are able to perceive and conceive these aims." Although some scholars and scientists regard the administrative role as largely supernumerary, I believe that all who have known the distinguished career of "Lew" Morrill will agree that his positive leadership in higher education has meant a great deal, not only to Minnesota but also to the nation as a whole. This book will be of particular interest to them. More than that, however, it is full of insights which will enhance anyone's understanding of an increasingly important American institution, the state university.

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Introduction to Quantum Field Theory. F. Mandl. Interscience, New York, 1960. vii + 202 pp. Illus. $6.

Two claims are made for this slender volume: first, that it is an introduction to the basic ideas of field quantization and, second, that "it should make the reader expert at handling modern perturbation-theoretic methods in quantum theory." One might be inclined to question the optimism with which the second claim is phrased, but it must be admitted that the author has a knack for exposition that goes far to substantiate the claim.

The weakness of the book is all too obvious, and perhaps even inevitable. Quantum field theory is a subject which is not yet in a definitive form. Therefore one must certainly include a large amount of background material in order to make intelligible the more recent developments which are not included in the present volume. This background material is provided in the book written by Schweber, Bethe, and de Hoffman; and in essence, Mandl has included no more modern material in his volume than is included in the above mentioned text. There is no mention of the recent work of Jost, Lehmann, Symanczik, and others who have explored the results of dispersion theory. This is a regrettable omission, in view of the book's 1959 copyright date.

The topics discussed are presented with a notable felicity of style. Mandl begins by axiomatically introducing creation and annhilation operators, that is, by omitting the usual treatment of harmonic oscillators. This topic is followed by a discussion of classical fields, field quantization, and the interaction representation; and the results obtained are applied in some detail to mesons, fermions, and photons. Then the author introduces interactions and this discussion leads to a consideration of the S-matrix and its representation in terms of Feynman diagrams. The elementary results are applied to Compton and Coulomb scattering. Finally, some of the refined results of diagrammatic techniques are presented and renormalization is discussed.

It is difficult not to recommend this book; the style of writing is uniformly high, but the book is inadequate as a text for a course in quantum field theory because of its omissions. It is, nevertheless, a valuable introduction to diagram methods and can be recommended to workers in statistical mechanics and solid state physics who may not be as interested as theoretical physicists in the intricacies of quantum electrodynamics.

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New Books

Biological and Medical Sciences

Marti-Ibanez, Felix, Ed. *Henry E. Sigerist on the History of Medicine.* M.D. Publications, New York, 1960. 324 pp. $6.75. Twenty-seven papers are reprinted from various journals and books.

McDonald, Lawson, Ed. *Pathogenesis and Treatment of Occlusive Arterial Disease.* Lippincott, Philadelphia, Pa., 1960. 249 pp. $5. Proceedings of a conference held in London at the Royal College of Physicians on 13–14 November 1959.

Newell, Frank W., Ed. *Glaucoma.* Josiah Macy, Jr. Foundation, New York, 1960. 224 pp. $8. Transactions of the 4th conference, 1959.

Peeters, H., Ed. *Protides of the Biological Fluids.* Elsevier, New York, 1960 (order from Van Nostrand, Princeton, N.J.). 430 pp. $15.75. Proceedings of the 7th colloquium held in Brŭges; some of the papers presented at the colloquium have been published in *Clinica Chimica Acta*; only summaries of these papers are included in this volume.

Reynolds, S. R. M., and Benjamin W. Zweifach, Eds. *The Microcirculation.* Univ. of Illinois Press, Urbana, 1959. 178 pp. $4.50. Proceedings of the 5th conference on microcirculatory physiology and pathology; presents discussions on the factors that influence the exchange of substances across the capillary wall.

Roberts, D. F., and G. A. Harrison. *Natural Selection in Human Populations.* Pergamon, New York, 1959. 84 pp. $3. Papers given by invited speakers at the first full meeting of the newly constituted Society for the Study of Human Biology, 8 November 1958; contributors are L. S. Penrose, A. R. G. Owen, C. A. Clarke, P. M. Sheppard, T. Dobzhansky, and E. H. Ashton.

Roemer, Milton, I., Ed. *Henry E. Sigerist on the Sociology of Medicine.* M.D. Publications, New York, 1960. 407 pp. $6.95. Thirty-one essays, 28 of which have been previously published.

Semmes, Josephine, Sidney Weinstein, Lila Ghent, and Hans-Lukas Teuber. *Somatosensory Changes after Penetrating Brain Wounds in Man.* Harvard Univ. Press, Cambridge, Mass., 1960. 104 pp. $4.

Seven, Marvin J., and L. Audrey Johnson, Eds. *Metal-Binding in Medicine.* Lippincott, Philadelphia, Pa., 1960. 413 pp. $13.75. Papers and panel discussions from a symposium sponsored by Hahnemann Medical College and Hospital in May 1959.

Simpson, George Gaylord, Anne Roe, and Richard Lewontin. *Quantitative Zoology.* Harcourt, Brace, New York, rev. ed., 1960. 447 pp. $8. Complete revision of the first edition (by Simpson and Roe) published in 1939.

Smith, E. Lester. *Vitamin B_{12}.* Methuen, London; Wiley, New York, 1960. 208 pp. $3.

Stanton, Isabel Alice. *A Dictionary for Medical Secretaries.* Thomas, Springfield, Ill., 1960. 183 pp.

U.S. Public Health Service. *The Central Nervous System and Behavior.* Russian Scientific Translation Program, National Institutes of Health, Bethesda, Md., 1960. 1060 pp. Collection of 70 articles translated from the Soviet medical literature and prepared primarily for participants at the third Macy conference on the central nervous system and behavior.

Waterman, Talbot H., Ed. *The Physiology of Crustacea.* vol. 1, *Metabolism and Growth.* Academic Press, New York, 1960. 687 pp. $22.

Mathematics, Physical Sciences, and Engineering

Alt, Franz L., Ed. *Advance in Computers.* vol. 1. Academic Press, New York, 1960. 326 pp. $10.

Ashby, W. Ross. *Design for a Brain.* The origin of adaptive behavior. Wiley, New York; Chapman and Hall, London, ed. 2, 1960. 295 pp. $6.50.

Cooke-Yarborough, E. H. *An Introduction to Transistor Circuits.* Oliver and Boyd, London; Interscience, New York, 1960. 170 pp. $3.50.

Dean, John A. *Flame Photometry.* McGraw-Hill, New York, 1960. 362 pp. $11.50.

Earhart, E. W., and R. D. Hindson, Eds. *Flat Rolled Products.* pt. 2, *Semi-Finished and Finished.* Interscience, New York, 1960. 159 pp. $4. Volume 6 in the Metallurgical Society Conferences series.

George, Joseph J. *Weather Forecasting for Aeronuatics.* Academic Press, New York, 1960. 682 pp. $15.

Langlois-Berthelot, R. *Transformers and Generators for Power Systems.* Their behavior, capabilities and rating. Translated by H. M. Clarke. Philosophical Library, New York, 1960. 550 pp. $12.