

Paleoclimatology

Climatic Change in Later Prehistory. Papers from a conference, Durham, England, March 1981. A. F. HARDING, Ed. Edinburgh University Press, Edinburgh, 1982 (U.S. distributor, Columbia University Press, New York). viii, 210 pp., illus. Paper, \$18.

Temporally parallel changes in paleoclimate and the archeological record have long led many workers to see (or to seek) cause-and-effect relations between the two sets of phenomena. At first glance, the title of this volume suggests more of the same. However, the tone of most of the contributions and of the editor's introduction is largely one of caution. There is welcome wisdom in Harding's remark that, given the abundance of changes recognized in both the climatic and archeological records, "success of some sort is assured" whenever one attempts to correlate them on a time scale. Closer examination of the ways in which an interpreted climatic change would affect human activities is warranted, and alternative explanations should be considered for changes in the archeological record that happen to coincide with a postulated climatic change. All this is very important for the period under consideration here, roughly 8000 to 2000 years ago, the Neolithic, Bronze, and Iron ages, which were times of increasingly complex social and industrial adaptations and of increasing manipulation of the environment by humans.

This collection of papers stems from an international conference organized by the editor, an archeologist. The contributors, however, are by and large not archeologists. The volume moves from a rapid review of how climate works, through palynology, Swiss lake history, Flandrian sea-level changes, beetles, peat bogs, and pedogenesis, to the complications of feedback between human activity and the paleoenvironmental record. Most papers concern the British Isles or central Europe, a contribution on the eastern Mediterranean region by J. L. Bintliff being the exception.

Implicitly or explicitly the Blytt-Sernander classification of postglacial climatic episodes defined on northwestern European pollen stratigraphy is used in nearly every paper. Only M. Magny, however, states explicitly that the B-S scheme seems to have validity as a chronological classification but not as a climatic one. (The Subboreal period is drier in Scandinavia but wetter in sub-Alpine areas.) The use of this scheme in the eastern Mediterranean is even more worrisome because that area lies in the zone

of interaction between cyclonic Europe and the subtropical high pressure systems.

Both Magny and M. Joos are concerned with the vicissitudes of Swiss lake dwellers, from the points of view of pollen and lake-level curves, respectively. Pollen indicates that there were low lake levels and abundant lake dwellings during wetter Subboreal times, contemporary with low flood levels on major rivers (Rhône, Doubs) and with glacier retreat in the Alps. Joos believes that lakes are very sensitive climatic indicators, but Magny looks to more direct geomorphic controls on the lakes and only indirect climatic ones.

Concerning soils, H. C. M. Keeley relates the dominant trend toward podzolization, gleying, and peat formation to the strong influence of humans, for the replacement of forests with grasslands that is associated with this reduction in soil base status is not readily linked with climatic changes. P. J. Osborne observes that the disappearance of forest beetles is a clear result of forest clearance during the Neolithic and that dung beetles provide evidence of a climate in southern England somewhat warmer in the Bronze Age than now. J. R. Pilcher and M. Hughes review the state of dendrochronology in Britain, where the record now goes back as far as 7500 years with only three gaps totaling a mere 240 years. However, unlike tree rings from timberline and arid settings, those from temperate forests are not amenable to easy paleoclimatic interpretation, lacking modern forest analogs and an adequate climatic record for calibration.

Bintliff's contribution, imposingly titled "Climatic change, archaeology and Quaternary science in the eastern Mediterranean region," relies very heavily on the ideas of H. H. Lamb for a "far more powerful analysis" than reasoning from local or regional phenomena. Nevertheless, Bintliff's blind faith in Vita-Finzi's concept of a simple, post-Roman, "Younger Fill" in Mediterranean valleys should be weakened by local and regional studies indicating that the "Younger Fill" is neither monolithic nor contemporaneous in the very areas where Bintliff and Vita-Finzi have worked (Greece, Iran, Algeria).

A paper by K.-D. Jäger and V. Ložek documents an excellent example of positive feedback between climatic change (Subboreal dryness) and anthropogenic adaptation (deforestation) that leads to further environmental deterioration in central Europe. The final contribution, by A. Whittle, describes the difficulty in interpreting the changing patterns of

sheep and cattle grazing in British uplands purely in terms of climatic change without a careful evaluation of other factors, such as grazing preferences of the animals and changes in stringency of shepherding practices, the races of livestock being raised, and herding strategies, for example transhumance or year-round pasturage.

There is much food for thought in these 200 pages, as well as a good review of indicators of environmental change. A clear trend emerges toward a more cautious interpretation of cause-and-effect relations between an apparent climatic change and social change, especially for the period in question. The book should be very informative to paleoenvironmental scientists and archeologists alike.

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Books Received

Artificial Reality. Myron W. Krueger. Addison-Wesley, Reading, Mass., 1982. xviii, 312 pp., illus. Paper, \$10.95.

Atlas of the Roman World. Tim Cornell and John Matthews. Facts On File, New York, 1982. 240 pp. \$35.

Avian Biology. Vol. 6. Donald S. Farner, James R. King, and Kenneth C. Parkes, Eds. Academic Press, New York, 1982. xxiv, 490 pp., illus. \$65.

Basic Hydraulics. P. D. Smith. Butterworth, Boston, 1982. xii, 156 pp., illus. Paper, \$19.95.

A Bio-bibliography for the History of the Biochemical Sciences since 1800. Joseph S. Fruton. American Philosophical Society, Philadelphia, 1982. 886 pp. \$20.

Biochemistry of Mammalian Reproduction. I. Gametes and Genital Tract Fluids; II, Reproductive Endocrinology. Lourens J. D. Zaneveld and Robert T. Chatterton, Eds. Wiley-Interscience, New York, 1982. xviii, 562 pp., illus. \$65.

Chemical Derivatization in Analytical Chemistry. Vol. 2, Separation and Continuous Flow Techniques. R. W. Frei and J. F. Lawrence, Eds. Plenum, New York, 1982. xii, 298 pp., illus. \$39.50. Modern Analytical Chemistry.

Chemistry in the Soil Environment. Proceedings of a symposium, Fort Collins, Colo., Aug. 1979. R. H. Dowdy and six others, Eds. American Society of Agronomy/Soil Science Society of America, Madison, Wis., 1981. viii, 260 pp., illus. Paper, \$10. ASA Special Publication No. 40.

Design of Computer Data Files. Owen Hanson. Computer Science Press, Rockville, Md., 1982. x, 358 pp., illus. \$24.95. Computer Software Engineering Series.

The Design of Electrical Services for Buildings. F. Porges. Spon, London, ed. 2, 1982 (U.S. distributor, Methuen, New York). x, 310 pp., illus. \$29.95.

Determinants of Soil Loss Tolerance. Proceedings of a symposium, Fort Collins, Colo., Aug. 1979. B. L. Schmidt and five others, Eds. American Society of Agronomy/Soil Science Society of America, Madison, Wis., 1982. x, 154 pp., illus. Paper, \$8.50. ASA Special Publication no. 45.

The Development of Thought. Graeme S. Halford. Erlbaum, Hillsdale, N.J., 1982. xiv, 450 pp., illus. \$39.95. Child Psychology.

Developmental Immunology. Clinical Problems and Aging. Papers from a symposium, Los Angeles, Feb. 1981. Edwin L. Cooper and Mary A. B. Brazier, Eds. Academic Press, New York, 1982. xviii, 322 pp., illus. \$27.50. UCLA Forum in Medical Sciences, No. 25.

Dictionary of Gemmology. P. G. Read. Butterworth, Boston, 1982. vi, 240 pp., illus. \$34.95.

Differential Equations. Classical to Controlled. Dahlard L. Lukes. Academic Press, New York, 1982. xiv, 322 pp. \$37.50. Mathematics in Science and Engineering, vol. 162.

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BOOKS RECEIVED

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- Elastic Media with Microstructure I.** One-Dimensional Models. Isaak A. Kunin. Translated from the Russian edition (Moscow, 1975). Springer-Verlag, New York, 1982. vii, 292 pp., illus. \$44.50. Springer Series in Solid-State Sciences, vol. 26.
- Excavations at Altun Ha, Belize, 1964-1970.** Vol. 2. David M. Pendergast. Architectural drawings by H. Stanley Loten. Royal Ontario Museum, Toronto, 1982. xiv, 306 pp. + loose figures. In slipcase, \$45.
- Exciton Dynamics in Molecular Crystals and Aggregates.** Contributions by V. M. Kenkre and P. Reineker. Springer-Verlag, New York, 1982. x, 226 pp. \$32. Springer Tracts in Modern Physics, vol. 94.
- Focus on Group Psychotherapy.** Clinical Essays. Saul Scheidlinger. International Universities Press, New York, 1982. xii, 264 pp. \$25.
- Formulas, Facts and Constants.** For Students and Professionals in Engineering, Chemistry and Physics. H. J. Fischbeck and K. H. Fischbeck. Springer-Verlag, New York, 1982. xii, 254 pp., illus. Paper, \$14.
- The Fractal Geometry of Nature.** Benoit B. Mandelbrot. Freeman, San Francisco, 1982. xii, 462 pp., illus., + plates. \$32.50. Based on *Fractals* (1977).
- Handbook of Medical Library Practice.** Vol. 1, Public Services in Health Science Libraries. Louise Darling, David Bishop, and Lois Ann Colaanni, Eds. Medical Library Association, Chicago, ed. 4, 1982. xvi, 330 pp. \$22.50.
- Handbook of Psychology and Health.** Erlbaum, Hillsdale, N.J., 1982. Vol. 1, Clinical Psychology and Behavioral Medicine: Overlapping Disciplines. Robert J. Gatchel, Andrew Baum, and Jerome E. Singer, Eds. xviii, 534 pp. \$49.95. Vol. 2, Issues in Child Health and Adolescent Health. Andrew Baum and Jerome E. Singer, Eds. xii, 292 pp. \$29.95.
- Heat Transfer in Nuclear Reactor Safety.** Papers from a seminar, Dubrovnik, Sept. 1980. S. George Bankoff and N. H. Afgan, Eds. Hemisphere, Washington, D.C., 1982. xii, 964 pp., illus. \$95. Proceedings of the International Centre for Heat and Mass Transfer, 13.
- Invertebrate Cell Culture Applications.** Karl Maramorosch and Jun Mitsuhashi, Eds. Academic Press, New York, 1982. x, 246 pp., illus. \$23.
- Isotope Studies of Hydrologic Processes.** Papers from a symposium, DeKalb, Ill., Sept. 1980. Eugene C. Perry, Jr., and Carla Montgomery, Eds. Northern Illinois University Press, DeKalb, 1982. vi, 118 pp., illus. \$25.
- Juxtaoral Organ (Chievitz' Organ).** Morphology and Clinical Aspects. Wolfgang Zenker. Urban & Schwarzenburg, Baltimore, 1982. viii, 110 pp., illus. Paper, \$22.50.
- Kew.** Gardens for Science and Pleasure. F. Nigel Hepper, Ed. Stemmer House, Owings Mills, Md., 1982. viii, 196 pp., illus. \$24.95.
- Komatiites.** N. T. Arndt and E. G. Nisbet, Eds. Allen and Unwin, Boston, 1982. xviii, 526 pp., illus. \$75.
- Lamarck the Mythical Precursor.** A Study of the Relations Between Science and Ideology. Madeleine Barthélemy-Madaule. Translated from the French edition (Paris, 1979) by M. H. Shank. MIT Press, Cambridge, Mass., 1982. xviii, 174 pp. \$17.50.
- Language Spread.** Studies in Diffusion and Social Change. Papers from a conference, Aberystwyth, Wales, Sept. 1978. Robert L. Cooper, Ed. Published in cooperation with the Center for Applied Linguistics by Indiana University Press, Bloomington, 1982. xii, 360 pp. \$17.50.
- Lasers.** Selected Reprints. Donald C. O'Shea and Donald C. Peckham, Eds. American Association of Physics Teachers, Stony Brook, N.Y., 1982. iv, 140 pp., illus. Paper, \$4.
- Learning BASIC Step by Step.** Vern McDermott and Diana Fisher. Computer Science Press, Rockville, Md., 1982. viii, 140 pp., illus. \$15.95. Teacher's Guide. viii, 258 pp., illus. Paper, \$17.95.
- Lectures on Lepton Nucleon Scattering and Quantum Chromodynamics.** W. B. Atwood, J. D. Bjorken, S. J. Brodsky, and R. Stroynowski. Birkhäuser, Boston, 1982. viii, 566 pp., illus. \$29.95. Progress in Physics, vol. 4.
- Molecular Genetic Neuroscience.** Papers from a meeting, Woods Hole, Mass. Francis O. Schmitt, Stephanie J. Bird, and Floyd E. Bloom, Eds. Raven, New York, 1982. xx, 492 pp., illus. \$74.
- Nitrogen in Agricultural Soils.** Frank J. Stevenson, Ed. American Society of Agronomy/Crop Science Society of America/Soil Science Society of America, Madison, Wis., 1982. xx, 940 pp., illus. \$30. Revision of *Soil Nitrogen* (1965).
- No Sea Too Deep.** The History of Oceanographic Instruments. Anita McConnell. Hilger, Bristol, England, 1982 (U.S. distributor, Heyden, Philadelphia). xii, 162 pp., illus. \$49.
- Nuclear Fuel Elements.** Design, Fabrication and Performance. Brian R. T. Frost. Pergamon, New

York, 1982. viii, 276 pp., illus. Cloth, \$35; paper, \$17.50.

