

higher primates. He endorses Parker and Gibson's hypothesis that extractive foraging, the procurement of embedded foods, predisposes toward tool use because it is facilitated by extension of reach and amplification of mechanical force, two major functions of tools. Beck then turns to two examples of extractive foraging: chimpanzees' fishing for termites with grass stems and herring gulls' predatory shell dropping. He concludes that tool use per se is not evidence for special cognition, since, in both cases the observable attributes of the performances can be equally well explained as extensions of such cognitive processes as concentration, purposefulness, selectivity, premeditation, imagery, plasticity with regard to subtle variations in environmental conditions, strategies, and play during ontogeny.

The final chapter discusses the relationship of tools to human evolution. Beck reviews the archeological evidence and suggests that the cutting and breaking-open functions of early stone tools fit with extractive foraging both for animal and plant foods. He concludes by arguing that human intelligence does not rest on tool use alone but on a socioeconomic complex involving extractive foraging, tool use, a hunting-and-gathering division of labor, and linguistic communication.

Beck's arguments are entirely convincing. Every generalization he makes is carefully formed and fully supported by the data. His documentation is thorough and informed. The book is valuable simply as an encyclopedia of knowledge about animal tool use, and the analyses of the data are often brilliant. I strongly recommend it as fascinating reading to readers interested in animal tool use, comparative psychology, and human evolution.

JANE B. LANCASTER

*Department of Anthropology,  
University of Oklahoma,  
Norman 73061*

## Plant Biophysics

**Photosynthesis.** Physical Mechanisms and Chemical Patterns. RODERICK K. CLAYTON. Cambridge University Press, New York, 1981. xiv, 282 pp., illus. Cloth, \$32.50; paper, \$11.95. IUPAB Biophysics Series, 4.

Research on photosynthesis has gone through several stages in recent times. The development of radioactive tracer techniques in the late 1940's led to the application of this technology to the

study of the mechanism of carbon dioxide fixation, which culminated in the elucidation of the reductive pentose phosphate cycle in the early 1950's. This was followed during the 1960's by what might be referred to as the biochemical stage, which resulted in a general picture of electron transport processes in photosynthetic membranes. What has followed in the 1970's could be referred to as the biophysical stage and has resulted in a detailed understanding of the photo-physical aspects of photosynthesis including the nature of the interaction of light with pigments and the conversion of light energy into oxidized and reduced chemical products through the primary processes of photosynthesis.

R. K. Clayton's new volume considers in great detail this most recent stage of research, but the volume also includes numerous "digressions" that make it particularly suitable as a teaching vehicle. A major digression deals with the physics of spectroscopy, including a section on measurements with polarized light as applied to the photosynthetic membrane. The inclusion of such digressions tends to disrupt the flow of material in the volume, but it also will aid students who might be deficient in background in these subjects.

With respect to biophysical aspects of primary photochemistry, emphasis is placed on the results obtained with the bacterial reaction center, but Clayton stresses that in the more complicated oxygen-evolving system a similar mechanism of charge separation probably holds. The more rapid developments in the bacterial field are clearly linked to the availability of purified "reaction centers," and these entities and the processes that occur in them receive a great deal of attention. However, secondary electron transport processes and adenosine triphosphate synthesis involving chemiosmotic mechanisms are also considered, although in far less detail. To complete the coverage, Clayton includes a short chapter on carbon assimilation but does not attempt to make it comprehensive, since more detailed expositions of the subject are already available.

Clayton has taken the reader to the forefront in this field, and has presented a balanced view that indicates that not all questions are answered. Q-cycle models for electron transport in the cytochrome *b* and *c* region of photosynthetic bacteria could have been discussed more fully, since recent considerations of similar mechanisms in electron transfer reactions in chloroplasts are omitted. Such coverage would have again documented the striking similarity between the over-

all photosynthetic processes in these two cases. This is also a subject of interest to workers and students in the broader field of bioenergetics, particularly those concerned with mitochondrial energy transduction.

The volume succeeds in a most difficult task: it compiles and reviews a large amount of recent experimental work in a comprehensive and comprehensible manner. The level of presentation is suitable for advanced undergraduate or graduate students as well as for workers in the field. The work can therefore be recommended strongly both as a teaching volume and as a monograph for specialists.

RICHARD MALKIN

*Department of Plant and Soil Biology,  
University of California,  
Berkeley 94720*

## Books Received

**The Adrenal Medulla of Rats.** Comparative Physiology, Histology, and Pathology. Samuel W. Thompson and five others. Thomas, Springfield, Ill., 1981. x, 108 pp., illus. \$18.75.

**Advances in Biochemical Engineering.** A. Fiechter, Ed. Springer-Verlag, New York, 1980. Vol. 17. vi, 174 pp., illus. \$44.90. Vol. 18. viii, 194 pp., illus. \$44.90.

**Advances in Cancer Research.** Vol. 33. George Klein and Sidney Weinhouse, Eds. Academic Press, New York, 1980. viii, 326 pp., illus. \$37.50.

**Advances in Quantum Chemistry.** Vol. 12. Per-Olov Löwdin, Ed. Academic Press, New York, 1980. x, 326 pp., illus. \$48.

**Advances in Virus Research.** Vol. 26. Max A. Lauffer, Frederik B. Bang, Karl Maramorosch, and Kenneth M. Smith, Eds. Academic Press, New York, 1981. viii, 266 pp., illus. \$32.50.

**The Aging Brain.** Neurological and Mental Disturbances. Proceedings of a school, Erice, Sicily, Mar. 1980. G. Barbagallo-Sangiorgi and A. N. Exton-Smith, Eds. Plenum, New York, 1980. xiv, 394 pp. \$42.50. Ettore Majorana International Science Series, vol. 5.

**Albert Einstein's Special Theory of Relativity.** Emergence (1905) and Early Interpretation (1905-1911). Arthur I. Miller. Addison-Wesley Advanced Book Program, Reading, Mass., 1981. xxviii, 466 pp., illus. Cloth, \$39.50; paper, \$27.50.

**Annual Review of Neuroscience.** Vol. 4. W. Maxwell Cowan, Zach W. Hall, and Eric R. Kandel, Eds. Annual Reviews, Palo Alto, Calif., 1981. x, 556 pp. \$20.

**La Biosfera.** Entre la Termodinámica y el Juego. Ramón Margalef. Omega, Barcelona, 1980. xii, 236 pp., illus. Paper, \$17.

**Biotic Crises in Ecological and Evolutionary Time.** Proceedings of a symposium, Chicago, May 1980. Matthew H. Nitecki, Ed. Academic Press, New York, 1981. xii, 302 pp., illus. \$25.

**Bon pour Enseigner?** Roger Gilbert. Mardaga, Brussels, 1980. 182 pp., illus. Paper, BF 390. Psychologie et Sciences Humaines.

**Building Library Collections.** Policies and Practices in Academic Libraries. Hugh F. Cline and Loraine T. Sinnott. Lexington (Heath), Lexington, Mass., 1981. xvi, 172 pp. \$15.95.

**Burger's Medicinal Chemistry.** Part 3. Manfred E. Wolff. Wiley-Interscience, New York, ed. 4, 1981. xvi, 1354 pp., illus. \$100.

**Calcium-Binding Proteins.** Structure and Function. Proceedings of a symposium, Madison, Wis., June 1980. Frank L. Siegel, Ernesto Carafoli, Robert H. Kretsinger, David H. MacLennan, and Robert H. Wasserman, Eds. Elsevier/North-Holland, New York, 1980. xxii, 512 pp., illus. \$57.50. Developments in Biochemistry, vol. 14.

**Carcinogenesis.** Fundamental Mechanisms and Environmental Effects. Proceedings of a symposium, Jerusalem, Apr. 1980. Bernard Pullman, Paul O. P. Ts'o, and Harry Gelboin, Eds. Reidel, Boston,

(Continued on page 1420)

## BOOKS RECEIVED

(Continued from page 1382)

1980 (distributor, Kluwer Boston, Hingham, Mass.). x, 592 pp., illus. \$63. The Jerusalem Symposia on Quantum Chemistry and Biochemistry, vol. 13.

**Cationic Polymerisation.** Initiation Processes with Alkenyl Monomers. Alessandro Gandini and Hervé Cheradame. Springer-Verlag, New York, 1980. x, 290 pp. \$79.80. *Advances in Polymer Science*, 34/35.

**The Centrifugal Model Testing of Waste-Heap Embankments.** Yu. N. Malushitsky. Translated from the Russian edition (Kiev, 1975) by David R. Crane. A. N. Schofield, Ed. Cambridge University Press, New York, 1981. xii, 206 pp., illus. \$72.

**Centrifugation in Biology and Medical Science.** Phillip Sheeler. Wiley-Interscience, New York, 1981. xvi, 270 pp., illus. \$35.

**Divorce, Child Custody and the Family.** Formulated by the Committee on the Family, Group for the Advancement of Psychiatry. Mental Health Materials Center, New York, 1980. vi + pp. 785-972. Paper, \$12.95. Group for the Advancement of Psychiatry, vol. 10, Publication No. 106.

**Domestic Animal Behavior.** Causes and Implications for Animal Care and Management. James V. Craig. Prentice-Hall, Englewood Cliffs, N.J., 1981. xviii, 364 pp., illus. \$19.95.

**Doomsday 1999 A.D.** Charles Berlitz with collaboration, maps, and drawings by J. Manson Valentine. Doubleday, Garden City, N.Y., 1981. x, 228 pp. \$11.95.

**Drug Design.** Vol. 10. E. J. Ariens, Ed. Academic Press, New York, 1980. xii, 434 pp., illus. \$49.50. *Medicinal Chemistry*.

**Drug Problems in the Sociocultural Context.** A Basis for Policies and Programme Planning. Griffith Edwards and Awni Arif, Eds. World Health Organization, Geneva, 1980 (U.S. distributor, WHO Publications Centre USA, Albany, N.Y.). 258 pp. Paper, \$11.15. *Public Health Papers*, 73.

**Dynamics of the Upper Atmosphere.** Susumu Kato. Center for Academic Publications Japan, Tokyo, and Reidel, Boston, 1980 (distributor, Kluwer Boston, Hingham, Mass.). xiv, 234 pp., illus. \$29.95. *Developments in Earth and Planetary Sciences*, 01.

**Early Retirement—Boon or Bane?** A Study of

Three Large Corporations. Dean W. Morse and Susan H. Gray. Allanheld, Osmun, Montclair, N.J., 1981. xiv, 142 pp. \$23. *LandMark Studies. Conservation of Human Resources Series*.

**Electron Transfer Reactions.** R. D. Cannon. Butterworths, Boston, 1980. xii, 352 pp., illus. \$84.95.

**Electronic States of Molecules and Atom Clusters.** Foundations and Prospects of Semiempirical Methods. Giuseppe Del Re, Gaston Berthier, and Josiane Serre. Springer-Verlag, New York, 1980. viii, 178 pp. Paper, \$17.50. *Lecture Notes in Chemistry*, vol. 13.

**Experimental Evaluation of Antitumor Drugs in the USA and USSR and Clinical Correlations.** Abraham Goldin, Ira Kline, Zoya R. Sof'ina, and Anatoli B. Syrkin, Eds. National Cancer Institute, Bethesda, Md., 1980 (available from the Superintendent of Documents, Washington, D.C.). xiv, 180 pp. \$11. *National Cancer Institute Monograph* 55. NIH Publication No. 80-1933.

**Experiments in Contradiction.** Jean Piaget. Translated from the French edition (Paris, 1974) by Derek Colman. University of Chicago Press, Chicago, 1981. xviii, 310 pp. \$22.

**Federal Health Programs.** Problems and Prospects. Stuart H. Altman and Harvey M. Sapolsky, Eds. Lexington (Heath), Lexington, Mass., 1981. xxii, 250 pp. \$24.95. *University Health Policy Consortium Series*.

**Fertility Decline in the Less Developed Countries.** Papers from a AAAS symposium, Washington, D.C., Feb. 1978. Nick Eberstadt, Ed. Praeger, New York, 1981. x, 372 pp. \$32.95.

**L'Homme en Accusation.** De la Biologie à la Politique. Pierre P. Grassé. Albin Michel, Paris, 1980. 354 pp. Paper.

**How Twins Learn to Talk.** A Study of the Speech Development of Twins from 1 to 3. Svenka Savić. Translated by Vladislava Felbabov. Academic Press, New York, 1980. xvi, 196 pp. \$34.50.

