

as they continue to pour forth energy over ten decades or more of the spectrum.

The book is beautifully, almost poetically, written. Occasionally, however, the poetry conceals a lack of attention to detail. Rowan-Robinson is weakest in discussing the planetary system, making such mistakes as giving the wrong rotation period for Mercury and the wrong surface temperature for Venus. He also errs by a factor of about  $10^9$  in the figure he gives for the density of a neutron star, and many astrophysicists will blanch at the repeated assertion that the Balmer and Lyman lines represent the spectrum of ionized hydrogen. On the other hand, how can one resist an author who describes how it is possible for mechanical processes to transfer energy from the solar chromosphere to the much hotter corona by noting, "It's analogous to what happens when a human being, with a body temperature of only  $37^\circ\text{C}$ , rubs two sticks together to generate a temperature of several hundred degrees to light a fire." Rowan-Robinson's enthusiasm is contagious; one believes him when he writes, "For me it has been a wonderful time to be alive and to be an astronomer."

DAVID MORRISON

*Institute for Astronomy,  
University of Hawaii,  
Honolulu 96822*

## Distant, Early Objects

**The Universe at Large Redshifts.** Proceedings of a symposium, Copenhagen, June 1979. J. KALACKAR, O. ULFBECK, and N. R. NILSSON, Eds. Royal Swedish Academy of Sciences, Stockholm, 1980. pp. 595-782, illus. Paper, 975 Sw. Kr. *Physica Scripta*, vol. 21, No. 5.

Light and other electromagnetic radiation that arrives here from the distant, early parts of the observable universe has a measured wavelength longer than the wavelength at emission. The ratio of observed to emitted wavelength is measured by redshift. Roughly, a redshift of 1 corresponds to looking about two-thirds of the way backward in time to the big bang; a redshift of 100 corresponds to looking back 99.9 percent of the way.

*The Universe at Large Redshifts* is an up-to-date conference report on the early universe—a summary of the observations that are currently available for redshifts greater than about 1, a discussion of their interpretation, and an outline of what observational improvements can be expected in the near future.

A formidable panel of experts have combined to make a technical but surprisingly readable volume; unfortunately there are no contributions from the very active Soviet group.

The main kinds of electromagnetic radiation discussed are the light and radio waves from identified distant galaxies and quasars, whose redshift is usually, though not always, less than unity; the x-ray background radiation, believed to come from sources with redshifts in the range 1 to 3; and the famous microwave radiation, which probably was last scattered at much larger redshifts, say 1000. The observations on the clumping of galaxies are discussed in considerable detail; these observations may contain information about conditions as early as redshift 1000. Several papers concern the present particle content of the universe—photon to baryon ratio, helium abundance, and so forth—which probably provides clues to still earlier epochs. The earliest time discussed in any detail is the Planck time (so-called because it can be formed from fundamental constants including Planck's) of  $10^{-43}$  second after the big bang.

Perhaps the strongest impression one has of the overall discussion is how well the standard hot big-bang model of the universe continues to stand up to new data. This model is by now quite venerable. The geometric aspects were worked out by Friedman, and others including Einstein, a half-century ago, using the familiar spatially homogeneous isotropic models. Even the comparatively recent scenario of an early hot thermal-equilibrium epoch during which helium was formed is now well into its teens—and is considerably older if we allow attempts that predate the discovery of the microwave radiation. In the book the standard hot big-bang model is not really debated—author after author simply takes it for granted as the most plausible zeroth approximation. The thousands of alternative models that have been discussed so excitedly during the last 50 years are mentioned in passing if at all.

So the recent results reported are for the most part "mere details" to fill in a well-known basic picture—but they are fascinating details. From the slight observed anisotropies in the background radiation and, perhaps more important, the lack of larger observed anisotropies in the microwave and x-ray data, as well as from the detailed observations of galaxies, a messy but plausible picture is building up of how the galaxies formed. Putatively they came from slight inhomogeneities present at the time the

universe cooled down enough for the nuclei and electrons in it to combine into atoms.

One interesting recent idea that is clarified in the book is that the "random" velocities of galaxies and clusters of galaxies are not necessarily hangovers from earlier times that are gradually damping down owing to the general expansion; such velocities may be caused by the gravitational attraction of overconcentrations of matter acting during most of the lifetime of the universe. If so, the observed random velocities, in particular the velocity of our own galaxy, can give information about such overconcentrations and corresponding underconcentrations.

It is quite a way from such a comparatively mundane inference to the idea that the recent "grand unified theories" of particle physics may perhaps provide an explanation of the present structure of galaxies (via the implications these theories have for fluctuations in the universe at fantastically early times). The book gives a rather balanced view of these and of most of the other key points in our gradually emerging, ever more realistic model of the universe.

R. K. SACHS

*Department of Mathematics,  
University of California,  
Berkeley 94720*

## Books Received

**Abdominal Computerized Tomography.** Proceedings of a meeting. Montpellier, France, Nov. 1978. J. L. Lamarque and J. M. Bruel, Eds. Excerpta Medica, Amsterdam, 1979 (U.S. distributor, Elsevier/North-Holland, New York). x, 366 pp. \$87.75.

**Adsorption of Microorganisms to Surfaces.** Gabriel Bitton and Kevin C. Marshall, Eds. Wiley-Interscience, New York, 1980. xii, 440 pp., illus. \$32.50.

**Advances in Ephemeroptera Biology.** Proceedings of a conference, Winnipeg, Canada, July 1979. John F. Flannagan and K. Eric Marshall, Eds. Plenum, New York, 1980. xiv, 552 pp., illus. \$49.50.

**Advances in Heterocyclic Chemistry.** Vol. 25. A. R. Katritzky and A. J. Boulton, Eds. Academic Press, New York, 1979. x, 398 pp., illus. \$41.

**Advances in Immunology.** Vol. 28. Frank J. Dixon and Henry G. Kunkel, Eds. Academic Press, New York, 1980. xii, 522 pp. \$37.50.

**Adventures of a Zoologist.** Victor B. Scheffer. Scribner, New York, 1980. xvi, 204 pp., illus. \$10.

**Agricultural Energetics.** Richard C. Fluck and C. Direlle Baird. AVI Publishing Company, Westport, Conn., 1980. viii, 194 pp., illus. \$19.

**Albert Einstein: Four Commemorative Lectures.** Loyd S. Swenson, C. P. Snow, Howard Stein, and Ilya Prigogine. University of Texas Humanities Research Center, Austin, 1979.

Unpaged, illus. Paper, \$3.50. Reprinted from *The Library Chronicle*, new series 12.

**Algorithmic Graph Theory and Perfect Graphs.** Martin Charles Golumbic. Academic Press, New York, 1980. xx, 286 pp., illus. \$29.50. Computer Science and Applied Mathematics.

**Algorithms.** Their Complexity and Efficiency. Lydia I. Kronsjö. Wiley-Interscience, New York, 1979. xvi, 362 pp., illus. \$41.25. Wiley Series in Computing.

**The Ambidextrous Universe.** Mirror Asymmetry and Time-Reversed Worlds. Martin Gardner. Illustrated by John Mackey. Scribner, New York, ed. 2, 1980. x, 294 pp. Paper, \$4.95.

**Avian Orientation and Navigation.** Klaus Schmidt-Koenig. Academic Press, New York, 1979. x, 180 pp., illus. \$26.50.

**Bacteria and Mineral Cycling.** T. Fenchel and T. H. Blackburn. Academic Press, New York, 1979. xii, 226 pp., illus. \$34.

**Bacterial Outer Membranes.** Biogenesis and Functions. Masayori Inouye. Wiley-Interscience, New York, 1980. x, 534 pp., illus. \$50.

**Basic Anatomy and Physiology of the Human Body.** J. Robert McClintic. Wiley, New York, ed. 2, 1980. xx, 694 pp., illus. + index. \$22.95.

**Basic and Clinical Aspects of Veterinary Immunology.** B. I. Osburn and Ronald D. Schultz, Eds. Academic Press, New York, 1979. xiv, 310 pp. \$33.50. Advances in Veterinary Science and Comparative Medicine, vol. 23.

**Basic Biostatistics in Medicine and Epidemiology.** Alfred A. Rimm, Arthur J. Hartz, John H. Kalbfleisch, Alfred J. Anderson, and Raymond G. Hoffmann. Appleton-Century-Crofts, New York, 1980. x, 354 pp., illus. Paper, \$16.50.

**Basic Child Psychiatry.** Philip Barker. University Park Press, Baltimore, ed. 3, 1979. xiv, 274 pp. Paper, \$8.95.

**Basic Genetics for Health Professionals.** Probodh K. Srivastava. PSG Publishing Company, Littleton, Mass., 1979. xii, 200 pp., illus. \$18.

**Behavioral Complexities.** Rémy Chauvin and Bernadette Muckensturm-Chauvin. Translated from the French edition (1977) by Joyce Diamanti. International Universities Press, New York, 1980. xx, 258 pp., illus. \$17.50.

**Behavioral Genetics.** A Primer. Robert Plomin, J. C. DeFries, and G. E. McClearn. Freeman, San Francisco, 1980. xiv, 418 pp., illus. Cloth, \$25; paper, \$15. A Series of Books in Psychology.

**Behavioral Neuroscience.** An Introduction. Carl W. Cotman and James L. McGaugh. Academic Press, New York, 1980. xviii, 838 pp., illus. \$19.95.

**Behçet's Syndrome.** Clinical and Immunological Features. Proceedings of a conference, London, Feb. 1979. T. Lechner and C. G. Barnes, Eds. Academic Press, New York, 1979. xii, 324 pp., illus. \$38.

**Beyond Universals in Cognitive Development.** David Henry Feldman. Ablex Publishing Corporation, Norwood, N.J., 1980. xx, 204 pp., illus. \$17.50. Publications for the Advancement of Theory and History in Psychology.

**Biochemical Systematics and Evolution.** Andrew Ferguson. Halsted (Wiley), New York, 1980. x, 194 pp., illus. \$42.95.

**Bone Marrow Transplantation in Europe.** Proceedings of a symposium, Courchevel, Savoie, France, Mar. 1978. Jean-Louis Touraine, R. Triau, and F. E. Zwann, Eds. Ex-

cerpta Medica, Amsterdam, 1979 (U.S. distributor, Elsevier/North-Holland, New York). x, 224 pp., illus. \$46.25. Symposia Fondation Merieux 2.

**The Botany and Chemistry of Hallucinogens.** Richard Evans Schultes and Albert Hofmann. Thomas, Springfield, Ill., ed. 2, 1980. xxvi, 438 pp., illus. \$28.75. American Lecture Series, Publication No. 1025.

**Breakthroughs.** Astonishing Advances in Your Lifetime in Medicine, Science, and Technology. Charles Panati. Illustrations by Stan Fedinick. Houghton Mifflin, Boston, 1980. xiv, 306 pp. \$12.95.

**Breeding Biology of the Egyptian Plover, *Pluvianus aegyptius*.** Thomas R. Howell. University of California Press, Berkeley, 1979. vi, 76 pp. illus. + plates. Paper, \$10.50. University of California Publications in Zoology, vol. 113.

**Calculus for the Managerial, Life, and Social Sciences.** Ernest F. Haeussler, Jr., and Richard S. Paul. Reston (Prentice-Hall), Reston, Va., 1980. xii, 574 pp., illus. \$16.95.

**Case Studies in Automation Related to Humanization of Work.** Proceedings of a workshop, Enschede, The Netherlands, Oct. 1977. J. E. Rijsdorp, Ed. Published for the International Federation of Automatic Control by Pergamon, New York, 1979. xii, 174 pp., illus. \$30.

**Catalog of Teratogenic Agents.** Thomas H. Shepard. Johns Hopkins University Press, Baltimore, ed. 3, 1980. xxii, 410 pp. \$25.

**Cell and Molecular Biology.** E. D. P. De Robertis and E. M. F. De Robertis, Jr. Saunders, Philadelphia, ed. 7, 1980. xxviii, 674 pp., illus. \$20.

**Cell Surface Labeling.** Papers from a workshop. Washington, D.C., Apr. 1979. Robert P. Becker and Om Johari, Ed. Scanning Electron Microscopy, Inc., AMF O'Hare, Ill., 1979. iv + pp. 537-636, illus. Paper, \$10. Reprinted from *Scanning Electron Microscopy* 1979/III.

**Changing Health Care.** Perspectives from a New Medical Care Setting. Gerald T. Perkoff. Health Administration Press, Ann Arbor, Mich., 1979. xiv, 162 pp. \$15.

**Chemical Messengers of the Inflammatory Process.** John C. Houck, Ed. Elsevier/North-Holland, New York, 1979. xviii, 422 pp., illus. \$75. Handbook of Inflammation, vol. 1.

**The Chemistry, Biochemistry and Biology of Cadmium.** M. Webb, Ed. Elsevier/North-Holland, New York, 1979. xiv, 466 pp., illus. \$80.50. Topics in Environmental Health, vol. 2.

**Climates throughout Geologic Time.** L. A. Frakes. Elsevier, New York, 1979. xii, 310 pp., illus. \$58.50.

**Cognition to Language.** Categories, Word Meanings, and Training. Mabel Rice. University Park Press, Baltimore, 1980. xiv, 294 pp. Paper, \$15.95.

**Computers and Instrumentation.** A Practical Handbook of Measurement, Interfacing and Control Circuits. Alan Carrick. Heyden, Philadelphia, 1980. xii, 328 pp., illus. \$19.50. Heyden International Topics in Science.

**Computers in Activation Analysis and Gamma-Ray Spectroscopy.** Proceedings of a conference, Mayaguez, P.R., Apr. 1978. B. Stephen Carpenter, Michael D. D'Agostino, and Herbert P. Yule, Eds. U.S. Department of Energy, Washington, D.C., 1979 (available as CONF-780421 from National Technical Information Center, Springfield, Va.). xxii, 882 pp., illus. Paper, \$15. DOE Symposium Series, 49.

**Condensed Matter Physics.** Dynamic Corre-

lations. S. W. Lovesey. Benjamin/Cummings Advanced Book Program, Reading, Mass., 1980. xiv, 192 pp. Cloth, \$26.50; paper, \$14.50. Frontiers in Physics, vol. 49.

**Conjugate Direction Methods in Optimization.** Magnus R. Hestenes. Springer-Verlag, New York, 1980. x, 326 pp. \$29.80. Applications of Mathematics, 12.

**Continental Tectonics.** Papers from a meeting, Miami, Mar. 1978. National Academy of Sciences, Washington, D.C., 1980. xii, 198 pp., illus. Paper, \$13.50. Studies in Geophysics.

**Continuities in Psychological Anthropology.** A Historical Introduction. Philip K. Bock. Freeman, San Francisco, 1980. xiv, 288 pp., illus. Cloth, \$15; paper, \$7.50.

**Contributions to Statistics.** Jaroslav Hájek Memorial Volume. Jana Jurečková, Ed. Reidel, Boston, 1979 (distributor, Kluwer Boston, Hingham, Mass.). 318 pp. \$50.

**Controlled Environment Guidelines for Plant Research.** Proceedings of a conference, Madison, Wis., Mar. 1979. T. W. Tibbitts and T. T. Kozlowski, Eds. Academic Press, New York, 1979. xviii, 414 pp., illus. \$25.

**Copper in the Environment.** Part 2, Health Effects. Jerome O. Nriagu, Ed. Wiley-Interscience, New York, 1980. xiv, 490 pp., illus. \$44.95. Environmental Science and Technology.

**Coulson's Valence.** Row McWeeny. Oxford University Press, New York, ed. 3, 1979. x, 436 pp., illus. Cloth, \$45; paper, \$19.95.

**Counseling in Genetics.** Y. Edward Hsia, Kurt Hirschhorn, Ruth L. Silverberg, and Lynn Godmilow, Eds. Liss, New York, 1979. xxiv, 348 pp. \$34.

**Dynamical Systems and Evolution Equations.** Theory and Applications. J. A. Walker. Plenum, New York, 1980. viii, 236 pp. \$29.50. Mathematical Concepts and Methods in Science and Engineering, vol. 20.

**Earthquake Engineering and Hazards Reduction in China.** A Trip Report of the American Earthquake Engineering and Hazards Reduction Delegation. Paul C. Jennings, Ed. National Academy of Sciences, Washington, D.C., 1980. vi, 190 pp., illus. Paper, \$11.50. Committee on Scholarly Communication with the People's Republic of China Report No. 8.

**Earthquakes and Volcanoes.** Readings from *Scientific American*. Introductions by Bruce A. Bolt. Freeman, San Francisco, 1980. x, 154 pp., illus. Cloth, \$15; paper, \$7.95.

**Ecological Effects of Waste Water.** E. B. Welch with hydrographic characteristics by T. Lindell. Cambridge University Press, New York, 1980. xii, 338 pp., illus. Cloth, \$28.50; paper, \$8.95.

**Ecology and Field Biology.** Robert Leo Smith. Harper and Row, New York, ed. 3, 1980. xii, 836 pp., illus. \$18.95.

**Ecology of Grasslands and Bamboolands in the World.** Makoto Numata, Ed. Junk, The Hague, 1979 (U.S. distributor, Kluwer Boston, Hingham, Mass.). 300 pp., illus. \$52.65.

**Educating the Gifted.** Acceleration and Enrichment. Papers from a symposium, New York, 1977. William C. George, Sanford J. Cohn, and Julian C. Stanley, Eds. Johns Hopkins University Press, Baltimore, 1979. xiv, 242 pp. Cloth, \$16; paper, \$4.95. Volumes Based on the Annual Hyman Blumberg Symposium on Research in Early Childhood Education, 9.

**The Education of American Physicians.** Historical Essays. Ronald L. Numbers, Ed. University of California Press, Berkeley, 1980. xiv, 346 pp. \$32.50.

**The Effects of Constant Light on Visual Pro-**

cesses. Proceedings of a symposium, Tallahassee, Fla., Apr. 1979. Theodore P. Williams and B. N. Baker, Eds. Plenum, New York, 1980. x, 455 pp., illus. \$45.

**Einstein.** Consejo Nacional de Ciencia y Tecnología, Mexico City, 1979. 146 pp., illus. Paper, \$11. Originally published in *Ciencia y Desarrollo*, Mar.-Apr. 1979.

**Electron and Magnetization Densities in Molecules and Crystals.** Papers from a NATO Advanced Study Institute, Arles, France, Aug. 1978. P. Becker, Ed. Plenum, New York, 1980. xiv, 904 pp., illus. \$75. NATO Advanced Study Institutes Series B, vol. 48.

**Engineering Mechanics of Materials.** B. B. Muvdi and J. W. McNabb. Macmillan, New York, and Collier Macmillan, London, 1980. xviii, 772 pp., illus. \$23.95.

**Environmental Chemistry of the Elements.** H. J. M. Bowen. Academic Press, New York, 1979. xvi, 334 pp., illus. \$43.50.

**Environmental Geochemistry.** A Holistic Approach. John A. C. Fortescue. Springer-Verlag, New York, 1980. xviii, 348 pp., illus. \$34.80. Ecological Studies, vol. 35.

**Environmental Health.** P. Walton Purdom, Ed. Academic Press, New York, ed. 2, 1980. xvi, 714 pp., illus. \$32.

**ESR and NMR of Paramagnetic Species in Biological and Related Systems.** Proceedings of a NATO Advanced Study Institute, Acquafredda di Maratea, Italy, June 1979. Ivano Bertini and Russell S. Drago, Eds. Reidel, Boston, 1980 (distributor, Kluwer Boston, Hingham, Mass.). xx, 434 pp., illus. \$50. NATO Advanced Study Institutes Series C, vol. 52.

**Essential Organic Chemistry for Students of the Life Sciences.** A. P. Ryles, K. Smith, and R. S. Ward. Wiley, New York, 1980. xiv, 306 pp., illus. \$35.95.

**Evolution and Mineralization of the Arabian-Nubian Shield.** Vol. 2. Proceedings of a symposium, Jeddah, Saudi Arabia, Feb. 1978. Published for the Institute of Applied Geology, King Abdulaziz University, by Pergamon, New York, 1979. x, 206 pp., illus. \$34. I.A.G. Bulletin No. 3.

**Evolutionary Biology.** Vol. 12. Max K. Hecht, William C. Steere, and Bruce Wallace, Eds. Plenum, New York, 1980. xii, 388 pp., illus. \$32.50.

**Exercises in Physical Geology.** W. K. Hamblin and J. D. Howard. Burgess, Minneapolis, ed. 5, 1980. vi, 226 pp., illus. Paper, \$8.95.

**Experiencing Science.** Jeremy Bernstein. Dutton, New York, 1980. xii, 276 pp. Paper, \$5.95. Reprint of the 1978 edition.

**Extremal Methods and Systems Analysis.** Papers from a symposium, Austin, Tex., Sept. 1977. A. V. Fiocco and K. O. Kortanek, Eds. Springer-Verlag, New York, 1980. xii, 546 pp. Paper, \$39.30. Lecture Notes in Economics and Mathematical Systems, vol. 174.

**Fundamental Tissue Geometry for Biologists.** K. J. Dormer. Cambridge University Press, New York, 1980. vi, 150 pp., illus. \$32.50.

**Fundamentals of Chemistry.** Frank Brescia, John Arents, Herbert Meislich, and Amos Turk. Academic Press, New York, ed. 4, 1980. xvi, 782 pp., illus. \$19.95.

**Game Theory.** Mathematical Models of Conflict. A. J. Jones. Horwood, Chichester, England, and Halsted (Wiley), New York, 1980. 310 pp., illus. \$45.

**The Geometry of Population Genetics.** Ethan Akin. Springer-Verlag, New York, 1979. iv, 206 pp. Paper, \$14.

**Geomorphological Processes.** E. Derbyshire, K. J. Gregory, and J. R. Hails. Daw-

son, Folkestone, Kent, England, and Westview Press, Boulder, Colo., 1979. iv, 312 pp., illus. Cloth, \$26.50; paper, \$13.50.

**Geothermal Resources.** Robert Bowen. Applied Science Publishers, London, and Halsted (Wiley), New York, 1980. xii, 244 pp., illus. \$54.95.

**Gifted Children.** Their Identification and Development in a Social Context. Joan Freeman. University Park Press, Baltimore, 1979. xii, 294 pp. \$17.95.

**A Golden Thread.** 2500 Years of Solar Architecture and Technology. Ken Butti and John Perlin. Cheshire Books, Palo Alto, Calif., and Van Nostrand Reinhold, New York, 1980. xii, 290 pp., illus. \$15.95.

**Guide to Good Programming Practice.** B. L. Meek and P. M. Heath, Eds. Horwood, Chichester, England, and Halsted (Wiley), New York, 1979. 182 pp., illus. \$27.95. Ellis Horwood Series in Computers and Their Applications, 3.

**Handbook of Organic Waste Conversion.** Michael W. M. Bewick. Van Nostrand Reinhold, New York, 1980. xxii, 420 pp., illus. \$24.50.

**Handbook of Water-Soluble Gums and Resins.** Robert L. Davidson, Ed. McGraw-Hill, New York, 1980. Various pages, illus. \$39.50.

**Health in the City.** Environmental and Behavioral Influences. Malcolm S. Weinstein. Pergamon, New York, 1980. xviii, 94 pp. \$10.

**Heat Conduction.** M. Necati Özışık. Wiley-Interscience, New York, 1980. xvi, 688 pp. \$28.

**Heat Pumps.** Design and Application. A Practical Handbook for Plant Managers, Engineers, Architects and Designers. D. A. Reay and D. B. A. Macmichael. Pergamon, New York, 1979. x, 304 pp., illus. Paper, \$16.50.

**Hepatitis Viruses of Man.** Arie J. Zuckerman and Colin R. Howard. Academic Press, New York, 1979. viii, 270 pp., illus. \$39. Experimental Virology.

**High Performance Loudspeakers.** Martin Colloms. Halsted (Wiley), New York, ed. 2, 1980. x, 246 pp., illus. \$21.95.

**History of the Idea of Progress.** Robert Nisbet. Basic Books, New York, 1980. xii, 370 pp. \$16.95.

**Hopewell Archaeology.** Papers from a conference, Chillicothe, Ohio, Mar. 1978. David S. Brose and N'omi Greber, Eds. Kent State University Press, Kent, Ohio, 1980. xiv, 310 pp., illus. Cloth, \$22.50; paper, \$12.50.

**Hormones and Evolution.** E. J. W. Barrington, Ed. Academic Press, New York, 1979. Two volumes. xlii, 990 pp., illus. + index. Each volume, \$69.

**The Hospital That Ate Chicago.** Distortions Imposed on the Medical System by Its Financing. George Ross Fisher. Saunders, Philadelphia, 1980. vi, 218 pp. \$10.95.

