

The second problem arises from the lack of an adequate introduction. The diversity of approaches to habituation requires that common threads, if indeed there are any, be explicitly pointed out. For example, both the decrease in number of Protozoa contracting to a repeated vibratory stimulus and the waning of the mobbing response of chaffinches to a stuffed owl are called habituation. It would be of considerable help if the value of grouping such disparate phenomena were made clear.

Granted, this is an extremely difficult problem; but the lack of explicit organization is manifested in other ways. For example, in the very brief preface, the reader is given the definition of habituation cited above. Then, in the first chapter (coauthored by the editors with Wyers), it is said that decreased gill withdrawal in the sea hare, *Aplysia*, to repeated stimulation of the mantle shelf can be called habituation only after demonstration of response restoration following a strong stimulus (dishabituation). Faced with such inconsistencies so early on, the reader might well feel better served if a clear introduction to the basic issues had been included in the preface.

Peeke and Herz, then, have provided a timely collection of papers in a field of intense research activity. My disappointment on reading these volumes can be attributed less to what they are than to what they could have been.

PAUL B. FAREL

Department of Physiology,  
School of Medicine,  
University of North Carolina,  
Chapel Hill

## The Heritage of Galen

**Galenism. Rise and Decline of a Medical Philosophy.** OWSEI TEMKIN. Cornell University Press, Ithaca, 1973. xx, 249 pp., illus. \$15. Cornell Publications in the History of Science.

This small book, based upon the Messenger Lectures given by Temkin at Cornell University in 1970, is the product of a lifetime of study of Galen and more particularly of the Galenic tradition through late antiquity and the middle ages. Distinguished by broad learning, it encloses within its modest number of pages a remarkably comprehensive survey of scholarship about Galen and Galenism from the 2nd to the 17th century.

Temkin has chosen to consider the

philosophy of Galen rather than Galen's medical theories, therapeutic practices, or contributions to anatomy and physiology. As a philosophy, Galenism was a historical phenomenon comparable with Platonism or Aristotelianism. But what was Galen's medical philosophy, if it is to be distinguished from his medicine and his science? Temkin suggests that it was the set of attitudes Galen adopted in his study of health and disease—a Platonic vision of truth, an emphasis on accuracy of observation, as in Galen's anatomical studies and physiological experiments, and on the breadth of experience to be gained from travel. Galen upheld the Hippocratic belief that the treatment of disease must be based on a knowledge of nature. Galen's philosophy also contained a strong moral element—respect for the Creator, self-discipline, moderation, and charity. Moreover, he considered himself an exemplar of such virtues. Yet for all Galen wrote, Temkin points out, we know little about the man himself. Temkin shows that in the centuries after Galen's death the writers who systematized his works were most interested in descriptions of medical diagnosis and therapy, namely, those things which would be most immediately useful in the practice of medicine. In the 12th century the translators of Galen's works from the Arabic showed a similar practical bent, so that during the middle ages Galen was known through his short practical treatises, while his longer scientific and philosophical works remained untranslated and almost unknown. The practical nature of medieval interest in Galen creates a difficulty for Temkin's earlier definition of Galenism as Galen's philosophy, because Temkin's discussion of Galenism in the middle ages is largely a discussion of Galenic medical ideas, that is, of Galenic medicine. Similarly when in the 16th century Paracelsus attacked Galen, he was attacking Galenic medicine rather than a system of philosophy.

The role of Galen's anatomy in the 16th century poses a particularly difficult historical problem. Temkin notes that Galen had been "especially insistent on establishing facts" in anatomy, yet his anatomy was criticized by Vesalius because it was based on the dissection of animals, rather than on the human body. Yet at the beginning of his career Vesalius read the new published Latin translations of Galen's *De usu partium* and *De anatomicis administrationibus*. From Galen's works Vesalius learned

