

rial on sex differences in play construction, where condensation and presentation in statistical terms is clearly possible, what is presented is an account of individual cases illustrated by diagrams of individual constructions. How does one advance from a combination of anecdotes and observations on individual persons and individual primitive societies to generalizations that make possible the prediction and understanding of human behavior? Erik Erikson presents a diagram of various stages in the gradual unfolding of the human personality through psychosocial crises which is tied to broad age categories. When one examines the evidence presented in support of this summarization, one finds its basis to be psychoanalytic theory rather than an extensive series of empirically derived principles based on an adequate sampling of human beings at various developmental levels, with appropriate attention to statistical significance.

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Economics of Mental Illness. Joint Commission on Mental Illness and Health, Monograph Series, No. 2. Rashi Fein. Basic Books, New York, 1958. xx + 164 pp. \$3.

This volume, the second in a series of studies sponsored by the Joint Commission on Mental Illness and Health, defines and assesses the direct and indirect cost of mental illness.

The questions which the commission sought answers to include: How much does mental illness cost the people of the United States? How much would it cost to provide the highest possible standard of care for the mentally ill? Can we afford these costs? Could greatly increased expenditures be justified on economic grounds? Where is the money coming from?

Rashi Fein sorts out these questions into problems on which the economist can provide direction and those which lie outside his professional competence. "What society can spend (and ultimately what society should spend) depends on the value system that society holds to. It is obvious that society can spend much more on mental illness (or on anything) than it presently is doing. Whether or not it chooses to do so is another question. We can provide data to assist us in understanding the implications of additional expenditures, the economic benefits to be derived therefrom, the gains, the costs. These may aid in answering the question, 'What should society do?' They do not answer the question. The

answer is up to society. The question, 'What can society do?' cannot be answered." Given the costs of mental illness, especially the loss in earnings and production, the issue becomes more clearly: Can we afford to incur the costs of not spending?

Direct costs per annum, defined as the sum of public expenditures (national, state, and local) and of identifiable private expenditures for the care of the mentally ill, are estimated to exceed \$1.7 billion. This sum includes not only the purchase of goods and services but also cash payments to the disabled under the Veterans Administration program. Indirect costs per annum, defined as the loss in productive activity of persons resident in mental institutions and of those who because of mental illness are absent from work, are estimated to approach \$800 million. Estimates are also developed by means of other techniques of measuring indirect costs. These range upward to \$1.9 billion—the estimated present value of all future earnings of persons who represent first admissions to public prolonged-care hospitals in 1954.

The volume contributes importantly to the literature on the cost of illness and the price of health. It makes a substantial beginning toward the formulation of different concepts of economic loss (or indirect cost) from illness and the concepts appropriate to the different uses. The concept of annual production-and-earnings loss is distinguished from loss measured as the present value of future earnings. Gross-production loss is differentiated from a net concept in which a deduction is made for the costs of maintaining a life saved. The book refines some of the tools of measurement used in earlier studies. Work-force-participation rates rather than population, or labor force, aggregates are used to determine the man-years loss in production. Definitions are tied to those used for national income account estimates so that output loss may be related to national net income product.

I might mention some minor technical deficiencies, without intending to suggest that these detract from the general usefulness of the study. There is no indication that the author is familiar with several earlier studies on the costs of sickness, including the C.-E. A. Winslow volume prepared for the World Health Organization, the *Cost of Sickness and the Price of Health* (1951). The author does not appear to be familiar with the work that has been done on construction of work-life tables—a readily available tool which would have simplified some of the estimating and would, on the whole, have improved the author's product. A median wage-and-salary figure is used to convert work-force years to dollar earnings per annum, without an ex-

planation of the use of a median rather than a mean, or of why wages and salaries are applied in lieu of an earnings figure that includes self-employment earnings.

While there are several other minor technical deficiencies, Rashi Fein has performed well the task of pointing out the nature of the costs of mental illness, the effects of use of additional resources for the care and prevention of mental illness, and the economic costs of possible types of action—including, clearly, inaction as well. His work should prove useful as a guide to programing in the period ahead.

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Handbuch der Physik. vol. 45, *Nuclear Instrumentation II*. S. Flügge, Ed. Springer, Berlin, 1958. vii + 544 pp. Illus. DM. 128.

Nuclear Instrumentation II, volume 45 of the *Handbuch der Physik*, is the second of two volumes devoted to nuclear instrumentation. The first of these has not as yet been published. E. Creutz is coeditor of the instrumentation volumes, together with S. Flügge, who is responsible for the over-all editorial direction of this new edition of the *Handbuch*.

Nuclear Instrumentation II contains the following sections: "Ionization chambers in nuclear physics," by H. W. Fulbright; "Geiger counters," by S. A. Korff; "Scintillation and Cerenkov counters," by W. E. Mott and R. B. Sutton; "The proportional counter as detector and spectrometer," by S. C. Curran; "The coincidence method," by S. DeBenedetti and R. W. Findley; "Cloud chambers," by C. M. York; "The bubble chamber," by D. H. Glaser; "Nuclear emulsions," by M. M. Shapiro; "Detection of neutrons," by H. H. Barschall; and "High energy neutron detectors," by R. T. Siegel. All of the articles give a rather complete review of the literature up to about 1956–1957.

