

21 July 1978 • Vol. 201 • No. 4352

\$1.50

# SCIENCE

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE





# Gilson presents a masterwork of precision and performance for **liquid column chromatography...** The Model HM Holochrome VARIABLE WAVELENGTH DETECTOR

- UV-VIS • DUAL BEAM
- HOLOGRAPHIC MONOCHROMATOR—190 to 600 nm.
- INTERCHANGEABLE FLOW CELLS—INCLUDES AN 8  $\mu$ l VOLUME 10 mm LIGHT PATH CELL FOR HPLC APPLICATIONS

This Model HM uses a stabilized Deuterium light source and the newest precision Holographic grating monochromator to provide continuous digital wavelength adjustment from 190 to 600 nanometers, without changing light sources.

#### Holographic Monochromator Reduces Light Dispersion

A monochromator provides greater flexibility, narrower bandwidth, and longer life than interference filters. The use of a holographically constructed concave grating simplifies the optics. This eliminates some lenses and mirrors that would normally be required with a conventional flat plane grating monochromator, thus reducing light dispersion.

#### High Sensitivity. Low Noise

Full-scale sensitivity can be set from .01 to 2 AU. The combination of high sensitivity and narrow bandwidth results in superior peak resolution as well as wide sensitivity range. Gilson

UV/VIS Holochrome monitor utilizes integrated circuit electronics and light intensity sufficient to maintain low noise levels with long light path. Noise is less than .0002 AU.

#### Flow Cells for HPLC and Gravity Systems

Pressure limit 35 kg/cm<sup>2</sup> (500 psi)

#### KEL-F FOR HPLC

10 mm light path—8  $\mu$ l volume  
BLOWN QUARTZ FOR BUBBLE-FREE OPERATION  
10 mm light path—70  $\mu$ l volume  
2.5 mm light path—32  $\mu$ l volume  
Gilson HM flow cells optimize bubble-free operation, long light path, small cell volume, and minimum peak broadening.

#### Two Recorder Outputs For Tall and Short Peaks

Two recorder outputs can be

set at different sensitivity levels (for example .01 and 2 AU). In this way, both tall and short peaks can be recorded simultaneously with optimum resolution.

GILSON COLUMN MONITORS ARE CONSTRUCTED FOR COLD ROOM OPERATION

CALL OR WRITE:

#### Gilson Medical Electronics, Inc.

*Serving research laboratories for more than a quarter of a century*

#### U.S.A. MANUFACTURING PLANT

P.O. Box 27, Middleton, Wisconsin 53562  
Telephone 608/836-1551 Telex No. 26-5478

#### EUROPEAN MANUFACTURING PLANT

Gilson Medical Electronics, Inc. (FRANCE) S.A.  
Boite Postale 45, 95400 Villiers-le-bel  
Arnouville-LesGonesse, FRANCE  
Telephone 990 54-41 Telex No. 69-1182F



# HPLC

For Literature Circle Reader Service No. 11.  
For Demonstration Circle Reader Service No. 113.



# The Beckman gamma choice. Big enough to let you be choosy.



Beckman now offers the research and clinical laboratory a complete choice of gamma-counting instruments. Check the features below to find the one instrument that can most effectively satisfy your needs.

The low cost Gamma 4000 is a high performance, bench-top unit featuring ease of operation, 200 or 400 sample capacity, preset and variable windows, and a choice of print-out devices. The optional DP-5000 computer/printer provides on-line data reduction capability—for Radio-Immunoassay final answer calculations.

The Gamma 7000 is micro-processor controlled and offers high

performance features with push-button simplicity. Permanently stored counting programs eliminate all knobs, manual controls and switches to make operation fast, easy and more reliable. Simply select the desired program, load samples and depress the AUTO pushbutton—a completely simple and thorough approach to counting.

The Gamma 8000 takes micro-processor-control one step further and allows the user to design special counting programs, while maintaining the simplicity of operation unique to Beckman Instruments.

Finally, there's the Gamma 9000 with the ultimate in data-handling

capability. Built right into the 9000 is a complete computer that both controls the operation of the instrument and takes your data through to final answer.

Of course, if you're really going to be choosy about your next gamma instrument, you'll need complete technical information. Why not get it now?

Contact Scientific Instruments Division, Beckman Instruments, Inc., P.O. Box C-19600, Irvine, CA 92713.

**Innovation you can count on**

Circle No. 69 on Readers' Service Card

**BECKMAN®**

ISSN 0036-8075  
21 July 1978  
Volume 201, No. 4352

# SCIENCE

<b>LETTERS</b>	International Cancer Congress: The View from Argentina: <i>J. Rivarola</i> and <i>J. V. Uriburu</i> ; Liposomes: European Research: <i>G. Gregoriadis</i> . . . . .	211
<b>EDITORIAL</b>	The Golden Age of the Geoscientist: <i>G. M. Friedman</i> . . . . .	215
<b>ARTICLES</b>	Volatile Metal Complexes: <i>R. E. Sievers</i> and <i>J. E. Sadlowski</i> . . . . .	217
	Other Tastes, Other Worlds: <i>V. G. Dethier</i> . . . . .	224
	Water Resources and the Land-Water Interface: <i>J. R. Karr</i> and <i>I. J. Schlosser</i> . . . . .	229
<b>NEWS AND COMMENT</b>	The Mystery of the Shroud of Turin Challenges 20th-Century Science . . . . .	235
	Britain's National Health Service: It Works and They Like It, But— . . . . .	239
<b>RESEARCH NEWS</b>	Synchrotron Radiation: New Window on Metalloprotein Structure . . . . .	243
	Particle Theory: Stanford Electron Experiment Closes Options . . . . .	245
<b>BOOK REVIEWS</b>	Plant Relations in Pastures, <i>reviewed by S. K. Jain</i> ; Evolution of the Atmosphere, <i>R. M. Garrels</i> ; Cancer Invasion and Metastasis, <i>R. Pollack</i> ; Books Received . . . . .	246