how to dissect and how to describe anatomical structures. Furthermore, if Galen used animals to illustrate human anatomy, so too did Vesalius. Vesalius may be considered to have applied Galen's methods to the study of human anatomy and therefore perhaps to have been Galen's greatest pupil. If so, modern anatomy might be considered a continuation of the Galenic anatomical tradition. Certainly Galen's anatomical works continued to be read through the 16th century. William Harvey cited Galen's *De usu partium* in the introduction to *De motu cordis*, and from other references it is clear that he had read Galen widely. Temkin points out (p. 153) that Harvey's methods of experimental demonstration were not dissimilar to those used by Galen but that Harvey's discovery of the circulation of the blood had the effect of destroying the whole connected system of ideas embodied in Galen's physiology. Temkin thus raises the question of the historical relationship of old science to new science. It is at once the most fundamental and the most subtle and complex question in the history of science and medicine. Temkin suggests that what was attacked and what was destroyed during the 16th and 17th centuries was Galen's authority. Many of Galen's ideas persisted even into the 19th century.

LEONARD G. WILSON

Department of the History of Medicine,  
University of Minnesota, Minneapolis

## Books Received

**Automatic Computational Techniques in Civil and Structural Engineering.** E. Litton. Halsted (Wiley), New York, 1973. xii, 372 pp., illus. \$19.50.

**Automation of Clinical Electroencephalography.** Proceedings of a conference. Peter Kellaway and Ingemar Petersen, Eds. Raven, New York, 1973. viii, 318 pp., illus. \$21.50.

**Bacterial and Fungal Diseases of Plants in the Tropics.** George F. Weber. University of Florida Press, Gainesville, 1973. xviii, 674 pp., illus. \$22.50.

**Bibliography on Geophysical, Geochemical, and Geological Effects of Nuclear Events.** T. C. O'Callaghan, Ed. General Publishing Services, Alexandria, Va., 1973. iv, 48 pp. Paper, \$5. Bibliographies in Science Series, No. 1.

**Biogeography.** An Ecological and Evolutionary Approach. C. Barry Cox, Ian N. Healey, and Peter D. Moore. Halsted (Wiley), New York, 1973. viii, 184 pp., illus. Paper, \$9.95.

**The Brain Changers.** Scientists and the

(Continued on page 676)

## New Resin-Single Column System for your Amino Acid Analyzer

Now there's a new single column system for the complete analysis in three hours of the standard amino acids. No special buffers . . . no baseline shift . . . no filters needed . . . no special columns. It requires less sample, too. Guaranteed results or your money back. Why use two when one will do. Write for literature to James V. Benson, Jr., Hamilton Company, P.O. Box 17500, Reno, Nevada 89510.

# HAMILTON



Circle No. 169 on Readers' Service Card

## Our double beam monitor is a triple threat! Buchler Fracto-Scan<sup>TM</sup>

Measures UV Absorbing Elements from

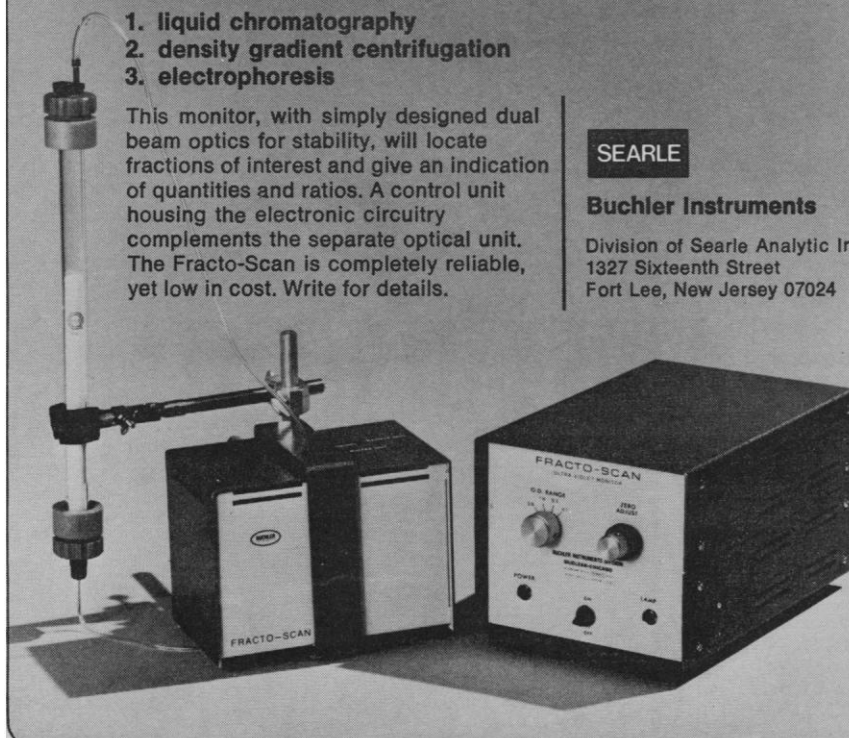
1. liquid chromatography
2. density gradient centrifugation
3. electrophoresis

