

accept Wright's major premise regarding the complex relationship of gene and character, they disagree with his views on the levels of selection. In particular, most consider selection at the level of single genes and individuals to be the major, if not the only, important mode of evolution by natural selection. This contrasting and widely held worldview is perhaps best exemplified in the following excerpt from G. C. Williams's *Adaptation and Natural Selection* (1966, p. 56):

Obviously it is unrealistic to believe that a gene actually exists in its own world with no complications other than abstract selection coefficients and mutation rates. The unity of the genotype and the functional subordination of the individual genes to each other and to their surroundings would seem, at first sight, to invalidate the one-locus model of natural selection. Actually these considerations do not bear on the basic postulates of the theory. No matter how functionally dependent a gene may be, and no matter how complicated its interactions with other genes and environmental factors, it must always be true that a given gene substitution will have an arithmetic mean effect on fitness in any population. One allele can always be regarded as having a certain selection coefficient relative to another at the same locus at any given point in time. Such coefficients are numbers that can be treated algebraically, and conclusions inferred from one locus can be iterated over all loci. Adaptation can thus be attributed to the effect of selection acting independently at each locus.

In the area of sociobiology this reductionist viewpoint has been developed to the extreme of caricature with the concept of the "selfish gene" and the methodology of "looking at evolution from the gene's point of view."

Although Wright himself developed much of the theory of gene frequencies, few of its modern adherents see its limitations as clearly as he. He considered a theory of evolution at the gene or individual level based on the properties assigned to single genes to be "very inadequate" for explaining the evolution of highly interactive genetic systems. The reasons for Wright's views and the limitations of single-gene theories are a major point of discussion throughout this work.

The only obstacle to the reader of these volumes is the density of Wright's prose, but it is an obstacle well worth surmounting. Wright's massive tome has become a touchstone for many of my colleagues working on diverse problems in population biology and evolution, from the sexual selection of quantitative characters (R. Lande) to the evolution of vertebrate feeding behaviors (S. Arnold). I am certain that as the recent trend of evolutionary argument from metaphor and plausibility is reversed

these volumes will become a major reference.

For these reasons, I recommend this work to all with research interests in genetics and evolution, not only as an important and comprehensive synthesis of evolutionary theory but also as a useful and timely reference.

MICHAEL J. WADE

*Department of Biology,  
University of Chicago,  
Chicago, Illinois 60637*

## Books Received

**Acousto-Optics.** J. Sapriel. Translated from the French edition (Paris, 1976) by Simon Francis and Barbara Kelly. Wiley-Interscience, New York, 1979. xvi, 126 pp., illus. \$20.

**Advanced Logical Circuit Design Techniques.** Antonin Svoboda and Donnamaie E. White. Garland STPM Press, New York, 1979. xviii, 280 pp., illus. \$22.50.

**Advances in Cyclic Nucleotide Research.** Vol. 10, Current Methodology. Gary Brooker, Paul Greengard, and G. Alan Robison, Eds. Raven, New York, 1979. xii, 260 pp., illus. \$24.

**Advances in Shock Research.** Papers from a conference, Airlie, Va., June 1978. Liss, New York, 1979. Vol. 1. Allan M. Lefer, Thomas M. Saba, and Leena M. Mela, Eds. xviii, 286 pp., illus. \$30. Vol. 2. William Schurer, John J. Spitzer, and Bryan E. Marshall, Eds. xx, 298 pp., illus. \$30.

**Alcoholism.** A Multidisciplinary Approach. Papers from a symposium, Amsterdam, May 1978. J. Mendlewicz and H. M. van Praag, Eds. Karger, Basel, 1979. vi, 138 pp., illus. Paper, \$36. *Advances in Biological Psychiatry*, vol. 3.

**Algorithmic Aesthetics.** Computer Models for Criticism and Design in the Arts. George Stiny and James Gips. University of California Press, Berkeley, 1979. xii, 220 pp., illus. \$15.75.

**An Analytical Approach to Cultural Resource Management.** The Little Colorado Planning Unit. Fred Plog, Ed. Arizona State University Department of Anthropology, Tempe, 1978. xviii, 286 pp., illus. Paper, \$9. Arizona State University Anthropological Research Papers, No. 13. USDA Forest Service Cultural Resources Report No. 19.

**The Architecture of Small Computer Systems.** Arthur G. Lippiatt. Prentice-Hall, Englewood Cliffs, N.J., 1978. xvi, 174 pp., illus. \$14.50.

**Arid-Land Ecosystems.** Structure, Functioning and Management. Vol. 1. D. W. Goodall, R. A. Perry, K. M. W. Howes, Eds. Cambridge University Press, New York, 1979. xxviii, 882 pp., illus. \$97.50. International Biological Programme 16.

**Artificial Breeding of Non-Domestic Animals.** Proceedings of a symposium, London, Sept. 1977. P. F. Watson, Ed. Published for the Zoological Society of London by Academic Press, New York, 1978. xxii, 376 pp., illus. \$33.25. Symposia of the Zoological Society of London, No. 43.

**Artificial Intelligence.** An MIT Perspective. Vol. 2, Understanding Vision, Manipulation. Computer Design. Symbol Manipulation. Patrick Henry Winston and Richard Henry

Brown, Eds. MIT Press, Cambridge, Mass., 1979. xvi, 486 pp., illus. \$25. The MIT Press Series in Artificial Intelligence.

**Astronomy.** An Introduction for the Amateur Astronomer. Jacqueline Mitton. Scribner, New York, 1979. 142 pp., illus. \$7.95.

**Astronomy.** From the Earth to the Universe. Jay M. Pasachoff. Saunders, Philadelphia, 1979. xviii, 476 pp., illus. + plates + appendixes. Paper, \$15.95. Saunders Golden Sunburst Series.

**Astrophysical Formulae.** A Compendium for the Physicist and Astrophysicist. Kenneth R. Lang. Springer-Verlag, New York, 1978. xxviii, 736 pp. Paper, \$29.50. Springer Study Edition. Reprint of the 1974 edition.

**Atlas of Photomicrographs of the Surface Structures of Lunar Regolith Particles.** O. D. Rode, A. V. Ivanov, M. A. Nazarov, A. Cimbalkova, K. Jurek, and V. Hejl. Reidel, Boston, 1979 (distributor, Kluwer Boston, Hingham, Mass.). 76 pp. + plates. \$39.

**Atlas of Radiologic Anatomy.** Lothar Wicke with the assistance of Wilhelm Firbas and Roland Schmiedl. Translated from the German edition (Munich, 1977). Urban & Schwarzenberg, Baltimore, ed. 2, 1979. 224 pp. \$17.50.

**Atlas of Wrist and Hand Fractures.** Sigurd C. Sandzén, Jr. PSG Publishing Company, Littleton, Mass., 1979. xvi, 430 pp. \$54.50.

**The Atmosphere.** An Introduction to Meteorology. Frederick K. Lutgens and Edward J. Tarbuck. Prentice-Hall, Englewood Cliffs, N.J., 1979. xvi, 414 pp., illus. \$14.95.

**Attractyliside.** Chemistry, Biochemistry and Toxicology. R. Santi and S. Luciani, Eds. Piccin Medical Books, Padua, Italy, 1978. xxiv, 136 pp., illus. \$12.

**The Beginnings of Greek Mathematics.** Arpád Szabó. Translated from the German edition. Reidel, Boston, 1978 (distributor, Kluwer Boston, Hingham, Mass.). 268 pp., illus. \$47.50. Synthese Historical Library, vol. 17.

**Behavior of Marine Animals.** Current Perspectives in Research. Vol. 3, Cetaceans. Howard E. Winn and Bori L. Olla, Eds. Plenum, New York, 1979. xxii, 438 pp., illus. \$37.50.

**Behavior Therapy.** Techniques and Empirical Findings. David C. Rimm and John C. Masters. Academic Press, New York, ed. 2, 1979. xvi, 538 pp., illus. \$16.50.

**Behavior Therapy.** Toward an Applied Clinical Science. W. Stewart Agras, Alan E. Kazdin, and G. Terence Wilson. Freeman, San Francisco, 1979. xii, 174 pp. Cloth, \$12; paper, \$5.50.

**Behçet's Disease.** Proceedings of a symposium, Istanbul, Sept. 1977. Nihat Dilşen, Meral Konice, and Candan Övül, Eds. *Excerpta Medica*, Amsterdam, 1979 (U.S. distributor, Elsevier, New York). xiv, 308 pp., illus. \$61.

**Biochemical and Biophysical Perspectives in Marine Biology.** Vol. 4. D. C. Malins and J. R. Sargent, Eds. Academic Press, New York, 1978. xii, 240 pp., illus. \$35.25.

**The Biochemistry of Atherosclerosis.** Angelo M. Scanu, Robert W. Wissler, and Godfrey S. Getz, Eds. Dekker, New York, 1979. xxii, 548 pp., illus. \$9.75. The Biochemistry of Disease, vol. 7.

**Biology of the Fungi.** Their Development, Regulation, and Associations. Ian K. Ross. McGraw-Hill, New York, 1979. xii, 500 pp., illus. \$19.95. McGraw-Hill Series in Organismic Biology.

**The Building of a Department.** Chemistry at Southern Illinois University, 1927-1967. James W. Neckers. Southern Illinois University Press, Carbondale, and Feffer and

Simons, London, 1979, xii, 188 pp. \$12.95.

**The Business of Enlightenment.** A Publishing History of the *Encyclopédie*, 1775-1800. Robert Darnton. Belknap Press (Harvard University Press), Cambridge, Mass., 1979. xiv, 624 pp. \$20.

**Chemical Effects of Nuclear Transformations in Inorganic Systems.** G. Harbottle and A. G. Maddock, Eds. North-Holland, Amsterdam, 1979 (U.S. distributor, Elsevier, New York). viii, 576 pp., illus. \$87.75.

**The Chemical Elements and Man.** Measurements, Perspectives, Applications. E. I. Hamilton. Thomas, Springfield, Ill., 1979. xx, 490 pp., illus. \$39.75. American Lecture Series, Publication No. 1021.

**Chemical Kinetics and Transport.** Peter C. Jordan. Plenum, New York, 1979. xvi, 368 pp., illus. \$21.50.

**Chemistry and Biology of Pteridines.** Proceedings of a symposium, La Jolla, Calif., Sept. 1978. Roy L. Kisliuk and Gene M. Brown, Eds. Elsevier/North-Holland, New York, 1979. xxii, 714 pp., illus. \$40. Developments in Biochemistry, vol. 4.

**The Chemistry of Antitumor Antibiotics.** Vol. 1. William A. Remers, Wiley-Interscience, New York, 1979. x, 290 pp., illus. \$29.

**Chemistry of Metal-Gas Interface.** M. W. Roberts and C. S. McKee. Clarendon (Oxford University Press), New York, 1979. xiv, 594 pp., illus. + plates. \$65. Monographs on the Physics and Chemistry of Materials.

**The Child and Its Family.** Michael Lewis and Leonard A. Rosenblum, Eds. Plenum, New York, 1979. xii, 304 pp., illus. \$19.50. Genesis of Behavior, vol. 2.

**Chromatin Structure and Function.** Papers from a NATO Advanced Study Institute, Erice, Italy, Apr. 1978. Claudio A. Nicolini, Ed. Plenum, New York, 1979. Two parts. Part A, Molecular and Cellular Biophysical Methods. xx, 368 pp., illus. + index. \$32.50. Part B, Levels of Organization and Cell Function. xx + pp. 379-880, illus. \$42.50. The two-volume set, \$72. NATO Advanced Study Institutes Series A, vol. 21a and vol. 21b.

**The Circadian System of Man.** Results of Experiments under Temporal Isolation. Rütger A. Wever. Springer-Verlag, New York, 1979. xii, 276 pp., illus. \$48.90.

**A Color Illustrated Guide to Constituents, Textures, Cements, and Porosities of Sandstones and Associated Rocks.** Peter A. Scholle. American Association of Petroleum Geologists, Tulsa, Okla., 1979. x, 202 pp. \$19.50. AAPG Memoir 28.

**The Colors of Rage and Love.** The Process of Change in Psychotherapy Elucidated by the Patient's Own Drawings. A Picture Book of Internal Events. Marie Naevestad. Universitetsforlaget, Oslo, 1979 (U.S. distributor, Columbia University Press, New York). 274 pp. \$30.

**Compact Numerical Methods for Computers.** Linear Algebra and Function Minimization. J. C. Nash. Halsted (Wiley), New York, 1979. x, 228 pp. \$27.50.

**Computer Assisted Studies of Chemical Structure and Biological Function.** Andrew J. Stuper, William E. Brügger, and Peter C. Jurs. Wiley-Interscience, New York, 1979. xxi, 220 pp., illus. \$23.50.

**Computers.** Their Structure, Use, and Influence. Daniel L. Slotnick and Joan K. Slotnick. Prentice-Hall, Englewood Cliffs, N.J., 1979. x, 438 pp., illus. \$15.95.

**Computing Methods in Applied Sciences and Engineering.** 1977. I. Papers from a symposium, Dec. 1977. G. Glowinski and J. L. Li-

ons, Eds. Springer-Verlag, New York, 1979. vi, 392 pp., illus. Paper, \$17.80. Lecture Notes in Mathematics, vol. 704.

**Concrete Materials and Practice.** L. J. Murdock and K. M. Brook. Halsted (Wiley), New York, 1979. x, 434 pp., illus. \$49.95.

**Containing Health Benefit Costs.** The Self-Insurance Option. Papers from a conference, Boston, June 1978. Richard H. Egdahl and Diana Chapman Walsh. Springer-Verlag, New York, 1979. viii, 182 pp. Paper, \$12. Industry and Health Care 6.

**Contemporary Biology.** Mary E. Clark. Saunders, Philadelphia, ed. 2, 1979. xviii, 666 pp., illus. + appendixes. \$17.95.

**Contemporary Issues in Biomedical Ethics.** Papers from a colloquium, London, Ontario, Canada, Oct. 1977. John W. Davis, Barry Hoffmaster, and Sarah Shorten, Eds. HUMANA Press, Clifton, N.J., 1978. xxx, 300 pp. \$19.50.

**The Crab Nebula.** Simon Mitton. Scribner, New York, 1979. 194 pp., illus. \$14.95.

**The Day the Bomb Fell on America.** True Stories of the Nuclear Age. Clyde W. Burleson. Prentice-Hall, Englewood Cliffs, N.J., 1978. xvii, 262 pp. \$9.95.

**Definition of a European Programme for Earthquake Prediction Research.** Proceedings of a seminar, Strasbourg, Mar. 1979. European Space Agency, Paris, 1979. viii, 92 pp., illus. Paper, 50 F. ESA SP-149.

**Dengue in the Caribbean, 1977.** Proceedings of a workshop, Montego Bay, Jamaica, May 1978. Pan American Health Organization, Washington, D.C., 1979. xii, 186 pp., illus. Paper, \$8. Scientific Publication No. 375.

**Design.** Purpose, Form and Meaning. John F. Pile. University of Massachusetts Press, Amherst, 1979. xii, 204 pp., illus. \$20.

**Detonation.** Wildon Fickett and William C. Davis. University of California Press, Berkeley, 1979. xiv, 386 pp., illus. \$27.50. Los Alamos Series in Basic and Applied Sciences.

**Education's Lasting Influence on Values.** Herbert H. Hyman and Charles R. Wright. University of Chicago Press, Chicago, 1979. x, 162 pp. \$12.50.

**Ego Psychology II.** Psychoanalytic Developmental Psychology. Gertrude Blanck and Rubin Blanck. Columbia University Press, New York, 1979. xx, 274 pp. \$17.50.

**Elemente der Klinischen Genetik.** Grundlagen und Anwendung der Humangenetik in Studium und Praxis. Eberhard Passarge. Gustav Fischer Verlag, New York, 1979. xii, 340 pp., illus. Paper, \$30.30.

**Energy from Heaven and Earth.** Edward Teller. Freeman, San Francisco, 1979. xiv, 322 pp., illus. \$15.

**Engineering Equipment for Foundries.** Proceedings of a seminar, Geneva, Nov. 1977. Published for the United Nations by Pergamon, New York, 1979. xviii, 496 pp., illus. \$54.

**Engineering Mathematics Handbook.** Definitions, Theorems, Formulas, Tables. Jan J. Tuma. McGraw-Hill, New York, ed. 2, 1979. xviii, 394 pp., illus. \$21.95.

**Enzymatic Reaction Mechanisms.** Christopher Walsh. Freeman, San Francisco, 1979. xviii, 978 pp., illus. \$29.50.

**Equadiff IV.** Proceedings of a meeting, Prague, Aug. 1977. Jiří Fábera, Ed. Springer-Verlag, New York, 1979. xx, 442 pp. Paper, \$21.30. Lecture Notes in Mathematics, vol. 703.

**Essentials of Psychology.** Robert E. Silverman. Prentice-Hall, Englewood Cliffs, N.J., 1979. xvi, 460 pp., illus. Paper, \$10.95.

**Essentials of Soil Study.** With Special Refer-

ence to Tropical Areas. A. Faniran and O. Areola. Heinemann, Exeter, N.H., 1978. x, 278 pp., illus. Paper, \$12.95.

**Evoked Brain Potentials and Behavior.** Proceedings of a conference, Brooklyn, N.Y., May 1977. Henri Begleiter, Ed. Plenum, New York, 1979. xiv, 568 pp., illus. \$35. The Downstate Series of Research in Psychiatry and Psychology, vol. 2.

**Evolutionary Biology.** Douglas J. Futuyma. Sinauer, Sunderland, Mass., 1979. x, 566 pp., illus. \$17.50.

**Evolutionary Models and Studies in Human Diversity.** Papers from a congress, Chicago, Aug. 1973. Robert J. Meier, Charlotte M. Otten, and Fathi Abdel-Hameed, Eds. Mouton, The Hague, 1978 (U.S. distributor, Beresford Books, Lawrence, Mass.). xiv, 376 pp., illus. \$40.25. World Anthropology.

**Excimer Lasers.** Ch. K. Rhodes, Ed. Springer-Verlag, New York, 1979. xii, 196 pp., illus. \$29.80. Topics in Applied Physics, vol. 30.

**Experimental Leukemia and Mammary Cancer.** Induction, Prevention, Cure. Charles Brenton Huggins. University of Chicago Press, Chicago, 1979. xvi, 222 pp., illus. \$20.

**Experimental Techniques in Low-Temperature Physics.** Guy K. White. Clarendon (Oxford University Press), New York, ed. 3, 1979. xii, 332 pp., illus. \$29.50. Monographs on the Physics and Chemistry of Materials.

**Explorers of the Body.** Steven Lehrer. Doubleday, Garden City, N.Y., 1979. xiv, 464 pp. + plates. \$12.95.

**Extraterrestrial Civilizations.** Isaac Asimov. Crown, New York, 1979. vi, 282 pp. \$10.

**Fish Physiology.** Vol. 8, Bioenergetics and Growth. W. S. Hoar, D. J. Randall, and J. R. Brett, Eds. Academic Press, New York, 1979. xviii, 786 pp., illus. \$65.

**Fishes of the Delaware Estuaries.** A Guide to the Early Life Histories. Johnson C. S. Wang and Ronnie J. Kernehan. EA Communications (Ecological Analysts Inc.), Towson, Md., 1979. xxxii, 410 pp., illus. Spiral bound, \$22.50.

**Fishes of the Hereford Inlet Estuary, Southern New Jersey.** Dennis M. Allen, Jay P. Clymer, III, and Sidney S. Herman. Wetlands Institute. Lehigh University, Bethlehem, Pa., 1978. xii, 138 pp. Spiral bound, \$2.25.

**Footnotes to a Fairytale.** A Study of the Nature of Expression in the Arts. W. J. Bonville. Green, St. Louis, 1979. xviii, 174 pp. \$15.

**Foundations of Astronomy.** From Big Bang to Black Holes. Richard Knox. Halsted (Wiley), New York, 1979. 184 pp., illus. \$10.95.

**Foundations of Modern Sociology.** Metta Spencer with the editorial collaboration of Alex Inkeles. Prentice-Hall, Englewood Cliffs, N.J., ed. 2, 1979. xviii, 622 pp., illus. \$14.95.

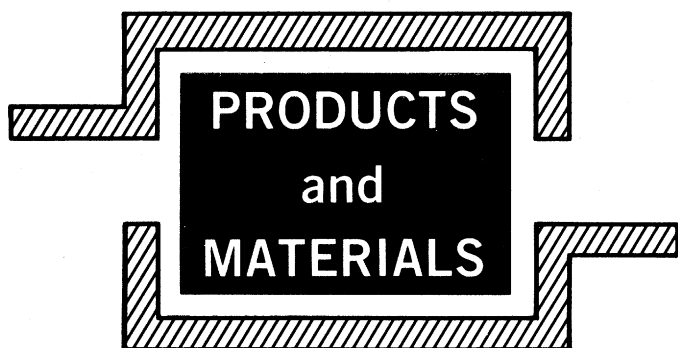
**Fundamentals of Chemistry.** Fred H. Redmore. Prentice-Hall, Englewood Cliffs, N.J., 1979. xx, 712 pp., illus. \$17.95.