**Human Navigation and the Sixth Sense.** R. Robin Baker. Hodder and Stoughton, London, 1981. vi, 138 pp., illus. Cloth, £8.95; paper £4.95.

**Hydrodynamic Stability.** P. G. Drazin and W. H. Reid. Cambridge University Press, New York, 1981. xiv, 526 pp., illus. \$77. *Cambridge Monographs on Mechanics and Applied Mathematics*.

**IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans.** Vol. 23, Some

Metals and Metallic Compounds. International Agency for Research on Cancer, Lyon, France, 1980 (U.S. distributor, WHO Publications Centre USA, Albany, N.Y.). 438 pp. Paper, \$30.

**International Review of Experimental Pathology.** Vol. 22. G. W. Richter and M. A. Epstein, Eds. Academic Press, New York, 1980. viii, 262 pp., illus. \$29.50.

**Interstellar Molecules.** Papers from a symposium, Tremblant, Quebec, Canada, Aug. 1979. B. H. Andrew, Ed. Reidel, Boston, 1980 (distributor, Kluwer Boston, Hingham, Mass.). xi, 704 pp., illus. Cloth, \$76.50; paper, \$34. *International Astronomical Union Symposium* No. 87.

**An Introduction to Genetic Analysis.** David T. Suzuki, Anthony J. F. Griffiths, and Richard C. Lewontin. Freeman, San Francisco, ed. 2, 1981. xviii, 912 pp., illus. + appendices. \$22.95.

**An Introduction to Personality.** Donn Byrne and Kathryn Kelley. Prentice-Hall, Englewood Cliffs, N.J., ed. 3, 1981. xiv, 592 pp., illus. \$18.95.

**Invitation to Physics.** Jay M. Pasachoff and Marc L. Kutner. Norton, New York, 1981. viii, 536 pp., illus. + plates. \$17.95.

**Jobs and Energy in Michigan.** The Next Twenty Years. Mark R. Berg, Paul H. Ray, and Mark A. Boroush with Mitchell J. Rycus. University of Michigan Institute for Social Research, Ann Arbor, 1981. xiv, 196 pp. Cloth, \$19.95; paper, \$11.95.

**Keith Lehrer.** Radu J. Bogdan, Ed. Reidel, Boston, 1980 (distributor, Kluwer Boston, Hingham, Mass.). x, 260 pp. Cloth, \$37; paper, \$12.95. *Profiles*, vol. 2.

**Leaving Early.** Perspectives and Problems in Current Retirement Practice and Policy. Jeanne Prial Gordus. W. E. Upjohn Institute for Employment Research, Kalamazoo, Mich., 1980. x, 88 pp. Paper, \$4.

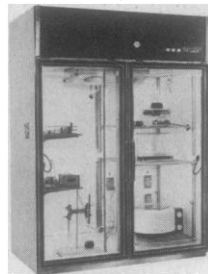
**Limits of Life.** Proceedings of a colloquium, College Park, Md., Oct. 1978. Cyril Ponnampuruma and Lynn Margulis, Eds. Reidel, Boston, 1980 (distributor, Kluwer Boston, Hingham, Mass.). xii, 200 pp., illus. \$26.50.

**Microprogrammed Control and Reliable Design of Small Computers.** George D. Kraft and Wing N. Toy. Prentice-Hall, Englewood Cliffs, N.J., 1981. xviii, 428 pp., illus. \$21.95.

**Mixed-Valence Compounds.** Theory and Applications in Chemistry, Physics, Geology, and Biology.

## You don't have to catch a cold in the name of science.

If you've been trying to conduct chromatography experiments inside a cold room, throw away your mittens and earmuffs and come out of the cold.



Because with Puffer-Hubbard's professional chromatography chambers, you can protect the integrity of your experiments while working in complete comfort.

You'll also enjoy better temperature control — a uniform 4°C — with our forced air cooling system, and have optimum

storage for buffers, reagents, fractionating equipment and other materials.

Puffer-Hubbard's chromatography chambers are available in 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. 397 on Readers' Service Card

## MERGER OR FINANCING?

Are you thinking of equity financing or merger of your company now or in the future? Beckman maintains a long-term search for top-quality technical growth opportunities serving medicine, science and industry. In addition to our traditional fields of instrumentation and precision electronic components, increased emphasis is being focused on clinical-diagnostic reagents, applied molecular biology and computer software technology. Perhaps you or an associate would like a copy of our Diversification Interests statement — for your present review or future reference. Available on request and in confidence.

ROBERT B. BROWN  
Director of Corporate Planning

**BECKMAN**

Beckman Instruments, Inc.  
2500 Harbor Blvd., Fullerton, CA 92634 USA

Circle No. 149 on Readers' Service Card

# Think less.

Nalgene FILMWARE® Scintillation Tubes cost less to buy, less to use.

Think about all your scintillation counting costs.

Now look at Nalgene FILMWARE Scintillation Tubes and see how they can cut *all* those costs dramatically.

Ours is a *flexible* plastic tube that gives you more for less.

Lower initial cost of the tubes.

\$60 to \$250 less per 1000 samples.

Less cocktail needed. As much as 75% less.

Less disposal volume. As much as 75% less.

Less chance of toluene inhalation.

Lower background count. As low as 7 cpm.

And no breakage or wall adsorption.

So start thinking "less", and you'll think more of us. Let us prove why the Nalgene FILMWARE Scintillation system belongs in your lab.

## Free.

Ask for our illustrated brochure. Contact your labware dealer, or write:

Nalge Company, P.O. Box 365,  
Rochester, New York 14602.

## SYBRON | Nalge

Circle No. 285 on Readers' Service Card

## Can't See? Can't Study!

### One camera used a Javelin Night Viewing Device

Javelin, with the widest range of Night Viewing Devices (NVDs) and accessories in the world makes your study easier to perform and your results more complete.

Whether you're studying the effects of pollution on hermit crabs or the social habits of insects or mammals, or working in the laboratory, it's a 24-hour a day endeavor. Javelin's NVDs will help you observe all facets of their activity without exposing them to any unnatural light, not even infrared, thus eliminating an extra variable in your study.

With a Javelin NVD you can study and photograph subjects in almost total darkness because the NVD provides a light gain greater than 50,000 times.

Two of Javelin's NVDs are particularly well adapted to scientific projects because they use a variety of lenses easily interchanged, connect and disconnect from various cameras quickly and are simpler to operate than your 35 mm camera. Using an NVD

and Photo Adaptor you can shoot in almost total darkness with a lens setting of f/4 using ASA400 film and view or shoot objects as close as ten inches or as far as 2,000 meters.

Our Javelin 221 is the most popular device for relatively short distances. Lightweight, it adds less than two pounds to your camera. The focal plane iris of this model allows you to reduce the field of view to concentrate on the particular portion of the screen of the greatest importance. For convenience, this model also mounts on a light tripod.

The Javelin 226 is a larger unit especially designed for long distance viewing. It features a biocular viewer, allowing you to stand twelve inches back of the NVD and look with both eyes, like watching TV. This viewer is on a swinging door mount with an optional adjacent swinging door to attach a television or photographic or movie camera. During field research you can view the scene by using the biocular view-

er and, within seconds, "change doors" to position a camera to photograph the scene. The model 226 weighs 13.5 pounds, heavy enough to support large telephoto lenses, but light enough to be easily transported.

Both models use an Automatic Brightness Control to eliminate adjustments when scanning from dark to illuminated areas. Gain is adjusted automatically.

Whether your project takes you underwater or above, whether it involves tagging prairie dogs or hospital research and evaluation, Javelin has done it all. Call us concerning your project. We may be able to get you out of the dark.

**JAVELIN ELECTRONICS**  
Subsidiary of Kidde, Inc.  
**KIDDE**

19831 Magellan Drive,  
Torrance, CA 90502 • (213) 327-7440  
Telex: 19-4860 JAVELIN TRNC

**Recover samples  
from gels and  
sucrose gradients.**

**Concentrate  
small samples  
fast.**



The ISCO Model 1750 concentrator offers you a new way to concentrate macromolecules. It's fast, convenient, inexpensive, non-disruptive, and adaptable to a wide variety of samples including DNA and RNA.

You can easily concentrate proteins, nucleic acids, certain whole cells and fragments, or any other water soluble macromolecule larger than 3500 MW and having electrophoretic mobility. During concentration, samples may also be separated from non-ionic media such as polyacrylamide gels or density gradient sugar solutions.

The Model 1750 will handle up to sixteen 10 ml samples, normally produces 50-fold concentrations in 90 minutes or less, and allows quick and easy recovery of concentrates. It uses no pumps or gases—samples are concentrated by a combination of electrophoresis and filtration.

Learn more about this versatile concentrator and other ISCO instruments. Dial toll free,

**[800] 228-4250**

(continental U.S.A. except Nebraska). Or write ISCO, Box 5347, Lincoln, NE 68505.



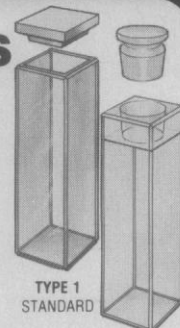
**Instruments with a difference**

**We're holding our prices  
down on CUVETTES!**

## UVONIC CUVETTES

Highest quality, fully fused cells for UV, visible and infrared in lightpaths (LP) of 2 to 10mm ... including Flow Cells, Jacketed Cells and Cell Washers.

- All cells in stock for immediate delivery.
- All cells matched at no extra cost.
- Satisfaction guaranteed.

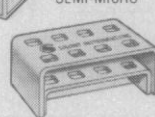


TYPE 23  
FLUORESCENT



**NOTE:** All Semi-Micro and Micro Cuvettes have frosted side walls which provide greater masking around the window. Black Wall Cells are useful when maximum masking for spectral purity is important.

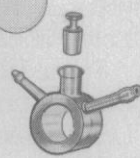
TYPE 9  
SEMI-MICRO



**FREE CELL RACK  
TO HOLD CUVETTES**  
with every order for  
4 or more Quartz  
or 8 or more  
Glass Cuvettes.



TYPE 26  
ANAEROBIC  
RECTANGULAR



TYPE 65  
JACKETED  
CYLINDRICAL  
CELL

**SEND FOR FREE CATALOG AND PRICE LIST**



**UVONIC CUVETTES DIVISION**

Savant Instruments, Inc.

221 Park Avenue, Hicksville, NY 11801 • (516) 935-8774

Circle No. 99 on Readers' Service Card

*"...SB&F functions for the sciences in ways that Saturday Review serves the humanities...in my opinion, you have achieved a lot in making science more inviting to the general public and to the millions of 'unfinished' scientists in our schools and colleges and university graduate schools."*

A. Gilbert Wright  
Museum Studies Coordinator  
George Washington University

## Science Books & Films

\$17.50/year (5 issues)

\$16.00/year AAAS members

\$32.00/2 years (10 issues)

\$30.00/2 years AAAS members

### Special Offer

Order today and receive a set of 10 bookplates as our gift to you.

Mail order to Ann Ragland, SB&F Subscriptions,  
Dept. 4a, 1515 Massachusetts Avenue, N.W.,  
Washington, D.C. 20005.



Proceedings of an institute, Oxford, England, Sept. 1979. David B. Brown, Ed. Reidel, Boston, 1980 (distributor, Kluwer Boston, Hingham, Mass.). viii, 520 pp., illus. \$60.50. NATO Advanced Study Institutes Series C, vol. 58.

**Modern Electricity/Electronics.** Gary M. Miller. Prentice-Hall, Englewood Cliffs, N.J., 1981. xvi, 414 pp., illus. \$19.95.

**Molecular Hydrodynamics.** Jean Pierre Boon and Sidney Yip. McGraw-Hill, New York, 1981. xviii, 418 pp., illus. \$49.95.

**La Morphogenèse de la Biologie aux Mathématiques.** Papers from three meetings, 1978. Yves Bouligand, Ed. Maloine, Paris, 1980. viii, 200 pp., illus. Paper. Recherches Interdisciplinaires.

**National Energy Profiles.** Kenneth R. Stunkel, Ed. Praeger, New York, 1981. xvi, 414 pp. \$32.95.

**Nature and Society in Central Brazil.** The Suyá Indians of Mato Grosso. Anthony Seeger. Harvard University Press, Cambridge, Mass., 1981. xvi, 278 pp., illus. \$27.50. Harvard Studies in Cultural Anthropology, 4.