This monitor, with simply designed dual beam optics for stability, will locate fractions of interest and give an indication of quantities and ratios. A control unit housing the electronic circuitry complements the separate optical unit. The Fracto-Scan is completely reliable, yet low in cost. Write for details.

SEARLE

**Buchler Instruments**

Division of Searle Analytic Inc.  
1327 Sixteenth Street  
Fort Lee, New Jersey 07024



676

Circle No. 168 on Readers' Service Card

## BOOKS RECEIVED

(Continued from page 650)

**New Mind Control.** Maya Pines. Harcourt Brace Jovanovich, New York, 1973. viii, 248 pp., illus. \$7.95.

**Cat Anatomy.** An Atlas, Text and Dissection Guide. Robert C. McClure, Mark J. Dallman, and Phillip D. Garrett. Lea and Febiger, Philadelphia, 1973. viii, 240 pp., illus. Paper, \$9.75.

**Chemical Engineers' Handbook.** Robert H. Perry and Cecil H. Chilton, Eds. McGraw-Hill, New York, ed. 5, 1973. xx, variously paged, illus. \$35. McGraw-Hill Chemical Engineering Series.

**Drug Resistance and Selectivity.** Biochemical and Cellular Basis. Enrico Michich, Ed. Academic Press, New York, 1973. xxi, 528 pp., illus. \$33.

**Dust Explosions and Fires.** K. N. Palmer. Chapman and Hall, London, 1973 (U.S. distributor, Halsted [Wiley], New York). xii, 396 pp., illus. + plates. \$18.50. Powder Technology Series.

**Earth History and Plate Tectonics.** An Introduction to Historical Geology. Carl K. Seyfert and Leslie A. Sirkin. Harper and Row, New York, 1973. viii, 504 pp., illus. \$12.95.

**The Electromagnetic Interaction.** R. L. Armstrong and J. D. King. Prentice-Hall, Englewood Cliffs, N.J., 1973. xii, 494 pp., illus. \$11.95.

**Electronics in the Life Sciences.** Stephen Young. Halsted (Wiley), New York, 1973. x, 198 pp., illus. \$11.50.

**The Elementary Functions.** An Algorithmic Approach. G. Albert Higgins, Jr. Prentice-Hall, Englewood Cliffs, N.J., 1974. xvi, 336 pp., illus. \$10.50. Reprint of the 1970 edition.

**Fish Chromosome Methodology.** Thomas E. Denton. Thomas, Springfield, Ill., 1973. viii, 166 pp., illus. \$11.50.

**Fishes of the Western North Atlantic.** Part 6, Order Heteromi (Notacanthiformes), Suborder Cyprinodontoides, Order Berycomorphi (Beryciformes), Order Xenobryces (Stephanobryciformes), Order Anacanthini (Gadiformes), in part Macrouridae. Sears Foundation for Marine Research, New Haven, Conn., 1973. xx, 698 pp., illus. \$27.50. Memoir No. 1.

**Fluid Logic Controls and Industrial Automation.** Daniel Bouteille with the cooperation of Claude Guidot. Translated from the French edition (1970) by Stuart North and Leonard P. Gau. Wiley-Interscience, New York, 1973. xii, 194 pp., illus. \$16.95.