**Genetic Counseling.** Psychological Dimensions. Seymour Kessler, Ed. Academic Press, New York, 1979. xx, 248 pp. \$18.

**Geology of the Planet Mars.** Vivien Gornitz, Ed. Dowden, Hutchinson and Ross, Stroudsburg, Pa., 1979 (distributor, Academic Press, New York). xviii, 414 pp., illus. \$39.50. Benchmark Papers in Geology, vol. 48.

**Geometric Topology.** Proceedings of a conference, Athens, Ga., Aug. 1977. James C. Cantrell, Ed. Academic Press, New York, 1979. xiv, 698 pp., illus. \$36.

**Getting Started in Digital Troubleshooting.** (Continued on page 210)



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*Laboratory Chemicals* are featured in a catalog of nearly 300 pages. Accurate Chemical & Scientific. Circle 758.

*Transient Recorders* summarizes the performance of nine transient digitizers. LeCroy Research Systems. Circle 759.

*Materials Analyzer* describes the CSI-740 device for laboratory and field work. Columbia Scientific Industries. Circle 760.

*Science Specialties* features equipment, instruments, apparatus, and chemicals for many laboratory applications. Cole-Parmer Instrument. Circle 761.

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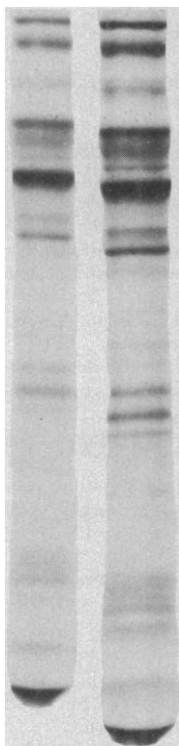
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# pH Electrode Quiz

## QUESTION

The most common cause of pH electrode failure is:

- ☐ Other people break them.
- ☐ Other people let the reference dry out.
- ☐ Cosmic forces de-energize them.

## ANSWER

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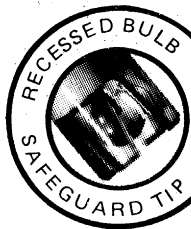
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James Coffron. Reston (Prentice-Hall), Reston, Va., 1979. xiv, 240 pp., illus. \$16.95.

**Getting Started in Electronic Troubleshooting.** William E. Long. Reston (Prentice-Hall), Reston, Va., 1979. xii, 228 pp., illus. \$14.95.

**Grassland Ecosystems of the World.** Analysis of Grasslands and Their Uses. R. T. Coupland, Ed. Cambridge University Press, New York, 1979. xxviii, 402 pp., illus. \$62.50. International Biological Programme 18.

**The Gunn-Hilsum Effect.** Melvin P. Shaw, Harold L. Grubin, and Peter R. Solomon. Academic Press, New York, 1979. xviii, 250 pp., illus. \$19.50.

**A Handbook of Decomposition Methods in Analytical Chemistry.** Rudolf Bock. Translated from the German edition (Weinheim, 1972) and revised by Iain L. Marr. Halsted (Wiley), New York, 1979. xii, 444 pp., illus. \$54.95.

**Handbook of Industrial Energy Analysis.** I. Boustead and G. F. Hancock. Horwood, Chichester, England, and Halsted (Wiley), New York, 1979. 422 pp., illus. \$69.50.

**Handbook of Solid-State Devices.** Characteristics and Applications. Michael Thomason. Reston (Prentice-Hall), Reston, Va., 1979. viii, 264 pp., illus. \$17.95.

**Higher Grade Chemistry.** Iain M. Duncan. Heinemann, Exeter, N.H., 1979. vi, 186 pp., illus. Paper, \$6.25.

**Homeopathy.** Medicine of the New Man. George Vithoulkas. Arco Publishing, New York, 1979. vi, 154 pp. Paper, \$3.95.

**How to Write and Publish a Scientific Paper.** Robert A. Day. ISI Press, Philadelphia, 1979. xii, 160 pp., illus. Cloth, \$15; paper, \$8.95.

**Human Ancestors.** Readings from *Scientific American*. Freeman, San Francisco, 1979. viii, 130 pp., illus. Cloth, \$12; paper, \$5.

**Human Evoked Potentials.** Applications and Problems. Proceedings of a conference, Konstanz, Germany, Aug. 1978. Dietrich Lehmann and Enoch Callaway, Eds. Plenum, New York, 1979. xiv, 498 pp., illus. \$39.50. NATO Conference Series III, vol. 9.

**Immunoassays in the Clinical Laboratory.** Proceedings of a conference, La Jolla, Calif., Mar. 1978. R. M. Nakamura, W. R. Dito, and E. S. Tucker III, Eds. Liss, New York, 1979. xviii, 366 pp., illus. \$40. Laboratory and Research Methods in Biology and Medicine, vol. 3.

**Immunotherapy of Human Cancer.** Papers from a conference, Houston, 1978. Published for the University of Texas System Cancer Center M. D. Anderson Hospital and Tumor Institute by Raven, New York, 1978. xx, 418 pp., illus. \$35.

**Inflammation.** J. R. Vane and S. H. Ferreira, Eds. Springer-Verlag, New York, 1978. xxviii, 786 pp., illus. \$159.50. Handbook of Experimental Pharmacology, vol. 50/1.

**The Infrared Handbook.** William L. Wolfe and George J. Zissis, Eds. Environmental Research Institute of Michigan, Ann Arbor, 1978. Various pages, illus. \$25.

**Ingalik Contact Ecology.** An Ethnohistory of the Lower-Middle Yukon, 1790-1935. James W. Vanstone. Field Museum of Natural History, Chicago, 1979. xii, 274 pp., illus. Paper, \$12. Fieldiana Anthropology, vol. 71. Publication 1295.

**Instrumental Applications in Forensic Drug Chemistry.** Proceedings of a symposium, Arlington, Va., May 1978. Michael Klein, Alice V. Kruegel, and Stanley P. Sobol, Eds. Drug

Enforcement Administration, Washington, D.C., 1979 (available from the Superintendent of Documents, Washington, D.C.). vi, 290 pp., illus. Paper, \$5.

**Integer Programming and Related Areas.** A Classified Bibliography, 1976-1978. Dirk Hausmann, Ed. Springer-Verlag, New York, 1978. xiv, 314 pp. Paper, \$16. Lecture Notes in Economics and Mathematical Sciences, vol. 160.

**The International Challenge of Drug Abuse.** Papers from a meeting, Honolulu, Aug., 1977. Robert C. Petersen, Ed. National Institute on Drug Abuse, Rockville, Md., 1978. xiv, 350 pp., illus. Paper. National Institute on Drug Abuse Research Monograph Series, 19.

**Interpretation and Processing of Vibrational Spectra.** Milan Horák and Antonín Vítek. Translated from the Czech by Karel Štulík. Wiley-Interscience, New York, 1979. 414 pp., illus. \$46.50.

**Introduction aux Thérapies Comportementales (Behavior Therapies).** Historique-Bases Théoriques-Pratique. Ovide Fontaine Mardaga, Brussels, 1978. 302 pp. Paper, 430 BF. Psychologie et Sciences Humaines.

**An Introduction to Affinity Chromatography.** C. R. Lowe. North-Holland, Amsterdam, 1979 (U.S. distributor, Elsevier, New York). iv + pp. 269-522, illus. Paper, \$29.25. Laboratory Techniques in Biochemistry and Molecular Biology, vol. 7, part 2.

**Introduction to Mathematical Logic.** Set Theory, Computable Functions, Model Theory. Jerome Malitz. Springer-Verlag, New York, 1979. xii, 200 pp. \$14. Undergraduate Texts in Mathematics.

**Introduction to Modern Austrian Capital Theory.** Malte Faber. Springer-Verlag, New York, 1979. x, 198 pp., illus. Paper, \$12.50. Lecture Notes in Economics and Mathematical Systems, vol. 167.

**Introduction to Physiology.** Vol. 4. Hugh Davson and M. B. Segal. Academic Press, London, and Grune and Stratton, New York, 1978. xii, 622 pp., illus. \$46.50.

**An Introduction to Programming.** A Structured Approach Using PL/I and PL/C. Richard Conway and Davis Dries with contributions by John E. Dennis and Jorge Moré. Winthrop (Prentice-Hall), Cambridge, Mass., ed. 3, 1979. xviii, 728 pp. \$12.95. Winthrop Computer Systems Series.

**Introduction to Psychology.** Larry T. Brown and Elliot A. Weiner. Winthrop (Prentice-Hall), Cambridge, Mass., 1979. xviii, 734 pp., illus. \$16.95.

**Introductory College Physics.** Atam P. Arya. Macmillan, New York, and Collier Macmillan, London, 1979. xxii, 856 pp., illus. \$18.95.

**Ion-Molecule Reactions.** J. L. Franklin, Ed. Dowden, Hutchinson and Ross, Stroudsburg, Pa., 1979 (distributor, Academic Press, New York). Two volumes, illus. Part 1, Kinetics and Dynamics. xvi, 400 pp. Part 2, Elevated Pressures and Long Reaction Times. xviii, 380 pp. The set, \$38. Benchmark Papers in Physical Chemistry and Chemical Physics, vol. 3.

**Ionisation Constants of Organic Acids in Aqueous Solution.** E. P. Serjeant and Boyd Dempsey. Pergamon, New York, 1979. xii, 990 pp. \$125. IUPAC Chemical Data Series, No. 23.

**Ionospheric Techniques and Phenomena.** Alain Giraud and Michel Petit. Reidel, Boston, 1979 (distributor, Kluwer Boston, Hingham, Mass.). xx, 266 pp., illus. \$38. Geophysics of Astrophysics Monographs, vol. 13.

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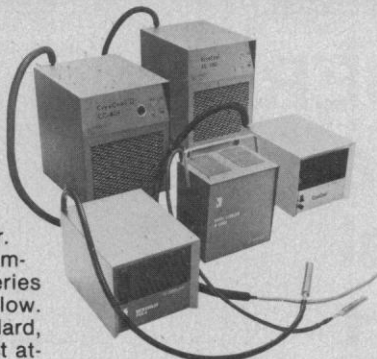
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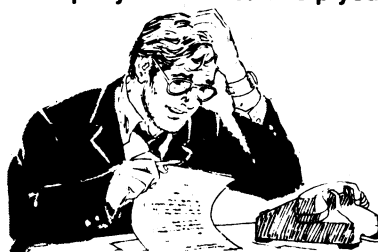
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**Konstruktion verseller Familien kompakter komplexer Räume.** Otto Forster and Knut Knorr. Springer-Verlag, New York, 1979. viii, 142 pp. Paper, \$9. Lecture Notes in Mathematics, vol. 705.

**Lifetide.** Lyall Watson. Simon and Schuster, New York, 1979. 344 pp. \$10.95.

**Linear Multivariable Control.** A Geometric Approach. W. Murray Wonham. Springer-Verlag, New York, ed. 2, 1979. xvi, 328 pp., illus. \$29.80. Applications of Mathematics, 10.

**Linguistic Convergence.** An Ethnography of Speaking at Fort Chipewyan, Alberta. Ronald Scollon and Suzanne B. K. Scollon. Academic Press, New York, 1979. xii, 276 pp. \$19.50. Language, Thought, and Culture.

**Liquid Chromatographic Analysis of Food and Beverages.** Vol. 1. Proceedings of a symposium, Honolulu, Apr. 1979. George Charalambous, Ed. Academic Press, New York, 1979. xiv, 236 pp., illus. \$16.

**Liquid Crystals and Biological Structures.** Glenn H. Brown and Jerome J. Wolken. Academic Press, New York, 1979. xii, 188 pp., illus. \$19.

**Manual of Surgery of the Gallbladder, Bile Ducts, and Exocrine Pancreas.** Robert E. Hermann with contributions by Avram M. Cooperman, Caldwell B. Esselstyn, Jr., Ezra Steiger, and R. Thomas Holzbach. Springer-Verlag, New York, 1979. xiv, 306 pp., illus. \$84.50.

**Materials Science and Engineering.** Its Evolution, Practice and Prospects. Morris Cohen, Ed. Elsevier, New York, 1979. viii, 102 pp. \$37.50. Special issue of *Materials Science and Engineering*.

**Mathematical Aspects of Reacting and Diffusing Systems.** Paul C. Fife. Springer-Verlag, New York, 1979. iv, 186 pp. Paper, \$9.80. Lecture Notes in Biomathematics, vol. 28.

**Mathematics for Electronics.** Donald P. Leach. Reston (Prentice-Hall), Reston, Va., 1979. xvi, 432 pp., illus. \$15.95.

**Maya Archaeology and Ethnohistory.** Papers from a symposium, Cambridge, England, Aug. 1976. Norman Hammond and Gordon R. Willey, Eds. University of Texas Press, Austin, 1979. xviii, 292 pp., illus. \$20. The Texas Pan American Series.

**Methods in Enzymology.** Sidney P. Colowick and Nathan O. Kaplan, Eds. Vol. 60, Nucleic Acids and Protein Synthesis. Kivi Moldave and Lawrence Grossman, Eds. Academic Press, New York, 1979. xxvi, 832 pp., illus. \$49.50.

**Methods in Enzymology.** Sidney P. Colowick and Nathan O. Kaplan, Eds. Vol. 62, Vitamins and Coenzymes, Part D. Donald B. McCormick and Lemuel D. Wright, Eds. Academic Press, New York, 1979. xxviii, 616 pp., illus. \$47.

**Methods of Modern Mathematical Physics.** Vol. 3, Scattering Theory. Michael Reed and Barry Simon. Academic Press, New York, 1979. xvi, 464 pp. \$42.

**Microbial Ecology.** A Conceptual Approach. J. M. Lynch and N. J. Poole, Eds. Halsted (Wiley), New York, 1979. xiv, 266 pp., illus. \$49.50.

**Microbial Respiration.** Walter P. Hempting, Ed. Dowden, Hutchinson and Ross, Stroudsburg, Pa., 1979 (distributor, Academic Press, New York). xiv, 338 pp., illus. \$29.50. Benchmark Papers in Microbiology, vol. 13.

**The Microcirculation in Diabetes.** E. Davis,

Ed. Karger, Basel, 1979. viii, 152 pp., illus. \$81. *Advances in Microcirculation*, vol. 8.

**Microwave Studies of Exciton Condensation in Germanium.** N. G. Basov, Ed. Translated from the Russian edition (Moscow, 1977) by David L. Burdick. Consultants Bureau (Plenum), New York, 1979. viii, 90 pp., illus. \$35. The Lebedev Physics Institute Series, vol. 100.

**Mineral Deposits of Europe.** Vol. 1, Northwest Europe. S. H. U. Bowie, A. Kvalheim, and H. W. Haslam, Eds. The Institution of Mining and Metallurgy, London, and The Mineralogical Society, London, 1979. xii, 362 pp., illus. \$55.

**Models and Methodologies in Evolutionary Theory.** Jeffrey H. Schwartz and Harold B. Rollins, Eds. Carnegie Museum of Natural History, Pittsburgh, 1979. 106 pp., illus. Paper, \$6. *Bulletin of Carnegie Museum of Natural History*, No. 13.

**Modern Power Transformer Practice.** R. Feinberg, Ed. Halsted (Wiley), New York, 1979. xvi, 360 pp., illus. \$49.95.

**Molecular Metals.** Proceedings of a conference, Les Arcs, France, Sept. 1978. William E. Hatfield, Ed. Plenum, New York, 1979. xii, 556 pp., illus. \$49.50. NATO Conference Series VI, vol. 1.

**Multiphase Polymers.** Papers from a symposium, Anaheim, Calif., Mar. 1978. Stuart L. Cooper and Gerald M. Estes, Eds. American Chemical Society, Washington, D.C., 1979. xii, 644 pp., illus. \$58.50. *Advances in Chemistry Series*, 176.

**Neural Mechanisms of Behavior in the Pigeon.** Proceedings of a Conference, Newark, Del., June 1977. A. M. Granda and J. H. Maxwell, Eds. Plenum, New York, 1979. xvi, 436 pp., illus. \$42.50.

**Neurosciences Research Program Bulletin.** Vol. 15. MIT Press, Cambridge, Mass., 1979. vi, 716 pp., illus. \$30.

**Neutron Transmutation Doping in Semiconductors.** Proceedings of a conference, Columbia, Mo., Apr. 1978. Jon M. Meese, Ed. Plenum, New York, 1979. x, 372 pp., illus. \$39.50.

**New Developments in Immunoassays.** Papers from a conference, Düsseldorf, Germany, Nov. 1977, and Chicago, Dec. 1977. H. Schönfeld, Ed. Karger, Basel, 1979. vi, 158 pp., illus. \$64. *Antibiotics and Chemotherapy*, vol. 26.

**New Directions in Discourse Processing.** Roy O. Freedle, Ed. Ablex Publishing Corporation, Norwood, N.J., 1979. xvi, 336 pp., illus. \$23.75. *Advances in Discourse Processes*, vol. 2.

**New Trends in Dynamic System Theory and Economics.** Proceedings of a seminar, Udine, Italy, Sept. 1977. Masanao Aoki and Angelo Marzollo, Eds. Academic Press, New York, 1979. xii, 412 pp. \$21.

**1979 Oil Spill Conference.** (Prevention, Behavior, Control, Cleanup.) Los Angeles, Mar. 1979. American Petroleum Institute, Washington, D.C., 1979. xxviii, 728 pp., illus. Paper, \$25. American Petroleum Institute Publication No. 4308.

**Nitrogen Electrolytes, Water and Energy Metabolism.** M. Rechcigl, Jr., Ed. Karger, Basel, 1979. xiv, 260 pp., illus. \$84.50. *Comparative Animal Nutrition*, vol. 3.

**Nuclear Transplantation.** J. F. Danielli and M. A. DiBerardino, Eds. Academic Press, New York, 1979. xvi, 308 pp., illus. \$27. *International Review of Cytology*, Supplement 9.

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**Pathways of Pollutants in the Atmosphere.** Papers from a meeting, Nov. 1977. Royal Society, London, 1979. viii, 638 pp., illus. £13.30. First published in *Philosophical Transactions of the Royal Society of London*, series A, vol. 290, No. 1376.

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**Personality.** Richard S. Lazarus and Alan Monat. Prentice-Hall, Englewood Cliffs, N.J., ed. 3, 1979. xii, 340 pp. Cloth, \$12.95; paper, \$6.95.

**Personality.** A Cognitive View. Ronald Forgas and Bernard H. Shulman. Prentice-Hall, Englewood Cliffs, N.J., 1979. xiv, 434 pp., illus. \$15.95.

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**Physics of Minerals and Inorganic Materials.** An Introduction. A. S. Marfunin. Translated from the Russian edition (Moscow, 1974) by N. G. Egorova and A. G. Mishchenko. Springer-Verlag, New York, 1979. xii, 342 pp., illus. \$49.80.

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**Physiology of Woody Plants.** Paul J. Kramer and Theodore T. Kozlowski. Academic Press, New York, 1979. xiv, 812 pp., illus. \$35.

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**Positrons in Solids.** P. Hautojärvi, Ed. Springer-Verlag, New York, 1979. xiv, 256

pp., illus. \$30.80. Topics in Current Physics, vol. 12.

**The Practical Inventor's Handbook.** Orville Greene and Frank Durr with John Berseth. McGraw-Hill, New York, 1979. x, 246 pp., illus. \$19.95.

**The Practice of Clinical Immunology.** R. A. Thompson. Arnold, London, ed. 2, 1978 (U.S. distributor, Year Book Medical Publishers, Chicago). x, 196 pp., illus. \$22.95. Current Topics in Immunology, No. 1.

**Precalculus Mathematics.** A Functional Approach. Karl J. Smith. Brooks/Cole, Monterey, Calif., 1979. xviii, 606 pp., illus. \$15.95.

**Prehistoric Cordage.** Identifications of Impressions on Pottery. William M. Hurley. Taraxacum, Washington, 1979 (distributor, Merrimack Book Service, Salem, N.H.). xii, 156 pp., illus. \$15. Aldine Manuals on Archeology, 3.

**Proceedings of Solar Energy Consumer Protection Workshop.** Vol. 1, Opening and Final Plenary Sessions. Atlanta, May 1978. U.S. Department of Energy, Washington, D.C., 1979 (available from the National Technical Information Service, Springfield, Va.). Various pages, illus. Paper, \$9.25; microfiche, \$3.

**Proceedings of the Fifth Annual Conference on Restoration of Coastal Vegetation in Florida.** Tampa, May 1978. Dorothea P. Cole, Ed. Hillsborough Community College Environmental Studies Center, Tampa, Fla., 1979. iv, 256 pp., illus. Paper, \$10.

**Progress in Allergy.** Vol. 26. Kimishige Ishizaka, Paul Kallós, Byron H. Waksman, and Alain L. de Weck, Eds. Karger, Basel, 1979. xviii, 238 pp., illus. \$64.75.

**The Psychological World of the Juvenile Delinquent.** Daniel Offer, Richard C. Marohn, and Eric Ostrov. Basic Books, New York, 1979. xii, 224 pp. \$15.

**Thinking through the Energy Problem.** Thomas C. Schelling, Committee for Economic Development, New York, 1979. xii, 74 pp. Paper, \$5.

