

23 November 1979 • Vol. 206 • No. 4421

\$4.50

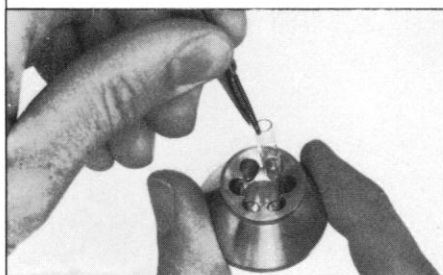
SCIENCE

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

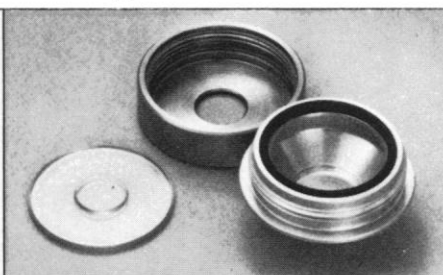


New rotors for the Airfuge®-

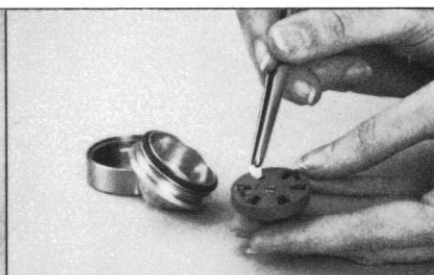
the small-sample ultracentrifuge.



The new 30° fixed angle rotor holds up to 240 μ l per tube and provides forces up to 178,000 g.



The new Batch Rotor rapidly pellets 2 to 7 ml of material.



The new Electron Microscopy Particle Counting Rotor is useful for virus research.

The Airfuge® air-driven ultracentrifuge, with its high forces and speeds, is unsurpassed for centrifuging small samples rapidly. The Airfuge continues to grow in versatility. Now there are five rotors to choose from for numerous applications.

Two fixed angle rotors, the 18° and the new 30° rotor, can pellet any material that can be sedimented in a full-sized ultracentrifuge, but in a fraction of the time. The rotors accelerate to a maximum speed of 95,000 rpm in just 30 seconds. They can be used for separations ranging from molecular weight determination studies, binding studies, cellular separations, lipoprotein fractionation, to steroid hormone receptor assays.

The Batch Rotor pellets material in a polyethylene liner or in the rotor body itself. The Electron Microscopy

Particle Counting Rotor sediments particles uniformly onto the surfaces of specimen grids for rapid, accurate, and reliable detection and counting. The unique Chylomicron Rotor clarifies lipemic sera by flotation of chylomicrons in just ten minutes.

The Airfuge ultracentrifuge uses ordinary laboratory air pressure to spin rotors almost friction-free on a cushion of air. It's efficient, quiet, and simple to operate. Ask about the 30-day free trial offer for the Airfuge. For a description of the Airfuge and its applications, write for the new Airfuge brochure, SB-557, to Beckman Instruments, Inc., 1117 California Ave., Palo Alto, CA 94304.

BECKMAN

Click-set and pipette 44.7 μ l



...or any volume from 2.0 to 1,000 μ l.

Three new, continuously adjustable Eppendorf® Digital Pipettes let you set any desired volume with precision.

These new continuously adjustable pipettes by Eppendorf feature digital readout to indicate the set volume. To change the setting, simply twist the control button until the desired volume appears. Incorrect adjustment is virtually impossible; with every twist of the control button, a unique ratchet mechanism clicks the changed volume precisely into place.

Unlike pipettes with micrometer adjustments and hairline volume settings, Eppendorf Digital Pipettes assure

consistently accurate and reproducible volumes time after time. Practically the same size as our single-volume models, these new pipettes retain all the operating conveniences for which Eppendorf is famous. A finger rest at the top provides positive support during use and keeps the pipette from rolling on flat surfaces. All operations, including tip ejection, are controlled by a single button and without changing grip position.

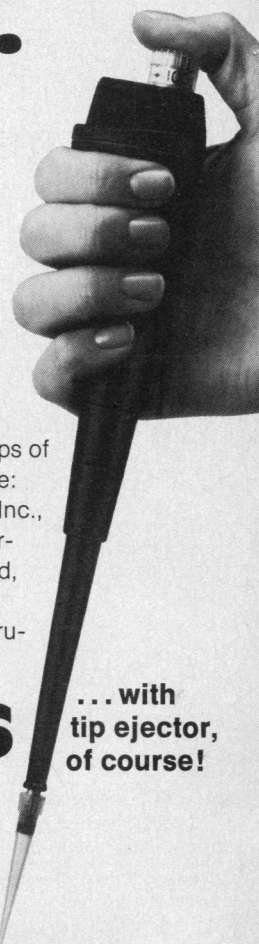
Eppendorf Digital Pipettes with built-in tip ejector are available in three

models: 2-10 μ l (contin. adjustable in steps of 0.1 μ l); 10-100 μ l (contin. adjustable in steps of 0.1 μ l); and 100-1,000 μ l (contin. adjustable in steps of 1.0 μ l). For literature, write: Brinkmann Instruments, Inc., Subsidiary of Sybron Corporation, Cantiague Road, Westbury, N.Y. 11590. In Canada: Brinkmann Instruments (Canada), Ltd.

Eppendorf Digital Pipettes

SYBRON | Brinkmann

Circle No. 163 on Readers' Service Card



... with
tip ejector,
of course!

SCIENCE

LETTERS	Dangerous Trends: <i>J. V. Mallow</i> ; Viroid Discovery: <i>T. O. Diener</i>	886
EDITORIAL	Stalking Innovation's Woes	889
ARTICLES	Can an Ape Create a Sentence?: <i>H. S. Terrace et al.</i>	891
	Restriction Endonucleases, Simian Virus 40, and the New Genetics: <i>D. Nathans</i>	903
NEWS AND COMMENT	Shuttle Problems Compromise the Space Program	910
	<i>Briefing</i> : Ex-President Disputes Election; CO ₂ in Climate: Gloomsgday Predictions Have No Fault; Too Much Light May Be Shed on Body Public . . .	912
	Earthlings at Odds over Moon Treaty	915
RESEARCH NEWS	New Treatment for Coronary Artery Disease	917
	A New Microscopic Tool for Biology	918
BOOK REVIEWS	Phylogenetic Analysis and Paleontology, <i>reviewed by M. J. Novacek</i> ; <i>J. B. Watson, R. J. Herrnstein</i> ; Behavioral Biology of <i>Aplysia</i> , <i>F. Krasne</i> ; Forgive and Remember, <i>R. N. Wilson</i> ; Books Received.	920
REPORTS	Voyager 2 Encounter with the Jovian System: <i>E. C. Stone and A. L. Lane</i>	925

BOARD OF DIRECTORS

EDWARD E. DAVID, JR.
Retiring President, ChairmanKENNETH E. BOULDING
PresidentFREDERICK MOSTELLER
President-ElectELOISE E. CLARK
MARTIN M. CUMMINGSRENÉE C. FOX
ANNA J. HARRISON

CHAIRMEN AND SECRETARIES OF AAAS SECTIONS

MATHEMATICS (A)
Garrett Birkhoff
Ronald GrahamPHYSICS (B)
Arthur L. Schawlow
Rolf M. SinclairCHEMISTRY (C)
Fred Basolo
William L. JollyASTRONOMY (D)
Peter S. Conti
Donat G. WentzelPSYCHOLOGY (J)
Frances K. Graham
Meredith P. CrawfordSOCIAL AND ECONOMIC SCIENCES (K)
David L. Sills
Gillian LindtHISTORY AND PHILOSOPHY OF SCIENCE (L)
Melvin Kranzberg
Diana L. HallENGINEERING (M)
Daniel C. Drucker
Donald E. MarloweEDUCATION (Q)
Fletcher G. Watson
James T. RobinsonDENTISTRY (R)
Carl J. Witkop, Jr.
Harold M. FullmerPHARMACEUTICAL SCIENCES (S)
Samuel Elkin
Robert A. WileyINFORMATION, COMPUTING, AND COMMUNICATION (T)
Mary E. Corning
Madeline M. Henderson

DIVISIONS

ALASKA DIVISION

Daniel B. Hawkins
PresidentT. Neil Davis
Executive Secretary

PACIFIC DIVISION

William L. Sims
PresidentAlan E. Leviton
Secretary-Treasurer

SOUTHWESTERN AND ROCKY MOUNTAIN DIVISION

Henry J. Shine
PresidentM. Michelle Balcomb
Executive Officer

SCIENCE is published weekly on Friday, except the last week in December, by the American Association for the Advancement of Science, 1515 Massachusetts Avenue, NW, Washington, D.C. 20005. Second-class postage (publication No. 484460) paid at Washington, D.C., and at an additional entry. Now combined with *The Scientific Monthly*. Copyright © 1979 by the American Association for the Advancement of Science. Domestic individual membership and subscription (51 issues): \$34. Domestic institutional subscription (51 issues): \$70. Foreign postage extra: Canada \$12, other (surface mail) \$15, air-surface via Amsterdam \$40. First class, airmail, school-year, and student rates on request. Single copies \$1.50 (\$2 by mail); back issues \$2.50 (\$3 by mail); classroom rates on request. **Change of address:** allow 6 weeks, giving old and new addresses and seven-digit account number. **Postmaster:** Send Form 3579 to *Science*, 1515 Massachusetts Avenue, NW, Washington, D.C. 20005. *Science* is indexed in the *Reader's Guide to Periodical Literature* and in several specialized indexes.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