<b>BOARD OF DIRECTORS</b>	EMILIO Q. DADDARIO Retiring President, Chairman	EDWARD E. DAVID, JR. President	KENNETH E. BOULDING President-Elect	ELOISE E. CLARK MARTIN M. CUMMINGS	RENÉE C. FOX BERNARD GIFFORD
<b>CHAIRMEN AND SECRETARIES OF AAAS SECTIONS</b>	MATHEMATICS (A) Mark Kac Ronald Graham	PHYSICS (B) D. Allan Bromley Rolf M. Sinclair	CHEMISTRY (C) William E. McEwen William L. Jolly	ASTRONOMY (D) Paul W. Hodge Donat G. Wentzel	
	PSYCHOLOGY (J) Brenda Milner Meredith P. Crawford	SOCIAL AND ECONOMIC SCIENCES (K) Kurt W. Back Gillian Lindt	HISTORY AND PHILOSOPHY OF SCIENCE (L) Robert S. Cohen Diana L. Hall	ENGINEERING (M) Robert B. Beckmann Donald E. Marlowe	
	EDUCATION (Q) Marjorie H. Gardner James T. Robinson	DENTISTRY (R) Sholom Pearlman John Termine	PHARMACEUTICAL SCIENCES (S) John G. Wagner Raymond Jang	INFORMATION, COMPUTING, AND COMMUNICATION (T) Eugene Garfield Madeline M. Henderson	
<b>DIVISIONS</b>	<b>ALASKA DIVISION</b>		<b>PACIFIC DIVISION</b>		<b>SOUTHWESTERN AND ROCKY MOUNTAIN DIVISION</b>
	Donald H. Rosenberg President	Keith B. Mather Executive Secretary	Glenn C. Lewis President	Alan E. Leviton Secretary-Treasurer	James W. O'Leary President  Lora M. Shields Executive Officer
<p>SCIENCE is published weekly, except the last week in December, but with an extra issue on the third Tuesday in September, by the American Association for the Advancement of Science, 1515 Massachusetts Ave., NW, Washington, D.C. 20005. Now combined with <i>The Scientific Monthly</i>. Second-class postage paid at Washington, D.C., and additional entry. Copyright © 1978 by the American Association for the Advancement of Science. Member rates on request. Annual subscriptions \$65; foreign postage: Canada \$10; other surface \$13; air-surface via Amsterdam \$30. Single copies \$1.50; \$2 by mail (back issues \$3) except <i>Guide to Scientific Instruments</i> \$6. School year subscriptions: 9 months \$50; 10 months \$55. Provide 6 weeks' notice for change of address, giving new and old addresses and postal codes. Send a recent address label, including your 7-digit account number. Postmaster: Send Form 3579 to Science, 1515 Massachusetts Avenue, NW, Washington, D.C. 20005. Science is indexed in the <i>Reader's Guide to Periodical Literature</i> and in several specialized indexes.</p>					



# AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

<b>REPORTS</b>	Mantle Uplifted Block in the Western Indian Ocean: <i>E. Bonatti</i> and <i>P. R. Hamlyn</i> . . . . .	249
	Periodic Freshwater Flooding and Stagnation of the Eastern Mediterranean Sea During the Late Quaternary: <i>D. F. Williams, R. C. Thunell, J. P. Kennett</i> . . .	252
	Pressure-Adaptive Differences in Lactate Dehydrogenases of Congeneric Fishes Living at Different Depths: <i>J. Siebenaller</i> and <i>G. N. Somero</i> . . . . .	255
	$L_{III}$ -Edge Anomalous X-ray Scattering by Cesium Measured with Synchrotron Radiation: <i>J. C. Phillips</i> et al. . . . .	257
	Enzyme-Linked Immunosorbent Assay for Identification of Rotaviruses from Different Animal Species: <i>R. H. Yolken</i> et al. . . . .	259
	Neuroleptic-Induced "Anhedonia" in Rats: Pimozide Blocks Reward Quality of Food: <i>R. A. Wise</i> et al. . . . .	262
	Physiological Basis of Anisometropic Amblyopia: <i>H. M. Eggers</i> and <i>C. Blakemore</i> .	264
	Chronically Decerebrate Rats Demonstrate Satiation But Not Bait Shyness: <i>H. J. Grill</i> and <i>R. Norgren</i> . . . . .	267
	Ponto-Geniculo-Occipital (PGO) Burst Neurons: Correlative Evidence for Neuronal Generators of PGO Waves: <i>R. W. McCarley, J. P. Nelson, J. A. Hobson</i> . . . .	269
	Physostigmine: Improvement of Long-Term Memory Processes in Normal Humans: <i>K. L. Davis</i> et al. . . . .	272
	Human Serial Learning: Enhancement with Arecholine and Choline and Impairment with Scopolamine: <i>N. Sitaram, H. Weingartner, J. C. Gillin</i> . . . . .	274
	Long-Term Changes in Dopaminergic Innervation of Caudate Nucleus After Continuous Amphetamine Administration: <i>G. Ellison</i> et al. . . . .	276
	<i>Technical Comments:</i> Meteorite Impact Crater in Central Alaska: <i>W. W. Patton, Jr., and T. P. Miller; P. J. Cannon; Rape Among Mallards: J. P. Hailman; F. McKinney, J. Barrett, S. R. Derrickson; D. P. Barash</i> . . . . .	279

MIKE MC CORMACK FREDERICK MOSTELLER	RUSSELL W. PETERSON CHEN NING YANG	WILLIAM T. GOLDEN Treasurer	WILLIAM D. CAREY Executive Officer
--	---------------------------------------	--------------------------------	---------------------------------------

GEOLOGY AND GEOGRAPHY (E) Gerald M. Friedman Ramon E. Bisque	BIOLOGICAL SCIENCES (G) Ursula K. Abbott Walter Chavin	ANTHROPOLOGY (H) June Helm Priscilla Reining
MEDICAL SCIENCES (N) Leon O. Jacobson Leah M. Lowenstein	AGRICULTURE (O) James B. Kendrick Coyt T. Wilson	INDUSTRIAL SCIENCE (P) David B. Hertz Robert L. Stern
STATISTICS (U) Samuel W. Greenhouse Ezra Glaser	ATMOSPHERIC AND HYDROSPHERIC SCIENCES (W) Kenneth C. Spengler Glenn R. Hilst	GENERAL (X) Allen V. Astin Joseph F. Coates

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

*Sebastolobus alascanus*. The muscle-type lactate dehydrogenase of this scorpaenid fish is markedly more sensitive to moderate hydrostatic pressures than is the homologous enzyme of its deeper-living congener, *Sebastolobus altivelis*. Such pressure-adaptive differences may be important in establishing species depth zonation patterns in the sea. See page 255. [Thomas W. Okita, Scripps Institution of Oceanography, University of California, San Diego]



# Research & Development: AAAS Reports

The informative and topical series of reports on research and development budgets and policies produced by the AAAS and used as the basis for the annual AAAS-sponsored June colloquium on R&D policy are . . .

- **Designed to** promote a wider and clearer understanding of R&D funding and policy issues
- **Addressed to** the scientific, technical, and public policy communities and to those responsible for policy and funding decisions on R&D
- **Written by** Willis H. Shapley, formerly a senior Bureau of the Budget official and Associate Deputy Administrator of NASA, and Don I. Phillips of the AAAS.

## Now Available

**RESEARCH & DEVELOPMENT: AAAS REPORT III**, by Willis H. Shapley and Don I. Phillips.

Retail price: \$6.00.\*

**Report III** expands the scope of the series to include R&D in industry and the impact of R&D on the economy, as well as R&D in the federal budget:

*R&D in the Federal Budget: FY 1979 (Part I)* provides an analysis of the federal budget's R&D content, the policies on which it is based, significant trends, and the basic issues of current and future concern in federal R&D.

