events that happened in the individual's earlier years than did Jung, and none of them seemed to spend time theorizing on either religion or occult phenomena.

Neumann saw Jung's work as the "grandest attempt yet made to construct a theory of the psyche." Glover saw it as a "mish mash of oriental philosophy with a bowdlerized psychobiology." The historians will decide in the future who was nearest the truth but, in the meantime, should one want to read a fair, dispassionate survey of the work of this admittedly great man, this book is recommended.

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Applied Mathematics

Methods of Mathematical Physics. vol. 2, *Partial Differential Equations*. R. Courant and D. Hilbert. Interscience, New York, 1962. xxii + 830 pp. $17.50.

The second volume of the mathematical classic, the Courant-Hilbert *Methoden der mathematischen Physik,* appeared in 1937, and it is still an indispensable handbook for anyone who has to deal with partial differential equations. It has served as the basis for countless courses in applied mathematics and advanced mathematical physics; it has stimulated and strongly influenced mathematical research during the past quarter century. The present volume is the long-expected English translation and, at the same time, a very much enlarged and revised edition of the original book, which covers the subject matter found in the first six chapters of the German edition. The seventh chapter, which deals with existence proofs for elliptic equations by variational methods, has been omitted in this translation and will form the nucleus of a projected third volume of the Courant-Hilbert. But even with this omission the volume has increased by almost 300 pages; a comparison of the material in the two editions is most instructive and provides a good concept of the developments in partial differential equations. The organization of the original volume and even the six chapter headings have been preserved. But a large amount of new results, methods, and applications has been added, and many old developments have been replaced by more powerful and more general procedures. The new edition is characterized by a trend toward greater generality and by a larger degree of abstraction. More stress is placed on the role of differential systems, and many existence and uniqueness proofs are reformulated to apply to systems rather than to simple differential equations. Uniqueness proofs under weakened assumptions are added, the concept of a generalized solution is introduced, and the replacement of differential equations by integral conservation laws is discussed. Functional analysis plays a central role in the book. Fixed point theorems in function spaces are applied to prove the existence of solutions in nonlinear boundary value problems, and the theory of distributions is used with elegance in the theory of linear hyperbolic systems to generalize the Riemann solution theory. However, all less conventional topics are clearly explained, and all new concepts are well motivated. Indeed, there is an appendix of about 30 pages which gives a succinct but clear survey of distribution theory. Thus, these new ideas may soon become familiar tools to even the more application-minded user of differential equations. Illustrations and examples from fluid dynamics, electromagnetic radiation, optics, and magnetohydrodynamics have been enlarged, or added, which show the significance of the general concepts and which will surely justify the use of heavier mathematical apparatus.

The book obviously owes much to the intensive and cooperative research activity of Courant's group of colleagues and disciples. It is an inexhaustible source of small methodological tricks, remarks, and observations which are so useful and essential to creative work in every field of mathematics. It shows the intense activity in and the vitality of the theory of partial differential equations. The rapid development of the theory also has an unfortunate and a less pleasing consequence. While the first edition was a self-contained survey of the theory, the new edition necessarily cites many references to current literature which cannot be elaborated in detail, and the reader is sent to monographs for full proofs even in such vital topics as the Schauder a priori estimates on solutions of elliptic equations. However, the authors could not possibly attain the previous completeness within the compass of a single volume, and it should be stressed that all facts which are not proved are very clearly and precisely formulated so that the general ideas and concepts are easily understood.

An appendix by L. Bers, on pseudo-analytic functions and quasiconformal mapping, deserves special mention for its clarity and for the great amount of interesting information condensed into very little space.

It is evident that the new edition will serve for a long time as a reference source and an inspiration for mathematicians and users of mathematics in all fields of science.

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Descriptive Presentation

Structure and Properties of Organic Compounds. A brief survey. Carl R. Noller. Saunders, Philadelphia, 1962. v + 255 pp. Illus. $6.

This text is precisely what its author states it to be, a brief survey of the structure and properties of organic compounds which is designed for use by those who need only be conversant with the field. With few exceptions, no attempt is made to present the experiments upon which the organic chemist bases his science. Instead, the presentation is descriptive and may seem arbitrary to the student. It will be mastered best by the student with an excellent memory. In this feature, Noller's text presents no great departure from most of the short texts that have preceded his. It may be seriously questioned, however, whether this or any similar short text is adequate for premedical students. One of Noller's more comprehensive texts would be a better choice for this purpose, in my opinion.