**The Human Direction.** An Evolutionary Approach to Social and Cultural Anthropology. James Peacock and A. Thomas Kirsch. Prentice-Hall, Englewood Cliffs, N.J., ed. 3, 1980. xiv, 334 pp. Paper, \$10.95.

**Human Parturition.** New Concepts and Developments. Marc J. N. C. Keirse, Anne B. M. Anderson, and Jack Bennebroek Gravenhorst, Eds. Leiden University Press, Leiden, Netherlands, 1979 (U.S. distributor, Kluwer Boston, Hingham, Mass.). x, 276 pp., illus. \$44.75. Boerhaave Series for Postgraduate Medical Education, vol. 15.

**Hydrogen.** Production and Marketing. Papers from a symposium, Honolulu, Apr. 1979. W. Novis Smith and Joseph G. Santangelo,

Eds. American Chemical Society, Washington, D.C., 1980. xxii, 416 pp., illus. \$36.50. ACS Symposium Series, 116.

**Hyperbolic Differential Polynomials and Their Singular Perturbations.** Jacques Chailou. Translated from the French edition (1973) by J. W. Nienhuys. Reidel, Boston, 1979 (distributor, Kluwer Boston, Hingham, Mass.). xvi, 168 pp. \$31.50. Mathematics and Its Applications, vol. 3.

**Individualized Assessment and Treatment for Autistic and Developmentally Disabled Children.** Vol. 2, Teaching Strategies for Parents and Professionals. Eric Schopler, Robert Jay Reichler, and Margaret Lansing. University Park Press, Baltimore, 1980. xiv, 256 pp., illus. Paper, \$19.95.

**Instant Evolution.** We'd Better Get Good at It. Thomas P. Carney. University of Notre Dame Press, Notre Dame, Ind., 1980. xii, 180 pp. \$13.95.

**Interaction within the Brain-Pituitary-Adrenocortical System.** Papers from a symposium, Varanasi, India, Nov. 1978. Mortyn T. Jones, Brian Gillham, Mary F. Dallman, and Sukumar Chattopadhyay, Eds. Academic Press, New York, 1979. xii, 294 pp., illus. \$34.

**Intercalated Layered Materials.** F. Lévy, Ed. Reidel, Boston, 1979 (distributor, Kluwer Boston, Hingham, Mass.). x, 578 pp., illus. \$78. Physics and Chemistry of Materials with Layered Structures, vol. 6.

**Introduction to Aural Rehabilitation.** Ronald L. Schow and Michael A. Nerbonne, Eds. University Park Press, Baltimore, 1980. xiv, 450 pp., illus. \$19.95. Perspectives in Audiology Series.

**Introduction to Radiochemistry.** David J. Malcolm-Lawes. Halsted (Wiley), New York, 1980. viii, 146 pp., illus. \$24.95.

**Introduction to the Work of Melanie Klein.** Hanna Segal. Basic Books, New York, ed. 2, 1980. xiv, 144 pp. Paper, \$3.95. Reprint of the 1974 edition.

**An Introduction to Theories of Personality.** Robert B. Ewen. Academic Press, New York, 1980. xvi, 524 pp., illus. \$16.95.

**Introductory COBOL.** Dennie Van Tassel. Holden-Day, San Francisco, 1980. xii, 420 pp., illus. Paper, \$12.

**Invertebrate Neuropharmacology.** Lucy D. Leake and Robert J. Walker. Halsted (Wiley), New York, 1980. xii, 358 pp., illus. \$59.95.

**A Laboratory Manual of Comparative Anatomy.** Kenneth R. Barker and Osmond P. Breland. McGraw-Hill, New York, 1980. viii, 200 pp., illus. Paper, \$10.95.

**Language of the Stars.** A Discourse on the Theory of the Light Changes of Eclipsing Variables. Zdeněk Kopal. Reidel, Boston, 1979 (distributor, Kluwer Boston, Hingham, Mass.). viii, 284 pp., illus. Cloth, \$63; paper, \$28.95. Astrophysics and Space Science Library, vol. 77.

**Lysosomes in Endocrine Secretions.** Papers from a meeting, Marseille, June 1979. Claude Simon and Andrée Tixier-Vidal, Eds. Société Française de Microscopie Electronique, Ivry sur Seine, 1979. vi + pp. 99-208, illus. Paper, 70 F. *Biologie Cellulaire*, vol. 36, No. 2.

**Macromolecular Syntheses.** A Periodic Publication of Methods for the Preparation of Macromolecules. Vol. 7. Edward M. Fettes, Ed. Wiley, New York, 1980. xii, 112 pp., illus. \$22.50.

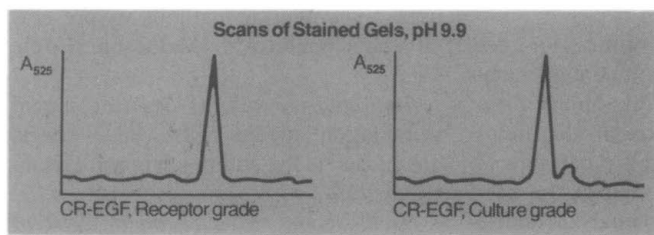
**Macrophage Regulation of Immunity.** Proceedings of a conference. Augusta, Mich., Mar. 1979. Emil R. Unanue and Alan S. Rosenthal, Eds. Academic Press, New York, 1980. xvi, 524 pp., illus. \$27.50.

(Continued on page 812)

# EGF

When you must have purity, our improved Receptor-Grade has a single peptide.

For other studies you can use our Culture-Grade, now priced 33% LESS than before.



"We grow more cells in defined media than anybody."

Call us 617-899-1133

**CR** Collaborative Research, Inc.

Circle No. 301 on Readers' Service Card

## The New Drummond Digital Microdispenser.

You can give better than lip service to volumetric accuracy.

Get accuracy and reproducibility of better than  $\pm 1\%$ . With the all-new Digital Microdispenser from Drummond®—the originators of positive displacement pipetting. The unique Drummond dual-check on accuracy assures that the liquid in the capillary equals the reading on the handle. And we've made it as easy as possible to get repeated precision delivery (with one hand). And as hard as possible to make a mistake.

The digital readout is easy to set. Simply rotate the plunger to the exact microliter setting desired. And you're ready to go.

Available from CMS, Fisher, A. H. Thomas, and other leading suppliers. Capacities from 10 to 100  $\mu$ l. Calibrated glass capillaries (50) and accessory maintenance kit included.

**FOR MORE INFORMATION CIRCLE THE NUMBER FOR THE NEW DRUMMOND PIPETTING EQUIPMENT CATALOG. TWELVE ILLUSTRATED PAGES THAT TELL ABOUT THE COMPLETE LINE OF DRUMMOND PIPETTING AIDS.**

**DRUMMOND SCIENTIFIC COMPANY**

500 Parkway, Broomall, Pa. 19008

Call toll-free: (800) 523-7480

In Pa.: (215) 353-0200

For pipetting, Drummond took the work right out of your mouth.



Circle No. 151 on Readers' Service Card





## PRODUCTS and MATERIALS

### Cell Separator

The LACS III apparatus operates on the principle of separation by sedimentation velocity under unit gravity. It obtains relatively pure and highly enriched fractions in as little as 2½ hours. A programmed tilting procedure enables the user to manipulate parameters that affect resolution and to increase the number of cells separated per milliliter of gradient per hour. A complex population of cells may be fractionated into component subpopulations that differ in function and that retain those functions. Payton Associates. Circle 792.

### Electrophoresis Apparatus

Apparatus is available to use agarose gels in a horizontal position and totally submerged in electrophoresis buffer. The apparatus consists of a Plexiglas tank with electrodes at either end and a gel tray. The tray, which is used to mold the gel and to support it during use, has removable gates at the ends and notched rails on its sides to position slot formers. It will accommodate gels 1.5 centimeters thick. Dan Kar. Circle 793.

### Image Analyzer

The Omnicon 7000 system quantifies images obtained with the scanning electron microscope. An interface uses a video amplitude threshold signal to convert analog signals to binary video signals for 18 parameters. The binary signals are sampled digitally to detect the features of interest in the image. The image is stored in memory for further anal-

ysis. There are two models, Omnicon 7010 and 7040, each of which operates as described above. Model 7040 will also operate in conjunction with an energy dispersive spectrometer to provide beam steering of the scanning electron microscope for chemical analysis. Bausch & Lomb. Circle 801.

### Handheld Water Analyzer

Four models comprise a series of handheld instruments for determination of pH, dissolved oxygen, conductivity, resistivity, and temperature in the field or laboratory. Ranges and resolutions for the above parameters are: 0 to 14 pH, 0.01 pH; 0 to 19.9 parts per million, 0.1 part per million; 0 to 200,000 microhmhos, 0.1 millimho; 0 to 20 megohms, 0.1 megohm; and -30° to 150°C, 0.1°C, respectively. Probes screw into the bottom of the meter case. Meters are powered by 9-volt batteries. Extech International. Circle 803.

### Sample Processor

Model 1560 is a microprocessor-controlled instrument that automates chemical analyses including dissolutions, extractions, and derivations. It also times reaction steps and controls pipetting and sample injections. This enables the user to treat samples prior to analysis and to present samples to other analytic instruments. The user programs model 1560 to treat up to 210 samples in sequence in up to 90 program steps. The display prompts the programmer during setup. During operation, the display indicates the step number and instruction in operation. ISCO. Circle 805.

### Atomic Absorption Spectrophotometer

The IL451 Video S features a video display. It can simultaneously show analytical working curves with up to five standards and it can also show absorp-

tion peaks from elements and background. These capabilities are useful for developing analytic strategies and for verifying results. Prescribed methods and sample data may be accompanied on the display with statistical analysis. The operator selects, with a keystroke, the amount of detail desired. There are 12 input keys to operate the data section and the operator is assisted by displayed instructions. A format-lock mode insures the display or readout against tampering. Instrumentation Laboratory. Circle 806.

### Chemistry Analyzer

The DACOS analyzer measures the absorbance of light by specimens, blanks, or reagents in 120 cuvettes at eight different wavelengths every 6 seconds. The device is controlled by a computer programmed in BASIC with 10 million bytes of memory. The instrument operates in batch, sequential, or combination modes and uses kinetic, endpoint, and SYVA EMIT methodologies simultaneously. The device accommodates up to 24 reagents and can memorize up to 100 protocols. The DACOS analyzer may be interfaced to other computers through an RS232 port. Its own computer may be used for other laboratory applications. Coulter Electronics. Circle 802.

### Literature

*Gas Data Book* treats chemical and physical characteristics of more than 130 gases. Toxicity, physical constants, uses, and detection methods are presented encyclopedically. Matheson. Circle 796.

*Radioassay Products* describes liquid scintillation media, RIA kits, fluors, chemicals, vials, and much more. Isolab. Circle 797.

*Oscilloscope Measurement System* profiles the HP 1980A/B microprocessor controlled electronic analyzer, its design specifications, accessories, and applications. Hewlett-Packard. Circle 799.

*Diagnostic Cytology* offers 24 pages of techniques for using membrane filters. Gelman Sciences. Circle 800.

*Solvent Guide* contains ultraviolet absorbance curves, polarity, viscosity, flash points, and application references. Burdick & Jackson Laboratories. Circle 809.

*Glassworking Equipment* offers lathes, ovens, cutoff machines, glassblowing kits, burners, torches, polariscopes, and supplies. Wale Apparatus. Circle 811.

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 Readers' Service Card (on pages 744A and 778A) and placing it in the mailbox. Postage is free.

—RICHARD G. SOMMER

# ORIEL



## PULSED LIGHT SOURCE DETECTION SYSTEM

A linked pulsed light U.V.-Visible Light Source  
and Detection System provides:

**Higher Signal Noise than D.C. Systems**  
**Operation in High Ambient Light**  
**Applications Include**

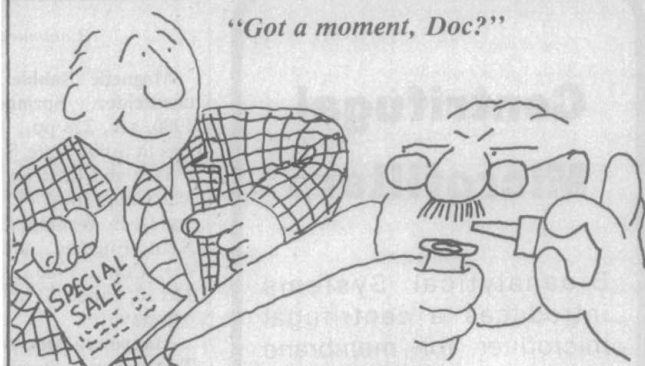
Fiber Optic Light Channeling  
Absorption Studies of Dense Samples  
Reflection Measurements (In Daylight!)  
High Sensitivity Fluorescence/Spectrofluorescence  
Complete analytical and optical research systems can be  
assembled using the pulsed light system with Oriel  
monochromators, sample compartments, optical  
benches, carriers, polarizers, mirrors and lenses.

Send for our 12 page catalog that describes this system today.

### ORIEL CORPORATION

15 MARKET ST., STAMFORD, CONN. 06902 (203) 357-1600

Circle No. 230 on Readers' Service Card



## WE WON'T EVER INTERRUPT YOUR RESEARCH,

because our only sales rep  
is your catalogue from Bio-Post. And because it is, we  
don't have to pay fat commissions and can pass  
the reduced costs onto you in  
lower prices. Low, inflation fight-  
ing prices for your everyday lab  
needs, such as, LSC cocktails,  
reagents and vials, pH meters and  
electrodes, pipetting, lab protec-  
tion and safety equipment. Send  
for your FREE Bio-Post Catalogue  
of lab equipment at inflation fight-  
ing prices and special offers—  
found only at Bio-Post.

Bio-Post, Inc., P.O. Box 2347  
12221 Parklawn Drive  
Rockville, MD 20852  
301-881-5755



Circle No. 59 on Readers' Service Card

## Let onComputing™ be your guide to personal computing.

### Finally, there is a magazine that speaks to the beginner.

onComputing is the new McGraw-Hill  
quarterly that tells what's ahead — without talking over  
your head — in the 1980's with personal computers.

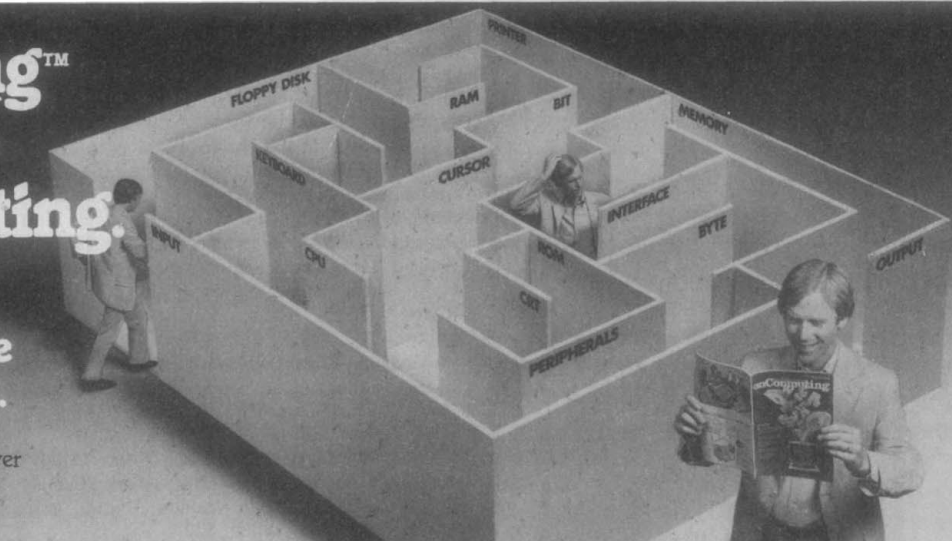
onComputing puts you on target with all the  
applications that go beyond your imagination.

- ☐ Personal computers in the home.
- ☐ Classrooms.
- ☐ They bring computer music.
- ☐ Electronic mail.
- ☐ Robots.
- ☐ They manage your personalized investment.
- ☐ The list goes on and on in onComputing.

If you're a beginner with personal  
computers, get the most understood magazine on  
computers, onComputing. And even if you're an  
experienced computer user, onComputing has the  
information you need in today's fast-growing personal  
computer market.

**Get onto onComputing.**  
**Call 800-258-5485.**

Circle No. 86 on Readers' Service Card



onComputing Subscription Dept. P.O. Box 307, Martinsville, NJ  
08836

DOMESTIC subscription rate: ☐ U.S. 1 yr. (4 issues) @ \$8.50

☐ Canada & Mexico, 1 yr. (4 issues) @ \$10.00

FOREIGN (to expedite service, please remit in U.S. funds  
drawn on a U.S. bank)

☐ Europe (and all other countries, except above), 1 Yr.

@ \$12.00 — surface delivery.

☐ Bill Visa ☐ Bill Master Charge ☐ Bill me (North America only)

Card Number

Expiration

Signature

Name (please print)

Street/Apartment Number

City

State/Province/Country Code 7480

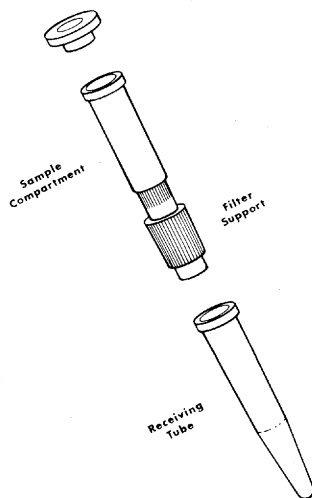
Please allow 6-8 weeks for processing



© onComputing, Inc. 1980

# Centrifugal Microfilters

Bioanalytical Systems introduces a centrifugal microfilter for membrane filtration of small volumes using the force of a conventional bench top centrifuge. Ideal for LC sample preparation, extraction of TLC spots, molecular separations in biochemistry, and many other applications.



- minimize loss and contamination
- no vacuum or pressure required
- solvent resistant polyalomer
- filter many samples simultaneously
- a variety of filter materials are available
- reusable

Send for details...



**BIOANALYTICAL  
SYSTEMS INC.**

PURDUE RESEARCH PARK • P.O. Box 2206  
West Lafayette, Indiana 47906  
(317) 463-2505 • telex 276141 BAS WLAF

## BOOKS RECEIVED

(Continued from page 783)

**Magnetic Bubble Technology.** A. H. Eschenfelder. Springer-Verlag, New York, 1980. xiv, 318 pp., illus. \$49.80. Springer Series in Solid-State Sciences, vol. 14.

**Man and Environmental Processes.** A Physical Geography Perspective. K. J. Gregory and D. E. Walling, Eds. Dawson, Folkestone, Kent, England, and Westview Press, Boulder, Colo., 1980. xiv, 276 pp., illus. Cloth, \$26.50; paper, \$13.50. Studies in Physical Geography.

**Manpower Policies for the Use of Science and Technology in Development.** Charles V. Kidd. Pergamon, New York, 1980. xii, 184 pp. \$20. Pergamon Policy Studies on Socio-Economic Development.

**Manual of Lower Gastrointestinal Surgery.** Claude E. Welch, Leslie W. Ottinger, and John P. Welch. Springer-Verlag, New York, 1980. xvi, 276 pp., illus. \$85. Comprehensive Manuals of Surgical Specialties.

**Many-Body Theory of Atomic Systems.** Proceedings of a symposium, Gothenburg, Sweden, June 1979. I. Lindgren and S. Lundqvist, Eds. Royal Swedish Academy of Sciences, Stockholm, 1980. pp. 225-594, illus. Paper, 450 Sw.Kr. *Physica Scripta*, vol. 21, No. 3/4.

**Master Tables for Electromagnetic Depth Sounding Interpretation.** Rajni K. Verma. IFI/Plenum, New York, 1980. x, 474 pp., illus. \$75. IFI Data Base Library.

**Mathematical Models in Cell Biology and Cancer Chemotherapy.** Martin Eisen. Springer-Verlag, New York, 1979. x, 432 pp., illus. Paper, \$22. Lecture Notes in Biomathematics, vol. 30.

**The Mathematical Theory of L Systems.** Grzegorz Rozenberg and Arto Salomaa. Academic Press, New York, 1980. xvi, 352 pp., illus. \$38. Pure and Applied Mathematics.

**The Mathematics of Finite Elements and Applications III.** Proceedings of a conference, Uxbridge, England, Apr. 1978. J. R. Whiteman, Ed. Academic Press, New York, 1979. xvi, 514 pp., illus. \$34.50.

**Matrix Theory and Applications for Engineers and Mathematicians.** Alexander Graham. Horwood, Chichester, England, and Halsted (Wiley), New York, 1979. 296 pp. \$47.50. Mathematics and Its Applications.

**Measurement and Interpretation of Productivity.** National Academy of Sciences, Washington, D.C., 1979. viii, 450 pp. Paper, \$18.

**Medical Education and Primary Health Care.** Papers from a conference. Horst Noack, Ed. University Park Press, Baltimore, 1980. 352 pp. \$32.50.

**Medical Education Financing.** Policy Analyses and Options for the 1980's. Jack Hadley, Ed. PRODIST (Neale Watson), New York, 1980. xvi, 314 pp., illus. \$20.

**Methods in Enzymology.** Sidney P. Colowick and Nathan O. Kaplan, Eds. Vol. 68, Recombinant DNA. Ray Wu, Ed. Academic Press, New York, 1979. xxii, 556 pp., illus. \$46.

**Microcomputers and Physiological Simulation.** James E. Randall. Addison-Wesley Advanced Book Program, Reading, Mass., 1980. xviii, 236 pp., illus. Paper, \$14.50.

**Modern Aspects of Microwave Spectroscopy.** G. W. Chantry, Ed. Academic Press, New York, 1979. xiv, 514 pp., illus. \$89.50.

**Molecular Biology of RNA Tumor Viruses.** John R. Stephenson, Ed. Academic Press, New York, 1980. xii, 528 pp., illus. \$49.50.

**Molecular Neurobiology.** Gordon Guroff.

Dekker, New York, 1980. xiv, 572 pp., illus. \$53.50.

**Morphology of Plants and Fungi.** Harold C. Bold, Constantine J. Alexopoulos, and Theodore Delevoryas. Harper and Row, New York, ed. 4, 1980. xii, 820 pp., illus. \$23.95.

**Multifunctional Proteins.** Hans Bisswanger and Eva Schmincke-Ott, Eds. Wiley-Interscience, New York, 1980. x, 334 pp., illus. \$33.50.

**The Nature of Woman.** An Encyclopedia and Guide to the Literature. Mary Anne Warren. Edgepress, Inverness, Calif., 1980. xx, 702 pp. \$20.

**Neue Physik.** Einführung in eine neue Atom- und Strahlungsphysik. K. Nowak. Verlag Neue Physik, Vienna, 1979. vi, 90 pp., illus. Paper, DM 15.

**The Neurobiology of Dopamine.** A. S. Horn, J. Korf, and B. H. C. Westerink, Eds. Academic Press, New York, 1979. xviii, 724 pp., illus. \$83.

**Neusiedlersee.** The Limnology of a Shallow Lake in Central Europe. H. Löffler, Ed. Junk, The Hague, 1979 (U.S. distributor, Kluwer Boston, Hingham, Mass.). x, 544 pp., illus. + plates. \$102.65. Monographiae Biologicae, vol. 37.

**Nomina Anatomica Avium.** An Annotated Anatomical Dictionary of Birds. Julian J. James E. Breazile, and Howard E. Evans, Eds. Academic Press, New York, 1979. xxvi, 638 pp., illus. \$64.50.

**Nonspeech Language and Communication.** Analysis and Intervention. Papers from a conference, Gulf Shores, Ala., Mar. 1977. Richard L. Schiefelbusch, Marilyn Barket, and Robert Hoyt, Eds. University Park Press, Baltimore, 1980. xiv, 530 pp., illus. \$24.95. Language Intervention Series, vol. 4.

**Nuclear Mysteries or Creation of the Parent Atoms.** Sister Incarnata Marie. Vantage Press, New York, 1980. xviii, 268 pp. \$9.95.

**Nucleic Acid-Metal Ion Interactions.** Thomas G. Spiro, Ed. Wiley-Interscience, New York, 1980. xii, 256 pp., illus. \$24.50. Metal Ions in Biology, vol. 1.

**Numerical Heat Transfer and Fluid Flow.** Suhas V. Patankar. Hemisphere, Washington, D.C., and McGraw-Hill, New York, 1980. xvi, 198 pp., illus. \$22.50. Series in Computational Methods in Mechanics and Thermal Sciences.

**Official Methods of Analysis of the Association of Official Analytical Chemists.** William Horwitz, Ed. Association of Official Analytical Chemists, Washington, D.C., ed. 13, 1980, xx, 1018 pp., illus. \$78.