The Galilean Satellites and Jupiter: Voyager 2 Imaging Science Results:
B. A. Smith et al. 927

Discovery of a New Jupiter Satellite: D. C. Jewitt, G. E. Danielson,
S. P. Synnott 951

Infrared Observations of the Jovian System from Voyager 2: R. Hanel et al. 952

Photometric Observations of Jupiter at 2400 Angstroms: C. W. Hord et al. 956

Radio Science with Voyager at Jupiter: Initial Voyager 2 Results and a
Voyager 1 Measure of the Io Torus: V. R. Eshleman et al. 959

Extreme Ultraviolet Observations from Voyager 2 Encounter with Jupiter:
B. R. Sandel et al. 962

Magnetic Field Studies at Jupiter by Voyager 2: Preliminary Results:
N. F. Ness et al. 966

Plasma Observations Near Jupiter: Initial Results from Voyager 2:
H. S. Bridge et al. 972

Hot Plasma Environment at Jupiter: Voyager 2 Results: S. M. Krimigis et al. 977

Voyager 2: Energetic Ions and Electrons in the Jovian Magnetosphere:
R. E. Vogt et al. 984

Plasma Wave Observations Near Jupiter: Initial Results from Voyager 2:
D. A. Gurnett, W. S. Kurth, F. L. Scarf 987

Planetary Radio Astronomy Observations from Voyager 2 Near Jupiter:
J. W. Warwick et al. 991

Jupiter's Cloud Distribution Between the Voyager 1 and 2 Encounters: Results
from 5-Micrometer Imaging: R. J. Terrile et al. 995

PRODUCTS AND MATERIALS	Solvent Delivery Pump; Bacterial Plating System; Modal Analyzer; Digital Measuring and Positioning Adaptor; Catalog of Immunological and Biological Reagents; Color Display Terminal and Printer; Gas Absorption Cells; Literature	998
-------------------------------	--	-----

MIKE MC CORMACK RUSSELL W. PETERSON	JOHN C. SAWHILL CHEN NING YANG	WILLIAM T. GOLDEN Treasurer	WILLIAM D. CAREY Executive Officer
GEOLOGY AND GEOGRAPHY (E) Linn Hoover Ramon E. Bisque	BIOLOGICAL SCIENCES (G) Donald S. Famer Walter Chavin	ANTHROPOLOGY (H) James B. Watson Priscilla Reining	
MEDICAL SCIENCES (N) Theodore Cooper Leah M. Lowenstein	AGRICULTURE (O) J. Lawrence Apple Coyl T. Wilson	INDUSTRIAL SCIENCE (P) Herbert I. Fustfeld Robert L. Stern	
STATISTICS (U) Richard L. Anderson Ezra Glaser	ATMOSPHERIC AND HYDROSPHERIC SCIENCES (W) Eugene W. Bierly Glenn R. Hilst	GENERAL (X) Ruth B. Pitt S. Fred Singer	

The American Association for the Advancement of Science was founded in 1848 and incorporated in 1874. Its objects are to further the work of scientists, to facilitate cooperation among them, to foster scientific freedom and responsibility, to improve the effectiveness of science in the promotion of human welfare, and to increase public understanding and appreciation of the importance and promise of the methods of science in human progress.

COVER

Exaggerated-color mosaic of Voyager 2 images shows a variety of cloud structures in Jupiter's equatorial region. Of particular interest is the arcuate discontinuity in cloud patterns near the mosaic's right (eastern) edge. Orange and violet images which comprise the mosaic were taken at a range of 2.8×10^6 kilometers by Voyager 2 on 7 July 1979, about 60 hours prior to its closest approach. The mosaic's vertical dimension corresponds to a distance of about 34,000 kilometers on Jupiter. See page 938 for another version of this mosaic, with more nearly natural color. [Mosaics prepared by G. W. Garneau, Image Processing Laboratory, Jet Propulsion Laboratory, Pasadena, Calif.]

"Scientists find computer systems powerful analyzing data."

Why?

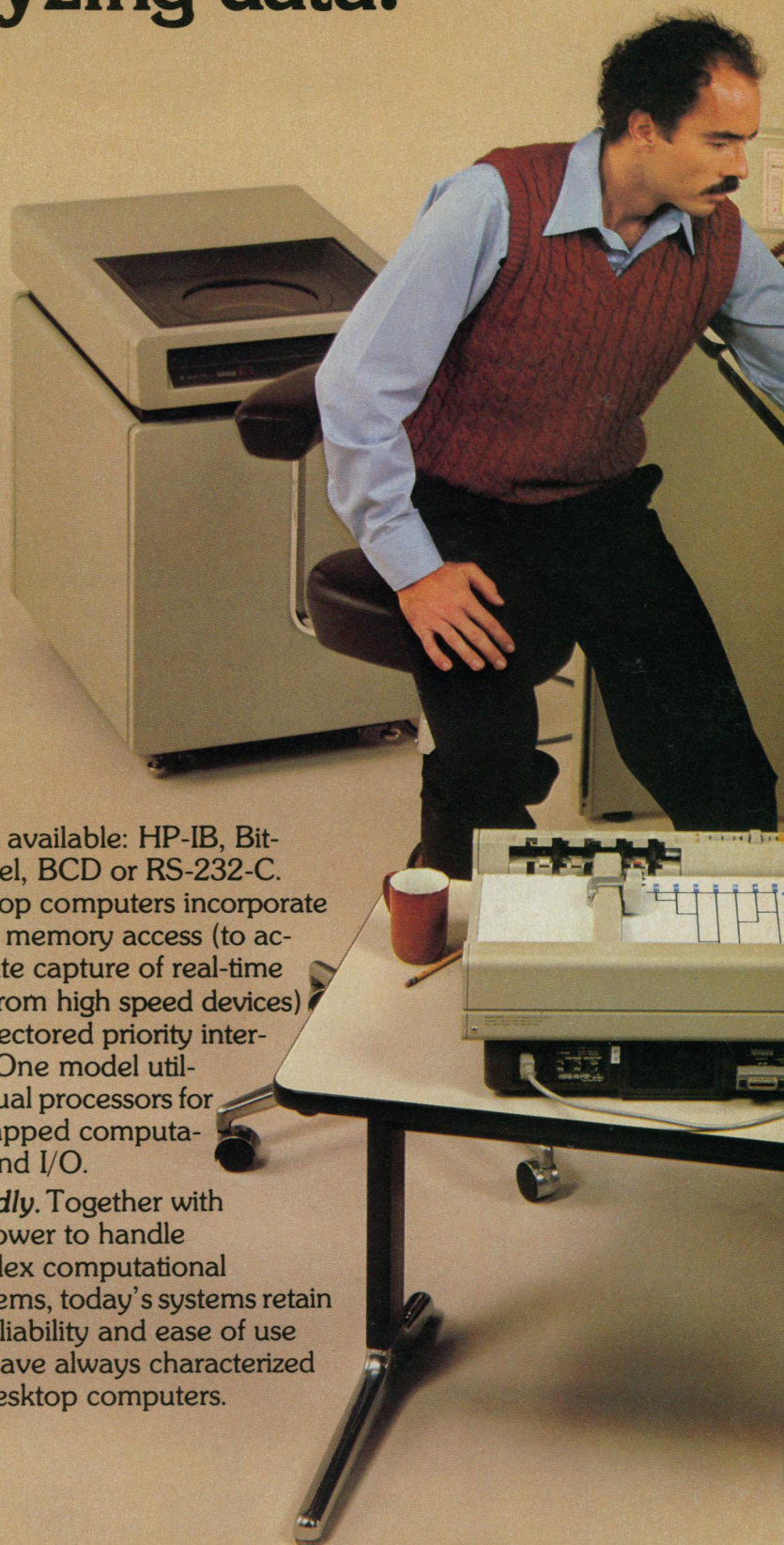
Computation Power. Today's Hewlett-Packard desktop systems put big computer power under your personal control. You solve problems with up to 449K bytes of user-addressable read/write memory, all available for your programs and data. Built-in operating systems incorporate HP Enhanced BASIC, a powerful super-set of ANSI Standard BASIC. Coupled with optional assembly language, HP Enhanced BASIC gives you optimum performance for time-critical operations. Extensive libraries of HP software help turn weeks of setup and development time into days.

Powerfully Integrated. Each system is a functionally integrated work station, from the keyboard and CRT display to the built-in processors and quiet printer. It provides everything you need to manipulate data, check interim results, perform side computations, explore variations and produce alphanumeric and graphic hard copies of your solutions.