For such topics as ionization chambers and proportional counters, where the art has been highly developed, the articles can be and are elegantly presented. For the topics covering scintillation and Cerenkov counters and high-energy neutron detectors—fields where important contributions are yet to be made—it is difficult to give an elegant presentation. Here the authors rely mainly on quoting the published literature and pointing out the inconsistencies which are typical in a rapidly developing field. The article on nuclear emulsions deserves mention as it is a very clear and logical exposition of

this important technique in nuclear physics.

It is important for workers in the field of neutron physics to note that the mobility of electrons in BF_3 , as given by Korff, is an order of magnitude too large. This value had its origin with Rossi and Staub [*Ionization Chambers and Counters* (McGraw-Hill, New York, 1949)] and caused a great deal of confusion in the United States. Barschall, in his otherwise complete article on the detection of neutrons, does not discuss this point.

This section of volume 45 of the *Handbuch* should prove valuable to students and researchers in experimental physics. However, its high cost (\$25) puts it out of reach of most individuals and relegates it to the library reference shelves.

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New Books

Advances in Chemical Physics. vol. I. I. Prigogine, Ed. Interscience, New York, 1958. 425 pp. \$11.50.

An Anthropologist at Work. Writings of Ruth Benedict. Margaret Mead. Houghton Mifflin, Boston, 1959. 605 pp. \$6.

Applied Medical Library Practice. Thomas E. Keys, with chapters by Catherine Kennedy and Ruth M. Tews. Thomas, Springfield, Ill., 1958. 514 pp. \$10.75.

Basic Organic Chemistry. Louis F. Fieser and Mary Fieser. Heath, Boston, 1959. 372 pp. \$6.

Le Bruit de fond. Pierre Grivet and Austin Blaquiére. Masson, Paris, 1958. 505 pp. Paper, F. 6500.

Calculateurs analogiques repetitifs. Rajko Tomovic. Masson, Paris, 1958. 186 pp. F. 3000.

Centaur. Essays on the history of medical ideas. Felix Marti-Ibanez. M.D. Publications, New York, 1958. 731 pp. \$6.

Communicable Diseases Transmitted Chiefly through Respiratory and Alimentary Tracts. vol. IV of *Preventive Medicine in World War II*. John Boyd Coates, Jr., Ed. Office of the Surgeon General, Department of the Army, Washington, D.C., 1958 (order from Supt. of Documents, GPO, Washington 25). 565 pp. \$5.50.

Concise Dictionary of Judaism. Dagobert D. Runes, Ed. Philosophical Library, New York, 1958. 237 pp. \$5.

Cytodifferentiation. Dorothea Rudnick, Ed. Univ. of Chicago Press, Chicago, Ill., 1958. 158 pp. \$3.75.

Dairy Handbook and Dictionary. J. H. Frandsen, Ed. Published by the editor, Amherst, Mass., 1958. 853 pp. \$10.50.

Einführung in die Makromolekulare Chemie. Hans Batzer. Huthig, Heidelberg, Germany, 1958. 234 pp. DM. 19.80.

L'Exploration des galaxies voisines. Par les methodes optiques et radio-electriques. Gerard de Vaucouleurs. Masson, Paris, 1958. 154 pp. Paper, F. 1600.

Evolution of the Speech Apparatus. E. Lloyd DuBrul. Thomas, Springfield, Ill., 1958. 113 pp. \$4.75.

Fast Reactions in Solids. F. P. Bowden and A. D. Yoffe. Academic Press, New York; Butterworths, London, 1958. 173 pp. \$7.

Fundamentals of Advanced Missiles. Richard B. Dow. Wiley, New York; Chapman & Hall, London, 1958. 583 pp. \$11.75.

Geologie de l'uranium. Marcel Roubaud. Masson, Paris, 1958. 462 pp. F. 6000.

The Geology of Uranium. Translated from Russian. Supplement No. 6 of the *Soviet Journal of Atomic Energy*, Atomic Press, Moscow, 1957. Consultants Bureau, New York, 1958. 134 pp. \$6.

George Perkins Marsh, Versatile Vermonter. David Lowenthal. Columbia Univ. Press, New York, 1958. 454 pp. \$6.50.

Growth and Perfection of Crystals. Proceedings of an International Conference on Crystal Growth held at Cooperstown, N.Y., on 27-29 August 1958. Sponsored by Air Force Office of Scientific Research, Air Research and Development Command, and General Electric Research Laboratory. R. H. Doremus, B. W. Roberts, David Turnbull, Eds. Wiley, New York; Chapman & Hall, London, 1958. 627 pp. \$12.50.

A Handbook on Torsional Vibration. E. J. Nestorides. Cambridge Univ. Press, New York, 1958. 686 pp. \$10.50.