**Foundations of Practical Gerontology.** Rosamonde Ramsay Boyd and Charles G. Oakes, Eds. University of South Carolina Press, Columbia, ed. 2, 1973. xxii, 296 pp. \$7.95.

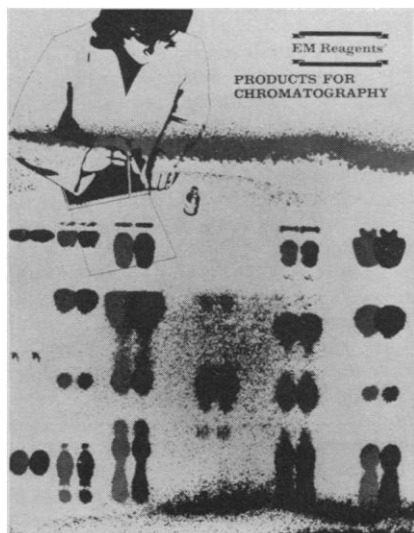
**Fourier Expansions.** A Collection of Formulas. Fritz Oberhettinger. Academic Press, New York, 1973. xii, 64 pp. \$11.

**Great Cases in Psychoanalysis.** Harold Greenwald, Ed. Aronson, New York, 1973. 256 pp. \$10. Reprint of the 1972 edition.

**Handbook of Political Psychology.** Jeanne N. Knutson, Ed. Jossey-Bass, San Francisco, 1973. xviii, 542 pp. \$25. Jossey-Bass Behavioral Science Series.

SCIENCE, VOL. 183

# FREE... The EM Chroma- tography Catalog



Latest listings on: Pre-Coated Systems for TLC on backings of Glass, Plastic, Aluminum; Pre-Coated Plates for PLC (Preparative Layer Chromatography); Sorbents for Thin Layer and Column Chromatography; Spray Reagents; TLC Diagnostic Tests, plus Pre-Packed Columns for High Performance Liquid Chromatography and Column Packing Materials for High Pressure Liquid Chromatography. Reference Standards and Auxiliary Materials for Chromatography.

## EM Laboratories, Inc.

associate of E. Merck, Darmstadt, Germany  
500 Executive Boulevard, Elmsford, New York 10523  
Telephone 914/592-4680

Circle No. 166 on Readers' Service Card

15 FEBRUARY 1974

**Health Service Prospects.** An International Survey. I. Douglas-Wilson and Gordon McLachlan, Eds. The Lancet, London; Nuffield Provincial Hospitals Trust. London; and Little, Brown, Boston, 1973. xii, 346 pp., illus. \$15.

**How Man Moves.** Kinesiological Studies and Methods. Sven Carlsöö. Translated from the Swedish edition (Stockholm, 1972) by William P. Michael. Heinemann, London, 1973 (U.S. distributor, Crane, Russak, New York). viii, 198 pp., illus. \$10.75.

**An Introduction to the Theory of Distributions.** José Barros-Neto. Dekker, New York, 1973. xiv, 222 pp. \$14.50. Pure and Applied Mathematics, vol. 14.

**Introduction to the Theory of Formal Groups.** J. Dieudonné. Dekker, New York, 1973. xvi, 266 pp. \$18.75. Pure and Applied Mathematics, vol. 20.

**An Introductory Course on Structural Instability.** Fundamentals of Post-Buckling Behaviour of Structures. Proceedings of a course, Surrey, England, Sept. 1973. W. J. Supple, Ed. IPC Science and Technology Press, Surrey, England, 1973. 124 pp., illus. £3.50.

**The Joy of Suffering.** Psychoanalytic Theory and Therapy of Masochism. Shirley Panken. Aronson, New York, 1973. 242 pp. \$12.50.

**The Logical Analysis of Quantum Mechanics.** Erhard Scheibe. Translated from the German by J. B. Sykes, Pergamon, New York, 1973. viii, 204 pp. \$19.50. International Series of Monographs in Natural Philosophy, vol. 56.

**Lysosomes and Storage Diseases.** H. G. Hers and F. Van Hoof, Eds. Academic Press, New York, 1973. xxii, 666 pp., illus. \$45.