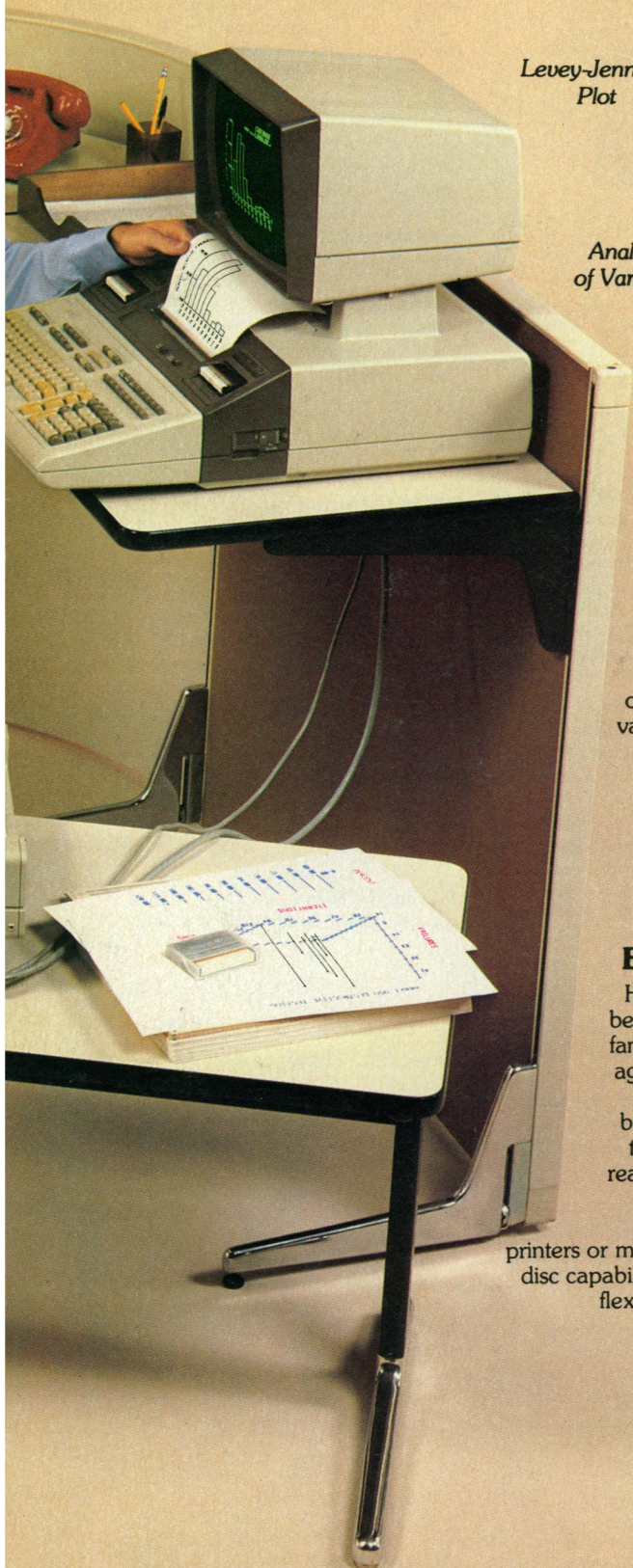
Systems Capability. Your system can be augmented with a broad range of HP peripherals or front-end measurement instruments. Interconnection is as easy as selecting interfacing cards and cables from one of four pro-

ocols available: HP-IB, Bit-Parallel, BCD or RS-232-C. Desktop computers incorporate direct memory access (to accelerate capture of real-time data from high speed devices) and vectored priority interrupt. One model utilizes dual processors for overlapped computation and I/O.

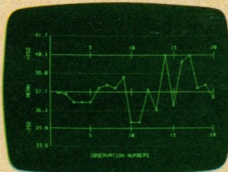
Friendly. Together with the power to handle complex computational problems, today's systems retain the reliability and ease of use that have always characterized HP desktop computers.



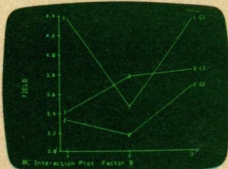
today's desktop tools for



Levey-Jennings
Plot



Analysis
of Variance



Visual Solutions Through Graphics.

Graphic systems powered by HP desktop computers give you a wide variety of application possibilities. With graphics options, plotted data becomes visible practically as fast as it is generated.

Whether it's CRT graphics or hard copy from the printer or plotter, you work with advanced graphics software and unified commands through HP Graphics Language.



Expand Your System.

HP Desktop Computers have become the center of a growing family of input, output and storage peripherals. You can tailor a system to suit your needs by choosing HP printers, plotters, paper tape punches and readers, card readers, digitizers, flexible and hard disc drives.

Choose fast, quiet thermal printers or multi-copy impact printing and disc capabilities ranging from 500K byte flexible to 120M byte hard discs.

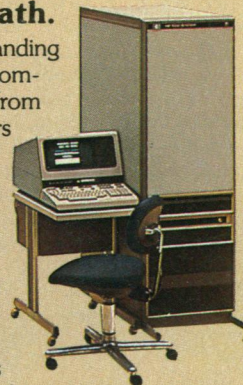
A Choice.



We build a broad range of desktop computers, with one just right for your computational applications. System 45B provides advanced graphics (including 3D), 449K byte read/write memory capacity and big system peripherals. System 35 offers a low cost 250K byte read/write memory capability with optional assembly language programming and powerful interfacing characteristics for automatic measurement and analysis.

A Growth Path.

HP can meet expanding needs with data communication links from desktop computers to HP 1000 computers. For multi-user, multi-tasking applications, HP 1000 computers offer a wide selection of compatible RTE operating systems with optional data base management, factory data collection and up to 64 user terminals.



For more information. Call 800-821-3777, extension 119, toll-free day or night (Alaska and Hawaii included). In Missouri, call 800-892-7655, extension 119. Or write 3404 E. Harmony Road, Fort Collins, Colorado 80525.

For a demonstration. Call the HP regional office nearest you: East 301/258-2000; West 213/877-1282; Midwest 312/255-9800; South 404/955-1500; Canada 416/678-9430.

409/095



**HEWLETT
PACKARD**

Circle No. 189 on Readers' Service Card

Van Nostrand Reinhold brings you

AGING IN

NONHUMAN PRIMATES

Edited by Douglas M. Bowden, M.D. Here is the first comprehensive collection of research data on all aspects of aging in nonhuman primates. Evaluating research done with macaques, baboons, and other species, its 40 expert contributors discuss both the biology and pathology of aging in the major physiological systems. They examine the degenerative factors of aging that begin in the early years, behavioral changes that result from aging, and the effects of stress and pharmacological intervention. Of special interest are the reports on the *Macaca nemestrina* Project 77 and the findings from the Soviet primate center at Sikhumi. 1979, 450 pp., illus., 6 x 9, \$27.50

To order this book

Circle No. 324 on Readers' Service Card

BEHAVIORAL SEX DIFFERENCES

IN NONHUMAN PRIMATES

By G. Mitchell, Ph.D. The first full-scale overview of psychobiological sex differences in primates, this book examines laboratory and field research findings in primatology, zoology, animal behavior, animal husbandry, anthropology, psychology, psychiatry and endocrinology. Taxonomically organized, it discusses all 55 genera of primates and gives full attention to physical sex dimorphism, hormonal influences, responses to birth, infant care, domination, communication, the effects of pathological conditions and much more. Fully assessed are implications for the study of human behavior. 1979, 544 pp., illus., 6 x 9, \$27.50

To order this book

Circle No. 325 on Readers' Service Card

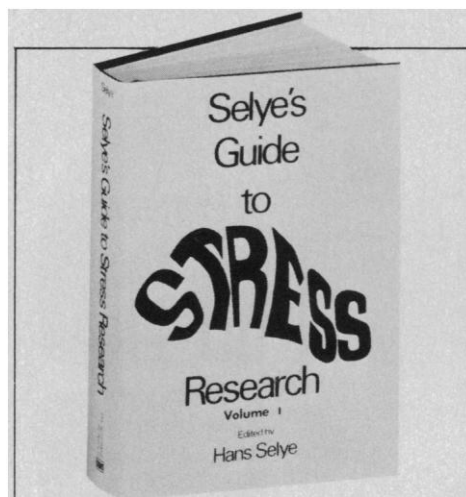
CAPTIVITY AND BEHAVIOR

Primates in Breeding Colonies, Laboratories, and Zoos

Edited by Joseph Erwin, Terry L. Maple and G. Mitchell. This important volume analyzes the influence of captivity on eleven species of apes and monkeys. Stressing the role of behavioral measurement in the management of captive primates, the authors discuss environmental enrichment techniques, crowding, birth in captivity, behavioral engineering, and the development of social bonds and abnormal behavior patterns. Here are ways to encourage adequate behavioral development and to reduce aggressiveness and depression, along with information on factors that may relate to human development and behavior. 1979, 320 pp., illus., 6 x 9, \$22.50

To order this book

Circle No. 326 on Readers' Service Card



SELYE'S GUIDE TO STRESS RESEARCH
Volume I

Edited by Hans Selye. A virtual encyclopedia of the study of stress, this outstanding collection of articles was written by the most qualified authorities in the field today, and put together by Hans Selye, father of the stress concept. The work provides penetrating analysis of the causes and consequences of stress, as well as ways to prevent or lessen distress and increase eustress. The concept of eustress receives special attention in Dr. Selye's Epilogue.