**Neoplastic and Normal Cells in Culture.** J. M. Vasiliev and I. M. Gelfand. Cambridge University Press, New York, 1981. xiv, 372 pp., illus. \$79. Developmental and Cell Biology Series, 8.

**Order Statistics.** H. A. David. Wiley, New York, ed. 2, 1981. xvi, 360 pp. \$34.95. Wiley Series in Probability and Mathematical Statistics.

**Organic Crystals; Germanates; Semiconductors.** L. N. Demianets, G. A. Emelchenko, J. Hesse, N. Karl, A. N. Lobachev, and H. Maier. Springer-Verlag, New York, 1980. vi, 220 pp., illus. \$55.50. Crystals, vol. 4.

**The Organization of the Cerebral Cortex.** Proceedings of a colloquium, Woods Hole, Mass. Francis O. Schmitt, Frederic G. Worden, George Adelman, and Stephen G. Dennis, Eds. MIT Press, Cambridge, Mass., 1981. xxii, 592 pp., illus. \$50.

**Our Hungry World.** Antioch Review, Yellow Springs, Ohio, 1980. pp. 401-536. Paper, \$3.50. *The Antioch Review*, vol. 38, No. 4.

**Oxford Reviews of Reproductive Biology.** Vol. 2. C. A. Finn, Ed. Clarendon (Oxford University Press), New York, 1980. x, 274 pp., illus. + plates. \$60.

**Parental Care in Mammals.** David J. Gubernick and Peter H. Klopfer, Eds. Plenum, New York, 1981. xx, 460 pp., illus. \$39.50.

**Pattern of the Past.** Studies in Honour of David Clarke. Ian Hodder, Glynn Isaac, and Norman Hammond. Cambridge University Press, New York, 1981. x, 444 pp., illus. \$49.50.

**Pattern Recognition in Chemistry.** Kurt Varmuza. Springer-Verlag, New York, 1980. xii, 220 pp., illus. Paper, \$21. Lecture Notes in Chemistry, vol. 21.

**Public Choice and Rural Development.** Proceedings of a conference, Washington, D.C., Sept. 1979. Clifford S. Russell and Norman K. Nicholson, Eds. Resources for the Future, Washington, D.C., 1981 (distributor, Johns Hopkins University Press, Baltimore). xii, 300 pp. Paper, \$12. Research Paper R-21.

**Quantum Theory of Chemical Reactions.** Vol. 2, Solvent Effect, Reaction Mechanisms, Photochemical Processes. Raymond Daudel, Alberte Pullman, Lionel Salem, and Alain Veillard, Eds. Reidel, Boston, 1980 (distributor, Kluwer Boston, Hingham, Mass.). viii, 326 pp., illus. \$42.

**Radiation Transfer and Stellar Atmospheres.** Thomas L. Swihart. Pachart, Tucson, 1981. xii, 130 pp., illus. \$24. Astronomy and Astrophysics Series, vol. 12.

**Reality and Scientific Truth.** Discussions with Einstein, von Laue, and Planck. Ilse Rosenthal-Schneider. Thomas Braun, Ed. Wayne State University Press, Detroit, 1980. 150 pp., illus. \$13.95.

**Recurrence in Ergodic Theory and Combinatorial Number Theory.** H. Furstenberg. Princeton University Press, Princeton, N.J., 1981. xii, 202 pp. \$19.50. M. B. Porter Lectures, Rice University, Department of Mathematics.

**Structure and Function of the Circulation.** Vol. 2. Colin J. Schwartz, Nicholas T. Werthessen, and Stewart Wolf, Eds. Plenum, New York, 1981. x, 848 pp., illus. \$75.

**The Structure of the British Isles.** J. G. C. Anderson and T. R. Owen. Pergamon, New York, ed. 2, 1980. xiv, 252 pp., illus. Cloth, \$28; paper, \$13.50.

**Structure of Transition Zone.** S. Asano, Ed. Center for Academic Publications Japan, Tokyo, and Reidel, Boston, 1980 (distributor, Kluwer Boston, Hingham, Mass.). x, 188 pp., illus. \$26.50. Advances in Earth and Planetary Sciences 8.

**Technician's Handbook of Plastics.** Peter A. Granddill. Van Nostrand Reinhold, New York, 1981. x, 246 pp., illus. \$19.95.

**Technology and the Future.** A Philosophical Challenge. Egbert Schuurman. Translated from the Dutch edition (Assen, 1972) by Donald Morton. Wedge, Toronto, 1980. xxiv, 434 pp. \$19.95.

**Water Quality Management.** Peter A. Krenkel and Vladimir Novotny. Academic Press, New York, 1980. xii, 672 pp., illus. \$65.

# 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):** \$8 per millimeter; \$200 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

**Anatomist.** Ph.D. 1978. Presently NIH postdoctoral trainee. Current interest in cell biology of the eye (for example, intercellular junctions in the lens). Good experience in freeze-fracture, TEM, SEM, cytochemistry, protein chemistry, energy-dispersive x-ray analysis, and so forth. With publications and teaching experience in gross anatomy and histology. Seeking academic/research position. Box 158, SCIENCE. X

**Electron Microscopist.** Wishes to relocate to San Francisco-Palo Alto area; 20 years of experience with TEM of plants, animal central nervous system, and insect embryos. Also SEM. B.S. in chemistry. Prefers managing service or teaching facility in hospital, university, or industry. Available 1 September 1981. Box 130, SCIENCE. X

**Immunopharmacologist/Toxicologist.** Ph.D. 1979. Recipient of NCI New Investigator Award with funding through December 1983. Seeks research and/or teaching position. Box 152, SCIENCE. 6/19, 26

**Microbiologist.** M.S., M.B.A. (management/marketing). Recent graduate seeks entry-level project/product management or related position in scientific environment which can utilize research and administrative skills. Familiar with COBOL and FORTRAN languages. Hardworking. Box 157, SCIENCE. X

**Veterinary Pathologist.** ACVP Board-certified; 11 years of experience in laboratory animal and diagnostic pathology. Seeks industrial position, preferably in Sunbelt. Box 155, SCIENCE. 6/19, 26

## POSITIONS OPEN

### ASSISTANT PROFESSOR OF ANIMAL SCIENCES

Tenure-track appointment. D.V.M. and Ph.D. required. Research and teaching in animal reproduction or lactation. For information or application (curriculum vitae and three letters of recommendation) write to

Dr. Colin G. Scanes  
Thompson Hall, Cook College  
New Brunswick, N.J. 08903

## POSITIONS OPEN

The Office of Graduate Studies and Research at the University of Florida is seeking an **ASSISTANT DEAN FOR RESEARCH** whose responsibilities will include negotiating research and training grants and contracts and interfacing with sponsors and faculty. The Assistant Dean will be expected to work closely with faculty to identify potential funding sources and in the preparation and submission of proposals for extramural funding. Starting date is negotiable.

**Qualifications:** Earned doctorate and experience in programmatic and technical grant administration. Personal research experience desirable. Preference will be shown to applicants with biological sciences background.

**Salary:** \$25,000 to \$32,000, depending on qualifications.

**Applications:** Should include complete curriculum vitae with names, addresses, and telephone numbers of five (5) references. Applications must be received by 15 July 1981 addressed to:

Dr. William Louis Stern, Chairman  
Assistant Dean for Research Search Committee  
223 Grinter Hall  
University of Florida  
Gainesville, Florida 32611

For further information, please communicate with Dr. Stern at 904-392-1175.

*Equal Opportunity/Affirmative Action Employer*

University of Florida, Department of Medicine, seeks an **ASSISTANT IN MEDICINE** for the Division of Endocrinology. M.S. or Ph.D. degree and expertise in lipid enzymology and lipoprotein analysis required, and familiarity with isolated hepatocyte techniques desired. Salary range: \$13,000 to \$20,000. Application recruiting deadline: 15 July 1981. Anticipated starting date: 1 August 1981. Contact: Peter W. Stacpoole, Ph.D., M.D., Division of Endocrinology, Box J-226, J. Hillis Miller Health Center, University of Florida, Gainesville, Florida 32610.  
*An Equal Opportunity/Affirmative Action Employer*

### ASSISTANT PROFESSOR POSITION

The Department of Microbiology, St. Louis University Medical Center, invites applications for an appointment as Assistant Professor (tenure track). Applicants should have a Ph.D. or M.D. or both and have postdoctoral research training. Teaching and research competence should be in the area of microbial pathogenesis. Please send curriculum vitae, bibliography, and a discussion of your present research, future research plans, and the names of three referees to **Dr. Morton M. Weber, Department of Microbiology, St. Louis University Medical Center, 1402 South Grand Boulevard, St. Louis, Mo. 63104.**  
*An Equal Opportunity/Affirmative Action Employer. M/F/H.*

The School of Veterinary Medicine of the University of Wisconsin-Madison invites applications and nominations for the position of **ASSOCIATE DEAN FOR RESEARCH AND GRADUATE TRAINING.**

Candidates should have a distinguished career in higher education including extensive experience in research and graduate training programs. A knowledge of research funding mechanisms and sources of extramural support is necessary. Candidates must have the D.V.M. and/or Ph.D. degree and must be eligible for senior faculty status at the University of Wisconsin-Madison.

The School of Veterinary Medicine is a new school. It will accept its first class in fall 1983. Faculty recruiting has begun and will continue over the next 4 years. The associate dean will provide leadership in developing research programs in the School of Veterinary Medicine and will assist new faculty in identifying sources of extramural support for their research. Specifically, the responsibilities of the associate dean are: (i) research administration including grant review, administration of research resources and facilities, and administration of intramural research funds; (ii) administration of graduate programs including recruitment and admission of graduate students and coordination of the development of graduate programs in the academic departments; and (iii) coordination of postgraduate specialty training with the Associate Dean for Clinical Affairs.

Interested candidates should forward complete curriculum vitae and names and addresses of three references. Address correspondence to: **Dr. B. C. Easterday, Dean, School of Veterinary Medicine, Room 328, 333 North Randall Avenue, University of Wisconsin-Madison, Madison, Wisconsin 53715.** Closing date for applications is 15 August 1981, or until filled.

*The University of Wisconsin-Madison is an Equal Opportunity/Affirmative Action Employer.*

## POSITIONS OPEN

The Department of Pathology at the University of New Mexico is recruiting at **ASSISTANT PROFESSOR** level for an **IMMUNOLOGIST** to fill new full-time faculty position available 1 August 1981. Successful applicants should have Ph.D. in experimental pathology and 3 years of postdoctoral training in area of cellular immunology. Department is particularly interested in individuals with demonstrated research interests in lymphoid cell differentiation and ultraviolet light tumor biology. Expertise in use and application of flow cytometry is essential. Salary competitive. Forward curriculum vitae and arrange for three letters of recommendation to be submitted by 1 August 1981 to: **Robert E. Anderson, Chairman, Pathology Department, University of New Mexico School of Medicine, Albuquerque, N.M. 87131. Affirmative Action/Equal Opportunity Employer.**

### BIOCHEMIST

Required for joint university-industrial position. Individual should have a Ph.D. with a good background in protein separation and preferably some knowledge of connective tissue structure. University environment; starting salary \$18,000+, depending on experience. Position open immediately. Contact **Professor A. Jamieson, Department of Macromolecular Science, Case Western Reserve University, Cleveland, Ohio 44106.**

**BIOLOGY: Assistant Professor—Developmental Biology.** One-year appointment. Commitment to teaching. Background in classical embryology and development. Complete curriculum vitae with the names of three references to: **Richard K. Koehn, Dean, Biological Sciences, State University of New York at Stony Brook, Stony Brook, N.Y. 11794.** Application Deadline: 10 July 1981. *An Equal Opportunity/Affirmative Action Employer.* AK number 76C.