**MTP International Review of Science.** Physical Chemistry Series One. Index Volume. A. D. Buckingham, Ed. Butterworths, London, and University Park Press, Baltimore, 1973. xii, 284 pp. \$12.50.

**Magnetism and Transition Metal Complexes.** F. E. Mabbs and D. J. Machin. Chapman and Hall, London, 1973 (U.S. distributor, Halsted [Wiley], New York). xviii, 206 pp., illus. \$11.

**A Manual of Sampling Techniques.** Ranjan Kumar Som. Heinemann, London, 1973 (U.S. distributor, Crane, Russak, New York). xvi, 384 pp., illus. \$24.50.

**The Many-Worlds Interpretation of Quantum Mechanics.** A Fundamental Exposition. Hugh Everett III, with papers by J. A. Wheeler, B. S. DeWitt, L. N. Cooper and D. Van Vechten, and N. Graham. Bryce S. DeWitt and Neill Graham, Eds. Princeton University Press, Princeton, N.J., 1973. viii, 253 pp. Cloth, \$12.50; paper, \$5.50. Princeton Series in Physics.

**Myoglobin.** Biochemical, Physiological, and Clinical Aspects. Lawrence J. Kagen. Columbia University Press, New York, 1973. xiv, 151 pp., illus. \$10. Columbia Series in Molecular Biology.

**A Natural History of Associations.** A Study on the Meaning of Community. Richard Maitland Bradfield. International Universities Press, New York, 1973. Two volumes, illus. Vol. 1. xx, 428 pp. Vol. 2. xii, 596 pp. \$35.

**The Nature of Mind.** A. J. P. Kenny, H. C. Longuet-Higgins, J. R. Lucas, and

# SAFE



**The Pipette** for radioimmunoassay is the **MLA Precision D** because your hand never touches the disposable tip. Fully controlled, automatic detipping is done with a flick of the finger.

The convenience of the Precision D sometimes overshadows the many serious reasons why MLA designed it. Here is a pipette for radioactive reagents, toxic or contaminated fluids that provides safety for the user.

MLA Pipettes are available from selected Laboratory Supply Houses.

The Pipetting Decision... is worth your time. Use the Reader Service Number to send for our Pipette Information Pack.



## Medical Laboratory Automation, Inc.

520 Nuber Ave., Mt. Vernon, N.Y. 10550  
914/664-0366

Circle No. 165 on Readers' Service Card



C. H. Waddington. Edinburgh University Press, Edinburgh, Scotland, 1973 (U.S. distributor, Aldine, Chicago). viii, 156 pp. \$5.75. Gifford Lectures 1971/72.

**New Developments in Gas Chromatography.** Howard Purnell, Ed. Interscience (Wiley), New York, 1973. viii, 408 pp., illus. \$19.95. *Advances in Analytical Chemistry and Instrumentation*, vol. 11.

**New Techniques in Biophysics and Cell Biology.** Vol. 1. R. H. Pain and B. J. Smith, Eds. Wiley-Interscience, New York, 1973. x, 250 pp., illus. \$16.95.

**Nuclear Analytical Chemistry 2.** Radioactive Indicators in Chemical Analysis. J. Tölgyessy and Š. Varga. Written in collaboration with V. Kriván, M. Kyrš, and

J. Krtíl. Translated by P. Tkáč. University Park Press, Baltimore, and Slovak Academy of Sciences, Bratislava, Czechoslovakia, 1972. 436 pp., illus. \$19.50.

**Perspectives on Animal Behavior.** A First Course. Gordon Bermant, Ed. Scott, Foresman, Glenview, Ill., 1973. x, 400 pp., illus. \$12.50.

**Perturbation Methods in Non-Linear Systems.** G. E. O. Giacaglia. Springer-Verlag, New York, 1972. x, 370 pp. Paper, \$8.80. *Applied Mathematical Sciences*, 8.

**Physics of Membrane Transport.** A. Iberall and A. Schindler. General Technical Services, Upper Darby, Pa., 1973. vi, 266 pp., illus. Paper, \$6.