The latest psychological findings
The reader will find meticulous treatment of all the psychological implications of stress, including: how stressful life events affect levels of response . . . the role of defense mechanisms in stress response . . . the nature of communication between unconscious cognitive activity and conscious awareness . . . and how unconscious activity evokes physiological change. There is also full discussion of the stress arising from social relationships, tension reduction techniques, and how adaptational outcomes are affected by mediating cognitions, emotions and other coping processes.

The physiological element of stress
On a more physiological level, the book addresses: psychoneuro-endocrine aspects of stressful interactions, sex differences in stress response, a comprehensive plan for coping with stress-induced disease, and the role of endorphins, along with many other vital subjects.

This monumental reference leaves no relevant topic on stress unexamined. It is the only book of its kind — authoritative, comprehensive, and a testament to the dedicated research of Dr. Hans Selye. 1979 (November), 450 pp., 6 x 9, \$22.50

To order this book
Circle No. 327 on Readers' Service Card

A DICTIONARY OF BOTANY

By R. John Little and C. Eugene Jones. This exceptional book answers the need for a dictionary of botany that is at once comprehensive, authoritative, and up-to-date. Containing nearly 5,500 definitions culled from over 100 sources, it is the first modern American dictionary of botany to be illustrated with original line drawings enhancing over 400 definitions of plants, plant tissues, microorganisms and more. You will find precise, detailed coverage of plant speciation, pollination biology and reproductive biology . . . definitions of terms from chemistry and physics that relate to botanical research . . . and full explanations of new terms previously found only in specialized books and papers. 1979, 400 pp., 6 x 9, illus., \$18.50

To order this book

Circle No. 328 on Readers' Service Card

BIOLOGICAL PATHS TO SELF-RELIANCE

A Guide to Biological Solar Energy Conversion

By Russell E. Anderson, Ph.D. Reflecting the awareness that our long-term survival depends on our ability to obtain food and fuel in an ecologically sound manner, this trend-setting work describes a biological solar-energy conversion system that uses natural processes to provide food, fuel, fertilizer and waste recycling in a healthy environment. The author details the resources and research needed to implement the system, including enzymatic, microbiological and thermochemical means of converting biomass to useful energy. 1979, 367 pp., illus., 6 x 9, \$18.95

To order this book

Circle No. 329 on Readers' Service Card

HANDBOOK OF DREAMS

Research, Theories and Applications

Edited by Benjamin B. Wolman, Ph.D. Dreams — what do they mean? Why do we dream? This handbook analyzes the entire dream process, covering all the theories and research from the time of Freud to the present. It includes discussion of the latest findings on REM and the stages of sleep. The contributors — who number among the most renowned experts in the field of dream analysis — also examine new therapeutic techniques that utilize dream analysis in the treatment of neurotic and psychotic disorders. 1979 (October), 512 pp., illus., 6 x 9, \$19.95

To order this book

Circle No. 330 on Readers' Service Card

... the latest in scientific books

CONSTANTS OF DIATOMIC MOLECULES

By K.P. Huber and G. Herzberg. This is the fourth and latest volume in the famous series on molecular spectra and molecular structure supervised by Nobel laureate Gerhard Herzberg. It contains a critical compilation of available data for all diatomic molecules and ions known at present—over 900 diatomic species in all. The information presented—including electronic energies, vibrational and rotational constants, and observed transitions—greatly reduces the need for time-consuming literature searches. Comprehensive data and a plenitude of references provide a resource unmatched today. 1979, 736 pp., 7 x 10, \$27.50

To order this book

Circle No. 331 on Readers' Service Card

WESTCOTT'S PLANT DISEASE HANDBOOK Fourth Edition

By Dr. Cynthia Westcott, revised by Dr. R. Kenneth Horst. This latest edition of a classic work in the field offers professional and home gardeners the latest diagnostic and disease control information, featuring complete listings of all symptoms and side effects. It incorporates current chemical and pesticide regulations, taxonomic changes in bacteria and fungi, and up-to-date research findings on viruses and virus-like agents. 1979, 832 pp., 74 illus., 8 color plates, 6 x 9, \$32.50

To order this book

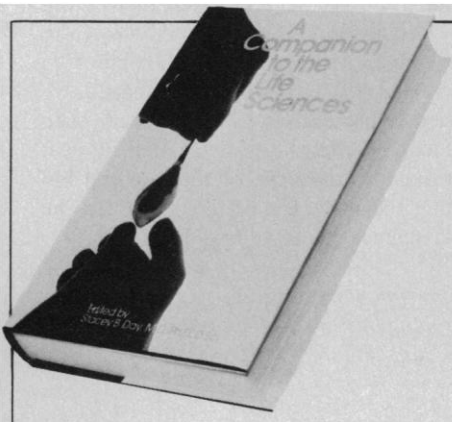
Circle No. 332 on Readers' Service Card

AMERICAN SPIDERS Second Edition

By Willis J. Gertsch. This profusely illustrated guide focuses on the numbers, kinds, morphology, life histories, and behavior of 3,000 species of North American spiders. Reflecting the large body of current information concerning these strange and complex animals, it traces their life history from emergence from the egg sac, through courtship, mating, and egg laying. Described in detail are silk spinning, evolution, distribution, and the spider's role in maintaining the ecological balance. Separate sections are devoted to each of the four major groups of spiders—the mygalomorphs, the cribellate spiders, the aerial web spinners, and the hunting spiders. 1979, 289 pp., 139 photos., including 70 in full color, 6 x 9, \$24.95

To order this book

Circle No. 333 on Readers' Service Card



A COMPANION TO THE LIFE SCIENCES

Edited by Stacey B. Day. Featuring extensive coverage of the biological and clinical sciences, here is an authoritative guide that provides essential information without the need to search through countless volumes. Over 100 key articles are included, each one focusing on a specific new area of importance in the medical professions.

A special section on data processing and communications analyzes their present and future implications for those involved in the medical field. Biosocial development is covered with particular emphasis on medical practice in rural areas.

A Companion to the Life Sciences is a vital source of current information in areas such as:

- Aging process • Analgesics • Cancer • Cellular engineering • Coronary heart disease and stroke • Experimental surgery • Gastro-intestinal disorders • Genetics • Hormones • Lung disorders • Rural medicine • Psychopharmacology • Stress • Viral infection, and many other subjects.

The book's impressive list of contributing authors represents universities and organizations that have pioneered new avenues of research in the medical field. **Stacey B. Day, M.D., Ph.D.**, is Head of Biomedical Communications and Education at the Sloan-Kettering Institute for Cancer Research.

1979, 475 pp., illus., 6 x 9, \$24.50

To order this book
Circle No. 334 on Readers' Service Card

FREE EXAMINATION

To order 15-day examination copies of any of these books, simply circle the appropriate number(s) on the Reader Service Card. At the end of 15 days, if satisfied, send your remittance, plus postage, handling, and your local sales tax. Otherwise, return the books and owe nothing.

Offer good in U.S.A. only. Payment must accompany orders with P.O. box addresses. Prices subject to change.

THE STRESS OF MY LIFE Second Edition

By Hans Selye. Internationally-known stress researcher Hans Selye brings the story of his life's work up to date and tells more about himself. He unfolds the joys, struggles, and tragedies of his 73 years, reveals the formation of his ideas on stress, and shows how he developed the code of behavior which has been of great help in his own work. This important new edition offers insights into the mechanisms and manifestations of stress as well as practical advice for coping with the stress of life today. 1979, 290 pp., illus., 6 x 9, \$12.95

To order this book

Circle No. 335 on Readers' Service Card

INTEGRATION AND COORDINATION OF METABOLIC PROCESSES A Systems Approach to Endocrinology

By J.H.U. Brown. Here is the first full-scale study of the interrelationships and coordination that occur among endocrine systems. Using engineering control diagrams to explain metabolic processes, it gives a clear picture of the way that bodily organs acting together and separately control metabolic processes. A separate section is devoted to each organ system, showing how it relates to other organ systems and how all the organs work together to regulate metabolic processes. 1978, 248 pp., 67 illus., 6 x 9, \$16.95

To order this book

Circle No. 336 on Readers' Service Card

DICTIONARY OF ASTRONOMY, SPACE AND ATMOSPHERIC PHENOMENA

By David F. Tver, with Lloyd Motz and William K. Hartmann. Combining the easy access of a dictionary with the precision and scope of an encyclopedia, this up-to-date compendium features descriptions and definitions of all the terms, techniques and equipment relating to celestial phenomena. It explains the latest concepts in space exploration, planetary research, stellar astronomy and meteor science, as well as includes charts to aid in identifying and locating stars and planets, the Meisser catalog of coordinates and magnitudes for over 100 celestial objects, and much more. 1979, 281 pp., illus., 6 x 9, \$17.50

To order this book

Circle No. 337 on Readers' Service Card

bioresearch information gets a new name.

BIOLOGICAL ABSTRACTS/RRM™

(REPORTS • REVIEWS • MEETINGS)

BA/RRM is the successor to BIORESEARCH INDEX

SCIENTISTS, LIBRARIANS AND INFORMATION SPECIALISTS NEED A REFERENCE TOOL WHICH COVERS THE "OTHER" LIFE SCIENCE-LITERATURE . . . WITH THE SAME WORLDWIDE SCOPE, CONVENIENCE, DEPENDABILITY AND THOROUGHNESS YOU RELY ON IN **BIOLOGICAL ABSTRACTS (BA)** . . . NOW **BA/RRM** MEETS THAT NEED!