**CELL PHYSIOLOGIST.** A full-time faculty position is available August 1981 in the Department of Biology of St. Mary's University of San Antonio, a private school founded in 1952 and operated by the Catholic order of The Society of Mary. The Biology Department specializes in providing the undergraduate education for students who aspire to enter the health professions. Candidates are required to have a Ph.D. or M.D. and be qualified to teach courses in cellular physiology, general physiology, and general biology. Duties include teaching and counseling and enthusiastic participation in the department's premedical, predoctoral, and preallied-health professional programs. Participation in our cooperative education program, through which our students are provided with career-related work and other experience, is also expected. Faculty rank and salary will be awarded commensurate with experience. All qualified candidates are welcome; minorities and women are encouraged to apply. Applicants should submit a complete curriculum vitae, transcripts, and the names and addresses of three former supervisors who will provide references to: **Dr. Rosemarie Wahl Synek, Chairman, Department of Biology, St. Mary's University, One Camino Santa Maria, San Antonio, Texas 78284.**

### CHAIRPERSON—DEPARTMENT OF NEUROLOGICAL SURGERY

Applications are invited from candidates having research, clinical, and administrative experience in neurosurgery. *The University of Washington is an Affirmative Action/Equal Opportunity Employer.* Applications accompanied by curriculum vitae and full list of publications should be addressed to: **H. D. Patton, Search Committee Chairman, Department of Physiology and Biophysics, University of Washington School of Medicine SJ-40, Seattle, Washington 98195,** not later than 1 October 1981.

### CYTOGENETICS TECHNICIAN

Full-time position in nationally recognized diagnostic laboratory for experienced cytogenetics technician, responsible for chromosomal analysis on blood and amniotic fluid cells for prenatal evaluation.

B.S. in biology, master's preferred, and 1 to 2 years of experience in cytogenetics.

Excellent salary and benefits include 3 weeks paid vacation and free health insurance. Submit résumé to the address below or telephone: 617-893-3500, extension 210 or 211.

**SHRIVER MEDICAL CENTER**  
200 Trapelo Road  
Waltham, Mass. 02154

*An Equal Opportunity Employer*

## POSITIONS OPEN

### CELLULAR RADIATION BIOLOGIST

Regular 9-month faculty position in the Department of Radiology and Radiation Biology. Requirements include doctorate in biological or physical sciences and research and teaching experience. Duties include teaching cellular radiation biology, development of an independent research program, and participation in interdisciplinary research and teaching. Rank and salary negotiable. Send résumé and three letters which include an evaluation of the applicants research accomplishments, potential for independent research, and teaching abilities to: **Dr. James R. Bamberg, Chairman Search Committee, Department of Radiology and Radiation Biology, Colorado State University, Fort Collins, Colorado 80523.** Deadline for applications is 31 July 1981. *An Equal Opportunity/Affirmative Action Employer.* Equal Opportunity Office: 314 Student Service Building.

The University of California, Irvine, College of Medicine, is seeking a **CHAIR** for the **Department of Biological Chemistry.** Candidates will have demonstrated excellence in research and teaching and will have administrative experience. Candidates should be able to provide academic leadership for the department. Applications from all qualified candidates are welcome; the *University of California is an Affirmative Action Employer.* Send curriculum vitae before 7 August 1981 to: **Dennis D. Cunningham, Chair of Biological Chemistry Search Committee, Department of Microbiology, College of Medicine, University of California, Irvine, Calif. 92717.**

### CYTOPATHOLOGY UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE

The Department of Pathology and Laboratory Medicine is recruiting tenure-track faculty at the level of assistant professor. Candidates must be qualified to actively participate in diagnostic and teaching activities within cytology and also show proven ability to develop independent research activities within the areas of either automated cell analysis or molecular-level tumor biology. *The University of Pennsylvania is an Equal Opportunity/Affirmative Action Employer.* Please send curriculum vitae and names of references to:

**Barbara F. Atkinson, M.D.**  
Director, Cytopathology  
Hospital of the University of  
Pennsylvania—Box 600  
3400 Spruce Street  
Philadelphia, Pennsylvania 19104

**University of Michigan Medical School, Department of Radiology, Division of Radiological Physics and Engineering,** has a faculty position available for a **DIAGNOSTIC X-RAY PHYSICIST.** Primary responsibilities would be for acceptance testing, quality assurance, and performance evaluation of new and prototype commercial equipment in the main diagnostic x-ray divisions of the existing and planned new hospital. Existence of four in-house maintenance and radiological engineering positions provides the opportunity to establish ideal relations between radiological physics, in-house, and contract maintenance. Opportunities for research and for teaching of physics, maintenance, medical, and allied health personnel will depend on the individual's interest and experience. Academic rank and salary will be commensurate with experience and expected responsibilities. Applicants should have a graduate degree in physics, radiological physics, or other relevant disciplines and must have several years experience in diagnostic radiological physics. ABR certification in diagnostic radiological physics is preferred and eligibility for same is expected. Publications in practical aspects of radiological physics are desired. Please send inquiries, résumés, academic transcripts, reprints, and a list of several references to: **Paul L. Carson, Ph.D., Director, Division of Radiological Physics and Engineering, c/o Mrs. Olga Matlega, Department of Radiology, XS2314, University of Michigan Hospital, Box 013, Ann Arbor, Mich. 48109.** *A nondiscriminatory, Affirmative Action Employer.* Code 86HO.

### DIRECTOR OF BASIC RESEARCH

Outstanding opportunity to manage state-of-the-art basic research group utilizing tissue culture and recombinant DNA technologies and building blocks for new product development. This is in a "Fortune 500" corporation with an eight-figure annual commitment to research. Ph.D. required who is presently in a corporate R & D environment. Pharmaceutical industry experience preferred. Please send résumé in confidence to: **Box 156, SCIENCE.**

## POSITIONS OPEN

### OKLAHOMA STATE UNIVERSITY DEVELOPMENTAL PLANT MORPHOLOGIST

The Department of Botany invites applicants for a tenure-track position at the assistant professor level beginning 15 August 1981. This is a 10-month-per-year appointment.

This developmental plant morphologist may be involved in teaching BISC 1214 (Biological Sciences II), BISC 1220 (Current Topics in Biology), BISC 1303 (Principles of Biology), or BOT 3024 (Plant Diversity) and will develop an upper division or graduate course in his/her specialty.

This person must have a completed Ph.D. in developmental botany. Consideration will be given to research experience in *in vitro* culture techniques, genetic expression, and physiological or structural aspects of developmental botany. Postdoctoral experience is desirable. The person must also have a demonstrated commitment to excellence in teaching.

The successful applicant will be expected to add to the department's strength in developmental/structural botany; to work with persons in other departments who need help with plant development/structure problems; to develop a research program and work for outside funding to support it; and to train graduate students in the subject.

Send letter of application, including research interests, curriculum vitae, all transcripts, and names (no letters) of three references, by 10 July 1981 to:

**Dr. James K. McPherson**  
Acting Head, Department of Botany  
Oklahoma State University  
Stillwater, Okla. 74078

*Oklahoma State University is an Equal Opportunity/Affirmative Action Employer.*

**FACULTY POSITIONS.** Ranks commensurate with postdoctoral (Ph.D. and/or M.D.) experience in teaching and research. Instruction work in medical, paramedical, and graduate curriculums. Expertise in smooth muscle physiology with special interest in gastrointestinal tract and in respiratory physiology with special interest in nervous control. Send résumé and references to **Dr. Piero P. Foa, Department of Physiology, Wayne State University, School of Medicine, 540 East Canfield, Detroit, Mich. 48201.**

*An Equal Opportunity/Affirmative Action Employer*

### TWO FACULTY POSITIONS—BIOLOGY— NIAGARA UNIVERSITY

Two full-time tenure-track positions at the **Assistant Professor** level, starting 24 August 1981. Applicants for these positions must have both research and teaching experience in their areas of specialization. Applicants will be expected to teach 12 semester hours per semester and develop a research program in their respective areas. The appointees will have 9-month appointments which will include undergraduate and graduate teaching responsibilities, advisement, and research.

**BOTANIST:** The successful applicant should be able to teach most of the following courses: General Botany, General Biology Laboratory, Plant Taxonomy, Plant Anatomy, Plant Physiology, Plant Ecology, and Field Botany.

**PATHOPHYSIOLOGIST:** The successful applicant should be able to teach most of the following courses: Pathophysiology, Cell Biology, Cell Physiology, Basic Oncology, Animal Physiology, Pathology, and Pharmacology.

Send curriculum vitae, official transcripts of all undergraduate and graduate education, and at least three letters of reference to: **Dr. Lawrence J. Kiely, Chairman, Department of Biology, Niagara University, Niagara University, New York 14109.** *Niagara University is an Equal Opportunity/Affirmative Action Employer.*

### FACULTY POSITION IN BIOCHEMISTRY

The Division of Biochemistry at The University of Texas System Cancer Center, M. D. Anderson Hospital and Tumor Institute, invites application for an Assistant Professorship from qualified individuals with an interest in utilizing recombinant DNA techniques to study problems in mammalian gene expression. Please send a curriculum vitae, list of publications, names of at least three references to be used for letters of recommendation, and a summary of research interests to **Dr. Grady F. Saunders, Department of Molecular Biochemistry, The University of Texas System Cancer Center, M. D. Anderson Hospital and Tumor Institute, 6723 Bertner Avenue, Houston, Texas 77030.**

*An Affirmative Action/Equal Opportunity Employer*

## MEDICAL SCIENTISTS

The American Medical Association, Division of Drugs has opportunities for individuals with an MD and/or PhD in a medical science. Work and publication experience in academic, governmental or industrial clinical pharmacology is desirable. Principal responsibilities involve evaluation, writing and processing drug information for computerization and the text, **AMA-Drug Evaluations**.

Applicants must have drug expertise in any of the following areas: psychopharmacology-neurology; gastroenterology-metabolism; infectious diseases; and cancer chemotherapy.

Voluntary outside academic or practice activities to maintain biomedical skills are possible. The AMA can offer an attractive salary and excellent fringe benefit program. Please send CV or resume to:



Thomas J. Nilles  
AMERICAN MEDICAL  
ASSOCIATION  
535 N. Dearborn  
Chicago, Illinois 60610  
equal opportunity employer m/f

## RESEARCH SCIENTISTS

The Ames Division of Miles Laboratories, Inc., a leading manufacturer of clinical laboratory diagnostic products, has several opportunities for enthusiastic goal-oriented scientists with the ability to use physical chemical techniques in the study of complex biological systems.

Each successful candidate should have a Ph.D. degree in Chemistry with up to two years of postdoctoral experience plus specialized training and long-term interests in one or more of the following areas:

1. Biophysics or Biophysical Chemistry
2. Polymer Chemistry (the use of specific polymers to provide enhanced system performance)
3. Electrochemistry (the use and preparation of novel, biochemically sensitive electrodes)

The Ames Division is located in Elkhart, Indiana, a community of 50,000 population. We offer excellent recreational and educational facilities as well as convenient accessibility to the Chicago area. Excellent starting salary commensurate with experience plus a superior benefits program. Relocation expenses paid by the company. Please send complete resume, including salary requirements, in confidence to:

Curtis A. Brown  
Senior Placement Representative      Department 994

**MILES LABORATORIES, INC.**  
P.O. BOX 40      Elkhart, Indiana 46515



An Equal Opportunity Employer M/F

**GENERAL  
TIRE**

## Group Leader – Library Operations for Information Center General Tire Research

General Tire is a diversified Company which has always been deeply committed to maintaining a fully competitive position in tires, chemicals, plastics, athletic and industrial products. We enjoy a stable management and a modern well-equipped Research and Development Center staffed by 200 persons and located near our Corporate Headquarters in Akron, Ohio.

An important part of our resources in technology is our Information Center, housed in our main research building. We serve over 100 scientists and engineers at this location, but also meet the expanding needs of our manufacturing divisions and numerous plants located throughout the

United States and the world.

We currently have an opening on our professional staff. Please apply if you have an MLS plus a background in physical science or engineering or a BS degree in physical science or engineering (preferably chemical) and an interest in a challenging opportunity in information science. We seek a mature, career-oriented, innovative professional who can make real contributions in a stimulating environment.

An attractive salary and excellent benefits accompany this growth opportunity.

Send your resume and salary history/requirements to:

Dr. Jon S. Gerhardt  
Manager Technical Staff Development  
**THE GENERAL TIRE & RUBBER COMPANY**  
Research Division

2990 Gilchrist Road • Akron, Ohio 44305

An Equal Opportunity Employer M/F

## POSITIONS OPEN

### DIRECTOR OF GREAT LAKES LABORATORY State University College at Buffalo

The State University College at Buffalo seeks an established environmental scientist to develop and oversee activities of an existing multidisciplinary environmental laboratory with a primary focus on the Great Lakes. The individual must possess an active research record, including substantial grants activity in an area appropriate to the focus of the Great Lakes Laboratory.