*R&D, Industry, & the Economy (Part II)* gives a picture of R&D in industry and its nature and content, recent trends, and future outlook. *Part II* brings into focus the complex issues that center around interrelations of R&D and our economic system which have major implications for R&D policy in government and in industry.

## Also Available

**AAAS REPORT I Research & Development in the Federal Budget: FY 1977**, by Willis H. Shapley.

The first report in the series lays a foundation for the succeeding volumes with an exposition of the complexities of the federal budget process.

A readable volume of lasting value.

Retail price: \$5.00 (quantities limited).\*

**AAAS REPORT II Research & Development in the Federal Budget: FY 1978**, by Willis H. Shapley, Don I. Phillips, and Herbert Roback.

The second report in the series gives an analytic summary and interpretation of R&D in the FY 1978 federal budget and a discussion of significant R&D policy issues that face policy-makers.

Retail price: \$5.00.\*

**Research & Development: AAAS Report Series**—Constructive and thought-provoking readings on vital issues facing the R&D community and the nation today. **ORDER YOUR COPIES NOW!**

### Report

R&D '79	\$ 6.00
R&D '78	\$ 5.00
R&D '77	\$ 5.00
R&D Set	\$14.00 (3 volumes)

A limited number of copies of the June 1976 and 1977 colloquium proceedings is available. Retail price: \$5.00\* each. Proceedings of the June 1978 colloquium will be available in September 1978. Retail price: \$6.00.\*

Send your name, address and list of titles to:



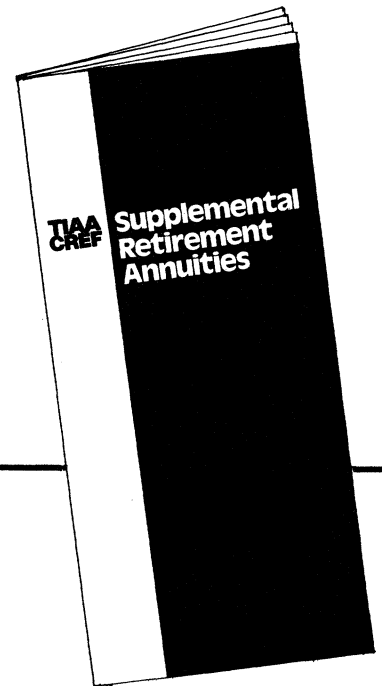
American Association for the Advancement of Science  
Department L  
1515 Massachusetts Avenue, NW  
Washington, D.C. 20005

All orders under \$10.00 must be prepaid.

\* AAAS member discount: 10% off retail price.



# TIAA-CREF Supplemental Retirement Annuities



## for tax-deferred annuity programs

Supplemental Retirement Annuities (SRA's) are new forms of TIAA and CREF contracts designed expressly for use by persons who want to set aside tax-deferred retirement funds over and above amounts being accumulated under their institution's basic retirement plan. They are available for employees of colleges, universities, private schools and certain other nonprofit educational organizations with tax-deferred annuity (salary-or-annuity option) programs. Through a properly drawn agreement with their institution, staff members may divert part of their compensation before taxes to the purchase of these new contracts.

**And SRA's are cashable at any time.** This means that if the money accumulated by salary reduction is needed before retirement, the SRA contracts can be surrendered for their cash value. Benefits, whether payable in cash or as income, are taxable as ordinary income when received.

For more information and answers to questions send for your copy of the booklet on Supplemental Retirement Annuities.

**S**end me a booklet describing  
TIAA-CREF Supplemental Retirement Annuities.



Name \_\_\_\_\_ Date of Birth \_\_\_\_\_

Address \_\_\_\_\_  
Street

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Nonprofit  
Employer \_\_\_\_\_

Teachers Insurance and Annuity Association  
730 Third Avenue, New York, New York 10017

wi



# System 45:

## Our friendly computer could speed through your tough technical problems...

### if the boss would just get finished with his.

He has problems, too. The versatile System 45, along with HP-created management programs, can help him with forecasting, project management, basic statistics—even payroll and inventory control. He can also create and access departmental data bases for administrative chores. But you won't wait but a couple of minutes because the System 45 is a speedy workhorse. When

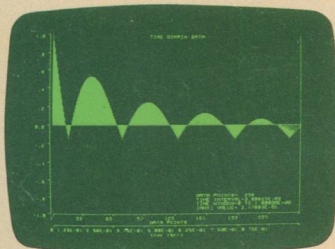
it's your turn, you, too, can take advantage of HP programs for applications as diverse and as valuable as differential equations, waveform analysis, eigenvalues and eigenvectors, regression analysis, linear equations and numerical integration to name a few.

You'll get answers fast. System 45 will display a 20 variable, 20 constraint linear programming solution in under five minutes. And tackle a Fast Fourier Transform of a set of a 1,024 full precision data points in less than a minute.

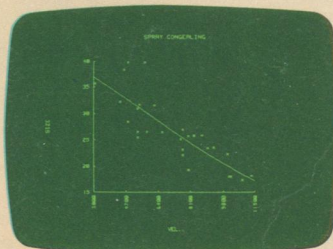
Anyone in your department can easily create and run their own special programs using System 45's enhanced BASIC language.

You can generate charts and graphs, interface with your instruments, add peripherals

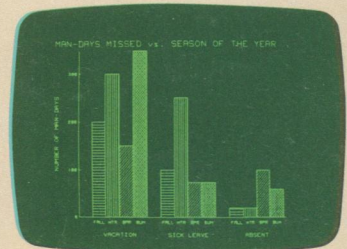
for extra storage, input and output. You can solve problems needing up to 62K bytes of



Waveform Analysis



Regression Analysis



Bar Chart



memory. Stated simply, System 45 is powerful, versatile and friendly: a productive, cost-effective tool for practically everyone in your department, even the boss. For brochures describing System 45 and the HP programs of interest to you, call the HP Literature Center toll-free day or night. The number is 1-800-821-7700, extension 302. (In Missouri, call 1-800-892-7655, extension 302.)



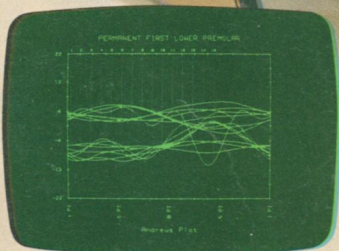
3400 E. Harmony Road, Fort Collins, Colorado 80521

For assistance call: Washington (301) 948-6370, Chicago (312) 255-9800, Atlanta (404) 955-1500, Los Angeles (213) 877-1282  
Ask for Desktop Computer Sales Department.