**Population, Environment, and Social**

**Organization.** Current Issues in Human Ecology. Michael Micklin. Dryden Press, Hinsdale, Ill., 1973. xviii, 510 pp. Paper, \$5.95.

**Social Stratification in Science.** Jonathan R. Cole and Stephen Cole. University of Chicago Press, Chicago, 1973. xiv, 284 pp., illus. \$12.50.

**Soil Stabilization.** Principles and Practice. O. G. Ingles and J. B. Metcalf. Halsted (Wiley), New York, 1973. x, 374 pp., illus. \$32.50.

**The Spaghetti City Video Manual.** A Guide to Use, Repair, and Maintenance. Videofreex. Praeger, New York, 1973. xii, 116 pp., illus. \$7.95.

**Tahitiens.** Mind and Experience in the Society Islands. Robert I. Levy. Illustrated by Pierre Heyman. University of Chicago Press, Chicago, 1973. xxviii, 548 pp. \$12.50.

**The Technique of Psychoanalytic Psychotherapy.** Vol. 1, The Initial Contact, Theoretical Framework, Understanding the Patient's Communications, The Therapist's Interventions. Robert Langs. Aronson, New York, 1973. 660 pp. \$15.

**Telecommunications Research in the United States and Selected Foreign Countries.** A Preliminary Survey. National Academy of Engineering, Washington, D.C., 1973 (available as PB 22080 from the National Technical Information Service, Springfield, Va.). Two volumes. Vol. 1, Summary. iv, 64 pp. Vol. 2, Individual Contributions. vi, 142 pp. \$10.

**Theoretical Solid State Physics.** William Jones and Norman H. March. Wiley-Interscience, New York, 1973. Two volumes, illus. Vol. 1, Perfect Lattices in Equilibrium. xvi + pp. 1-680. Vol. 2, Nonequilibrium and Disorder. xvi + pp. 681-1302. Each volume, \$39.50. *Interscience Monographs and Texts in Physics and Astronomy*, vol. 27.

**Topics in Advanced Model Rocketry.** Gordon K. Mandell, George J. Caporaso, and William P. Bengen. MIT Press, Cambridge, Mass., 1973. xviii, 632 pp., illus. \$25.

**Topics in Differential Games.** Austin Blaquiere, Ed. North-Holland, Amsterdam, and Elsevier, New York, 1973. x, 450 pp., illus. \$25.50.

**The Variation and Adaptive Expression of Antibodies.** George P. Smith. Harvard University Press, Cambridge, Mass., 1973. xiv, 220 pp., illus. \$12.

**Vegetation of the Earth.** In Relation to Climate and the Ecophysiological Conditions. Heinrich Walter. Translated from the second German edition (Stuttgart) by Joy Wieser. English Universities Press, London, and Springer-Verlag, New York, 1973. xvi, 238 pp., illus. Paper, \$5.90. *Heidelberg Science Library*, vol. 15.

**Wildlife Ecology.** An Analytical Approach. Aaron N. Moen. Freeman, San Francisco, 1973. xx, 458 pp., illus. \$17.50. *A Series of Books in Agricultural Science*.

**World Directory of Plant Pathologists.** Fran. E. Fisher, Ed. Published under the auspices of the University of Florida Agricultural Research Education Center, Lake Alfred, 1973 (available from Fran. E. Fisher, University of Florida, Lake Alfred). viii, 142 pp. Paper, to individuals, \$8; to institutions, \$12.

# Anyway you shake it... we make it

Gyrate, reciprocate, aerate and incubate! Just about every conceivable shaking requirement can be satisfied by NBS. Select from a full range of shaking equipment: water bath and incubator shakers, Gyrotory, reciprocating and twist-action shakers. You'll find them all in the most extensive shaker catalog ever published.

**Send for Catalog CS-S/274**

**NEW BRUNSWICK SCIENTIFIC CO., INC.**  
1130 Somerset Street, New Brunswick, N.J. 08903 • 201/846-4600  
*With NBS, Advanced Technology is a Way of Life.*