The book is remarkably free from errors, but there are a few. On page 134 Noller states that sympathomimetic amines "mimic the action of the sympathetic nervous system." This is a big order for a mere chemical! A transposition converts Chevreul (1786–1889) from one of the world's oldest chemists into a shortlived one by making his birthdate 1876 instead of 1786. In similar vein, Van't Hoff is represented as dying 10 years before he received the Nobel Prize rather than 10 years after.

The alert student may be mystified by the statement (on page 24) that methane decomposes to carbon and hydrogen above 1200°, shortly followed (on pages 37 and 38) by the one that acetylene and hydrogen can be formed from methane in reasonably high yield at 1400 to 1600°, if the exposure time is short enough. This is an oversimplification that overlooks the important factors of surface effects and concentrations on the complex sequence of reactions which determine the outcome of this pyrolysis.

The author's choice of compounds for discussion includes many substances found in commerce and a large group of physiologically active substances. This selection insures the interest of nurses, predental students, majors in home economics, majors in agriculture, and similar groups, to whom the text is especially addressed.

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Miscellaneous Publications

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

Arctic Aeromedical Laboratory. *Technical Note*, AAL TN 60–4: "The effect of depth of immersion on the responses of the finger in ice water," C. J. Eagan (12 pp.); AAL TN 60–26: "Alterations in effects of morphine on the cold-acclimatized animal," H. Leong Way and H. W. Elliott (16 pp.); AAL TN 60–30: "Arctic field evaluation of vapor impermeable glove, flying," K. R. Skrettingland (9 pp.); AAL TN 60–32: "Refinements in photoelectric plethysmography," pt. 2, Alrick B. Hertzman (12 pp.); AAL TN 61–1: "Cardiovascular effects of refeeding stress following starvation," pt. 9, G. S. Smith and B. Connor Johnson (10 pp.); AAL TN 61–2: "Mechanism of adaptation to a threonine-deficient diet," pt. 4, Dorothy Arata (3 pp.); AAL TN 61–3: "Mechanism of adaptation to a threonine-deficient diet," pt. 5, Dorothy Arata (6 pp.); AAL TN 61–4: "A new heavy winter flying clothing assembly," James H. Veghte and James I. Clogston (9 pp.); AAL TN 61–7: "Evaluation of various types of boots in cold environments," Kermit R. Skrettingland, James Clogston, James H. Veghte (16 pp.); AAL TN 61–8: "T-33 aircraft survival container," Paul W. Barnett (6 pp.). Alaskan Air Command, Fort Wainwright, 1961 (order from USAF, APO 731, Seattle).

Australia, Bureau of Mineral Resources, Geology, and Geophysics. *Bulletin*, No. 61, "The molluscan fauna and probable lower Cretaceous age of the Nanutarra formation of Western Australia," L. R. Cox. Department of National Development, Canberra, 1961. 53 pp.

Cornell University, Daniel and Florence Guggenheim Aviation Safety Center. "Survey of research projects in the field of aviation safety, 1962 annual supplement," compiled by R. M. Woodham. The Center, New York, 1962. 23 pp.

Geophysics Research Directorate. *Air Force Surveys in Geophysics*, No. 140: "Proceedings of the national symposium on winds for aerospace vehicles design," vols. 1 and 2; N. Sissenwine and H. G. Kasten, Eds. (vol. 1, 233 pp.; vol. 2, 269 pp.). Air Force Cambridge Research Laboratories, Bedford, Mass., 1962 (order from Office of Technical Services, Washington, D.C.).

Great Britain, Department of Scientific and Industrial Research. "Register of research in the human sciences 1960–1961. DSIR, London, 1962 (order from British Information Services, New York). 123 pp. $2.

New York Botanical Garden. *Annual Report, 1961 and Annual Meeting, 22 May 1962*. New York Botanical Garden, New York, 1962. 48 pp.

Smithsonian Institution, Astrophysical Observatory. *Smithsonian Contributions to Astrophysics*, vol. 4, No. 2: "Orbital elements of photographic meteors," Richard E. McCrosky and Annette Posen. Smithsonian, Washington, D.C., 1961 (order from Superintendent of Documents, GPO, Washington, D.C.). 84 pp. $0.40.

U.S. Geological Survey. *Bulletin*, No. 1110–G, pp. 239–288: "Contributions to general geology, geology of the Otter Creek quadrangle, Montana," Roger B. Colton (maps and plates, 1962); No. 1123–B, pp. 95–138: "Geology of parts of the upper Mississippi Valley zinc-lead district, geology of the Montfort and Linden quadrangles, Wisconsin," John E. Carlson (maps, 1961). Superintendent of Documents, GPO, Washington, D.C.