Nukespeak. Nuclear Language, Visions, and Mindset. Stephen Hilgartner, Richard C. Bell, and Rory O'Connor. Sierra Club Books, San Francisco, 1982. xiv, 282 pp., illus. \$14.95.

Numerical Integration. Proceedings of a conference, Oberwolfach, Germany, Oct. 1981. G. Hammerlin, Ed. Birkhäuser, Boston, 1982. 276 pp. \$29.95. International Series of Numerical Mathematics, vol. 57.

Numerical Methods of Approximation Theory. Vol. 6. Papers from a workshop, Oberwolfach, Germany, Jan. 1981. L. Collatz, G. Meinardus, and H. Werner, Eds. Birkhäuser, Boston, 1982. 268 pp., illus. \$29.95. International Series of Numerical Mathematics, vol. 59.

La Productivité des Pâturages Sahéliens. Une Etude des Sols, des Végétations et de l'Exploitation de Cette Ressource Naturelle. F. W. T. Penning de Vries and M. A. Djitéye, Eds. Centre for Agricultural Publishing and Documentation, Wageningen, Netherlands, 1982. xxii, 526 pp., illus. Dfl. 55. Agricultural Research Reports 918.

Progress in Nuclear Energy. Vol. 8. M. M. R. Williams and N. J. McCormick, Eds. Pergamon, New York, 1982. viii, 326 pp., illus. \$116. First unpublished in *Progress in Nuclear Energy*, vol. 8, Nos. 1-3.

Psychiatric Ward Practice. A Handbook for Medical Students. M. Korkina, M. Tsvilko, and E. Kossova. Translated and revised from the Russian edition (1973). Mir, Moscow, 1981 (U.S. distributor, Imported Publications, Chicago). 168 pp. Paper, \$5.

The Pursuit of Power. Technology, Armed Force, and Society since A.D. 1000. William H. McNeill. University of Chicago Press, Chicago, 1982. x, 406 pp. \$20.

Raman Spectroscopy in Biology. Principles and Applications. Anthony T. Tu. Wiley-Interscience, New York, 1982. xvi, 448 pp., illus. \$65.

Real-Space Renormalization. T. W. Burkhardt and J. M. J. van Leeuwen, Eds. Springer-Verlag, New York, 1982. xiv, 214 pp., illus. \$27. Topics in Current Physics, 30.

Recalled by Life. Anthony J. Sattilaro with Tom Monte. Houghton Mifflin, Boston, 1982. xii, 224 pp. \$12.95.

Regressions in Mental Development. Basic Phenomena and Theories. Thomas G. Bever, Ed. Erlbaum, Hillsdale, N.J., 1982. viii, 322 pp. \$29.95.

Reliability and Risk Analysis. Methods and Nuclear Power Applications. Normal J. McCormick. Academic Press, New York, 1981. xii, 446 pp., illus. \$39.50.

Research Instruments in Social Gerontology. Vol. 1, Clinical and Social Psychology. David J. Mangen and Warren A. Peterson, Eds. University of Minnesota Press, Minneapolis, 1982. xiv, 654 pp. \$35.

The Rocket Team. Frederick I. Ordway III and Mitchell R. Sharpe. MIT Press, Cambridge, Mass., 1982. xviii, 462 pp. + plates. Paper, \$9.95. Reprint of the 1979 edition.

Root Nodules of Legumes. Structure and Functions. F. J. Bergersen. Research Studies Press (Wiley), New York, 1982. x, 164 pp., illus. \$31.95. Botanical Research Studies, 1.

Strategies for Natural Language Processing. Wendy G. Lehnert and Martin H. Ringle, Eds. Erlbaum, Hillsdale, N.J., 1982. xxii, 534 pp., illus. \$49.95.

Synchronous Generators in Electrophysical Installations. I. A. Glebov, E. G. Kasharsky, and Ph. G. Rutbert. Translated from the Russian edition (1977) by G. P. Skrebtsov. Lexington (Heath), Lexington, Mass., 1982. xviii, 188 pp. \$27.95.

Test-Tube Babies. A Guide to Moral Questions, Present Techniques and Future Possibilities. William A. W. Walters and Peter Singer, Eds. Oxford University Press, New York, 1982. viii, 166 pp. Cloth, \$16.95; paper, \$8.95.

Theory and Research in Learning Disabilities. Proceedings of a conference, Edmonton, Alberta, Canada, Nov. 1980. J. P. Das, R. F. Mulcahy, and A. E. Wall, Eds. Plenum, New York, 1982. viii, 288 pp., illus. \$37.50.

Toeplitz Centennial. Papers from a conference, Tel Aviv, May 1981. I. Gohberg, Ed. Birkhäuser, Boston, 1982. 592 pp. \$48.40. Operator Theory, vol. 4.

Transferring Technology for Small-Scale Farming. Proceedings of a symposium, Chicago, Dec. 1978. Noble R. Usherwood, Matthias Stelly, David M. Kral, and Mary Kay Cousin, Eds. American Society of Agronomy, Madison, Wis., 1981. viii, 132 pp., illus. Paper, \$5.50. ASA Special Publication No. 41.

Unified Theories of Elementary Particles. Critical Assessment and Prospects. Proceedings of a symposium, Munich, July 1981. P. Breitenlohner and H. P. Dürr, Eds. Springer-Verlag, New York, 1982. vi, 218 pp., illus. Paper, \$12.50. Lecture Notes in Physics, vol. 160.

Windborne Pests and Diseases. Meteorology of Airborne Organisms. David E. Pedgley. Horwood, Chichester, England, and Halsted (Wiley), New York, 1982. 250 pp., illus. \$59.95.

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Environmental Physiologist/Pharmacologist Hyperbaric Sciences Researcher. Generated original data for human compressed air diving at altitude. Experienced in project management. Keen interest in associated work. Seeking challenging academic or industrial position. San Francisco area. Willing to relocate. Ph.D. 1982. Résumé upon request. Box 24, SCIENCE. X

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**Search Committee Chairman
Department of Biological Sciences
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ASSISTANT PROFESSOR OF MOLECULAR BIOLOGY

The Department of Molecular Biology and Microbiology at Case Western Reserve University invites applications for several tenure-track faculty positions. We encourage applications from candidates with strong credentials in molecular biology, especially as applied to areas of virology and immunology. These appointments provide excellent opportunities to develop independent research programs and to teach medical and graduate students. Send curriculum vitae, a statement of research and teaching interests, and the names of four references to: **Dr. Fritz Rottman, Chairman, Department of Molecular Biology and Microbiology, Case Western Reserve University, Cleveland, Ohio 44106. An Equal Opportunity/Affirmative Action Employer.**

ASSISTANT PROFESSOR OF PATHOLOGY. The Department of Pathology, State University of New York (SUNY) at Buffalo, School of Medicine, invites applications for a tenure-track assistant professor position. Applicants must have Ph.D. and/or M.D. degree with research interests in basic cellular/tumor immunology. Strong background in natural and induced cell-mediated immunity preferred. Will be expected to take part in teaching programs and have potential for independent research. Salary commensurate with experience and qualifications. Candidates should submit, by 30 April 1983, curriculum vitae, summary of research interest, and names of three references to: **Ichiro Nakamura, Ph.D., Department of Pathology, 232 Farber Hall, State University of New York at Buffalo, Buffalo, N.Y. 14214. Female and minority candidates are encouraged to apply. SUNY at Buffalo is an Equal Opportunity/Affirmative Action Employer.**

ASSISTANT AND/OR ASSOCIATE PROFESSOR(S) OF PHYSIOLOGY

The Department of Physiology and Biophysics has positions available for which applications are invited. Candidates should have completed their M.D. or Ph.D. (medical physiology) at least 2 years prior to application and demonstrated scientific capabilities in their area of interest. To be considered, individuals must have displayed an ability to effectively teach in other areas of human physiology in a medical school setting. Preference will be given to candidates with research experience in neurophysiology though applicants with expertise in other fields will also be considered. To apply, please send curriculum vitae, bibliography, and names of three references to: **Dr. J. C. Torres, Department of Physiology and Biophysics, Mail Stop 409, Hahnemann University, 230 North Broad Street, Philadelphia, Pennsylvania 19102. An Equal Opportunity/Affirmative Action Employer. All applications must be completed by 31 March 1983.**

BIOCHEMIST (advertised). Postdoctoral position available immediately for Ph.D. in biochemistry or related field to study lipoprotein metabolism and atherosclerosis in nonhuman primates in the laboratory of Dr. Rampratap S. Kushwaha. Applicants should be experienced with methods in protein biochemistry and metabolism. Minimum first year salary is \$17,784 with consideration made for prior relevant postdoctoral experience. Applications, including curriculum vitae, a description of research interests, and names of three references, should be sent to: **Personnel Manager, Southwest Foundation for Research and Education, P.O. Box 28147, San Antonio, Texas 78284. An Equal Opportunity/Affirmative Action Employer**

POSITIONS OPEN

ASSISTANT PROFESSOR

The Harvard School of Public Health is seeking applicants to fill an assistant professorial position in the Department of Tropical Public Health. The applicant should have training in mosquito physiology and vector ecology. The person would be expected to establish a vigorous research and teaching program.

Applicants should send curriculum vitae, bibliography, copies of publications, the names and addresses of three referees, and a summary of both research and teaching objectives to: **Chairman, Search Committee in Public Health Entomology, Department of Tropical Public Health, Harvard School of Public Health, 665 Huntington Avenue, Boston, Massachusetts 02115.** An Affirmative Action/Equal Opportunity Employer.

School of Medicine, **ASSOCIATE DEAN FOR ADMINISTRATION**, West Virginia University (WVU) School of Medicine, Morgantown, West Virginia, seeks an associate dean for administration at the professorial level. Will be responsible for advising dean on graduate program in basic medical sciences, basic science matters, fiscal matters, grants and contracts, and will be expected to stimulate research, especially between basic and clinical sciences. The position requires an individual with a Ph.D. in one of the basic medical sciences who has had investigative, academic, and administrative experience in an LCME-accredited medical school at a university with a major medical center. Preference will be given to individuals who have already attained the rank of professor and who have a strong record of attracting extramural research funding, including current support. Those qualified and interested should send curriculum vitae to: **William W. Fleming, Ph.D., Chair of Search Committee, West Virginia University School of Medicine, Room 3151 Basic Sciences Building, WVU Medical Center, Morgantown, W. Va. 26506**, by 1 March 1983. An Equal Opportunity Employer.