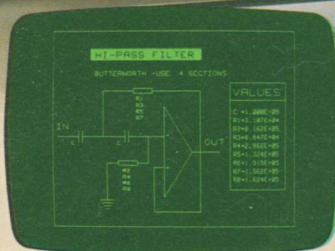
Circle No. 38 on Readers' Service Card



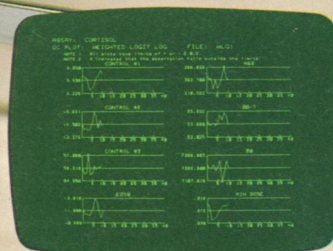
408/5



Andrews Plot



Active Filter Design



RIA QC Plot



**You'll find Whatman**  
**under** *Air/Water Pollution,*  
*Monitoring and Analysis of,*  
**preferred filters for.**



It is a common thing for authors writing methods and procedures for air and water pollution sampling and analysis to cite Whatman filter media.

We think that the reasons are based on the confidence of experience. Confidence in our products' performance, uniformity, purity

and continuing ready availability (over 200 laboratory supply dealers in the U.S.).

We realize that the quality and performance of the filter medium in your procedure should be something you can take for granted.

With Whatman media, you can.

WHATMAN INC. ■ 9 Bridewell Place, Clifton, New Jersey 07014  
(201) 777-4825





## Say goodbye to a couple of troublemakers.

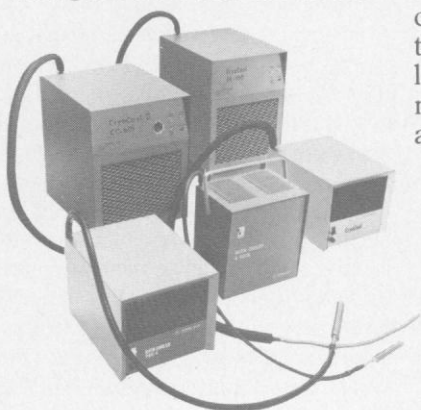
If you use liquid nitrogen or dry ice in applications such as vapor freezing traps and low temperature baths, you know how expensive they are. And how difficult to handle and store.

What you may not know is that Neslab's CryoCool Refrigeration Units can do the

same job. Better. More efficiently. With virtually no bother. And at far less cost.

Hard to believe? Talk to some of the hundreds of satisfied CryoCool users, and you'll be a believer. We'll even send you a list of their names.

Send for our new catalogs on cooling systems, heat exchangers and/or constant temperature baths and circulators. Call if you need technical assistance with an applications problem.



NESLAB INSTRUMENTS, INC.  
871 Islington Street  
Portsmouth, NH 03801 U.S.A.  
(603) 436-9444

Circle No. 47 on Readers' Service Card

## COMBATING THE #1 KILLER

JEAN L. MARX and  
GINA BARI KOLATA

The SCIENCE  
Report on  
Heart  
Research

— a direct, unbiased report with information for all investigators in the field, makers of public policy, scientists and the general public.

\$17.00 casebound      \$7.50 paperbound  
10% discount to AAAS members

Send name, address and remittance to

**AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE**



Department B-3  
1515 Massachusetts Avenue, NW  
Washington, D.C. 20005

afflicting these two organs. Hepatic and splenic disorders are by no means few, and some of the tropical diseases affecting millions in the developing world are good examples. Research in this country (11) has shown that treatment of experimental visceral leishmaniasis with small amounts of liposome-entrapped antimonial drugs is as effective in killing the parasites in the liver as are much larger doses of free drugs. Success in this area of medicine would not only resolve problems of toxicity that prevent aggressive chemotherapy, it would also make therapy economically realistic for the countries involved.

Routes other than the intravenous have also been used for the administration of liposomes. Work at this laboratory (12) and elsewhere in England (13) suggests that insulin-containing liposomes given intragastrically can transport the hormone into the circulation and reduce blood glucose levels in diabetic rats. We have found that the effect is more pronounced when liposomes are made of certain semisynthetic phospholipids which, at the body temperature, are more resistant to pancreatic phospholipases or to detergents. Again, the implications for success in treating diabetic patients orally cannot be overemphasized. However, there are difficulties to overcome, among them, improving the absorption of liposomal insulin by the gut.

Local injection of liposomes as a means of drug administration is likely to be an early application mainly because of the avoidance of complications arising from intravenous use. Work at this laboratory (14) suggests that the need for a biocompatible immunological adjuvant that will make vaccination safer, more effective, and cheaper, may be satisfied by liposomes. Thus, immune response to liposome-entrapped bacterial and viral antigens administered intramuscularly was found to be much greater than when free antigens were used. Yet another possible means of local drug release is being investigated by workers in England who have shown (15) that specially tailored steroids anchored onto the liposomal membrane can, upon intraarticular injection into rabbits with experimental arthritis, decrease the temperature and the size of the joint to a much greater extent than can similar amounts of conventional steroids.

So far, experiments here and in Germany and experience with routine intravenous feeding with phospholipids suggest that liposomes of certain lipid compositions are almost certain to be safe (16). Indeed, in situations where some exploratory work in humans is



deemed essential (for example, liposome distribution in cancer patients when the anatomical and physiological circumstances of tumors cannot be duplicated in animals), their use should not be discouraged. There is, however, some concern with regard to the toxicity that drug-containing liposomes may induce as a result of an altered drug distribution, of an unsuspected novel way of drug action, or even because of the patient's reaction to the carrier. For instance, were one to administer (bovine or porcine) insulin-containing liposomes orally to normal volunteers, there could be a manifestation of the adjuvant property of the carrier with formed antibodies neutralizing the cross-reacting human insulin.

Progress in modifying cell structure and behavior by the use of liposomes in vitro has been, thanks to the obliging properties of the system, remarkable. It may be that the complexities of the living animal and ethical and practical difficulties in dealing with human subjects have delayed similar progress in medicine. This has caused some confusion as to the potential value of the carrier in helping to alleviate disease. But the need for controlled drug delivery is patently obvious; on this basis, liposomes (or their more sophisticated versions) along with other carriers are likely to play a significant role.