**People, Pattern and Process.** An Introduction to Human Geography. Keith Chapman. Halsted (Wiley), New York, 1980. x, 334 pp., illus. \$37.95.

**Phase Transitions in Surface Films.** Proceedings of a NATO Advanced Study Institute, Erice, Sicily, June 1979. J. G. Dash and J. Ruvalds, Eds. Plenum, New York, 1980. xii, 368 pp., illus. \$42.50. NATO Advanced Study Institutes Series B, vol. 51.

**Physical and Mental Suffering of Experimental Animals.** A Review of Scientific Literature 1975-1978. Jeff Diner. Animal Welfare Institute, Washington, D.C., 1979. viii, 196 pp. Paper, \$4.

**Physical Science with Modern Applications.** Melvin Merken, Saunders, Philadelphia, ed. 2, 1980. xvi, 756 pp., illus. \$18.95. Saunders Golden Sunburst Series.

**Physician and Nurse Migration.** Analysis and Policy Implications. Report of a WHO Study. Alfonso Mejía. Helena Pizurki, and Erica Royston. World Health Organization,

Geneva, 1979 (U.S. distributor, WHO Publications Centre USA, Albany, N.Y.). xvi, 476 pp. Paper, \$38.40.

**Physics in Your World.** Karl F. Kuhn and Jerry S. Faughn. Saunders, Philadelphia, ed. 2, 1980. xii, 554 pp., illus. Paper, \$13. Saunders Golden Sunburst Series.

**Physics of Nonlinear Transport in Semiconductors.** Proceedings of a NATO Advanced Study Institute. Urbino, Italy, July 1979. David K. Ferry, J. R. Barker, and C. Jacoboni, Eds. Plenum, New York, 1980. xx, 614 pp., illus. \$65. NATO Advanced Study Institutes Series B, vol. 52.

**Physiology and Classification.** Historical Relations. Joseph Schiller, Maloigne, Paris, 1980. xiv, 194 pp. Paper, 120F.

**Physiology of Parasites.** Leslie H. Chappell. Halsted (Wiley), New York, 1980. x, 230 pp., illus. \$29.95. Tertiary Level Biology.

**Piecewise Methods and Applications to Power Systems.** H. H. Happ. Wiley-Interscience. New York, 1980. xxii, 406 pp., illus. \$29.95. Wiley Series on Systems Engineering and Analysis.

**The Planet Pluto.** A. J. Whyte. Pergamon, New York, 1980. xii, 148 pp., illus. \$17.50

**Plants of the Gods.** Origins of Hallucinogenic Use. Richard Evans Schultes and Albert Hofmann. McGraw-Hill, New York, 1980. 192 pp., illus. \$34.95.

**Plastic Product Design.** Ronald D. Beck, Van Nostrand Reinhold, New York, ed. 2, 1980. vi, 410 pp., illus. \$28.50.

**The Pleasures of Sociology.** Lewis A. Coser, Ed. New American Library, New York, 1980. xii, 516 pp. Paper, \$2.95.

**Polymers.** Part C, Physical Properties. R. A. Fava, Ed. Academic Press, New York, 1980. xxviii, 528 pp., illus. \$59. Methods of Experimental Physics, vol. 16.

**Polyplidity.** Biological Relevance. Proceedings of a conference, St. Louis, May 1979. Walter H. Lewis, Ed. Plenum, New York, 1980. xii, 584 pp., illus. \$55. Basic Life Sciences, vol. 13.

**Preparation and Properties of Stereoregular Polymers.** Papers from a NATO Advanced Study Institute, Tirrenia, Italy, Oct. 1978. Robert W. Lenz and Francesco Ciardelli, Eds. Reidel, Boston, 1980 (distributor, Kluwer Boston, Hingham, Mass.). xviii, 472 pp., illus. \$44.75. NATO Advanced Study Institutes Series C, vol. 51.

**Pressure Component Construction.** Design and Materials Application. John F. Harvey. Van Nostrand Reinhold, New York, 1980. xvi, 480 pp., illus. \$24.95.

**Principles of Human Anatomy.** Gerard J. Tortora. Harper and Row, New York, ed. 2, 1980. xiv, 656 pp., illus. \$19.95.

**Principles of Mathematical Modeling.** Clive L. Dym and Elizabeth S. Ivey. Academic Press, New York, 1980. xvi, 262 pp., illus. \$17.95. Computer Science and Applied Mathematics.

**Probabilistic Analysis of Redundant Systems.** S. K. Srinivasan and R. Subramanian. Springer-Verlag, New York, 1980. viii, 356 pp. Paper, \$29. Lecture Notes in Economics and Mathematical Systems, vol. 175.

**Proceedings of the Third Regional Conference on Geology and Mineral Resources of Southeast Asia.** Bangkok, Nov. 1978. Prinya Nutalaya, Ed. Wiley, New York, 1980. 888 pp., illus. \$75.

**Progress in Ecdysone Research.** J. A. Hoffmann, Ed. Elsevier/North-Holland, New York, 1980. x, 492 pp., illus. \$67.25. Developments in Endocrinology, vol. 7.

**The Psychology of the Psychic.** David Marks

The new 1981 Science Cover Calendar is now available.

The 4th annual AAAS wall calendar, featuring 14 striking full-color reproductions of Science covers, is now available in a new, attractive, 13" x 26" wall format.

Order yours today (and spread the word). Enclose check or money order for \$4.00 (\$3.50 to AAAS members) and mail to: AAAS Sales Dept., Box 6, 1515 Massachusetts Ave., NW, Washington, DC 20005. All orders must be prepaid.

Good News

## Save on Calculators

"Olympic Sales Co is the largest Hewlett-Packard dealer in the world," ask HP.

HP-41C Scientific	239.95
Card Reader for 41C	178.95
Printer for HP-41C	309.95
Optical WAAND for 41C	112.95
Memory Module for 41C	39.95
HP-34C Scientific	124.95
HP-38C Business	124.95
HP-33C Scientific	98.95
HP-37E Bus. Prog.	58.95
HP-32E Adv. Scientific	53.95
HP-67 Scientific prog	297.95
HP-97 Scient prog printing	579.95

"C" stands for continuous memory. We carry an enormous stock of HP goods and HP accessories at all times.

One year guarantee by HP on all calcs, 90 days on computers. All units complete.

**hp HEWLETT PACKARD**



HP-85 COMPUTER

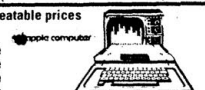
We have the lowest prices on HP in America and elsewhere. Do not waste money—buy from us and save. HP-85—Graphic Plotters—Letter quality printers—16K Memory modules—Software, etc. (coming soon: 8 models of Disk Drives for HP-85) HP-85 ROM.

## TEXAS INSTRUMENTS

TI-58/59 Libraries	33.95	Math Marvel	32.95
TI-5040 printer	89.95	MBA	59.95
TI-5015 printer	63.95	Bus. Analyst II	43.95
TI-5213 printer	160.00	Bus. Analyst I	20.95
TI-5215 printer	175.00	Speak and Spell	58.95
TI-5217 printer	190.00	Speak and Read	66.95
TI-5219 printer	205.00	Speak and Math	73.95
TI-58C	98.95	Language Tutor	158.95
TI-57	49.95	Business Card	38.50
TI-5100	39.95	Investment Analyst	48.95

## SPECIALS Computers at unbeatable prices

**APPLE II Computer**  
Peripherals, accessories, software for immediate delivery and the lowest prices. Call us. We carry a huge inventory of Apple Products 16K-32K-48K. Disk Drives, Monitors, Graphic Tablets, Pascal, Fortran, DOS. 3.3 Silenotype printers and on and on.



We are now taking orders for Apple III Systems. First come, first served. Call us about Apple III.

## TEXAS INSTRUMENTS Computer

99/4 Computer console	689.95	Mattel Race Hrse Anlysr Comput	119.95
12" Color Monitor	369.95	Sony Walkmn/Sndbort Stero pleyr	169.95
ATARI 800 16K Computer	799.95	Sony TCS 300 Walkmn recds/plays	189.95
ATARI 400 8K Computer	469.95	Craig transitor doubl capac M100SE	139.95
Mattel Intell TV game	2509	BSR X 10 Timer	59.95
Contrlr cmdnd	33.95		

Prices f.o.b. L.A. Minimum freight & handling charge—\$4.95. In CA, add 6% sales tax. Goods subject to availability. We'll beat any advertised price if competitor has goods on hand.

Request our 130 page catalog in writing. Outside CA call free 800-421-8045. In CA, Call below #'s. Call Mon.—Sat. 7AM—6PM.

**OLYMPIC SALES COMPANY, INC.**

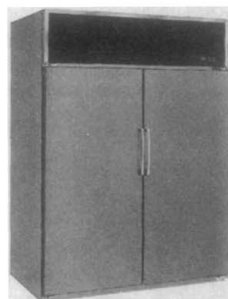
216 South Oxford Avenue • P.O. Box 74545 • Los Angeles, CA 90004  
(213) 381-3911 or (213) 381-1202 • Telex 67-3477

Circle No. 235 on Readers' Service Card

## We build our lab equipment so you can rebuild it.

No two storage problems are alike, and we've taken that into account in designing our laboratory freezers and refrigerators.

The interior fittings, for instance, are totally removable, so that you can adapt any of our units to fit your specific needs.



But no matter how you modify them, all Puffer-Hubbard units give you a host of built-in advantages, including high-capacity cooling, temperature uniformity, and perimeter heaters around the doors to prevent frost build-ups.

Our laboratory freezers (−18°C) and refrigerators (4°C) are available in 7, 23, 50 and 75 cu. ft. sizes, with a variety of accessories.

For a copy of our complete catalog, call or write:

**Rheem puffer-hubbard**

Scientific Equipment Division Rheem Manufacturing Company 1100 Memorial Drive  
West Columbia, South Carolina 29169 Telephone: 803/796-1700 TWX: 810-666-2103

Circle No. 249 on Readers' Service Card



and Richard Kammann. Prometheus Books, Buffalo, N.Y., 1980. vi, 234 pp. Cloth, \$16.95; paper, \$8.95.

**Public Places and Private Spaces.** The Psychology of Work, Play, and Living Environments. Albert Mehrabian. Basic Books, New York, 1980. xiv, 354 pp., illus. Paper, \$5.95. Reprint of the 1976 edition.

**Qualitative and Quantitative Social Research.** Papers in Honor of Paul F. Lazarsfeld. Robert K. Merton, James S. Coleman, and Peter H. Rossi, Eds. Free Press (Macmillan), New York, and Collier Macmillan, London, 1980. xviii, 414 pp. \$17.95.

**Quantitative Analysis for Public Policy.** John Kenneth Gohagan. McGraw-Hill, New York, 1980. xviii, 462 pp., illus. \$22.95. McGraw-

Hill Series in Quantitative Methods for Management.

**Quantitative Cytochemistry and Its Applications.** Papers from a meeting, London, Nov. 1978. J. R. Pattison, L. Bitensky, and J. Chayen, Eds. Academic Press, New York, 1979. xvi, 322 pp., illus. \$32.50.

**Radiocarbon Dating.** Proceedings of a conference, Los Angeles and La Jolla, Calif., 1976. Rainer Berger and Hans E. Suess, Eds. University of California Press, 1979. xviii, 788 pp., illus. \$55.

**Reading and Reasoning.** John Downing. Springer-Verlag, New York, 1979. vi, 194 pp. \$16.80.

**Recent Advances in the Quantum Theory of Polymers.** Proceedings of a workshop, Nam-

ur, Belgium, Feb. 1979. J. M. André and 5 others, Eds. Springer-Verlag, New York, 1980. vi, 306 pp., illus. Paper, \$22. Lecture Notes in Physics, vol. 113.

**Regulation of Differentiation in Mammalian Nerve Cells.** Kedar N. Prasad. Plenum, New York, 1980. xiv, 246 pp., illus. \$24.50.

**Renal Function in Anaesthesia and Surgery.** David R. Bevan. Academic Press, New York, 1979. xii, 240 pp., illus. \$32.

**Renewable Energy.** Bent Sørensen. Academic Press, New York, 1979. xviii, 684 pp., illus. \$46. Energy Science and Engineering.

**Research Design in Clinical Psychology.** Alan E. Kazdin. Harper and Row, New York, 1980. xiv, 448 pp. \$16.95.

**Response Models for Detection of Change.** Amnon Rapoport, William E. Stein, and Graham J. Burkheimer. Reidel, Boston, 1979 (distributor, Kluwer Boston, Hingham, Mass.). viii, 202 pp., illus. \$29.95. Theory and Decision Library, vol. 18.

**Responses of Plants to Environmental Stresses.** Vol. 1, Chilling, Freezing, and High Temperature Stresses. J. Levitt. Academic Press, New York, ed. 2, 1980. xii, 498 pp., illus. \$29.50. Physiological Ecology.

**Reticular Formation Revisited.** Specifying Function for a Nonspecific System. Papers from a symposium, St. Louis, 1978. J. Allan Hobson and Mary A. B. Brazier, Eds. Raven, New York, 1980. xvi, 552 pp., illus. \$49.50. International Brain Research organization Monograph Series, vol. 6.

**Retinal Detachment Surgery.** A. H. Chignell, Springer-Verlag, New York, 1980. x, 168 pp., illus. \$35.80.

**Rheological Techniques.** R. W. Whorlow. Horwood, Chichester, England, and Halsted (Wiley), New York, 1980. 448 pp., illus. \$77.95.

**The Round Art.** The Astrology of Time and Space. A. T. Mann. Donald Lehmkuhl and Mary Flanagan, Eds. Mayflower Books, New York, 1980. 300 pp., illus. \$24.95.

**Secondary Products of Metabolism.** A. H. Rose, Ed. Academic Press, New York, 1979. xvi, 596 pp., illus. \$78.50. Economic Microbiology, vol. 3.

**Selected Water Problems in Islands and Coastal Areas.** With Special Regard to Desalination and Groundwater. Proceedings of a seminar, San Anton, Malta, June 1978. Published for the United Nations by Pergamon, New York, 1979. xxvi, 502 pp., illus. \$80.

**Self-Medication.** Proceedings of a workshop, London, Jan. 1979. J. A. D. Anderson, Ed. MTP Press, Lancaster, England, 1979 (U.S. distributor, University Park Press, Baltimore). 126 pp. \$16.50.

**Sensation Seeking.** Beyond the Optimal Level of Arousal. Marvin Zuckerman. Erlbaum, Hillsdale, N.J., 1979 (distributor, Halsted [Wiley], New York). xiv, 450 pp. \$29.95.

**The Serum Concentration of Drugs.** Clinical Relevance, Theory and Practice. Proceedings of a symposium, Amsterdam, Dec. 1979. F. W. H. M. Merkus, Ed. Excerpta Medica, Amsterdam, 1980 (U.S. distributor, Elsevier North-Holland, New York). xiv, 286 pp., illus. \$73.25.

**Side Effects of Drugs Annual 4.** A Worldwide Yearly Survey of New Data and Trends. M. N. G. Dukes, Ed. Excerpta Medica. Amsterdam, 1980 (U.S. distributor, Elsevier North-Holland, New York). xviii, 376 pp. \$63.50.

**Sigmund Freud's Dreams.** Alexander Grinstein. International Universities Press, New York, ed. 2, 1980. viii, 486 pp. + plates. \$22.50.



Disperse  
Emulsify  
Homogenize

Shred  
Blend  
& Cut

**300 microliters to 300 gallons of process flow  
with one of Tekmar's Super Dispax Homogenizers**

*Mechanical, high frequency units operate on high shear and impact principle; widely used in biomedical, analytical, pilot plant and process areas.*

Widest selection of Rotor-stator generators available anywhere. Rotor-stator generators are available in diameters of 8mm, 10mm, 18mm, 30mm, 45mm, and 65mm; capable of particle size reduction, dispersions, cell membrane disruption of static sample-volumes of less than 1ml to 50 liters.

Solid-state control for Tissumizer and Super Dispax Model SD45. Thyristor speed control matched directly to the output of the SDT Tissumizer and the SD45 provide constant speed/torque at selected RPM regardless of load. Our Tissumizer Control Module features a high torque motor speed control, dual range electronic timer, and temperature readout with selectable over-temperature controllability.

Continuous flow-through units. Glass flow-through accessories for all laboratory sized units assist in controlling aerosols or to determine scale up data for specifying one of our larger laboratory, continuous pilot plant and/or process units.

All models competitively priced, easily cleaned and serviced. Laboratory units are routinely available from our Cincinnati stock. All homogenizers disassemble for ease of cleaning and repairing. Tool sets and complete instructions supplied with all apparatus.



Wide range of rotor-stator generators — diameters from 8mm to 65mm shown. Choose appropriate one for varying sample volumes from less than 1ml to 50 liters.

Tekmar®

TEKMAR COMPANY / P.O. Box 37202 / Cincinnati, OH 45222 / (800) 543-4461  
In Ohio call collect (513) 761-0633 / Telex No. 21-4221





## LUCIDA fiber optic RINGLIGHT

retrofits to  
your stereomicroscope

Now you can dispense with hot little lamps on wiggly arms and fluorescent tubes that seem to fade as you zoom up.

Enjoy the brilliance, high color temperature of a 150 watt halogen source conveyed, and delivered absolutely cold by fiber-optic RingLight. Vertical adjustment produces subtle variations in illumination and corresponding "revelations" of specimen surface structure.

Adaptors available for popular stereomicroscopes. Other applications limited only by your imagination.

H/I

**HACKER  
INSTRUMENTS  
INC.**

Box 657, Fairfield,  
New Jersey 07006  
(201) 226-8450

Circle No. 91 on Readers' Service Card



## HELLMA

...tomorrow's designs today!



OS<sup>®</sup> QH<sup>®</sup> QS<sup>®</sup> OF<sup>®</sup> QU<sup>®</sup> QI<sup>®</sup>

Hellma—the largest assortment of highest precision glass and quartz cells.

Standard • Flow-through • Constant-temperature  
Anaerobic • Special Designs

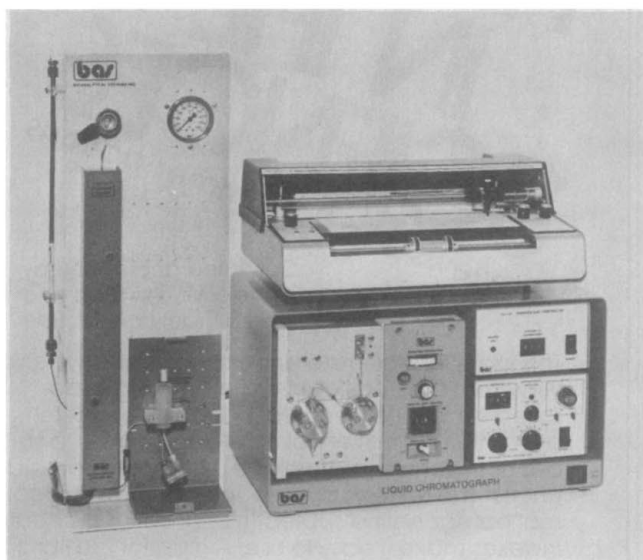
Also available—ULTRAVIOLET LIGHT SOURCES  
Deuterium Lamps • Mercury Vapor Lamps  
Hollow Cathode Lamps • Power Supplies


**HELLMA  
CELLS, INC.**

Write for literature  
Box 544  
Borough Hall Station  
Jamaica, New York 11424  
Phone (212) 544-9534

Circle No. 208 on Readers' Service Card

## CATECHOLAMINES AND METABOLITES?



### WITHIN

Brain Tissue  
Adrenal Tissue  
Body Fluids  
Dosage Forms  
Plant Matter  
Insect Tissue

### WITHOUT

Derivatives  
Radioisotopes  
Fluorescence  
Gas Chromatography  
Mass Spectrometry  
A Rich Uncle

Catecholamine analyzers based on liquid chromatography with electrochemical detection have replaced classical fluorescence procedures in all of the above areas and are now in routine use in many laboratories. Detailed procedures are available and can be adopted by your laboratory without modification. Not limited to catecholamines, these new reverse-phase systems are capable of monitoring many other phenolic natural products and drugs. All of the known catecholamine metabolites and many tryptophan metabolites can be determined. In addition, the activity of many neurologically important enzymes can be measured. Let us know your requirements!

DOPAMINE • NOREPINEPHRINE • EPINEPHRINE • VMA • HVA • DOPAC • MHPG • M • NM • 3-MT • 5-HT • 5-HIAA • TH • DBH • COMT • NMT



**BIOANALYTICAL SYSTEMS INC.**

P.O. Box 2206 • W. Lafayette, IN 47906 • (317) 463-2505 • telex 276141 BAS WLAF

## PRECISION X-RAY GENERATORS

ADAC Laboratories manufactures X-Ray generators, which are presently being used in many diverse applications. A few of which are: X-Ray Spectroscopy, Densitometry, Digital Radiography, Computerized Tomography, Quantitative Inspection, Real Time gaging, and measurement systems.

ADAC's full line of generators feature:

- Voltage range from 10kv to 250kv
- Current range from 5ma to 300ma
- X-Ray Tube current regulation better than .1% accuracy
- Line and load voltage regulation better than .1% accuracy
- Fully adjustable voltage and current ranges
- Safety interlock status and control circuits provided as standard
- Analog or digital control capability
- Totally solid state design, no electro mechanical devices incorporated
- All high voltage components are hermetically sealed for maximum reliability and safety
- These constant potential generators are small in size and light weight

ADAC also has the capability of developing special designs to meet your unique requirements. We would enjoy discussing them with you.

Please call:

**ADAC**

Clarence S. Jones  
ADAC Laboratories,  
255 San Geronimo Way  
Sunnyvale, CA 94086  
Phone (408) 736-1101

Circle No. 73 on Readers' Service Card

## mRNA Termini (caps)

Name	Cat. No.	5 units	5x5 units
m <sup>7</sup> G(5')ppp(5')Cm	4607	\$40.00	\$160.00
m <sup>7</sup> G(5')ppp(5')Um	4609	40.00	160.00
m <sup>7</sup> G(5')ppp(5')Am	4633	40.00	160.00
m <sup>7</sup> G(5')ppp(5')Gm	4631	40.00	160.00
m <sup>7</sup> G(5')ppp(5')N <sup>6</sup> mAm	4611	50.00	200.00

### Or their precursors

Name	Cat. No.	5 units	5x5 units
m <sup>7</sup> G(5')ppp(5')A	4637	\$35.00	\$150.00
m <sup>7</sup> G(5')ppp(5')G	4635	35.00	150.00
G(5')ppp(5')Am	4641	30.00	125.00
G(5')ppp(5')Gm	4639	30.00	125.00
G(5')ppp(5')A	4645	25.00	100.00
G(5')ppp(5')G	4643	25 units	40.00

We have them all in stock for immediate delivery.

excellence in biochemistry



**PL biochemicals, inc.**

1037 WEST MCKINLEY AVENUE, MILWAUKEE, WIS. 53205

® Call 414/347-7442 TWX 910-262-1111

Circle No. 96 on Readers' Service Card



## HOLLOW CATHODE LAMPS

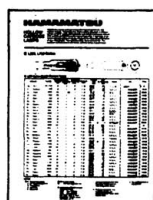
- HIGHEST DETECTIVITY
- HIGHEST LINEARITY
- MONEY-SAVING PRICES

A test of our lamps will let you compare the performance and price.

WRITE FOR OUR PRICE LIST/DATA SHEET DESCRIBING OVER 50 HOLLOW CATHODE LAMPS

**HAMAMATSU**

HAMAMATSU CORPORATION  
420 SOUTH AVENUE • MIDDLESEX, NEW JERSEY 08846 • PHONE (201) 469-6640  
International Offices in Major Countries of Europe and Asia.



Name \_\_\_\_\_

Title \_\_\_\_\_ Phone \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

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

Circle No. 253 on Readers' Service Card

## FILMS IN THE SCIENCES

Reviews and Recommendations

Compiled and edited by  
Michele M. Newman and  
Madelyn A. McRae

This indispensable reference reviews nearly 1,000 films from all areas of science. It provides detailed summaries, evaluations and complete ordering information for films appropriate to students, teachers, professionals and general audiences. The reviews are grouped by Dewey decimal category and subject/title and film distributor indexes make it easy to use. A must for the librarian, the science teacher, or the curious browser.

182 pages 1980  
Cloth: ISBN 87168-304-7 \$14.00

American Association for the Advancement of Science, Box FL4, 1515 Massachusetts Avenue, N.W., Washington, D.C. 20005

SCIENCE, VOL. 210

**Simple Fold Instruments to Make and to Play.** Ilene Hunter and Marilyn Judson. Simon and Schuster, New York, 1980. 160 pp., illus. Paper, \$4.95. A Fireside Book. Reprint of the 1977 edition.