BIOCHEMICAL PHARMACOLOGY. Program developing on mechanism of action of Cyclosporin A has position available immediately. Experience in protein chemistry or immunological techniques desirable. Salary and position negotiable. Send résumé and three references. **Dr. R. E. Handschumacher, Department of Pharmacology, Yale University School of Medicine, 333 Cedar Street, P.O. Box 3333, New Haven, Conn. 06510.** An Equal Opportunity/Affirmative Action Employer.

BIOCHEMIST—MICROBIOLOGIST RESEARCH ASSOCIATE. Postdoctoral position vacant for research in the biochemical and microbiological aspects of nitrogen fixation. Preference will be given to the applicants with training that is relevant to biological nitrogen fixation. Closing date: 1 March 1983. Forward curriculum vitae, reprints, and two letters of recommendation to: **Harold J. Evans, Laboratory for Nitrogen Fixation Research, Oregon State University, Corvallis, Ore. 97331.** Oregon State University is an Equal Opportunity/Affirmative Action Employer and complies with Section 504, Rehabilitation Act of 1973.

BIOLOGICAL SCIENCES

Eastern Washington University invites applications for three positions available 1 September 1983:

1) **BOTANIST**—Assistant professor, renewable term contract, conversion to tenure-track possible. Ph.D. required, prefer research experience in air pollutant effects on higher plants. Teach general biology, general botany, plant physiology, courses in areas of individual specialization.

2) **MICROBIAL GENETICIST**—Assistant professor, 1-year term contract. Ph.D. required. Teach undergraduate courses in microbiology, genetics, cell biology, and graduate course in molecular-cellular biology.

3) **HUMAN ANATOMY—PHYSIOLOGY**—Instructor, renewable term contract. Ph.D. or M.S. with teaching experience required. Teach undergraduate courses in human anatomy and physiology for Allied Health Sciences.

Please indicate for which position(s) application is being made. Send curriculum vitae, academic transcripts, and statements of research interests (positions 1 and 2); interests in graduate instruction (positions 1, 2, and 3); undergraduate instruction (all positions); and three reference names to: **Dr. James L. Hanegan, Chairman, Department of Biology, Eastern Washington University, Cheney, Wash. 99004.** Credentials evaluation begins 21 February 1983. An Affirmative Action/Equal Opportunity Employer.

POSITIONS OPEN

BIOCHEMISTRY FACULTY POSITION, TEMPLE UNIVERSITY SCHOOL OF MEDICINE. A tenure-track faculty position in the Department of Biochemistry is available at the level of assistant or associate professor. Applicant should have a demonstrated ability to conduct an independent research program or exhibit exceptional potential to develop a research program. Research which applies physical-chemical and/or genetic techniques to biochemical problems will be given preference. Exceptional applicants in other areas will also be considered. Teaching participation in several areas of medical and graduate biochemistry is required. Applicant must provide curriculum vitae, a research proposal, and three letters of recommendation as soon as possible and no later than 31 March 1983. **Dr. G. W. E. Plaut, Department of Biochemistry, Temple University School of Medicine, Philadelphia, Pa. 19140.** Equal Opportunity Employer.

BIOCHEMIST. Genetic Systems Corporation, a leader in biotechnology, is expanding its Human Therapeutics Program. An immediate opening exists for a staff biochemist. Preference will be extended to applicants with microbial/viral biochemistry backgrounds, including LC and HPLC. Applicants should hold a Ph.D. degree and 1 to 2 years of postdoctoral experience or relevant work experience. Individuals interested in contributing to a vigorous research program are encouraged to submit current curriculum vitae to: **Ingrid Rasch, Personnel and Administrative Manager, Genetic Systems Corporation, 3005 First Avenue, Seattle, Washington 98121.** Genetic Systems, located in one of the country's most beautiful cities, has well-equipped laboratories, a strong research team, competitive salaries, and excellent fringe benefits.

BIOLOGY—Assistant professor, tenure-track position to begin September 1983. Ph.D. required. Developmental biologist to teach courses in developmental biology, cell biology, and immunology. Instrumentation familiarity and experience, ability to work in introductory courses required. Commitment to quality undergraduate teaching and liberal arts philosophy essential. Send résumé and three letters of recommendation by 7 March 1983 to: **Dr. Charles F. Calkins, Dean of the Faculty, Carroll College, Waukesha, Wis. 53186.** Carroll College is an Equal Opportunity Employer.

MEIJI MILK PRODUCTS CO., LTD., a leading food processing company in Japan, is launching an interdisciplinary basic research program of cell biology. Several positions are available at junior and senior levels in protein/glycoprotein characterization, eukaryotic cell biology, hybridoma technology, and genetic engineering. Innovative researchers and clinicians are encouraged to apply. The candidate speaking fluent Japanese and English is most desirable. The company provides a competitive salary, moving expense, and excellent fringe benefits. Applicant should send curriculum vitae, the names of three or more references, bibliography, and a summary of research accomplishment and research interest in English to: **Masaru Imada, Ph.D., Department-1, MEIJI MILK PRODUCTS CO., LTD., Rockefeller Center Station, P.O. Box 927, New York, N.Y. 10185.**

DIRECTOR, TOXICOLOGY PROGRAM. School of Mathematical and Natural Sciences, Montclair State College, Upper Montclair, N.J., invites applications for director of a new toxicology program offered with the University of Medicine and Dentistry of New Jersey. Appointment will be at the tenure-track assistant professor level. Ph.D. required; research and/or teaching experience in toxicology required. Deadline for applications: 1 March 1983. Send curriculum vitae and names of three references to: **Dr. J. Michael McCormick, Chairperson, Biology Department, Montclair State College, Box C224 V-2, Upper Montclair, N.J. 07043.** Montclair State College is an Equal Opportunity/Affirmative Action Institution.

ELECTRON MICROSCOPIST Department of Biology University of Utah

Supervise and maintain departmental TEM/SEM facility, serve and collaborate with faculty, provide training in EM use. Opportunity for independent research as well. Nontenure-track position. Send résumé of academic and TEM/SEM experience, including names, addresses, and telephone numbers of three referees, by 1 April 1983 to: **W. K. Baker, Department of Biology, University of Utah, Salt Lake City, Utah 84112.**

An Equal Opportunity/Affirmative Action Employer

POSITIONS OPEN

DEAN—MARINE SCIENCES. Texas A & M University at Galveston (TAMUG) invites applications for the position of Dean of the Moody College of Marine Technology, one of the two academic colleges comprising the University. Candidates should possess the Ph.D. degree in an appropriate field and have academic administrative experience and a substantial career record of teaching and research. Applicants should have the ability to lead faculty, staff, and students of the component Departments of Marine Sciences, Marine Biology, and General Academics toward excellence in all appropriate endeavors. Letter of application, curriculum vitae, and the names and current addresses of at least three professional references should be forwarded to: **Dr. W. J. Wardle, Chairman, Search Committee, Texas A & M University at Galveston, P.O. Box 1675, Galveston, Texas 77553.** TAMUG is an Equal Opportunity/Affirmative Action Employer.

DEAN, COLLEGE OF VETERINARY MEDICINE. Washington State University invites nominations and applications for the position of Dean, College of Veterinary Medicine. The dean is the chief executive officer of the college, responsible to the University president for its administration, and agent of the faculty for execution of educational, research, and service policy. Available 1 September 1983; application review begins 15 April. Candidates must have D.V.M. degree and appropriate scholarly and administrative credentials. Complete job description and requirements available on request. Contact **Dr. Ghery D. Pettit, Chairman, Search Committee, 134 McCoy Hall, Washington State University, Pullman, Wash. 99164-6610.** Telephone: 509-335-1581.

Washington State University is an Equal Opportunity/Affirmative Action Employer.

DIRECTOR WINSHIP CANCER CENTER EMORY UNIVERSITY SCHOOL OF MEDICINE

The Emory University School of Medicine and the Woodruff Medical Center seeks nominations and applications for the position of director of the Winship Cancer Center. Primary responsibility will be to build upon an existing nucleus of excellent clinical activity in order to expand the Medical Center's clinical and research capabilities in the realm of malignant diseases. Expanded Cancer Center facilities have been designed in the scheduled expansion of the Emory Clinic Building on campus. The Search Committee seeks to identify candidates of national or international repute in the general field of cancer. Qualifications include an M.D. or Ph.D. degree, a demonstrated interest and acknowledged expertise in cancer, and sufficient administrative capability to coordinate the expanded Center's activities. Nominations and applications must be submitted by 1 April 1983, and should include a curriculum vitae and three substantiating letters of recommendation. Direct correspondence to: **Cancer Center Search Committee, 409 Woodruff Medical Center Administration Building, Emory University School of Medicine, Atlanta, Georgia 30322.**

Affirmative Action/
Equal Opportunity Employer

FACULTY POSITION IN OCCUPATIONAL HEALTH AND POLICY

Applications invited for appointment as associate professor or full professor of occupational health and policy in the School of Public Health, University of California, Berkeley, beginning fall 1983. Responsibilities include teaching and research on the use, impact, and influence of scientific and technical data on regulation, education, and public policy in occupational health, including supervision of doctoral-level thesis research. Appointee also expected to contribute to collaborative programs of the Northern California Occupational Health Center. Qualifications should include doctoral degree, national reputation in occupational health, and experience developing national occupational health policy. Salary negotiable at associate or full professor level. Send curriculum vitae, names of references, and relevant publications to: **Dr. Robert C. Spear, School of Public Health, University of California, Berkeley, California 94720.** Applications will be accepted until 1 April 1983. The University of California is an Equal Opportunity/Affirmative Action Employer.

POSITIONS OPEN

ECOSYSTEMS ECOLOGIST. The Ecosystems Center of the Marine Biological Laboratory (MBL) has a position available at the assistant scientist level. The Ecosystems Center has the goal of carrying out basic research in ecology and, where possible, applying this to the solution of environmental problems. The candidate is expected to develop independent research programs as well as to interact with a group of eight scientists on projects related to the biogeochemical cycling of essential elements. Applicants should have postdoctoral experience, familiarity with modeling, and demonstrate expertise in some particular area of ecosystem science. Résumé and names of three references should be sent by 31 March to: **Dr. George M. Woodwell, Director, Ecosystems Center, MBL, Woods Hole, Mass. 02543.**

The MBL is an Affirmative Action/Equal Opportunity Employer.

FACULTY POSITION IN NUTRITION/FOOD POLICY AND PLANNING

The Department of Nutritional Sciences, University of California, Berkeley, invites applications for an 11-month faculty appointment in nutrition/food policy and planning. The position is open at the assistant, associate, or full professor level. The applicant must hold a Ph.D. (or equivalent) degree in nutritional sciences, with primary or secondary emphasis on public policy, nutritional anthropology, economics, or political science. The appointee is expected to develop a new academic and research program concerned with food systems and distribution and the nutritional state of people, from the point of view of policy analysis, at the national and international levels. Research topics could include the ecologic, geographic, economic, or cultural aspects of food distribution and utilization patterns; nutritional status measurement; and/or analysis of intervention methodologies and risk assessment.