**Third International Visual Field Symposium.** Tokyo, May 1978. E. L. Greve, Ed. Junk, The Hague, 1979 (U.S. distributor, Kluwer Boston, Hingham, Mass.). viii, 488 pp., illus. \$85. Documenta Ophthalmologica Proceedings Series, vol. 19.

**Topics in Current Chemistry.** Vol. 78, Biochemistry. Springer-Verlag, New York, 1979. iv, 196 pp., illus. \$48.40.

**Traffic Planning and Engineering.** F. D. Hobbs. Pergamon, New York, ed. 2, 1979. xvi, 544 pp., illus. Cloth, \$55; paper, \$20. Pergamon International Library.

**Tunneling in Biological Systems.** Proceedings of a symposium, Philadelphia, Nov. 1977. Britton Chance and five others, Eds. Academic Press, New York, 1979. xviii, 758 pp., illus. \$42. Johnson Research Foundation Colloquia.

**The Two-Paycheck Marriage.** How Women at Work Are Changing Life in America. Caroline Bird. Rawson, Wade, New York, 1979. xiv, 306 pp. \$8.95.

**Uncertain Futures.** Challenges for Decision-Makers. Robert U. Ayres. Wiley-Interscience, New York, 1979. xviii, 430 pp., illus. \$19.95.

**Woman Unliberated.** Difficulties and Limitations in Changing Self. C. Margaret Hall. Hemisphere, Washington, D.C., 1979. xiv, 170 pp. Paper, \$11.95.

**Ziegler-Natta Catalysts and Polymerizations.** John Boor, Jr. Academic Press, New York, 1979. xviii, 670 pp., illus. \$65.





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**Population Geneticist/Biometrician**, Ph.D. 1967. Seeks research/teaching position in agriculture/biology. Nine and one-half years with leading pharmaceutical company, responsible for plant breeding and mathematical/statistical programs; 2 years of postdoctoral experience in computer simulation; 3 years of university teaching in agronomy/botany. Several publications. Box 3, SCIENCE. X

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**ANALYTICAL CHEMISTRY FACULTY POSITIONS (two):** Assistant or associate, tenure-track in a department with a faculty of 15. It is preferred that the successful candidates will have postdoctoral experience, will establish a significant research program, and will have a strong interest in quality teaching at the undergraduate and graduate (M.S.) levels. Outstanding candidates in any field of analytical chemistry, apart from electrochemistry and separations, will be considered. Send undergraduate and graduate transcripts, résumé, three reference letters, and detailed research plans by 15 February 1980 to: **Chairman, Analytical Chemistry Search and Screen Committee, Department of Chemistry, Indiana University-Purdue University at Indianapolis, 1125 East 38 Street, Indianapolis, Ind. 46205.** An Equal Opportunity/Affirmative Action Employer.

**ANIMAL PHYSIOLOGIST.** Applications are invited for tenure-track position at assistant or associate level. Primary teaching responsibility will be in upper level physiology (organ and cell). Additional responsibilities include a course in anatomy and physiology, additional biology courses, and involvement in the development and implementation of a health related curriculum. Candidate should have strong interest in teaching; research encouraged. Ph.D. and knowledge of allied health curriculum required. Send résumé, transcripts, and three letters of reference to: **Dr. Charles H. Brueske, Chairman, Department of Biology, Mount Union College, Alliance, Ohio 44601.** An Equal Opportunity Employer.

**AQUATIC ECOLOGIST.** Ph.D. required with a specialty in aquatic ecology/zooplankton (organismal or cellular) which includes training in both botany and zoology. The position is primarily for teaching general biology. Assistant professor level starting 25 August 1980. Application deadline is 1 February 1980. An Equal Opportunity/Affirmative Action Employer. Apply to: **V. Thiesfeld, Chairman, Department of Biology, University of Wisconsin-Stevens Point, Stevens Point, Wis. 54481.**

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Positions are open at the rank of assistant professor for individuals with research interests in: (i) molecular, cellular, or genetic aspects of development; (ii) control of spatial organization, patterning, and gene expression; and (iii) cell biology, especially membrane receptors and interactions. Candidates with promise of excellence in both research and teaching should send curriculum vitae and the names of three references to: **Search Committee, c/o Edward C. Cox, Department of Biology, Princeton University, Princeton, New Jersey 08544.** Princeton University is an Equal Opportunity/Affirmative Action Employer.

**PHYSICAL CHEMISTRY FACULTY POSITION.** Assistant professor, tenure-track in a department with a faculty of 15. Establishment of a significant research program along with quality teaching at undergraduate and graduate (M.S.) levels is expected. Teaching responsibilities may include a graduate course in kinetics and/or quantum mechanics. Postdoctoral experience preferred. All areas of research considered. Send undergraduate and graduate transcripts, résumé, three reference letters, and detailed research plans by 15 February 1980 to: **Chairman, Physical Chemistry Search and Screen Committee, Department of Chemistry, Indiana University-Purdue University at Indianapolis, 1125 East 38 Street, Indianapolis, Ind. 46205.** An Equal Opportunity/Affirmative Action Employer.

## POSITIONS OPEN

**UNIVERSITY OF WASHINGTON.** Tenure-track, **ASSISTANT PROFESSOR** position available in the Animal Behavior Program, Department of Psychology. We are looking for the best possible scientist with interests in one or more of the following areas: computer modeling and quantitative analysis of ethological or sociobiological processes; sociobiology; laboratory ethology; neuroethology; or behavior genetics. Advanced degree need not be in psychology, but candidates must be capable of teaching basic level courses such as statistics. Send brief statement of research interests, curriculum vitae, reprints, and three letters of recommendation to: **Dr. David P. Barash, Department of Psychology, University of Washington, Seattle, Washington 98195.** Women and minorities are urged to apply. Application deadline: 1 March 1980. The University of Washington is an Equal Opportunity/Affirmative Action Employer.

## ASSISTANT PROFESSOR: BIOCHEMISTRY

The Biochemistry Department of Brandeis University invites applications for an assistant professor position. The criterion for selection will largely rest on demonstrated and potential outstanding research accomplishments. Excellence in teaching is also expected. Send curriculum vitae, a short description of research accomplished, in progress, and that proposed for the next several years. Also arrange for three letters of recommendation to be sent to: **Dr. Helen Van Vunakis, Faculty Search Committee, Biochemistry, Brandeis University, Waltham, Mass. 02254.** Deadline for application is 15 February 1980. Brandeis is an Equal Opportunity/Affirmative Action Employer.

## TWO ASSISTANT PROFESSORSHIPS IN BIOLOGY

**DEVELOPMENTAL BIOLOGIST.** Two-year appointment, beginning fall 1980. Teach a semester course in developmental biology, part of an introductory biology course, and a semester course to be arranged. The candidate will be expected to conduct a research program capable of involving undergraduates.

**PHYSIOLOGY AND ANIMAL BEHAVIOR.** One-year appointment, beginning fall 1980. Teach semester courses in physiology and either animal behavior or neurophysiology, and a portion of an introductory biology course.

Send curriculum vitae, statement of research interests, and three letters of reference by 15 February 1980 to: **Dr. C. Thomas Settemire, Chairman, Biology Department, Bowdoin College, Brunswick, Maine 04011.** An Affirmative Action/Equal Opportunity Employer.

**ASSISTANT PROFESSOR, INORGANIC OR BIOCHEMISTRY,** beginning 15 August 1980. Must have interest and experience in modern analytical chemistry to aid departmental teaching and research. Only recent Ph.D., or those who have fulfilled all degree requirements by the above date will be considered. Major emphasis on undergraduate teaching. Research with M.S. students expected. A résumé, three reference letters, and a summary of research plans must be received before 28 January 1980 by: **Dr. B. L. Fox, Chemistry Department, University of Dayton, Dayton, Ohio 45469.** The University of Dayton is an Equal Opportunity/Affirmative Action Employer.

## ASSISTANT PROFESSOR PHYSIOLOGY AND BIOPHYSICS

The Department of Physiology and Biophysics at the University of Vermont College of Medicine invites applications for a tenure-track position. Applicants should have Ph.D. in physiology and/or biophysics and two or more years of postdoctoral training, or the M.D. degree and equivalent research training. Candidates must demonstrate outstanding teaching ability and excellence in independent research, and have strong commitments to both activities. The successful candidate will be expected to fulfill modest teaching responsibilities in medical, undergraduate, and graduate courses with distinction, and to establish a vigorous and productive independent research program which merits extramural support. Preference will be given to those whose research areas complement, but do not duplicate, those of the existing faculty. Send letters of application, curriculum vitae, a brief description of career goals and proposed research program, and names of three references to: **Norman R. Alpert, Chairman, Department of Physiology and Biophysics, University of Vermont College of Medicine, Burlington, Vermont 05405.** The University of Vermont is an Equal Opportunity/Affirmative Action Employer.

## POSITIONS OPEN

### ASSISTANT PROFESSOR OF MICROBIOLOGY

Teaching responsibilities may include introductory microbiology and a course in area of specialization. Research area open, but preference will be given to individuals working in biochemistry, immunology, physiology, or genetics. The Ph.D. degree and relevant postdoctoral experience are required. Candidates must be able to maintain an independently funded research program. Applicants should submit, by 15 February 1980, curriculum vitae and copies of recent publications and have three letters of reference sent to: **Dr. Henry C. Reeves, Microbiology Search Committee, Department of Botany and Microbiology, Arizona State University, Tempe, Ariz. 85281.**

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**ASSISTANT PROFESSOR: NEMATOLOGY.** Department of Entomology and Nematology at the University of Florida invites applications for a teaching and research position (nontenure-track) in nematology. Ph.D. in or with specialty in nematology required and teaching experience desirable. Salary: \$19,000 minimum. Send résumé by 25 January 1980 to: **Dr. G. C. Smart, Jr., Department of Entomology and Nematology, 3103 McCarty Hall, University of Florida, Gainesville, Fla. 32611.** *Affirmative Action/Equal Opportunity Employer.*

### ASSISTANT PROFESSORS DEPARTMENT OF PHARMACY

School of Pharmacy  
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The Department of Pharmacy, in order to increase its strength and diversity, invites applications for tenure-track assistant professors from Ph.D. scientists with specialization in the area of **PHYSICAL PHARMACY** or **BIOANALYSIS** or **BIOMEDICAL** and/or **CHEMICAL ENGINEERING** or **MATERIAL SCIENCES** and possibly other nontraditional areas. Teaching responsibilities may include portions of the physical pharmacy-biopharmaceutics-drug delivery sequence for professional students and elective and graduate courses in specialty areas. Send curriculum vitae, a summary of current research, a concise outline of future research, and three letters of reference by 1 April 1980 to: **Dr. Betty-ann Hoener, Search Committee Chair, School of Pharmacy, University of California, San Francisco, Calif. 94143.** *The University is an Equal Opportunity/Affirmative Action Employer. Women and minorities are encouraged to apply.*

### ASSISTANT OR ASSOCIATE PROFESSOR OF PHYSIOLOGY

This is a tenure-track position in a department that presently consists of one adjunct and four full-time faculty members.

The College of Medicine will start its third class of medical students in fall 1980. The presently authorized class size is 32 and future plans are projected for a class size of 72 students. The Graduate School offers the degrees of M.S. and Ph.D. in the biomedical sciences.

Candidates must have the Ph.D. or M.D. degrees and be capable of teaching medical students in areas outside of their own research interests. They will be expected to develop and pursue independent research programs. The research interests of candidates are not critical, but there will be some preference given to cardiovascular physiologists.

Interested persons should send their curriculum vitae and the names of three references to:

**Robert W. Rasch, M.D., Ph.D.**  
Professor and Chairman of Physiology  
College of Medicine, Box 19780A  
East Tennessee State University  
Johnson City, Tennessee 37601

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## POSITIONS OPEN

**ASSISTANT PROFESSOR: PHYSIOLOGY.** The Department of Biology invites applications for a tenure-track position available in September 1980. Ph.D. and demonstrated competence in college teaching and research required. Expertise in cell or organ physiology and effects of toxic substances preferred. Forward curriculum vitae, copies of published research, transcripts, and three letters of reference by 30 January 1980 to: **Chairman, Search Committee, Department of Biology, The American University, Washington, D.C. 20016.** *An Affirmative Action/Equal Opportunity Employer.*

**TOXICOLOGY.** The Department of Pharmacology and Therapeutics, Schools of Medicine and Dentistry, State University of New York at Buffalo (SUNY), invites applications for a full time faculty position as **ASSISTANT PROFESSOR.** Candidates must have a Ph.D. degree in pharmacology, toxicology, or in a closely related area; they must have clear evidence of training and expertise in toxicology. No applicant without such evidence will be considered. Preference will be given to those with at least 2 years of research experience and publications in some area of toxicology. Duties include teaching (graduate and professional programs), research, and participation in development of the department program in toxicology. Send curriculum vitae and also request that three letters of recommendation be sent to: **Dr. Edward A. Carr, Jr., Department of Pharmacology and Therapeutics, Medical School, SUNY at Buffalo, 127 Farber Hall, Buffalo, New York 14214.** *An Equal Opportunity/Affirmative Action Employer.*

Full-time faculty position as **ASSOCIATE PROFESSOR OF ANATOMY** at the Sophie Davis School of Biomedical Education. Candidate will be expected to participate in a leadership capacity in team-taught gross anatomy course to freshman students in 7-year combined premedical, medical program. Should be interested in innovative approaches in gross anatomy teaching, including audiovisual and computerized instruction. Should be able to assist in microscopic anatomy and/or embryology or neuroanatomy. Candidates will be encouraged to develop an independent research program. Research interests are open. Appropriate facilities are available. Position available for academic year 1980-1981.

Ph.D. required; experience in medical school education required. Salary: \$20,000 to \$30,000.

Send résumés with lists of references by 31 January 1980 to: **Dr. Max Hamburg, School of Biomedical Education, The City College of New York, 138th Street and Convent Avenue, New York, N.Y. 10031.**

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**BIOLOGICAL INSECT CONTROL RESEARCH—**An opening exists for a research associate to initiate investigation of the epizootiology of the entomogenous fungi *Entomophthora grylli* and methods of establishing epizootics of the fungus in field populations of grasshoppers. The appointment will be for one year with a possibility of an extension. Minimum qualifications are a Ph.D. or equivalent background in entomology with training in areas such as microbiology and ecology. Preferred qualifications are a Ph.D. and experience in mycology with a background in epizootiology and applied entomology. Send curriculum vitae, publications, dissertation summary, and names and addresses of five references to: **Dr. R. D. Frye, Department of Entomology, North Dakota State University, Fargo, N.D. 58105,** by 1 February 1980. *North Dakota State University is an Equal Opportunity Employer.*

### BOTANIST

The Department of Environmental, Population and Organismic Biology (EPO Biology) at the University of Colorado, Boulder, expects to fill a tenure-track position in botany at the assistant professor level for fall 1980. The applicant will be expected to complement current teaching and research interests in EPO Biology. The successful applicant must hold the Ph.D. degree in botany or biology and will be expected to teach in the general biology program, offer one or more advanced botany courses, and develop an active research program. Salary will be competitive. Applicants should send curriculum vitae, statement of research interests, and have at least three letters of reference sent to:

**Dr. Jane H. Bock, Botany Search Committee**  
EPO Biology Department, Box 334  
University of Colorado  
Boulder, Colorado 80309

Complete applications are due on 15 February 1980. *University of Colorado is an Equal Opportunity/Affirmative Action Employer.*

## POSITIONS OPEN

**ASSOCIATE OR ASSISTANT PROFESSOR—NUTRITION.** Nutrition Program, College of Human Development, The Pennsylvania State University. Position available 1 September 1980 for scholar with established productivity in research, teaching, and grant support. Applicants with Ph.D. or equivalent degree in nutrition science, clinical, or other applied nutrition areas will be considered. Develop independent research program with application to human nutrition; supervise graduate student research; teach senior-level nutrition science course and other courses in area of expertise; advise students. Application deadline: 31 March 1980 or until position is filled. Send application letter, curriculum vitae, and three letters of reference to: **Dr. Helen Smicklas-Wright, Chairperson, Search Committee, Nutrition Program, Box C, 114-F Henderson Human Development Building, University Park, Pa. 16802.** *Equal Opportunity/Affirmative Action Employer.*

**BIOCHEMIST—**The Department of Biological Chemistry of the University of Maryland School of Medicine has a regular faculty position (assistant or associate professor) for an individual having an active research program in mammalian cell membrane-bound proteins or related areas. Responsibilities will include the teaching of basic and clinical biochemistry courses to medical and graduate students. Send curriculum vitae and names of three references to: **Dr. Adil E. Shamoo, Professor and Chairperson, Department of Biological Chemistry, University of Maryland School of Medicine, 660 West Redwood Street, Baltimore, Maryland 21201.** *An Equal Opportunity Employer.*

**BIOLOGICAL OCEANOGRAPHER.** Assistant professor, tenure-track position available February 1980, primarily graduate-level teaching and research. Oceanographic background required. Strong research program is to be mounted in phytoplankton studies, zooplankton, benthic marine organisms, or microorganisms. Send curriculum vitae by 31 January 1980 to: **Dr. John C. Ludwick, Chairman, Department of Oceanography, Old Dominion University, Norfolk, Va. 23508.** *An Affirmative Action/Equal Opportunity Employer.*

The Department of Biology seeks a **BOTANIST** to fill a tenure-track teaching/research position at the assistant professor level. Appointment begins 16 August 1980. Salary range: \$14,000 to \$15,500. Primary responsibilities include teaching an undergraduate vascular plant systematics course, development of undergraduate and graduate level courses in the area of expertise, herbarium curatorial duties, and establishment of independent research/graduate program. Ph.D. required. Application deadline is 15 February 1980. Forward curriculum vitae, three letters of reference, official copies of college transcripts, and reprints of publications to: **Dr. Syed M. Jalal, Professor of Biology, University of North Dakota, Grand Forks, N.D. 58202.** *An Affirmative Action/Equal Opportunity Employer.*

### CELL BIOLOGY POSITION

Louisiana State University anticipates a vacancy at the rank of assistant professor. Candidate must develop graduate program with research specialty in cytogenetics. Undergraduate instructional duties will include a course in cell biology and beginning zoology. Applicants with postdoctoral teaching experience preferred. Applications with curriculum vitae, bibliography, transcripts, and three letters of reference are due by 12 February 1980 and should be sent to: **Dr. K. C. Corkum, Chairman, Department of Zoology and Physiology, Louisiana State University, Baton Rouge, Louisiana 70803.**

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

### INVERTEBRATE ZOOLOGY POSITION

Louisiana State University anticipates a vacancy at the rank of associate professor on tenure-track. Duties will include directing and teaching in the introductory zoology course, and coordinating the several laboratories. Active research in some phase of invertebrate zoology is required. Applicants must have 4 years of teaching experience, preferably in large multisectioned courses. Applications with curriculum vitae, bibliography, transcripts, and philosophy of undergraduate teaching should be sent by 15 February 1980 to: **Dr. Kenneth C. Corkum, Chairman, Department of Zoology and Physiology, Louisiana State University, Baton Rouge, La. 70803.**

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## POSITIONS OPEN

### BIOMEDICAL ENGINEERING FACULTY POSITIONS

Positions at the assistant or associate professor level are available in the Department of Biomedical Engineering at Case Western Reserve University. Each position involves teaching and research in a department jointly supported by the Schools of Engineering and Medicine with both undergraduate and graduate programs (including Ph.D./M.D.). Qualifications include experience in the application of quantitative techniques to biology and/or clinical medicine. Applicants should have expertise in one of the following areas: microelectronic-instrumentation, materials, systems, signal processing, or computers. Those interested should send a letter of interest, curriculum vitae, representative reprints, and references to: **Dr. Robert Plonsey, Chairman, Department of Biomedical Engineering, Case Western Reserve University, Cleveland, Ohio 44106.**

### BIOPHYSICIST/BIOENGINEER

The Massachusetts Institute of Technology (MIT) National Magnet Laboratory is seeking a biophysicist or bioengineer to participate in a long-term program of research on the human lung using magnetic measuring techniques. Will make measurements of magnetic dust in the lungs of human subjects. Will screen subjects, perform the measurements, and keep extensive records. Occasional evening and weekend work required. Send résumé to: **MIT Personnel Office, 400 Main Street, Cambridge, Mass. 02139, attention: Job Number R79-212. An Equal Opportunity/Affirmative Action Employer.**

### CHALLENGING POSITION IN CANCER RESEARCH INFORMATION ANALYSIS

Scientists with an interest in clinical cancer research are needed in an expanding international program for cancer information, dissemination, and analysis. Candidates with broad research interests and a Ph.D. or M.S. in biochemistry, immunology, pharmacology, or other areas relating to clinical investigation are invited to send curriculum vitae and references to: **Dr. E. M. McKelvey, M. D. Anderson Hospital and Tumor Institute, 6723 Bertner Drive, Houston, Texas 77030. An Equal Opportunity/Affirmative Action Employer.**

### The University of Texas at Dallas EXTENDED SEARCH

The Geosciences Program is seeking applications for a tenure-track position beginning fall 1980 in **CARBONATE SEDIMENTOLOGY**. Rank and salary are open. Departmental research facilities of special interest to prospective faculty include SEM, luminoscope, automated microprobe, and computer. The position requires a Ph.D. and a commitment to excellence in teaching and research. Duties will include teaching at the upper-level undergraduate and graduate levels, supervision of M.S. and Ph.D. student research, and research in area of specialty. Preference will be given to scientists with broad interests who will interact with current faculty in geology, micropaleontology, and sedimentary geochemistry. Applicants should submit a résumé (*indication of sex and ethnicity for Affirmative Action statistical purposes is requested but not required*), names of three references, and statement of research interest by 15 February 1980 to:

**Academic Search Number 213  
The University of Texas at Dallas  
P.O. Box 688  
Richardson, Texas 75080**

*The University of Texas at Dallas is an Affirmative Action/Equal Opportunity Employer.*

**COMPUTER EQUIPMENT ANALYST**, Science and Education Administration, Beltsville, Maryland, \$24,703 to \$38,186 per annum (commensurate with qualifications and experience). Responsible for the performance of systems analyses, feasibility studies, and writing of technical specifications. Duties involve specification of minicomputers and a variety of peripherals with emphasis on data acquisition/control accessories, consultation with users of such equipment in the agriculture research environment, and providing technical support to procurement activities involving minicomputers and related equipment. Position requires a knowledge of commercially available minicomputer hardware, software, and services. Career Civil Service position. Contact or mail application SF-171 to: **Dolores Kauffman, USDA-SEA-AOD, Personnel Branch, S1, Building 003, Room 318, BARC-West, Beltsville, Md. 20705. Telephone: 301-344-2768. An Equal Opportunity Employer.**

## POSITIONS OPEN

**CHAIRMAN, MICROBIOLOGY.** Applications and nominations are invited for the position of **Chairman** of the Department of Microbiology at The University of Texas Health Science Center at San Antonio. The department, which consists of 18 full-time faculty members, has teaching responsibilities to both the medical and dental schools. Research activities in areas of immunology, bacteriology, mycology, and virology provide training opportunities for students in the graduate program leading to the M.S./Ph.D. degrees. The department will occupy additional space in a new building in 1981. Selection criteria include extensive academic experience, administrative competence, a record of scholarly achievement with a history of extramural research support, and demonstrated ability to provide innovative leadership. The position will be available on 1 September 1980. Inquiries, nominations, or letters of application, accompanied by curriculum vitae, should be submitted no later than 15 February 1980 to: **Dr. Richard N. Buchanan, Chairman, Microbiology Search Committee, Department of General Practice, The University of Texas Health Science Center at San Antonio, 7703 Floyd Curl Drive, San Antonio, Texas 78284. An Affirmative Action/Equal Opportunity Employer.**

**CHAIRMAN, BIOCHEMISTRY.** The Chicago College of Osteopathic Medicine (CCOM) invites applications and nominations for the position of chairman of the Department of Biochemistry. The candidate is expected to be committed to maintaining excellence of teaching and to have proven research capability and demonstrated administrative skill. Opportunities for developing interdisciplinary research programs exist in the college.