**Social Behaviour in Primates.** Neil Chalmers. University Park Press, Baltimore, 1980. viii, 256 pp., illus. Paper, \$24.50. A Series of Student Texts in Contemporary Biology.

**Social Psychology.** Jeffrey H. Goldstein. Academic Press, New York, 1980. xvi, 536 pp., illus., + index. \$16.95.

**The Social Welfare Forum, 1979.** Proceedings of a conference, Philadelphia, May 1979. Published for the National Conference on Social Welfare by Columbia University Press, New York, 1980. xvi, 228 pp. \$25.

**Solar Energy.** John I. B. Wilson. Wykeham, London, and Crane, Russak, New York, 1979. viii, 196 pp., illus. Paper \$15.95. Wykeham Science Series.

**Speaking, Singing and Teaching.** A Multidisciplinary Approach to Language Variation. Proceedings of a workshop, Tempe, Ariz., Apr. 1979. Florence Barkin and Elizabeth Brandt, Eds. Arizona State University Department of Anthropology, Tempe, 1980. viii, 482 pp., illus. Paper, \$10. Arizona State University Anthropological Research Papers No. 20.

**Stirling Engines.** G. Walker. Clarendon (Oxford University Press), New York, 1980. xxii, 532 pp., illus. \$89. Oxford Science Publications.

**Streptococcal Diseases and the Immune Response.** Proceedings of a symposium, Trinidad, Nov. 1977. Stanley E. Read and John B. Zabriskie, Eds. Academic Press, New York, 1980. xviii, 830 pp., illus. \$45.

**Stress and Anxiety.** Vol. 6. Papers from a NATO Advanced Study Institute, Cambridge, England, Aug. 1978. Irwin G. Sarason and Charles D. Spielberger, Eds. Hemisphere, Washington, D.C., and Halsted (Wiley), New York, 1979. xiv, 386 pp., illus. \$22. The Series in Clinical and Community Psychology.

**Structure and Function of Gangliosides.** Proceedings of a symposium, Strasbourg, France, Apr. 1979. Lars Svennerholm, Paul Mandel, Henri Dreyfus, and Paul-Francis Urban, Eds. Plenum, New York, 1980. xii, 572 pp., illus. \$49.50. Advances in Experimental Medicine and Biology, vol. 125.

**Studies in Statistical Mechanics.** Vol. 7, Fluctuation Phenomena. E. W. Montroll and J. L. Lebowitz, Eds. North-Holland, Amsterdam, 1979 (U.S. distributor, Elsevier/North-Holland, New York). vi, 350 pp., illus. \$58.50.

**Supermadre.** Women in Politics in Latin American. Elsa M. Chaney. Published for the Institute of Latin American Studies by University of Texas Press, Austin, 1980. x, 210 pp. \$14.95. Latin American Monographs, No. 50.

**Surface Mining of Non-Coal Minerals.** A Study of Mineral Mining from the Perspective of the Surface Mining Control and Reclamation Act of 1977. National Academy of Sciences, Washington, D.C., 1979. xxxiv, 340 pp., illus. Paper, \$11.50.

**Symbolic Functioning in Childhood.** Papers from a conference, Oct. 1975. Nancy R. Smith and Margery B. Franklin, Eds. Erlbaum, Hillsdale, N.J., 1979 (distributor, Halsted [Wiley], New York). xii, 240 pp. \$19.95. Child Psychology.

**Themes of Work and Love in Adulthood.** Papers from a conference, Palo Alto, Calif., May 1977. Neil J. Smelser and Erik H. Erik-

son, Eds. Harvard University Press, Cambridge, Mass., 1980. xii, 298 pp. \$15.

**The Theory of Linear Induction Machinery.** Michel Poloujadoff. Clarendon (Oxford University Press), New York, 1980. xiv, 276 pp., illus. \$42. Monographs in Electrical and Electronic Engineering.

**Thermoregulatory Mechanisms and Their Therapeutic Implications.** Papers from a symposium, Oxford, England, July 1979. B. Cox, P. Lomax, E. Schönbaum, and A. S. Milton, Eds. Karger, Basel, 1980. xvi, 304 pp., illus. \$42.50.

**To Choose a Future.** Resource and Environmental Consequences of Alternative Growth Paths. Ronald G. Ridker and William D. Watson. Published for Resources for the Future by Johns Hopkins University Press, Baltimore, 1980. xvi, 464 pp. \$33.50.

**Topics in Antibiotic Chemistry.** Vol. 3, Mechanisms of Action of Nalidixic Acid and Its Congeners; New  $\beta$ -Lactam Antibiotics. P. G. Sammes, Ed. Horwood, Chichester, England, and Halsted (Wiley), New York, 1980. 204 pp., illus. \$59.95.

**Topological Model Theory.** Jörg Flum and Martin Ziegler. Springer-Verlag, New York, 1980. x, 152 pp. Paper, \$11.80. Lecture Notes in Mathematics, vol. 769.

**Transfer of Cell Constituents into Eukaryotic Cells.** Papers from a NATO Advanced Study Institute, Sintra-Estorial, Portugal, Sept. 1979. J. E. Celis, A. Graessmann, and A. Loyer, Eds. Plenum, New York, 1980. x, 444 pp., illus. \$45. NATO Advanced Study Institutes Series A, vol. 31.

**Tutorials in Surgery 2.** F. G. Smiddy. Pitman, London, 1979 (U.S. distributor, University Park Press, Baltimore). x, 294 pp., illus. Paper, \$24.50.

**Types and Events of Disasters Organization in Various Disaster Situations.** Proceedings of a congress, Mainz, Germany, Sept. 1977. R. Frey and P. Safar, Eds. Springer-Verlag, New York, 1980. xx, 356 pp., illus. Paper, \$46.50. Disaster Medicine, vol. 1.

**Uses and Actions of 1,25-Dihydroxyvitamin D<sub>3</sub> in Uremia.** Papers from a symposium, Chantecler, Quebec, Canada, June 1978. J. W. Coburn and S. G. Massry, Eds. Karger, Basel, 1980. x, 218 pp., illus. Paper, \$43. Contributions to Nephrology, vol. 18.

**Vacuum Arcs.** Theory and Application. J. M. Lafferty, Ed. Wiley-Interscience, New York, 1980. xx, 372 pp., illus. \$26.50.

**Value and Values in Evolution.** Papers from a symposium, Chicago, 1970. Edward A. Maziarz, Ed. Gordon and Breach, New York, 1979. x, 196 pp. \$19.50.

**Veracruz y Sus Recursos Naturales.** Papers from a meeting, Xalapa, Mexico, Aug. 1979. Instituto Mexicano de Recursos Naturales Renovables, Mexico City, 1979. 194 pp. Paper, \$7.50. XXI Serie de Mesas Redondas.

**Windpower Principles.** Their Application on the Small Scale. N. G. Calvert. Illustrations by F. Cummins. Halsted (Wiley), New York, 1980. 122 pp. \$17.95.

**The Windward Road.** Adventures of a Naturalist on Remote Caribbean Shores. Archie Carr. University Presses of Florida, Tallahassee, 1979. xl, 258 pp., illus. + plates + index. Paper, \$6.95. Reprint of the 1956 edition.

**Women Scientists in Industry and Government.** How Much Progress in the 1970's? National Academy of Sciences, Washington, D.C., 1980. viii, 56 pp. Paper, \$5.

**The Year Book of Pathology and Clinical Pathology, 1980.** Frank A. Carone and Rex B. Conn, Eds. Year Book Medical Publishers, Chicago, 1980. 458 pp., illus. \$33.95.

# Personnel Placement

SCIENCE publishes each Friday, except the last Friday of the year. Advertising closing for a particular Friday issue is Wednesday, 3 1/2 weeks before. Advertising is accepted only in writing; no abbreviations. Also, personnel advertising is accepted only with the understanding that the advertiser does not discriminate among applicants on the basis of race, sex, religion, age, color, national origin, or handicap.

**POSITIONS WANTED:** 40¢ per word, plus \$4 for use of box number, per insertion. \$10 minimum, per insertion. Prepayment required. This rate is available only to individuals seeking jobs.

**DISPLAY (POSITIONS OPEN, COURSES, FELLOWSHIPS, MARKETPLACE, and so forth):** \$7.20 per millimeter; \$180 minimum, per insertion (minimum charge covers 25 millimeters on a single column; 25 millimeters equals 10 lines of 50 spaces per line). No charge for use of box number. No agency commission for ads less than 103 millimeters (4 inches). No cash discount. Prepayment required for all foreign ads. Purchase orders and billing information required for all other advertising.

Send copy for all **Positions Wanted** ads and **Display** ads less than 1/6 page in size (125 millimeters) to:

SCIENCE, Room 207  
1515 Massachusetts Ave., NW  
Washington, D.C. 20005  
Telephone: 202-467-4456

Send copy for **Display** ads 1/6 page and larger to:

Scherago Associates, Inc.  
1515 Broadway  
New York, N.Y. 10036  
Telephone: 212-730-1050

Blind ad replies should be addressed as follows:

Box (give number)  
SCIENCE  
1515 Massachusetts Ave., NW  
Washington, D.C. 20005

## POSITIONS WANTED

**Aircraft Technologist.** Desires overseas research position in Southwest Asia. Primary aspects of interest are in the latest applied research and development technologies used in the Mikoyan-Gurevich and Tupolev type aircraft. Box 263, SCIENCE. X

**Aquatic Biologist/Toxicologist.** Ph.D. Strong background in toxicity testing, hazard assessment, water quality, and fisheries biology. Publications. Box 266, SCIENCE. X

**Coal Geologist.** Ph.D. Exploration and development experience, FORTRAN, digital mapping, electric log interpretation, publications. Seeks sediment research or exploration with aggressive acquisition program. Box 259, SCIENCE. X

**Electron Microscopist.** Ph.D. in biology, experienced in independent research on various tissues, supervision of EM laboratory, and training of students. Numerous publications. Seeks position primarily involving research. Box 264, SCIENCE. X

**Immunologist.** Ph.D. 1970. Eight years of university research experience in lymphocyte-mediated target cell destruction, cellular immunity in infectious diseases, immunosuppressive effects of endotoxin and bacterial vaccines, and PMN-mediated target cell destruction. Numerous publications. Seeking research position in academia or industry within project investigating cellular and neuroimmunology, DNA uptake and transfer in lymphocytes, and/or aging research. Box 260, SCIENCE. 11/14, 21

**Manager of Information Services.** seeks new opportunity to plan for and set up information center/library to serve information-hungry scientists, engineers, technicians, or managerial ladder. Professional degrees. Aerospace and automotive research laboratory experience at corporate level. Knows on-line scientific bases, experienced in launching in-house automation routines. Available January. Box 265, SCIENCE. X

## POSITIONS OPEN

### AMERICAN MUSEUM OF NATURAL HISTORY

The Department of Mineral Sciences is seeking to fill a tenure-track position for **ASSISTANT CURATOR OF MINERALOGY** beginning July 1981. This is a research position with an average of one-quarter time responsibility towards departmental activities, collections management, exhibition, and interaction with the mineral community at large. High-quality problem-oriented research is the prime responsibility. The field of specialization within mineral science is open and may include and combine aspects of x-ray crystallography, ultrastructure analysis, crystal growth, spectroscopy, gemology, petrologic mineralogy, mineral geochemistry, crystal and thermochemistry, medical mineralogy, and mineral physics. Major research facilities include a fully automated ARL-SEMQ electron microprobe, x-ray laboratory, minicomputer, and a 100,000-specimen mineral collection. Opportunities exist for research and/or teaching collaboration with nearby institutions such as Columbia (Lamont-Doherty Geological Observatory), Princeton, State University of New York at Stony Brook, Yale, and Mt. Sinai School of Medicine (TEM facilities).

Requirements are a Ph.D. in hand by time of appointment, an ability to do creative research, and a desire to learn about collections and relate to the public in terms of exhibition and speaking. Applications should include: (i) curriculum vitae, (ii) names of three persons familiar with your work who will write letters of recommendation, and (iii) a brief statement of research interests.

These must be submitted by 1 February 1981 to:

**Dr. Martin Prinz**  
Chairman, Department of Mineral Sciences  
American Museum of Natural History  
New York, N.Y. 10024

*An Equal Opportunity/Affirmative Action Employer, M/F/H*

### ASSISTANT ADJUNCT PROFESSOR

The University of California, Irvine, Department of Pathology in the College of Medicine, invites applications for an appointment as assistant adjunct professor in the Microbiology Division. The applicant must have a doctoral degree. The applicant is expected to participate in research projects through the collaboration with departmental faculty or develop an independent research program. Teaching responsibilities involve instructing medical students and residents in selected areas of microbiology. Administrative responsibilities will be shared with the division director. A minimum of 2 years of postdoctoral experience in clinical microbiology is an absolute requirement and should include bacteriology, virology, parasitology, and Chlamydiae. *Affirmative Action Employer.* Send curriculum vitae and names and addresses of at least three references to: **Dr. Luis M. de la Maza, Director, Medical Microbiology, Department of Pathology, 101 City Drive South, University of California Irvine Medical Center, Orange, Calif. 92668**, by 5 December 1980.

Department of Economics and the Institute for Environmental Studies (IES), University of Washington, announce availability of **JOINT ASSISTANT PROFESSOR** position. Person filling position is expected to engage in scholarly research in an area of economics related to environmental problems. Teaching responsibilities involve two courses per year in each unit. Position will begin 1 September 1981. Send completed application with résumé, copies of selected publications, names of three persons to be contacted for professional evaluations to: **Institute for Environmental Studies, FM-12, University of Washington, Seattle, Wash. 98195** by 31 December 1980. For further information, telephone: **Gordon Orians, Director, IES, at 206-543-1812**, or **Gardner Brown, Department of Economics, at 206-543-5945**. *Equal Opportunity Employer.*

**ASSISTANT PROFESSOR OF BIOCHEMISTRY**, tenure-track, fall 1981. Ph.D. required. Position involves developing advanced undergraduate course(s) in the area of **MOLECULAR BIOLOGY**, teaching in courses required for the biochemistry major, and maintaining an active research program which can involve undergraduates in **NUCLEIC ACID BIOCHEMISTRY**. Send a letter describing teaching and research interests, transcripts, and three letters of recommendation by 31 December 1980 to: **Dr. Susan Hixson, Chairman, Program in Biochemistry, Carr Laboratory, Mount Holyoke College, South Hadley, Mass. 01075**. *An Equal Opportunity Employer.*

## POSITIONS OPEN

**ASSISTANT PROFESSOR, BIOCHEMICAL NUTRITIONIST.** The Department of Nutrition at Rutgers University invites applications for a 12-month, tenure-track appointment available February 1981 with research emphasis in the area of carbohydrate and lipid metabolism. Applicants must present evidence of exceptional qualifications for development of an independent research program and for teaching at both the graduate and undergraduate levels. Postdoctoral experience is desirable. Complete résumé, summary of research plans, and three letters of recommendation should be sent to: **Dr. Robert D. Steele, Department of Nutrition, P.O. Box 231, Rutgers University, New Brunswick, N.J. 08903** by 1 January 1981. *An Equal Opportunity/Affirmative Action Employer.*

**ASSISTANT PROFESSOR OF BIOCHEMISTRY.** Twelve-month, tenure-track position available 1 July 1981, in a rapidly developing medical school. Postdoctoral experience required. Primary prerequisite is promise in development of an active research program complementary to interests of the department and in teaching medical and Ph.D. students. Applicants from any area of biochemistry, including nutritional biochemistry, will be considered. Submit résumé, research plans, and names of three references to: **Dr. W. R. Frisell, Chairman, Department of Biochemistry, School of Medicine, East Carolina University, Greenville, North Carolina 27834**. *Equal Opportunity through Affirmative Action.*

**ASSISTANT PROFESSORS, BIOCHEMISTRY.** Applications are invited for two 12-month, tenure-track positions which begin July or September 1981. Preference will be given to applicants working in molecular genetics, membrane structure-function relationship, and/or cell recognition phenomena. One position will be filled from applicants planning to pursue fundamental research in one of these areas as related to plant biochemistry or plant cell biology. Despite these preferences, applications from individuals having other research interests and expertise are encouraged. Applicants, who should have a Ph.D. and postdoctoral experience in biochemistry or a related field, will be expected to develop an active, externally funded research program, and to participate in the undergraduate and graduate teaching programs of the department. Normal teaching assignments are a one-semester lecture or laboratory course per academic year. Applications should include curriculum vitae, copies of publications, graduate and undergraduate transcripts, and a brief statement of current and future research interests. Three people, well acquainted with the applicant's research and teaching ability, should be asked to send letters of reference. Review of applications will begin this month; interviews will be scheduled early in 1981. Inquiries and applications should be directed to: **Roger E. Koeppel, Biochemistry Department, 454 PS II, Oklahoma State University, Stillwater, Okla. 74078**. *Equal Opportunity/Affirmative Action Employer.*

**ASSISTANT PROFESSOR, MEAT SCIENCE AND MUSCLE BIOLOGY.** A Ph.D. to teach (50 percent) an advanced course in meat science and assist with a graduate course in muscle biology and a seminar. Research (50 percent) should be basic and applied biochemical or cell biology studies concerned with lipid metabolism and adipose tissue as related to meat quality and animal production. Position available January 1981. Applications will be accepted until 1 December 1980. Send résumé, transcripts, and three letters of recommendation to: **Dr. D. E. Becker, Department of Animal Science, University of Illinois, Urbana, Illinois 61801**.

**ASSISTANT/ASSOCIATE PROFESSORS, NEUROBIOLOGY AND BEHAVIOR.** State University of New York (SUNY) at Stony Brook is continuing its active development of a new Department of Neurobiology and Behavior and is seeking candidates for two positions at the assistant or associate professor level for the 1981-1982 academic year. Associate professor positions can carry tenure and assistant professor positions are tenure-track. The department presently has 11 faculty with primary appointments and three with joint appointments. These faculty have broad interests in cellular and integrated neurobiology. Candidates should have at least 2 years of postdoctoral experience. Letters of application should be accompanied by curriculum vitae, statement of research and teaching interests, and the names and addresses of at least three references. Please send all materials to: **Dr. David H. Cohen, Department of Neurobiology and Behavior, SUNY at Stony Brook, Long Island, N.Y. 11794**. *An Equal Opportunity/Affirmative Action Employer.*

## POSITIONS OPEN

**ASSISTANT PROFESSOR, DEPARTMENT OF MICROBIOLOGY.** Applications are invited from individuals who have a doctorate in the broadly defined area of molecular biology. Preference will be given to applicants with a strong background in bacterial genetics. The successful applicant will be expected to develop an independent research program and to teach medical and graduate (Ph.D.) students. Those interested should submit curriculum vitae, a list of publications, a summary of current research interests, and names of three references who may be contacted to: **Dr. James G. Wetmur, Search Committee Chairman, Department of Microbiology, MOUNT SINAI SCHOOL OF MEDICINE, One Gustave L. Levy Place, New York, N.Y. 10029**. *An Equal Opportunity Employer, M/F.* Application deadline: 31 December 1980.

**ASSISTANT PROFESSOR OF PHARMACOLOGY.** The Washington State University (WSU) College of Pharmacy invites applications for tenure-earning position. A Ph.D. in pharmacology is required and postdoctoral experience is desirable. A professional degree in pharmacy is preferred. Teaching experience is desirable as the successful candidate must teach at the undergraduate and graduate levels. Directing research of graduate students and development of a vigorous research program is mandatory. Screening of candidates will begin 1 February 1981. Send résumé and letters of inquiry to: **Acting Dean Larry Simonsmeier, College of Pharmacy, Washington State University, Pullman, Wash. 99164**. *WSU is an Equal Opportunity/Affirmative Action Employer.*

**ASSISTANT PROFESSOR OF PHARMACOLOGY.** Tenure-track position. Applicants should possess a Ph.D. in pharmacology with a minimum of 1 year of postdoctoral experience. Additional qualifications desired include training and/or research interests in toxicology. Duties include teaching pharmacology to undergraduate and graduate students and the development of an active funded research program. Starting date: September 1981; closing date for receipt of applications: 1 January 1981; salary negotiable. Forward curriculum vitae and arrange for three letters of recommendation to be sent to: **Dr. Philip Rosenberg, Chairman, Section of Pharmacology and Toxicology, The University of Connecticut, School of Pharmacy, Storrs, Connecticut 06268**.

*Equal Opportunity Employer*

### ASSISTANT PROFESSOR OF PHARMACY AND PHARMACOLOGY

The Departments of Pharmacy (School of Pharmacy) and Pharmacology (School of Medicine), University of California, San Francisco (UCSF), are seeking a Ph.D. scientist with specialization in the areas of drug metabolism and pharmacokinetics for appointment to a tenure-track position. Training in pharmacy and/or pharmacology and postdoctoral experience are desirable. Teaching responsibilities may include the pharmacokinetics, clinical pharmacokinetics, and biopharmaceutics portions of courses for pharmacy and medical students, as well as elective and graduate courses in specialized areas. A strong commitment to the development of cooperative research programs involving both departments is essential. Send curriculum vitae, a summary of current research interest, a concise statement of future research plans, and three letters of reference by 15 February 1981 to: **Betty-ann Hoener, Ph.D., Chair, Search Committee, School of Pharmacy, University of California, San Francisco, Calif. 94143**. *UCSF is an Equal Opportunity/Affirmative Action Employer. Women and minorities are encouraged to apply.*

The **Department of Psychology**, University of Georgia, invites applications for a tenure-track position at the **ASSISTANT PROFESSOR** level beginning in September 1981. A candidate should have a Ph.D. degree in psychology, postdoctoral research experience, a fundable program of research, and demonstrated teaching ability in the areas of physiological and experimental sensory neuropsychology, sensory psychophysiology, and neurobiology. Competence in intra- and extracellular recording techniques as well as psychophysical methods is expected.

Applicants are invited to send, by 1 February 1981, curriculum vitae, names and addresses of three references, and a letter describing research and teaching interest to: **L. J. Peacock, Ph.D., Chairman, Biopsychology Search Committee, Department of Psychology, University of Georgia, Athens, Georgia 30602**. *An Equal Opportunity/Affirmative Action Institution.*



## POSITIONS OPEN

### ASSISTANT PROFESSOR IN SCIENCE WRITING

The Writing Program at Massachusetts Institute of Technology (MIT) hopes to fill a position at the rank of assistant professor in science writing, beginning in September 1981. Candidates should have training and/or experience in science writing and editing. They should have teaching experience at the college level and a strong interest in curricular development. Candidates whose primary experience is in technical writing will also be considered. Term of appointment and salary will be commensurate with credentials. Send letter of application and curriculum vitae before 1 December to:

**Professor Harriet Ritvo**  
The Writing Program (S)  
MIT, Room 14E-310F  
Cambridge, Mass. 02139

*MIT is an Affirmative Action/Equal Opportunity Employer.*

### ASSOCIATE DIRECTOR

The Monell Chemical Senses Center, an interdisciplinary institute involved in the study of taste and olfaction, is seeking a qualified candidate for the position of associate director. The Center has more than 35 Ph.D. scientists and provides training in the chemical senses at the doctoral and postdoctoral levels. Primary responsibilities will be to provide scientific leadership, to assist in the operation of the Center, and to coordinate the Center's relationships with foundations, universities, industry, and governmental agencies.

Minimum qualifications include a doctoral degree in a scientific discipline not necessarily related to taste and olfaction; administrative ability; and a successful research program as evidenced by professional reputation and publications.

Correspondence, including a complete résumé, should be addressed to:

**Dr. John Labows**  
Chairman, Search Committee  
Monell Chemical Senses Center  
3500 Market Street  
Philadelphia, Pa. 19104

*An Equal Opportunity/Affirmative Action Employer*

## BIOCHEMIST

M.S. with background in general or synthetic chemistry. Should know electrophoresis and chromatography. Work with cell cultures a plus.

## INORGANIC CHEMIST

M.S. or Ph.D. in inorganic chemistry. Background in electrochemistry or metallurgy with good footing in solution chemistry sought.

