and perhaps even the submerging of certain traditional fields, such as perhaps the area known as managerial economics, as this and other areas may be shown to be special cases for the application of the general approach of operations research. There seems to be some general concern about whether the result will be describable as the taking over of managerial economics by operations research or as the adoption, by the managerial economist, of the contributions of operations research toward the solution of his problems. For those of us who are primarily interested in the solution of managerial problems, there is little reason for concern about whether the surviving entity of the merger is called Operations Research, Management Science, or Managerial Economics.

Baumol's book discusses various selected aspects of economic theory and operations research. The subject of the book is, as the preface suggests, economic theory, rather than operations research. Also, as the preface indicates, the discussion of operations research is too limited to be considered to constitute a survey of the field.

The operations research subjects which have been selected for inclusion may have been selected because they were considered by the author to be the most relevant for economic theory, but there is minimal space devoted to attempts to

integrate these materials with the economic theory portions of the book. Such integration as the book provides is largely organizational rather than substantive.

The book is organized into four parts. The first part, *Analytical Tools of Optimization*, introduces the reader to the concept of optimization, to mathematics, (from the basic definition of functions and linear equations to partial differentiation and Lagrange multipliers) marginal analysis, and linear, nonlinear, and integer programming. Part II is *Microeconomic Analysis*. Part III, entitled, *Recent Developments in Mathematical Economics*, contains chapters on Input-Output Analysis, Activity Analysis, Neumann-Morganstern Cardinal Utility, Game Theory, and Decision Theory. The fourth part, *Applications to Marketing and Operations Research*, is brief, consisting of three chapters, one of which is devoted to Electronic Computers.

The materials which have been selected for inclusion are interesting and important. Most should no doubt be part of the minimum equipment of both economists and operations researchers, but, as the author indicates, the coverage of economics materials is more thorough than is the coverage of operations research, and the economist could do with more of Operations Research than is found in this volume.

Although the book lacks a unified structure and could, with little loss, be rearranged into two separate books, the materials which are included are discussed well. The writing and the pedagogy are generally excellent and frequently brilliant. For this reason, the book is admirably suited to class use, in conjunction with other books, in many courses which may touch upon some of the materials which Baumol discusses. This reviewer has used several chapters of this book in this very way, and with highly satisfactory results.

SAMUEL B. RICHMOND
Graduate School of Business
Columbia University

BOOKS RECEIVED

(*Inclusion of books in this list does not preclude their subsequent review.*)

Automatic Data Processing Seminar for Federal Executives. Washington 25, D. C., The Graduate School, U. S. Department of Agriculture, 262 pp., $4.50.

Case Method in Human Relations: The Incident Process by PAUL PIGORS AND FAITH PIGORS. New York: McGraw-Hill Book Company, 1961, 413 pp., $8.75.

Equitable Payment by ELLIOTT JAQUES. New York: John Wiley and Sons, Inc., 1961, 336 pp., $6.00.

Group Dynamics-Key to Decision Making by ROBERT R. BLAKE AND JANE S. MORTON. Houston, Texas: Gulf Publishing Company, 1961, 120 pp.

Injury and Recovery in the Course of Employment by EARL F. CHEIT. New York and London: John Wiley and Sons, Inc., 1961, 377 pp., $11.95.

Management Models and Industrial Applications of Linear Programming, Vol. II, by A. CHARNES AND W. W. COOPER. New York and London: John Wiley and Sons, Inc., 1961, 390 pp., $11.75.

New Patterns of Management by RENSIS LIKERT. New York: McGraw-Hill Book Company, 1961, 279 pp., $6.95.

Operations Research/Management Science, Vol. I, Issue 3, ROBERT S. TITCHEN AND ARNOLD J. ROSENTHAL, (Editors). New York: Interscience Publishers, Inc., 1961, Subscription Price: $75.00 per year.

Pattern in Organization Analysis: A Critical Examination by SHERMAN KRUPP. Philadelphia: Chilton Company, 1961, 201 pp., $5.00.

Plant Production Control by CHARLES A. KOEPKE. New York: John Wiley and Sons, Inc., 1961, 373 pp., $11.75.

The Study of Administration by E. S. WENGERT, DALE S. HARWOOD, Jr., LUCIAN MARQUIS, AND KEITH GOLDHAMMER. Eugene, Oregon: University of Oregon, 1961, 149 pp.

Systems: Research and Design, DONALD P. ECKMAN (Editor) New York: John Wiley and Sons, Inc., 1961, 310 pp., $8.50.