Qualifications for the position include an earned doctorate in the biological or physical sciences and eligibility for appointment at a senior rank within one of the College's academic departments. The individual should have demonstrated ability to encourage and lead interdisciplinary research teams and have evidence of substantial grants management, including budget and personnel. The successful candidate will have a record of initiating and developing contracts with such groups as business, industry and government agencies. Letter outlining qualifications for this position and a current resumé must be forwarded by June 30, 1981, to:

**Great Lakes Laboratory Search Committee**  
C/O Joseph M. Stetar, Dean  
Office of Graduate Studies and Research  
State University College at Buffalo  
1300 Elmwood Avenue  
Buffalo, New York 14222

SUC-at Buffalo is an equal opportunity/  
affirmative action employer.

## FACULTY POSITIONS IN BIOCHEMISTRY

The Department of Biochemistry of The University of Texas Health Science Center at Dallas is seeking qualified applicants for one, and possibly two, tenure-track faculty positions to be activated after 1 September 1981 at the level of assistant or associate professor. Teaching responsibilities include participation in medical biochemistry instruction and in teaching graduate students. Applicants should have postgraduate experience and be capable of developing an independent research program that includes studies on steroid hormones, lipid peroxidation, prostaglandin synthesis, and metabolism as related to membrane structure and function. Please send curriculum vitae, a description of intended research program, and at least two letters of recommendation to:

**Search Committee**  
Department of Biochemistry  
The University of Texas  
Health Science Center at Dallas  
5323 Harry Hines Boulevard  
Dallas, Texas 75235

An Equal Opportunity/Affirmative Action Employer

**IMMUNOGENETICIST.** Opportunity to collaborate in biomedical research projects involving nonhuman primates and to pursue independent research. Applicants with interest and experience in defining and exploiting major histocompatibility systems are especially encouraged. The Southwest Foundation is affiliated with the University of Texas Health Science Center at San Antonio and maintains more than 3000 nonhuman primates, large colonies of standard laboratory animals, and one marsupial species. The successful applicant will join Drs. John L. VandeBerg, Jean W. MacCluer, and Bennett Dyke in a newly established Genetics Program. This is an excellent opportunity for a creative scientist. Send resumé, statement of research interests, and names of three references to: Personnel Manager, Southwest Foundation for Research and Education, P.O. Box 28147, San Antonio, Texas 78284. An Equal Opportunity/Affirmative Action Employer.

## POSITIONS OPEN

### UNIVERSITY OF CALIFORNIA SANTA BARBARA

**Faculty position in natural resources management.** One joint appointment at the Assistant Professor level in Economics and Environmental Studies, beginning 1 July 1982, subject to availability of funding. Qualifications normally include Ph.D. and notable academic record and demonstrated ability in teaching and research scholarship. The candidate should have demonstrable research capabilities in the application of stochastic processes and optimization theory to the study of renewable natural resources. Teaching duties will include courses in environmental economics and quantitative methods in natural resource management. Candidates should send a resumé, published and unpublished work, at least three letters of recommendation, and evidence of teaching performance to: Llad Phillips, Chairman, Department of Economics, or Daniel B. Botkin, Chairman, Environmental Studies, University of California, Santa Barbara, California 93106. Applications will be accepted until 31 October 1981. The University of California is an Equal Opportunity/Affirmative Action Employer.

## FACULTY POSITIONS

The College of Veterinary Medicine of the University of Florida is seeking applications and/or nominations for three tenure-track faculty positions. Detailed position descriptions are available upon request.

### DEPARTMENT OF PREVENTIVE MEDICINE:

*Full/Associate/Assistant Professor in Veterinary Extension*, application deadline is 1 October 1981. Position No. VM-8113. Dr. Gene Cope, Search Committee Chairperson.

*Associate/Assistant Professor in Veterinary Bacteriology*, application deadline is 1 August 1981. Position No. VM-8111. Dr. Jack M. Gaskin, Search Committee Chairperson.

### DEPARTMENT OF SPECIAL CLINICAL SCIENCES:

*Associate/Assistant Professor in Comparative Ophthalmology*, application deadline is 20 July 1981. Position No. VM-8112. Dr. K. N. Gelatt, Search Committee Chairperson.

Letters of application or nomination should include a curriculum vitae outlining citizenship, academic training, teaching and practice experience, present professional activities, and Board certification. Also needed are a list of publications, a statement of professional goals, and the names of three persons who can provide letters of reference. Salary will be commensurate with training and experience (and the academic rank) of the successful applicant. Correspondence should be addressed to the appropriate Search Committee Chairperson at:

**College of Veterinary Medicine**  
Box J-125, JHMH  
University of Florida  
Gainesville, Florida 32610

## NATIONAL SCIENCE FOUNDATION HEAD, ASTRONOMY CENTERS SECTION

The National Science Foundation is seeking a qualified candidate for the position of Head, Astronomy Centers Section. The Section Head is responsible to the Division Director for the overall planning, management, and commitment of budgeted funds for the Section, which is involved in the administration of the five national centers for astronomy.

Applicants must have a Ph.D. or equivalent professional experience in astronomy or closely related field, supervisory and managerial experience in the achievement of organizational objectives through subordinates, experience in the planning of scientific or technical programs, and demonstrated familiarity with relevant academic community and/or recognized professional standing in the astronomical community.

This position is part of the Senior Executive Service with a salary limited by law to \$50,112 per annum. Appointment will be on a career basis. Applicants should contact Margaret Cademartori on 202-357-7857 to request announcement EPB 81-6 which contains additional qualification requirements as well as instructions concerning the preparation of the supplemental narrative required with the SF-171 as application. Send SF-171 and narrative to National Science Foundation, Executive Personnel Branch, Room 212, 1800 G Street, NW, Washington, D.C. 20550 (attention: EPB 81-6). Applications must be received by 17 July 1981. Equal Opportunity Employer.

## POSITIONS OPEN

### FACULTY POSITION IN OCEANOGRAPHY

Applications are invited for a tenure-earning faculty appointment in physical oceanography; level of appointment and salary commensurate with qualification. Applicant should have a record of scholarly publications demonstrating the ability to interpret oceanographic observations. Duties include teaching graduate-level courses in physical oceanography and supervising research of graduate students. Send curriculum vitae, publication list, and name of three references to: Dr. Friedrich Schott, Chairman, Division of Meteorology and Physical Oceanography, Rosenstiel School of Marine and Atmospheric Science, University of Miami, 4600 Rickenbacker Causeway, Miami, Florida 33149. The University of Miami is an Affirmative Action/Equal Opportunity Employer.

**TUFTS UNIVERSITY SCHOOL OF VETERINARY MEDICINE—IMMUNOLOGIST, INSTRUCTOR OR ASSISTANT PROFESSOR** with research experience in cellular immunology and immunochemistry. Participation is expected in funded research projects involving basic cellular immunology and autoimmunity. Independent studies utilizing these models are encouraged. The successful applicant, who will help develop and teach a course in immunology to veterinary students, should have: (i) a D.V.M. or equivalent degree and research experience in immunology (internal medicine training and an interest in clinical immunology are desirable); or (ii) a Ph.D. or equivalent degree and postdoctoral research experience in immunology (strongly recommended). Send curriculum vitae, a short description of research interests, and names and addresses of three references to: Dr. Anthony Schwartz, Tufts University School of Veterinary Medicine, 136 Harrison Avenue, Boston, Mass. 02111. An Equal Opportunity/Affirmative Action Employer.

University of Michigan Medical School, Department of Internal Medicine has an academic appointment available in the Section of Hematologic Diseases at the academic level of INSTRUCTOR/ASSISTANT PROFESSOR. Applicant must be Board-certified/eligible in internal medicine and hematology. He/she will be responsible for care of patients with blood diseases and instructing house officers and students. Attending duties in internal medicine will also be part of the duties. Duties are to be performed at a University of Michigan-affiliated hospital. Send curriculum vitae (first inquiry) to: R. R. Joseph, M.D., Professor and Director, Department of Internal Medicine, Wayne County General Hospital, 2345 Merriam Road, Westland, Mich. 48105. A nondiscriminatory, Affirmative Action Employer. Code 294DO.

**LABORATORY INVESTIGATOR** position available fall 1981 for a recent Ph.D. in biochemistry or immunology. Studies will involve saliva biochemistry and salivary gland physiology with emphasis on the proteins and immunoglobulins. Applicants should have demonstrated oral and written communications ability. Faculty appointment with teaching responsibilities at affiliated university is possible. Salary: \$15,000 to \$20,000 per year depending on qualifications. Write to:

**Ralph P. Feller, D.M.D./M.S.**  
Chief, Dental Service  
VA Hospital  
11201 Benton Street  
Loma Linda, Calif. 92357

University of Michigan Medical School, Department of Anatomy, has two temporary LECTURER positions available from 1 September 1981 to 30 June 1982 to replace faculty on sabbatical leave. The salary for each position will be \$19,000. Teaching responsibility will include gross anatomy and neuroanatomy. Individuals with broad training in anatomy will be favored. The department's research facilities will be available. Please send reply to: Dr. A. Kent Christensen, Chairman, Department of Anatomy, The University of Michigan Medical School, Ann Arbor, Mich. 48109. A nondiscriminatory, Affirmative Action Employer.

**NEUROENDOCRINOLOGIST.** The University of Oregon Health Sciences Center seeks an Assistant Professor with research interests in endocrine regulation of the CNS. Persons who investigate actions of biogenic amines or work in similar areas would be desirable. Some teaching will be required. Send resumé and three letters of recommendation by 15 August 1981 to: Dr. John A. Resko, Department of Physiology, University of Oregon Health Sciences Center, Portland, Oregon 97201. An Equal Opportunity Employer.



## Physiologist/ Pharmacologist

Pfizer Central Research is seeking a Ph.D Physiologist/Pharmacologist for a recently established section of General Pharmacology. The task of the new group will be to develop a complete pharmacological profile of newly discovered compounds with interesting CNS, metabolic, immunological or anti-infectious activity. The scope of the job will, therefore, require a good understanding of a wide spectrum of physiological and biochemical systems and their use in evaluating drug action. As the appointee will have to work closely with multidisciplinary project teams of chemists and biologists, the ability to interact productively with other scientists is important. Applicants should hold a Ph.D in physiology or pharmacology, and preferably have several years experience with the use of modern pharmacological testing methodology.

This position offers an excellent opportunity for professional recognition and career growth, and the publication of interesting new findings will be encouraged. In addition, we offer a competitive compensation and benefit package and the opportunity to live in an attractive Connecticut shore community.

Please send resume to: **Mr. F. G. Ziegler, Pfizer Inc., Eastern Point Road, Groton, CT 06340**



An Equal  
Opportunity  
Employer

## BIOLOGIST

## CELL BIOLOGIST Mobil

Mobil Oil Corporation has an immediate opening for a Cell Biologist at its new Toxicology laboratory near Princeton, New Jersey.

Primary responsibilities will be to perform and evaluate mammalian cell culture assays in genetic toxicology. The successful applicant will also be expected to participate in an ongoing research program in mammalian mutagenesis.

An M.S. degree with 2 to 3 years experience or a recent PhD graduate in genetics, biochemistry or molecular biology is desired. Experience in tissue culture is essential.

Salary is commensurate with qualifications and experience. If interested, please send your resume to R.H. Daniels.

### MOBIL RESEARCH & DEVELOPMENT CORPORATION

Central Research Division  
Post Office Box 1025  
Princeton, NJ 08540  
*equal opportunity employer*

## Research Scientists Molecular Biology

Genentech, Inc., is a rapidly expanding company pioneering recombinant DNA research. At the present time we are accepting applications for Molecular Biologists with post-doctoral experience. We are seeking highly qualified scientists interested in developing pharmaceutical products through recombinant DNA technology.

We have an excellent record of scientific achievement and encourage our staff to pursue advanced research and publish in leading journals. Located on the beautiful San Francisco peninsula, we offer a stimulating environment oriented to both individual and team accomplishment.

For consideration please send curriculum vitae and three references to **Ms. J. Robertson, Professional Employment. Please refer to Position 11-106.**

### Genentech, Inc.

460 Point San Bruno Boulevard  
South San Francisco, CA 94080

*We are an equal opportunity employer m/f*

## D.V.M., Ph.D. Pathologist ACVP Diplomate

Career opportunity with top quality toxicology and pathology research laboratory located in Wonderful Western Michigan. Responsibilities will include the design, implementation and management of studies, the evaluation of data, the histopathologic assessment of lesions and the preparation of reports and, finally, contact with clients and regulators.