Interested and qualified candidates are encouraged to apply by sending résumé, with complete salary history, to:

**DEVELOPMENT MANAGER**  
**HABER, INC.**

470 Main Road, Towaco, N.J. 07082  
*An Equal Opportunity Employer*

**BIOLOGY.** Two positions available fall 1981; Ph.D. preferred. (i) Vertebrate zoologist, position requires interest and training in field zoology and organismal-level physiology; (ii) cell-molecular biologist, interest and training in genetics. Erskine is a fully accredited, church-related, liberal arts, coeducational college of 650 students with 50 highly qualified faculty members, more than 60 percent of whom hold the earned doctorate. Contact: **Dean J. A. Knight, Erskine College, Due West, S.C. 29639.**

**BIOLOGIST-ECOLOGIST** needed to teach ecology and general biology and manage a 3200-acre wildlife sanctuary. Ph.D. or equivalent required. Salary open. Appointment is at the assistant professor level and starts July 1981. Write or telephone: **Professor Daniel J. McDonald, Chairman, Biology Department, Dickinson College, Carlisle, Pa. 17013.** *Dickinson College is an Affirmative Action/Equal Opportunity Employer and encourages applications from women and from members of minority groups.*

## POSITIONS OPEN

**BIOBEHAVIORAL SCIENCES.** Assistant or associate research professor. Salary: \$17,500 to \$23,000. Photon-absorptionmetry of living populations and skeletal specimens. Computer analysis of demographic, anthropometric, genetic, and photon scan data. Forensic identification of skeletons. Teach seminars, lecture, and laboratory courses in biological anthropology. Advise graduate students for dissertation research. Edit scientific papers. Prepare grant proposals and administer grants. Field direction of multidisciplinary research teams. This position does not lead to tenure. Ph.D. Experience in duties listed above and relevant publications. Reply to: **W. S. Laughlin, U-154, University of Connecticut, Storrs, Connecticut 06268.**

*Equal Opportunity Employer*

### BIOCHEMISTRY POSITION

To study the biosynthesis of glycoproteins. Experience with enzymology of membrane systems preferred. Salary up to \$19,000 per year. Send résumé and two letters of recommendation to:

**Dr. I. K. Vijay**  
Department of Dairy Science  
Animal Sciences Center  
University of Maryland  
College Park, Maryland 20742

*An Equal Opportunity/Affirmative Action Employer*

**BIOCHEMIST** required for joint university-industrial position. Individual should have a Ph.D. with a good background in nucleic acid manipulation, protein isolation, and techniques associated with recombinant DNA. The individuals hired will work initially in a university environment and will be considered for long-term appointments. Starting salary: \$18,000 plus, depending on experience. Inquiries to: **Professor A. G. Walton, Department of Macromolecular Science, Case Western Reserve University, Cleveland, Ohio 44106.** *Case Western Reserve University is an Equal Opportunity Employer.*

### CHAIRPERSON DEPARTMENT OF BIOCHEMISTRY WEST VIRGINIA UNIVERSITY

West Virginia University School of Medicine is seeking a biochemist with an established record of scholarly achievement, excellence in teaching, and preferably some administrative experience, to chair the Department of Biochemistry. Candidates must have an active research program and a demonstrated ability to generate extramural research support. A strong commitment to excellence in teaching and research within the context of a university medical center is essential. Closing date for applications is 1 January 1981. Qualified applicants should submit their curriculum vitae and the names and addresses of three references to: **Dr. Robert S. McCuskey, Professor and Chairman of Anatomy, West Virginia University Medical Center, Morgantown, West Virginia 26506.** *West Virginia University is an Affirmative Action/Equal Opportunity Employer.*

### DIRECTOR NEW YORK STATE SCIENCE SERVICE

The New York State Museum invites nominations and applications for the position of **DIRECTOR** of the State Science Service. The Science Service is responsible for a wide variety of environmental studies conducted through the Biological and Geological Surveys and the State Museum's natural history collections. Staff includes more than 25 scientists working on both basic and applied research with strong emphasis on the systematic study of New York State's natural resources. Other Science Service activities include participation in the museum's exhibition, education, and public service programs. The director of the Science Service is responsible for planning and administration, and reports to the Assistant Commissioner of Education for the New York State Museum. Applicants and nominees should have a Ph.D. in a natural science, a distinguished research record, grants and fund-raising experience, and 5 years of administrative experience. Applications and nominations, including curriculum vitae, should be submitted by 31 December 1980 to: **Director, Division of Personnel, New York State Education Department, State Education Building, Albany, N.Y. 12234.**

### HEAD, DEPARTMENT OF HORTICULTURAL SCIENCES TEXAS A&M UNIVERSITY

Nominations and applications are invited for professor and head, Department of Horticultural Sciences. The department is concerned with all aspects of horticultural sciences including pomology, olericulture, ornamental horticulture, floriculture, post-harvest physiology, and related food sciences. The head provides administrative direction and intellectual leadership of the academic and research programs of the department and statewide leadership and coordination of Extension Service and Experiment Station programs in horticulture. Qualifications include an earned doctorate and professional experience in research and education in one of the horticultural sciences including pathology, physiology, entomology, food science, landscape architecture, agronomic science, and floriculture as well as the traditional and emerging horticultural sciences. Administrative experience is desirable. Demonstrated abilities for management and communication will be important factors. More than 80 professional faculty and professional staff are affiliated with the department and are located at College Station and at Research and Extension Centers at Lubbock, El Paso, Stephenville, Weslaco, and Overton. The faculty offers B.S., M.S., M.Agr., and Ph.D. degrees in floriculture, in horticulture, and in food science and technology. More than 300 undergraduate and 60 graduate students are in degree programs in the department. The department manages the affiliated Benz School of Floral Design. New facilities to house the department are in planning. Applications will be received until 15 December 1980 or until the position is filled.

Nominations and applications with current curriculum vitae and names of at least three references should be sent to: **H. O. Kunkel, Dean, College of Agriculture, Texas A&M University, College Station, Texas 77843.**

*Texas A&M University and The Texas A&M University System are Equal Opportunity/Affirmative Action Employers.*

## CLINICAL DIAGNOSTIC IMMUNOLOGIST

**CAPPEL LABORATORIES**, a major company in the development and manufacture of immunologicals for the research laboratory is expanding into clinical diagnostic products and has an opening for a Ph.D. level immunologist. Candidates should have a minimum of three years experience in development of non-isotopic immunological products for the clinical laboratory. The position offers an opportunity to participate in the formation and direction of a new research and development department reporting directly to the Company's General Manager. Responsibilities include supervision, product development and design, monitoring clinical evaluations and preparation of 510 K submissions.

**CAPPEL LABORATORIES**, a division of B.C.A., is located in modern laboratory facilities situated in an attractive rural area 40 miles west of Philadelphia. Salary is open and excellent employee benefits are provided. Please forward curriculum vitae or resumes to:

**L. A. Davis**  
Personnel Department  
**CAPPEL LABORATORIES**  
Cochranville, Pa. 19330



## POSITIONS OPEN

The Johns Hopkins University Applied Physics Laboratory is presently seeking two individuals to join a multidisciplinary environmental assessment research team. **BIostatistician.** Experienced M.S.-level biostatistician to work with an environmental assessment research group. Experience in experimental design (field and laboratory), linear models, and statistical methods for bioassay data is desired. Knowledge of data management, programming, and statistical packages is important. **SENIOR FISHERIES BIOLOGIST/ECOLOGIST.** The position requires a strong statistical and quantitative (modeling) background in population and community dynamics of estuarine organisms. A background in fisheries would be particularly valuable. Candidates should have a Ph.D. in marine biology, ecology, or related field and interest in the applied aspects of the siting of energy facilities on the Chesapeake Bay. A demonstrated ability for grant writing and original research is necessary. We offer a comprehensive benefit program, excellent relocation package, and a salary commensurate with education and training. The environmental research laboratory facilities are located on the beautiful Chesapeake Bay at Shadyside, Maryland. Please send your résumé to:

Stevan F. Sayre, Professional Employment  
Department ADI-10D

THE JOHNS HOPKINS UNIVERSITY  
APPLIED PHYSICS LABORATORY

Johns Hopkins Road, Laurel, Maryland 20810

An Equal Opportunity/Affirmative Action Employer

**BOTANIST.** The Department of Botany and Microbiology at the University of Oklahoma has a vacancy at the assistant or associate professor level for a physiological ecologist commencing 1 September 1981. Applicants must possess a Ph.D. in botany with strong training in ecology, plant physiology, and biochemistry. The successful applicant would be expected to conduct research, direct graduate students, and teach an advanced course in the area of specialization, as well as teaching introductory ecology and botany. Applicants for this tenure-track position should submit curriculum vitae, statement of research interest, and three letters of recommendation by 15 December to: Professor Leonard Bevers, Department of Botany and Microbiology, University of Oklahoma, Norman, Okla. 73019. The University of Oklahoma is an Equal Opportunity/Affirmative Action Employer.

**Cell Physiologist or Biologist—Research Associate.** Candidate with proven ability to collaborate in ongoing project to define role of cations in growth regulation. Tissue culture experience required. Salary: \$18,000, depending upon qualifications. Send curriculum vitae and names of three references to: F. Gary Toback, M.D., Ph.D., Department of Medicine, The University of Chicago, 950 East 59 Street, Chicago, Ill. 60637. Telephone: 312-947-6918. An Equal Opportunity/Affirmative Action Employer.

**CHAIRPERSON.** Department of Biochemistry—Candidates must have substantial background in academic medicine evidenced by a record of excellence in teaching, research, and leadership in medical and graduate education. Interested persons are encouraged to submit their credentials and curriculum vitae to: Dr. Donald E. Hill, Chairman, Biochemistry Search Committee, Slot 512, University of Arkansas College of Medicine, University of Arkansas for Medical Sciences, 4301 West Markham Street, Little Rock, Arkansas 72201. Affirmative Action/Equal Opportunity Employer.

### CHAIRPERSON—BIOCHEMISTRY

The Department of Biochemical Sciences at Princeton welcomes applications and nominations for a senior faculty position and chairperson. Candidates with a distinguished record of research and teaching in molecular biology and administrative skills are sought. Curriculum vitae and bibliography should be sent to: Search Committee, Department of Biochemical Sciences, Princeton University, Princeton, N.J. 08544. Princeton University is an Equal Opportunity/Affirmative Action Employer.

**POSTDOCTORAL POSITIONS** available in structural and physical biochemistry, molecular genetics, microbial physiology, animal virology, tumor biology, and cell biology. For specifics, write to: Postdoctoral Coordinator, Department of Biochemical Sciences, Princeton University, Princeton, N.J. 08544. Princeton University is an Equal Opportunity/Affirmative Action Employer.

## POSITIONS OPEN

### CELLULAR PHYSIOLOGIST

**FACULTY POSITION FOR A CELL PHYSIOLOGIST:** The Department of Physiology, University of North Carolina School of Medicine, Chapel Hill, invites applications for a tenure-track position in cellular physiology at the assistant or associate professor level. Preference will be given to applicants with research interests in cell-cell interactions, cell surface phenomena, cellular differentiation, or hormone action. A minimum of 2 years of postdoctoral experience is required. By 15 January 1981, candidates should send curriculum vitae and a summary of research plans, and have three letters of recommendation sent to: The Cellular Physiology Search Committee, Department of Physiology, Medical Research Wing 206H, University of North Carolina, Chapel Hill, N.C. 27514. An Equal Opportunity/Affirmative Action Employer.

**THE WEIZMANN INSTITUTE OF SCIENCE** is pleased to announce the availability of the **CHARLES H. REVSON CAREER DEVELOPMENT CHAIRS.**

The Revson Chairs are intended for promising scientists who are eligible for appointment as senior scientists at the Weizmann Institute.

The Revson Chairs are intended for either scientists who reside in Israel or for those who are considering making their residence in that country.

The appointments for Revson Career Development Chairs are for 3 years. Appointees found suitable at the end of this period will be invited to continue their employment as permanent members of the Weizmann Institute's scientific staff.

Application forms and further information are available from:

The Charles H. Revson Foundation Program  
c/o The Academic Secretary  
Weizmann Institute of Science  
Rehovot, Israel

**CHEMIST**—Long Island-based environmental consulting firm is seeking a chemist with experience in seawater analysis. Requires M.S. with 1 to 2 years of experience and knowledge of AAS. Some quality control responsibilities. Salary: \$16,000 to \$20,000, commensurate with experience. Send résumé to:

GEOMET Technologies, Inc.  
333 Crossways Park Drive  
Woodbury, New York 11797

### CHEMIST

## MOLECULAR BIOLOGIST/ BACTERIOLOGIST

Ph.D. with background in biochemistry. Must have demonstrated credentials, good communicating ability, and work well with people. Appointee will oversee project work and maintain commercial/scientific liaisons.

If this is you . . . send résumé, including salary history, to:

DEVELOPMENT MANAGER  
**HABER, INC.**

470 Main Road, Towaco, N.J. 07082  
An Equal Opportunity Employer

Fully trained, Board-certified **ENDOCRINOLOGIST** expert in radioimmunoassay (at least 3 years of experience) to carry out studies of angiotensin and vasopressin in brain and blood. Must have experience in peptide chemistry and animal physiology and animal brain surgery. Must be able to provide own salary support.

Affirmative Action/Equal Opportunity Employer. Interested candidates should send curriculum vitae, reprints, a brief description of research interests, and the names of three possible references to:

Eli S. Goldensohn, M.D.  
Coordinator COAP (Neurology)  
College of Physicians and Surgeons  
Neurological Institute  
710 West 168 Street  
New York, N.Y. 10032

## POSITIONS OPEN

### CLINICAL CHEMIST

The Department of Laboratories at the Long Beach Veterans Administration Medical Center, a 1250-bed facility, is currently seeking a Board-certified pathologist with expertise in clinical biochemistry to direct the Biochemistry Section of the clinical laboratories. A joint appointment with the associated University of California, Irvine, will be provided commensurate with academic accomplishments. Excellent opportunities for research and teaching are available. An Affirmative Action Employer. Send curriculum vitae and references to: S. T. Nerenberg, M.D., Ph.D., Chief of Laboratory Service, VA Medical Center, 5901 East 7 Street, Long Beach, Calif. 90822 by 29 December 1980.

### DEAN COLLEGE OF MEDICINE UNIVERSITY OF OKLAHOMA

Applications are invited for the position of Dean, College of Medicine. The College is located on the Oklahoma City Campus of the University of Oklahoma and is one of seven colleges comprising the Health Sciences Center. Applicants should submit current curriculum vitae before 31 December 1980 to:

Dean's Search Committee  
Office of the Provost  
University of Oklahoma  
P.O. Box 26901  
Oklahoma City, Okla. 73190

An Equal Opportunity/Affirmative Action Employer

**DEVELOPMENTAL BIOLOGIST.** Assistant or associate professorship available August 1981. The major teaching responsibility will be in developmental biology (both plants and animals), and appointee should be active in research, preferably in this area. Additional teaching will be in introductory courses and/or comparative vertebrate anatomy. Ph.D. required or imminent. Rank and salary commensurate with qualifications and experience. Curriculum vitae, course work summary, brief statement of teaching/research interests, and three letters of recommendation should be sent by 15 January 1981 to: Chairman, Department of Biology, Valparaiso University, Valparaiso, Ind. 46383. An Affirmative Action/Equal Opportunity Employer.

### DIRECTOR REHABILITATIVE ENGINEERING R & D VETERANS ADMINISTRATION

The Veterans Administration seeks qualified candidates for the position of director, Rehabilitative Engineering Research and Development Service (RER & DS). Director is responsible for nationwide program of R & D in devices, techniques, and concepts of rehabilitation encompassing areas of prosthetics, orthotics, orthopedics, spinal cord injury, sensory and mobility aids. RER & DS supports over 70 research projects budgeted at \$9 million in FY 81. Experience in rehabilitative engineering and in management of R & D programs are both essential. Applicants must be licensed to practice medicine. U.S. citizenship required. This is an excepted service position with base salary to \$50,112 per annum and bonus pay to \$27,500. Initial appointment is for 4 years, subject to extension. Submit curriculum vitae to: Richard J. Greene, Ph.D., M.D., Chairman, Search Committee (153), Veterans Administration, 810 Vermont Avenue, NW, Washington, D.C. 20420 or telephone: 202-389-2666. Application deadline: 31 December 1980. The Veterans Administration is an Equal Opportunity/Affirmative Action Employer.

**FACULTY POSITION**—The Department of Physiology, School of Medicine, University of Pennsylvania, Philadelphia, Pa., invites applications for the position of assistant professor. Candidates should have experience with modern biochemical and biophysical techniques in cellular active transport, including chemical synthesis. Teaching responsibilities include medical and graduate courses in physiology. Research experience sufficient to seek grant support as an independent investigator desirable. Send curriculum vitae and names of three references to:

Dr. Robert Forster, Professor and Chairman  
Department of Physiology  
School of Medicine  
University of Pennsylvania  
Philadelphia, Pennsylvania 19104

An Equal Opportunity/Affirmative Action Employer

**POSTDOCTORAL  
RESEARCH AWARDS**

Sponsored by the  
**BALLISTIC  
RESEARCH LABORATORY**  
in association with  
**THE NATIONAL RESEARCH COUNCIL**

The National Research Council will make awards in 1980 under the Resident Associateship Program, which provides awardees with opportunities to conduct experimental and theoretical research as visiting scientists and engineers in the fields of:

Applied Computer Sciences  
Applied Mathematics  
Probability Theory and Stochastic Processes  
Combustion Research  
Fluid Mechanics  
Continuum Mechanics  
Materials Sciences  
Nuclear and Radiation Physics  
Physical Chemistry  
Quantum Chemistry

in the Laboratory complex located in the beautiful Chesapeake Bay country of Maryland, within easy driving distance of the metropolitan centers of Baltimore, Philadelphia, and Washington, D.C.

Some programs are open to senior investigators as well as recent doctorates.

Further details on research programs may be obtained from: **Dr. L. J. Puckett, telephone: 301-278-2236**, at the Ballistic Research Laboratory, Aberdeen Proving Ground, Maryland.

For application materials and details on specific research opportunities, write promptly giving areas of interest to:

Associateship Office (608-E1)  
**NATIONAL RESEARCH COUNCIL**  
2101 Constitution Avenue, NW  
Washington, D.C. 20418

Postmark deadline for application is 15 January.

# Cellular Immunologist

An opportunity for professional growth and career advancement is immediately available in the Infectious Disease Research Section of American Cyanamid's Medical Research Division.

The selected candidate will participate in studies directed to the development of *in vitro* and *in vivo* models to assess the potential of synthetic compounds and natural products to restore or potentiate host resistance mechanisms in infectious and neoplastic diseases. Emphasis on cellular responses.

Applicants should have 3-5 years post-doctoral experience in cellular immunology with a demonstrated record of accomplishment.

American Cyanamid offers salary commensurate with experience, comprehensive benefits, and a location which provides a variety of cultural and recreational activities. Please send resume, including salary history, in confidence to: Ms. S. L. Johnson, Professional Employment Coordinator,



**CYANAMID**

**American Cyanamid Company**

Medical Research Division  
Pearl River, New York 10965

An Equal Opportunity Employer, male/female

## PH.D. PHARMACOLOGISTS FOR CARDIOVASCULAR RESEARCH

The Cardiovascular Pharmacology Research division of Lilly Research Laboratories has immediate need for individuals to assist in expanding its research effort aimed at the development of new drugs for the treatment of cardiovascular disease. Candidates should have a Ph.D. degree and postdoctoral experience in pharmacology or physiology.

**1. SENIOR PHARMACOLOGIST (PH.D.) IN CARDIOVASCULAR PHARMACOLOGY**—The preferred candidate will have experience in evaluating drug effects on systemic hemodynamics as well as a demonstrated ability to conceive and execute novel research. An interest in developing agents for the treatment of cardiac failure is desirable.

**2. SENIOR PHARMACOLOGIST (PH.D.) IN HYPERTENSION**—A position is available for a creative scientist to develop a research program in the hemodynamics of hypertension and to participate in ongoing research directed toward hypertensive therapy. The candidate should have a background in arterial, renal, and/or reflex mechanisms that regulate *in vivo* control of blood pressure.

**3. SENIOR PHARMACOLOGIST (PH.D.) IN BIOCHEMICAL PHARMACOLOGY**—This candidate should have an interest in the mode of action of cardiotonic agents at the biochemical level. Experience in biochemistry and a working knowledge of pharmacology are desirable.

Send résumé with salary requirements to:

Peter D. Cullen  
Senior Personnel Representative  
Eli Lilly and Company  
307 East McCarty Street  
Indianapolis, IN 46285



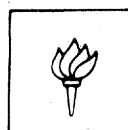
**Lilly Research Laboratories**

A Division of Eli Lilly and Company

An Equal Opportunity Employer M/F

# Chairperson Department of Biology

Applications and nominations for the position of Chairperson of the Department of Biology are invited. Candidates must have a superior record of research in one of the major fields of Biological Science and be familiar with current scientific methods and concepts across a broad spectrum of biological sub-disciplines. Candidates must exhibit a capacity to exercise leadership in the development of first-rate instructional programs at both the undergraduate and graduate levels, including pre-medical education and doctoral training. The new Chairperson will have the responsibility for planning a major renovation of the Department's Research and Instructional Laboratories; recruiting new faculty; and developing consortial programs with the Basic Medical Sciences at the New York University Medical Center, as well as with other science departments at our Washington Square campus. Salary fully negotiable. Submit applications and nominations by December 15, 1980, along with curriculum vitae, research plans and a list of five references to:



**NEW YORK UNIVERSITY**

Office of the Dean of Arts and Science  
5 Washington Square North  
New York, N.Y. 10003

Attn: Prof. Edward McNelis, Chairperson  
Biology Search Committee

An Equal Opportunity/Affirmative Action Employer

## POSITIONS OPEN

### EPIDEMIOLOGIST—SECTION HEAD

The Department of Preventive Medicine, New York State College of Veterinary Medicine, Cornell University, Ithaca, N.Y., is seeking an innovative health professional (D.V.M., M.D., D.D.S., Ph.D.) responsible for the direction of professional and graduate programs in epidemiology at the Cornell campus and for the coordination of these programs with the Cornell Medical School in New York City. The successful candidate will teach a graduate-level course in epidemiological methods, develop a competitive research program in epidemiology, and assume administrative responsibility for the section of epidemiology (currently includes four tenure-stream faculty). Salary and rank will be commensurate with training and experience. Qualified applicants should submit curriculum vitae and letter of intent to: **Dr. Raymond H. Cypess, Chairman, Department of Preventive Medicine, New York State College of Veterinary Medicine, Ithaca, N.Y. 14853.** *Cornell University is an Equal Opportunity/Affirmative Action Employer.*

### EPIDEMIOLOGIST

The New York State College of Veterinary Medicine, Cornell University, Ithaca, N.Y., invites applications for a tenure-track faculty position in the epidemiology section of the Department of Preventive Medicine. Candidates should possess a health degree (D.V.M., M.D., D.D.S., or Ph.D.) and a specialization preferably in clinical, environmental, or chronic disease epidemiology. Responsibilities include: assisting in the professional and graduate teaching program, conducting research, and contributing to health service programs of the department. Salary and rank based on credentials and experience. Qualified applicants should submit curriculum vitae and a letter of intent to: **Dr. Raymond H. Cypess, Chairman, Department of Preventive Medicine, New York State College of Veterinary Medicine, Cornell University, Ithaca, N.Y. 14853.** *Cornell University is an Equal Opportunity/Affirmative Action Employer.*

### PHARMACOLOGISTS

Applications are invited for faculty positions in a new Department of Pharmacology at Cornell University. Duties include the teaching of basic and/or clinical pharmacology to veterinary and postgraduate students. Candidates should have the D.V.M., M.D., or Ph.D. degree, should be firmly committed to a career of teaching, and have strong or potentially strong research programs. All areas of pharmacology are being considered in the development of the department. Preferred research interests are in mechanisms of action of pharmacological agents which affect basic cell processes. Applications and three letters of recommendation should be sent to: **Dr. Geoffrey W. G. Sharp, Chairman, Department of Pharmacology, New York State College of Veterinary Medicine, Cornell University, Ithaca, New York 14853.** *Cornell University is an Equal Opportunity/Affirmative Action Employer.*

### NORTHWESTERN UNIVERSITY PATHOLOGY FACULTY POSITIONS

The Department of Physiology invites applications for faculty positions in central autonomic regulation. We are especially interested in individuals working on central regulation of cardiovascular function or integrative aspects of neuroendocrine function. Academic rank and salary will be commensurate with experience. These positions could involve a joint appointment with a clinical department interested in supporting the appointees research. Applicants should submit curriculum vitae, statement of research plans, names of references, and representative publications to: **Faculty Search Committee, Department of Physiology, Northwestern University, 303 East Chicago Avenue, Chicago, Illinois 60611.** *Equal Opportunity/Affirmative Action Employer.*

### SYSTEMS SOFTWARE

System software staff of the computer-based Education Research Laboratory (PLATO), with duties in maintenance, development, system management, and system design. Qualifications: bachelor's degree with experience in system software and/or CAT programming. Should be able to work on own initiative in group of 10 to 20 people. Starting salary: \$15,000 to \$19,000. Send letter and résumé to: **Dr. R. K. Rader, 252 ERL, University of Illinois, Urbana, Ill. 61801.** Closing date: 1 December 1980.

