

The heart of the present book is again the Laplace transform, for it turns convolutions into ordinary products, and many readers will indeed be relieved to find that the book limits itself to material accessible, from fundamentals exposed in the earlier treatise, by pedestrian methods of real and complex variable theory available in Titchmarsh.

The limitations that the authors impose on the notion of convolution are drastic. They restrict themselves to the Lebesgue convolution  $K * f$  and the Stieltjes convolution  $K \# f$  of a pair of functions  $K, f$  on the additive group consisting of the real line—that is, to integrals  $\int K(x-t)f(t) dt$  and  $\int K(x-t)df(t)$ —where the function  $K$ , termed *kernel*, is variation-diminishing, which means that  $K * f$  has no more changes of sign than  $f$ .

As a result of researches of Laguerre, Pólya, and Schoenberg, these kernels, or rather their Laplace transforms  $1/E(s)$ , are characterized in several ways in the first few chapters: the corresponding  $E(s)$  turn out to be the entire functions, equal to unity at the origin, which are expressible as uniform limits of polynomials in  $s$  with real roots, or, what amounts to the same, the products of the type:

(1)  $\exp(-cs^2 + bs) \prod (1 - s/a_k) \exp(s/a_k)$  where  $c \geq 0$ ,  $b, a_k$  ( $k = 1, 2, \dots$ ) are real and  $\sum a_k^{-2} < \infty$ . However, the authors develop the theory of convolution transforms only in the case  $E(s) = \exp(-cs^2)$  (Chapter VIII) and in the case where  $E(s)$  is given by (1) with  $c = 0$  (Chapters VI, VII), or in a still more restricted case in complex form (Chapter IX).

In spite of these drastic limitations, no doubt due to the author's desire to spare the reader, the book is undoubtedly an excellent complement to the earlier one on the Laplace Transform, and, as the authors state, some of the earlier results can now be better understood as special cases of the newer developments.

L. C. YOUNG

Department of Mathematics,  
University of Wisconsin

## New Books

*Atom Harvest.* Leonard Bertin. Secker & Warburg, London, 1955. 253 pp. 20s.

*The Preservation of Natural History Specimens.* vol. I, *Invertebrates*. Reginald Wagstaffe and J. Havelock Fidler, Eds. Philosophical Library, New York, 1955. 205 pp. \$10.

*The Mathematics of Physics and Chemistry.* Henry Margenau and George M. Murphy. Van Nostrand, Princeton, N. J., ed. 2, 1956. 604 pp. \$6.85.

*Aircraft Gas Turbines.* C. W. Smith. Wiley, New York; Chapman & Hall, London, 1956. 448 pp. \$8.75.

*A Follow-up Study of World War II Prisoners of War.* VA Medical Monograph. Bernard M. Cohen and Maurice Z. Cooper. Superintendent of Documents, GPO, Washington 25, 1954. 81 pp. \$1.50.

*Principles of Chemical Engineering Thermodynamics.* Ernest D. Wilson and Harold C. Ries. McGraw-Hill, New York, 1956. 376 pp. \$7.50.

*Biographical Memoirs of Fellows of the Royal Society.* vol. I. A new series in continuation of *Obituary Notices of Fellows of the Royal Society*. Royal Society, London, 1955. 263 pp. 30s.

*The Mighty Force of Research* (15 articles reprinted from *Fortune*). Editors of *Fortune*. McGraw-Hill, New York, 1956. 308 pp. \$4.

*Laboratory Manual of Vertebrate Embryology.* Robert Rugh. Burgess, Minneapolis, rev. ed., 1956. 250 pp. \$3.

*Physical Organic Chemistry.* Jack Hine. McGraw-Hill, New York, 1956. 497 pp. \$9.

*A Laboratory Guide for Elementary Physiology.* Oscar E. Tauber, Delma E. Harding, and Robert E. Haupt. Burgess, Minneapolis, 1955. 224 pp. \$3.

*Technical Education.* Its aims, organization, and future development. P. F. R. Venables. Bell, London; Essential Books, Fairlawn, N. J., 1955. 42s.

*The Laboratory Diagnosis of Cancer of the Cervix.* Symposia on research advances applied to medical practice, No. 2. F. Homburger and W. H. Fishman, Eds. Karger, Basel, Switzerland, and New York, 1956. 70 pp. F. 12.40.

*Clinical Papers and Essays on Psycho-Analysis.* Karl Abraham. Hilda Abraham, Ed.; trans. by Hilda Abraham and D. R. Ellison. Basic Books, New York, 1955. 336 pp. \$6.

*Titanium.* A. D. McQuillan and M. K. McQuillan. Academic Press, New York; Butterworths, London, 1956. 466 pp. \$10.