Send letter of application with curriculum vitae and references to: **Dr. R. S. Tarr, Chairman, Search Committee, Department of Physiology, Chicago College of Osteopathic Medicine, 1122 East 53 Street, Chicago, Illinois 60615. CCOM is an Equal Opportunity/Affirmative Action Employer.**

### CHEMIST

Ph.D. with demonstrated research competence to identify and pursue approaches to the destruction and disposal of carcinogens in laboratory waste. Applicants should send a résumé with the names of three references to: **R. A. Pendleton, Environmental Control and Research Laboratory, Frederick Cancer Research Center, P.O. Box B, Frederick, Md. 21701.**

### CHIEF, DIVISION OF CLINICAL PATHOLOGY DIRECTOR, CLINICAL PATHOLOGY LABORATORIES

The State University of New York-Upstate Medical Center is seeking an individual with research background, effective administrative experience, and Board-certification in clinical pathology, as full professor in the Department of Pathology, chief of the Division of Clinical Pathology, and director of the Clinical Pathology Laboratories. This individual will be responsible for (i) fostering the highest academic standards for the Department of Pathology in the conduct and effectiveness of academic programs within the Clinical Pathology Division, (ii) effective function of the clinical pathology laboratories as an integral part of the patient care system of Upstate Medical Center, and a major resource for academic programs, and (iii) communication, advice, and leadership locally, regionally, and nationally in clinical pathology.

Forward curriculum vitae and credentials by 10 February 1980 to:

**Rolla B. Hill, M.D.  
Chairperson, Search Committee  
Department of Pathology  
Upstate Medical Center  
Syracuse, New York 13210**

*Equal Opportunity/Affirmative Action Employer*

**DEVELOPMENTAL BIOLOGIST.** Tenure-track position at the assistant professor level available September 1980. Special consideration will be given to individuals specializing in developmental genetics or physiology of eukaryotic plants. Teaching at the undergraduate and graduate levels as well as research expected. Postdoctoral experience and marine background preferred. Send résumé, three letters of recommendation, and official graduate and undergraduate transcripts plus letter of application to:

**Dr. Robert J. Beyers  
University of South Alabama  
Mobile, Alabama 36688**

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

## POSITIONS OPEN

### CHAIRPERSON DEPARTMENT OF PHYSIOLOGY AND BIOPHYSICS UNIVERSITY OF KENTUCKY

The Albert B. Chandler Medical Center in Lexington invites applications for the position of **CHAIRPERSON** to begin in 1980. Applicants must have an outstanding record of research productivity and effective university teaching experience. Administrative experience is desirable. Nominations and résumés should be submitted to:

**Search Advisory Committee  
Department of Neurology—MS 129  
College of Medicine  
University of Kentucky  
Lexington, Kentucky 40536**

### CHEMIST

**CHEMIST-RADIOLOGY.** The Department of Radiology at Duke University Medical School is seeking a chemist to participate in basic and clinical research projects in an active Nuclear Medicine Section. Experience in organic synthesis and biochemistry would be desirable. Salary and academic rank depend on previous experience. Send curriculum vitae to: **R. Edward Coleman, M.D., Director of Nuclear Medicine, Department of Radiology, Duke University Medical Center, Durham, North Carolina 27710. An Equal Opportunity/Affirmative Action Employer.**

### COMPARATIVE ANATOMY-ICHTHYOLOGY

Assistant professor, tenure-track position available August 1980. Responsibilities include teaching a course in comparative anatomy. Field orientation in ichthyology preferred, with additional teaching assignments in existing anatomy and ichthyology courses. The candidate would be expected to develop an active research program. Ph.D. is required. Send curriculum vitae and names of three references by 1 February 1980 to: **Dr. Harold G. Marshall, Chairman, Department of Biological Sciences, Old Dominion University, Norfolk, Va. 23508. An Affirmative Action/Equal Opportunity Employer.**

# SCIENTISTS

*Hazleton Laboratories America, a leading independent contract research laboratory, is seeking scientists in the following disciplinary areas as a result of an expansion program.*

### Director—Department of Chemistry

To direct and manage the scientific, operational, and developmental aspects of a Chemistry Department with a staff complement of 40. Desire Ph.D. with a minimum of six to eight years of experience to include at least three years of demonstrated experience in research administration. Research experience preferred in analytical chemistry. Other duties include supervision, planning, and control functions.

### Biostatistician

To act as consultant to operating departments and clients sponsoring projects. Desire M.S. or Ph.D. in statistics with one or two years of biostatistics experience and strong computer training.

HLA offers a full benefit program, salaries commensurate with experience and training, and modern laboratory facilities comprised of over 350,000 sq. ft. of laboratory and animal accommodations. Our campuses are located in Northern Virginia and provide easy access to NIH, FDA, EPA, as well as three major airports.

Candidates should submit their resumes in confidence, stating salary history and requirements, to **David J. Howard, Employment Manager, Hazleton Laboratories America, Inc., 9200 Leesburg Turnpike, Vienna, Virginia 22180. An Equal Opportunity Employer, M/F**



**HAZLETON**  
LABORATORIES AMERICA, INC.



## POSITIONS OPEN

### DEVELOPMENTAL GENETICIST

The Department of Zoology, University of Wisconsin-Milwaukee, is recruiting for an assistant professor tenure-track position starting 27 August 1980. Candidate must have demonstrated potential to develop and maintain an active research program in genetic aspects of eukaryotic differentiation and regulation at the cellular and subcellular level. Preference will be given to applicants with postdoctoral research experience. Responsibilities include supervision of M.S. and Ph.D. students, participation in courses in general genetics and population genetics, and the development of an advanced course in the area of special interest. Curriculum vitae, a summary of research goals, transcripts, and three letters of professional recommendation may be sent to: **Professor Ethel Sloane, Chairperson, Personnel Committee, Department of Zoology, P.O. Box 413, University of Wisconsin-Milwaukee, Milwaukee, Wis. 53201.** Closing date is 15 February 1980.

*The University of Wisconsin-Milwaukee is an Equal Opportunity/Affirmative Action Employer and welcomes applications from all qualified candidates.*

### DIRECTOR OF BROOKLYN BOTANIC GARDEN

The Board of Trustees invites applications from candidates having these qualifications: **demonstrated leadership** in imaginative planning, decision-making, and administration of the scientific, educational, and community service functions of a major botanical garden; **professional training** (preferably earned doctorate) in or related to botany or horticulture; **understanding of fiscal management** of nonprofit organizations and ability to effectively represent the institution in seeking private or public support. Send résumé, bibliography, and references to: **Robert A. Lehman, Chairman, Search Committee, Board of Trustees, Brooklyn Botanic Garden, 1000 Washington Avenue, Brooklyn, N.Y. 11225.**

School of Public Health, University of Illinois at the Medical Center, Chicago, is seeking a **DIRECTOR AND PROFESSOR** for Community Health Sciences. Program areas include public health practice, health care systems, maternal and child health, mental health, nutrition, family planning, and aging. Responsibilities include administration, teaching, and research. Salary commensurate with credentials and experience. Send applications by 31 January 1980 to: **Dr. Paul Q. Peterson, Chairman, Search Committee, School of Public Health, University of Illinois, P.O. Box 6998, Chicago, Illinois 60680.**

*Equal Opportunity/Affirmative Action Employer*

**ELECTRON MICROSCOPY-GROSS ANATOMY.** Assistant professor, tenure-track position is available August 1980. Responsibilities include supervision of EM laboratory and technician, offering course work in electron microscopy and neuroanatomy. The candidate would be expected to develop a research program. The Ph.D. is required. Application deadline is 1 February 1980. Send curriculum vitae and names of three references to: **Dr. Harold G. Marshall, Chairman, Department of Biological Sciences, Old Dominion University, Norfolk, Va. 23508.** An Affirmative Action/Equal Opportunity Employer.

### MICROBIAL PHYSIOLOGIST

The Department of Zoology/Microbiology, University of Wisconsin-Milwaukee, is recruiting for an assistant professor tenure-track position starting 27 August 1980. A doctoral degree with postdoctoral experience is required. All candidates with experience in microbial physiology will be considered; research interests in the area of photo- or chemolithotrophy are desirable. Responsibilities include supervising M.S. and Ph.D. students, developing an active research program and seeking extramural support, participation in teaching undergraduate courses, and developing an advanced course in his/her area of expertise. Curriculum vitae, a summary of research goals, transcripts, and three letters of professional recommendation may be sent to: **Professor Ethel Sloane, Chairperson, Personnel Committee, Department of Zoology, P.O. Box 413, University of Wisconsin-Milwaukee, Milwaukee, Wis. 53201.** Closing date is 15 February 1980.

*The University of Wisconsin-Milwaukee is an Equal Opportunity/Affirmative Action Employer and welcomes applications from all qualified candidates.*

## POSITIONS OPEN

### DIRECTOR OF CANCER RESEARCH

Full-time position as Director of Cancer Research in the Division of Gynecologic Oncology. Requires a Ph.D. in biochemistry and preferably postdoctoral training experience in radioimmunoassay. Immunologic and other analytical techniques are desired. The applicant should be able to perform independent research as well as being able to develop methods for the measurement of tumor-associated oncofetal antigens in tumor tissue and plasma. Salary and position according to qualifications. Submit curriculum vitae to:

**J. R. van Nagell, Jr., M.D.**  
Division of Gynecologic Oncology  
University of Kentucky Medical Center  
Lexington, Kentucky 40536

### Ph.D., DIRECTOR OF ORTHOPAEDIC RESEARCH, UNIVERSITY OF NEBRASKA MEDICAL CENTER

The University of Nebraska Department of Orthopaedic Surgery and Rehabilitation is seeking a basic scientist with a background and interest in musculoskeletal research to direct a growing research program.

The director of research will have the opportunity to teach basic science to orthopaedic residents and students and to apply basic science expertise to clinical problems. Send résumé to: **John F. Connolly, M.D., Chairman, Department of Orthopaedic Surgery and Rehabilitation, University of Nebraska Medical Center, 42nd and Dewey Avenue, Omaha, Neb. 68105; telephone: 402-541-4287.** The University is an Affirmative Action/Equal Opportunity Employer.

### DIRECTOR, INTERNATIONAL CENTRE FOR DIARRHOEAL DISEASES RESEARCH, BANGLADESH (ICDDR, B)

The ICDDR,B is an international health research and training centre located in Bangladesh, and is directed toward the study of all aspects of diarrhoeal diseases and related aspects of fertility and nutrition. It was established by an ordinance of the government of Bangladesh in December 1978. Twenty-six nations and agencies now participate in the work of the centre. It is guided by a Board of Trustees with majority representation from developing countries. The director is responsible for the programs and management of the centre.

A candidate should have a strong international reputation as a biomedical scientist and experience in managing a scientific organization. Experience in developing countries is desirable.

The terms and conditions of employment are negotiable and may be guided by policies of other international institutions.

Letters of application should contain complete curriculum vitae and should be addressed to:

**Charles C. J. Carpenter, M.D.**  
Chairman, Department of Medicine  
Case Western Reserve University  
Cleveland, Ohio 44106

**DIRECTOR.** University Grants and Contracts Office. B.A./M.A. sought plus 5 years of experience in university research/development administration; knowledge of funding sources. Salary range: \$22,000 to \$26,000 per annum. Send résumé, three letters of reference, and 1- to 1½-page essay on views of "the role of research within a state university" to: **D. S. Willey, Box 3R, New Mexico State University, Las Cruces, N.M. 88003; telephone: 505-646-1706.** Deadline for receipt of applications: 1 March 1980. An Equal Opportunity/Affirmative Action Employer.

**ENERGY RESEARCH.** The Massachusetts Institute of Technology (MIT) Energy Laboratory is looking for a research associate to be responsible for management of a research and modeling program on the relation between energy markets and the macroeconomy. Must demonstrate through training and work experience exceptional competence in macro- and microeconomics (both theoretical and applied), energy economics, and econometrics. Ph.D. in economics necessary and demonstrated competence in managing projects involving faculty, a research staff, and students, as well as ability to communicate, both orally and through publication, to peers and policy-oriented analysts. Salary: \$28,000 to \$32,000 per year, 40 hours per week. Please submit résumé to: **MIT Personnel Office, 400 Main Street, Cambridge, Mass. 02139, attention: Job Number R79-368.** An Equal Opportunity/Affirmative Action Employer.

## POSITIONS OPEN

**DIRECTOR** for established university natural history museum with major holdings in anthropology, paleontology, and zoology. Responsible for direction and promotion of research, exhibit, and public information programs. Applicants should have museum experience with demonstrated abilities in management, development, and public service. Seeking scholar with doctorate and active research interests relating to collections. Individual selected may also be appointed as associate or full professor level in appropriate academic department. Salary commensurate with experience. Address inquiries, résumés, and three letters of reference to: **Dr. Gary D. Schnell, Chairperson, Search Committee, Stovall Museum of Science and History, University of Oklahoma, Norman, Okla. 73019 by 10 March 1980.** The University of Oklahoma is an Affirmative Action/Equal Opportunity Employer.

**DIRECTOR** for Atmospheric Quality Division at the NATIONAL CENTER FOR ATMOSPHERIC RESEARCH (NCAR) in BOULDER, COLORADO. Will have responsibility for the overall scientific productivity, creativity, and excellence of a division of about 39 persons, of whom 17 are at the Ph.D. level. Requires Ph.D. and senior scientific status in atmospheric chemistry and aeronomy with demonstrated productivity, breadth of interest, leadership, and in-depth knowledge of the present state of science. Closing date for accepting applications is 25 January 1980. Candidate should be willing and able to assume responsibilities as director no later than 1 July 1980. Please send complete résumé, publications list, and salary requirements to: **Marsha Hanson, Employment Office, NCAR, P.O. Box 3000, Boulder, Colo. 80307.** An Equal Opportunity/Affirmative Action Employer.

**DIRECTOR OF NEPHROLOGY SECTION**—The Department of Medicine, St. Francis Hospital and Medical Center, seeks nephrologist with post-fellowship experience and preferably clinical research interests to direct a Nephrology Section that includes several Board-certified practicing nephrologists and a newly expanded, modern, 15-station dialysis unit that includes generous office space, conference rooms, and research laboratory space. The hospital is a 658-bed, major teaching hospital of the University of Connecticut School of Medicine with full-time physicians, excellent medical house staff, and active private medical staff. Full-time physicians in medicine have full faculty appointments at the University of Connecticut. There is a nephrology fellowship program integrated with University of Connecticut. Applicant should have interests in administration of dialysis unit, clinical research, teaching, and limited consultation activities. Salary negotiable, based on credentials. For further information, reply in confidence to: **Thomas J. Godar, M.D., Director, Section of Pulmonary Diseases, Chairman, Nephrology Search Committee, St. Francis Hospital and Medical Center, 114 Woodland Street, Hartford, Conn. 06105.**

### ECOLOGIST

The Institute for Environmental Studies of the University of Illinois at Urbana-Champaign. Opening for **assistant professor of environmental studies** with joint appointment in Department of Forestry. Senior scientists will also be considered for tenured appointments. Conduct ecological research related to environmental problems in an interdisciplinary team format with chemists, economists, and other social scientists. Emphasis on transport and distribution of toxic materials in the environment is important. Ph.D. in ecology with emphasis in terrestrial ecosystems. Starting date between 1 March and summer of 1980. Salary open. Apply: **Dr. Ben B. Ewing, Institute for Environmental Studies, University of Illinois, 408 South Goodwin, Urbana, Illinois 61801.** Telephone 217-333-2503. To ensure full consideration, apply by 1 March 1980.

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

### FACULTY POSITION

The Department of Biology at Eastern Washington University (EWU) has open a 2-year position in vertebrate biology to begin 1 September 1980 at the assistant professor level. Responsibilities include teaching embryology, comparative anatomy, human anatomy, a course in area of speciality (lower vertebrates), and research and service. Ph.D. is the minimum requirement. Please send résumé by 1 February 1980 to: **Dr. James L. Hanagan, Search Committee, Department of Biology, EWU, Cheney, Washington 99004.** An Affirmative Action/Equal Opportunity Employer.



Open to both  
men and women

National Health and Welfare, Health Protection Branch  
Ottawa, Ontario

## VETERINARY VIROLOGIST (339-296-002)

Salary: \$33,474 to \$39,288  
Ref. No: 79-SM-OC-NHW-VS-92

### Duties

Coordinates the quality control testing in animals relative to the control of virus diseases in humans; conducts clinical, gross-pathological and histopathological examinations; develops new testing procedures; plans and conducts research in animals.

### Qualifications

D.V.M.; post-graduate training or equivalent experience in virology and some experience in pathology arising from viral diseases;  
Knowledge of English is essential.

*"Additional job information is available by writing to the address below;*

*Toute information relative à ce concours est disponible en français et peut être obtenue en écrivant à l'adresse suivante".*

### How to Apply

Send your application form and/or résumé to:

F.A. Whitteker, Staffing Officer  
Public Service Commission of Canada  
Senior Management Staffing Program  
L'Esplanade Laurier, West Tower, 17th floor  
Ottawa, Ontario K1A 0M7

Please quote the applicable reference number at all times.

## DEAN COLLEGE OF AGRICULTURE DIRECTOR, AGRICULTURAL EXPERIMENT STATION MONTANA STATE UNIVERSITY

Montana State University is a comprehensive, multi-purpose land grant institution maintaining programs of undergraduate and graduate instruction for over 10,000 students, research and public service. Its atmosphere and setting, 90 miles north of Yellowstone National Park, offer a unique opportunity for combining professional goals and a high quality of personal life style.

POSITION AVAILABLE: July 1, 1980

**POSITION DESCRIPTION:** The Dean and Director is the chief administrative officer of the College of Agriculture and the Agricultural Experiment Station. The Dean and Director is assisted by an Associate Dean for Resident Instruction and an Associate Director of the Agricultural Experiment Station. The College and Station activities encompass 11 on-campus departments and seven off-campus research centers.

The Dean and Director provides overall administrative leadership and planning for both teaching and research functions and has authority for decisions involving policy, personnel and overall budget matters. The Dean provides information for and seeks support of the public, agricultural and related industries, state and local governments, and the University.

- QUALIFICATIONS:**
- (1) An earned doctorate in agriculture or a related discipline and a record of professional achievements.
  - (2) An appropriate combination of significant administrative experiences in research, education, complex budget processes, public relations, policy formulation, and personnel management.
  - (3) An understanding of the mission and function of the College of Agriculture and the Experiment Station in a Land Grant University.
  - (4) An ability to generate continued support for agriculture from the general public, state and local governments, agricultural and related industries, students and faculty.