*The University of Illinois is an Affirmative Action/Equal Opportunity Employer.*

## POSITIONS OPEN

### ENVIRONMENTAL SCIENTIST

Ph.D.—B.S. with experience required to participate in programs concerned with evaluation and assessment of health effects, environmental effects and controls, exposure levels and controls, and risk assessment of industrial chemicals. No laboratory work is involved. Excellent writing skills are required.

Of particular interest are scientists with expertise in the following areas:

- Environmental Chemistry
- Inorganic Chemistry
- Physical Chemistry
- Process Chemistry
- Process Chemical Engineering
- Industrial Hygiene
- Toxicology
- Economics

Interested applicants may send résumés to:

**Personnel Director  
ENVIRO CONTROL, INC.  
11300 Rockville Pike  
Rockville, Md. 20852**

**FACULTY POSITION.** Assistant professor, tenure-track, in physical chemistry. Applicant should submit curriculum vitae and other relevant information, including research plans and requirements and names of at least three references, to: **Dr. M. R. Topp, Chairman, Search Committee, Department of Chemistry, University of Pennsylvania, Philadelphia, Pa. 19104.** Closing date: 15 January 1981. *The University of Pennsylvania is an Equal Opportunity/Affirmative Action Employer.*

**VISITING FACULTY POSITION IN ECOSYSTEM ANALYSIS AND CONSERVATION.** Temporary 1-year appointment with possibility of renewal, beginning fall 1981. Applications invited from biogeographers, ecologists, and physical geographers. Ph.D. required; some teaching experience preferred. Salary commensurate with qualifications and experience. Submit curriculum vitae and names of three referees not later than 10 January 1981 to: **Tom McKnight, Chair, Department of Geography, University of California, Los Angeles, Calif. 90024.**

**FACULTY POSITION** in physical chemistry or chemical physics. Applications or nominations are invited for an opening in the Department of Chemistry at Massachusetts Institute of Technology (MIT). Applicants should have demonstrated ability to do outstanding independent research in chemistry and show promise of excellence in teaching. Appointment will probably be at the assistant professor level, but applications and nominations for other levels will be considered. Candidates should submit curriculum vitae, a publications list, a description of research interests, and have three letters of recommendation sent not later than 15 February 1981 to: **Professor J. L. Kinsey, Room 18-399, MIT, Cambridge, Mass. 02139.** *MIT is an Equal Opportunity/Affirmative Action Employer.*

**FACULTY POSITION, IMMUNOLOGY.** The Department of Microbiology, College of Medicine, has an opening at the assistant or associate professor level. Responsibilities include teaching graduate and medical students. Candidates would be expected to develop a strong research program involving fundamental biochemical or genetic studies in an area of immunology. Applicants with substantial training or research experience in biochemistry and molecular biology are preferred. Postdoctoral experience is required. Send curriculum vitae and references to: **Dr. Paul S. Sypherd, Department of Microbiology, University of California, Irvine, College of Medicine, Irvine, Calif. 92717.** *An Affirmative Action Employer.*

### Faculty Position—WATER RESOURCES ENGINEER and/or Chemist

The Johns Hopkins University, School of Hygiene and Public Health, has a position open at the assistant professor level in the Division of Environmental Health Engineering, Department of Environmental Health Sciences. The position involves teaching and research in the water and waste-water program. Applicants should hold an earned doctorate in environmental engineering with a strong background in chemistry and a demonstrated ability to conduct laboratory and field investigations. *The Johns Hopkins University is an Equal Opportunity Employer and welcomes applications from qualified women and minorities.* Send curriculum vitae and references to: **Dr. Vincent P. Oliveri, School of Hygiene and Public Health, 615 North Wolfe Street, Room 6030, Baltimore, Md. 21205.**

## POSITIONS OPEN

### DIRECTOR

Marine environmental and oceanographic research institute. Newly acquired facility on Chesapeake Bay offers substantial opportunity for growth under creative and assertive leadership. Established research qualifications, broad scientific judgment, and administrative experience required. *The Johns Hopkins University is an Equal Opportunity Employer and welcomes applications from qualified women and minorities.* Write: **Chairman, Department of Environmental Health Sciences, Johns Hopkins School of Hygiene and Public Health, 615 North Wolfe Street, Baltimore, Md. 21205.**

### Yale University Department of Geology and Geophysics

Applications are solicited for a faculty position in **SOLID EARTH GEOPHYSICS** to begin in the academic year 1981-1982. Areas of interest to the department include seismology, exploration geophysics, mechanical and physical properties of rocks and minerals, geomagnetism, and tectonophysics.

*Yale University is an Equal Opportunity/Affirmative Action Employer and encourages women and members of minority groups to compete for this position.*

Curriculum vitae, publications, and the names of three or more referees should be sent by 31 January 1981 to: **Robert B. Gordon, Chairman, Department of Geology and Geophysics, P.O. Box 6666, New Haven, Conn. 06511.**

### Yale University Department of Geology and Geophysics

Applications are solicited for a faculty position in **PETROLOGY OR MINERALOGY** to begin in the academic year 1981-1982. Areas of special interest to the department include theoretical and experimental mineralogy, petrology, and field studies.

*Yale University is an Equal Opportunity/Affirmative Action Employer and encourages women and members of minority groups to compete for this position.*

Curriculum vitae, publications, and the names of three or more referees should be sent by 31 January 1981 to: **Robert B. Gordon, Chairman, Department of Geology and Geophysics, P.O. Box 6666, New Haven, Conn. 06511.**

**INSECT TOXICOLOGIST.** Assistant professor. Ph.D. or equivalent. Academic year, tenure-track position. Background in entomology and toxicology. Candidate is expected to develop a strong research program in basic or applied insect toxicology. Teaching responsibilities include environmental toxicology and insect toxicology. Application deadline: 1 January 1981. Applicants should forward curriculum vitae, transcripts, significant reprints, three letters of recommendation, and plans for developing a fundable research program to:

**Ronald J. Prokopy, Chairman, Search Committee  
Department of Entomology  
University of Massachusetts  
Amherst, Mass. 01003**

*An Equal Opportunity/Affirmative Action Employer*

### POSTDOCTORAL TRAINING

The Department of Pathology, New York State College of Veterinary Medicine, Cornell University, announces openings for postdoctoral training in veterinary pathology. The biphasic program emphasizes competency in anatomic pathology and advanced research training, eventuating in specialty Board-certification by the ACVP, and when appropriate, a Ph.D. in experimental pathology. Preference will be given to applicants with the following areas of specific interest: pathobiology of aging, comparative pathology (Cornell Medical College), laboratory animal pathology, zoo animal pathology, National Cancer Institute Residency Program, clinical pathology. Applications will be accepted through 31 January 1981; notification will take place prior to 31 March 1981. Previous experience in the field is desirable but not mandatory. Starting salary level is approximately \$13,000. Application materials (curriculum vitae and personal bibliography, official college transcripts, three professional references, and brief statement concerning career goals and availability) should be directed to: **Robert M. Lewis, D.V.M., Chairman, Department of Pathology, E205 Schurman Hall, New York State College of Veterinary Medicine, Cornell University, Ithaca, New York 14853.**

*Cornell University is an Equal Opportunity/Affirmative Action Employer.*

## POSTDOCTORAL FELLOWSHIP

SYNTEX, a leading multinational Pharmaceutical/Life Sciences firm on the SAN FRANCISCO PENINSULA, is offering a fellowship to a qualified individual, lasting 1-2 years in the Dept. of Physiology, Institute of Biological Sciences, SYNTEX RESEARCH, available immediately.

Qualifications desired are experience in male reproductive physiology including sperm metabolism, respiration and ultra structure. Collaboration with other groups at SYNTEX working in the physiology of reproduction is expected. Candidates should have strong background in biochemistry.

Minimum stipend is \$16,000 with good benefits. Send resume and names of 3 references to Dr. Brian H. Vickery, Dept. of Physiology, Institute of Biological Sciences, SYNTEX RESEARCH, 3401 Hillview Ave, Palo Alto, CA 94304. An equal opportunity/affirmative action employer.



## DIRECTOR OF ADMINISTRATION FOR THE BIOLOGICAL LABORATORIES

Position currently open for a Director of Administration for the Biological Laboratories, Harvard University. These laboratories currently house approximately 40 full-time faculty members, 160 graduate students, 60 postdoctoral fellows, 35 research assistants, and a technical staff of 35. Its annual budget is approximately \$5 million.

Reporting to the Dean of the Faculty of Arts and Sciences, the director will be responsible for the efficient operation of all technical and administrative services which support the teaching and research efforts of the faculty. Working with the Office of the Dean of the Faculty and the departmental chairmen, the director will help prepare and be responsible for the management of the annual budgets of the Biological Laboratories. The director will have the major responsibility for the planning and oversight of the maintenance of the Laboratories, will play a major role in planning and executing extensive laboratory renovations during the next several years, and will participate in seeking and securing funds from governmental and other sources for facilities, research, and renovations.

Candidates should possess a relevant doctoral degree in science or engineering or equivalent, and at least 5 years of experience in science or technical management is required. Familiarity with current federal regulatory policies and research support mechanisms is preferred. The ability to communicate effectively among different groups of people is necessary. And, above all, candidates must understand management problems from the viewpoint of the working scientist.

Applicants should submit curriculum vitae and names of three references to: Dean Henry Rosovsky, Faculty of Arts and Sciences, Harvard University, University Hall 5, Cambridge, Mass. 02138 before 15 December 1980.

Harvard University is an Equal Opportunity/Affirmative Action Employer.

## SUNY-BINGHAMTON ASSISTANT PROFESSORS

The Department of Biological Sciences at SUNY-Binghamton will make three tenure-track appointments at the assistant professor level beginning September 1981. The department, which has made 15 full-time faculty appointments since 1973, has a high level of external support of its research and Ph.D. programs, and occupies a modern, well-equipped building on a scenic campus. SUNY-Binghamton, according to Cass and Birnbaum's *Comparative Guide to American Colleges* (8th ed.), is the most selective public institution in the United States in its undergraduate admissions criteria.

We solicit applications from active researchers who will handle the additional duties indicated. An outstanding record of or potential for independent research is a necessary prerequisite.

**Ultrastructural Cell-Biologist.** Other Duties—(1) Administer electron microscopy laboratories, which include a full-time technician and one scanning and two transmission electron microscopes. (2) Teach or otherwise supervise the training of qualified graduate students in electron microscopy. (3) Teach advanced courses and/or seminars in area of specialization.

**Microbiologist.** Teaching—(1) One large-enrollment (about 100) microbiology course, with help of a preparator in addition to regular teaching assistants, one semester each year. (2) Half-course in clinical microbiology and/or an advanced course in an area of specialization in alternate semesters.

**Geneticist.** Teaching—(1) One large-enrollment (about 150 students) genetics course one semester each year. (2) Advanced courses in area of specialization in alternate semesters.

**Physiologist.** Teaching—(1) One of several large-enrollment physiology courses (80-100 students) one semester each year. (2) Advanced courses in area of specialization in the alternate semesters.

Applicants should send curriculum vitae, at least three letters of reference, reprints, succinct summary of research program, statement of teaching interests, and both home and business telephone numbers. Send applications to Department of Biological Sciences, SUNY-Binghamton, Binghamton, N.Y. 13901. Applications would be expedited if candidates would arrange to have letters of reference sent directly. Please address c/o the appropriate search committee(s): "Ultrastructure-Cell Biology Search Committee," or "Microbiology Search Committee," or "Genetics Search Committee," or "Physiology Search Committee." Deadline for receipt of applications is December 15. We are an equal opportunity-affirmative action employer.



**Princeton University**

## PLASMA PHYSICS LABORATORY

## RESEARCH POSITIONS IN EXPERIMENTAL AND APPLIED PHYSICS

The Princeton Plasma Physics Laboratory conducts major research programs in plasma physics related to the development of a magnetically confined, toroidal, controlled fusion reactor. The Laboratory now operates two large tokamak experiments, the Princeton Large Torus (PLT) and the Poloidal Divertor Experiment (PDX), as well as a number of small plasma research devices. A major new device, the Tokamak Fusion Test Reactor (TFTR), is under construction. The S-1 Spheromak experiment, which will test an innovative approach to magnetically controlled fusion, is in the design phase.

We need creative experimentalists and applied physicists with a doctoral degree or equivalent experience in the following areas:

- SURFACE PHYSICS
- DIAGNOSTIC PHYSICS
- DATA ACQUISITION AND ANALYSIS
- PLASMA PHYSICS
- THEORETICAL OR EXPERIMENTAL MHD PHYSICS
- CONFINEMENT AND CONFINEMENT DEVICE OPERATIONS

United States citizenship is not a prerequisite for employment. Letters of inquiry and resumes describing the applicant's academic training, experience and publications should be sent to PROJECT EGR-81, Princeton Plasma Physics Laboratory, P.O. Box 451, Princeton, N.J. 08544.

An Equal Opportunity/Affirmative Action Employer

## POSITIONS OPEN

### FACULTY POSITION DEPARTMENT OF CHEMISTRY AND BIOCHEMICAL SCIENCES OREGON GRADUATE CENTER

The Department of Chemistry and Biochemical Sciences invites applications for a faculty position in the area of plant molecular biology, tissue culture and/or gene transfer technology. Candidates must have extensive research experience in their field and will be expected to develop a strong research program in addition to classroom teaching at the graduate level. Applications should include curriculum vitae, a brief description of past, ongoing, and proposed research, and the names and addresses of at least three individuals well acquainted with their research and teaching abilities. Applications should be addressed to:

Office of the President  
Oregon Graduate Center  
19600 Northwest Walker Road  
Beaverton, Oregon 97006

*An Equal Opportunity/Affirmative Action Employer*

### FACULTY POSITION DEPARTMENT OF MATERIALS SCIENCE OREGON GRADUATE CENTER

The Materials Science Department is seeking a faculty person with strong interests in the wear research field. Research and/or teaching experience in wear-related program is desirable; background should contain a heavy emphasis in metallurgy and materials science. Responsibilities include expanding graduate-level wear research and education programs leading to M.S. and Ph.D. degrees. This position includes responsibilities for both federal and private research programs as well as extensive industrial liaison. Salary and position (assistant professor, associate professor, or professor level) commensurate with experience. Please send résumé to:

Office of the President  
Oregon Graduate Center  
19600 Northwest Walker Road  
Beaverton, Oregon 97006

*An Equal Opportunity/Affirmative Action Employer*

**MAMMALIAN PHYSIOLOGIST.** Four-year assistant professorship as a replacement for an RCDA recipient. Available September 1981. Teaching duties include a one-semester undergraduate human physiology lecture course annually and a graduate specialty course in alternate years. Research is definitely encouraged. However, space availability will depend upon applicant's area of specialty. Ph.D. required. Submit curriculum vitae, statement of research interests, and names of at least three references to: **Dr. Peter Abramoff, Chairman, Department of Biology, Marquette University, Milwaukee, Wis. 53233.** *An Equal Opportunity/Affirmative Action Employer.*

### NUTRITIONAL BIOCHEMIST

The Department of Nutrition, University of California, Davis, is seeking applicants for a tenure-track position at the assistant or associate professor level; 50 percent teaching; graduate level intermediary metabolism and undergraduate nutrition and metabolism; 50 percent research: independent research preferably in lipid metabolism but open in other nutritional areas. Interested persons send résumé, bibliography, transcripts (undergraduate and graduate), a statement of research and teaching interests, and the names of three references who may be contacted to: **W. C. Weir, Department of Nutrition, University of California, Davis, Calif. 95616.** *The University of California is an Affirmative Action/Equal Opportunity Employer and will welcome applications from members of minority groups and women.* Position available 1 July 1981. To ensure consideration, apply by 1 February 1981.

**PHYSIOLOGIST.** Tenure-track, assistant professorship, available for a mammalian physiologist beginning September 1981. Specific research area is of less significance than ability to establish a quality research program. Teaching undergraduate human physiology laboratory course annually and graduate specialty course in alternate years. Ph.D. plus postdoctoral experience required. Biology Department consists of 19 full-time faculty, including five physiologists with research specialties in neuro, muscle, and endocrine physiology. Submit curriculum vitae, statement of research interests and future directions, and names of at least three references to: **Physiology Selection Committee, Department of Biology, Marquette University, Milwaukee, Wisc. 53233.** *An Equal Opportunity/Affirmative Action Employer.*

## POSITIONS OPEN

### FACULTY POSITIONS CORNELL UNIVERSITY Department of Agronomy

Applications are invited for immediate openings in the areas of **SOIL GENESIS AND CLASSIFICATION**, and **BIOMETEOROLOGY**.

The rank for the position in soil genesis, morphology, classification, and soil survey is open. A Ph.D. degree in soil science is required. Experience in the National Cooperative Soil Survey and teaching at the college level are needed for appointment above assistant professor level. The primary responsibilities of the appointee will be teaching (40 percent) and research (50 percent). The incumbent will also act as New York State Soil Survey leader and will supervise Cornell Soil Survey staff.

The assistant or associate professor of biometeorology will devote two-thirds time to research and one-third time to teaching. Research will focus on new weather-related programs and on the causes and timing of weather events as they affect agriculture. A specific current interest is integrated pest management. Inquiries from meteorologists and persons in related disciplines are encouraged. The position requires a Ph.D. degree.

Applicants should send curriculum vitae, transcripts, and names of three references to: **R. F. Lucey, Chairman, Department of Agronomy, Cornell University, Ithaca, N.Y. 14853.**

*An Equal Opportunity/Affirmative Action Employer*

### LABORATORY ANIMAL VETERINARIAN FREDERICK CANCER RESEARCH CENTER (FCRC) FREDERICK, MARYLAND

A veterinarian with training or experience in laboratory animal medicine is required to assist in the development of an animal resources program at a large research center.

The primary function of the position is to manage the disease control and prevention program for a multiple-facility animal care operation.

Technical support is provided by a large laboratory dedicated to laboratory animal diagnostics and staffed by professional-level microbiologists and serologists. A staff of more than 100 provides other animal care services in more than 150,000 square feet of animal facilities.

FCRC is developing as a major biomedical research center and can provide a laboratory animal veterinarian with opportunities for growth and experience in management, training, research support, and research in laboratory animal medicine.

The Frederick area provides the many advantages of a small city in a rural area and is only 1 hour away from major cultural centers at Washington, D.C., and Baltimore. In addition, the metropolitan area contains one of the largest concentrations of laboratory animal care professionals in the world, which assures frequent interaction with colleagues.

To establish your interest in this position, telephone or write:

Louis J. Serrano, D.V.M.  
Director of Animal Resources  
FCRC  
P.O. Box B  
Frederick, Maryland 21701  
Telephone: 301-663-7259

### MICROBIOLOGIST

The Department of Laboratories at the Long Beach Veterans Administration Medical Center, a 1250-bed facility, is currently seeking a Board-certified pathologist with expertise in clinical microbiology to direct the Microbiology Section of the clinical laboratories. A joint appointment with the associated University of California, Irvine, will be provided commensurate with academic accomplishments. Excellent opportunities for research and teaching are available. *An Affirmative Action Employer.* Send curriculum vitae and references to: **S. T. Nerenberg, M.D., Ph.D., Chief of Laboratory Service, VA Medical Center, 5901 East 7 Street, Long Beach, Calif. 90822** by 29 December 1980.

### POSTDOCTORAL POSITION IN MAMMALIAN/ MICROBIAL DRUG METABOLISM

Available 1 February 1981. Biochemist with interest in mammalian and/or microbial metabolism of xenobiotics. Experience with microsomal and other metabolizing systems desired. Analytical expertise required. Salary commensurate with experience, and position renewable. Send résumé and three letters of recommendation directly to: **J. P. Rosazza, College of Pharmacy, University of Iowa, Iowa City, Iowa 52242; telephone 319-353-6578.**

## POSITIONS OPEN

### FACULTY POSITION IN BIOMEDICINAL CHEMISTRY UNIVERSITY OF NEBRASKA MEDICAL CENTER COLLEGE OF PHARMACY

A tenure-track position will be available 1 January 1981 in the Department of Biomedical Chemistry of the College of Pharmacy, University of Nebraska Medical Center. Applicants should possess the Ph.D. A pharmacy degree and postdoctoral experience are desirable. We are interested in an individual with a background in drug metabolism, immunology, chemical carcinogenesis, or drug receptors. The position involves team-teaching at the professional and graduate levels. The development of a viable research program is expected. Opportunities for interdisciplinary research exist. Salary and rank (assistant or associate professor) are commensurate with experience and qualifications.

Applicants should provide a complete résumé which includes the following: teaching experience and areas of interest, list of publications, three letters of reference, a brief summary of research experience, and an outline of research interests you expect to pursue. To apply, please contact: **Dr. Sidney J. Stohs, Professor and Chairman, Department of Biomedical Chemistry, College of Pharmacy, University of Nebraska Medical Center, Omaha, Neb. 68105.** *The University of Nebraska is an Equal Opportunity/Affirmative Action Employer.*

**METEOROLOGIST/CLIMATOLOGIST.** One year, nontenure-track position available pending grant funding; \$16,000 per year, academic or fiscal. Closing date for applications: 28 November 1980. Individual to work closely with a staff of interdisciplinary researchers undertaking reconstruction of historic climate records for the northeastern United States. Earned doctorate in meteorology/climatology and strong background in computer programming required. Postdoctoral research experience in climate reconstruction preferable. Experience in multidisciplinary analysis and grant writing strongly desired. *The University of Maine is an Equal Opportunity Employer.* Send curriculum vitae to: **Dr. Harold W. Borns, Jr., Director, Quaternary Studies, 304A Boardman Hall, University of Maine, Orono, Maine 04469.**

### MICROBIOLOGY/IMMUNOLOGY FACULTY POSITIONS

The Department of Microbiology, University of Texas Health Science Center at San Antonio, is undertaking a major commitment to excellence in research and teaching. We seek individuals who wish to establish strong and independent programs in humoral or cellular immunology, molecular and developmental biology-genetics, and microbial disease (viral, prokaryote, protozoal) pathogenesis. Each is a tenure-track, 12-month appointment with negotiable starting date. Candidates must possess relevant postdoctoral training and outstanding credentials.

Applicants are requested to send curriculum vitae, a brief statement describing research interests, and three letters of reference by 1 February 1981 to: **Joel B. Baseman, Chairman, Department of Microbiology, The University of Texas Health Science Center at San Antonio, 7703 Floyd Curl Drive, San Antonio, Texas 78284.** *An Equal Opportunity/Affirmative Action Employer.*

### MOLECULAR BIOLOGY MICHIGAN STATE UNIVERSITY

The Department of Biochemistry, Michigan State University (MSU), invites applications for several tenure-track faculty positions, one of which will be at a senior level. We encourage applications from candidates with strong credentials in areas of molecular biology such as regulation of gene expression and recombinant DNA technology. All appointments will be made at competitive salary levels and will include laboratory space for major size programs. Evidence of ability to teach undergraduate, graduate, and professional courses will be evaluated. Inquiries regarding the senior level position should be directed to: **Chairman, Department of Biochemistry.** For full consideration at the assistant professor level, send curriculum vitae, reprints, in press manuscripts, a statement of research and teaching interests, and written recommendations from three references by 1 January 1981 to: **Chairperson of Molecular Biology Search Committee, Department of Biochemistry, Michigan State University, East Lansing, Michigan 48824.**

*MSU is an Affirmative Action/Equal Opportunity Institution.*



# MONOCLONAL ANTIBODY RESEARCH & DEVELOPMENT

The Becton Dickinson Monoclonal Antibody Laboratory, located in the San Francisco Bay Area, seeks an experienced PhD-level Immunochemist, Immunologist or Biochemist to join our Research and Development Group. Applicants should be familiar with immunoassays, membrane biochemistry and methods for purifying and characterizing macromolecules. An interest in working with advanced instrumentation for flow cytometry and fluorescence-activated cell sorting would be advantageous.

We offer a creative work environment, excellent salary and the opportunity to be a significant contributor in the dynamic health care field. Please send your résumé and names of 3 references to: Charles M. Metzler, PhD

**BECTON DICKINSON**  
**MONOCLONAL ANTIBODY LABORATORY**  
506 Clyde Avenue

Mountain View, California 94043

An Equal Opportunity Employer M/F/H/V

**BECTON  
DICKINSON**

## RESEARCH OPPORTUNITIES IN ENERGY-RELATED FIELDS AT U.S. DEPARTMENT OF ENERGY RESEARCH FACILITIES

The U.S. Department of Energy's research facilities invite applications from qualified faculty and graduate and undergraduate students interested in participating in ongoing DOE energy-related research and development. The facilities are located in Carbondale, Illinois; Bartlesville, Oklahoma; Pittsburgh, Pennsylvania; Puerto Rico; Aiken, South Carolina; Oak Ridge, Tennessee; and Morgantown, West Virginia. Appointments may be made for the summer and a limited number for the academic year.