GREGORY GREGORIADIS

*Division of Clinical Investigation,  
Clinical Research Centre, Harrow,  
Middlesex, HA1 3UJ, England*

#### References

1. G. Gregoriadis, *N. Engl. J. Med.* **295**, 704 (1976); *ibid.*, p. 765; J. A. Fender and A. Romero, *Life Sci.* **20**, 1109 (1977); M. Finkelstein and G. Weissmann, *J. Lipid. Res.* **19**, 289 (1978).
2. G. Gregoriadis, *Nature (London)* **265**, 407 (1977).
3. — and B. E. Ryman, *Biochem. J.* **124**, 58 (1971); *Eur. J. Biochem.* **24**, 485 (1972); *Biochem. J.* **129**, 123 (1972); G. Gregoriadis and R. A. Buckland, *Nature (London)* **244**, 170 (1973).
4. P. E. Belchetz, I. P. Braidman, J. C. W. Crawley, G. Gregoriadis, *Lancet* **1977-I**, 116 (1977).
5. D. A. Tyrrell, B. E. Ryman, B. R. Keeton, V. Dubowitz, *Br. Med. J.* **2**, 88 (1976).
6. C. M. Cohen *et al.*, *Biochemistry* **15**, 452 (1976).
7. G. Gregoriadis, *FEBS Lett.* **36**, 292 (1973).
8. E. D. Neerunjun and G. Gregoriadis, *Biochem. Soc. Trans.* **2**, 868 (1974); Y.-E. Rahman, E. A. Cerny, S. L. Tollaksen, B. J. Wright, S. L. Nance, J. F. Thomson, *Proc. Soc. Exp. Biol. Med.* **146**, 1173 (1974).
9. G. Gregoriadis, E. D. Neerunjun, R. Hunt, *Life Sci.* **21**, 357 (1977).
10. G. Gregoriadis and E. D. Neerunjun, *Biochem. Biophys. Res. Commun.* **65**, 537 (1975).
11. C. D. V. Black, G. J. Watson, R. J. Ward, *Trans. R. Soc. Trop. Med. Hyg.* **71**, 550 (1977); R. R. C. New, M. L. Chance, S. C. Thomas, W. Peters, *Nature (London)* **272**, 55 (1978).
12. G. Dapergolas and G. Gregoriadis, *Lancet* **1976-II**, 824 (1976); *Biochem. Soc. Trans.* **5**, 1383 (1977).
13. H. M. Patel and B. E. Ryman, *FEBS Lett.* **62**, 60 (1976).
14. A. C. Allison and G. Gregoriadis, *Nature (London)* **252**, 252 (1974); G. Gregoriadis and A. C. Allison, *FEBS Lett.* **45**, 71 (1974).
15. J. T. Dingle *et al.*, *Nature (London)* **271**, 372 (1978).
16. G. Gregoriadis, *Ann. N.Y. Acad. Sci.*, in press.

21 JULY 1978

# YOUR PROFESSIONAL REPUTATION DESERVES NOTHING LESS THAN OUR REPUTATION.

The world of Microscopy is a day after day world of challenges. Challenges to your skill, your interpretive powers, your ability to arrive at correct conclusions, and a challenge to your reputation.

That's why the professional chooses instruments of unquestioned precision that speed his work and leave him mentally and physically fresh for the next assignment. And he knows the economic importance and convenience of having a full range of accessories and services promptly available at all times, anywhere in the world.

With a Wild Heerbrugg Instrument at your fingertips, you can be absolutely confident that it meets every requisite of your profession.



**INSIST ON WILD  
HEERBRUGG  
MICROSCOPES.  
NOTHING LESS.**

**WILD® WILD HEERBRUGG  
HEERBRUGG INSTRUMENTS, INC.**

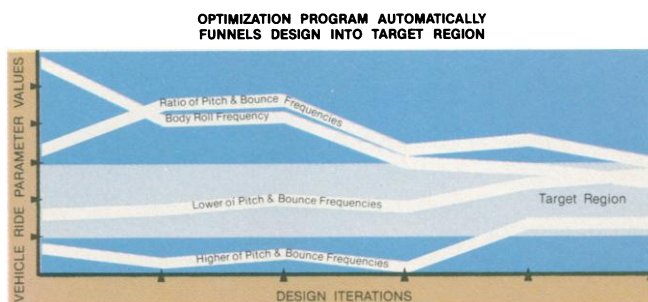
FARMINGDALE, NEW YORK 11735 • 516-293-7400

Wild Of Canada, Ltd. 881 Lady Ellen Pl., Ottawa 3, Ont.  
Wild Of Mexico, Comercial Ultramar Sa, Colima 411, Mexico 6, D.F.  
Circle No. 40 on Readers' Service Card

Before computers, engineering designs were evaluated the hard way. They were built, tested, modified, retested, remodified — and so on.

Computers improved the process dramatically, enabling much of the evaluation to be done with mathematical models rather than costly prototypes. Great for the evaluator.

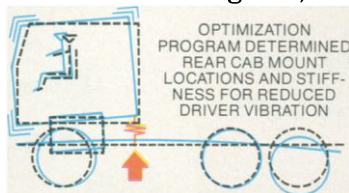
But that didn't help the designer. He still had the root problem of juggling parameter values to find the right combination. And because of the endless possibilities, he could only hope that his final, intuitive design was close to optimal.



Now he can do more than hope. Engineering mechanics specialists here at the General Motors Research Laboratories have devised computer concepts to aid the designer. Through these concepts, depending on how tight his constraints are and how well he defines the problem, a designer can:

- Automatically converge on the solution, if one exists.
- Or finding no solution, determine the trade-offs in relaxing the constraints.

The concepts, built on the theories of mathematical optimization and artificial intelligence, have been embodied in a new computer program that can be applied to almost any design problem.



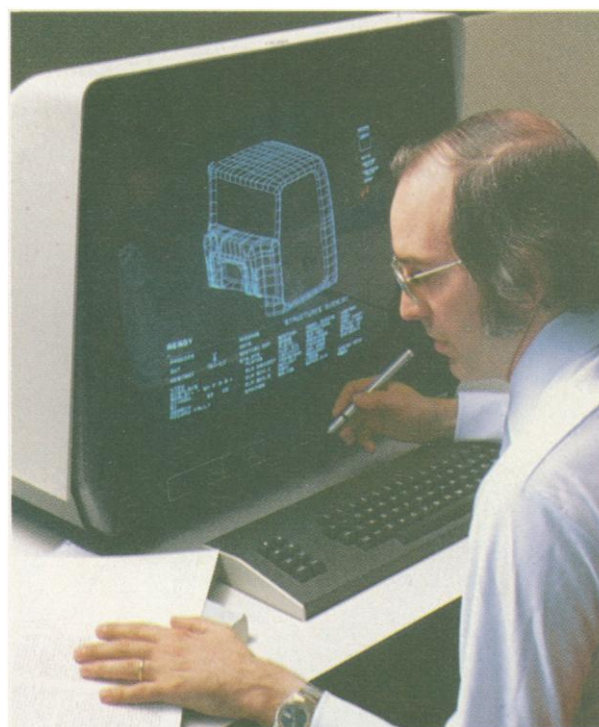
For example, we're using it to improve truck ride, increase bearing capacity, and lighten vehicle body and chassis structures.

Each application requires a computerized mathematical model of the system and fixed design goals. The "optimizer" does the rest. It shows how to alter the design to achieve those goals, cutting what could be weeks of iterative analysis down to a day or two.

We're automating the design process . . . minimizing the art, maximizing the science . . . to meet the demands of an increasingly complex world.