A total commitment to integrity and excellence is required. Financial package will be appropriate to the chosen individual.

Contact or send resume to Bobby Joe Payne, D.V.M., Ph.D., Director of Pathology and/or Gordon S. Dean, Ph.D., President.

### TOXICITY RESEARCH LABORATORIES, LTD.

510 West Hackley Avenue  
Muskegon, Michigan 49444  
Telephone 6167332584

## POSITIONS OPEN

University of Michigan Medical School, Department of Internal Medicine has an academic appointment available in the Section of Rheumatology at the academic level of INSTRUCTOR/ASSISTANT PROFESSOR. Applicant must be Board-certified/eligible in internal medicine and arthritis. He/she will be responsible for care of patients with rheumatologic diseases and instructing house officers and students. Attending duties in internal medicine will also be part of the duties. Duties are to be performed at a University of Michigan-affiliated hospital. Send curriculum vitae (first inquiry) to: **R. R. Joseph, M.D., Professor and Director, Department of Internal Medicine, Wayne County General Hospital, 2345 Merriam Road, Westland, Mich. 48105.** A nondiscriminatory, Affirmative Action Employer. Code 142HO.

### **PATHOLOGIST—CELL BIOLOGIST**

Established investigator for faculty position. Special areas of interest include basic cell structure/function relations, animal genetics, neurobiology, and animal virology. *Women and members of minority groups are encouraged to apply.* Please forward curriculum vitae to **John E. Craighead, M.D., Chairman, Department of Pathology, University of Vermont, Burlington, Vermont 05405.**

### **OKLAHOMA STATE UNIVERSITY PLANT POPULATION BIOLOGIST**

The Department of Botany invites applicants for a tenure-track position at the assistant professor level beginning 15 August 1981. This is a 10-month-per-year appointment.

This plant population biologist may be involved in teaching BISC 1114 (Biological Sciences I), BISC 1220 (Current Topics in Biology), or BISC 1402 (Plant Biology) and will develop an upper division or graduate course in his/her specialty.

This person must have a completed Ph.D. in plant population biology with an evolutionary-systematic emphasis. Postdoctoral experience is desirable. The person must have a demonstrated commitment to excellence in teaching.

The successful applicant will be expected to add to the department's strength in systematic botany and/or add a plant population biology dimension; to work with persons in other departments who need help with plant population biology problems; to develop a research program and seek outside funding to support it; and to train graduate students in the area.

Send letter of application, including research interests, curriculum vitae, all transcripts, and names (no letters) of three references, by 10 July 1981 to:

**Dr. James K. McPherson  
Acting Head, Department of Botany  
Oklahoma State University  
Stillwater, Okla. 74078**

*Oklahoma State University is an Equal Opportunity/Affirmative Action Employer.*

**POSTDOCTORAL POSITIONS:** Two postdoctoral positions available immediately to investigate the molecular basis for slow infections caused by visna virus and by measles virus. Three years' support, initial stipend \$13,380. Experience in recombinant DNA or monoclonal antibody technology desirable. Send résumé and names of three references to **Dr. A. T. Haase, M.D., University of California, San Francisco, at the Veterans Administration (151F), Building 1, Room 110, 4150 Clement Street, San Francisco, California 94121.** An Affirmative Action/Equal Opportunity Employer.

### **POSTDOCTORAL POSITION**

Available immediately to study neurotransmitter localization in mammalian retina. Applicants with experience in neurochemistry and cell culture preferred. Send curriculum vitae and two letters of reference to: **Dr. P. V. Sarthy, Department of Ophthalmology RJ-10, University of Washington, Seattle, Washington 98195.** An Affirmative Action/Equal Opportunity Employer.

**POSTDOCTORAL POSITION** starting September 1981 to study how lipids biosynthesized in brain micropexosomes are incorporated into myelin membranes. The research will involve studies on membrane-bound enzymes, subcellular fractionations, and electron microscopy. Experience in these fields is desirable. Please send curriculum vitae and names of three referees to **Dr. A. K. Majra, Neuroscience Laboratory, University of Michigan, 1103 East Huron, Ann Arbor, Mich. 48109.** A nondiscriminatory, Affirmative Action Employer.

## POSITIONS OPEN

### **MICROBIOLOGIST**

SRI INTERNATIONAL, formerly Stanford Research Institute, the premiere research and development organization on the San Francisco Peninsula, has a postdoctoral position available immediately for a microbiologist experienced in cell culture and ionic flux measurement techniques. Experience with C1300 neuroblastoma cells an advantage. Salary: \$19,000. Send résumé and names of three references to:

**W. Dahlgren, Personnel Department  
SRI INTERNATIONAL  
333 Ravenswood Avenue  
Menlo Park, Calif. 94025  
An Equal Opportunity Employer**

University of Michigan Medical School, Department of Radiology, Division of Radiological Physics and Engineering has a faculty position available for a **PHYSICIST OR ENGINEER** to provide support for CT and ultrasound. Primary responsibilities would be for acceptance testing, quality and safety assurance, performance evaluation of new and prototype commercial equipment and cooperative implementation and evaluation of improved imaging techniques. Opportunities for more basic research and for teaching physics, maintenance, medical, and allied health personnel will depend on the individual's interest and experience. Salary and academic position will be commensurate with experience and expected responsibilities. Applicants must have a graduate degree, preferably Ph.D. in physics, radiological physics, or other relevant discipline and should have several years of experience or training in radiological physics including CT and/or ultrasound. Eligibility for ABR certification in diagnostic radiological physics is desired. Publications in radiological physics are desired. Please send inquiries, résumés, academic transcripts, reprints, and a list of several references to: **Paul L. Carson, Ph.D., Director, Division of Radiological Physics and Engineering, c/o Mrs. Olga Matlega, Department of Radiology, XS2314, University of Michigan Hospital, Box 013, Ann Arbor, Mich. 48109.** A nondiscriminatory, Affirmative Action Employer. Code 87HO.

### **POSTDOCTORAL POSITION IN BIOCHEMISTRY**

Position immediately available for Ph.D. biochemist with background in enzymology and preferable quinine chemistry to assist in the investigation of the mode of action of vitamin K and regulation of prothrombin synthesis in the Department of Biochemistry. Send curriculum vitae and names of three references to: **Dr. Robert E. Olson, St. Louis University Medical Center, Department of Biochemistry, 1402 South Grand, St. Louis, Mo. 63104.** An Equal Opportunity/Affirmative Action Employer, M/F/H.

### **ACADEMIC POSITIONS POSTDOCTORAL POSITIONS IN BIOLOGICAL CHEMISTRY**

For research on the targeting of phospholipid vesicles to specific cell types and therapeutic applications of vesicle-encapsulated agents. One position available immediately, and one on 1 October 1981. Experience in synthetic chemistry and modern instrumental methods desirable. Send résumé and three letters of recommendation to: **Dr. John D. Baldeschwieler, Division of Chemistry and Chemical Engineering, California Institute of Technology, Pasadena, California 91125.** Affirmative Action/Equal Opportunity Employer.

**POSTDOCTORAL RESEARCH** appointments are available in the program of Microbiology/Immunology of Northeastern Ohio Universities College of Medicine to study herpes simplex virus glycoproteins, virus-cell recognition, and antiherpetic drugs in the laboratory of Dr. Kenneth S. Rosenthal; or the genetics, physiology, and enzymology of DNA topoisomerases in the laboratory of Dr. Richard E. Depew.

Please send curriculum vitae and names of three references to:

**Office of the Vice Provost  
Northeastern Ohio Universities  
College of Medicine  
Rootstown, Ohio 44272**

*Equal Opportunity/Affirmative Action Employer.*

## POSITIONS OPEN

**POSTDOCTORAL POSITION IN NATURAL PRODUCTS CHEMISTRY** to work in the identification of the chemical basis of plant resistance to foliage feeding insects. Familiarity with chromatography, NMR, and MS is essential. Available 1 October 1981. Salary to \$18,000. Send curriculum vitae, publications, and three letters of reference to **C. Michael Smith, Department of Entomology, Louisiana State University, Baton Rouge, La. 70803.** An Equal Opportunity Employer.

**POSTDOCTORAL POSITION** in population genetics, in the newly established Genetics Program at the Southwest Foundation. Opportunity to pursue independent research and to collaborate with Drs. Jean W. MacCluer, Bennett Dyke, and John L. VandeBerg in a variety of ongoing projects. Training in statistics desirable. Current and prospective areas of interest within the program include: (i) identification of genetic factors contributing to susceptibility to atherosclerosis; (ii) maintenance of genetic variability and investigation of inbreeding effects within the Foundation's baboon colony; (iii) investigations of genetic variation in reproductive performance in a variety of species; and (iv) development of models for predicting the incidence of genetic diseases in human populations. Send résumé, statement of research interests, and names of three references to: **Personnel Manager, Southwest Foundation for Research and Education, P.O. Box 28147, San Antonio, Texas 78284.** We are an Equal Opportunity/Affirmative Action Employer.

**POSTDOCTORAL/RESEARCH ASSISTANT** available summer 1981 to study mechanism by which erythropoietin or Friend virus indicates red cell growth and differentiation in vitro. Send curriculum vitae and list of three references to: **Dr. Sanford B. Krantz, Director, Division of Hematology, Room A-5102, Vanderbilt University, 21st and Garland, Nashville, Tennessee 37232.**

### **PRESIDENT**

#### **New Jersey Marine Sciences Consortium**

The Board of Trustees of the New Jersey Marine Sciences Consortium invites nominations and applications for the position of President.

The Consortium is involved in education and research in marine sciences largely in the New Jersey region. Founded in 1969, the Consortium has 23 institutional members and two industrial members. The major office of the corporation is located in Princeton. The Consortium operates field stations at Sandy Hook and Seaville. In addition to a variety of educational and research programs, the Consortium administers the Sea Grant Program in the state.

Desirable qualifications sought in candidates include: successful administrative experience at a high rank, ability to develop working relationships with diverse groups, fund-raising experience, demonstrated leadership qualities, and a knowledge of marine science. Position will be available on or before 1 November 1981.

Salary and fringe benefit package competitive with that of college presidents.

Nominations and applications, together with résumé, should be postmarked no later than 3 July 1981 and mailed to:

**N.J. Marine Sciences Consortium Search Committee  
c/o Thomas A. Henry  
Cumberland County College  
P.O. Box 517  
Vineland, N.J. 08360**

*An Affirmative Action/Equal Opportunity Employer*

### **UNIVERSITY OF UPPSALA, SWEDEN PROFESSORSHIP IN MICROBIOLOGY**

Applications are invited for this chair. Present research at the department includes the study of the structure, replication, function, genetics, and metabolism of microorganisms, including viruses and also their interaction with the environment. In addition to research, the professorship involves teaching advanced courses, graduate student research guidance, and administrative duties. Current starting salary: Swedish kronor 125,000 per year (approximately \$27,000). Applications, including four copies of a curriculum vitae and the applicant's published papers (and unpublished manuscripts), should be addressed to the Swedish government and received at the **Registrar, University of Uppsala, Box 256, S-751 05 Uppsala, Sweden**, no later than 6 July 1981. Further information can be obtained from the **Department of Microbiology, telephone 018-152000, extension 1580, Uppsala, Sweden.**

**AQUATIC ECOLOGIST/MODELER**  
or  
**BIOLOGICAL OCEANOGRAPHER**

The U.S. Department of Commerce/NOAA, Great Lakes Environmental Research Laboratory, is seeking an ecologist with a background in environmental systems modeling and experimental work on aquatic ecosystems processes including studies on cycling of nutrients and/or toxic organics in the Great Lakes. The position includes laboratory, field, and numerical modeling responsibilities. Candidates need to be familiar with the fields of limnology and ecology. This position is in the Competitive Civil Service and will be filled at the GS-13 level. Entrance level salary is \$32,048 per annum.

**Qualifications:** B.S. or higher degree in biology or a related field of science underlying ecological research, and must have included at least 30 semester hours in basic and applied biological sciences, including a total of at least 9 semester hours in ecology, plus 12 semester hours in the physical and mathematical sciences; or B.S. or higher degree with 24 semester hours in oceanography or related discipline, plus 20 semester hours in any combination of oceanography, physics, geophysics, chemistry, mathematics, meteorology, and engineering sciences, plus 3 years of professional experience in or directly related to ecology or oceanography. Combined background must have equipped the candidate with the knowledge and ability to perform fully the work of this position. At least 1 year of experience must have been equivalent to the GS-12 level in the federal service. Experience in research directed toward solving environmental problems and experience in numerical modeling is mandatory. Additional technical information may be obtained from Dr. Andrew Robertson, telephone: 313-668-2281 or FTS 378-2281.