The program is managed for DOE by Oak Ridge Associated Universities.

Information and application materials may be obtained from:



Oak Ridge Associated Universities  
University Programs  
P.O. Box 117  
Oak Ridge, Tennessee 37830

This is an equal opportunity program open to qualified persons without regard to race, sex, creed, color, or national origin. The program is open to permanent resident aliens and U.S. citizens.

**Applications must be in by January 19, 1981.**

## Top Managerial Position in Pharmaceutical Research

As Management Consultants we are interested in establishing contact with experienced research managers.

For one of our clients, an important international chemical/pharmaceutical company, we are looking for the future head of a large research organisation based in German-speaking Europe, covering all fields from chemical synthesis to pharmacology and clinical research.

More important than a track record in either chemical, pharmacological or medical research is the qualification to plan complex R + D activities into the future, to maximise the given potential by adapting conception and organisation to a constantly changing technological and socio-political environment, and to understand, motivate and direct a large staff of experienced researchers.

This challenging position gives the right person the possibility to contribute, within a solid management team, to the further development of a highly reputable and successful company.

Required background: a degree in medicine, pharmacology, biology or chemistry; academic and/or industrial research experience; fluency in English and German. Extremely interesting conditions can be arranged for the right person.

If you or one of your acquaintances would be interested in a preliminary exchange of information, please contact

Max Rüegger  
President  
Consulting Partners AG  
Dufourstrasse 101

CH—8008 Zürich / Switzerland  
Tel.: 01-251.49.66

Complete professional discretion is, of course, guaranteed. You may feel free to contact us via third parties, if you so prefer.

## POSITIONS OPEN

**IMMUNOLOGIST.** Postdoctoral position available immediately for in vivo and in vitro studies of the immunologically active hormone-like peptide, tuftsin. Background in cellular or tumor immunology preferred. Send résumé and the names of three references to: **Dr. Kenji Nishioka, Surgical Research Laboratory, BF-426, The University of Texas System Cancer Center M.D. Anderson Hospital and Tumor Institute, Houston, Texas 77030. An Equal Opportunity Employer.**

## MEDICAL GENETICIST

Faculty position available: University of California, Irvine, Department of Pediatrics. Applicant must have M.D. or M.D./Ph.D. degree(s), have completed a fellowship in medical genetics, and have demonstrated research potential for an academic career. The level of appointment and salary will be commensurate with qualifications and experience. Interested individuals are requested to send curriculum vitae and names/addresses of three references to: **Beverly C. Morgan, M.D., Professor and Chair, or Kenneth W. Dumars, M.D., Professor and Chief, Division of Developmental Disabilities and Clinical Genetics, Department of Pediatrics, University of California Irvine Medical Center, 101 City Drive South, Orange, Calif. 92668. An Affirmative Action Employer.** Closing date: 15 December 1980.

## NEUROPATHOLOGISTS

The Pathology Departments of the University of California, Irvine, and the Long Beach Veterans Administration Medical Center are jointly seeking the services of two Board-certified neuropathologists for their conjoined programs in neuropathology. Assigned academic rank will be commensurate with experience and academic accomplishments. Excellent opportunities for scholarly activities, service, and research are available. *An Affirmative Action Employer.* Send curriculum vitae and references to: **S. T. Nerenberg, M.D., Ph.D., Chief of Laboratory Service, Long Beach VA Medical Center, 5901 East 7 Street, Long Beach, Calif. 90822 by 29 December 1980.**

**PALEONTOLOGIST.** Tenure-track position; assistant professor level; Ph.D. required. Teaching duties include invertebrate paleontology and historical geology. Excellent research opportunities, beginning February 1981. Send résumé and three letters of recommendation to: **Chairman, Department of Geoscience, Rider College, 2083 Lawrenceville Road, P.O. Box 6400, Lawrenceville, N.J. 08648.** Deadline for applications is 31 December 1980. *Rider College is an Equal Opportunity/Affirmative Action Employer.*

**PHARMACOLOGISTS** at the level of assistant and associate professor. The Department of Pharmacology, University of Minnesota, Duluth, School of Medicine, is seeking to fill two positions, one at the assistant and the other at the associate professor level. Both tenure-track positions are available as of 1 July 1981. Qualifications should include the Ph.D. or M.D. degree, research experience, and teaching interest in the areas of cardiovascular pharmacology, chemotherapy, or toxicology. Secondary consideration may be given to individuals whose expertise is in the areas of neuropharmacology, autonomic pharmacology, or endocrine pharmacology. Candidates for assistant professor should have 1 to 2 years of postdoctoral experience and demonstrated research productivity. Associate professor candidates should have at least 4 years of academic experience, including teaching and research, and a record of publication and ability to secure external funding. Those interested should send curriculum vitae, including a summary of teaching and research experience, list of publications, and the names of three references, to: **Dr. Richard Eisenberg, University of Minnesota, Duluth, School of Medicine, Duluth, Minnesota 55812 by 31 December 1980.**

*The University of Minnesota is an Equal Opportunity Educator and Employer and specifically invites and encourages applications from women and minorities. The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, creed, color, sex, national origin, or handicap.*

**SENIOR EM TECHNICIAN** needed to direct several funded research projects dealing with transmission and scanning electron microscopy of the vitreous, retina, PE, and choroid. Qualifications: B.A. preferred with several years of experience in all areas of TEM and SEM. Send résumé with references to: **Personnel Director, Estelle Doheny Eye Foundation, 1355 San Pablo Street, Los Angeles, Calif. 90033.**

## POSITIONS OPEN

**MOLECULAR BIOLOGIST.** Williams College, Biology Department, has an anticipated fall 1981 opening for a 2-year visiting appointment of a molecular biologist/biochemist to teach a one-semester course in biochemistry and another course in advanced molecular biology or related subspecialty. Ph.D. degree required. Send application, containing résumé, description of research interests, and three letters of recommendation, by 15 December to: **W. DeWitt, Chairman, Biology Department, Williams College, Williamstown, Mass. 01267. Equal Opportunity/Affirmative Action Employer.**

**PHARMACOLOGIST.** Emory University has a position open at the assistant professor or associate professor rank. Candidates must have doctoral or equivalent degree; for assistant professor rank at least 1 year of postdoctoral research experience and potential to develop an independent research program; for associate professor rank five or more years of experience in teaching and research in pharmacology or related discipline, evidence of excellent independent research, and current grant support. Strong commitment to teaching and research is essential. Preferred research interests are cardiovascular-renal system, autonomic nervous system, receptors, cellular and molecular pharmacology, or autacoids. Letters of application, curriculum vitae, a brief description of career goals and proposed research program, and three letters of recommendation must be received by 31 January 1981. Send to: **Dr. Neil C. Moran, Chairman, Department of Pharmacology, Emory University, Atlanta, Ga. 30322.**

*An Affirmative Action/Equal Opportunity Employer*

## PLANT SYSTEMATICS

The Department of Biology, Virginia Polytechnic Institute and State University (VPI & SU) invites applications for a tenure-track position at the assistant professor level. Applicants should have the Ph.D. degree. The candidate will be expected to develop an upper level or graduate course in higher plant systematics, participate in the botany teaching program, and maintain an active research program with graduate students pursuing M.S. and Ph.D. degrees in botany. Salary is competitive and commensurate with experience and productivity. Letters of application, curriculum vitae, a list of three to five references, a brief description of career goals and proposed research, and selected pertinent reprints must be received by 15 December 1980. Address to: **Dr. Bruce C. Parker, Chairman, Search Committee, Department of Biology, VPI & SU, Blacksburg, Va. 24061.**

*An Equal Opportunity/Affirmative Action Employer*

## PLANT ULTRASTRUCTURE

Anticipated assistant professor, tenure-track, specializing in any area of plant ultrastructure is sought for fall 1981. Excellent EM facilities (including JEOL 100CX TEM and Hitachi S500 SEM) are available; major instruments are under service contract and maintained by our technical staff. A Ph.D. is required. Postdoctoral experience and demonstrated ability to attract extramural funding are desirable. Teaching responsibilities include participation in general botany and a course in area of specialty. Establishment of a strong research program and supervision of graduate students are expected. Curriculum vitae, brief description of research interests and goals, and three letters of recommendation should be sent to: **Dr. Charles A. Schexnayder, Chairman, Department of Botany, Louisiana State University, Baton Rouge, La. 70803 by 15 December 1980. An Equal Opportunity/Affirmative Action Employer.**

**POSTDOCTORAL POSITION** available to study molecular biology of glyoxysomal enzymes, with emphasis on transcription of mRNA's and enzyme compartmentalization into glyoxysomes. Experience in enzyme purification, in vitro protein synthesis and/or membrane biochemistry desirable. Available immediately; salary competitive. Send résumé and three letters of reference to: **Dr. Wayne M. Becker, Department of Botany, University of Wisconsin-Madison, Madison, Wisconsin 53706. An Equal Opportunity/Affirmative Action Employer, M/F.**

**POSTDOCTORAL POSITIONS** available in Departments of Anatomy, Biochemistry, Microbiology, Pharmacology, and Physiology. Applicants must have a Ph.D. or M.D. degree. Positions available during 1980-1981. Send application to: (appropriate) **Department Head, Arizona Health Sciences Center, Tucson, Arizona 85724. An Equal Opportunity/Affirmative Action Employer.**

## POSITIONS OPEN

### POLAR OCEANOGRAPHER/ SEA ICE DYNAMICIST

A position is available under the Intergovernmental Personnel Act of 1970 for persons now employed in state/local government or in colleges and universities. This position is located within the Oceanic Processes Branch of the Environmental Observation Division of the Office of Space and Terrestrial Applications, NASA Headquarters. The position is for 1 year, with the possibility for renewal for an additional year. Pay will be at a level commensurate with experience, and will be established after a review of qualifications.

Candidates must have been employed by the university in a permanent position for at least 90 days or be a career employee of a state or local government. Candidates must also meet the federal qualification standards for the position. These are as follows: a degree in an appropriate field of science, plus 3 years of progressively responsible experience in duties related to the position.

This individual will be responsible for planning, developing, and implementing a scientific research program in satellite remote sensing of oceanic processes in polar regions. A background in polar oceanography, sea ice dynamics, or a closely related field is required; experience in remote sensing, although desirable, is not essential. A Ph.D. or equivalent training and experience is mandatory.

Interested parties should send a current résumé to: **NASA Headquarters, attention: Sarah Keegan, Code EPM-3, Washington, D.C. 20546.**

*Selection for this position will be made from otherwise eligible candidates without discrimination for any nonmerit reason such as race, color, religion, sex, national origin, politics, marital status, physical handicap, age, membership or nonmembership in an employee organization, or personal favoritism.*

**POSTDOCTORAL POSITION** for 2 years, starting January 1981. Salary: \$13,380. Biochemist with experience in ESR and absorption spectroscopy and affinity chromatography and heme-containing oxygen-activating enzymes. To study the mechanism of  $\text{NH}_3$  oxidation by enzymes of nitrosomonas. Send curriculum vitae, brief description of research interests, and three references to: **Dr. Alan Hooper, Genetics and Cell Biology, University of Minnesota, 250 BioScience Center, 1445 Gortner Avenue, St. Paul, Minn. 55108 by 15 December 1980. The University is an Equal Opportunity Educator and Employer and specifically invites and encourages applications from women and minorities.**

**POSTDOCTORAL POSITION** will be available as of January 1981 for research on the neurochemistry of the retina. The studies will revolve around the use of suicide inactivators of key enzymes in retinal neurotransmitter metabolism. A strong interest in biochemistry and neurochemistry required. Send curriculum vitae and the addresses of three references to: **Dr. Robert R. Rando, Department of Pharmacology, Harvard Medical School, 250 Longwood Avenue, Boston, Mass. 02115.**

**POSTDOCTORAL POSITION** available immediately to study nutrition and metabolism of essential fatty acids and related nutrients. Send résumé, publications list, and three references to: **Dr. Ralph T. Holman, Director, Hormel Institute, Austin, Minn. 55912. University of Minnesota is an Equal Opportunity Educator and Employer and specifically invites and encourages women and minority applicants.**

**POSTDOCTORAL and/or TECHNICAL.** Two positions in visual psychophysics/computer image processing available immediately. Qualifications include programming and hardware skills in both pixel and vector computer graphics systems, sophistication in spatial and temporal frequency analysis, and interest in higher order perception in humans. Please send résumé and three references to: **Dr. Naomi Weisstein, State University of New York at Buffalo, 4230 Ridge Lea Road, Buffalo, N.Y. 14226.**

**RESEARCH AND TEACHING.** Tenure-track position. Take major role in graduate and research programs in Department of Occupational Therapy. Requires Ph.D. in field related to OT (for example, physiology, psychology, special education); interests complementary to OT (rehabilitation of handicapped/disabled persons) and willingness to learn about the field. Send curriculum vitae and names of three references by 1 January 1981 to: **G. Morgan, Gifford Building, Colorado State University, Fort Collins, Colo. 80523. An Equal Opportunity/Affirmative Action Employer. Equal Opportunity Office: 314 Student Services Building.**

## Director of Environmental Sciences

Position available September 1981. Candidates should be outstanding scholars with strong research record in some applied area of environmental science and have made an important contribution to establishing environmental science as an integrated discipline. Should have substantial background in obtaining and managing research and institutional grants and experience in program development and administration. Anticipate filling position at rank of full professor; possibility of appointment to university professorship.

*An Equal Opportunity/Affirmative Action/Title IX Employer*

Send curriculum vitae, by 15 December 1980, to: **Dr. Claire Van Ummerson, Chairman, Search Committee, Deans Office, College of Arts and Sciences,**



University of Massachusetts at Boston  
Harbor Campus, Boston, Mass. 02125

## ESCUELA DE MEDICINA UNIVERSIDAD AUTONOMA DE CIUDAD JUAREZ PROGRAMA ESPECIAL PARA DOCTORADOS (Ph.d.-M.D.)

APARTADO POSTAL 231 TELEFONO 2-75-60 CD. JUAREZ, CHIH., MEXICO

The University Autónoma de Ciudad Juárez School of Medicine has established an additional route to the M.D. qualification whereby selected candidates who already hold a Ph.D. in biological, physical, or bioengineering science can enter an accelerated course of study, D.V.M. and D.D.S. degrees also can be considered for admission.

The Ph.D.-M.D. Program is now considering applications for the 7th class which commence sessions on June 1, 1981. The admission period is June through January and the deadline is January 31, 1981.

Successful students will complete the M.D. training within 25 months.

### LANGUAGE:

Spanish language instruction and assistance is given all year starting June 1, 1981 to June 1982.

### APPLICATIONS:

The Special Program is not using agencies for registration so, inquires for the Ph.D.-M.D. Program and requests for standard application forms must be addressed directly to:

**ELIAS ABBUD ABBUD, M.D.**

Chairman, Admissions Committee

**LUIS RAUL ABBUD ABBUD, M.H.A.**

Administrator

Universidad Autónoma de Cd. Juárez

Apartado Postal 231

Ciudad Juárez, Chih., MEXICO

### TUITION AND FEES:

Tuition is \$6000.00 for each of the two academic segments, Spanish language tuition is \$600.00. Fees include a registration fee of \$15.00 and an application and is non-refundable. Checks should be made payable to the Universidad Autónoma de Ciudad Juárez School of Medicine.

## POSTDOCTORAL RESEARCH AWARDS

Competitive awards for research—free of administrative duties—as visiting scientists in selected federal laboratories throughout the United States. Over 200 new awards offered by the National Research Council. Opportunity for specialized experience in experimental or theoretical research in fields of:

**ATMOSPHERIC & EARTH SCIENCES  
ENGINEERING • LIFE SCIENCES  
PHYSICS • CHEMISTRY  
ENVIRONMENTAL SCIENCES  
MATHEMATICS • SPACE SCIENCES**

Most of the 15 programs are open to non-U.S. nationals, and most are open to senior investigators as well as recent PhDs.

Application materials with details on research opportunities and laboratory locations are available from:

Associateship Office (JH 610-S3)  
**NATIONAL RESEARCH COUNCIL**  
2101 Constitution Avenue, N.W.  
Washington, D.C. 20418

Postmark deadline for applications:  
January 15.

**National  
Research Council**

National Academy of Sciences  
National Academy of Engineering Institute of Medicine

## BIOCHEMIST/IMMUNOLOGIST/ MICROBIOLOGIST

**Biochemical/Immunological Mechanisms at the  
Cellular/Molecular levels**

The Office of Naval Research is seeking a biochemist, immunologist, or microbiologist to serve as a Scientific Officer with responsibility for managing a contract research program involving university, government, and industrial laboratory efforts in defining biochemical and immunological mechanisms leading to improved means to alleviate operational stress on man.

Required qualifications include a Ph.D. degree in biochemistry, immunology, microbiology, or closely related fields (or equivalent combination of education and experience) plus three years of progressively more responsible professional experience in the research of biochemical and immunological mechanisms.

Starting salary is \$29,375 to \$31,118 depending on qualifications. The position provides promotion potential to the GS-14 level.

Interested applicants should send a Standard Form 171, Personal Qualifications Statement (available at Federal Job Information Centers), by 15 Jan. 1981 to:

**Office of Naval Research  
Director of Civilian Personnel  
Room 823, Ballston Tower #1  
800 North Quincy Street  
Arlington, VA 22217**

**Announcement #80-86  
(202) 696-4706**

U.S. Citizenship Required

An Equal Opportunity Employer

## POSITIONS OPEN

**POSTDOCTORAL POSITION IN CARDIOVASCULAR PHYSIOLOGY.** Available immediately. Emphasis on relation between oxygen consumption and blood flow and potential mediators of active hyperemia. Please send curriculum vitae and three letters of recommendation to: **Personnel/Manpower Division, Dr. E. L. Bockman, Department of Physiology, Uniformed Services University, 4301 Jones Bridge Road, Bethesda, Md. 20014.** An Equal Opportunity Employer.

**POSTDOCTORAL POSITION** available immediately for Ph.D. in biochemistry or molecular biology. Training or some background in recombinant DNA techniques and/or DNA sequencing preferred. Research involves the study of the regulation and synthesis of an enzyme of mammalian mitochondria. Salary commensurate with experience and competitive with postdoctoral fellowships. Send curriculum vitae and names of references to:

**Dr. Carol J. Lusty**  
Department of Biochemistry  
Public Health Research Institute  
of The City of New York, Inc.  
455 First Avenue  
New York, N.Y. 10016  
An Equal Opportunity Employer

**POSTDOCTORAL RESEARCH ASSOCIATE,** plant molecular biology. Immediate opening for recent Ph.D. to construct a plant cloning vector using the *Agrobacterium tumefaciens* Ti plasmid system. Applicants should send curriculum vitae and arrange for three letters of reference to be sent to: **Dr. Daniela Sciaky, Biology Department, Brookhaven National Laboratory, Associated Universities, Inc., Upton, Long Island, New York 11973.** Equal Opportunity Employer, M/F.

**POSTDOCTORAL RESEARCH ASSOCIATE** position is available immediately to collaborate in research on the regulation of hemoglobin synthesis by hormones during *Chironomus* development using molecular techniques. Experience in biochemistry and particularly in molecular procedures is preferred. The salary offered is competitive. Send curriculum vitae and ask at least three references to send letters to: **Dr. Hans Laufer, Professor, Genetics and Cell Biology Section, Biological Sciences Group, U-42, University of Connecticut, Storrs, Conn. 06268.** Equal Opportunity Employer

### POSTDOCTORAL RESEARCH ASSOCIATE

Position available beginning 1 January 1981 for studies on seed protein genes and the regulation of their expression. Research experience in the area of protein and nucleic acid biochemistry necessary. Starting salary: \$14,000 per year. Send résumé and three letters of reference to: **Dr. Brian Larkins, Department of Botany, Purdue University, West Lafayette, Indiana 47907.**

### NATIONAL SCIENCE FOUNDATION (NSF)

NSF, Division of Physiology, Cellular and Molecular Biology, is seeking qualified applicants to fill a 1- or 2-year rotational position as **PROGRAM DIRECTOR FOR THE CELLULAR PHYSIOLOGY PROGRAM.** The position is exempted from the competitive civil service at the EC-14/EP grade (equivalent to the GS-14/15), \$37,871 to \$50,112.50 per annum. The salary will be based on professional qualifications and experience. This program has been designed for the support of cellular studies that will include certain aspects of membrane structure and function, transport mechanisms, and specific features of cell surface phenomena. Candidates should have a Ph.D., significant research and administrative experience, as well as a broad understanding of current research in physiological and molecular cell biology. Interested candidates should send résumé to: **National Science Foundation, Personnel Administration Branch, Room 212, 1800 G Street, NW, Washington, D.C. 20550; attention: E. Paul Broglio.** For further information, telephone: 202-357-7841. NSF is an Equal Opportunity Employer.

**RESEARCH STAFF OPENINGS (two).** Animal experimental psychologists with training and/or interest in either early behavioral development or aging. Experience in physiological techniques and microprocessors desirable. Salary and rank open, depending on experience; 1 January starting date preferred. Send curriculum vitae with letters of recommendation to: **Byron A. Campbell, Department of Psychology, Princeton University, Princeton, N.J. 08544.** An Equal Opportunity/Affirmative Action Employer, M/F.

## POSITIONS OPEN

**POSTDOCTORAL POSITION** in experimental hematology available immediately for studies on cell-cell interaction for the regulation of hematopoiesis. Experience with in vitro culture of hematopoietic progenitor cells is desirable. Send curriculum vitae and three references to: **Dr. Saul J. Sharkis, Department of Oncology, Room 2-127, The Johns Hopkins School of Medicine, 600 North Wolfe Street, Baltimore, Maryland 21205.** An Equal Opportunity/Affirmative Action Employer.

**POSTDOCTORAL POSITION** available immediately for NIH-supported project to study mechanisms of translational regulation by bacteriophage T4; for example, see *J. Virol.* 32, 905 (1979). Desirable (but not obligatory) background: microbial genetics, in vitro translation, protein and nucleic acid purification, and immunology. Send résumé, plus letters directly from three or more references, to: **Dr. John Wiberg, Department of Radiation Biology and Biophysics, University of Rochester School of Medicine, Rochester, N.Y. 14642.** Telephone: 716-275-3841.

**POSTDOCTORAL RESEARCH ASSOCIATE** Position available immediately to study mechanisms of pathogenicity of *Pseudomonas aeruginosa* in insects. Experience in biochemistry, microbiology, or immunology preferred. Send résumé, including summary of research experience and three references, by 1 December 1980, to: **Dr. P. E. Dunn, Department of Entomology, Purdue University, West Lafayette, Ind. 47907.** An Equal Opportunity/Affirmative Action Employer.

**RESEARCH ASSOCIATE** with Ph.D. degree wanted to run laboratory dealing with amino acid and hormone measurements for clinical investigative studies.

Contact: **Philip Felig, M.D., Yale University School of Medicine, 333 Cedar Street, New Haven, Conn. 06510.**

*Yale University is an Affirmative Action/Equal Opportunity Employer. Applications from females and minority groups are encouraged.*

**RESEARCH ASSOCIATE.** A position is available immediately for a Ph.D. biochemist with experience in studying hemeprotein structure-function relationships to investigate mechanisms of hemeprotein-hemeprotein electron transfer. Salary commensurate with experience. The position is for 1 year, renewable. Send curriculum vitae and three letters of reference to: **Dr. G. Mauk, Department of Biochemistry, University of British Columbia, Vancouver, British Columbia, Canada V6T 1W5.**

**RESEARCH ASSOCIATE.** Immediate opening for an individual with a Ph.D. in life sciences to participate in a project involving the study of the effect of alcohol on cellular cytoskeletal components. The individual should be trained in biochemical and immunochemical techniques with experience in nonisotopic immunoassays and tissue culture. The position is available for 3 years at a starting salary of up to \$19,000 per annum plus benefits. The individual accepting this position will be expected to assist in the generation of new research funds and to serve as co-investigator on new projects. Please contact: **Dr. Harold M. Timberg, Alcohol Research Program (151), Veterans Administration Hospital, 11201 Benton Street, Loma Linda, California 92357.** Telephone: 714-825-7084, extension 2839.

**Research Associate, Ph.D. in physiology or biophysics** with experience in cardiac electrophysiology. Must also have demonstrated skills in the construction and use of Na and Ca selective microelectrodes for intracellular recording. Salary and rank related to experience and productivity. Send curriculum vitae, two references, and supporting material to: **Dr. H. A. Fozzard, Hospital Box 423, The University of Chicago, 950 East 59 Street, Chicago, Ill. 60637.** Affirmative Action/Equal Opportunity Employer.