*If you have a Ph.D. in engineering or the physical, mathematical or biomedical sciences, we invite you to check a number of current openings at the General Motors Research Laboratories. Please write GMR Personnel, Dept. 715. An Equal Opportunity Employer.*

## Who says designing can't be a science?



**General Motors  
Research Laboratories**

Warren, Michigan 48090



# 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

1978: RICHARD E. BALZHISER, JAMES F. CROW, HANS LANDSBERG, EDWARD NEY, FRANK W. PUTNAM, MAXINE SINGER, PAUL E. WAGGONER, F. KARL WILLENBROCK

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

## 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 and Comment:* BARBARA J. CULLITON, *Editor*; LUTHER J. CARTER, CONSTANCE HOLDEN, DEBORAH SHAPLEY, R. JEFFREY SMITH, NICHOLAS WADE, JOHN WALSH. *Editorial Assistant*, SCHERRAINE MACK

*Research News:* ALLEN L. HAMMOND, *Editor*; RICHARD A. KERR, GINA BARI KOLATA, JEAN L. MARX, THOMAS H. MAUGH II, WILLIAM D. METZ, ARTHUR L. ROBINSON. *Editorial Assistant*, FANNIE GROOM

*Associate Editors:* ELEANORE BUTZ, MARY DORFMAN, SYLVIA EBERHART, JUDITH GOTTLIEB

*Assistant Editors:* CAITILIN GORDON, RUTH KULSTAD, LOIS SCHMITT, DIANE TURKIN

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

*Letters:* CHRISTINE KARLIK

*Copy Editors:* ISABELLA BOULDIN, OLIVER HEATWOLE

*Production:* NANCY HARTNAGEL, JOHN BAKER; YA LI SWIGART, ELEANOR WARNER; 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 Editors:* RICHARD SEMIKLOSE

*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: *Advances*, Washington. For "Instructions for Contributors," write the editorial office or see page xi, *Science*, 30 June 1978.

BUSINESS CORRESPONDENCE: Area Code 202. Business Office, 467-4411; Circulation, 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.

# The Golden Age of the Geoscientist

Exploration for energy and minerals has followed a cyclic pattern of feast or famine. Post-World War II exploration programs led to a rapid expansion of undergraduate and graduate training in the geosciences, and a large cadre of professional geoscientists subsequently entered industry. But in the mid-1950's, the situation abruptly changed. In the spring of 1956, a colleague in a southwestern university confided to me that, although his department was training 300 undergraduate majors, only two microscopes were available to students. In the fall of 1957, I asked this same colleague how many undergraduate majors had enrolled in his department. His answer: two. What was the reason for such a drastic decline in enrollment? In early 1957, famine had replaced feast in the exploration business. Companies closed exploration offices and laid off geoscientists.

In the 1960's, the employment pendulum swung less dramatically, but in 1973 we entered a new age: exploration efforts in the United States became extremely active, and demand for geoscientists and petroleum engineers climbed steeply.

Ordinarily, a master's degree is considered essential by industry, except for those with bachelor's degrees who are well trained in mathematics and physics and entered the field of geophysics. However, with the steeply increasing demand, even poor students with only a bachelor's degree have found first-rate employment. Good students with master's degrees, especially women and members of minority groups, have special opportunities. They are likely to receive more than five job offers from major oil corporations at salaries ranging from \$17,000 to \$21,000 per year.

With this frenetic hiring one would think that these corporations could quietly put their geoscientists to work in a creative effort to find more reserves. But the truth is that most geoscientists on the staff of major companies are inexperienced. In one major corporation I know of, almost 80 percent of the geoscientists have less than 2 years of experience. Small exploration companies, known as independents, woo geoscientists away from the major corporations with excellent salaries, bonuses, and fringe benefits. Body snatching is hardly new in the exploration business, but in the past young scientists needed 5 years of experience before they became attractive to independents. Today that period is commonly only 1½ years. Thus the major corporations have become the training ground for the independents. Among my students, it is not unusual for 25- to 27-year-olds with recent master's degrees to earn salaries of \$30,000 per year plus a free car, gas, repairs, and insurance. No wonder this is considered the golden age of the geoscientist.

The needs for graduate training in the earth sciences, however, are selective. The fields most required include geophysics, stratigraphy, sedimentology, and tectonics. Basic supporting training in physics, chemistry, and mathematics is important. Departments that are strong in the four fields of geology named above have bulging graduate enrollments. Ph.D. training is commonly considered a luxury today because industry wants and needs trained scientists now.

In other countries geoscience is still sleepy, but activities are increasing. In the United Kingdom and Western Europe, the fate of trained geoscientists used to be emigration. Today the job market is expanding, and geoscientists may find employment at home. A new breed of geoscientist is the government-company scientist of OPEC countries. In these countries, and in those aspiring to OPEC stature, new opportunities in geoscience are opening up.

Geoscientists will be in demand for the foreseeable future as the world seeks to meet its needs for energy and minerals. But the lessons of the past should not be forgotten. The feast of today may once again be followed by famine.—GERALD M. FRIEDMAN, *Chairman, Section E, AAAS, and Department of Geology, Rensselaer Polytechnic Institute, Troy, New York 12181*

# Introducing 6 new multi-volume Eppendorf® Pipettes.

## Now one pipette takes the place of three.



The new Eppendorf System 4700 multi-volume pipettes are actually three pipettes in one.

While multi-volume models have the same dimensions, similar accuracy and built-in tip ejector as fixed-volume models, a partial twist of the operating button adjusts them for any of 3 different volumes, and without need to calibrate each setting. (A ratchet-type stop assures positive engagement of the desired setting and prevents accidental change of volume).

There are six multi-volume models to choose from: 10/20/25  $\mu$ l, 20/25/50  $\mu$ l, 50/75/100  $\mu$ l, 100/200/250  $\mu$ l, 200/300/500  $\mu$ l and 500/750/1,000  $\mu$ l. Each fits the hand perfectly; a finger rest at the top provides positive support during use and prevents rolling off the workbench

when laid down. As on all new System 4700 pipettes, filling, pipetting and tip ejection are controlled by depressing a single button through a series of distinct, positive stops, without changing the grip position.

Multi-volume pipettes are part of the new Eppendorf Pipetting

System, fully described in an informative brochure. For your copy, write: Eppendorf Division, Brinkmann Instruments, Cantiague Road, Westbury, N.Y. 11590. In Canada: 50 Galaxy Boulevard, Rexdale (Toronto), Ont.

**A single button does it all...  
sample pick-up, pipetting, tip ejection  
and volume adjustment.**



## Eppendorf Pipetting System

Circle No. 26 on Readers' Service Card



## SMALL MONOCHROMATORS

The H-10 and H-20 are our best selling monochromators because they are small, rugged and versatile. They can be used for OEM or for any application requiring high purity monochromatic light in a compact package. Concave holographic gratings permit broad spectral coverage, high aperture and very pure, noise-free spectra in a monochromator that you can hold in your hand.