### NOMINATION AND APPLICATION PROCEDURES:

- (1) Nominations should include a brief statement about the nominee's accomplishments and qualifications and other information relevant to the Search Committee's evaluations.
- (2) Individuals wishing to apply for this position should submit a resume, including previous professional responsibilities, noteworthy achievements, and other information which may be helpful to the Search Committee. The names and addresses of three references should also be included.
- (3) Nominations and applications should be submitted by March 15, 1980 to:

Dr. David F. Gibson, Chairman, Search Committee  
214 Roberts Hall  
Montana State University  
Bozeman, Montana 59717  
Telephone: (406) 994-2272

Montana State University is an Affirmative Action/Equal Opportunity Employer



## POSITIONS OPEN

**EPIDEMIOLOGIST**, Medical and Health Sciences Division. To assist in formulation and development of epidemiologic studies; be responsible for valid statistical design and analyses; and implement plans for and supervise data collection.

Qualifications: Ph.D. in epidemiology and experience in epidemiologic studies.

**ENERGY RESEARCH SCIENTISTS**, Institute for Energy Analysis. Needed for three projects: a comprehensive study of fuel-use alternatives and climatic and societal impacts of the CO<sub>2</sub> problem; a regional geothermal and energy resource assessment study; and an assessment and evaluation of energy data requirements and economic analysis of energy-related industries.

Candidates should possess a Ph.D. in fields such as geology, geophysics, engineering, chemistry, meteorology, sociology/demography, political science, and economics; applicable relevant experience; and a demonstrated publication.

Send résumé, salary requirements, and names and addresses of references to: **Dr. John Hicks, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, Tennessee 37830. Equal Opportunity Employer.**

### UNIVERSITY OF CHICAGO FACULTY POSITION IN PLANT CELL BIOLOGY

The Department of Biology invites applicants for a faculty appointment from individuals with research interests in cell or molecular biology of plants. Applicants should have demonstrated aptitude to develop an independent research program and willingness to participate with others in courses in cell biology and modern plant biology. Send curriculum vitae, bibliography, and reference names and addresses to: **Dr. Hewson Swift, Department of Biology, University of Chicago, 1103 East 57 Street, Chicago, Illinois 60637.**

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

### THE SCHOOL OF HEALTH SCIENCES HUNTER COLLEGE OF THE CITY UNIVERSITY OF NEW YORK TWO FACULTY POSITIONS— SEPTEMBER 1980 ASSISTANT/ASSOCIATE PROFESSOR

**ENVIRONMENTAL HEALTH SCIENCE, B.S., M.S. PROGRAMS**—Doctorate preferred; masters, teaching, and practical experience required. Expertise in two or more of the following essential: environmental measurements, radiological health, water quality management, toxicology, and toxic substances control.

**MEDICAL LABORATORY SCIENCES, UPPER DIVISION B.S. PROGRAM**—Background in microbiology or clinical chemistry and related specialties. Doctorate required; clinical laboratory experience desirable.

Salaries competitive; excellent fringe benefits. Positions are full-time and tenure-track.

Résumé by 15 February 1980 to: **Dean of Health Sciences, Hunter College, 440 East 26 Street, New York, N.Y. 10010.**

*An Equal Opportunity/Affirmative Action Employer*

### FACULTY POSITION—SOCIAL SCIENCES

Tenure-track position in the social sciences starting September 1980; must have broad interdisciplinary interests with ability to teach **qualitative economics, system dynamics, and environmental management.** Ph.D. and some teaching experience required. Simon's Rock is an early-entrance, small liberal arts college with strong emphasis on high-quality teaching. Send résumé and two letters of recommendation to: **Edward Misch, Chairman, Social Studies Division, Simon's Rock of Bard College, Great Barrington, Mass. 01230.**

**FACULTY POSITIONS.** One assistant professor, 3-year appointment, to teach analytical or inorganic chemistry; one assistant professor, 1-year appointment, to teach organic chemistry. Both will also be expected to teach additional courses. The department will be particularly interested in Ph.D. applicants whose research interests can involve undergraduates and complement areas already active. Send curriculum vitae and names of three references to: **Dr. S. S. Butcher, Chemistry Department, Bowdoin College, Brunswick, Maine 04011,** by 15 February 1980. *Affirmative Action/Equal Opportunity Employer.*

## POSITIONS OPEN

### FACULTY POSITIONS: BIOCHEMISTRY

The Department of Biochemistry at the Boston University School of Medicine anticipates a faculty opening at the assistant professor level. Candidates working in (i) **molecular biology** with experience in nucleic acid biochemistry, DNA sequencing, or gene cloning and (ii) **metabolic regulation** in eukaryotic cells, are particularly encouraged to apply. Send curriculum vitae, bibliography, and three letters of recommendation to: **Dr. Carl Franzelau, Chairman, Department of Biochemistry, Boston University School of Medicine, 80 East Concord Street, Boston, Mass 02118. An Equal Opportunity Employer, M/F.**

### FACULTY POSITIONS—CELL BIOLOGY

Northwestern University is expanding its program in cell biology on the Evanston Campus. Two tenure-track faculty positions are now open; one in the Department of Biological Sciences and one in the Department of Biochemistry and Molecular Biology. We are seeking individuals with a Ph.D. or equivalent degree and postdoctoral experience to establish a research program in cell biology. These individuals should have demonstrated creativity and productivity in research in cell biology and show promise of developing independent research programs of exceptionally high quality. These individuals will be expected to participate in undergraduate and graduate teaching. Candidates should submit curriculum vitae, reprints, a statement of present and future research interests, and three letters of reference to: **Cell Biology Search Committee, O. T. Hogan Building, Northwestern University, Evanston, Illinois 60201. Northwestern University is an Affirmative Action/Equal Opportunity Employer.**

**FACULTY POSITION IN ENVIRONMENTAL HEALTH.** A tenure-track academic year position will be available September 1980, to teach courses in environmental health and microbiology, coordinate undergraduate and graduate programs in environmental health, and carry out research. Applicant must have a doctoral degree in a health-related field, practical environmental health experience, and the ability to teach effectively and develop an independent research program. The Microbiology Department has an undergraduate curriculum in microbiology, with options in environmental health and medical technology, and M.S. and Ph.D. programs in microbiology. Send résumé and names of three references by 15 March 1980 to: **Dr. Gordon A. McFeters, Microbiology Department, Montana State University, Bozeman, Montana 59717. Montana State University is an Equal Opportunity/Affirmative Action Employer.**

### FACULTY POSITIONS IN BIOLOGY

Applications are invited for a tenure-stream position in microbiology-molecular biology and an anticipated position in aquatic ecology, both at assistant professor rank, commencing 1 June 1980. Candidates for both positions must have Ph.D. completed and relevant research and/or teaching experience. The position involves teaching in the appropriate area at undergraduate and graduate levels plus development of an independent research programme. Salaries commensurate with qualifications and experience (floor 1978-1979 was \$19,785; floor for 1979-1980 has not been established). Applicants should send recent curriculum vitae and names of three referees to: **R. M. Roy, Chairman, Biology, Concordia University, 1455 de Maisonneuve Boulevard West, Montreal, Québec, Canada H3G 1M8.**

**FACULTY POSITION.** Tenure-track, assistant/associate position in the Laboratory of Plant Hardiness starting summer 1980. Research (80 percent) will be in plant hardiness, low-temperature injury in horticultural crops, and associated stress phenomena. Teaching (20 percent) will be in horticulture and/or plant physiology. The candidate must have a Ph.D. in horticulture, plant physiology, or closely related field with training or experience in biochemistry. Research experience in both whole-plant and cellular or molecular levels required; experience in environmental stress desirable; salary is competitive. Completed applications, consisting of a résumé, transcripts, short description of research interests, and three letters of recommendation, will be accepted until 1 April 1980 by: **Dr. J. V. Carter, Department of Horticultural Science and Landscape Architecture, University of Minnesota, St. Paul, Minn. 55108. An Equal Opportunity/Affirmative Action Employer.**

## POSITIONS OPEN

### HEAD— DEPARTMENT OF EARTH RESOURCES

Colorado State University is seeking candidates for the position of head, Department of Earth Resources, in the College of Forestry and Natural Resources. Department activities include teaching and research at both undergraduate and graduate levels in geology, water resources, remote sensing, and bioclimatology.

Applicant's qualifications must include demonstrated administrative, research, and teaching ability and a degree in one of the above academic specializations. The position requires an understanding of the relations among education, research, and service within a college oriented toward development and management of natural resources. The head should be capable of developing programs in natural resource areas with governmental agencies, industry, and other organizations.

Rank and salary will be commensurate with experience and qualifications.

Applications, résumé, selected reprints, and three letters of recommendation should be sent to:

**Professor S. A. Schumm  
Department of Earth Resources  
Colorado State University  
Fort Collins, Colo. 80523  
Telephone: 303-491-5661**

Deadline for application is 15 March 1980.

Position may be filled 1 July but no later than 20 August 1980.

*Colorado State University is an Equal Opportunity/Title IX Employer. Office of Equal Opportunity: 314 Student Services.*

### HORTICULTURIST/PLANT PHYSIOLOGIST

The Department of Botany and Plant Sciences, University of California, Riverside, announces a position at the assistant professor level, with both an experiment station and academic title, available 1 July 1980. The position is a tenure-track, 11-month appointment in the College of Natural and Agricultural Sciences and the Agricultural Experiment Station. A Ph.D. is required; postdoctoral experience is preferred, but all qualified candidates will be considered. Background in tree crops physiology and horticulture is desirable, but candidates with other backgrounds are also encouraged to apply. The appointee is expected to teach upper-division courses in tree crops. Opportunity to develop a graduate-level course in area of specialization. Must be willing to serve as major professor to M.S. and Ph.D. students. Must develop a horticultural and physiological research program on citrus. The area(s) of research will be determined by the interests of the successful candidate and the scientific and agricultural merits of the research. Opportunity exists for interaction with research workers from many disciplines, including research on integrated pest management.

Send curriculum vitae and official transcripts and arrange to have at least three confidential letters of recommendation sent to: **Dr. R. K. Soost, Search Committee Chairman, Department of Botany and Plant Sciences, University of California, Riverside, Calif. 92521.** Application deadline is 15 February 1980.

*An Affirmative Action/Equal Opportunity Employer*

**IMMUNOLOGY FACULTY POSITION**—Applications invited for tenure-track position at the University of Pennsylvania, School of Veterinary Medicine, to conduct research on the virus-host, tumor-host immunological interactions in the bovine leukemia system. Strong background in cellular immunology desired. Rank and salary open. Applicants should submit curriculum vitae, representative publications, and names of three referees to: **J. F. Ferrer, M.D., University of Pennsylvania, New Bolton Center, Kennett Square, Pa. 19348. The University of Pennsylvania is an Equal Opportunity/Affirmative Action Employer.**

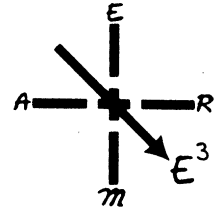
**VIROLOGY FACULTY POSITION**—Applications invited for tenure-track position at University of Pennsylvania, School of Veterinary Medicine, to conduct research primarily on the bovine leukemia virus system. Opportunity to develop independent research program in coordination with ongoing studies on bovine leukemia. Strong background in the molecular and biological aspects of mammalian viruses, preferably publications, and names of three referees to: **J. F. Ferrer, M.D., University of Pennsylvania, New Bolton Center, Kennett Square, Pa. 19348. The University of Pennsylvania is an Equal Opportunity/Affirmative Action Employer.**



# THE UNITED STATES AIR FORCE SUMMER FACULTY RESEARCH PROGRAM

PRESENTS

OPPORTUNITIES IN RESEARCH



## IN BASIC, ENGINEERING, GEOPHYSICAL, LIFE, BUSINESS AND ADMINISTRATIVE SCIENCES

The USAF Summer Faculty Research Program (SFRP), sponsored by the Air Force Office of Scientific Research (AFOSR) and conducted by the Southeastern Center for Electrical Engineering Education (SCEEE), provides research opportunities for qualified faculty members of US colleges, universities and technical institutions. These opportunities consist of ten-week summer research periods at one of 25 USAF laboratories/centers located at various Air Force Bases (AFB's) and Air Force Stations (AFS's) across the US, with follow-on research opportunities being available through other AFOSR and SCEEE programs. Characteristics of the 1980 SFRP are as follows:

**1980 SFRP OBJECTIVES:** (1) To develop the basis for continuing research of interest to the Air Force at the faculty member's institution. (2) To further the research objectives of the Air Force. (3) To stimulate continuing relations among faculty members and professional peers in the Air Force. (4) To enhance the research interests and capabilities of scientific and engineering educators.

**PREREQUISITES FOR APPOINTMENTS:** To be qualified for selection as a Research Associate and SCEEE Fellow in the 1980 SFRP, applicants must: (1) be US citizens, (2) be faculty members of accredited US colleges, universities or technical institutes, (3) have at least two years of teaching and/or research experience, and (4) not have previously held a SFRP Research Associate appointment. Even though it is anticipated that this research will be unclassified, Research Associates must hold or be eligible for a Department of Defense SECRET security clearance in order to insure full access to work areas. All qualified applicants will receive consideration without regard to race, color, religion, sex, or national origin. Preference

will be given to applicants having no previous research sponsorship by the Air Force.

**TERMS:** Remuneration is \$450/week for ten weeks. A travel allowance will be paid for a pre-program visit to the appointee's research site and for the summer program. An allowance for lodging costs for the ten-week period will also be paid.

**RESEARCH PERIOD:** A continuous ten-week period between May 15, 1980 and September 15, 1980. Research start date is flexible.

**APPLICATION DEADLINE:** February 1, 1980.

**ANNOUNCEMENT OF AWARDS:** March 1, 1980.

**FOR APPLICATION FORMS AND FURTHER INFORMATION, PLEASE CONTACT YOUR DEPARTMENT HEAD OR:**

USAF-SFRP  
SCEEE Management Office  
7300 Lake Ellenor Drive  
Orlando, FL 32809

**OR CALL:**  
SFRP Office  
(305) 859-8527

**RESEARCH LOCATIONS AND DISCIPLINES SOUGHT:** The following is a list of research locations and the disciplines sought at each of those locations for the 1980 SFRP. Please note that this list is alphabetical first by research location and second by the disciplines sought. Ask your Department Head, Dean, or Office of Sponsored Research for a copy of the SFRP Application Brochure and Application Form, or call or write the SCEEE Management Office for your own personal copy.

## PROGRAM DESCRIPTIONS

**AERO PROPULSION LABORATORY,** Wright-Patterson AFB (Dayton), OH: Engineering, Electrical/Mechanical • Mathematics • Sciences, Basic/Computer.

**AEROSPACE MEDICAL RESEARCH LABORATORY,** Wright-Patterson AFB (Dayton), OH: Engineering, Aeronautical/Biomedical/Communications/Electrical/Industrial • Sciences, Basic/Life.

**ARMAMENT DIVISION,** Eglin AFB (Ft. Walton Beach), FL: Chemistry • Computer Science • Engineering, Aeronautical/Electrical/Mechanical • Mathematics • Operations Research • Physics.

**ARNOLD ENGINEERING DEVELOPMENT CENTER,** Arnold AFS (Tulahoma), TN: Engineering, Aeronautical/Electrical/Mechanical • Physics.

**AVIONICS LABORATORY,** Wright-Patterson AFB (Dayton), OH: Engineering, Electrical • Mathematics • Sciences, Basic/Computer/Management/Software.

**BUSINESS RESEARCH MANAGEMENT CENTER,** Wright-Patterson AFB (Dayton), OH: Engineering, Industrial/Systems • Operations Research • Sciences, Behavioral/Socioeconomic.

**EASTERN SPACE AND MISSILE CENTER,** Patrick AFB (Cocoa Beach), FL: Engineering, Astronautical/Electrical • Physics.

**ELECTRONIC SYSTEMS DIVISION,** Hanscom AFB (Bedford), MA: Engineering, Electrical/Industrial • Mathematics • Operations Research • Physiology.

**ENGINEERING AND SERVICES CENTER,** Tyndall AFB (Panama City), FL: Chemistry • Engineering, Chemical/Civil/Electrical/Geotechnical/Mechanical/Structural • Economics • Environmental Planning • Food Technology • Geophysics • Management, Natural Resources/Systems • Meteorology • Sciences, Behavioral/Computer/Environmental • Sociology.

**FLIGHT DYNAMICS LABORATORY,** Wright-Patterson AFB (Dayton), OH: Engineering, Aeronautical/Electrical/Mechanical • Mathematics.

**FRANK J. SEILER RESEARCH LABORATORY,** USAF Academy (Colorado Springs), CO: Chemistry • Engineering, Aerospace/Electrical • Mathematics • Operations Research.

**GEOPHYSICS LABORATORY,** Hanscom AFB (Bedford), MA: Meteorology • Sciences, Basic.

**HUMAN RESOURCES LABORATORIES:** **Advanced Systems Division,** Wright-Patterson AFB (Dayton), OH: Econometrics • Engineering, Human Factors/Industrial/Logistics/Systems • Industrial Psychology • Inventory Theory • Management, Logistics/Production/Systems • Operations Research • Organizational Theory • Science, Management • Transportation Theory; **Flying Training Division,** Williams AFB (Chandler), AZ: Engineering, Aeronautical/Electrical/Systems • Mathematics • Operations Research • Physics • Science, Computer; **Personnel Research Division,** Brooks AFB (San Antonio), TX: Mathematics • Psychology, Educational/Experimental/Industrial • Statistics; **Technical Training Division,** Lowry AFB (Denver), CO: Education • Instructional Technology • Psychology, Research • Science, Computer/Management.

**LEADERSHIP AND MANAGEMENT DEVELOPMENT CENTER,** Maxwell AFB (Montgomery), AL: Engineering, Industrial • Management, Business.

**LOGISTICS COMMAND,** Wright-Patterson AFB (Dayton), OH: Econometrics • Engineering, Industrial • Management Science • Mathematics • Operations Research • Statistics.

**LOGISTICS MANAGEMENT CENTER,** Gunter AFS (Montgomery), AL: Engineering, Industrial • Operations Research.

**MATERIALS LABORATORY,** Wright-Patterson AFB (Dayton): Engineering, Industrial/Mechanical • Manufacturing Technology • Metallurgy • Sciences, Basic.

**ROCKET PROPULSION LABORATORY,** Edwards AFB (Rosamond), CA: Chemistry, Analytical/Inorganic/Organic/Physical • Engineering, Aeronautical/Electrical/Mechanical/Nuclear • Physics.

**ROME AIR DEVELOPMENT CENTER:** Griffiss AFB (Rome), NY: Engineering, Electrical • Mathematics • Physics • Science, Computer; **Electronic Technology Branch,** Hanscom AFB (Bedford), MA: Chemistry • Engineering, Electrical • Physics.

**SCHOOL OF AEROSPACE MEDICINE,** Brooks AFB (San Antonio), TX: Biochemistry • Biomathematics • Biostatistics • Cell Biology • Engineering, Biomedical/Industrial • Mathematics • Operations Analysis • Physiology • Sciences, Basic/Computer/Veterinary.

**WEAPONS LABORATORY,** Kirtland AFB (Albuquerque), NM: Engineering, Civil/Electrical/Mechanical/Nuclear • Sciences, Basic/Computer.

## POSITIONS OPEN

### GENETICS FACULTY POSITION

chairperson or established staff person; professor or associate professor

Applications are invited for a 12-month tenured appointment. The successful candidate must be: actively engaged in a vigorous and creative research program, able to direct graduate students, a stimulating teacher, and, if appropriate, an able administrator. Any area of genetics will be considered that will lead to advancements in our basic understanding of agronomically important plants or their symbionts, with preference given to plant cell culture or nitrogen fixation. Duties will include teaching undergraduate general genetics and/or a graduate course of choice. Appropriate reductions in teaching duties will be made for chairperson responsibilities. The Department of Genetics has ten faculty with active research programs in: *Rhizobium*, soybean, maize, *Drosophila*, immuno and somatic cell genetics. Please send curriculum vitae, a statement of research plans, and three letters of recommendation by 15 February 1980 to: **Dr. Alan Atherly, Department of Genetics, Iowa State University, Ames, Iowa 50011.**

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

**IMMUNOLOGY, B.S.-M.S.,** 3 to 4 years of experience in tissue culture, lymphocyte isolation and purification, immunodiagnostic procedures including lymphocyte blastogenesis surface markers, immunoglobulins by laser nephelometry column purification techniques. Expert use of the microscope, radioactive counters, laser nephelometer, HPLC required. Injection treatment, surgery, and autopsy of experimental mice essential. Salary commensurate with experience. Cancer center in New York City.

**Dr. J. George Bekesi, Professor**  
Department of Neoplastic Diseases  
Mt. Sinai School of Medicine  
Mt. Sinai Hospital  
100th Street and Fifth Avenue  
New York, N.Y. 10029

### INHALATION TOXICOLOGIST

B.S./M.S.-level scientist with training or experience that would provide the necessary background to participate in an inhalation toxicology program.