**RESEARCH ASSOCIATE II IN SOIL PHYSICS**—Ph.D. degree in soil physics with strong background in soil physical chemistry. Experience in performing solute transport experiments. Candidate will determine physicochemical parameters and develop computer models which describe the transport of adsorbing chemicals, including radionuclides through unsaturated soil. Salary: \$18,024 per year. **Department of Agronomy, Box 30, New Mexico State University, Las Cruces, N.M., 88003.** Contact: **Dr. P. J. Wierenga, telephone: 505-646-2028.** An Equal Opportunity/Affirmative Action Employer. Deadline for applications: 30 November 1980.

## POSITIONS OPEN

**POSTDOCTORAL POSITION** available. Research in hormone binding, action, and degradation and receptor regulation in freshly isolated and primary cultures of hepatocytes. Contact: **John M. Amatruda, M.D., Department of Medicine, Endocrine-Metabolism Unit, University of Rochester School of Medicine, Rochester, New York 14642.** An Equal Opportunity Employer.

**RESEARCH ASSOCIATES.** Postdoctoral positions immediately available for individuals in pharmacology or chemistry. The appointment requires a protein or organic chemistry background. This position will be open until filled. Send curriculum vitae and the names of three references to: **Dr. James L. Way, College Hall, Washington State University, Pullman, Wash. 99164.** An Equal Opportunity/Affirmative Action Institution.

The **AUSTRALIAN NATIONAL UNIVERSITY** invites applications for appointment as **RESEARCH FELLOW** in **MOLECULAR CYTOGENETICS** in the Research School of Biological Sciences. This fellowship is supported by a grant from the Australian Research Grants Committee to Professor M. J. D. White for the investigation of the genetic system of a parthenogenetic insect species and its bisexual relatives. There is already a considerable background of knowledge on the chromosome architecture of these species. It is proposed that the research fellow should work on the repetitive nucleotide sequences, using a variety of molecular techniques, including cloning. It is anticipated that the successful applicant will have a Ph.D. and further research experience in a relevant field but not necessarily in cytogenetics. There is a commitment by the ARGC to support the research fellow for 3 years from the date of appointment in 1981. Applications welcome from persons on leave from other institutions. Salary range: A\$17,739 to A\$23,155 per annum (A\$1 = U.S.\$1.17). Superannuation, housing assistance, reasonable appointment costs. Applications to: **Registrar, P.O. Box 4, Canberra ACT 2600, Australia,** by 1 December 1980.

The **AUSTRALIAN NATIONAL UNIVERSITY** invites applications for appointment as **RESEARCH FELLOW** in **HUMAN BIOLOGY** in the John Curtin School of Medical Research. Applicants should have a Ph.D., or equivalent experience, especially in human biochemical genetics, and be capable of carrying out independent research. Previous involvement in studies using recombinant DNA technology will be an advantage. Further information may be obtained from the head of the department, **Dr. R. L. Kirk.** Salary range: A\$17,739 to A\$23,155 per annum (A\$1 = U.S.\$1.17). Appointment for 2 years with possible extension to 5 years. Applications welcome from persons on leave from other institutions. Superannuation, housing assistance, reasonable appointment costs. Applications to: **Registrar, P.O. Box 4, Canberra ACT 2600, Australia,** by 30 November 1980.

### SENIOR FULL-TIME FACULTY MEMBER DEPARTMENT OF COMMUNITY HEALTH

Senior full-time faculty member, Department of Community Health, School of Medicine, University of California, Davis. Rank and salary commensurate with experience and qualifications. Responsibilities include: teaching epidemiology and environmental, occupational, and community health; research; and participation in community service programs.

Requirements: M.D. and California licensure; Board-certification or -eligibility in preventive medicine/internal medicine; experience in graduate teaching, research and clinical aspects of preventive medicine and community health, with epidemiological background.

Direct inquiries to: **Chair, Search Committee, Department of Community Health, School of Medicine, University of California, Davis, Calif. 95616.** Final filing date: 31 December 1980. An Affirmative Action Employer.

**VISITOR APPOINTMENTS** are available for new and established Ph.D.'s for up to 1-year periods to carry out research in solar physics, solar-terrestrial physics, and related subjects. Applicants should provide curriculum vitae, including education, work experience, publications, the names of three scientists familiar with their work, and a statement of their research plans. Applications must be received by 15 January 1981 and they should be sent to: **Visitor Committee, High Altitude Observatory, National Center for Atmospheric Research (NCAR), P.O. Box 3000, Boulder, Colorado 80307.** NCAR is an Equal Opportunity/Affirmative Action Employer.

## SCIENTIFIC MANAGERS IN BIOTECHNOLOGY

### Industrial Genetics Division

A challenging new position has been created with the responsibility to manage the development of R & D programs that apply recombinant DNA technology to chemical and pharmaceutical industries, select areas of research, negotiate contracts, and monitor programs. The position also requires managing communications between biological and chemical scientists internally and externally. A Ph.D. with production line experience in the chemical and pharmaceutical industries is desired.

### Hepatitis Products

This managerial position requires state-of-the-art expertise in direct research and product development of hepatitis diagnostic products. A Ph.D. with postdoctoral experience is preferred. Research experience in hepatitis B virus plus background in virology and immunology is desirable.

Please forward your résumé, in confidence, to:

**Box 262, SCIENCE**

*An Equal Opportunity Employer*

## DEAN Medical School The University of Texas Health Science Center at Houston

Distinguished academician with demonstrated administrative record sought to take this 10-year-old school to maturity.

Correspondence should be directed to:

**Medical School Dean's Search Committee  
Office of the President  
The University of Texas  
Health Science Center at Houston  
Box 20036  
Houston, Texas 77025**

Telephone inquiries should be directed to:  
**Gwen Clopton at 713-792-4975.**

The Department of Geological Sciences at the University of Maine at Orono is seeking a geophysicist, a geochronologist, a metamorphic petrologist, and a marine sedimentologist. The first three will join a group investigating mountain systems, with particular emphasis on the New England Appalachians. Existing related staff include a structural geologist, an experimental petrologist, and a stratigrapher. The sedimentologist will join a group of Earth and Marine scientists with diverse interests including: benthic ecology, estuarine modeling, lacustrine sedimentation, glacial-marine sedimentation, and environmental geochemistry. All of these new individuals will join two new major research programs funded by the National Science Foundation. Applicants should have a Ph.D. and productive post-doctoral experience. Salaries and rank are commensurate with experience.

Vita and names of three referees should be sent to Professor Stephen A. Norton, Geological Sciences, 110 Boardman Hall, University of Maine at Orono, Orono, Maine 04469 by December 7, 1980. The University of Maine at Orono is an equal opportunity employer.

**Geophysicist.** Applicants should have experience in potential field and seismic methods, particularly as applied to investigations of subsurface structures and problems of plate tectonics. Familiarity with computer techniques and quantitative methods of data analysis is essential. Research responsibilities include integration of geophysical studies with ongoing geologic investigations of the Appalachian-Caledonian orogen and model studies utilizing existing gravity and magnetic data. The successful applicant is expected to develop cooperative research projects with other members of the group. Teaching responsibilities include a course in geophysical principles and a seminar. This is a tenure-track position.

**Geochronologist.** Applicants should have a well-rounded background in both stable and unstable isotope systematics and specialize in one or more of the following geochronological methods:  $\text{Ar}^{40}/\text{Ar}^{39}$ , Rb-Sr, or U-Th-Pb. The geochronologist is expected to participate in studies bearing on orogenesis of the Appalachian-Caledonian system and to develop cooperative research projects with other members of the group. Teaching responsibilities include a course in isotope geology and an advanced course in his/her specialty. This is a tenure-track position.

**Metamorphic Petrologist.** Applicants should possess an intimate knowledge of mineral associations, an overview of the relationship of metamorphism to mountain building, and the ability to apply thermodynamics/kinetics to problems of metamorphic petrology. The researcher is expected to participate in ongoing studies concerned with the Appalachian-Caledonide orogen and to develop cooperative research projects with others in this group. Research should combine field and laboratory studies. Teaching responsibilities include a course in petrography and one or more advanced courses in metamorphic petrology. This is a tenure-track position.

**Marine Sedimentologist.** Applicants should have expertise in fine-grained sediments. Training should include a strong background in the fundamental and quantitative aspects of sediment transport mechanics. Interest and past research should be in the application of this background to field-oriented studies of sedimentary processes in the coastal environment. Training should include experience in the application of statistical and computer techniques to solving field problems. Experience with geochemical methods would be useful.

The successful applicant will be expected to interact extensively with the staff, to obtain extramural support, and to conduct research in the Maine coastal zone. Teaching responsibilities include a course in sediment transport and a specialty course in alternate years. The position is non-tenure track with annual reappointment (for up to 5 years). The appointment may be joint between Geological Sciences and Oceanography.



## WORKSHOP

**Subarctic Pacific Ecosystem Research (SUPER), a Workshop.** A workshop is planned to discuss the status and research perspectives of pelagic ecology in the subarctic Pacific Ocean. The organizers seek detailed understanding of this principal example of a "balanced" pelagic ecosystem. The workshop will be 23 to 26 February 1981 in Seattle. Support is available for some qualified investigators to attend. For further information, write: **Charles B. Miller, Scripps Institution of Oceanography (A-028), University of California, San Diego, La Jolla, Calif. 92093.**

## GRADUATE STUDY

### GRADUATE STUDY UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE

The Biomedical Graduate Program offers graduate training in anatomy and cell biology, biochemistry, microbiology, pathology, pharmacology, and physiology.

Stipends to cover tuition and living expenses are available to qualified applicants. For application forms, contact: **Dr. Peter Ove, Director, Graduate Division of Biomedical Sciences, School of Medicine, University of Pittsburgh, Pittsburgh, Pa. 15261. An Equal Opportunity/Affirmative Action Institution.**

## PROGRAMS

**POSTDOCTORAL TRAINING IN ENVIRONMENTAL AND INDUSTRIAL TOXICOLOGY.** Thomas Jefferson University will again conduct a 2-year combined M.S.-postdoctoral program for holders of the Ph.D. in chemistry, biology, and related fields beginning July 1981. Program includes course work, research, toxicologic evaluation, methodology, and field experience in industrial laboratories. It leads to the M.S. (professional) degree in toxicology. A limited number of positions provide federally funded postdoctoral level stipends (minimum \$13,300 per year, plus tuition and health insurance). Program is also open to applicants sponsored by industrial firms. Apply to: **R. C. Baldrige, Dean, College of Graduate Studies, Thomas Jefferson University, Philadelphia, Pa. 19107. Telephone: 215-928-8982.**

### SEVENTH SUMMER PROGRAM IN METHODS OF IMMUNOLOGIC RESEARCH AND DIAGNOSIS

The seventh biennial program on current methods of immunologic research and diagnosis will be offered by The Ernest Witebsky Center for Immunology of the State University of New York at Buffalo, 1 to 13 June 1981. This will consist primarily of a combination of core and elective practical laboratory exercises to allow the participant to become acquainted with the techniques by personally carrying them out at the bench complemented by demonstrations, lectures, and discussions. The entire program is designed to provide the participant with a survey of presently available methodology and insight into the underlying immunologic principles. It is open to individuals at the postdoctoral level, supervisory senior technologists, and graduate students beyond the master's level.

Further information may be obtained from: **James F. Mohn, M.D., Director, The Ernest Witebsky Center for Immunology, State University of New York at Buffalo, 210 Sherman Hall, Buffalo, New York 14212; telephone: 716-831-2848. The deadline for application is 31 March 1981.**

**PRE- AND POSTDOCTORAL TRAINING IN ENVIRONMENTAL TOXICOLOGY.** Interdepartmental program leading to Ph.D. in either biochemistry and biophysics, food science and technology, or pharmacology and toxicology. Research emphasis: metabolism and mode of toxic action of environmental contaminants. Postdoctoral position requires degree in chemistry, biochemistry, or biological sciences. Applications due January 1981. U.S. citizens or permanent residents only. NIEHS/NRS Award funding. **Dr. Ian J. Tinsley, Program Director, EHSC, Oregon State University, Corvallis, Oregon 97331. An Equal Opportunity/Affirmative Action Institution.**

## PROGRAMS

**DOCTORAL PROGRAM—PHARMACOLOGY**  
Medical University of South Carolina, Department of Pharmacology, seeks qualified candidates for Ph.D. program. Interdisciplinary environment with research capabilities ranging from gas chromatography-mass spectrometry through cell cultures and animal studies to clinical studies of patients with disease. Research training is available in biochemical pharmacology, cardiovascular pharmacology, drug metabolism, toxicology, analytical chemistry, clinical pharmacology. Stipends available. Contact: **Graduate Training Director, Department of Pharmacology, Medical University of South Carolina, Charleston, S.C. 29403.**

**PROFESSIONAL PROGRAM:  
DOCTOR OF OPTOMETRY (O.D.)**  
Accelerated program of two calendar years specifically designed for the Ph.D. in the sciences to earn the O.D. degree. Excellent opportunities in health-related teaching and research; opportunity for an independent professional career. Program starts May 1981. **Director of Admissions, The New England College of Optometry, 424 Beacon Street, Boston, Massachusetts 02115.**

## TRAINEESHIPS

**POSTDOCTORAL TRAINEESHIPS (two).** Two postdoctoral positions in molecular endocrinology are available immediately at the Medical Foundation of Buffalo, Inc. Studies include isolation, purification, and crystallization of proteins and enzymes involved in hormone biosynthetic pathways. Traineeships renewable with the opportunity for a subsequent permanent staff appointment. Stipend range: \$12,000 to \$16,000, depending upon experience. These are funded by NIH and are subject to section 472 of PHS Act (42 USC-2891-1). Send résumé to: **Dr. Vivian Cody or Dr. Yoshio Osawa, Medical Foundation of Buffalo, Inc., 73 High Street, Buffalo, N.Y. 14203.**

**POSTDOCTORAL TRAINEESHIP:** Cardiovascular Science Postdoctoral Research Training Program sponsored by NIH. Designed to provide postgraduate research training to individuals with M.D., Ph.D. degrees. Emphasizes neural control of circulation, acute myocardial inflammation, and the regulation of cardiac performance in normal and diseased states. Write to: **Robert O'Rourke, M.D., Department of Medicine, Director, Cardiology Division, University of Texas Health Science Center at San Antonio, San Antonio, Tex. 78284. Equal Opportunity Employer.**

## FELLOWSHIPS

### FELLOWSHIP IN HEMATOPATHOLOGY

Postresidency training and research in laboratory hematology including associated areas of coagulation, lymph nodes and immunology for Board-eligible pathologists. One-year program with option for second year. A University of California Irvine Medical Center and Memorial Hospital Medical Center of Long Beach integrated program. Positions available starting July 1981. Apply with curriculum vitae to: **Henry Simpkins, M.D., Division of Hematopathology, University of California Irvine Medical Center, Orange, Calif. 92668. An Equal Opportunity/Affirmative Action Employer.**

### FELLOWSHIP, CLINICAL CHEMISTRY

The University of California, Irvine, Department of Pathology, is recruiting for a fellow in clinical chemistry. Required: M.D. with at least 2 years in clinical pathology or clinical/anatomical pathology. Duties include supervision of resident staff in division of clinical chemistry and research (basic or clinical). *Affirmative Action Employer.* Send curriculum vitae and references to: **H. Simpkins, M.D., Ph.D., Chief, Division of Clinical Chemistry, University of California, Irvine Medical Center, Orange, California 92668, by 15 December 1980.**

**POSTDOCTORAL RESEARCH FELLOWSHIPS** available in respiratory physiology beginning July 1981. Send résumé plus the names of two references to:

**Dr. S. M. Tenney  
Department of Physiology  
Dartmouth Medical School  
Hanover, N.H. 03755**

*Dartmouth Medical School is an Affirmative Action/Equal Opportunity Employer.*

## FELLOWSHIPS

Applications are invited for **POSTDOCTORAL AND PREDOCTORAL FELLOWSHIPS** in an NIH-funded training grant in reproductive biology. The traineeships are organized around research in one of the laboratories of nine participating faculty members from five departments. Emphasis is in the areas of fertilization, implantation, placentalation, and endocrinology. Predoctoral students may pursue Ph.D. programs in anatomy, biochemistry, endocrinology, or physiology. These fellowships (subject to the National Research Act Public Law 93-348) are open to U.S. citizens, U.S. nationals, or individuals with permanent visa at the time of appointment. Initial appointments will be made for 1 year with renewals for a second year possible. The earliest starting date will be 1 July 1981. For information, write: **Dr. Allen Enders, Department of Human Anatomy, School of Medicine, University of California, Davis, Calif. 95616. The University of California is an Equal Opportunity/Affirmative Action Employer.**

### POSTDOCTORAL FELLOWSHIP

Postdoctoral position available July 1981, to study molecular biology of kinetoplast (mitochondrial) DNA in hemoflagellate protozoa, including the structure and expression of specific kinetoplast DNA genes. Experience in recombinant DNA techniques desired. Send curriculum vitae and names of references to:

**Dr. Larry Simpson  
Department of Biology and  
Molecular Biology Institute  
University of California  
Los Angeles, California 90024**

*The University of California is an Equal Opportunity/Affirmative Action Employer.*

The National Research Council is offering a limited number of 1-year resident **FELLOWSHIPS** for work on national policy issues. Scientists and engineers who are citizens and have received terminal degrees fewer than 10 years prior to date of application are eligible. The program is sponsored by the Andrew W. Mellon Foundation. Address inquiries to: **National Research Council, Fellowship Office, 2101 Constitution Avenue, NW, Washington, D.C. 20418.**

## MARKETPLACE



### Thermocouple THERMOMETERS

We make 14 thermometers, with digital or meter readout. All read in 2 secs, are extremely easy to use. Simply apply probe — read temperature.

Models  
BAT-4 BIOLOGICAL  
BAT-5 CRYOGENIC  
BAT-8 DIGITAL  
BAT-8 DIGITAL °C or °F  
TH CLINICAL

Unbreakable probes are steel sheathed including World's Smallest Microprobe, 0.01" dia.

**The Modern Way to Measure**

**BAILEY INSTRUMENTS INC.**  
Saddle Brook, N.J. 07662 • (201) 845-7252

Circle No. 19 on Readers' Service Card

### INTERFERON TESTING SERVICE

Bioassay Systems is offering an interferon testing service available for cell culture samples, blood specimens and commercial production lots. Interferon activity is measured using the Inhibition of VSV-induced CPE Effect in Human Foreskin Fibroblasts (FS-7). Benefits of service include rapid turnaround time, reliability, experience and cost-effectiveness. For more details, write or call **BIOASSAY SYSTEMS CORPORATION, 225 Wildwood Avenue, Woburn, MA 01801 (617) 933-9229.**

Circle No. 132 on Readers' Service Card

**U.S. DEPARTMENT OF ENERGY  
POSTGRADUATE RESEARCH IN  
FOSSIL ENERGY**

**MORGANTOWN ENERGY  
TECHNOLOGY CENTER**

**PITTSBURGH ENERGY  
TECHNOLOGY CENTER**

Postgraduate appointments in fossil energy research and development at the Morgantown and Pittsburgh Energy Technology Centers.

Applicants must have received an M.S. or Ph.D. degree in the physical or earth sciences, or engineering fields, within two years prior to the date of application. Candidates for advanced degrees must complete the requirements within six months.

Applicants must be U.S. citizens or permanent resident aliens.

Appointments will normally start in January or July for one year at the rate of \$15,000 (M.S.) and \$18,000 (Ph.D.). Travel allowances are provided.

Information and application materials may be obtained from:

**Oak Ridge Associated Universities  
University Programs  
P.O. Box 117  
Oak Ridge, Tennessee 37830**

This is an equal opportunity program open to qualified persons without regard to race, sex, creed, color, or national origin. The program is open to permanent resident aliens and U.S. citizens.

**PHYSIOLOGIST  
BIOMEDICAL STRESSES RELATED  
TO MILITARY OPERATIONS**

The Office of Naval Research is seeking a physiologist to serve as Scientific Officer with responsibility for managing a contract research program on physiological criteria leading to the definition of the safe limits for manned underwater work for flying very high performance aircraft and, for cold weather operations.

Required qualifications include a Ph.D. degree in mammalian or human physiology (or an equivalent combination of education and experience) plus three years of progressively more responsible professional experience in biomedical stresses related to military operations. An important area of experience would be appropriate research on the cardiovascular, respiratory, neuroendocrine, and/or thermoregulatory systems.

Starting salary is \$24,703 (GS-12) to \$38,118, (top GS-13 rate), depending upon qualifications. The position provides promotion potential to the GS-14 level.

Interested persons should send a Standard Form 171, Personal Qualifications Statement (available at Federal Job Information Centers), by 15 Jan. 1981 to:

**Office of Naval Research  
Director of Civilian Personnel  
Room 823, Ballston Tower #1  
800 North Quincy Street  
Arlington, Virginia 22217  
Announcement #80-85  
(202) 696-4706**

**An Equal Opportunity Employer**

**U.S. Citizenship Required**

# **Drug Metabolism Research Position**

If you are a PhD with either academic or industrial experience in analytical chemistry and pharmacokinetics, you can step into this professionally fulfilling position developing analytical methods for new drug candidates and characterizing metabolic and pharmacokinetic profiles.

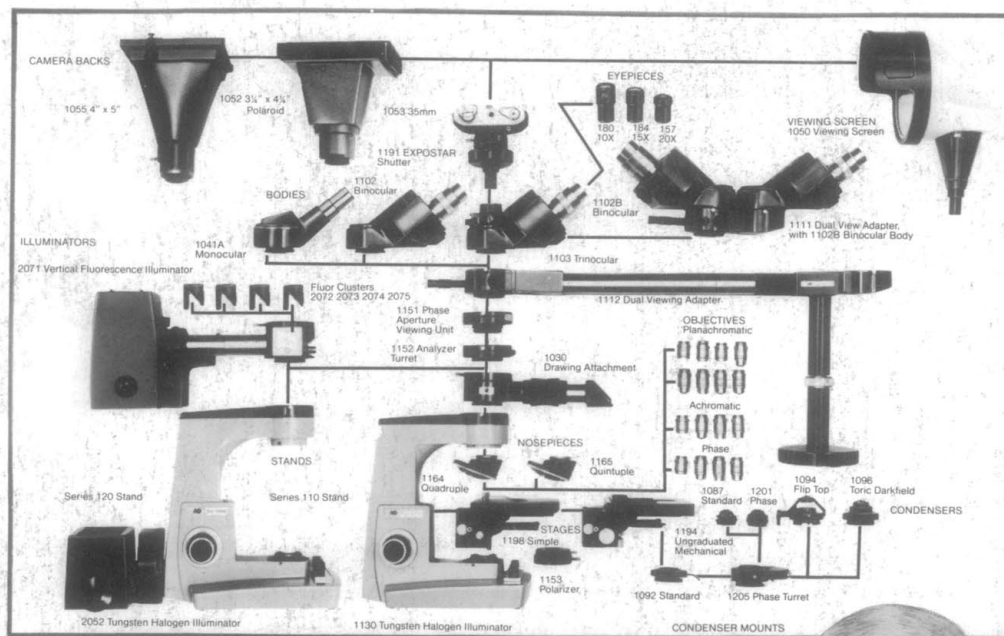
We are an expanding ethical pharmaceutical company located in the Northeast.

You'll receive generous compensation including an excellent benefits package and relocation assistance. Find out additional details by sending your curriculum vitae to:

**Box SC 621  
810 Seventh Avenue  
New York, New York 10019**

**An Equal Opportunity Employer M/F**

# The total microscope system.



AO Series One-Ten MICROSTAR® microscope

We call the AO One-Ten a microscope system because you can buy as much capability as you need. The "building block" design lets you add components whenever you need them. Models are available for brightfield/darkfield. Add phase contrast, fluorescence, dual view, multiview and photographic accessories.

The advanced One-Ten is widely accepted. Users like its contemporary styling and smooth, rich finish. But most of all, they like its performance and many features: the magnificent illumination from the bright tungsten-halogen illuminator with continuously variable intensity; the fine AO optics that give a flat edge-to-edge image over a 20mm field of view; the focusable nosepiece that allows the stage to remain secure and solid; the convenient low positioning of the coaxial coarse and fine focusing controls; plus much more.

Send for a detailed brochure or ask your AO dealer representative for a demonstration. American Optical, Scientific Instrument Division, Box 123, Buffalo, NY 14240.

**AO**  
American Optical®

Circle No. 54 on Readers' Service Card