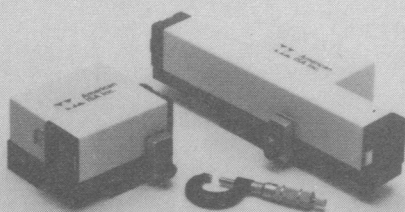
Circle the reader service number or phone today for complete specifications.

Instruments SA, Inc., J-Y Optical Systems Division, 173 Essex Avenue, Meriden, N.J. 08840. (201) 494-8660, Telex 844-516. In Europe, Jobin Yvon, Division d'Instruments SA, 16-18 Rue du Canal, 91160 Longjumeau, France, Tel. 909.34.93 Telex JOBYVON 842-692882.

**JOBIN  
YVON**



**Instruments SA, Inc.**  
J-Y Optical Systems Division



Circle No. 39 on Readers' Service Card

## HIGHLY PURIFIED PROLACTIN [<sup>125</sup>I] HUMAN & RAT

Each lot is tested in a specific assay to ensure immunoreactivity. Available from stock. Prepared fresh monthly.

Send for our complete catalog of <sup>125</sup>I-labeled products.

*Not for use in humans or clinical diagnosis*

**Prolactin, [<sup>125</sup>I] – (human) NEX-127**  
**Prolactin, [<sup>125</sup>I] – (rat) NEX-108**

20-50 µCi/µg. Shipped frozen in 0.05M phosphate-buffered saline solution (pH 7.5) containing a stabilizer and a proteolytic enzyme inhibitor.  
10 µCi 2 x 10 µCi 50 µCi 2 x 50 µCi



**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. 55 on Readers' Service Card

## LKB Multiphor®

For both analytical and preparative electrofocusing.

Multiphor® is the central unit in LKB's system for analytical electrofocusing in thin-layer polyacrylamide gel and preparative electrofocusing in flat-bed granulated gel.

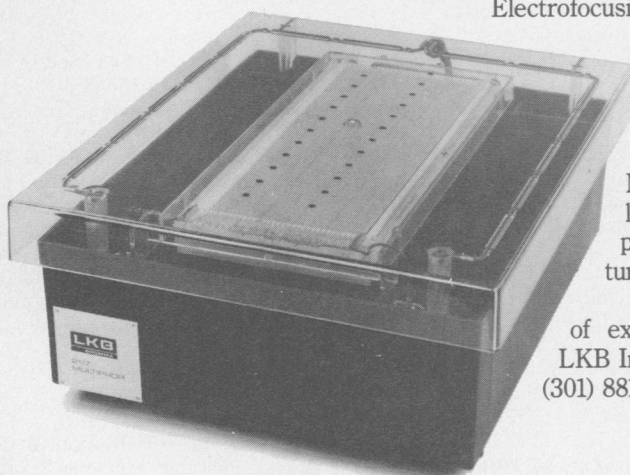
The unique Multiphor design enables you to run up to 48 samples simultaneously under identical conditions.

Electrofocusing is performed rapidly by applying a high constant power, possible because of the high efficiency of the glass cooling-plate of Multiphor.

Electrofocusing brings you more information, one-step separation of multi-protein mixtures, and superior resolution.

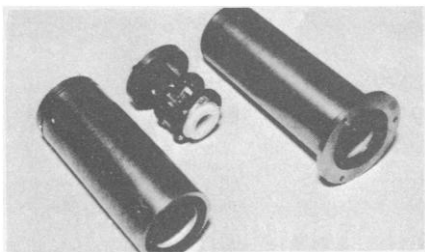
LKB offers the complete system for electrofocusing: Multiphor, LKB 2103 Power Supply, Ampholine® and Ampholine® PAGplates — your standards in electrofocusing. All supported by LKB Application Notes and *Acta Ampholinae* Literature Reference List.

For more information write to LKB: the only complete source of experience, knowledge and equipment for electrofocusing. LKB Instruments Inc., 12221 Parklawn Dr. Rockville, MD 20852; (301) 881-2510; Telex 89-682.



Circle No. 103 on Readers' Service Card

**LKB**

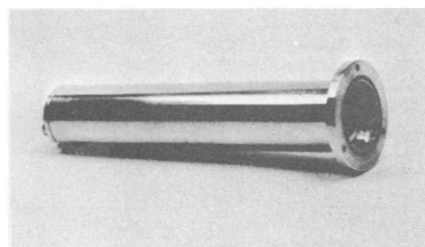


## EMI GENCOM PMT HOUSINGS FOR

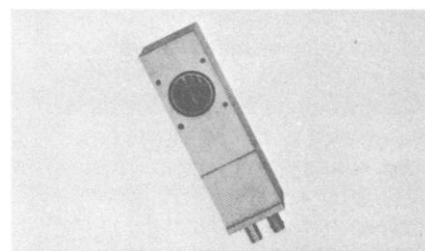
- : Broadband Photon Counting
- : General Lab Use
- : O.E.M. Applications

EMI Gencom PMT Housings are unsurpassed for flexibility, ease of use, litelite construction, and RFI shielding. They are designed by engineers with years of Photomultiplier Application experience.

The "B" type shown above uses the unique Bayonet Lock, is available in STD and RFI versions, with and without flange and provides space for AC-DC Power Supply if required. It accommodates all EMI 2" tubes and some competitive types.



The QL-30 is similar in design and fits all EMI 1-1/8" tubes. When supplied less flange, the slim line design allows compact packaging for OEM use. RFI shielded version available.



The new "S" Housing for side looking (squirrel cage) PMTs fits all tubes of this type, EMI or others. STD or RFI shielded versions available.

All of these new designs give improved performance at lower cost. Available from Stock.



Detailed  
data  
from:

**EMI GENCOM INC.**

80 Express St.  
Plainview, New York 11803  
Tel (516) 433-5900  
TWX 510-221-1889

Circle No. 41 on Readers' Service Card

## BOOKS RECEIVED

(Continued from page 248)

**Methods in Immunology.** A Laboratory Text for Instruction and Research. Justine S. Garvey, Natalie E. Cremer, and Dieter H. Sussdorf. Benjamin Advanced Book Program, Reading, Mass., ed. 3, 1977. xxvi, 546 pp., illus. \$27.50.

**The Mineralogy of the Diamond.** Yu. L. Orlov. Translated from the Russian edition (Moscow, 1973). Wiley-Interscience, New York, 1977. xii, 236 pp., illus. \$28.50.

**Mutual Accommodation.** Ethnic Conflict and Cooperation. Robin M. Williams, Jr., in collaboration with Madelyn B. Rhenisch. University of Minnesota Press, Minneapolis, 1977. xviii, 458 pp. \$15.

