Roland McKean on suboptimization presents not so much a method as a warning and some rules. To the manager who has judged his operation on subsidiary measures, such as production per man or the ratio of profits to costs, ignoring or suppressing such factors as capital requirements, or the efficiency of other parts of the enterprise, this chapter says beware, as it does to the operations research worker on his selection of his basic measure of effectiveness.

Chapters by Walter E. Cushen on symbolic logic, by Joseph E. Harrison, Jr., on linear programming, and by David H. Blackwell on game theory are the most technical in the book and discuss techniques for which wide usefulness in operating problems is potential rather than proved. In general, their computational complexity is such that examples are given only in oversimple problems. It is refreshing to note the authors' statements of the limitations surrounding each. But a chapter, also by Harrison, on the use of high-speed large-capacity computers in operations research gives promise that their employment will allow the routine use of such techniques in practical problems.

Joseph F. McCloskey introduces a section on case histories in operations research with the opinion that scientists can make a new contribution in the new environment of operating problems, because they command the mathematical tools that make it possible to reduce to principle and formula many variables that enter into consideration when major decisions must be made. He notes that most successful operations research has been in an atmosphere of detachment from direct responsibility for the operation, sufficient time for research, and the confidence of the responsible executive.

The several case histories that follow are an interesting cross section of what different workers in the field view as operations research, although allowances must be made for distortions due to paraphrase and condensation. The example by John F. Magee concerning the effect of promotional effort on sales should appeal particularly to the businessman. It deals with a problem close to his heart, clear improvement in the operation resulted through methods not normally at his disposal, the best principles of operations research were applied, and, best of all, he can probably understand most of the method. Charles Warren Thornthwaite's example of developing a climatic calendar for large-scale vegetable farming is a wonderful case of a scientist's being around, recognizing an important problem, and solving it in an almost offhand and obvious manner. It should be an everlasting refutation to some businessmen's reaction that "anybody" could do that—the fact is they had the opportunity to do so and did not. Horace C. Levinson's account of his operations research in the mail-order and department store businesses includes some interesting examples on the evaluation of advertising and night store hours that required some pretty good techniques, but others that seem to be indistinguishable from normal market research. A useful model for relating complexity and reliability of electronic equipment is discussed in David M. Boodman's chapter on the reliability of air-borne radar. It would seem to have obvious application to the setting of design and manufacturing standards for consumers goods, balancing costs of extra reliability against those of servicing and fulfilling guarantees.

In my opinion, examples by Alfred H. Hausrath on study of the utilization of Negro manpower in the Army and by Robert H. Roy on operations research in the printing industry were not suitable for inclusion in this volume. The first is social research, the second is methods research or industrial engineering—neither was dominated by quantitative analysis or met McCloskey's own criteria for operations research. One more case history, by Seymour T. R. Abt, dealt with opportunities for operations research in supermarkets rather than accomplishments.

In summary, the book is an excellent compendium for the reader who wishes to catch up on operations research and get a good idea of how it may be useful to management in business and industry. It suffers little from its multiple authorship and usefully draws together many of the bits and pieces in which information on this field existed heretofore. It will give the executive reader some uneasy moments as he wonders whether he is missing some good bets for improving his operations and whether he might better his competitive position by having some scientists messing around with his management problems.

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The Chemistry of Lipids of Biochemical Significance. J. A. Lovern. Methuen's Monographs on Biochemical Subjects. Rudolph Peters and F. G. Young, Eds. Methuen, London; Wiley, New York, 1955. xiii + 132 pp. $1.75.

J. A. Lovern has written a compact book that deals with the field encompassed by its title in five different chapters dealing, respectively, with the structure of lipids, their preparation and analysis, their condition in the tissue, their dynamic state, and, finally, their biological function. The subject matter is well distributed among these five different headings, and the result is an exceedingly readable little book that manages to impart an amazing amount of information in very little time. The facts and theories presented are clearly stated, critically evaluated, and woven into a logical whole.

Lovern is a well-known lipid biochemist. Therefore the book is the work of a specialist writing on his own field. Too often such authorship results in an exposition of the subject that is either too specialized or too general. Lovern has successfully avoided these twin pitfalls, and his book is, on the one hand, authoritative and thorough and, on the other hand, easy to understand. It should be useful both to the specialist and to the general biologist.

Coming shortly after the exhaustive works of Deuel and of Wittcoff, Lovern's small book might have run the danger of being overlooked. Its excellence will undoubtedly save it from such fate.