Please send résumé to: **David R. O'Donnell, Senior Personnel Representative, Eli Lilly and Company, P.O. Box 708, Greenfield, Indiana 46140.**

**INTERPRETIVE NATURALIST.** At nature center. Job involves conducting programs for families, students, teachers, and so forth. Qualifications include an advanced degree, knowledge of Midwest natural history, strong abilities in communication. Starting salary is \$12,273. Closing date for receipt of applications is 1 February 1980. Send résumé and recommendations to: **R. D. Gooch, Superintendent of Conservation, Forest Preserve District of DuPage County, 881 West St. Charles Road, Lombard, Ill. 60148.**

**Molecular Biology, Plant Cell Science, Plant Physiology, Genetics, Plant Breeding, Food Crop Science, Organic and Biochemistry Ph.D.'s,** and experienced Technicians —The **INTERNATIONAL PLANT RESEARCH INSTITUTE (IPRI)** anticipates new positions throughout 1980. Assistant, associate, and senior research scientists who have an outstanding record of achievement and innovation, ability to solve tough problems, and spirit of adventure: here is a unique opportunity to work with others with the same record in San Francisco Bay area of California. Send (in confidence) curriculum vitae, salary history, references, publications, and summary of your most innovative work to: **Oluf L. Gamburg Ph.D., IPRI, 887 Industrial Road, San Carlos, California 94070. Equal Opportunity Employer, M/F.**

### NEUROCHEMISTRY

**POSTDOCTORAL FELLOW**—Applicants are invited to apply for a position to study the neurochemical correlates of hepatic encephalopathy. Currently, emphasis is on the relationship between regional metabolism, blood flow, amino acid transport, neurotransmitters, and physiological function.

Applications, consisting of curriculum vitae and the names and addresses of two referees, should be sent to: **Dr. Richard Hawkins, Department of Anesthesia, The Milton S. Hershey Medical Center, The Pennsylvania State University, Hershey, Pa. 17033.** Salary to be commensurate with qualifications.

*Equal Opportunity/Affirmative Action Employer*

## POSITIONS OPEN

**MAMMALIAN PHYSIOLOGISTS AND BIOPHYSICISTS.** Positions open for the 1980-1981 academic year in the areas of cardiovascular physiology, renal physiology, gastrointestinal physiology, endocrinology, reproductive physiology, and respiratory physiology at King Faisal University College of Medicine in Dammam, Saudi Arabia. Ph.D. and/or M.D. and at least 2 years of teaching experience. Salaries are highly competitive and benefits are excellent. Language of instruction is English. Send complete curriculum vitae with telephone numbers and three references to: **Dr. Tawfig Tamimi, Dean, College of Medicine, King Faisal University, c/o Saudi Arabian Educational Mission, 2221 West Loop South, Houston, Texas 77027.**

**MAMMALOGIST.** Applications are invited for assistant curator in the Division of Mammals, Field Museum of Natural History; 12-month, career-track, full-time appointment, with both research and curatorial responsibilities to begin September 1980. Applicants must have Ph.D. with primary interest in and commitment to an active research program in systematic mammalogy in the broadest sense and the curation of a major mammal collection. Other duties may include participation in exhibition and education functions of Field Museum. Opportunities exist for work with graduate students. Salary dependent on qualifications and experience. Send curriculum vitae, description of research experience, future plans, reprints of publications, and letters from three referees by 1 March 1980 to: **Dr. Harold Voris, Chairman, Search Committee, Department of Zoology, Field Museum of Natural History, Roosevelt Road at Lake Shore Drive, Chicago, Illinois 60605. Telephone: 312-922-9410.**

*An Equal Opportunity Employer*

The Horn Point Environmental Laboratories (HPEL), University of Maryland, is expanding its faculty to include two tenure-track positions in the physical sciences.

**MARINE SEDIMENTOLOGY.** Research interests in sedimentary processes of the coastal region.

**COASTAL HYDROLOGY/HYDROGRAPHY.** Research interests in hydrology and groundwater dynamics and/or hydrography of shallow estuarine systems.

Rank and salary commensurate with qualifications. Ph.D. in appropriate discipline required. Incumbent will develop research programs and train graduate students. Faculty at HPEL are on 12-month appointments.

Candidates should submit résumé, statement of research interests, and names of six referees to: **Search Committees, HPEL, P.O. Box 775, Cambridge, Md. 21613** by 31 January 1980.

*Equal Opportunity/Affirmative Action Employer*

**Medical Geneticist. (M.D.)** for state-funded faculty position. Growing department has comprehensive teaching program; clinical activities extend to 31 counties in Alabama and adjoining Florida and Mississippi areas under state and federal sponsorship. Position offered is compatible with various clinical and research interests. Apply to: **W. Wertelecki, M.D., Department of Medical Genetics, University of South Alabama Medical Center, Mobile, Ala. 36617. Telephone: 205-476-6305. Equal Opportunity Employer.**

### MICROBIOLOGY FACULTY POSITION— MOLECULAR GENETICS, PHYSIOLOGY, ULTRASTRUCTURE, ECOLOGY, PATHOGENESIS, OR PARASITOLOGY

Microbiology Department with emphasis on molecular aspects of microbial pathogenesis and immunology seeks candidates for several tenure-track or tenured faculty appointments. Candidates with expertise and research experience in the areas listed above are encouraged to apply. Responsibilities include teaching in medical and graduate courses and development of independent research programs. Level of appointment and salary commensurate with training and experience. Applications for appointments beginning 1 May 1980 through 1 October 1980 should be submitted by 15 February 1980. Ph.D. or equivalent professional degree plus postdoctoral research experience required. Submit curriculum vitae and bibliography, names of three professional references, and major publications to: **Dr. Randall K. Holmes, Professor and Chairman, Department of Microbiology, c/o Personnel/Manpower Division, Uniformed Services University of the Health Sciences, 4301 Jones Bridge Road, Bethesda, Md. 20014. Equal Opportunity/Affirmative Action Employer.**

## POSITIONS OPEN

### ORGANIC CHEMIST

Immediate opening for Ph.D. organic chemist required to synthesize labeled ( $^3\text{H}$ ,  $^4\text{H}$ ,  $^{14}\text{C}$ ) and non-labeled chemicals for use in cancer research. Self-initiated and collaborative research opportunities are available. Creative and publication oriented individuals are encouraged to apply.

Send curriculum vitae with three names of reference and complete publication list to:

#### Personnel

Position Number 1279

**FREDERICK CANCER RESEARCH CENTER**  
Litton Bionetics, Inc.

P.O. Box B

Frederick, Md. 21701

*Equal Opportunity Employer, M/F*

### NATIONAL MUSEUM OF NATURAL HISTORY SMITHSONIAN INSTITUTION

**THE DEPARTMENT OF PALEOBIOLOGY** anticipates a tenure-track opening on the scientific staff for an invertebrate or vertebrate paleontologist, paleobotanist, or sedimentologist at the GS-11 level (\$20,611) beginning September 1980. Send curriculum vitae, copies of publications, and statement of long-term research goals to: **Dr. T. R. Waller, Chairman, Search Committee, Department of Paleobiology, Smithsonian Institution, Washington, D.C. 20560.**

Position open for a **PATHOLOGIST—DIRECTOR OF HEMATOLOGY LABORATORY** in the Department of Pathology, Northwestern University Medical School, and Northwestern Memorial Hospital, Chicago, Illinois. Full-time academic appointment; rank dependent on level of experience and scholarly development. An active research program obligatory. Send résumé to: **Dante G. Scarpelli, M.D., Ph.D., Professor and Chairman, Department of Pathology, Northwestern University Medical School, 303 East Chicago Avenue, Chicago, Ill. 60611. Equal Opportunity/Affirmative Action Employer**

### PEATLAND ECOLOGIST OR PALEOECOLOGIST

Anticipated opening 1 March 1980 for person with Ph.D. and knowledge and research experience in geological and biological aspects of peatland ecology and paleoecology, to develop and manage research in Maine on physical and biological effects on peat growth under long- and short-term natural conditions and after harvest. Send letter, curriculum vitae, and names and addresses of three references to:

**Professor Ronald B. Davis**  
Institute for Quaternary Studies  
304A Boardman Hall  
University of Maine  
Orono, Maine 04469

*The University of Maine at Orono is an Equal Opportunity/Affirmative Action Employer.*

### PHARMACOLOGIST

Ph.D. to develop and teach a course in general pharmacology to a small class of second-year medical students at the Muncie Center for Medical Education of the Indiana University School of Medicine. Breadth of experience in the field is important. Tenure-track appointment at Ball State University with anticipated starting date of September 1980. Rank and salary are based on experience. Please send curriculum vitae, a summary of teaching and research goals, and names of three references to: **Dr. Thomas A. Lesh, Muncie Center for Medical Education, Maria Bingham 209, Ball State University, Muncie, Ind. 47306.** Application deadline: 1 March 1980. *Ball State University practices Equal Opportunity in Education and Employment.*

### POSTDOCTORAL FELLOW

Postdoctoral organic synthesis position available for the development of new and direct synthesis routes to chemicals used in cancer research. Appointment is for 1 year with renewal for a second year at a beginning salary of \$14,200.

Please send complete résumé and names of three references to:

#### Personnel

Position Number 1348

**FREDERICK CANCER RESEARCH CENTER**  
Litton Bionetics, Inc.

P.O. Box B

Frederick, Md. 21701

*Equal Opportunity Employer, M/F*

**KING FAISAL UNIVERSITY  
COLLEGE OF MEDICINE  
DAMMAM, SAUDI ARABIA  
FACULTY POSITIONS OPEN  
1980-1981**

The expanding College of Medicine, now in its sixth year, is accepting applications from qualified men and women for the 1980-1981 academic year in:

<b>CHEMISTRY</b>	<b>PATHOLOGY</b>
<b>BIOLOGY</b>	<b>EPIDEMIOLOGY</b>
<b>PHYSICS</b>	<b>MICROBIOLOGY</b>
<b>BIOCHEMISTRY</b>	<b>PARASITOLOGY</b>
<b>ANATOMY</b>	<b>PHARMACOLOGY</b>
<b>PHYSIOLOGY</b>	<b>COMMUNITY MEDICINE</b>

Doctorate or equivalent degree required. Language of instruction is English. Interviews to be held in London, Houston, and Ottawa during February 1980.

**Salaries** are highly competitive and negotiable; comparable to other Saudi universities.

**Benefits** include free furnished housing, educational allowances, air tickets to and from Saudi Arabia once each year for a family of four, 60-day paid vacation, and liberal overweight allowance. No Saudi income tax.

Send curriculum vitae with current telephone number and the names and addresses of three references to:

**Dr. Tawfig Tamimi**  
Dean, College of Medicine  
King Faisal University  
c/o Saudi Arabian  
Educational Mission  
2221 West Loop South  
Houston, Texas 77027  
OR  
c/o P.O. Box 2  
Sunbury-on-Thames  
Middlesex TW16 5JP England

**DEPARTMENT OF NUTRITION  
AND FOOD SCIENCE  
MASSACHUSETTS INSTITUTE OF  
TECHNOLOGY (MIT)**

**FOUR ASSISTANT/ASSOCIATE PROFESSOR  
POSITIONS AVAILABLE**

All successful applicants will be expected to develop independent research programs, teach graduate courses, and supervise and train graduate students in research. Rank depends on qualifications and experience.

- 1) **In neural and endocrine regulation in mammalian nervous system.** Tenure-track. Qualifications include 2 years of postdoctoral experience, using techniques such as iontophoresis of drugs or neurotransmitters and intra- or extracellular recording of electrical activity in single neurons, and working knowledge of neurotransmitter biochemistry and physiology.
- 2) **In toxicology.** Applicants should have background in biochemistry, molecular biology, chemistry, or toxicology, and research interest in mechanisms of action of environmentally significant chemicals, particularly estimating health risk. Excellent opportunity to interact with faculty members in related areas of chemistry and biology.
- 3) **In human and clinical nutrition.** Applicants must be M.D.'s with research training, and should also have a Ph.D. and related experience. The successful applicant will become actively involved in research programs at the MIT Clinical Research Center.
- 4) **In metabolism and nutrition.** Applicants should have Ph.D. and/or M.D. degree and major interest in interaction of hormones and whole body metabolism and nutrient utilization.

Send curriculum vitae, including brief description of research interest and teaching experience, representative publications, and names of three references to: **Dr. Gerald N. Wogan, Head, Department of Nutrition and Food Science, Massachusetts Institute of Technology, Room 16-333, Cambridge, Mass. 02139.**

MIT is an Equal Opportunity Employer. Members of minority groups are urged to apply.

**Dartmouth Medical School  
ASSOCIATE DEAN  
for STUDENT and  
ACADEMIC AFFAIRS**

Dartmouth Medical School, embarking on a major curriculum expansion and increase in student enrollment, is seeking candidates for the position of Associate Dean for Student and Academic Affairs.

The associate dean has overall administrative responsibility for the Offices of the Registrar and of the Director of Admissions, Financial Aid, and Minority Affairs. The associate dean counsels students seeking advice on curriculum and personal matters, academic performance, choice of electives, internship applications, as well as long-term career planning. As the representative of the dean on the Curriculum Committee, the associate dean is involved in curriculum development and is responsible for the implementation of the academic programs. In all these matters, the associate dean works closely with the dean.

Candidates must have a doctoral degree (M.D. preferred) and academic achievements and experience which would qualify him or her for a senior faculty rank.

Salary is negotiable. Preferred date of appointment is 1 July 1980. Applications or nominations should include up-to-date curriculum vitae and the names and addresses of three references. These documents should be submitted before 1 March 1980 to: **R. E. Gosselin, M.D., Chairman of Search Committee, Department of Pharmacology and Toxicology, Dartmouth Medical School, Hanover, N.H. 03755.**

An Affirmative Action/Equal Opportunity Employer, M/F

**INDUSTRY  
CAREERS**  
Large range of

positions—Bench to top management. Must have prior industrial experience. PhD's and MS. Applied research and product development.

PHARMACEUTICALS	CLINICAL DIAGNOSTICS
• TOXICOLOGY	• METABOLISM
• PHARMACOLOGY	• CARDIOVASCULAR
• PHARMACISTS	• DERMATOLOGY
• MICROBIOLOGY	• BIOCHEMISTRY
• VIROLOGY	• ORG. CHEMISTRY

Our clients are major corporations and pay all fees. Send your cv, in confidence, with salary requirements, geographic preference and type of position you are seeking to:

**Gary S. Bell Associates, Inc.**  
393 Crescent Avenue  
Wyckoff, New Jersey 07481  
Attn: Mr. Allen Cayne, Exec. VP  
telephone: 201-891-5900

**FACULTY POSITIONS OPEN  
COLLEGE OF AGRICULTURAL  
SCIENCES AND FOODS  
KING FAISAL UNIVERSITY  
HOFUF, SAUDI ARABIA  
Academic Year 1980-1981**

The expanding College of Agricultural Sciences and Foods of King Faisal University invites inquiries from qualified applicants for the 1980-1981 academic year in the following fields: **Agromony, Horticulture, Beekeeping, Poultry Science, Biology, Chemistry, Physics, Botany, Biochemistry, Agricultural Extension, Plant Pathology, Agricultural Economics, Animal Science, Animal Ecology, Dairy Science, Agricultural Engineering, and Water Resources and Climatology.**

**PREREQUISITES:** Master's or equivalent degree; practical and/or teaching experience. Knowledge of Arabic is helpful but not required. Language of instruction is English. Positions available September 1980; interviews scheduled with the dean in Houston, London, and Ottawa in April/May 1980.

**SALARY RANGES:** Approximate annual U.S. equivalent: professor, \$25,469 to \$33,965; associate professor, \$22,779 to \$28,973; assistant professor, \$18,570 to \$27,487; and lecturer, \$11,611 to \$16,035. Salaries are paid monthly in Saudi riyals. Substantial increase in these salaries is being considered for 1980-1981.

**BENEFITS:** Free, furnished accommodations; substantial educational allowance for up to four children. Air tickets to and from Saudi Arabia once per year for family of four. Sixty-day paid summer holiday; yearly bonus; overweight allowance. No Saudi income tax. Contracts are for 1 year and are renewable.

Send curriculum vitae with current telephone number and the names, addresses, and telephone numbers of three references to:

**Dr. Hussein M. Elarosi**  
Dean, College of Agricultural Sciences and Foods  
King Faisal University

c/o Saudi Arabian Educational Mission, 2221 West Loop South, Houston, Texas 77027;

OR

c/o P.O. Box 2, Sudbury-on-Thames, Middlesex TW16 5JP England.

**MANAGER, ENVIRONMENTAL  
SAFETY SERVICES/  
BIOSAFETY OFFICER  
UNIVERSITY OF GEORGIA**

Position includes dual responsibilities of Biosafety Officer and management of comprehensive Environmental Safety Services Program. Provide curriculum vitae, salary requirements, and specific, brief comments on qualifications: (i) through (vi). (i) Responsibility for safety programs (biohazards safety training, bulletins, advice on construction of containment facilities, and so forth) relative to in vitro construction and propagation of recombinant DNA, research with pathogenic organisms and tumor viruses, and studies involving prolonged laboratory culture of cells, invertebrates and pathogens affecting plants and animals, and chemical carcinogens. (ii) Ability to work according to policies/guidelines established by University Biosafety Committee, Chemical and Laboratory Safety Committee, and Radiation Safety Committee to ensure university research carried out according to state, federal, and university regulations. (iii) Professional ability to consult with researchers, identify and aid in evaluation of safety factors and give technical advice on grant proposals, research projects, and laboratory facilities involving biohazards. (iv) Coordination of bioscience and physical science aspects, personnel, laboratory safety equipment, and training in the fields of radiation safety, sanitation, and laboratory safety. (v) Administratively address safety concerns of solid/liquid waste control, hazardous waste disposal, safety measures related to carcinogenic sources, fire safety, pesticide control, water quality control, air quality control, noise pollution, food sanitation, animal quarters sanitation, building sanitation, occupational health and safety, and related training programs. (vi) Must have either an advanced degree in some biological or physical science (that is, public health, environmental health, industrial hygiene, health physics, organic or biological chemistry, virology, microbiology, or molecular biology) or M.D. or D.V.M. Submit applications to: **Edward T. Kassinger, Director of Public Safety, University of Georgia, Athens, Ga. 30602.** The University of Georgia is an Equal Opportunity/Affirmative Action Employer.

## POSITIONS OPEN

### AN UNTAMED PHYSICIST?

Are you a capable, successful Ph.D. experimental physicist or EE with some latent pioneer spirit? Do you have at least some electronic design ability? Would you be interested in broad problems related to instruments and systems involved in fisheries research and management? Are you attracted, or at least not repelled, by the idea of life in the remote, but accessible, San Juan Islands, northwest of Seattle, in Puget Sound?

This small, successful corporation has an opening for a staff member who must be able to answer yes to the questions above. Some experience with mini/micro computers, and a comfortable attitude toward small boats and small airplanes will count in the applicant's favor.

We offer to the successful applicant broad responsibility and compensation to match, a first-quality profit-sharing, retirement, and benefit plan, and an opportunity to live and prosper in a unique, beautiful environment of mountains, land, and water.