**To apply:** Current or former federal employees submit SF-171, CD-332 (Employee Appraisal), transcript, and Optional OPM Form 1386 (Background Survey Questionnaire). Forms may be obtained by telephoning: 303-497-6615 or FTS 320-6615. Applicants not employed by the federal government: Ecologist—submit all of the forms listed above except the CD-332; Oceanographer—submit an application package for "Physical Science Positions, CN-1300" and Optional OPM Form 1386. These forms may be obtained from the nearest Office of Personnel Management. All applications must be submitted to: NOAA/NTIA, Personnel Services Division (R562), attention: Donna Swallow, Boulder, Colorado 80303. Reference Vacancy Number NOAA/ERL81-58DS. Applications must be received no later than 10 July 1981 to receive consideration. An Equal Opportunity Employer.

**D.V.M., Ph.D.**  
**Veterinarian and Toxicologist**

Career opportunity with top quality toxicology and pathology research laboratory located in Wonderful Western Michigan. Responsibilities will include animal care and disease control; the design, implementation and the management of studies; the evaluation of data; the preparation of reports; and finally, contact with clients and regulators.

A total commitment to integrity and excellence is required. Financial package will be appropriate to the chosen individual.

Contact or send resume to E. C. Tompkins, Ph.D., Director of Toxicology and/or Gordon S. Dean, Ph.D., President.

**TOXICITY RESEARCH LABORATORIES, LTD.**  
**510 West Hackley Avenue**  
**Muskegon, Michigan 49444**  
**Telephone 616-733-2584**



**HEAD, AQUATIC VERTEBRATE SECTION**

Vegreville—A Section Head is required to carry out environmental research in Aquatic Biology in the field of fish ecology. B.Sc. in Biology plus extensive related experience required (post-graduate degree is desirable). Demonstrated ability to carry out high quality scientific research is essential. For further information call Dr. James Moore (403) 632-6767.

Salary: To \$34,104 (currently under review)

Competition #EVM641-13

Closing Date: July 30, 1981

For detailed information, request Job Bulletins and apply to:

**Alberta Government Employment Office**  
**5th Floor, Melton Building**  
**10310 Jasper Avenue**  
**Edmonton, Alberta**  
**T5J 2W4**

**AAAS Memberships  
and Subscriptions**

• Whenever you write us about your membership or subscription, please attach a **Science** address label to ensure prompt service.

• **Mail to:** Membership and Subscription Records, AAAS, 1515 Massachusetts Ave., NW, Washington, D.C. 20005.

☐ **Change of Address:** Please provide 6 weeks' notice. Paste an address label from a recent issue in the space provided. Print new address below.

☐ **Query:** If you have a question, place your address label here and attach this form to your letter.

• **To join or subscribe:** Mail this form with your payment, mark the appropriate boxes, and print your name and address in the space below. (For renewals, attach label.)

☐ **Membership rates** (individual only)  
☐ \$38 USA    ☐ \$62 Canada, PUAS    ☐ \$65 Foreign  
☐ \$93 air-surface delivery via Holland

☐ **Subscriber rates**  
☐ \$76 USA    ☐ \$100 Canada, PUAS    ☐ \$103 Foreign  
☐ \$131 air-surface delivery via Holland

**ATTACH  
LABEL  
HERE**

☐ Payment enclosed    ☐ Bill me later

Name Please print

Address

City State    Zip

**MW06**

## POSITIONS OPEN

### PROTEIN CHEMISTRY

Position available immediately to investigate the molecular biology of fibrinogen, plasma fibronectin (cold-insoluble globulin), and their interactions with one another and with macrophages. A strong background in protein chemistry with experience in peptide separation and characterization is highly desirable. This is an exceptional and challenging possibility for an individual who is capable of independent investigation in a programmatic setting. Collateral faculty rank position with an opportunity for adjunct basic science appointment and graduate school teaching. Excellent laboratory facilities. Salary negotiable, depending on qualifications and experience. Send curriculum vitae plus statement of background, career goals, and research interests to: **Dr. Michael W. Mosesson, Department of Medicine, Mount Sinai Medical Center, 950 North 12 Street, P.O. Box 342, Milwaukee, Wisconsin 53201.**

### PUBLIC HEALTH MEDICAL OFFICER POSITIONS PREVENTIVE MEDICAL SERVICES BRANCH CALIFORNIA DEPARTMENT OF HEALTH SERVICES

Immediate openings for physicians (Public Health Medical Officer II and III) with environmental/occupational epidemiology training, experience, and/or interest as Chief, Epidemiological Studies Section (\$4068 to \$4948 per month), Berkeley; Chief, Environmental Toxins Epidemiology Unit (\$4068 to \$4948 per month), Sacramento; and Public Health Medical Officer, Environmental Toxins Epidemiology (\$3699 to \$4832 per month), Sacramento. Openings will also be available shortly for Public Health Medical Officer II's and Public Health Medical Officer III's in chronic disease programs, Sacramento. Requirements: California license or eligibility, with specialty Board certification or eligibility or one or more years of graduate study, specialty training, or experience. For information and specific requirements call collect: **Kathleen Acree, M.D., 714 P Street, Room 499, Sacramento, Calif. 95814; telephone: 916-445-3151.** Formal written filing deadline 3 July 1981.

*An Equal Opportunity Employer*

### RESEARCH ASSOCIATE

Position is available for a recent graduate in cell biology and/or biochemistry to work in the area of intracellular binding and internalization of gonadotropin. The candidate should have experience in processing tissues and isolated subcellular organelles for EM examination, their morphological assessment, autoradiography-electron microscopy, and/or biochemical techniques related to the above project. If interested contact: **Dr. Ch. V. Rao, Department of Obstetrics/Gynecology, 436B MDR Building, University of Louisville, Louisville, Ky. 40292.**

### VETERINARY PATHOLOGISTS

Expansion has resulted in openings for pathologists, Board-certified, Board-qualified, and entry level, some with managerial responsibility and with opportunity to serve as pathology study monitor and team leader.

Our Pathology Division consists of 125 people in necropsy pathology, histology, histopathology, clinical pathology, and administrative services. It is responsible for the pathology phase of our extensive program of toxicological research for the pharmaceutical, agricultural, chemical, and consumer industries as well as governmental agencies.

International Research and Development Corporation (IRDC) is located a few miles from Kalamazoo, Michigan, midway between Chicago and Detroit, an area affording a broad range of urban or rural life-styles with excellent cultural and recreational opportunities. We offer excellent benefit programs and a starting salary commensurate with experience. Send your résumé to:

**Dr. Ward R. Richter**  
Director, Division of Pathology  
International Research and  
Development Corporation  
500 North Main Street  
Mattawan, Michigan 49071  
*Equal Opportunity Employer*

## POSITIONS OPEN

**RESEARCH ASSOCIATE.** To work on research on diabetic eye disease. Must have experience in intraocular surgery, including vitrectomy. Background in polarographic and spectrophotometric oxygen measurements; experience in clinical medicine. Experience in laboratory sciences. Requirements: M.D. or equivalent. Send curriculum vitae and two letters of recommendation to:

**Department of Ophthalmology  
Duke University Medical Center  
Durham, N.C. 27710**

*Equal Opportunity Employer*

The Division of Neurological Surgery, University of North Carolina School of Medicine, is seeking applicants for the position of **RESEARCH ASSISTANT PROFESSOR** to develop and direct basic and clinical research in the immunobiology of brain tumors. Prospective candidates should have several years of postgraduate (M.D. or Ph.D.) experience in: recovery and identification of systemic and intratumoral immune-related cells, analysis of immune cell function in tumor-bearers, serologic analyses of tumor cell-surface antigens, and/or hybridoma technology. Qualified individuals should submit curriculum vitae and three letters of recommendation to: **M. Stephen Mahaley, Jr., M.D., Ph.D., Professor and Chief, Division of Neurosurgery, 148 Clinical Sciences Building 229H, University of North Carolina, Chapel Hill, N.C. 27514.** *An Equal Opportunity/Affirmative Action Employer.*

**RESEARCH SCIENTIST/ASSISTANT PROFESSOR, Ph.D. required,** with experience in reproductive endocrinology. Assistant professor level with permanent career possibilities. Interest in either neuroendocrinology, neurochemistry, or receptors is essential. Apply to **Dr. Richard P. Michael, Department of Psychiatry, Emory University, Atlanta, Georgia 30322.** Telephone: 404-894-5947. *An Equal Opportunity/Affirmative Action Employer.*

**SCIENTIFIC DIRECTOR.** An internationally known university research center has available the position of Scientific Director to administer a program concerned with scientific techniques as applied to archaeology, primarily those developments in physics, electronics, chemistry, remote and near sensing, and geophysical prospecting. This research center recognizes the need to disseminate information to the research archaeologist concerning the scientific applications which have been proven in the laboratory and in the field. Qualifications: Ph.D. in physics, 10 to 15 years of experience in the field of archaeometry with a specialty in thermoluminescence dating (predose method), radium-lead disequilibrium, lead isotope ratios, and provenience studies. Art authenticity experience with museums a plus factor. Administrative and development experience in a similar research setting a must, as well as a history of publishing in international journals. Salary range, \$23,600 to \$33,250. Curriculum vitae plus names and addresses of five references to be submitted to **Burvin Hardy, Philadelphia Job Bank, 1709 South Broad Street, Philadelphia, Pa. 19148.** *The University of Pennsylvania is an Equal Opportunity/Affirmative Action Employer.*

**TRAINING IN METABOLISM. PREDOCTORAL AND POSTDOCTORAL TRAINEESHIPS** are available for July 1981 in an NIH-supported program. Trainees participate in courses, seminars, and collaborative research under joint supervision of faculty of the Departments of Biochemistry, Medicine, Pediatrics, and Pharmacology of Case Western Reserve University, School of Medicine. The program is designed for the Ph.D. or would-be Ph.D. desiring a foundation in clinical investigation while developing his or her basic science capabilities and for M.D.'s to obtain expertise in basic science. Ph.D. candidates must fulfill the requirements of the basic science departments for awarding the degree. Trainees must be U.S. citizens or permanent residents. For detailed information write to: **Dr. Richard W. Hanson, Program Director, Department of Biochemistry, Case Western Reserve University, School of Medicine, Cleveland, Ohio 44106.**

## FELLOWSHIPS

**POSTDOCTORAL FELLOWSHIP.** To study hormonal regulation of vitamin D metabolism in mammals. Theoretical and/or practical experience required. Contact: **Dr. E. M. Spencer, Children's Hospital of San Francisco, 3700 California Street, San Francisco, Calif. 94118.**

*Equal Opportunity Employer, M/F/H*

## FELLOWSHIPS

**POSTDOCTORAL FELLOWSHIP** in the Endocrine Research Unit, Mayo Clinic/Mayo Foundation. The candidate must be an organic chemist or biochemist with a strong organic chemistry background prepared to pursue a career in biomedical research relating to vitamin D metabolism or oncology research. Additional opportunities may be available in the area of organic analytical methodology, particularly GC/MS. Write to: **R. Kumar, M.D., Mayo Clinic, Rochester, Minn. 55901,** or telephone: 507-285-5607.

*An Equal Opportunity/Affirmative Action Institution*

**POSTDOCTORAL FELLOWSHIP IN BIOCHEMICAL PHARMACOLOGY** (1 to 2 years). An immediate opening exists to perform research in an ongoing program that includes pharmacokinetics and in vitro metabolism studies of carcinogens and xenobiotics of environmental importance. Ph.D. in pharmacology or biochemistry required. Experience in pharmacokinetics and pharmacodynamics desired. Send curriculum vitae with transcripts to: **Larry Brown, Midwest Research Institute, 425 Volker Boulevard, Kansas City, Missouri 64110.**

### POSTDOCTORAL FELLOWSHIPS AND ASSISTANTSHIPS

The Division of Biochemical and Clinical Pharmacology at St. Jude Children's Research Hospital will have several fellowships available commencing 1 September 1981. Research will be focused on agents used in pediatric chemotherapy and will include the following: use of biophysical techniques, including nuclear magnetic resonance, to study the interaction of such drugs with target macromolecules; investigation of the mechanism of uptake of such agents into tumor cells and other mammalian cells; examination of the effect of such agents singly and in combination on the metabolism and replication of mammalian cells in culture and in animal models. Experience with appropriate techniques essential.