Pecos, New Mexico: Archaeological Notes. Papers of the Robert S. Peabody Foundation for Archaeology, vol. 5. Alfred Vincent Kidder. Roberts S. Peabody Foundation, Phillips Acad., Andover, Mass., 1958. 380 pp. \$7.50.

Topics in Electromagnetic Theory. Dean A. Watkins. Wiley, New York; Chapman & Hall, London, 1958. 127 pp. \$6.50.

Vapor-Liquid Equilibrium. Eduard Hala, Jiri Pick, Vojtech Fried, Otakar Vilim. Translated by G. Standart. Pergamon, New York and London, 1958. 420 pp.

Vacuum Metallurgy. Rointan F. Bunshah, Ed. Reinhold, New York; Chapman & Hall, London, 1958. 490 pp. \$12.50. This volume contains the lectures presented during the course on vacuum metallurgy sponsored by the department of metallurgical engineering in cooperation with the Office of Special Service to Business and Industry, New York University, 10-14 June 1957. The lectures are on vacuum equipment, thermodynamics and kinetics, arcs and arc melting processes, induction melting processes, electron bombardment melting techniques, degassing in the liquid solid states, distillation of metals, metallurgical application of vacuum processing, analytical techniques, and future trends.

Vitamins and Hormones. Advances in research and applications. vol. 16. Robert S. Harris, G. F. Marrian, Kenneth V. Thimann. Academic Press, New York, 1958. 448 pp. \$11.60.

Wild Paradise. The story of the Coto Donana expeditions. Guy Mountfort. Houghton Mifflin, Boston, Mass., 1958. 240 pp. \$7.

Miscellaneous Publications

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

Certification of School Librarians. A compilation of state requirements, 1958. Bull. 1958, No. 12. Mary Helen Mahar. 73 pp. \$0.30. *Foreign Language Laboratories in Schools and Colleges*. Bull. 1959, No. 3. Marjorie C. Johnston and Catherine C. Seerley. 86 pp. \$0.35. U.S. Office of Education, Washington, D.C., 1958 (order from Supt. of Documents, GPO, Washington 25).

A Study of the Chironomidae (Diptera) of Africa South of the Sahara. pt. IV. Bulletin, Entomology, vol. 6, No. 11. Paul Freeman. 102 pp. 30s. *The African Species of Stivalius, a Genus of Siphonaptera*. Bulletin, Entomology, vol. 7, No. 2. F. G. A. M. Smit. 37 pp. 10s. *Revisions of Mallophaga Genera*. Degeeriella from the Falconiformes. Bulletin, Entomology, vol. 7, No. 4. Theresa Clay. 86 pp. 30s. *Revision du Genre Exocentrus Mulsant (Col., Cerambycidae)*. S. Breuning. Bulletin, Entomology, vol. 7, No. 5. S. Breuning. 119 pp. *New and Little Known Emesinae (Reduviidae, Hemiptera) in the British Museum (Natural History)*, London. Bulletin, Entomology, vol. 7, No. 6. P. Wygodzinsky. 18 pp. 6s. *New Species and Subspecies of Odonata and on Some Trichoptera from Southern Rhodesia and Portuguese East Africa*. Bulletin, Entomology, vol. 7, No. 7. D. E. Kimmins. 22 pp. 7s. *A Revision of the Genera Nidalia and Bellonella, with an Emendation of Nomenclature and Taxonomic Definitions for the Family Nidaliidae (Otocorallia, Alcyonacea)*. Bulletin, Zoology, vol. 5, No. 5. Huzio Utinomi. 22 pp. 7s. *The Upper Permian Flora of England*. Bulletin, Geology, vol. 3, No. 9. Hilda M. M. Stoneley. 44 pp. 17s. 6d. British Museum (Natural History), London, 1958.

Climate and Man in the Southwest. A symposium held before the 33rd annual meeting of the Southwestern and Rocky Mountain Division of the AAAS, 30 April 1957, Tucson, Ariz. Terah L. Smiley, Ed. Univ. of Arizona Press, Tucson, 1958, 84 pp.

Year Book of the Physical Society, 1958. Containing special lectures delivered before the society, exhibition discourses, obituaries, proceedings of the meetings of the society, report of Council for 1957, accounts and balance sheet for 1957, and instructions to authors. Physical Society, London, S.W.7, 1958. 106 pp.

Contributions to Stratospheric Meteorology. GRD Research Notes No. 1. ASTIA Document No. AD 152626. Peter Antanaitis et al. 134 pp. *Project Prairie Grass, a Field Program in Diffusion*. vol. II. Geophysical Research Papers, No. 59. Morton L. Barad, Ed. 209 pp. Atmospheric Analysis Laboratory, Geophysics Research Directorate, Air Research and Development Command, Bedford, Mass., 1958 (order from U.S. Department of Commerce, Office of Technical Services, Washington 25).

Herbaceous Angiosperms of the Lesser Antilles. Ismael Velez. Biology Dept., Inter-American Univ. of Puerto Rico, San Juan, 1957. 121 pp.