The position will be available 1 July 1983. To apply, please send curriculum vitae, bibliography, statement of research and teaching interests, and the names of five referees who may be contacted. Apply to: **Dr. Norman Kretschmer, Chair, Nutrition/Food Policy and Planning Search Committee, Department of Nutritional Sciences, University of California, Berkeley, Calif. 94720.** Application deadline: 1 March 1983 or until position is filled. Salary: commensurate with qualifications. *The University of California is an Equal Opportunity/Affirmative Action Employer.*

FACULTY POSITION IN INDUSTRIAL HYGIENE

Applications invited for assistant professor of industrial hygiene, Department of Biomedical and Environmental Health Sciences, School of Public Health, University of California, Berkeley. Responsibilities include teaching graduate courses on the application of engineering principles to the control of physical and chemical hazards in the workplace, specifically including ventilation system principles; initiating an active research program in related areas; and supervising master's- and doctoral-level thesis research. Applicants should possess a doctorate in mechanical or chemical engineering, industrial hygiene, or related discipline and ability to teach and conduct research in an interdisciplinary setting. Appointment is assistant professor, level dependent upon qualifications. Submit curriculum vitae, names of referees, and relevant publications to: **Dr. Stephen M. Rappaport, School of Public Health, University of California, Berkeley, Calif. 94720.** Applications will be accepted until 15 April 1983. *The University of California is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL FELLOW. The Ecosystems Center of the Marine Biological Laboratory (MBL) announces the availability of a 1-year postdoctoral appointment for work in terrestrial or aquatic ecology. Applicants should have completed the requirements for the Ph.D. prior to the start of the appointment and should expect to join in some aspect of the Center's continuing research. Major programs at present are on the biogeochemical cycling of nutrient elements including carbon, nitrogen, and sulfur. The position is available starting 1 July 1983 and is renewable for a second year. Curriculum vitae, statement of objectives, and names of three references should be sent by 15 April to: **Dr. G. M. Woodwell, Director, Ecosystems Center, MBL, Woods Hole, Massachusetts 02543.**

The MBL is an Affirmative Action/Equal Opportunity Institution.

THE PENNSYLVANIA STATE UNIVERSITY

ERIE, PENNSYLVANIA

HEAD, DIVISION OF NATURAL SCIENCES AND ENGINEERING. The division has 40 full-time faculty in the disciplines of engineering, biology, chemistry, physics, mathematics, geoscience, and computer science. The division offers associate, baccalaureate, and graduate programs in science, engineering, and technology, and it has a special commitment to innovation and interdisciplinary studies, recently supported by a NSF CAUSE grant. The division has chosen to focus on the themes of energy and the environment for much of its instruction and research programs.

General qualifications include an earned doctorate in engineering or a closely related field, successful teaching experience, and a strong record in research and scholarship. In addition, significant administrative experience is desirable. The division headship includes a faculty appointment at the rank of associate or full professor.

Erie is a city of year-round cultural and recreational opportunities with particularly strong opportunities for music, theatre, skiing, and water sports. Applications and three letters of recommendation should be received by 15 March 1983 and should be addressed to:

Search Committee for NSE Head
Office of the Dean
Behrend College, Box 102
The Pennsylvania State University
Station Road
Erie, Pa. 16563

*An Affirmative Action/
Equal Opportunity Employer*

The DEPARTMENT OF PHYSICS AND ASTRONOMY of California State University, Los Angeles, will have two **tenure-track positions** available in September 1983. One of the positions includes a half-time appointment as **radiation safety officer** requiring certification for the University's broad scope license. The Ph.D. is required. Postdoctoral experience is desirable. Candidates with experience in any of the following areas are preferred: experimental solid-state or material science with experience for developing research in the department's 4MV Van de Graaff Laboratory, theoretical condensed matter physics, radiological health physics, intermediate energy nuclear physics. Candidates will be considered for the rank of assistant professor or associate professor depending on previous teaching experience and other qualifications. Candidates must have a genuine interest in teaching in the department's bachelor's and master's degree programs, including the guidance of master's thesis projects. The successful candidates will be expected to teach in the regular curriculum, develop research programs, and write grant proposals for external funding.

Research interests in the department at present include experimental solid-state, intermediate energy nuclear physics, optics, biophysics, atomic physics, cosmic rays, theoretical atomic and nuclear physics, elementary particles, mathematical physics, and astrophysics.

Application deadline: 1 March 1983 or until positions are filled.

Send résumé, including a summary of research interest and three letters of recommendation, to:

Professor Fleur B. Yano, Chair
Department of Physics and Astronomy
California State University, Los Angeles
5151 State University Drive
Los Angeles, California 90032

California State University is an Equal Opportunity/Affirmative Action Employer.



NAVAL RESEARCH LABORATORY PLASMA PHYSICS DIVISION

Supervisory Research Physicist GM-1310-15

\$48,553 to \$63,115 per annum

(Salary dependent upon qualifications)

As Branch Head of the Geophysical and Plasma Dynamics Branch, which employs 15 scientific and support personnel, manages, supervises and conducts research for a broad theoretical and numerical simulation program in atmospheric, ionospheric, magnetospheric phenomena of interest to the Department of Defense. Research emphasizes the solution of problems in high altitude nuclear effects (HANE), and the development of models describing atmospheric, ionospheric, and magnetospheric phenomena. Problems of particular interest are: ionospheric irregularities at high equatorial latitude; magnetic

field reconnection processes; 2D and 3D MHD global magnetospheric modeling; auroral field line modeling; anomalous resistivity; lower hybrid drift and tearing mode instabilities; ELF/VLF generation; and gravity wave breaking in the mesosphere.

Qualifications: A Bachelor's or higher degree in physics (Ph.D. preferred) plus at least 3 years of professional experience in or directly related to the duties described above with one year equivalent to GS-14.

Please submit your comprehensive resume or SF-171 and publication list by 15 March 1983 to:

NAVAL RESEARCH LABORATORY

CIVILIAN PERSONNEL OFFICE

Attn: 47-80-13.1 KMO/S

4555 Overlook Avenue, S.W., Washington, D.C. 20375

An Equal Opportunity Employer U.S. Citizenship Required
(Minority/Female/Disabled)

POSITIONS OPEN

DEVELOPMENTAL GENETICIST. The Biology Department at the State University College at Fredonia anticipates a tenure-track position at the assistant professor level beginning August 1983. Ph.D. required. Major responsibilities will be to teach upper-level courses in genetics and developmental biology, to develop a research program involving undergraduate and graduate (M.S.) students, and to advise both undergraduate and graduate students. Other responsibilities may include instruction in an introductory biology course. Send curriculum vitae, a statement of research record and interests, and three letters of reference by 1 March 1983 to: **Search Committee, Department of Biology, State University College, Fredonia, New York 14063.** *State University of New York is an Equal Opportunity/Affirmative Action Employer.*

EXECUTIVE DIRECTOR, Eunice Kennedy Shriver Center—The Harvard Medical School and the Eunice Kennedy Shriver Center for Mental Retardation seek to identify an outstanding candidate to fill the position of director of the Eunice Kennedy Shriver Center. The appointee will hold a professorship in the Department of Neurology at the Massachusetts General Hospital. The candidate is expected to direct a research laboratory focused on the disorders of the nervous system that underlie mental retardation. It is expected that the candidate will provide leadership and direction for clinical and basic research at the center. Skills in administration are required. Please submit curriculum vitae and a letter of interest by 1 March 1983 to: **Joseph B. Martin, M.D., Ph.D., Chairman, Search Committee for Director Eunice Kennedy Shriver Center, Department of Neurology, Massachusetts General Hospital, Boston, Mass. 02114.** *We are Equal Opportunity/Affirmative Action Employers.*

FACULTY POSITION: Organic or inorganic chemist to teach advanced laboratory, and other courses appropriate to specialty, beginning September 1983. Experience in organometallic chemistry desirable. Three-year, nontenure-track appointment, with possibility of renewal for 2 additional years. Résumé, transcripts, and three recommendations by 15 March 1983 to: **C. Levin, Department of Chemistry, Smith College, Northampton, Mass. 01063.** *An Equal Opportunity Employer.*

FACULTY POSITION IN PHYSIOLOGY. The Department of Physiology at the University of Medicine and Dentistry (UMD)—New Jersey Medical School at Newark, N.J., invites applications for a tenure-track faculty position at the assistant/associate professor level from qualified individuals with a commitment to teaching and research. Responsibilities will include participation in the medical and dental school curriculum and in the graduate training program within the UMD Graduate School of Biomedical Sciences, as well as conducting an independent research program. The preferred areas of research interest are cellular physiology of cardiac and vascular tissue. Applicants should have a minimum of 2 years of postdoctoral research experience and have demonstrated the ability to conduct high-quality independent research. Applicants should submit curriculum vitae, bibliography, recent reprints, and a summary of research interests to: **Chairperson, Department of Physiology, UNIVERSITY OF MEDICINE AND DENTISTRY OF NEW JERSEY—New Jersey Medical School, 100 Bergen Street, Newark, N.J. 07103.** *An Equal Opportunity/Affirmative Action Employer, M/F.*

BROWN UNIVERSITY—FACULTY POSITION IN ENVIRONMENTAL STUDIES

A 2-year position, beginning 1 September 1983, with the possibility of renewal, with responsibility for teaching introductory and advanced undergraduate classes in environmental studies, serving as acting director of the Center for Environmental Studies in 1984, and supervising environmental internships and independent studies. Direct experience with environmental decisions and an interest in issues of urban self-reliance are highly desirable. Salary and rank commensurate with experience. *Brown University is an Equal Opportunity Employer.* Interested individuals should send a letter of application and curriculum vitae and request that two letters of recommendation be sent to:

**Harold R. Ward, Director
Center for Environmental Studies
Box 1943
Brown University
Providence, R.I. 02912**

Applications should be received by 15 March 1983.

POSITIONS OPEN

The ILLINOIS COLLEGE OF OPTOMETRY Announces Faculty Positions

The Illinois College of Optometry is accepting applications for full-time faculty positions beginning in the summer and/or fall of 1983. Applicants should have an O.D. degree and/or graduate degree when appropriate. Salary and rank will be commensurate with credentials and experience.

Division of Basic Sciences: Pharmacologist.

Responsibilities include teaching diagnostic and therapeutic aspects of general and ocular pharmacology. This position includes responsibility for initiating research projects and developing a program of sponsored research.

Division of Patient Care: Pediatric Vision Care.

Responsibilities include supervising students in clinical work and teaching courses in the optometry curriculum. A commitment to clinical-related research is required.

Division of Optometric Sciences: Visual Scientist.

Responsibilities include such courses as ocular motility, binocular visions, strabismus. A commitment to clinically related research is desirable.

Applications or inquiries should be directed to:

**John A. Cromer, Ph.D., Dean
Illinois College of Optometry
3241 South Michigan Avenue
Chicago, Illinois 60616**

An Equal Opportunity/Affirmative Action Employer

The University of Michigan Medical School, the Department of Pediatrics, has two open **FACULTY POSITIONS** at the instructor through professor level.

These individuals should be Board-qualified, patient care, teaching, and research-oriented in fields of hematology, infectious diseases, or immunology.

Direct inquiries to: **Robert P. Kelch, M.D., University Hospital, Ann Arbor, Michigan 48109.** *The University of Michigan is a nondiscriminatory, Affirmative Action Employer.* Codes 109 and 47.

FACULTY POSITION. The Department of Pharmacology, University of Texas Medical School at Houston, invites applications for a regular tenure-track position at any academic level: assistant, associate, or full professor. Primary responsibilities are the performance of research and the teaching of medical and graduate students. Applications are encouraged from individuals interested in the regulation of biological processes at the molecular and/or cellular level. Interested individuals should send a covering letter outlining future research plans, curriculum vitae, including a bibliography, and the names of three individuals who may be contacted as references to: **Dr. G. Alan Robison, Search Committee, Department of Pharmacology, The University of Texas Medical School at Houston, P.O. Box 20708, Houston, Texas 77025.** The deadline for the receipt of applications is 15 March 1983. *An Equal Opportunity Employer. Women and minorities are encouraged to apply.*

MICROBIOLOGY AND ANATOMY/PHYSIOLOGY POSITIONS

The Department of Biology of the University of Missouri—St. Louis invites applications for two positions, one in **MICROBIOLOGY** and a second in **ANATOMY/PHYSIOLOGY**. Both are to begin in August 1983 and will be made at the nontenure-track visiting assistant professor level.