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A History of Dermatology in Philadelphia. Including a biography of Louis A. Duhring, father of dermatology in Philadelphia. Reuben Friedman. Froben, Fort Pierce Beach, Fla., 1955. 556 pp. Illus. $10.

To members of the medical and allied professions who have seen the exhibits of historical manuscripts presented at society meetings by Reuben Friedman and to those who have read his historical articles, monographs, and books on the discovery of the cause of scabies, his scholarship in the field of medical history needs no further elaboration. The author is also a dedicated dermatologist whose precepts I was fortunate in having during the formative years of my own training in the specialty.

Although it concentrates on the history of dermatology in Philadelphia, the treatise includes a background of national and international events in the growth of the specialty that affords an excellent perspective of the development of cutaneous medicine in the Quaker City. As a result, the volume will be found valuable by graduate students of dermatology in appreciating how definite names and descriptions of cutaneous disease entities crystallized from a heritage of confused and confusing nomenclature. In addition, physicians will gain from it an understanding of the growth of that body of specialized science: from Willan's classification of skin diseases and his modern concept of eczema, through Alibert's classification, to that of Hebra

on which the Philadelphia school was based.

The biographies of the patriarch, Louis A. Duhring, and his professional heirs and of John H. Stokes and his students constitute the history of dermatology in Philadelphia. In his book, the author has made the old schools come alive. He has illustrated the relationships of leading lights in Philadelphia dermatology by means of charts showing their spheres of influence.

His clear analysis of the development of dermatology in that city is made more lucid by means of insight into the lives and characters of Duhring and Stokes presented through the eyes of their contemporaries and students. It shows the profound influence that Duhring had during his lifetime, and even after death by means of his personal fortune, which was dedicated to what had been his sole interest in life—the advancement of the specialty of cutaneous medicine.

Of interest to physicians, as well as to those trained in law, will be the complete text of Duhring's will—a masterpiece of testamentary draftsmanship that covered every contingency and revealed further the personality of the testator.

Not least in interest are the author's philosophic comments in the preface and in a section on notes and errors, which cast light on the tribulations of historians. The book also gives an insight into the art of writing medical history; wherever possible the author makes use of memoirs written by contemporaries, adding percipient explanations only when necessary.

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Transactions of the Symposium on Computing, Mechanics, Statistics and Partial Differential Equations. Held at the University of Chicago 29–30 Apr. 1954. vol. II, Symposium on Applied Mathematics. F. E. Grubbs, F. J. Murray, and J. J. Stoker, Eds. Interscience, New York–London, 1955. iv + 216 pp. Illus. $5.

This second symposium volume, like the first, is reprinted from *Communications on Pure and Applied Mathematics* [8, No. 1 (1955)]. It contains three chapters dealing with numerical analysis, two with problems in mathematical statistics (and one with statistical mechanics), and two with differential equations. The remaining three chapters are devoted to operations research, elasticity, and stability in mechanical systems.

The papers are of fine quality. The one by Florent Bureau on "Divergent integrals and partial differential equations" gives a penetrating review of the subject, including an extensive bibliography. Several other papers provide useful bibliographies. This is particularly true of J. Neyman's "The problem of inductive inference"; H. O. Hartley's "Some recent developments in analysis of variance"; and John Todd's "Motivations for working in numerical analysis," an interesting and inclusive survey of the most significant aspects of modern research in the field.

Like Todd, most of the other authors have provided a review of the field mentioned in the title, sometimes by an incisive discussion of special problems. Two papers present approaches peculiarly identified with the authors. "The simplest rate theory of pure elasticity" by C. A. Truesdell sets forth a new concept for the study of elasticity and expounds the simplest ideas of the resulting theory. The paper by William Feller, "On differential operators and boundary conditions," discusses a generalization of a linear differential operator of second order and shows by examples the usefulness of the concept, even for classical problems.

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New Books

The Biology of the Spirit. Edmund W. Sinnott. Viking, New York, 1955. 180 pp. $3.50.

Genetics Is Easy. A handbook of information. Philip Goldstein. Lantern Press, New York, ed. 2, 1955. 238 pp. $4.

The Only Way Out. Jacob Rosin. American Press, New York, 1955. 114 pp. $2.95.

Yearbook of Anthropology, 1955. vol. 1. William L. Thomas, Jr., Ed. Wenner-Gren Foundation for Anthropological Research, New York, 1955. 836 pp.