BA/RRM COVERAGE: 125,00 unique items in 1980.

- Editorials
- Reports
- Data Surveys
- Bibliographies
- Proceedings
- Symposia
- Meeting Abstracts
- Conferences
- Colloquia
- Workshops
- New Books
- Book Chapters
- Review Journals
- Translated Russian
- Journals
- Nomenclature Rules,
- Keys, Guides, Maps
- And more . . .

BA/RRM ARRANGEMENT: Time-tested **BA** Subject Classification.

NEW CONTENT SUMMARY FEATURES

Full bibliographic detail	▶	12027. GOLDMAN, JOEL C., JUDITH M. CAPUZZO, and GEORGE T. F. WONG. (Woods Hole Oceanogr. Inst., Woods Hole, Mass.) Jolley, Robert L., Hend Gorchev and D. Heyward Hamilton, Jr. (ED.). Water chlorination. Environmental impact and health effects. Vol. 2. Proceedings of the 2nd conference. Gatlinburg, Tenn., USA, Oct. 31-Nov. 4, 1977. XVIII+909p. Illus. Maps. Ann Arbor Science Publishers, Inc., Ann Arbor, Mich., USA. ISBN 0-250-40201-7. 291-305. 1978. [In Engl.] Biological and chemical effects of chlorination at coastal plants. / <i>HOMARUS AMERICANUS</i> . LARVAE. JUVENILE MORTALITY	◀	Author address
Language	▶	CON: Ecology-Plant/ Ecology-Animal/ Ecology-Oceanography/ Environ Health-Air, Watr, Soil Polltn/ Invertb Physiol-Crustacea	◀	Subject terms
All major subject concepts	▶	TAX: Chrysophyta/ Rotifera/ Pelecypoda/ Copepoda/ Malacostraca	◀	Taxonomic names

BA/RRM INDEX: Five easy-to-use Subject, Author and Taxonomic indexes in each monthly issue.

FOR YOUR FREE SAMPLE, SIMPLY CLIP THIS FORM AND MAIL TO BIOSIS

18-11

Please send me a *free sample* of **BIOLOGICAL ABSTRACTS/RRM**.

Name _____ Title _____

Organization _____

Address _____

City _____ State or Country _____ Postal Code _____

Please note that inquiries from residents of *Europe and Asia* will be forwarded to the Official Representatives who distribute **BIOSIS** services in those countries.

BIOSCIENCES INFORMATION SERVICE, 2100 ARCH STREET, PHILADELPHIA, PA. 19103 USA

23 NOVEMBER 1979

Circle No. 256 on Readers' Service Card



887



AAAS BOOKS AAAS BOOKS

From heart disease to solar energy, from food to electronics—the American Association for the Advancement of Science publishes books which cover these topics and many more. Books that will keep you informed and abreast of important scientific advancements. Books that are designed for the researcher, scientist, engineer, student, and general public. Books that you need to read.

AAAS SCIENCE REPORT SERIES

Combating the #1 Killer: The SCIENCE Report on Heart Research, by Jean L. Marx and Gina Bari Kolata. Based on the American Heart Association's Blakeslee Award-winning articles in SCIENCE, this book presents an overview of the status of current research on all aspects of cardiovascular diseases. xi + 205 pp. \$17.00 (case); \$7.50 (paper).

Solar Energy in America, by William D. Metz and Allen L. Hammond. Chapters deal with research strategies of both government and industry: "Power Towers," photovoltaic cells and other collector strategies, fuel photosynthesis, wind and ocean thermal power, energy storage, and more. Fall 1978. \$18.00 (case); \$8.50 (paper).

Two other AAAS series, *Compendia* and *R&D Reports*, provide authoritative information on some of the principal issues that concern us all today. These publications can serve not only as valuable reference sources for scientists and researchers, but also as supplementary reading material in courses devoted to these issues.

AAAS SCIENCE COMPENDIA SERIES

ENERGY: Use, Conservation and Supply; Volume II. vi + 202 pp. \$14.00 (case); \$6.00 (paper).

ELECTRONICS: The Continuing Revolution. iv + 217 pp. \$12.00 (case); \$4.50 (paper).

MATERIALS: Renewable and Nonrenewable Resources. x + 198 pp. \$12.00 (case); \$4.50 (paper).

POPULATION: Dynamics, Ethics and Policy. viii + 184 pp. \$12.00 (case); \$4.50 (paper).

FOOD: Politics, Economics, Nutrition and Research. vi + 202 pp. \$12.00 (case); \$4.50 (paper).

ENERGY: Use, Conservation and Supply; Volume I. vi + 154 pp. \$10.00 (case); \$3.50 (paper).

HEALTH CARE: Regulation, Economics, Ethics, Practice. iv + 256 pp. Fall 1978. \$14.00 (case); \$6.00 (paper).

AAAS RESEARCH & DEVELOPMENT REPORT SERIES

Research & Development: AAAS Report IV. xvi + 137 pp. \$6.50 (paper).

Research & Development in the Federal Budget: FY 1978. xii + 148 pp. \$5.00 (paper).

Research & Development: AAAS Report III. xiv + 122 pp. \$5.00 (paper).

Research & Development in the Federal Budget: FY 1977. ix + 100 pp. \$5.00 (paper).

Now . . . it's your turn to let us know how we can help you. . . .

To order your individual copies of the above titles, please send your name, address, and list of book titles (indicate case or paper) to AAAS, Department JB-1, 1515 Massachusetts Avenue, NW, Washington, DC 20005. Remittance must accompany all orders under \$10.00. Please allow 6-8 weeks for delivery.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

Science serves its readers as a forum for the presentation and discussion of important issues related to the advancement of science, including the presentation of minority or conflicting points of view, rather than by publishing only material on which a consensus has been reached. Accordingly, all articles published in *Science*—including editorials, news and comment, and book reviews—are signed and reflect the individual views of the authors and not official points of view adopted by the AAAS or the institutions with which the authors are affiliated.

Editorial Board

1979: E. PETER GEIDUSCHEK, WARD GOODENOUGH, N. BRUCE HANNAY, MARTIN J. KLEIN, FRANKLIN A. LONG, NEAL E. MILLER, JEFFREY J. WINE

1980: RICHARD E. BALZHISER, WALLACE S. BROECKER, CLEMENT L. MARKERT, FRANK W. PUTNAM, BRYANT W. ROSSITER, VERA C. RUBIN, MAXINE F. SINGER, PAUL E. WAGGONER, F. KARL WILLENBROCK

Publisher

WILLIAM D. CAREY

Editor

PHILIP H. ABELSON

Editorial Staff

Managing Editor ROBERT V. ORMES

Business Manager HANS NUSSBAUM

Assistant Managing Editor JOHN E. RINGLE

Production Editor ELLEN E. MURPHY

News Editor: BARBARA J. CULLITON

News and Comment: WILLIAM J. BROAD, LUTHER J. CARTER, CONSTANCE HOLDEN, ELIOT MARSHALL, DEBORAH SHAPLEY, R. JEFFREY SMITH, NICHOLAS WADE, JOHN WALSH. *Editorial Assistant*, SCHERRAINE MACK

Research News: BEVERLY KARPLUS HARTLINE, FREDERICK F. HARTLINE, RICHARD A. KERR, GINA BARI KOLATA, JEAN L. MARX, THOMAS H. MAUGH II, ARTHUR L. ROBINSON. *Editorial Assistant*, FANNIE GROOM

Consulting Editor: ALLEN L. HAMMOND

Associate Editors: ELEANORE BUTZ, MARY DORFMAN, SYLVIA EBERHART, RUTH KULSTAD

Assistant Editors: CAITILIN GORDON, LOIS SCHMITT

Book Reviews: KATHERINE LIVINGSTON, *Editor*: LINDA HEISERMAN, JANET KEGG

Letters: CHRISTINE KARLIK

Copy Editors: ISABELLA BOULDIN, STEPHEN KEPPEL

Production: NANCY HARTNAGEL, JOHN BAKER, YA LI SWIGART, HOLLY BISHOP, ELEANOR WARNER, MARY MCDANIEL, JEAN ROCKWOOD, LEAH RYAN, SHARON RYAN

Covers, Reprints, and Permissions: GRAYCE FINGER, *Editor*: CORRINE HARRIS, MARGARET LLOYD

Guide to Scientific Instruments: RICHARD SOMMER

Assistant to the Editor: JACK R. ALSIP

Membership Recruitment: GWENDOLYN HUDDLE

Member and Subscription Records: ANN RAGLAND

EDITORIAL CORRESPONDENCE: 1515 Massachusetts Ave., NW, Washington, D.C. 20005. Area code 202. General Editorial Office, 467-4350; Book Reviews, 467-4367; Guide to Scientific Instruments, 467-4480; News and Comment, 467-4430; Reprints and Permissions, 467-4483; Research News, 467-4321. Cable: *Advancesci*, Washington. For "Instructions for Contributors," write the editorial office or see page xi, *Science*, 28 September 1979.