Applicants should have a Ph.D. in the subject area and teaching and/or job experience in an allied health area is desirable. Research opportunities may be available in collaboration with other faculty members in the department. An EM facility is available for research.

The successful microbiology applicant will teach two lecture sections and one laboratory section in general microbiology each semester and supervise teaching assistants in four additional laboratory sections.

The appointment in anatomy/physiology involves teaching two sections of anatomy/physiology lecture and one laboratory section each semester and supervising teaching assistants for eight other laboratory sections.

Send complete curriculum vitae and names of three references by 25 March to: **Dr. Charles R. Granger, Chairperson, Department of Biology, University of Missouri—St. Louis, St. Louis, Missouri 63121.** *An Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

FACULTY POSITION SCHOOL OF LIBRARY AND INFORMATION STUDIES

LIBRARY AND INFORMATION STUDIES: Assistant professor, to begin 1 July 1983, or by arrangement, in area of information management. Exceptionally well-qualified persons who do not now hold a tenured professorship may be considered for a higher level appointment.

Desired qualifications are expertise in one or more of the following: management information systems, data processing, information storage and retrieval, systems analysis and design, organizational behavior, organizational communication, office automation, records management, database management, and decision-support systems. Also teaching ability; doctorate or comparable evidence of research ability; relevant applied experience. Applications by 25 April 1983 to: **Professor M. E. Maron, Chair, Search Committee, School of Library and Information Studies, University of California, Berkeley, Calif. 94720.** *The University of California is an Equal Opportunity/Affirmative Action Employer.*

INVERTEBRATE PALEONTOLOGIST, Invertebrate Paleontology Section, Department of Malacology. Ph.D., publications, experience with collections required. Curator, 50 percent; research and development of grants/contracts, 50 percent. Collection has received NSF curatorial support; strength is in mollusks. Position to start immediately. Send curriculum vitae, publications, and names of three references to: **Dr. K. E. Hoagland, Department of Malacology, Academy of Natural Sciences, 19th and the Parkway, Philadelphia, Pa. 19103,** by 18 February 1983.

MAMMAL PHYSIOLOGIST. Two-year postdoctoral research-teaching position. Research area is physiology of life history traits, including litter size and development of homiothermy. Teaching duties include a single one-semester lecture course per year. Send curriculum vitae and three letters of recommendation by 1 March to: **Dr. Polley McClure, Department of Biology, Indiana University, Bloomington, IN. 47402.** Telephone: 812-335-6237.

Indiana University is an Equal Opportunity Employer.

MEDICAL MICROBIOLOGIST—Assistant/associate professor. Tenure-track position in an expanding department occupying a new research facility. Must have active research interest in mechanisms of microbial pathogenesis at the cellular and molecular level. Postdoctoral or equivalent experience in microbial physiology or pathogenic organisms desired. Teaching experience in medical microbiology and/or graduate-level bacterial physiology or bacterial pathogenesis required. Closing date: 31 March 1983. Send curriculum vitae, description of professional aspirations, and names of three references to: **Dr. Byron Burlingham, Department of Microbiology, School of Medicine, East Carolina University, Greenville, N.C. 27834.** *An Equal Opportunity through Affirmative Action Employer.*

MICROBIOLOGIST. Ph.D. with background in immunology and biochemistry to teach undergraduate introductory microbiology courses for health science paraprofessionals plus advanced undergraduate courses in area of specialty. Submit application with curriculum vitae and three letters of recommendation by 1 April 1983 to: **Dr. James R. Gammon, Chairman, Search Committee, Department of Zoology, DePauw University, Greencastle, Ind. 46135.** *An Equal Opportunity/Affirmative Action Employer.*

MONOCLONAL ANTIBODIES

Cytogen Corporation, a monoclonal antibody company located in Princeton, N.J., is recruiting qualified professional personnel (Ph.D. level or equivalent) with two or more years of industrial and/or academic experience in the following areas:

- IMMUNOASSAY DEVELOPMENT
- FLUORESCENCE/LUMINESCENCE
- TUMOR IMMUNOLOGY
- TISSUE CULTURE

Applications are welcome from qualified individuals who wish to contribute innovative solutions to problems in the diagnostic and therapeutic arenas. Please send résumé and salary history to:

**Thomas J. McKearn, M.D., Ph.D.
Vice President R & D
CYTOGEN CORPORATION
201 College Road East
Princeton Forrestal Center
Princeton, N.J. 08540
Equal Opportunity Employer**

**THE INTERNATIONAL CENTRE OF
INSECT PHYSIOLOGY AND ECOLOGY
P.O. BOX 30772, NAIROBI, KENYA**

Applications are invited from suitably qualified persons for the following position:

**RESEARCH SCIENTIST/SENIOR RESEARCH SCIENTIST
(LIVESTOCK TICKS RESEARCH PROGRAMME) — REF: SCI/83/2**

Position is tenable at Mbita Point Field Station in South Nyanza. Candidates should be mature, have a university degree in Veterinary Science with long practical working experience in Tropical Veterinary Medicine, with special reference to tick-borne diseases and trypanosomiasis. Additional professional qualifications at M.Sc. or Ph.D. level in the relevant field may be an added advantage.

The selected candidate will be resident at ICIPE's Mbita Point Field Station, on the shores of Lake Victoria and will be responsible for the survey of diseases and parasites of domestic animals in a circumscribed area, with an estimated cattle population of 10,000; an investigation of the productivity and methods of husbandry throughout the study area; the implementation of integrated methods for the control of ticks and tick-borne diseases; and the supervision of the management of a herd of improved cattle in an experimental ranch in the vicinity. The level of appointment will depend on the qualifications and experience of the candidate.

Applications giving detailed information on general education, professional qualifications and experience, marital status, age, present terms of employment (including salary and benefits), names and addresses of four referees (one being personal) and photocopies of relevant certificates and diplomas (which will not be returned) should be addressed:

**The Acting Administrative Manager
ICIPE Research Centre
P.O. Box 30772
NAIROBI, Kenya**

To reach him not later than 28th February 1983.

Gastrointestinal Pharmacologist/ Physiologist

The Pharmaceutical R&D Division of Bristol-Myers Corporation has an attractive opportunity in Syracuse, New York for an experienced Gastrointestinal Pharmacologist/Physiologist to join a well established interdisciplinary research program. The successful candidate will investigate new approaches to the therapeutic control of gastrointestinal disorders and disease. This individual should have a PhD in Pharmacology or Physiology and at least 2 years of postdoctoral experience in gastrointestinal pharmacology and/or gastrointestinal function. Research experience or knowledge at both the cellular and whole animal level of the control mechanisms of mucosal cell injury and protection, antroduodenal coordination, drug/GI receptor interaction and GI peptides is preferred.

The company offers a competitive salary and benefits package along with opportunity for professional growth.

Qualified applicants committed to R&D of novel drugs within a team approach should submit their resume including salary requirements in complete confidence to: Manager of Employment



**BRISTOL-MYERS COMPANY
RESEARCH AND DEVELOPMENT DIVISION
P.O. Box 657, Syracuse, New York 13201**
An equal opportunity employer M/F

HEALTH SCIENTIST ADMINISTRATOR OR MEDICAL OFFICER

OPENING DATE: February 1, 1983 CLOSING DATE: February 28, 1983

The Reproductive Sciences Branch, Center for Population Research, National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service, is seeking qualified applicants for the position of Health Scientist Administrator or Medical Officer. The incumbent will organize, develop and manage a program of grant-supported research and research training projects having major emphases on the biology and endocrinology of reproductive events and processes from fertilization through implantation. Medical Officer candidates must have a medical degree with specialization in obstetrics and gynecology or endocrinology. Health Scientist Administrator candidates should have a doctoral level degree or a lesser degree with major study in an academic field of the health or pertinent sciences which have been applied and utilized by the applicant in health or health related research and, in addition, at least three years of qualifying progressively responsible experience in developmental biology, embryology or a closely related field. Candidates must provide evidence of strong interest in research on fertilization, early embryonic development, and/or implantation in animals. Familiar-

ity with the research techniques and tools of modern molecular biology as they pertain to these areas of investigation is desirable. This position will be filled either through the Civil Service or the Commissioned Corps of the U. S. Public Health Service. The salary range for Health Scientist Administrators is \$34,930-\$53,661 depending upon training and experience. The salary range for Medical Officers is \$42,546-\$57,500 depending upon training and experience. In addition, the Medical Officer may be eligible for a supplemental Physician's Comparability Allowance (\$2,500-\$8,000 per year) as determined by qualifications. If the position is filled under the Commissioned Corps, salary will be set in accordance with the individuals' training and experience under current pay regulations. **Applications (Personal Qualifications Statement, SF-171), current curriculum vitae and bibliography are to be sent to Ms. Brenda H. Watts, Personnel Management Specialist, NICHD, Personnel Office, Building 31, Room 2A25, National Institutes of Health, Bethesda, Maryland 20205 by February 28, 1983. For further information, please call Ms. Watts on area code 301, 496-3365.**

NIH IS AN EQUAL OPPORTUNITY EMPLOYER

POSITIONS OPEN

NEUROBIOLOGY

A faculty position is open at the Worcester Foundation for Experimental Biology for an individual working on molecular or cellular aspects of neurobiology. This appointment will be made at either staff scientist or senior scientist rank. Send curriculum vitae and research synopsis to: **Dr. Thoru Pederson, Molecular-Cellular Neurobiology Position, c/o Personnel Office, Worcester Foundation for Experimental Biology, 222 Maple Avenue, Shrewsbury, Mass. 01545.** Deadline for receipt of application materials is 15 April 1983.

An Equal Opportunity/Affirmative Action Employer

NMR SPECTROSCOPIST. The position involves the supervision of the operation and maintenance of the NMR spectroscopy laboratory in the Department of Chemistry, University of Illinois at Chicago. Ideally, the applicant will have a degree in chemistry with a strong background in modern FT NMR, electronics and computer science. At present the Department has Bruker 90- and 80-MHz FT NMR spectrometers on site, and a 200-MHz IBM multinuclear FT NMR system will be installed shortly. Collaborative studies with the faculty are strongly encouraged. The initial salary is competitive and is dependent upon previous experience. Applicants should send a résumé and three letters of reference to: **Professor D. G. Gorenstein, Department of Chemistry, University of Illinois at Chicago, Box 4348, Chicago, Illinois 60680.** Appointment is subject to budgetary approval. *The University of Illinois is an Equal Opportunity/Affirmative Action Employer.*

A Board-certified or Board-eligible **ORTHOPAEDIC SURGEON** who will have responsibility for care of trauma and general orthopaedic service at Wayne County General Hospital including diagnostic, therapeutic, and surgical care. Would be responsible also for teaching of University of Michigan medical students and orthopaedic residents. Will expect research in orthopaedic surgery and participation in clinical or basic research at University of Michigan. All inquiries should be directed to: **William S. Smith, M.D., Professor and Head, Section of Orthopaedic Surgery, Box 054, University of Michigan Medical Center, Ann Arbor, Mich. 48109.** *The University of Michigan is a nondiscriminatory, Affirmative Action Employer.* Code 205.