**The New Model Rocketry Manual.** G. Harry Stine. Arco, New York, 1977. 124 pp., illus. Cloth, \$6.95; paper, \$3.25.

**NMR in Biology.** Papers from a meeting, Oxford, England, Mar. 1977. R. A. Dwek, I. D. Campbell, R. E. Richards, and R. J. P. Williams, Eds. Academic Press, New York, 1977. xvi, 382 pp., illus. \$17.65.

**Nutrition and Cancer.** Myron Winick, Ed. Wiley-Interscience, New York, 1977. viii, 184 pp. \$18. Current Concepts in Nutrition, vol. 6.

**The Observer's Handbook 1978.** John R. Percy, Ed. Royal Astronomical Society of Canada, Toronto, 1977. 128 pp., illus. Paper, \$4.

**Personality and Adjustment in the Aged.** R. D. Savage, L. B. Gaber, P. G. Britton, N. Bolton, and A. Cooper. Academic Press, New York, 1977. x, 188 pp. \$16.

**Perspectives in the Sociology of Science.** Stuart S. Blume, Ed. Wiley, New York, 1977. viii, 238 pp. \$24.50.

**Photochemical and Photobiological Reviews.** Vol. 2. Kendrick C. Smith, Ed. Plenum, New York, 1977. x, 330 pp., illus. \$29.50.

**The Physics of Semi-Conductor Devices.** D. A. Fraser. Clarendon (Oxford University Press), New York, 1977. x, 150 pp., illus. \$13.50. Oxford Physics Series.

**Politics of Pain Management.** Staff-Patient Interaction. Shizuko Y. Fagerhaugh and Anselm Strauss. Addison-Wesley Health Sciences Division, Menlo Park, Calif., 1977. xii, 324 pp. Paper, \$8.95.

**Power Sources 6.** Research and Development in Non-Mechanical Electrical Power Sources. Proceedings of a symposium, Brighton, England, Sept. 1976. D. H. Collins, Ed. Academic Press, New York, 1977. xii, 796 pp., illus. \$70.25.

**Proceedings of the Eighth International Congress of the International Union for the Study of Social Insects.** Wageningen, The Netherlands, Sept. 1977. J. de Wilde, Ed. Centre for Agricultural Publishing and Documentation, Wageningen, The Netherlands, 1977. xii, 326 pp., illus. Paper, Dfl. 40.

**Progress in Allergy.** Vol. 23. Paul Kallós, Byron H. Waksman, and Alain L. de Weck, Eds. Karger, Basel, 1977. xiv, 366 pp., illus. \$71.50.

**Psychological Testing.** The Measurement of Intelligence, Ability and Personality, Paul Kline. Crane, Russak, New York, 1977. 168 pp. \$11.50.

**Psychophysics and Physiology of Hearing.** Proceedings of a symposium, Keele, Staffordshire, England, Apr. 1977. E. F. Evans and J. P. Wilson, Eds. Academic Press, New York, 1977. xx, 526 pp., illus. \$27.35.

**Public Economics and the Quality of Life.**

Papers from a conference, New Orleans, Jan. 1975. Lowdon Wingo and Alan Evans, Eds. Published for Resources for the Future and the Centre for Environmental Studies by Johns Hopkins University Press, Baltimore, 1978. xvi, 328 pp., illus. \$17.95.

**Respiratory Defense Mechanisms.** Part 2. Joseph D. Brain, Donald F. Proctor, and Lynne M. Reid, Eds. Dekker, New York, 1977. xx + pp. 487-1216, illus. \$69.50. Lung Biology in Health and Disease, vol. 5.

**Salt-Water Purification.** K. S. Spiegler, Plenum, New York, ed. 2, 1977. x, 190 pp., illus. \$19.50.

**Science and Building.** Structural and Environmental Design in the Nineteenth and Twentieth Centuries. Henry J. Cowan. Wiley-Interscience, New York, 1978. x, 374 pp., illus. \$23.

**Science Based on Symmetry.** Vol. 1. K. R. Chakravorty. Firma KLM (P) Limited, Calcutta, 1977. I, 502 pp., illus. Rs. 150.

**Seismic Sea Waves—Tsunamis.** T. S. Murty. Department of Fisheries and the Environment, Ottawa, Canada, 1977 (available from Printing and Publishing Supply and Services Canada, Ottawa). x, 338 pp., illus. \$12. Bulletin of the Fisheries Research Board of Canada, 198.

**Sentics.** The Touch of Emotions. Manfred Clynes. Anchor/Doubleday, New York, 1978. xxxiv, 250 pp., illus. + plates. Paper, \$3.95. Reprint of the 1977 edition.

**Sexual Stratification.** A Cross-Cultural View. Alice Schlegel, Ed. Columbia University Press, New York, 1977. xx, 372 pp. Cloth, \$20; paper, \$7.50.

**Studies in Convection.** Vol. 2. Theory, Measurement and Applications. B. E. Launder, Ed. Academic Press, New York, 1977. viii, 224 pp., illus. \$17.25.

**System Theory.** Philosophical and Methodological Problems. I. V. Blauberg, V. N. Sadosky, and E. G. Yudin. Translated from the Russian. Progress Publishers, Moscow, 1977 (U.S. distributor, Imported Publications, Chicago). 318 pp. \$4.

**Technology and Social Shock.** Edward W. Lawless. Rutgers University Press, New Brunswick, N.J., 1977. xii, 616 pp. Paper, \$6.95.

**Topics in Interstellar Matter.** Papers from a meeting, Grenoble, Aug. 1976. Hugo van Woerden, Ed. Reidel, Boston, 1977. viii, 300 pp., illus. \$30. Astrophysics and Space Science Library, vol. 70.

**Trace Fossils 2.** Proceedings of a symposium, Sydney, Australia, Aug. 1976. T. P. Crimes and J. C. Harper, Eds. Seel House Press, Liverpool, England, 1977. viii, 352 pp., illus. \$39. *Geological Journal* Special Issue No. 9.

**Two-Phase Flow and Heat Transfer.** D. Butterworth and G. F. Hewitt, Eds. Oxford University Press, New York, 1977. xxvi, 514 pp., illus. \$32. Harwell Series.

**Verhandlungen der Gesellschaft für Ökologie, Göttingen 1976.** Papers from a meeting, Göttingen, Germany, Sept. 1976. P. Müller, Ed. Junk, The Hague, 1977. xvi, 622 pp., illus. Paper, Dfl. 100.

**Welding Process Technology.** P. T. Houldcroft. Cambridge University Press, New York, 1977. x, 314 pp., illus. \$17.95.

**World Prehistory in New Perspective.** Grahame Clark. Cambridge University Press, New York, ed. 3, 1977. xx, 554 pp., illus. Cloth, \$29.95; paper, \$9.95.

**The Year of the Dinosaur.** Edwin H. Colbert. Illustrated by Margaret Colbert. Scribner, New York, 1978. xvi, 172 pp. \$9.95.