Send curriculum vitae and names of three references to:

**Dr. Raymond L. Blakley**  
Division of Biochemical and Clinical Pharmacology  
St. Jude Children's Research Hospital  
Memphis, Tennessee 38101

## COURSE

### LISREL ANALYSIS OF LINEAR STRUCTURAL RELATIONSHIPS

Baltimore: 14-17 August  
Chicago: 21-24 August  
Berkeley: 29 August-1 September  
Karl Joreskog and Dag Sorbom will offer a course for those who wish to extend their skills to include analysis of linear structural relationships among latent variables.

TUITION: \$290. For details write or call:

**Linda Budd**  
5835 South Kimbark  
Chicago, Illinois 60637  
312-753-4745 (9-1 M-F)  
312-753-4887 (1-4 M-F)

## SYMPOSIUM

### SYMPOSIUM

"Metabolic Effects of Utilizable Dietary Carbohydrates," 182nd Annual Meeting of the American Chemical Society, 26-27 August 1981, New York Sheraton, New York City.

Program information available:

**Dr. Sheldon Reiser**  
Carbohydrate Nutrition Laboratory  
BHNRC, HN, SEA, USDA  
Room 315, Building No. 307, BARC-East  
Beltsville, Maryland 20705

## MARKETPLACE

**AO REICHERT ULTRA-STAR MICROSCOPE.** Includes: 4 x 5 large format camera, 35-mm minicamera, auto exposure control, transmitted light, phase contrast, and interference contrast. Also 10X, 40X, 100X Plan Achromat Phase Objectives, 10X 40X, Plan Achromat I.C. Objectives, and 100X Plan Achromat I.C. Objective. Price and terms negotiable. Send inquiries to **S. A. Sacco, Griswold Controls, 2803 Barranca Road, Irvine, Calif. 92714,** or telephone collect: 714-559-6000, extension 47.



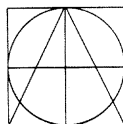
## Demonstration Opportunity For Hazardous Waste Technology

The California Governor's Office of Appropriate Technology (OAT) in cooperation with the U.S. EPA Industrial Environmental Research Laboratory—Cincinnati, is conducting a study to identify and evaluate for possible demonstration: innovative thermal, chemical, and biological processes for reducing, recycling, detoxifying, and destroying hazardous wastes. OAT is especially interested in technology which:

### OFFICE OF APPROPRIATE TECHNOLOGY

- recovers materials or energy;
- produces non-toxic emissions and residues;
- treats waste on-site at the point of generation; or
- conserves energy or utilizes a renewable source of energy.

Those individuals or organizations who wish to have their processes considered in this study should contact **Harry Freeman, Toxic Waste Assessment Program, Office of Appropriate Technology, 1322 O Street, Sacramento, CA 95814, (916) 323-6578.** An equal opportunity employer.



## TRAINING COURSES in RADIONUCLIDES IN RESEARCH and APPLIED HEALTH PHYSICS announced by Oak Ridge Associated Universities

A two-week **BASIC USE OF RADIONUCLIDES IN RESEARCH COURSE** will be conducted July 13-24, 1981; November 30—December 11, 1981; and July 19-30, 1982. This laboratory-oriented course will emphasize the fundamentals of radiation physics, radiation biology, and nuclear instrumentation. The course will enable scientists to become familiar with laboratory and theoretical applications of radionuclides in research. Some lecture and laboratory experiments to be covered include nuclear theory, radiation detection, radiation safety, biomedical applications, x-ray fluorescence analysis, instrumentation, radiation dosimetry, and activation analysis.

A five-week **APPLIED HEALTH PHYSICS COURSE** will be conducted October 5—November 6, 1981; May 17—June 18, 1982; and October 4—November 5, 1982. This course emphasizes the fundamentals of health physics, problems and practices in providing radiation protection, the mechanism of radiation damage, and methods and procedures for evaluating radiation hazards. Lecture and laboratory experiments include radiation physics, health physics instrumentation, shielding and facility design, waste disposal, legal and public relations, handling of radiation emergencies, health physics principles, radiation dosimetry, radiation biology, radiation control techniques, and environmental monitoring.

For additional information on these courses contact: Registrar, Professional Training Programs, Oak Ridge Associated Universities, Post Office Box 117, Oak Ridge, Tennessee 37830 or telephone 615-576-3434.

## PEPTIDE CHEMIST

One of the nation's leading manufacturers of ethical pharmaceutical products has an interesting position immediately available for a PhD Synthetic Organic Chemist with at least two years of post doctoral or industrial experience. A strong background in peptide chemistry including solution and solid phase synthesis, isolation and purification techniques, and physical methods of analysis and characterization is also required. The qualified candidate will become a senior scientist on our staff and will conduct research on the design and synthesis of novel peptide agents having potential therapeutic value. This position offers an interdisciplinary research opportunity and a potential leadership role.

Our ultra modern headquarters is conveniently located in a pleasant country setting just outside Philadelphia, Pa. We offer a competitive salary and a comprehensive benefits package. For prompt consideration forward your resume including salary requirements to J.E. Foley.

**McNEIL  
PHARMACEUTICAL**

Spring House, Pa. 19477

Leadership Beyond Compliance  
M/F/H/V  
A Johnson & Johnson Company



## SENIOR SCIENTISTS Research & Development

Sandoz Inc. is a recognized leader in the research and development of effective pharmaceutical products. We currently have two career opportunities in our R&D facility.

### SCIENTIFIC WRITER

The areas of responsibility for the scientific writer will include writing of pre-clinical summaries and pharmacology sections of IND's and NDA's for a diversity of therapeutic agents. The successful candidate should have a PhD in Pharmacology and the ability to independently write scientific documents based on detailed scientific reports prepared by laboratory scientists.

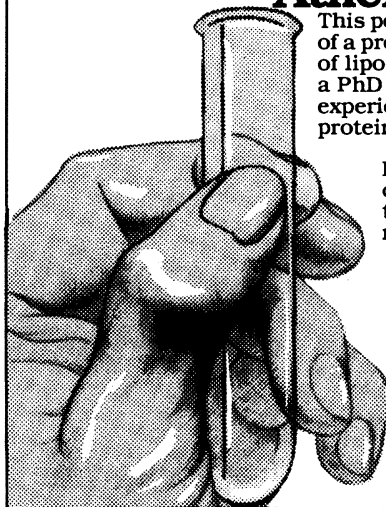
### SENIOR SCIENTIST Atherosclerosis Research

This position involves the supervision and direction of a program aimed at pharmacological modification of lipoprotein metabolism. Candidates should have a PhD in Biochemistry with academic or industrial experience in atherosclerosis research and lipoprotein metabolism.

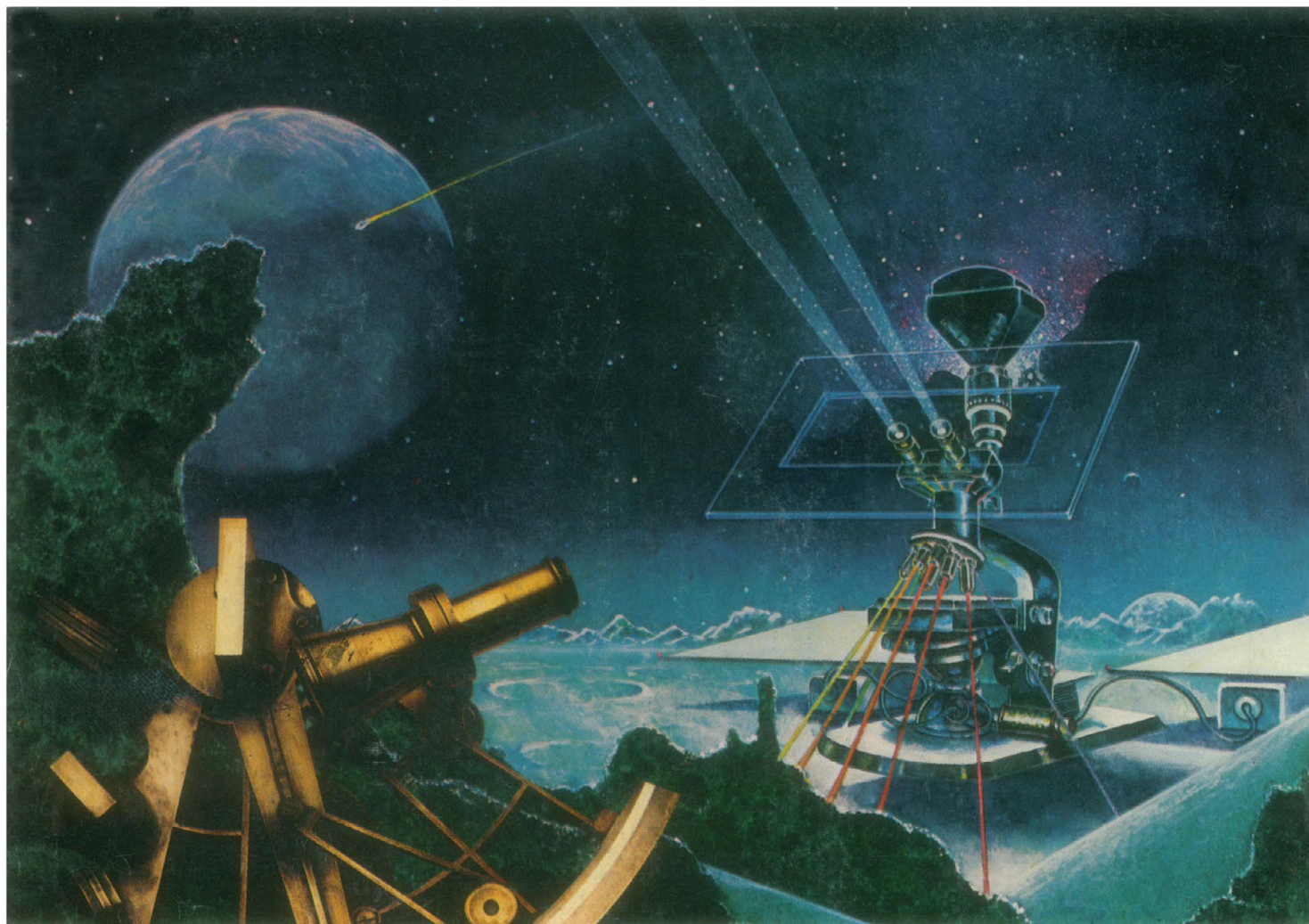
Located in Northern New Jersey, Sandoz offers a professional environment and attractive salary and benefits package. Please send resume and salary requirements to:

Mrs. J. O'Hagan  
Personnel Manager  
Sandoz Inc.  
Route 10  
East Hanover, N.J. 07936

An equal opportunity  
employer M/F







## Kodak announces a new world of low-cost inorganic chemicals. (And simple arithmetic.)

First, we're offering 250 of the most called-for inorganic chemicals—with the same quality, purity, and consistency of our organic chemicals. Second, if you're comparing discounts, figure out the real bottom-line price difference. And third, since we package by metric measure, Kodak's 500-gram container is more than the typical one-pound (450-gram) unit. Add it up. See your dealer, or write for a free copy of our new "Tools for Analytical Chemists," Catalog JJ-2. Let it guide your imagination—and arithmetic.



### The creative source.

The ready source—dealers handling KODAK Laboratory Chemicals: American Scientific & Chemical; American Scientific Products; Bioclinical Laboratories NJ; BCL/New York; Brand-Nu Laboratories, Inc.; Bryant Laboratory, Inc.; CAMX Scientific; Fisher Scientific; Mays Chemical; Midland Scientific, Inc.; North-Strong Division; Preiser Scientific; Sargent-Welch Scientific; Scientific & Industrial Sales & Service, Inc.; Specialty Chemicals, Inc.; VWR Scientific Inc.; Ward's Natural Science Establishment, Inc.

© Eastman Kodak Company, 1981. Kodak Laboratory and Specialty Chemicals, Rochester, NY 14650

Eastman Kodak Company, Kodak Laboratory & Specialty Chemicals  
Dept. 412-L, Rochester, NY 14650.

Please send me a free copy of "Tools for Analytical Chemists," Catalog JJ-2.

NAME \_\_\_\_\_ TITLE \_\_\_\_\_

FIRM \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