If you think you are qualified and if you would like to know more, respond with résumé, list of publications, and names of three references to: **Dr. K. B. Jefferts, Northwest Marine Technology, Inc., Shaw Island, Washington 98286.**

**POSTDOCTORAL FELLOW or RESEARCH ASSOCIATE** to participate in a program on the metabolism and mechanisms of action of a new class of steroid hormones. Candidates sought with backgrounds in endocrinology, enzymology, genetics, receptorology, or organic chemistry. Send curriculum vitae and names of three references to: **Carl Monder, Ph.D., Research Institute for Skeletomuscular Diseases, Joint Diseases North General Hospital, 1919 Madison Avenue, New York, N.Y. 10035.**

**POSTDOCTORAL POSITION** available for recent Ph.D. in biochemistry or microbiology to study membrane protein biosynthesis induced by plasmids and bacteriophage. The work involves a combination of gene isolation and protein purification techniques. Competitive salary. Send curriculum vitae and names of three references to: **Dr. D. H. Duckworth, Department of Immunology and Medical Microbiology, Box J-266, J. Hillis Miller Health Center, Gainesville, Florida 32610. Equal Opportunity/Affirmative Action Employer.**

**POSTDOCTORAL POSITIONS** (three) available immediately. Two positions (fellowships) supported by NIH Training Grant (National Research Service Awards) are for M.D. or Ph.D. interested in basic cancer chemotherapy, clinical cancer chemotherapy and biology, or cancer drug development. Third position (research associate) supported by a NIH grant is for the study of cancer-related tight-binding inhibitors. Send (within 1 month) curriculum vitae, area of interest, and the names of two references to: **Dr. Sungman Cha, Brown University, Box G, Providence, R.I. 02912. Telephone: 401-863-3114. An Equal Opportunity/Affirmative Action Employer.**

**POSTDOCTORAL POSITION IN FETAL AND NEONATAL BIOLOGY.** Fields of investigation include the physiology, biochemistry, and pharmacology of the cardiovascular, respiratory, renal, and central nervous systems. Emphasis is on theoretical (mathematical modeling) and experimental studies. The fellowship commences 1 July 1980, and is available for 2 years. Please send curriculum vitae and bibliography to: **Dr. Lawrence D. Longo, Division of Perinatal Biology, School of Medicine, Loma Linda University, Loma Linda, Calif. 92350.**

**POSTDOCTORAL POSITION** (immediate opening). Study in area of microbial genetics and protein chemistry of bacterial transport systems. Excellent opportunity to combine genetics and biochemistry in an established system. Send résumé and names of three references to: **Dr. Robert W. Hogg, Department of Microbiology, Case Western Reserve University, Cleveland, Ohio 44106. An Affirmative Action Employer.**

**Postdoctoral Positions**—For research on physical-chemical properties, mechanisms, and biological regulation of lysyl oxidase, as related to collagen and elastin biosynthesis. Background in enzymology and/or protein chemistry highly desirable. Available immediately. Send résumé and three references to: **Dr. Herbert M. Kagan, Department of Biochemistry, Boston University School of Medicine, 80 East Concord Street, Boston, Mass. 02118. An Equal Opportunity Employer, M/F.**

## POSITIONS OPEN

### POSTDOCTORAL POSITION

Ph.D. in zoology, anatomy, or related field for interdisciplinary research of salivary gland function in ixodid ticks. Research will center on immunocytochemical, histochemical, and cytochemical localization of cAMP and related factors involved in the secretory process. Position available 1 June 1980 with 2½ years of funding assured. Starting salary: \$14,000 per annum, plus fringe benefits. Send résumé and names of references to: **Dr. J. R. Sauer, Department of Entomology, or Dr. C. L. Ownby, Department of Physiological Sciences, Oklahoma State University, Stillwater, Okla. 74074. An Equal Opportunity/Affirmative Action Employer.**

**POSTDOCTORAL POSITION** available immediately. The work will involve the application of photoaffinity labeling techniques to the delineation of the topography of *E. coli* ribosome binding sites for initiation factors. Research may also entail the application of other physico-chemical techniques to probe the IF-3 binding site and mapping of the binding sites of other factors (S-1, IF-2, EFTu). Experience in protein synthesis/protein and nucleic acid chemistry is desirable. Appointment can be arranged for up to 2 years. Salary range: \$11,000 to \$12,000. Send résumé and names of three references to: **Dr. Ira S. Schwartz, Department of Biochemistry, University of Massachusetts, Amherst, Mass. 01003. An Equal Opportunity/Affirmative Action Employer.**

**POSTDOCTORAL POSITIONS** available. The Epilepsy Center laboratories associated with Duke University Medical Center (Departments of Pharmacology and Medicine) and the VA Medical Center will have available a number of postdoctoral positions in neurophysiology and neuropharmacology. One position involves the use of in vitro vertebrate models to study the mechanisms of action of convulsants, anti-convulsants, and physiological modulators of neuronal excitability. Other positions involve studies of cellular excitability, using invertebrate models. The laboratories are well-equipped for electrophysiological analyses of cellular function, having capabilities for voltage clamping with both double and single microelectrodes, analysis of membrane noise, and the monitoring of single cell function with optical techniques. For information, contact: **Dr. W. A. Wilson, Epilepsy Center, VA Medical Center, Durham, N.C. 27705; telephone: 919-286-0411, extension 6575. Duke University is an Equal Opportunity Employer.**

**POSTDOCTORAL POSITION**—Research on the effects of ethanol or mammalian hepatic inflammation and fibrosis including studies of protein and collagen metabolism. Position is available immediately for 2 to 3 years. Please send curriculum vitae, statement of research interest, and three letters of recommendation to: **Charles S. Lieber, M.D., Alcoholism Research and Treatment Center, BRONX VA HOSPITAL, 130 West Kingsbridge Road, New York, N.Y. 10468. An Equal Opportunity Employer.**

**POSTDOCTORAL POSITION** available in basic or clinical investigation of cardiac physiology, biochemistry, and pharmacology. Stipend: \$13,380 to \$17,040. Contact: **Dr. Rita Carey, Cardiology Section, Temple University Medical School, 3400 North Broad Street, Philadelphia, Pa. 19140. An Equal Opportunity/Affirmative Action Employer.**

**POSTDOCTORAL POSITION** (immediate opening) to participate in a collaborative research and training program dealing with the role of brain DA-containing systems in stress-induced behavior, with a special emphasis on the effects of activating or stressful environmental stimuli on the electrical activity of mesencephalic DA neurons. The applicant should have a Ph.D. in psychobiology or neurobiology, with either experience in electrophysiological recording techniques or an aptitude for and willingness to learn such techniques. Must be a U.S. citizen. Send curriculum vitae and names of references to: **Dr. Seymour Antelman and Dr. Anthony Caggiola, Department of Psychology, University of Pittsburgh, Pittsburgh, Pa. 15260. An Equal Opportunity Employer.**

**POSTDOCTORAL POSITION** available 1 July 1980 in tumor immunology. Research on mechanisms involved in establishment and maintenance of tumor dormant states in murine models. Salary supported by NCI grants at levels commensurate with experience. **Dr. E. Frederick Wheelock, Department of Microbiology, Thomas Jefferson University, Philadelphia, Pa. 19107.** Please send curriculum vitae and letters of reference. *An Equal Opportunity/Affirmative Action Employer.*

## POSITIONS OPEN

### POSTDOCTORAL POSITION

Two-year postdoctoral position to study vertebrate photoreceptor physiology available about 1 June 1980. Starting salary: \$13,380 or higher (depending upon experience). Candidates with experience with intracellular recording techniques preferred. Send curriculum vitae to: **Dr. W. H. Miller, Department of Ophthalmology and Visual Sciences, Yale Medical School, New Haven, Conn. 06510.**

**POSTDOCTORAL RESEARCH**—Ph.D., M.D., or Ph.D.-M.D. for primary participation in biochemical pharmacology studies on sodium-potassium adenosine triphosphatase. Send résumé to: **Personnel Office, Oral Roberts University, P.O. Box 2187, Tulsa, Oklahoma 74101. Oral Roberts University is an Equal Opportunity Employer.**

### POSTDOCTORAL RESEARCH OPPORTUNITIES

Applications are being sought for two positions as research associates in the Biomedical Engineering Laboratory of Rice University. Applicants are expected to have Ph.D. degrees or equivalent training in engineering, science, or mathematics. The positions are for a 1-year term at a salary of \$15,000 with the possibility of renewal for one or more subsequent years.

Position 1 involves mathematical and experimental (in vitro) simulation of oxygen transport from blood to tissue in the microcirculation. Thus it would be of interest to applicants with capabilities and interests in transport phenomena and applied mathematics.

Position 2 involves work on the effect of fluid mechanics and surface interaction on leukocyte function and morphology. The applicant should have some expertise in experimental fluid mechanics. In addition, some knowledge of cell biology and biochemistry would be desirable.

Send curriculum vitae and references to:  
**Professor J. D. Hellums (position 1), or  
Professor L. V. McIntire (position 2)  
Biomedical Engineering Laboratory  
Rice University  
P.O. Box 1892  
Houston, Texas 77001**

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

### PROVOST OF DIVISION AGRICULTURAL AND LIFE SCIENCES UNIVERSITY OF MARYLAND COLLEGE PARK

Applications and nominations are invited for the position of Provost, Division of Agricultural and Life Sciences.

The provost is responsible to the chancellor of the College Park campus and is the chief administrative and academic officer of this division comprising about 275 faculty, 3800 undergraduates, and 800 graduate students. This division includes the College of Agriculture, the Departments of Botany, Chemistry, Entomology, Geology, Microbiology, and Zoology, and the Water Resources Research Center. Agricultural Experiment Station and Cooperative Extension Service activities are performed through the College of Agriculture.

Desired qualifications include an earned doctorate, proven scholarly and professional competence, extensive academic and administrative experience at the university level, and the ability to provide creative and innovative leadership.

In order to receive full consideration, applications and nominations should be received no later than 15 February 1980. Correspondence should be addressed to: **Dr. Albert Gomezplata, Provost Search Committee, Department of Chemical Engineering, University of Maryland, College Park, Maryland 20742.**

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

**RESEARCH ASSOCIATE IN STEROID METABOLISM**—Postdoctoral position available immediately to study mechanism of action of aldosterone and regulation of aldosterone metabolite synthesis. Use of HPLC, in vitro synthetic techniques, and animal physiology desirable. Send curriculum vitae and three letters of recommendation to: **Dr. David J. Morris, Department of Laboratory Medicine, The Miriam Hospital, 164 Summit Avenue, Providence, R.I. 02906. A Brown University-affiliated hospital.**



## RESEARCH ASSISTANT

### Pharmacology

Arnar-Stone Laboratories has an immediate opening for a Research Assistant with one or more years of experience in *in vitro* cardiovascular and/or autonomic pharmacology. A B.S. or M.S. in a biological science, physiology, or pharmacology is required. Some experience with *in vivo* cardiovascular pharmacology is desirable.

Duties involve setting up and running experiments to identify pharmacological properties of new compounds as potential candidates for cardiovascular therapy, data summary and primary analysis.

We offer a competitive salary and comprehensive benefits package. For consideration, please send resume including salary history and requirements to:

Diane Veris



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American Hospital  
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1600 Waukegan Road  
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## M.D./Ph.D. EPIDEMIOLOGIST

Merck Sharp & Dohme Research Laboratories is presently seeking an outstanding M.D. Epidemiologist to join our Virus and Cell Biology Department as Associate Director of Biological Evaluation and Analysis.

Merck Sharp & Dohme Research, Division of Merck & Co., Inc., is an industry leader in the development of biological and pharmaceutical products. The individual recruited would be involved in the planning and monitoring of clinical trials with our various biological products, and in analyzing and interpreting results from these studies. This is an unusual career opportunity which offers a highly stimulating, interdisciplinary work environment.

Opportunities also exist in this area for Ph.D. level candidates in Epidemiology, Biostatistics, or Preventive Medicine.

Please send resume and salary requirements to:

Mr. George W. Brodhead

**Merck Sharp & Dohme  
Research Laboratories**

Division of Merck & Co., Inc.  
West Point, PA 19486

An Equal Opportunity Employer

## CARDIOVASCULAR PHARMACOLOGIST PhD

SMITHKLINE CORPORATION, a diversified multinational firm, located in Philadelphia, Pennsylvania, is seeking a Scientist for a position in Cardiovascular Pharmacology. The successful candidate should be interested in research directed toward the discovery of Pharmacological characterizations of new cardiovascular drugs and should have training in the hemodynamic and pharmacological aspects of cardiovascular functions. Career development will be encouraged and technical assistance is provided.

Preference will be given to individuals with the following qualifications:

- PhD in Pharmacology
- At least 1 to 2 years of laboratory experience beyond the Doctorate
- Demonstrated capability in initiating and conducting independent and unique research
- Interest in molecular mechanisms of cardiovascular drug action and physiological pharmacology

SmithKline offers an excellent compensation program and opportunity for professional growth. Please send resume with salary history to: Mr. William Groves, Senior Employment Administrator, SMITHKLINE & FRENCH LABORATORIES, A Division of, SMITHKLINE CORPORATION, 1556 Spring Garden Street, P.O. Box 7929, Philadelphia, Pennsylvania 19101.

We are an  
equal opportunity employer,  
Male/Female/  
Handicapped/  
Veteran.

**SmithKline**  
Smith Kline & French Laboratories

## COLD SPRING HARBOR LABORATORY 1980 NEUROBIOLOGY COURSES & WORKSHOPS



### The Neurobiology of Behavior, June 6-June 20

Instr.: E Kandel, J Koester, College of Physicians & Surgeons, Columbia University; K Pearson, University of Alberta

### Nervous System of the Leech, June 9-June 29

Instr.: J Nicholls, Stanford University Medical School; K Muller, Carnegie Institution of Washington; I Parnas, Hebrew University; B Zipser, Cold Spring Harbor Laboratory

### Mammalian Central Nervous System, June 9-July 2

Instr.: D Hubel, H Sherk, Harvard Medical School; P Kirkwood, Institute of Neurology, London; J Malpeli, University of Illinois; W Rymer, Northwestern University Medical School

### The Synapse: Cellular & Molecular Neurobiology, June 22-July 12

Instr.: R Rahamimoff, Hebrew University Medical School; U J McMahan, Stanford University; B Katz, University College London; C Stevens, Yale University; D Yoshikami, University of Utah

### Basic Neuroanatomical Methods, July 8-July 28

Instr.: E G Jones, B K Hartman, Washington University; P J Hand, University of Pennsylvania

### Principles of Neural Development, July 15-July 29

Instr.: D Purves, Washington University School of Medicine; P H Patterson, Harvard Medical School

### Electrophysiological Methods for Cellular Neurobiology, July 21-August 10

Instr.: J Kehoe, R Kado, Ecole Normale Supérieure; D Chiarandini, New York University School of Medicine; E Stefani, Instituto Politecnico Nacional

Registration Deadline: March 15, 1980. For applications write to:  
Registrar, Cold Spring Harbor Laboratory  
Box 100, Cold Spring Harbor, New York 11724  
preferably by February 1.

## RESEARCH PHYSICIST

GS-13

\$29,375 to \$38,186

Salary Commensurate With Qualifications

The Naval Research Laboratory is seeking a qualified individual to perform experimental and theoretical research into new optical processing techniques which will permit the manipulation of data from radar, sonar, electronic warfare and optical sensor systems. Responsibilities include addressing problems involving the definition of Navy system data handling requirements, the development of new and/or the application of established mathematical techniques, and construction of the first processor to demonstrate concept verification. A B.S. degree in Physics and experience in experimental optics, and Fourier transform spectroscopy is required. An advanced degree is highly desirable.

This is a career position in the Federal Service with all normal civil service benefits. Interested applicants should submit a Personal Qualifications Statement (SF-171) or detailed resume, prior to February 1, 1980 to:

Naval Research Laboratory  
Civilian Personnel Office  
Code 55-129-13S  
4555 Overlook Avenue, S.W.  
Washington, D.C. 20375



U.S. Citizenship is required

An Equal Opportunity Employer



## POSITIONS OPEN

Full-time faculty **PSYCHIATRIST** position as **DIRECTOR** of an 18-bed adolescent inpatient unit and adolescent day treatment program of University Hospital; to lead interdisciplinary team, supervise residents, teach medical students, and participate in ongoing clinical research. Must have Boards in psychiatry or be Board-eligible with intention to take Boards in near future; evidence of research and teaching skills is essential as well as clinical and administrative skills. Reply to: **Albert J. Silverman, M.D., Professor and Chairman, Department of Psychiatry, University of Michigan Medical School, Ann Arbor, Mich. 48109.** Code 3300HO. *A non-discriminatory, Affirmative Action Employer.*

**RESEARCH ASSISTANT** experienced in neurobiological, psychopharmacological, and behavioral research. Send curriculum vitae to: **W. W. Spradlin, M.D., Chairman, Department of Behavioral Medicine and Psychiatry, Box 203, University of Virginia Medical Center, Charlottesville, Va. 22908.** *Equal Opportunity/Affirmative Action Employer.*

The Neurosciences Program at the University of Alabama in Birmingham invites applications from qualified individuals for one or more positions at the **RESEARCH ASSISTANT PROFESSOR** level. Applicants should have a doctoral degree and appropriate postdoctoral experience. The Neurosciences Program is multidisciplinary in approach with emphasis on molecular biology, sensory motor mechanisms, membrane biochemistry, psychopharmacology, medicinal chemistry, cerebral metabolism, psychophysiology of sleep, and neurochemistry and behavior. Applicants should send curriculum vitae and the names of three references to: **Dr. Vernon P. Parnham, Director, The Neurosciences Program, University of Alabama in Birmingham, University Station, Birmingham, Alabama 35294.** Closing date for applications: 1 March 1980.

*An Equal Opportunity/Affirmative Action Employer*

**RESEARCH ASSOCIATE**—Immunologist, Ph.D. knowledgeable in the methodologies of humoral and cell-mediated immunity to study the effects of gut-derived antigens in human and experimental liver disease. Experience in cell culture and biochemical procedures necessary. Salary from \$20,000 per annum. Send curriculum vitae, reprints, and three letters of recommendation to: **Dr. H. Gans, VA Medical Center, Danville, Illinois 61832.** *An Equal Opportunity Employer.*

**RESEARCH ASSOCIATE.** Available immediately for studies on genetic regulation of  $\beta$ -galactosidase in yeast, including mutant isolation and characterization, gene cloning, DNA and RNA sequencing, and in vitro transcription. Experience in genetics or biochemistry essential. Faculty position possible. Salary: \$14,000 to \$20,000, depending upon experience. Please send résumé and three letters of reference to: **Dr. Robert Dickson, Department of Biochemistry, University of Kentucky College of Medicine, Lexington, Ky. 40536.** *An Equal Opportunity/Affirmative Action Employer.*

**RESEARCH ASSOCIATE** in membrane molecular pathobiology. Available immediately. Salary: \$15,000 to \$18,000 per annum. Candidate should have experience in membrane protein biochemistry. Studies on structure and function of abnormal (parasite-specific) host cell membrane proteins. Inquire: **Dr. R. Schmidt-Ullrich or Dr. D. F. H. Wallach, Tufts-New England Medical Center, Department of Therapeutic Radiology/Radiobiology Division, 171 Harrison Avenue, Boston, Mass. 02111.** *An Equal Opportunity Employer, M/F.*

### STAFF ASSOCIATE

Seeking recent postdoctorals for staff positions in laboratories devoted to broad research program in developmental cell biology in comprehensive cancer center. Research programs include cellular genetics and development, tumor immunology, viral oncology, and chemical carcinogenesis. The research training experience will generally entail a 2-year commitment. Salary negotiable and dependent on postdoctoral level. Send curriculum vitae to:

**Business Manager  
Cancer Center/Institute of Cancer Research  
Columbia University  
701 West 168 Street  
New York, New York 10032**

*An Equal Opportunity/Affirmative Action Employer*

## POSITIONS OPEN

**RESEARCH ASSOCIATE.** Postdoctoral positions available in cell surface chemistry/biology to study (i) structure, biosynthesis, and relationship to tumor cell survival of cell surface glycoproteins from mammary tumors and (ii) membrane-cytoskeleton interactions in tumor cells and their effects on cell functions. Send curriculum vitae and names of three references to: **Dr. Kermit L. Carraway, Department of Biochemistry, Oklahoma State University, Stillwater, Okla. 74074.**

**RESEARCH FELLOW**—Ph.D. in biochemistry, specialized in biochemical techniques and instrumentation, protein purification chemistry, and sequence analysis. Requires 1 to 2 years of cell culture experience.

**RESEARCH TECHNICIAN III**—Chromatography, high-voltage electrophoresis, amino acid analysis, spectrophotometry, ultracentrifuge, and experience in isolation of proteins and peptides using ion exchange columns. Requires M.S. in analytical/organic/biochemistry, synthesis of amino acid derivatives, peptide sequencing, and HPLC techniques. Please send résumé for either position to: **Dr. T. S. Samy, SIDNEY FARBER CANCER INSTITUTE, 44 Binney Street, Boston, Mass. 02115.** *An Equal Opportunity/Affirmative Action Employer.*

**SEDIMENTARY GEOLOGIST.** We seek applicants for a tenure-track assistant professor (\$17,000 to \$19,900 per academic year) commencing fall 1980 in the broad area of sediments, stratigraphy, and/or sedimentary petrology. A Ph.D. will be required, as is a high level of competence in research and teaching. Send résumé, statement of research and teaching interests, and the names of three referees by 1 March 1980 to: **Jere H. Lipps, Chair, Department of Geology, University of California, Davis, California 95616.** *An Equal Opportunity/Affirmative Action Employer.*

### SENIOR SCIENTIST

Physical science background, specialization in energy, toxics, and other issues related to public policy applications of technology. Full-time position—Union of Concerned Scientists, Cambridge Office. Salary negotiable. Send résumé to: **Personnel, 1208 Massachusetts Avenue, Cambridge, Mass. 02238** by 21 January 1980.

### STAFF ASSOCIATES

The Hastings Center, a nonprofit organization devoted to an examination of the ethical problems of biology, medicine, and the behavioral sciences, is seeking one or more staff members at the associate level. Associate positions require a combination of administrative and scholarly skills and a strong orientation toward interdisciplinary work between the sciences and the humanities. The salary range is \$20,000 to \$34,000 and candidates should have a Ph.D. or its equivalent in one of the sciences or the humanities. Applicants should send curriculum vitae, a cover letter detailing professional background, and the names of three references to: **The Hastings Center, 360 Broadway, Hastings-on-Hudson, N.Y. 10706.** *The Hastings Center is an Equal Opportunity Employer.*

**STORED PRODUCT ENTOMOLOGIST.** Ph.D. with experience in management of stored product insects for a 2-year position as research associate. Primary responsibilities will be to assist in planning, conducting, and analyzing laboratory and field priority research projects pertinent to stored product insect problems of Minnesota. Salary minimum: \$15,048. Résumé and three letters of recommendation to: **Dr. Phillip K. Harein, Department of Entomology, Fisheries and Wildlife, 219 Hodson Hall, 1980 Folwell Avenue, University of Minnesota, St. Paul, Minn. 55108** by 31 March 1980. Position to be filled by 1 July 1980. *Equal Opportunity/Affirmative Action Employer.*

### CIRMF-GABOON VETERINARIAN

International Center of Biomedical Research in Franceville (CIRMF)-Gaboon is looking for a veterinarian in charge of **HIGHER PRIMATES** as well as of other monkeys and usual laboratory animals.