*Writing Useful Reports.* Principles and applications. Robert E. Tuttle and C. A. Brown. Appleton-Century-Crofts, New York, 1956. 635 pp. \$4.50.

*Fluid Flow in Practice.* J. R. Caddell, Ed. Reinhold, New York; Chapman & Hall, London, 1956. \$3.

*Numerical Analysis.* With emphasis on the application of numerical techniques to problems of infinitesimal calculus in single variable. Zdenek Kopal. Wiley, New York, 1955. 556 pp. \$12.

*Realms of Water* (original title: *De Kringloop van Het Water*). Some aspects of its cycle in nature. P. H. Kuenen. May Hollander, trans. Wiley, New York; Cleaver-Hume, London, 1955. 327 pp. \$6.50.

*Comparative Endocrinology of Vertebrates.* pt. II, *The Hormonal Control of Water and Salt-Electrolyte Metabolism in Vertebrates.* Proceedings of a conference held at the Department of Zoology, University of Liverpool, 12-16 July 1954. Memoirs of the Society for Endocrinology No. 5. I. Chester Jones and P. Eckstein, Eds. Cambridge University Press, New York, 1956. 124 pp. \$4.75.

*Introductory Quantitative Chemistry.* Axel R. Olson, Charles W. Koch, and George C. Pimentel. Freeman, San Francisco, 1956. 470 pp. \$5.

## Miscellaneous Publications

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

*Identification and Geographical Variation of the Cyprinodont Fishes Fundulus olivaceus (Storer) and Fundulus notatus (Rafinesque).* Studies in Zoology, vol. 3, No. 7. Jerram L. Brown. Tulane University, New Orleans, La., 1956. 16 pp. \$0.50.

*French Doctoral Theses, Sciences, 1951-1953.* Ser. III, No. 1, of *French Bibliographical Digest*. French Cultural Services of New York. New York 21, 1955. 75 pp.

*You and TV.* How a television picture gets from the studio to you. Robert Stollberg. Science Research Associates, Chicago, 1955. 55 pp. \$0.60.

*Prehistoric People of the Northern Southwest.* Bull. No. 12. Joe Ben Wheat. Grand Canyon Natural History Assoc., Grand Canyon, Ariz., 1955. 38 pp.

*Census Atlas Maps of Latin America, Central America.* Census Atlas Project, U.S. Bureau of the Census in cooperation with Foreign Operations Administration. U.S. Department of Commerce, Washington 25, 1955. \$1.

*The Monk Seals (Genus Monachus).* Bulletin of the British Museum (Natural History) Zoology, vol. 3, No. 5. Judith E. King. British Museum (Natural History), London, 1956. 56 pp. 18s.

*Rain-making, Its Present Position and Future Possibilities.* A. K. Roy. Council of Scientific & Industrial Research, New Delhi, India, 1955. 31 pp.

*Armour Research Foundation of Illinois Institute of Technology, Annual Report, 1955.* Progress through research. The Institute, Chicago 16, Ill., 1956. 56 pp.

*Science as a Social Institution.* An introduction to the sociology of science. Short studies in sociology 11. Gerard DeGré. Doubleday, New York, 1955. 48 pp. \$0.85.

*Standard Laboratory Colonies of Termites for Evaluating the Resistance of Timber, Timber Preservatives, and Other Materials to Termite Attack.* Bull. 277. F. J. Gay, T. Greaves, F. G. Holdaway, and A. H. Wetherly. 60 pp. *Mineralogical Examination of a Yellow Podzolic Formed on Granodiorite.* Soil Publ. No. 5. R. Brewer. 28 pp. Commonwealth Scientific and Industrial Research Organization, Melbourne, Australia, 1955.

*Better Teaching with Relief Maps.* A teachers' manual for the Aero Relief Map of the United States. Preston E. James and Shirley Hess. Aero Service Corp., Philadelphia 20, 1956. 37 pp.

*Atomic Energy Commission, Nineteenth Semiannual Report.* U.S. Atomic Energy Commission, Washington, 1956. 200 pp.

*Effects of Traffic Control on Street Capacity.* Highway Research Board Bull. 112. National Academy of Sciences-National Research Council, Washington, 1956. 52 pp. \$0.90.

*Accidental Scientific Discoveries.* Bernard E. Schaar, Ed. Schaar and Co., Chicago 7, 1955. 64 pp.

*Present Knowledge in Nutrition.* Prepared from articles published in *Nutrition Reviews*. Revised and edited by editorial staff and advisory board. Nutrition Foundation, New York 16, ed. 2, 1956. 130 pp.