PHARMACOLOGIST/BIOCHEMIST

Experienced Ph.D. or M.D. in biochemistry of mediators related to inflammatory diseases. Knowledge of techniques of biological assay would be an advantage. Responsible for setting up and leading team devoted to the biological evaluation of compounds; pharmacology and biochemistry of inflammation. In vitro and animal model experience desirable. Publications and record of independent research essential. Send inquiries to: **Box 28, SCIENCE.**

Ph.D. with research training to study mechanisms of insulin action and insulin receptor structure. A strong background in biochemistry is desirable. Salary commensurate with experience. Address inquiries and curriculum vitae to: **Section Head, Endocrinology and Metabolism, East Carolina University, School of Medicine, Greenville, N.C. 27834.** *Equal Opportunity Employer through Affirmative Action.*

PHYSIOLOGIST

Full-time position available in May 1983, teaching general physiology with laboratory. Ph.D. required. Applicants with additional experience in anatomy and/or biochemistry are preferred. Development of an independent research project in an interest area of the applicant as it relates to health science is encouraged. Interested persons are invited to submit a letter discussing teaching and research experience. Enclose curriculum vitae with names and addresses of three references to: **Search Committee, Basic Science Division, Northwestern College of Chiropractic, 1834 South Mississippi River Boulevard, St. Paul, Minnesota 55116.** *An Equal Opportunity Employer.*

POSTDOCTORAL FELLOW in Cancer Research Center and Department of Biochemistry for research on anticancer drug effects on cell membranes. Applicant should have Ph.D. in biochemistry, pharmacology, or cell biology. Candidates should have experience in HPLC and other separation methods as well as cell culture techniques. Send curriculum vitae with three letters of recommendation to: **Dr. Robert L. Capizzi, Director, Oncology Research Center, Bowman Gray School of Medicine of Wake Forest University, 300 South Hawthorne Road, Winston-Salem, N.C. 27103.** *An Affirmative Action/Equal Opportunity Employer.*

POSITIONS OPEN

PHYSIOLOGICAL PSYCHOLOGIST: A full-time, tenure-track position opening 1 September 1983 in the Department of Psychology, College of St. Thomas. Requirements include educational background and teaching experience in the areas of physiology, sensation, and perception. A Ph.D. in psychology, evidence of professional activity and demonstrated teaching skills are required. Responsibilities will include teaching undergraduate courses in general psychology, physiological psychology, sensory and perceptual processes, as well as monitoring the use of departmental equipment and overseeing senior research projects. Rank and salary will be commensurate with academic, teaching, and research experience. Please submit a letter of application, curriculum vitae, and the names of at least three references to: **Dr. John Buri, Chairman, Department of Psychology, College of St. Thomas, 2115 Summit Avenue, St. Paul, Minn. 55105.** Deadline for receipt of application is 28 February 1983. The College of St. Thomas is a private, coeducational, Catholic, liberal arts college with an enrollment of 5900. *The College of St. Thomas is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL FELLOW/RESEARCH ASSOCIATE—Position available May 1983 to study the structure, function, and regulation of the expression of cell surface glycoproteins in human hematopoietic cell differentiation. Experience in recombinant DNA research or background with molecular biology is desirable. Interaction with an active molecular biology group in the Foundation is expected. Salary: \$15,000 to \$18,000. Send curriculum vitae and names of two references to: **Dr. Minoru Fukuda, Staff Scientist, Cancer Research Center, La Jolla Cancer Research Foundation, 10901 North Torrey Pines Road, La Jolla, California 92037.**

POSTDOCTORAL POSITION (readvertised). Immunologist with a background in genetics to work on developing the MHC of a marsupial under the supervision of William H. Stone, who is the Cowles Distinguished Professor at Trinity University, and scientist at the Southwest Foundation for Research and Education. The successful candidate will be appointed as postdoctoral scientist at the Southwest Foundation, and visiting research fellow at Trinity. Minimum salary for the first year is \$17,784 with consideration made for prior relevant postdoctoral experience. Candidates should respond to: **Personnel Manager, Southwest Foundation for Research and Education, P.O. Box 28147, San Antonio, Texas 78284.** Please include curriculum vitae, statement of research experience and interests, and names of three references. *An Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITION starting September 1983 to study the immunology of complement and complement receptor regulation of: (i) lymphocytes and the immune response; (ii) tumoricidal activity of macrophages and NK cells; and (iii) neutrophil and monocyte respiratory burst. Send curriculum vitae and names and telephone numbers of three professional references to: **Dr. Gordon Ross, Division of Rheumatology-Immunology, University of North Carolina, 932 FLOB 231H, Chapel Hill, N.C. 27514.** Awards subject to citizenship eligibility requirements as defined by the granting agency.

An Equal Opportunity/Affirmative Action Employer

POSTDOCTORAL POSITION Fluorescence Studies of Protein Dynamics

Position available early spring for a Ph.D. experienced in modern luminescence spectroscopy as applied to biomolecules to investigate rapid structural fluctuations of globular proteins. Experience in protein chemistry desirable. Much of the work to be carried out at Bell Laboratories, Murray Hill, New Jersey. Send résumé to: **Dr. A. A. Lamola, Department of Dermatology, College of Physicians & Surgeons, Columbia University, 630 West 168 Street, New York, N.Y. 10032.**

POSTDOCTORAL POSITIONS available July 1983, initially for 2 years with a flexible starting date and negotiable for a longer period. Areas of research include the structure and metabolism of plasma lipoproteins, the role of plasma lipid transfer proteins in lipoprotein metabolism and in lipoprotein-cell interactions, and the stimulation of cellular prostaglandin secretion by plasma lipoproteins. Background in biochemistry, tissue culture, monoclonal antibodies, or prostaglandins would be appropriate. Send résumé and list of references to: **Dr. Alan Tall, Department of Medicine, Columbia University College of Physicians and Surgeons, 630 West 168 Street, New York, N.Y. 10032.**

POSITIONS OPEN

A **POSTDOCTORAL POSITION** will be available soon for suitably qualified applicants interested in studying immunity to cancer. The research program of the Trudeau Institute involves the use of animal models of infectious diseases and cancer to analyze mechanisms of protective immunity at the physiological, cellular, and molecular levels. Applicants should have some training in immunobiology. The starting salary is \$14,500 and campus housing may be available. Send résumé to: **Dr. Robert J. North, Director, Trudeau Institute, Inc., P.O. Box 59, Saranac Lake, N.Y. 12983.**

An Equal Opportunity Employer

POSTDOCTORAL POSITION available 1 April to design and conduct experiments with input of original ideas. Methods involved will include organ culture, high-pressure liquid chromatography, and in vitro enzyme assay. Ph.D. with research experience in chemical carcinogenesis, biochemistry of hydrocarbon carcinogens in vitro and emphasis on metabolic activation, DNA carcinogen interaction, DNA repair and interest in mouse mammary carcinogenesis and its chemoprevention; \$11,000 minimum. Send résumé and names of three references by 1 March to: **Dr. M. R. Banerjee, Tumor Biology Laboratory, 201 Lyman Hall, University of Nebraska-Lincoln, Lincoln, Nebraska 68588-0342.** *Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL POSITIONS—Positions are available with flexibility in starting date to work on molecular biology of archaeobacteria, 5S rRNA structure and function, or molecular phylogeny. Desirable backgrounds include nucleic acids research, physical biochemistry, microbial systematics, and theoretical biology. Send résumé, including three references, to: **Dr. George E. Fox, Department of Biochemical Sciences, University of Houston, Houston, Texas 77004.** *An Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITION available September 1983 in laboratory studying effects of cancer therapeutic agents on various immune defense systems, their development and regulation. Background in cellular immunology and/or pharmacology is essential. Techniques used include tissue culture, in vivo and in vitro primary sensitization, radiolabeled target cell assays, functional and physical cell separation, and utilization of monoclonal antibodies. Please send statement of research interest, curriculum vitae, and names and addresses of three references to: **Dr. E. Mihich, Director of Grace Cancer Drug Center and Department of Experimental Therapeutics, Roswell Park Memorial Institute, 666 Elm Street, Buffalo, New York 14263.** *An Equal Opportunity Employer, M/F.*

POSTDOCTORAL POSITION available immediately for an individual with a Ph.D. in radiation biology, genetics, or a related field to study the molecular mechanisms of mutagenesis and carcinogenesis following exposure of normal and repair-deficient mammalian cells to ultraviolet light. Send curriculum vitae and the names of three references to: **Dr. T. Daniel Griffiths, Department of Biological Sciences, Northern Illinois University, DeKalb, Ill. 60115.**

POSTDOCTORAL POSITION available immediately to study morphological aspects of spinal cord contusion injury. Research involves LM morphometry and histochemistry and some TEM. Opportunity to also participate in tissue culture studies on neuron regeneration, if desired. Send curriculum vitae and names of three references to: **Dr. Jean Wrathall, Department of Anatomy, Georgetown University, Washington, D.C. 20007.** Telephone: 202-625-2347. *Georgetown University is an Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL RESEARCH ASSOCIATE; VIROLOGY. The Department of Entomology, Texas A&M University, invites applications for a 2-year research position starting immediately. Applicants should have background in molecular biology or virology and will conduct research on the persistence and expression of baculovirus DNA genomes in permissive and nonpermissive cells. Starting salary is \$20,000. For additional information, contact: **Dr. Max D. Summers, Department of Entomology, Texas A&M University, College Station, Texas 77843.** Send curriculum vitae, reprints, and names of references. *Texas A&M University is an Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

NOBLE FOUNDATION Postdoctoral Positions

- **IMMUNOLOGY**—Lymphokine activation macrophages and NK; carcinogenesis and immune function.
- **BIOCHEMICAL PHARMACOLOGY**—Nucleic acids; cellular and molecular mechanisms; carcinogenesis.
- **CELL BIOLOGY**—Cellular aging, histone chemistry, molecular biology.
- **TUMOR HOST**—Interleukin I; trace metal; acute phase protein and neutrophils.
- **MEMBRANE BIOLOGY**—Enzyme and protein chemistry.

Two-year appointment at \$18,000 per annum; health and dental insurance; moving expenses; recent Ph.D. required

Opportunity to do unencumbered research in privately funded laboratory

Send résumé to: **Dr. M. K. Patterson, Jr., Noble Foundation, Box 2180, Ardmore, Oklahoma 73401.**

POSTDOCTORAL POSITION available immediately to study the role of bacterial adherence in urinary tract infection. The research is a joint project in the Departments of Urology and Microbiology-Immunology. The applicant should have a background in microbiology and/or biochemistry. Send curriculum vitae and names of three references to: **Dr. Anthony J. Schaeffer, Department of Urology, 303 East Chicago Avenue, Chicago, Ill. 60611. An Equal Opportunity Employer.**

POSTDOCTORAL POSITION available in biochemical toxicology for M.D. or Ph.D. to study regulation of heme and hemoprotein dependent metabolic functions and mechanisms of polychlorinated biphenyl toxicity. Two-year fellowship with competitive salary. M.D. may be able to coordinate the fellowship with a clinical subspecialty training program. Send curriculum vitae and three references to: **Dr. Arleen Rifkind, Department of Pharmacology, Cornell University Medical College, 1300 York Avenue, New York, N.Y. 10021.**

POSITIONS OPEN

ACADEMIC POSITIONS

POSTDOCTORAL POSITIONS (BIOPHYSICAL) are available for a combined spectroscopic, kinetic, and enzymatic study of the structure and thermodynamics of drug-nucleic acid complexes and carcinogen-nucleic acid complexes. We are particularly interested in the cooperative binding and allosteric effects which we have observed in selected systems. The experiments range from equilibrium binding of the drugs and carcinogens with DNA and chromatin to NMR studies of carcinogen-oligonucleotide adducts. State-of-the-art instrumentation is available to support these projects (for example, 400 MHz NMR, computer interfaced CARY 219, JASCO CD, Perkin-Elmer fluorimeter). Applicants should forward curriculum vitae and three letters of recommendation to: **Professor Thomas R. Krugh, Department of Chemistry, University of Rochester, Rochester, N.Y. 14627; telephone: 716-275-4224.**