Ten years of experience wished. French language not necessarily needed. Two-year contract (renewable) will be offered. For details write to our office in Paris: **CIRMF, 28 boulevard de Grenelle, 75015 Paris, France.**

## POSITIONS OPEN

### UNIVERSITY OF CALIFORNIA, BERKELEY VERTEBRATE PALEONTOLOGIST

The Department of Paleontology, University of California, Berkeley, invites applications for a faculty position at the assistant professor level.

Applicants must have a strong interest in undergraduate and graduate instruction and an active research program in some aspect of paleoherpetology or paleoichthyology. Demonstrated ability in studies of functional morphology or taphonomy is desirable. Applicants should send résumé, statements of research and teaching programs, and names of three references to: **Chairman, Department of Paleontology, University of California, Berkeley, California 94720.** The closing date for receipt of applications will be 1 March 1980. *The University of California is an Affirmative Action Employer.*

## ANNOUNCEMENT

### BUCKNELL UNIVERSITY PRESS The Animal Behavior Series

The Primates Series published by Bucknell has been extended to include the whole area of animal behavior. Serving as consulting editors are: G. Burghart, J. Crook, D. A. Dewsbury, J. Itani, D. Ploog, and E. Salzen. Manuscripts for the expanded series may be submitted to: **Douglas Candland, Bucknell University Press, Lewisburg, Pa. 17837.**

## WORKSHOP

### FOURTH ANNUAL WORKSHOP ON INDUSTRIAL TOXICOLOGY

Thomas Jefferson University offers its fourth annual 3 1/2-day **Workshop on Industrial Toxicology**, 25 to 28 March 1980. The workshop will emphasize basic concepts as well as practical approaches to problems, issues, and questions facing industrial hygienists, safety engineers, industrial physicians, toxicologists, chemists, biochemists, health administrators, and other supervisory personnel in industry and government.

Topics include: Introduction to Mutagenesis, Carcinogenesis and Teratogenesis; Organ Toxicity—liver, lung, kidney, CNS, skin, eye, and so forth; Toxicity Testing; Interpretation and Application of Toxicity Data; Role of Behavioral Toxicology in Safety Evaluation; Federal Regulation of Industrial Air Standards; Regulatory Affairs; and Future Developments in Industrial and Environmental Toxicology.

For brochure and information on credits for maintenance of Board certification: **Dean R. C. Baldrige, College of Graduate Studies, Thomas Jefferson University, Philadelphia, Pa. 19107.** Telephone: 215-928-8982.

## DOCTORAL PROGRAM

### Ph.D. IN ENGINEERING AND PUBLIC POLICY

The Department of Engineering and Public Policy at Carnegie-Mellon University offers an interdisciplinary, research-oriented Ph.D. for persons with an undergraduate degree in engineering or the mathematical or physical sciences. Persons with more advanced training or experience are especially welcome. Some financial support is available. Contact:

**Engineering and Public Policy  
Carnegie-Mellon University, 30912  
Pittsburgh, Pa. 15213**

## PROGRAM

**PRE- AND POSTDOCTORAL TRAINEESHIPS AND FELLOWSHIPS** in an interdepartmental program in **EXPERIMENTAL PARASITOLOGY** are available, as of 1 September 1980, at the **UNIVERSITY OF MASSACHUSETTS/Amherst**. Training is provided in the biological, immunological, physiological, and biochemical aspects of zooparasites. Write to: **Dr. B. M. Honigberg, Parasitology Program, Department of Zoology, University of Massachusetts, Amherst, Mass. 01003.** *An Affirmative Action/Equal Opportunity Employer.*

## POSTDOCTORAL RESEARCH

### Ultrasonic Tissue Characterization

The Department of Radiological Sciences, University of California, Irvine invites applications for the position of Senior Development Engineer. Applicants should possess a Ph.D. and have extensive experience in signal analysis, especially relating to ultrasonic waveforms, and in the development of medical imaging hardware and software. Applicants with only a B.S. or M.S. and/or applicants with alternative academic preparations will also be considered provided they have appropriate experience and strong letters of recommendation. However, the successful applicant will be expected to have background, experience, and specialized knowledge involving the physics of ultrasound, the propagation of ultrasound in tissue, general signal processing procedures (with some specific applications involving ultrasound), the development of medical imaging hardware, the development of signal processing hardware, the implementation of software on an appropriate computer system, and systems analysis of imaging systems. The successful applicant will play a major role in an ongoing research program involving ultrasonic tissue characterization. Salary: \$26,000 to \$32,000 depending on experience. Application deadline: 1 March 1980. Starting date: winter 1980. Applications from all qualified candidates are welcome; minorities and women are encouraged to apply. Send curriculum vitae and letters of application to:

**Dr. Joie Pierce Jones**  
Department of Radiological Sciences  
University of California, Irvine  
Irvine, California 92717



*An Affirmative Action Employer*

## BIOGEN S.A.

a young company engaged in basic and applied research in the field of molecular biology and microbiology, and with the objective of utilizing the potential of genetic engineering for the production substances of commercial and medical interest in such areas as health care, agriculture and energy, is inviting applications for its *Research Laboratory in Geneva, Switzerland*:

—*Research Manager*, for a person of

- outstanding scientific level in the field of molecular biology and microbiology,
- with proven ability in the coordination and administration of the activities of a research laboratory,
- sense of human relations, as well as capacity for organization, are required.

—*Nucleic Acid Chemist*, with good experience in recent technologies for the synthesis of DNA.

In both cases, salary (including fringe benefits) will be competitive and in accordance with competence and experience. Send curriculum vitae (with a description of previous experience and a list of publications) to BIOGEN Laboratory, 3 Route de Troinex, 1227 Geneva, Switzerland.

## SENIOR RESEARCH SCIENTIST

The Ames Company Division of Miles Laboratories, Inc., a leading manufacturer of Clinical Laboratory Diagnostic Products, is seeking a Senior Research Scientist. The successful candidate will have a Ph.D. in Biochemistry and/or Chemistry with a strong background in enzymology and protein chemistry. Immunochemistry or organic chemistry experience is desirable. Post doctoral or other experience is helpful. The individual will be responsible for conducting and supervising laboratory work related to developing non-radioactive immunoassay systems for use in clinical diagnosis.

The Ames Company 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 will be paid by the Company. Please send complete resume, including salary requirements, in confidence to:

**Kimberley K. Keller**  
Placement Representative  
Department 947

**MILES LABORATORIES, INC.**

P.O. Box 40  
Elkhart, Indiana 46515

An Equal Opportunity Employer M/F/H



## University of Leiden—The Netherlands Faculty of Science

*The Subfaculty of Chemistry of the University of Leiden, The Netherlands, invites applications for the tenured position of*

### ASSOCIATE PROFESSOR OF BIOPHYSICAL CHEMISTRY (M/F) vacancynumber 9-480/2.491

The appointee is expected to focus his/her research on the structure and dynamics of biological macromolecules and molecular assemblies with the aid of physical methods. It is also expected that the appointee will stimulate and coordinate cooperative research efforts in this field between the department of biochemistry and other disciplines.

Responsibilities will include teaching.

Applications with curriculum vitae and including full details of qualifications and experience should be addressed to the University of Leiden, Personnel department, Stationsweg 46, Leiden, The Netherlands.

Information:

Dr. A. van der Gen, Gorleaus Laboratoria,  
University of Leiden, Netherlands.



## GRADUATE STUDY

**GRADUATE STUDY IN ANATOMICAL SCIENCES** at Georgetown University, leading to the Ph.D. Research in cell and tissue biology, neurobiology and behavior, developmental biology and teratology. Stipends and full tuition available to qualified applicants. Deadline for applications requesting financial aid is 1 February 1980. Write to: **Chairman, Department of Anatomy, Box 890, Georgetown University Medical Center, Washington, D.C. 20007.** An Equal Opportunity/Affirmative Action Employer.

## TRAINEESHIPS

**NIH POSTDOCTORAL RESEARCH TRAINEESHIPS IN ENDOCRINOLOGY, METABOLISM, AND DIABETES.** Positions are available under guidance of eight faculty members in six basic and clinical departments. One available immediately; others 1 July 1980. For further information, write or telephone: **Dr. D. C. Collins, Emory School of Medicine, 69 Butler Street, SE, Atlanta, Ga. 30303; telephone: 404-588-3529.**

### PREDOCTORAL AND POSTDOCTORAL TRAINING IN NEUROBIOLOGY AND MEMBRANE BIOPHYSICS UNIVERSITY OF MIAMI SCHOOL OF MEDICINE

The Department of Physiology and Biophysics emphasizes cellular and molecular approaches to biological problems and offers training in neurobiology, developmental neurobiology, and membrane biophysics. Traineeships, fellowships, and assistantships are available. For details write: **Dr. S. J. Socolar, Department of Physiology and Biophysics, R430, University of Miami School of Medicine, Box 016430, Miami, Fla. 33101.** An Equal Opportunity/Affirmative Action Employer.

## FELLOWSHIPS

**Herbert H. Jasper Postdoctoral Fellowship.** One-year, with stipend of \$320,000. Exceptional research facilities, working with investigator of choice. Submit curriculum vitae, research interests at maximum of three pages, and two letters of reference before 28 February 1980 to: **Fellowship Committee, Centre de recherche en sciences neurologiques, Faculté de médecine, Université de Montréal, C.P. 6208, Montréal, Québec, Canada H3C 3T8.** Fellowship award to be announced 15 April 1980.

**POSTDOCTORAL RESEARCH FELLOWSHIPS** available in the areas of diabetes, hormone action, and cyclic nucleotides. This is a multidisciplinary program with research training by faculty preceptors in basic and/or clinical areas. Interested applicants with M.D., M.D.-Ph.D., or Ph.D. degrees with or without residency training should send curriculum vitae to: **Dr. Ferid Murad, Program Director, Departments of Medicine and Pharmacology, Box 419, University of Virginia, Charlottesville, Virginia 22908.**

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**VISION RESEARCH TRAINING POSTDOCTORAL FELLOWSHIPS** (two) are available for research training in comparative ophthalmology and visual sciences. During a 3-year program, fellows may receive training in comparative ophthalmologic skills before undertaking research investigations in one of the following areas: physiology of transport across the blood-retinal barrier; morphology, histochemistry, and biochemistry of the lens; pathogenesis of developmental retinal disease. Applications are sought from U.S. citizens or permanent residents, with a recent Ph.D. in a biomedical science or a D.V.M. with or without postgraduate residency training. Current stipends under National Research Service Awards are \$10,000 to \$11,500 per year, depending on relevant experience. A letter of application describing research interests and career goals, curriculum vitae, and three letters of reference must be received by 1 March 1980. Send applications to: **Dr. E. L. Pautler, Department of Physiology and Biophysics, Colorado State University, Fort Collins, Colo. 80523.** Colorado State University is an Equal Opportunity/Title IX Employer. Equal Opportunity Office: 314 Student Services Building.

## FELLOWSHIPS

**NIH-SPONSORED POSTDOCTORAL FELLOWSHIP** available January 1980 for research on cardiac contractile proteins and LC<sub>2</sub>-specific protease. Experience in physical techniques of protein characterization desirable. Send curriculum vitae and three letters of reference to: **Dr. Sarkis S. Margossian, Montefiore Hospital and Medical Center, 111 East 210 Street, Bronx, N.Y. 10467.**

### MARINE POLICY AND OCEAN MANAGEMENT RESEARCH FELLOWSHIPS

Woods Hole Oceanographic Institution offers 1-year fellowships to professionals in social sciences, law, or natural sciences to conduct research in marine policy and ocean management. Recipients of awards are selected on a competitive basis, with primary emphasis placed on research promise.

Fellowship stipend is \$16,500. Appointees are eligible for group health insurance and a modest research budget. Recipients are encouraged to pursue their own research interests independently or in association with resident staff. Completed applications must be received by 1 March 1980 for 1980-1981 awards. Awards will be announced 1 April 1980. Write for application forms to: **Fellowship Committee, Woods Hole Oceanographic Institution, Woods Hole, Massachusetts 02543.**

Equal Opportunity/Affirmative Action Institution

### POSTDOCTORAL FELLOWSHIPS

Postdoctoral fellowships are available for outstanding M.D.'s and Ph.D.'s to work on the cellular biology of sex steroid hormone receptors in the cardiovascular system.

Applicants must be either permanent residents or citizens of the United States. *The University of Texas is an Equal Opportunity/Affirmative Action Employer.*

Send applications, curriculum vitae, and names of three references to:

**Colin J. Schwartz, M.D., F.R.A.C.P.**  
Professor of Pathology  
The University of Texas Health Science Center  
7703 Floyd Curl Drive  
San Antonio, Texas 78284  
Telephone: 512-691-6121

**POSTDOCTORAL FELLOWSHIP IN ENDOCRINOLOGY AND METABOLISM.** One NIH-supported position available July 1980 and four for 1981. One to 3 years of training in basic or clinical research in areas of secretion and action of pancreatic and gut hormones, diabetes mellitus, hypothalamic-pituitary-gonadal system, growth hormone structure-function relationship, adrenal cortex, renin-angiotensin-aldosterone system; collaboration with Departments of Biochemistry and Physiology available. Applicant should have M.D. or Ph.D. May include training in clinical endocrinology and metabolism. Contact (with curriculum vitae): **S. S. Fajans, M.D., Division of Endocrinology and Metabolism, University Hospital, Ann Arbor, Michigan 48109; telephone: 313-764-4165.** An Equal Opportunity/Affirmative Action Institution.

### INTERNATIONAL INTERNSHIPS AND RESEARCH FELLOWSHIPS AT THE INTERNATIONAL CROPS RESEARCH INSTITUTE FOR THE SEMI-ARID TROPICS (ICRISAT)

A limited number of research internships and fellowships are available within multidisciplinary research programs for the rainfed semi-arid tropics. Potential research areas: plant breeding, genetics, physiology, pathology, entomology, biochemistry, microbiology, agroclimatology, agronomy, cropping systems, soil science, land and water management, agricultural engineering. Requirements: recent Ph.D. or M.Sc., research interest within ICRISAT mandates. Competitive compensation; furnished apartment or dormitory; economy class air fares. Apply to: **Director, ICRISAT, Patancheru P.O., A.P. 502 324, India.**

## FELLOWSHIPS

**The University of Alberta, Department of Genetics. POSTDOCTORAL FELLOWSHIP** beginning 1 July 1980 at the University of Alberta is available for a qualified applicant interested in a research program on spontaneous mutation, mutators, repair and replication of DNA in yeast. Background in molecular biology and biochemistry is required. Send curriculum vitae with names of references to: **R. C. von Borstel, Department of Genetics, University of Alberta, Edmonton, Alberta, Canada T6G 2E9.**

**POSTDOCTORAL TRAINING FELLOWSHIPS** in hemostasis-thrombosis and immunology. Open to M.D.'s or Ph.D.'s. Areas available for training: biochemistry and metabolism of fibrinogen, prothrombin and Factor VIII, platelet preservation and biochemistry (with special reference to platelet prostaglandin synthesis), platelet-Factor VIII interactions, and basic immunology of lymphocyte membranes. Period: 1 to 3 years, starting 1 July 1980 or thereafter. Send curriculum vitae to: **Dr. Sandor Shapiro, Cardeza Foundation, Thomas Jefferson University, 1015 Walnut Street, Philadelphia, Pa. 19107.**

**GRADUATE FELLOWSHIPS.** The Department of Pathology of the University of Tennessee Center for the Health Sciences invites applications from superior students for graduate fellowships in experimental pathology, leading to the Ph.D. degree. A strong background in chemistry and biology is required. Research areas include hematopathology, neuropathology, hypertension and atherosclerosis, and biochemical pathology. For information and application forms, write to: **Diane W. Crocker, M.D., Professor and Chairman, Department of Pathology, University of Tennessee Center for the Health Sciences, 858 Madison Avenue, Memphis, Tennessee 38163.** An Equal Opportunity/Affirmative Action Employer.

### Université du Québec à Montréal Département des Sciences Biologiques POSTDOCTORAL FELLOWSHIP

Applications are invited for postdoctoral fellowship for the study of the ecological control of nuisance aquatic plants.

Candidates are invited from good experimentalists with knowledge of plant ecology and physiology, preferably with experience in aquatic plants. Tenure is 2 years, with appointment as soon as possible. Salary: \$15,000 per annum. Send curriculum vitae to: **Dr. F. Sarhan, Département des Sciences biologiques, Université du Québec à Montréal, Montréal, Québec, Canada H3C 3P8.**

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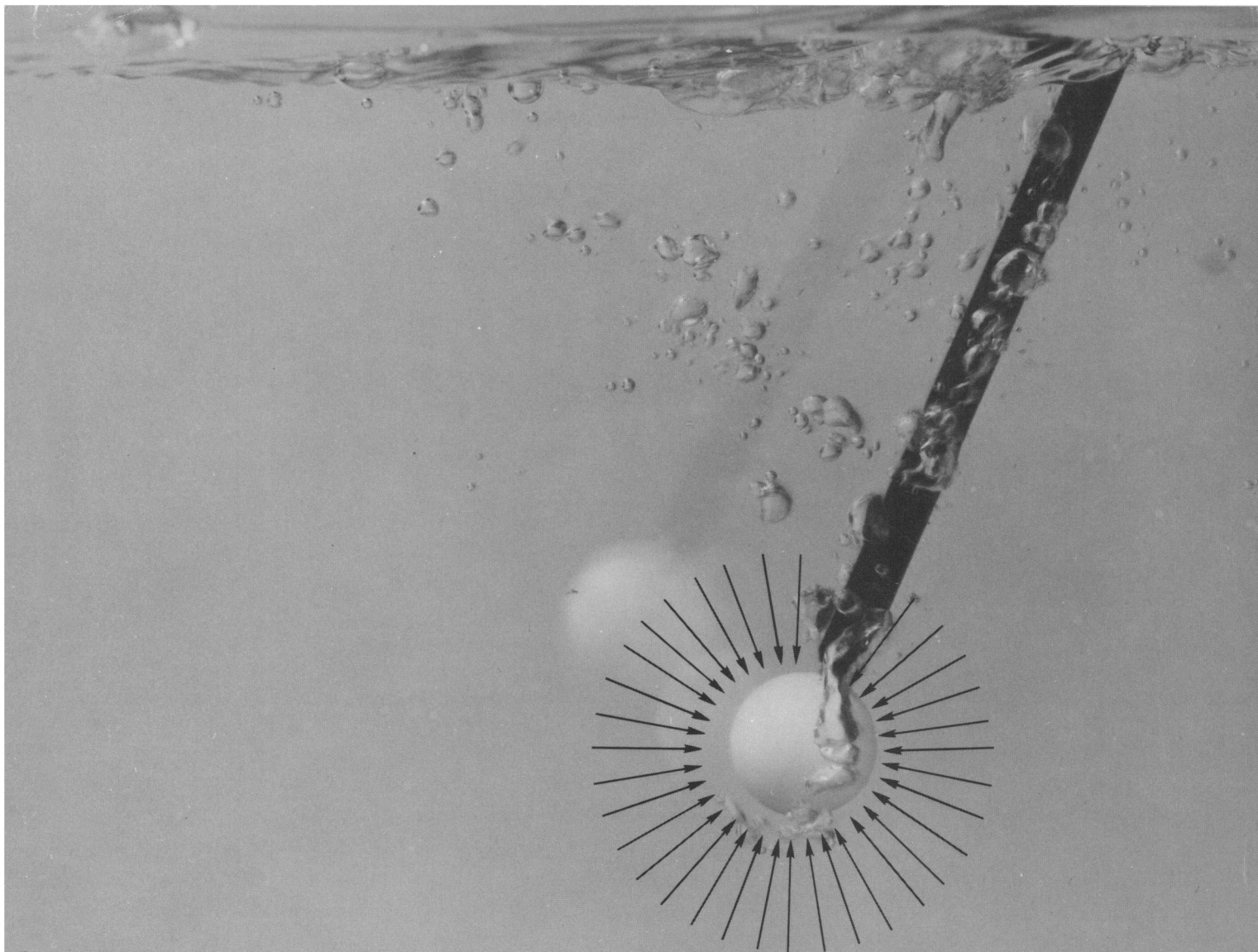
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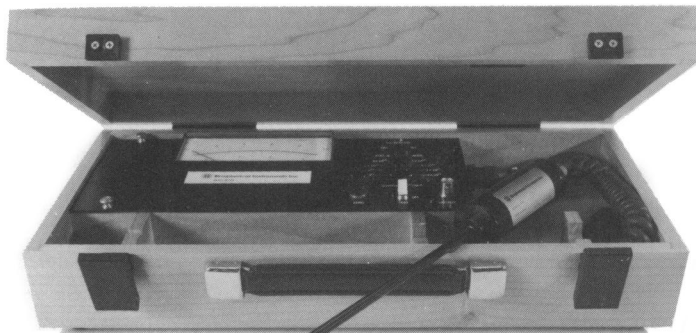
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