BUSINESS CORRESPONDENCE: Area Code 202. Membership and Subscriptions: 467-4417.

Advertising Representatives

Director: EARL J. SCHERAGO

Production Manager: MARGARET STERLING

Advertising Sales Manager: RICHARD L. CHARLES

Marketing Manager: HERBERT L. BURKLUND

Sales: NEW YORK, N.Y. 10036: Steve Hamburger, 1515 Broadway (212-730-1050); SCOTCH PLAINS, N.J. 07076: C. Richard Callis, 12 Unami Lane (201-889-4873); CHICAGO, ILL. 60611: Jack Ryan, Room 2107, 919 N. Michigan Ave. (312-DE-7-4973); BEVERLY HILLS, CALIF. 90211: Winn Nance, 111 N. La Cienega Blvd. (213-657-2772); DORSET, VT. 05251: Fred W. Dieffenbach, Kent Hill Rd. (802-867-5581)

ADVERTISING CORRESPONDENCE: Tenth floor, 1515 Broadway, New York, N.Y. 10036. Phone: 212-730-1050.

Stalking Innovation's Woes

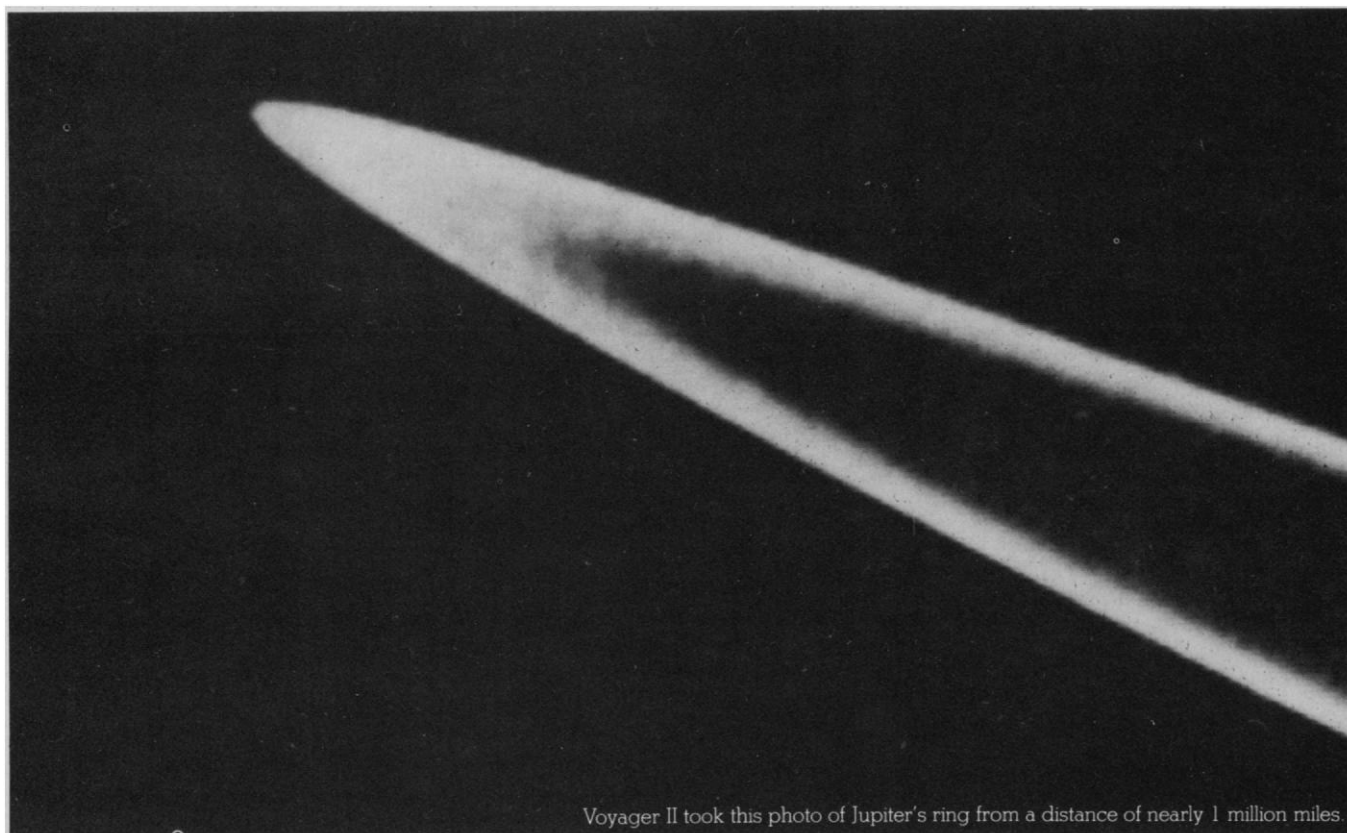
To its credit, the Carter Administration set out 18 months ago to find out what government could sensibly do to quicken the tired pace of U.S. technological innovation. Different administrations have different styles, and in the present administration the preferred mode is a Domestic Policy Review. Whatever it is called, it comes down to an interagency study managed by a convenor, but with the important difference that a "DPR" is designed to put options before the President for decision.

The President's decisions are now in hand. We know what options he has chosen. What we do not know is what he rejected, or why. In his message to Congress the President took a wise and restrained line, observing that "there is no one place where the federal government can take action and thereby insure that industrial innovation will be increased." Considering that economic and regulatory uncertainty are as responsible as anything else for risk aversion in the industrial sector, and that a President of any stripe can influence those factors only at the margins, Mr. Carter had it right. He offered a mixed menu of responses by government to innovation's woes, describing them well and honestly as representing "only an early skirmish" with the problem. If this is disappointing to those who expected a massive response to a crisis of stagnation in innovation, others will see it as government's admission that under market economy conditions there is still a great deal that is not very clear about the interactive factors which cause innovation to bloom or droop. Moreover, one suspects that the caution reflected in the plan of action is not unrelated to the government's discomfiture in failing to write an effective prescription for inflation.

Perhaps the clearest signal in the President's message is a recognition from Washington that the federal government plays a role in the process of industrial innovation. Through its taxing, regulatory, and fiscal policies the federal government, often unknowingly, intrudes itself into the normal play of market forces. The evidence in the present message is that government now sees that this is the case and proposes to begin an open-minded effort to rationalize its role. That alone goes far to justify the huge input of work which went into the Domestic Policy Review.

As to the prescriptions themselves, they are modest but positive. Federal patent policies will, if Congress consents, be made uniform insofar as they deal with the touchy issue of exclusive licensing. Smaller innovative firms are to get increasing financial help through the National Science Foundation's Small Business Innovation Research Program, and the Commerce Department will set up two pilot Corporations for Innovation Development with participation by states or regions to help small entrepreneurs find initial venture money. There is a pledge to explore the uses of federal procurement policy for strengthening marketing incentives, essentially by shifting emphasis from design specifications to performance specifications. In the regulatory area, where the Administration has already applied some brakes to the regulatory toboggan, the agencies will be expected to take innovation into account and also prepare 5-year forecasts of their regulatory intentions, thus moderating the uncertainty factor. Working with labor and management, government will try to come up with a national labor/technology forecasting system to lubricate industrial frictions arising from planned technological changes. On the antitrust front, no laws are to be rewritten or monopolies egged on, but the regulators are to make it clear that there are circumstances in which cooperation among firms in research and development is acceptable. As for providing tax inducements which might interest large firms in risking capital for major innovations, the report contains nothing more than the President's understanding and a promise to look again at the question in connection with his fiscal policies for 1981.

On balance, the outcome of the Domestic Policy Review is a plus. Although it hardly improves the near-term prospects for regenerating innovation in the national economy, it is credible as far as it goes. If the early skirmish prefigures an escalated campaign to come to grips with the questions, there will be no cause to complain.—WILLIAM D. CAREY



Voyager II took this photo of Jupiter's ring from a distance of nearly 1 million miles.

The ring of Jupiter and the volcanoes of Io.

At JPL, even we've been surprised and excited by the data NASA's Voyager I and II spacecraft have sent back to Earth about Jupiter. Like the ring around Jupiter and the volcanoes on Io. We can't wait to see what's new on Saturn and Uranus. In fact, we're taking a close look at most of outer space. Plus, we're probing the depths of the ocean and seeking new energy sources. If you would like a career with excitement, send us a resume.

Jet Propulsion Laboratory
California Institute of Technology
Attention: Professional Staffing —
Dept. 490, 4800 Oak Grove Drive
Pasadena, CA 91103
An Equal Opportunity Employer

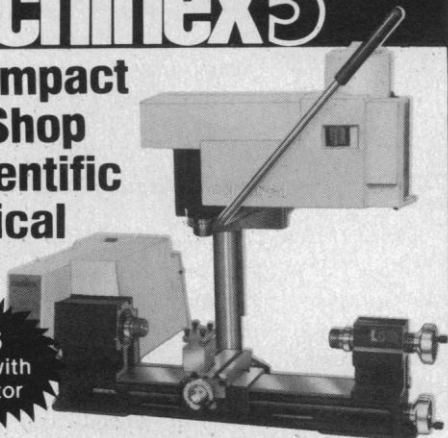
Circle No. 315 on Readers' Service Card

**THERE'S
ONLY
ONE JPL**

machinex⁵

**The Compact
R & D Shop
for Scientific
& Medical
Labs.**

\$399.95
complete with
1/4-hp motor



MACHINEX 5 is a ruggedly built metal lathe complete with 1/4-hp motor that machines any material—steel, cast iron, brass, aluminum, plastic, or hardwood. With 5" swing capacity, the lathe can turn large work, yet is so compact it can be used anywhere. MACHINEX 5 is so easy to use that a beginner can precision machine metal parts his first try.