POSTDOCTORAL POSITION. A 2-year appointment is available for a recent Ph.D. to work in our cellular immunology laboratory. The research involves structural and functional studies of human T lymphocytes and natural killer cells from healthy individuals and patients with malignant and rheumatic diseases. Send curriculum vitae and three letters of recommendation to: **Dr. Daniel J. Hirszen, Northwestern University Medical School, Department of Medicine, 333 East Huron, Chicago, Ill. 60611.**

POSTDOCTORAL RESEARCH ASSOCIATE

Position available immediately to study mechanism of insulin action on renal transport of fluid and electrolytes. Opportunity to learn isolated membrane vesicle transport and protein phosphorylation/dephosphorylation methodologies. Applicants with Ph.D. and background in membrane physiology and/or biochemistry are encouraged to apply. Send curriculum vitae and three letters of recommendation to:

**Dr. Thomas E. Northrup
Department of Physiology
Eastern Virginia Medical School
P.O. Box 1980
Norfolk, Va. 23501**

POSITIONS OPEN

POSTDOCTORAL POSITION available immediately for an organic, medicinal, or biochemistry Ph.D. to study heparin's structure using a microbial heparinase with the goal of developing new anticoagulants. Background in carbohydrate chemistry, enzymology, NMR, and HPLC desirable. Ability to work across disciplines essential. Salary: \$16,000. Send résumé and two letters of reference by 1 March to: **Professor Robert J. Linhardt, Division of Medicinal Chemistry, College of Pharmacy, University of Iowa, Iowa City, Iowa 52242. The University of Iowa is an Affirmative Action/Equal Opportunity Employer.**

POSTDOCTORAL POSITION for person interested in nerve muscle interactions in on-going studies of mammalian muscle spindles; 1 to 3 years of experience with EM and immunocytochemical techniques is required. Competitive salary. Send résumés to: **Personnel, Code N, Boston University Medical Center, 80 East Concord Street, Boston, Mass. 02118. An Equal Opportunity Employer, M/F.**

CORNELL UNIVERSITY Research Associate

To assist two professors in investigations of nutritional and metabolic interactions of basic amino acids and electrolytes in swine. Applicant must have strong background in physiology and biochemistry and be familiar with quantitative laboratory techniques. Will be expected to perform minor surgery, collect biological samples, analyze tissues and biological fluids for amino acids, electrolytes, enzyme activities, and perform measurements of amino acid absorption and transport. Experience with animal experimentation and diet formulation is desirable. Application deadline: 18 February 1983. Send résumé to:

**Dr. R. E. Austic
Department of Poultry and Avian Sciences
305 Rice Hall
Cornell University
Ithaca, N.Y. 14853**

Cornell University is an Equal Opportunity/Affirmative Action Employer. Minorities, women, and the handicapped are encouraged to apply.

Millersville State College (MSC) invites applications and nominations for the position of **DEAN OF THE SCHOOL OF SCIENCE AND MATHEMATICS.**

MSC is one of the 4 institutions in the newly restructured State System of Higher Education of Pennsylvania. It will be accorded university status as of 1 July 1983. The College enrolls approximately 6,500 undergraduate and graduate students.

The School of Science and Mathematics is one of three schools in the College. It consists of the following departments: Biology, Chemistry, Earth Sciences, Mathematics and Computer Science, Nursing, and Physics. The dean is the chief academic officer of the School and reports directly to the provost and vice president for academic affairs. The dean is classified as a State College and University Manager VI with a salary range of \$37,653 to \$45,516 and has responsibilities for the administration of the School's academic programs, including undergraduate and graduate instruction, curriculum budget, and staffing.

Qualifications for this position include an earned doctorate in one of the disciplines represented in the school, demonstrated excellence in teaching, substantial administrative experience at the college level in positions such as chairperson, dean, or chairperson of a major college/university committee, and evidence of scholarly achievements equivalent to a senior faculty rank. Experience with collective bargaining or the ability to work in a collective bargaining environment is desirable. Additional qualifications include an ability to communicate effectively, an awareness of emerging issues in higher education in general and in science education in particular, an understanding of the role of public higher education, a commitment to faculty development, experience in working with persons from diverse backgrounds, a commitment to academic freedom, and overall leadership and management capability.

Millersville State College is conveniently located in Lancaster County, Pennsylvania, approximately 65 miles west of Philadelphia, within 3 hours driving distance of Baltimore, New York City, and Washington, D.C. It is a multi-purpose institution offering baccalaureate and master's degree programs in teacher education, the traditional liberal arts, and other professional areas. It has approximately 350 full-time faculty members.

Application materials, to be postmarked by 1 March 1983, are: a letter of application, a current résumé, and at least three current letters of recommendation. Materials should be sent to:

**Dr. William A. Pearman, Chairperson
Dean Search Committee
Millersville State College
Millersville, Pa. 17551**

Appointment is effective 1 August 1983.

Millersville State College earnestly seeks and is eager to receive applications from women and minority candidates.

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

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

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 - ☐ \$48 USA ☐ \$72 Canada ☐ \$75 Foreign
 - ☐ \$103 air-surface delivery via Holland

- ☐ **Subscriber rates**
 - ☐ \$85 USA ☐ \$109 Canada ☐ \$112 Foreign
 - ☐ \$140 air-surface delivery via Holland

- ☐ Payment enclosed ☐ Bill me later

Name Please print

Address

City State Zip **SM01**

**ATTACH
LABEL
HERE**

POSITIONS OPEN

POSTDOCTORAL POSITION (research associate) available 1 June 1983 to study regulatory aspects of DNA replication in mammalian cells. Background in tissue culture and protein biochemistry is desirable. Salary: \$16,000 per year. Send curriculum vitae and two letters of reference to: **Dr. E. Rapaport, Department of Microbiology, Boston University School of Medicine, 80 East Concord Street, Boston, Mass. 02118.** An Equal Opportunity Employer, M/F.

POSTDOCTORAL/RESEARCH ASSOCIATE position available immediately for up to 3 years. Research involves electrophysiology/pharmacology of glia and neuroglia interactions. Candidate should have experience with standard intracellular electrophysiological techniques. Send curriculum vitae, publication list, and names of three referees by 28 February 1983 to: **Dr. Edward M. Lieberman, Department of Physiology, School of Medicine, East Carolina University, Greenville, N.C. 27834.** An Equal Opportunity Employer through Affirmative Action.

POSTDOCTORAL RESEARCH POSITION immediately available to Ph.D. or M.D. candidates interested in any of the following research areas: cell membrane glycoproteins, plasmalemmal structure and synthesis, calcium transport and vitamin D metabolism, differentiation of intestinal epithelial cells, control of cell growth, or tumor biology. The laboratory is fully equipped for most biochemical and cell biology experiments, including tissue culture and electron microscopy. NIH Training Grant Fund. Send curriculum vitae and names of three references to: **Milton M. Weiser, M.D., Chief, Division of Gastroenterology and Nutrition, State University of New York at Buffalo, Buffalo General Hospital, Kimberly Building, 100 High Street, Buffalo, New York 14203.** An Equal Opportunity/Affirmative Action Employer.

POSTDOCTORAL RESEARCH POSITION—Virology-immunology, spring 1983, ongoing program on mechanism of immunity to Togaviruses (for example, identification of viral antigens from infected cells, virions, hybridomas, T cell cloning, and so forth). Scientific, cultural, and outdoor environment (Smokies) superior. Send curriculum vitae and three references to: **A. Brown, Microbiology, University of Tennessee, Knoxville, Tenn. 37996.** Affirmative Action/Equal Opportunity Employer.

PROFESSOR AND CHAIRMAN DEPARTMENT OF BIOCHEMISTRY AND MOLECULAR BIOLOGY COLLEGE OF MEDICINE UNIVERSITY OF FLORIDA

The department is seeking applicants having an M.D. or Ph.D. degree, and a distinguished record of creative research in any area of biochemistry and molecular biology. Candidates should have a commitment to excellence in teaching as well as research and should have previous administrative experience. The Department of Biochemistry and Molecular Biology has teaching responsibilities to professional medical, dental, and veterinary medicine students as well as at the undergraduate and graduate level. The department has an internationally recognized research program and maintains a dynamic graduate training program. The department's location in the College of Medicine encourages scientific interaction with the clinical research departments as well as with programs in the other branches of the University. Salary negotiable; anticipated start date: 1 July 1983. Interested individuals should send their curriculum vitae by 1 March 1983 to:

Richard T. Smith, M.D.
Chairman, Biochemistry and Molecular Biology
Search Committee
Box J-275, J. Hillis Miller Health Center
University of Florida College of Medicine
Gainesville, Florida 32610

An Affirmative Action/Equal Opportunity Employer

RESEARCH PROFESSOR—Conduct research in the areas of the concepts and techniques in polymer gels for use in the design and fabrication of artificial organs, using such methods as correlated percolation theory and renormalization group techniques; develop and teach courses in the application of modern methods of statistical mechanics to polymer physics. Requirements include Ph.D. in physics or equivalent, 5 years of teaching and/or research experience with strong background in the above areas, and proven independent research ability; 40 hours per week; \$36,000 per year. Send résumé to: **W. Healey, Job Order Number 3170, Division of Employment Security, C. F. Hurley Building, Government Center, Boston, Mass. 02114.**

POSITIONS OPEN

PROGRAM COORDINATOR/ASSISTANT DEAN. Montana State University (MSU) invites applications for the position of coordinator of the Montana component of the WAMI Regional Medical Education Program (WAMI = Washington, Alaska, Montana, Idaho) of the University of Washington School of Medicine (UWSM). The position will include a tenure-track appointment in an appropriate basic science department at MSU, an affiliate faculty appointment at the UWSM, and an appointment as an assistant dean of (UWSM). Qualifications include: Ph.D., M.D., or equivalent degree, administrative abilities, experience in teaching biomedical science, record of independent research, ability to obtain extramural funding, and demonstrated communication skills. Responsibilities include administration of a first year medical school curriculum, coordinating the efforts of WAMI faculty and students, and serving as liaison to other academic programs and to the medical community. Substantial time will be available for research, teaching, and other scholarly activities. Salary negotiable and commensurate with qualifications and experience. Submit curriculum vitae and names of four references to: **Kay W. Garcia, Chairperson WAMI Search Committee, Office of Continuing Education for the Health Professional, 211 Montana Hall, MSU, Bozeman, Montana 59717.** Deadline for applications is 15 April 1983. *Montana State University is an Equal Opportunity/Affirmative Action Employer and encourages women and minorities to apply for this position.*

RESEARCH ASSOCIATE/POSTDOCTORAL SCIENTIST—NEUROENDOCRINE AGING

A 3-year position is available to investigate the effects of aging on the brain-pituitary-testis axis of mice. Position involves supervision of ongoing research project designed to identify neural and behavioral bases for reproductive failure in male mice. Send curriculum vitae and names of three references to: **Dr. F. H. Bronson, Institute of Reproductive Biology, Department of Zoology, University of Texas, Austin, Texas 78712.**

TWO RESEARCH ASSOCIATE positions are available in neurochemistry to work on mechanism of assembly of myelin membranes at the molecular level. Candidates having a recent Ph.D. with some experience in lipid and/or protein biochemistry are desirable. Send curriculum vitae with names of two referees to: **Dr. F. B. Jungalwala, Eunice Kennedy Shriver Center, 200 Trapelo Road, Waltham, Mass. 02254.**

RESEARCH POSITION—Glycopeptide-glycolipid research position at a university hospital for benchwork-oriented individual with quantitative working habits for structural characterization of carbohydrate moieties of glycoconjugates from human cell membranes. Doctorate required. Considerable freedom for this section-leader within the overall goals of the department. Technical help can be hired. Starting salary range: \$30,000 to \$40,000, depending upon experience; excellent benefits; significant annual salary increases; and paid attendance of meetings including overseas. This position is not dependent on grant money and is intended to be a permanent one. Please send résumé to: **Dr. Georg F. Springer, Director, Immunochimistry Research, Evanston Hospital, 2650 Ridge Avenue, Evanston, Ill. 60201.** Equal Opportunity Employer, M/F.