Forestry Handbook. Reginald D. Forbes, Ed. Ronald Press, New York, 1955. 1200 pp. $15.

A History of Philosophy. B. A. G. Fuller; revised by Sterling M. McMurrin. Holt, New York, ed. 3, 1955. 618 pp. $6.90.

The Extra Pharmacopoeia. vol. 2. Pharmaceutical Press, London, ed. 23, 1955. 1501 pp. £2 17s. 6d.

Imagination's Other Place. Poems of science and mathematics. Compiled by Helen Plotz. Crowell, New York, 1955. 200 pp. $3.50.

Hawley's Technical Speller. Compiled by Gessner G. Hawley and Alice W. Hawley. Reinhold, New York; Chapman & Hall, London, 1955. 146 pp. $2.95.

The Permanent Revolution in Science. Richard L. Schanck. Philosophical Library, New York, 1954. 112 pp. $3.

World Economic Geography with Emphasis on Principles. Earl B. Shaw. Wiley, New York; Chapman & Hall, London, 1955. 582 pp. $6.50.

Miscellaneous Publications

(Inquiries concerning these publications should be addressed, not to Science, *but to the publisher or agency sponsoring the publication.)*

The Helen Hay Whitney Foundation Second Report, for the Years 1950–1954. The Foundation, New York, 1955. 60 pp.

Report to Congress on the Mutual Security Program for the Six Months Ended June 30, 1955. Superintendent of Documents, GPO, Washington 25, 1955. 60 pp. $0.45.

Report on the Foundation's Activities for the Year Ended January 31, 1955. Wenner-Gren Foundation for anthropological Research, New York, 1955. 84 pp.

The Bromeliaceae of Brazil. Misc. Coll., vol. 126, No. 1. Lyman B. Smith. Smithsonian Institution, Washington, 1955. 290 pp.

Polio and the Salk Vaccine. Public Affairs Pamphlet No. 150A. Roland H. Berg. Public Affairs Committee, New York 16, 1955. 28 pp. $0.25.

Proceedings of the Third Japan National Congress for Applied Mechanics, 1953. 1954. 442 pp. *Proceedings of the Fourth Japan National Congress for Applied Mechanics, 1954.* 1955. 468 pp. Ed. by Japan National Committee for Theoretical and Applied Mechanics. Science Council of Japan, Tokyo.

Geology of Southern California. Bull. 170. Div. of Mines, Dept. of Natural Resources, San Francisco 11, Calif., 1954. 878 pp. (10 separately bound chapters, 34 map sheets, and 5 road logs, boxed.) $12.

Museum at Work. Bernice P. Bishop Museum annual report for 1954. The Museum, Honolulu, 1955. 55 pp.

Uranium Prospecting in Canada, Ground and Aerial Surveys. AECL No. 200. A. H. Lang. 22 pp. *Canadian Practice in Ore Dressing and Extractive Metallurgy of Uranium.* AECL No. 201. A. Thunaes. 9 pp. *Electric Power in Canada.* Regional forecasts in relation to nuclear power possibilities. AECL No. 202. J. Davis. 11 pp. *Some Economic Aspects of Nuclear Fuel Cycles.* AECL No. 203. W. B. Lewis. 30 pp. *Health and Safety Activities in Reactor Operations and Chemical Processing Plants.* AECL No. 207. A. J. Cipriani. 8 pp. *Studies of Special Problems in Agriculture and Silviculture by the Use of Radioisotopes.* AECL No. 209. J. W. T. Spinks. 33 pp. *Current Techniques in the Handling and Distribution of Cobalt 60 Radiation Sources.* AECL No. 212. A. B. Lillie. 16 pp. Atomic Energy of Canada, Chalk River, Ontario, 1955.

The Prevention of Occupational Skin Diseases. Louis Schwartz. Assoc. of American Soap and Glycerine Producers, New York 17, 1955. 42 pp.

Proceedings of the Fourth Meeting of the Mixed Commission on the Ionosphere of the International Council of Scientific Unions. Held in Brussels, 16–18 Aug. 1954. 238 pp. $6. *Proceedings of the XIth General Assembly of the International Scientific Radio Union.* Held in The Hague, 23 Aug.–2 Sept. 1954. vol. X, pt. 4, *Commission IV on Radio Noise of Terrestrial Origin.* 60 pp. $1.20. International Scientific Radio Union, Brussels, 1955.