MACHINEX 5 is more than just an ordinary small lathe, for the lathe can be converted to a precision drill press/milling machine in less than a minute with the accessory vertical column.

In all, MACHINEX 5 is really a universal benchtop machine shop. It's an all-in-one lathe/drill/mill that performs all standard metal-machining operations—turning, drilling, milling, boring, and grinding—and performs them all with split-thousandth precision.

Send 50¢ for brochure \$2 brochure and operating manual.

AMERICAN EDELSTAAL INC., DEPT. SK-9
1 Atwood Ave., Tenafly, NJ 07670

Circle No. 33 on Readers' Service Card

You need **P-L**
to make your lab
COMPLETE

That's right, your lab just isn't complete without the new, expanded Catalog 106 from P-L Biochemicals.

Catalog 106 will provide you with direct access to the quality biochemicals you need; biochemical reagents for nearly every facet of life sciences research.

Find out today how P-L can help make your lab complete with products and information from Catalog 106.

Write or call
for your free copy.

excellence in biochemistry



P-L biochemicals, inc.

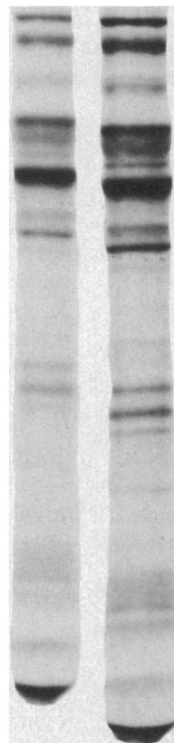
1037 WEST MCKINLEY AVENUE, MILWAUKEE, WIS 53205

® Call 414/347-7442 TWX 910-262-1111

Circle No. 289 on Readers' Service Card

Breakthrough in fluorography:

EN³HANCETM
Autoradiography
Enhancer.



Compare these two 24-hour tritium autoradiograms.

Notice that the one on the right, prepared with EN³HANCE, reveals details more clearly. Yet it was prepared in less time than the one on the left, enhanced with PPO-DMSO.

EN³HANCE produces optimal results with fewer preparation steps. It's safer, too, because it doesn't contain any dimethylsulfoxide. And although it is particularly effective with weak ³H samples, EN³HANCE also offers its unique advantages to samples labeled with ¹⁴C and ³⁵S.

So let convenience and improved performance come into your autoradiography and keep dimethylsulfoxide out. Send for the complete description of EN³HANCE, including comparative data.



New England Nuclear

549 Albany Street, Boston, Mass. 02118

Call toll-free: 800-225-1572

(In Massachusetts and International: 617-482-9595)

NEN Chemicals GmbH

D-6072 Dreieich, W. Germany

Postfach 401240

Telephone: (06103) 85034

Telex: 4-17993 NEN D

NEN Canada Ltd.

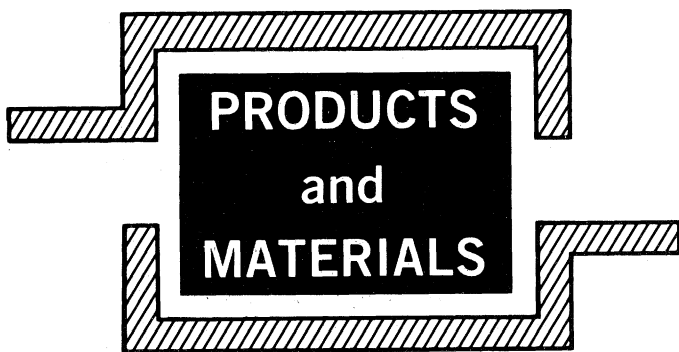
2453 46th Avenue

Lachine, Que. H8T 3C9

Telephone: 514-636-4971

Telex: 05-821808

Circle No. 239 on Readers' Service Card



Solvent Delivery Pump

Constametric III uses dual reciprocating sapphire pistons to deliver the mobile phase solvent accurately at pressures up to 6000 pounds per square inch. Flow rates may be accurately programmed and controlled with any microprocessor-based liquid chromatography system. Pump heads that resist corrosive solvents are available. External solvent lines, a removable in-line filter, and see-through ports simplify maintenance. Flow rates from 0.01 to 9.99 milliliters per minute are continuously adjustable. Laboratory Data Control. Circle 808.

Bacterial Plating System

The model B250 spiral plater simplifies microbial assays by eliminating the need for serial dilutions and replicate plates. The dispenser distributes the sample on the surface of a rotating plate and obtains a continuously varying dilution of up to 10,000 to 1 on a single dish. Model B250 may be operated in a high or low range of concentrations once the operator decides where the greater sensitivity is desired. Spiral Systems Marketing. Circle 795.

Modal Analyzer

Model 6601 has a high-speed terminal that displays the test object, viewed at any angle in perspective, at 5000 vectors per second. Up to four views may be displayed simultaneously and up to 50 modes may be extracted. Analysis may be conducted on 75 degrees of freedom simultaneously. Up to 7500 transfer

functions may be stored on floppy disks for subsequent reexamination. Impulse, swept sine, or random excitation may be employed. The basis of the system is the portable model 660A-2D dual-channel fast Fourier-transform analyzer. Nicolet Scientific. Circle 796.

Digital Measuring and Positioning

Adaptor

The DMP adaptor is a modular transducer that converts mechanical and optical instruments into digital systems. A flexible connector attaches to, but does not alter, the original tool. An attached instrument, such as a microscope, offers increased measuring resolution, efficiency, and accuracy. Processors are available for automatic scaling, data processing, and display. Los Angeles Scientific Instrument. Circle 798.

Catalog of Immunological and Biological Reagents

This publication features 46 categories of chemicals for immunologists, pharmacologists, and other biomedical researchers. Nearly 15,000 products from more than 100 sources have been conveniently grouped for reference. Sources of sera, red cells, purified serum fractions, antisera, antigens, hormones, frozen tissues and organs, tissue powders and extracts, vaccines, and adjuvants are listed. Lectins, complement components, fluorescein- and hapten-conjugated molecules, RIA kits, reference sera and substances, and many more items are features. Linscott's. Circle 797.

Color Display Terminal and Printer

The 3279 terminal and 3287 printer provide color for alphanumeric and graphic plotting operations. With appropriate software, graphs and tables as well as illustrations may be presented more vividly. One set of software applications

offers a menu of displays such as bar graphs, line graphs, pie or surface charts, scatter plots, Venn diagrams, or histograms in color to enhance data reporting. IBM. Circle 799.

Gas Absorption Cells

A line of cells for gas sampling studies that may use ultraviolet, visible, and infrared radiation is available in four standard sizes. Two short-path (5- and 17-meter) and two long-path (40- and 72-meter) models are offered. The long-path cells offer the added feature of dual path length (20 and 36 meters, respectively). A simple adjustment of transfer optics enables use of full or half length. Three sets of windows are supplied with the dual path cells. Ancal. Circle 809.

Literature

Cine Equipment describes apparatus for cinematography, time-lapse photography, and televised microscopy with the Axiomat modular microscope. Carl Zeiss. Circle 788.

Syringe Dispenser for Organic Solvents gives specifications of the Minipet device for research applications. Manostat. Circle 790.

Fluid Sampling and Measuring Instruments describes a complete line of chromatographic samplers, samplers for pressurized liquids, sample containers and closures, and accessories. Precision Sampling. Circle 794.

Scientific Catalog includes many items for teaching, research, industrial, and hobbyist applications. Edmund Scientific. Circle 801.

Fluidized Baths is devoted to a line of units for industrial applications or for use in large-scale research projects. Techne. Circle 802.

Blood Reagent System describes the Gran-U-Chem line of granulated reagents that require no refrigeration. There are chemicals for 15 different colorimetric and enzymatic blood chemistry tests. Mallinckrodt. Circle 803.

Ampholytes for Electrofocusing offers materials for analytic and preparative methodologies. Bio-Rad Laboratories. Circle 805.

Organic Chemical Bulletin includes several new products for the laboratory in the latest issue. Eastman Organic Chemicals. Circle 806.

HPLC Detectors comprise six new systems described in an extensive catalog. Kratos, Schoeffel Instrument Division. Circle 807.

Newly offered instrumentation, apparatus, and laboratory materials of interest to researchers in all disciplines in academic, industrial, and government organizations are featured in this space. Emphasis is given to purpose, chief characteristics, and availability of products and materials. Endorsement by *Science* or AAAS is not implied. Additional information may be obtained from the manufacturers or suppliers named by circling the appropriate number on the Reader Service Card (on pages 886A and 1006E) and placing it in the mailbox. Postage is free.—RICHARD G. SOMMER

FREE — From Schleicher & Schuell:

THE FILTER PAPER HABIT BREAKER.