U.S. National Aeronautics and Space Administration. "Proceedings of the International Meteorological Satellite Workshop, 13–22 November 1961," Hugh L. Dryden and Francis W. Reichelderfer, Chairman. NASA and U.S. Weather Bureau, Washington, D.C., 1962 (order from Superintendent of Documents, GPO, Washington, D.C.). 226 pp. $1.75.

U.S. National Bureau of Standards. Circular, No. 488, *An Ultraviolet Multiplet Table*, sect. 3, "The spectra of molybdenum, technetium, ruthenium, rhodium, palladium, silver, cadmium, indium, tin, antimony, tellurium, iodine, xenon, cesium, barium, lanthanum, hafnium, tantalum, tungsten, rhenium, osmium, iridium, platinum, gold, mercury, thallium, lead, bismuth, polonium, radon, and radium" (94 pp. $0.60); sect. 4, "Finding list for spectra of the elements hydrogen to niobium ($Z = 1$ to 41)" (65 pp. $0.45); sect. 5, "Finding list for spectra of the elements molybdenum to lanthanum ($Z = 42$ to 57); hafnium to radium ($Z = 72$ to 88)" (30 pp. $0.30). Charlotte E. Moore. Superintendent of Documents, GPO, Washington, D.C., 1962.

U.S. Office of Education. OE–34015: *A Guide to Programmed Instructional Materials Available to Educators by September 1962*. Compiled by the Center for Programmed Instruction for the Office of Education. Superintendent of Documents, GPO, Washington, D.C., 1962. 414 pp. Paper, $1.50. Descriptive information and sample frames are provided for each program, but the programs are not evaluated.

U.S. Office of Naval Research. *ONR Report*, ACR-64: "Animals and man in space, a chronology and annotated bibliography through the year 1960," Dietrich E. Beischler and Alfred R. Fregly. ONR, Washington, D.C., 1962 (order from Office of Technical Services, Washington, D.C.). 97 pp. $2.50.

U.S. Public Health Service. Publication No. 919: "Highlights of progress in mental health research, 1961. Prepared by the Publications and Reports Section, National Institute of Mental Health. Superintendent of Documents, GPO, Washington, D.C. $0.25.

University of California. *Publications in Entomology*, Vol. 28, No. 1, pp. 1–124: "A revisional study of the bees of the genus *Perdita* F. Smith, with special reference to the fauna of the Pacific coast (Hymenoptera, Apoidea)," pt. 5, P. H. Timberlake ($2.50); *Publications in Geological Sciences*, vol. 42, No. 1: "Superposed deformations in the central Sierra Nevada foothills, east of the mother lode," Alexander K. Baird (69 pp. Maps. $2). Univ. of California Press, Berkeley, 1962.

University of Illinois, Engineering Experiment Station. *Bulletin*, No. 462: "Hydrologic determination of waterway areas for the design of drainage structures in small drainage basins," Ven Te Chow. Univ. of Illinois, Urbana, 1962. 104 pp. $1.50.

University of Texas, Bureau of Ecomonic Geology. *Publication*, No. 6120: "The Ouachita system," Peter T. Flawn *et al.* (401 pp. Maps. 1961); *Report of Investigations*, No. 43: "Mineral resources of South Texas, region served through the port of Corpus Christi," Ross A. Maxwell (140 pp. Maps. 1962); No. 44: "Stratigraphic names in the Midway and Wilcox groups of the Gulf coastal plain," William L. Fisher (reprinted from *Transactions of the Gulf Association of Geological Societies*, vol. 11, pp. 263–295. 1961). The University, Austin.

World Health Organization. "Radiation and health" (reprinted from *WHO Chronicle*, 1961. 42 pp. $0.30); "WHO and mental health 1949–1961 (reprinted from *WHO Chronicle*, 1962. 48 pp. $0.30); *Technical Report*, No. 228: "Evaluation of the toxicity of a number of antimicrobials and antitoxicants (104 pp. $1.25); No. 231: "Arterial hypertension and ischaemic heart disease, preventative aspects" (28 pp. $0.30); No. 232: "Chemotherapy of cancer" (52 pp. $0.60); No. 233: "Expert Committee on Filariasis (*Wuchereria* and *Brugia* infections) report," (52 pp. $0.60); No. 235: "The role of public health officers and general practitioners in mental health care" (56 pp. $0.60); No. 236: "Planning, organization, and administration of a national health laboratory service" (48 pp. $0.60); No. 237: "Requirements for biological substances. pt. 7. Requirements for poliomyelitis vaccine (oral)" (32 pp. $0.30). WHO, Geneva Switzerland, 1962 (order from Columbia Univ. Press, New York).