Compare the S&S line of filter papers with the other major brand. You'll soon realize it might be just the time to break the old paper habit, and switch to S&S. To determine which S&S paper to substitute for the other manufacturer's, request our two-page Filter Paper Use Compatibility Table. It shows at a glance the proper S&S paper to use in 10 different application categories. In fact, you'll see that S&S makes a lot of filters that don't even show up in the other lineup. **Send for this convenient reference sheet today.**

Schleicher & Schuell

Keene, New Hampshire 03431
(603) 352-3810



Circle No. 284 on Readers' Service Card

Monoclonal Anti-Thy 1.1 Anti-Thy 1.2

Extraordinarily specific and sensitive.
Superior to conventionally produced antisera.

Monoclonal Anti-Thy 1.1

In 0.25ml ascites fluid
Titer: 10^{-5} NEI-002

Monoclonal Anti-Thy 1.2

In 1ml ascites fluid
Titer: 10^{-6} NEI-001

In 1ml buffered ascites fluid
Titer: 10^{-5} NEI-001A

Not for use in humans or clinical diagnosis.



New England Nuclear

549 Albany Street, Boston, Mass. 02118
Call toll-free: 800-225-1572
(In Massachusetts and International: 617-482-9595)

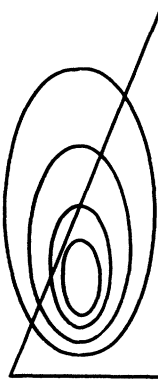
NEN Chemicals GmbH, Dreieich, W. Germany; NEN Canada Ltd., Lachine, Quebec

Circle No. 261 on Readers' Service Card



The Reception of Unconventional Science

edited by Seymour H. Mauskopf



"By 'unconventional science' the editor means all theoretical approaches which fall for a time to gain acceptance among the scientific orthodoxy. . . . Highly recommended as a brief introduction to a basic issue in science history methodology."

—LIBRARY JOURNAL

AAAS Selected Symposium 25
137 pages • \$13.25

Westview Press

5500 Central Avenue • Boulder, Colorado 80301
Frederick A. Praeger, Publisher

TARTRAZINE- ^{14}C is only one example of a wide variety of LABELED COMPOUNDS

of interest to researchers in the areas of food chemicals (dyes, antioxidants, preservatives, sweeteners, etc.) drugs, pesticides, polymers, monomers, aromatics, etc. available on a

CUSTOM SYNTHESIS

basis from the radiochemical laboratories of

DYNAPOL

The broad experience of our radiochemists and our special facilities allow us to offer a full range of services in the preparation of bulk labeled intermediates and normally unavailable specialty research compounds labeled with a variety of isotopes including

^{14}C , ^{13}C , ^3H , ^2H , ^{35}S , ^{32}P ,
 ^{36}Cl , ^{125}I , ^{131}I , ^{18}O

For further information or a quote
on your special needs
write or contact

DYNAPOL

1454 Page Mill Road • Palo Alto, CA 94304 U.S.A.
(415) 493-5611 Telex: 345530 DYNAPOL PLA
Attn: R. Hale, Ph.D. Mgr. Radiochemistry

Circle No. 297 on Readers' Service Card

NUCLEAR POWER

Technology on Trial

**James J. Duderstadt
Chihiro Kikuchi**

As access to world fossil fuel supplies dwindles, America's need for alternative energy sources increases. With this need has come an ever increasing dependence on nuclear fission as a source of energy. Meanwhile, the accident at Pennsylvania's Three-Mile Island has raised questions as to the safety of nuclear technology. In **NUCLEAR POWER: TECHNOLOGY ON TRIAL**, the authors argue for the continued development of this energy resource, while presenting information which enables the reader to make a personal decision on the role nuclear power should play in our future. The result is a major contribution to the ongoing debate over energy policy.

\$16.00
paperbound **\$8.50**

The University of Michigan Press

Dept. T P.O. Box 1104 Ann Arbor MI 48106

Circle No. 44 on Readers' Service Card

AMBIO

A JOURNAL OF THE HUMAN ENVIRONMENT
RESEARCH AND MANAGEMENT

Now distributed for the Royal Swedish Academy of Sciences by Pergamon Press.

Launched in 1972, AMBIO is already recognized by many as the leading interdisciplinary periodical in the environmental sciences.


Now, with the aim of broadening an already international coverage and readership, AMBIO will be published and distributed through a joint arrangement between the Royal Swedish Academy of Sciences and Pergamon Press.

Regular issues contain general articles on current environmental problems and challenges, and reports on original research in the field. Special issues give a more comprehensive treatment of some topical subjects.

"... AMBIO is the best magazine of its kind."
IGNACY SACHS, Centre Nationale de Recherche sur L'Environnement

FREE SPECIMEN COPY AVAILABLE
ON REQUEST

Published in 6 issues p.a.
Annual subscription (1980) **US\$60.00**
Two-year rate (1980/81) **US\$114.00**
Individual rate **US\$25.00**
Prices include postage and insurance and are subject to change without notice.

 Pergamon Press
Headington Hill Hall, Oxford OX3 0BW
Fairview Park, Elmsford, New York 10523

Circle No. 311 on Readers' Service Card
1000

Did you miss the AAAS
Annual Meeting in 1976,
1977, 1978 or 1979?

INSTANT REPLAY

**You can make up for lost
opportunities by listening
to the sessions on high-
quality cassette tapes.**

You can share the information
of AAAS meetings with others
or review it yourself.

Write to Eastern Audio and ask
for a complete list of AAAS
tapes and prices.

AAAS Cassettes
c/o Eastern Audio Associates
9505 Berger Road
Columbia, MD 21046

BOOKS RECEIVED

(Continued from page 924)

ponentiality. Julian Keilson. Springer-Verlag, New York, 1979. xiv, 184 pp. Paper, \$12. Applied Mathematical Sciences, vol. 28.

Marsh-Estuarine Systems Simulation. Papers from a symposium, Jan. 1977. Richard F. Dame, Ed. Published for the Belle W. Baruch Institute for Marine Biology and Coastal Research by University of South Carolina Press, Columbia, 1979. xii, 260 pp., illus. \$27.50. The Belle W. Baruch Library in Marine Science, No. 8.

Nuclear Physics in Retrospect. Proceedings of a Symposium on the 1930s. Minneapolis, May 1977. Roger H. Stuewer, Ed. University of Minnesota Press, Minneapolis, 1979. xviii, 340 pp., illus. \$25.

Numerical Solution of Differential Equations. Isaac Fried. Academic Press, New York, 1979. xvi, 262 pp., illus. \$23.50. Computer Science and Applied Mathematics.

Ocean Acoustics. J. A. DeSanto, Ed. Springer-Verlag, New York, 1979. xii, 288 pp., illus. \$37.40. Topics in Current Physics, vol. 8.

Psychosocial Determinants of Fertility and Contraception in Venezuela. Snehenhu B. Kar and Ramón González-Cerrutti. Pan American Health Organization, Washington, D.C., 1978. viii, 150 pp. Paper, \$3. Scientific Publication No. 365.

Pulverized-Coal Combustion and Gasification. Theory and Applications for Continuous Flow Processes. L. Douglas Smoot and David T. Pratt, Eds. Plenum, New York, 1979. xviii, 334 pp., illus. \$39.50.

Refrigeration and Air-Conditioning. Air-Conditioning and Refrigeration Institute. Prentice-Hall, Englewood Cliffs, N.J., 1979. xii, 864 pp., illus. \$25.

Research Problems in Zooarchaeology. Papers from a meeting, London, Sept. 1976. D. R. Brothwell, K. D. Thomas, and Juliet Clutton-Brock, Eds. Institute of Archaeology, London, 1978. x, 146 pp., illus. Paper, £4.50. Institute of Archaeology Occasional Publication No. 3.

Science and the Second Renaissance of Europe. A. Danzin. Published for the Commission of the European Communities by Pergamon, New York, 1979. xiv, 126 pp., illus. Paper, \$16.

Science of the Times, 2. Arleen Keylin, Ed. Times Books (New York Times), New York, 1979. xvi, 304 pp., illus. \$14.95. Reprinted from the *New York Times*.

Scientific Foundations of Clinical Biochemistry. Vol. 1, Analytical Aspects. David L. Williams, Ronald F. Nunn, and Vincent Marks, Eds. Heinemann, London, 1978 (U.S. distributor, Year Book Medical Publishers, Chicago). xii, 490 pp., illus. \$55.

Teaching Medical Anthropology. Model Courses for Graduate and Undergraduate Instruction. Harry F. Todd, Jr., and Julio L. Ruffini, Eds. Society for Medical Anthropology, Washington, D.C., 1979 (distributor, American Anthropological Association, Washington, D.C.). 108 pp. Paper, \$5. Society for Medical Anthropology Special Publication No. 1.

Virus-Transformed Cell Membranes. Claude Nicolau, Ed. Academic Press, New York, 1978. xviii, 408 pp., illus. \$43.50.

The War Game. A Critique of Military Problem Solving. Garry D. Brewer and Martin Shubik. Harvard University Press, Cambridge, Mass., 1979. xx, 386 pp. \$18.50.

SCIENCE, VOL. 206