Positions available in Experimental Medicine Section, Tulane University Medical School, for **SYNTHETIC CHEMISTS** trained in solid phase peptide synthesis for program on analogs of hypothalamic hormones in endocrinology and cancer with Dr. Andrew Schally. Send curriculum vitae and references to: **Joan Goffredo, Research Building 3, VA Hospital, 1601 Perdido Street, New Orleans, La. 70146.** Telephone: 504-589-5230. An Equal Opportunity/Affirmative Action Employer.

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE VIROLOGIST

Applications are invited for a tenure-track faculty position in the Department of Microbiology and Immunology. Applicants should have demonstrated ability to perform original research in virology and an interest in teaching graduate and medical students. Send curriculum vitae and names of three references to: **Dr. Joseph M. Davie, Department of Microbiology and Immunology, Box 8093, Washington University School of Medicine, St. Louis, Mo. 63110.** An Equal Opportunity/Affirmative Action Employer, M/F/H/V.

POSITIONS OPEN

RESEARCH ASSOCIATE, Ph.D. in physiology or biochemistry and experience in enzyme chemistry. Will have to know or learn micromanipulation. Studies on packaging, distribution, and secretion of pancreatic enzymes. Use of a microfluorescence method to measure extremely small quantities, in the 0.3–10–18 M range of alpha chymotrypsinogen and of amylase in single, individual zymogen granules purified from rat pancreas. Studies of enzymes secretion from single pancreatic acinar cells. Send résumés to: **Claude Lechene, M.D., Department of Physiology and Biophysics, Harvard Medical School, 221 Longwood Avenue, Boston, Mass. 02115.**

RESEARCH IN IMMUNOLOGY

The Immunological Sciences Research Group at The University of Calgary is seeking an individual with expertise in mediators involved in immune regulation to join their actively expanding group. Applicants must be capable of independent research and will be eligible for nomination for funding from the Alberta Heritage Foundation for Medical Research, a newly established foundation for the support of medical research in the province. Candidates for appointment at the assistant professor level are preferred but more senior individuals will definitely be considered. Remuneration will be based upon salary scales at The University of Calgary. In accordance with Canadian immigration requirements this advertisement is directed to Canadian citizens and permanent residents. Qualified individuals outside of Canada are encouraged to apply however. Deadline for receipt of applications is 31 March 1983. Interested candidates should send their curriculum vitae, a brief description of field of interest, and three names of references to:

Dr. David S. Matheson, Chairman
Immunological Sciences Research Group
Faculty of Medicine
The University of Calgary
3330 Hospital Drive, NW
Calgary, Alberta, Canada T2N 4N1

RESEARCH POSITION—AUDITORY NEUROPHYSIOLOGY

A position is available at the Electrophysiology Laboratory of the Siegel Institute, Michael Reese Hospital, for an **electrophysiologist or neurophysiologist** with computer science background to pursue human and animal research in auditory evoked potentials. Candidates should have training or experience in collaborative neurophysiologic studies of the auditory system. Staff of the Electrophysiology Laboratory currently hold research/teaching appointments in the Department of Surgery (Otolaryngology), University of Chicago.

Interested applicants should submit curriculum vitae, a brief statement of research training, experience, and interests, and the names of three individuals who can supply letters of recommendation to:

Laszlo Stein, Ph.D., Director
Siegel Institute
Michael Reese Hospital and Medical Center
Lake Shore Drive at 31st Street
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Telephone: 312-791-2910

MIT RESEARCH SCIENTIST

To serve as supervisor of Genetic Toxicology Testing Laboratory. Will supervise toxicological analysis of complex mixtures in bacteria and human cells in culture. Involves close working relationship with analytical chemists and combustion engineers. This individual will be expected to offer a plan for independent research in toxicology to be carried out in addition to operation of testing facility.

Candidates must have Ph.D. or Sc.D. in toxicology as well as a record of original research contributions in field of genetic toxicology. Experience supervising technical personnel plus strong communication skills important.

Please submit two copies of résumé to: **Attention: Job Number R959, Professor William G. Thilly, Massachusetts Institute of Technology (MIT), E18-666, 77 Massachusetts Avenue, Cambridge, Mass. 02139.** MIT is an Equal Opportunity/Affirmative Action Employer.

EXPERIENCED SECONDARY SCIENCE INSTRUCTOR needed to teach biology and chemistry at a highly-competitive, rural, Roman Catholic, college-preparatory boarding school for boys. Some graduate work and experience required. Extracurricular interests desirable. Send résumé and references to: **Dr. James Mooney, Chairman, Science Department, Portsmouth Abbey School, Portsmouth, R.I. 02871.**

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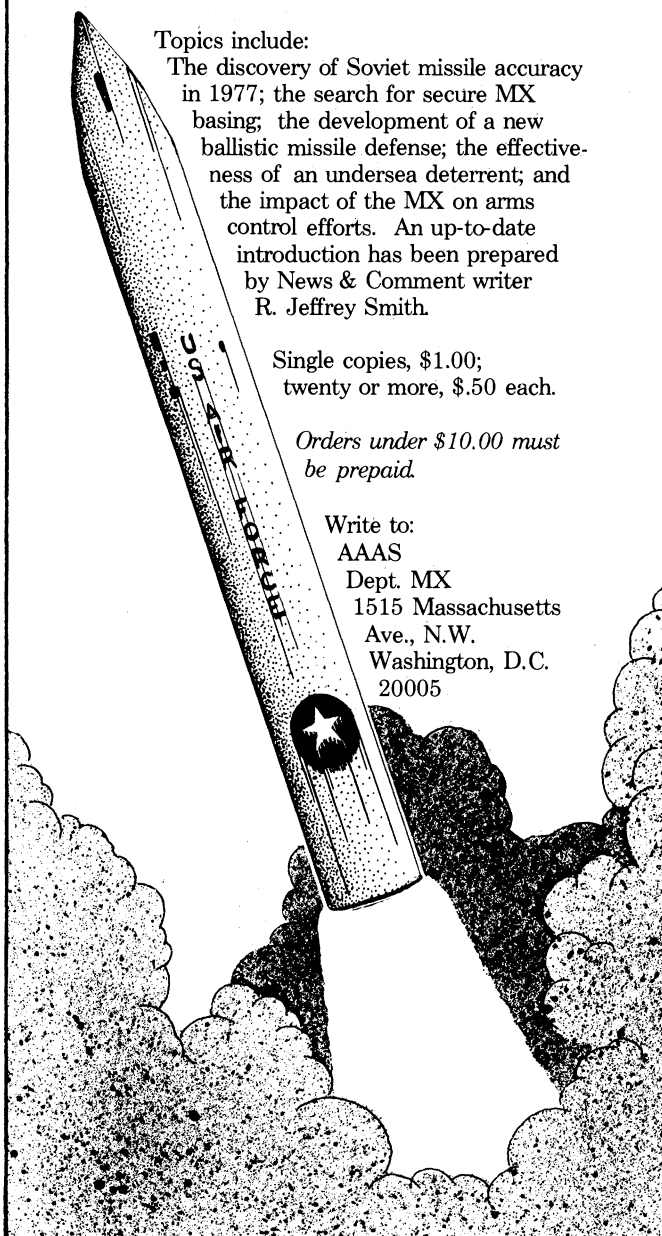
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For information, telephone: 809-297-1880, or write (AIRMAIL): Bermuda Biological Station, Ferry Reach 1-15, Bermuda.

FINANCIAL ASSISTANCE

LERNER-GRAY FUND FOR MARINE RESEARCH provides financial assistance, in marine zoology, exclusive of botany. Level: advanced predoctoral students and postdoctoral researchers. Range: \$200 to \$1000. Projects can be carried out anywhere in the world. Applications are due by 15 March on prescribed forms. Write: Lerner-Gray Fund for Marine Research, American Museum of Natural History, Central Park West at 79th Street, New York, New York 10024.

GRADUATE STUDY

GRADUATE STUDIES IN BIOLOGY GEORGETOWN UNIVERSITY WASHINGTON, D.C.

The Department of Biology has positions available in both the M.S. and Ph.D. programs. University fellowships are available for qualified applicants for the Ph.D. program. The 14 faculty members conduct active research programs in various areas of cellular and organismal biology, including: cell biology, development, genetics, immunology, behavior, physiology, neurobiology, membrane biology, phycology, microbiology, ecology, radiobiology, and tissue culture (plant, animal, and hybridoma). For further information, please contact: Dr. P. Chen, Committee on Graduate Students and Studies, Department of Biology, Georgetown University, Washington, D.C. 20057.

TRAINEESHIPS

POSTDOCTORAL TRAINEESHIPS in biochemical genetics of mammalian tumor viruses and bacterial phage at The University of Michigan Medical School are now available through an NIH-funded interdisciplinary program. Research areas include animal cell transformation, tumor virus and phage DNA replication and recombination, regulation of gene expression and virus-cell interactions. Program faculty include: Dr. W. R. Folk, Dr. G. R. Greenberg, Dr. L. Lutter (Department of Biological Chemistry); Dr. W. Brockman, Dr. D. I. Friedman (Microbiology); and Dr. M. Levine (Human Genetics). Applicants need not have previous research experience in virology, but must be U.S. citizens or permanent residents. Submit curriculum vitae and a list of three references to: Virology Postdoctoral Training Program, Department of Biological Chemistry, The University of Michigan Medical School, Ann Arbor, Mich. 48109.

PROGRAMS

PREDOCTORAL TRAINING IN TOXICOLOGY. Rutgers, The State University of New Jersey, is currently accepting applications for the 1983-1984 academic year for M.S. and Ph.D. training in environmental and industrial toxicology for full- or part-time study. Fellowships are available on a competitive basis. The interdisciplinary faculty is drawn from each of the college divisions of Rutgers, The University of Medicine and Dentistry of New Jersey, and nearby industry. For further information, write to: Dr. Robert Snyder, Director, Joint Graduate Program in Toxicology, Rutgers, The State University of New Jersey, Box 789, College of Pharmacy, Piscataway, N.J. 08854.

PROGRAMS

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This unique program offers the candidate with an earned doctorate in the sciences the opportunity to obtain a doctor of optometry (O.D.) degree in two calendar years. Employment opportunities exist in private practice, industry, education, and research. Contact: The Dean of Admissions, The New England College of Optometry, Room 201, 424 Beacon Street, Boston, Mass. 02115.

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Send letter of application, including research interest, curriculum vitae, and two references, to:

Dr. David H. George
Dean, Post Graduate Education
New York College of Podiatric Medicine
New York, N.Y. 10035

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Fellowships are available for postdoctoral training in the following areas of research with the indicated faculty: cell membranes (J. F. Ash), neurite growth (F. D. Collins), neuronal plasticity (K. A. Crutcher), clonal analysis (M. Jacobson), visual system (A. G. Leventhal), mammalian neurogenetics (R. J. Mullen), auditory system (T. N. Parks), neurulation (G. C. Schoenwolf). For more information, telephone: 801-581-6728, or write to: M. Jacobson, Anatomy Department, University of Utah School of Medicine, Salt Lake City, Utah 84132.

PREDOCTORAL FELLOWSHIPS IN PHARMACOLOGY

Student fellowships are available for predoctoral study in the Pharmacology Graduate Program of the Grace Cancer Drug Center, Roswell Park Memorial Institute. Stipends and tuition waivers are available for eligible students. The program offers diversified training related to the pharmacological and biochemical basis for drug action with emphasis on cancer therapeutics: inhibition of nucleic acid, protein and membrane components, enzyme activity regulation, coenzyme action and inhibition, basis for selective toxicity, pharmacokinetics and drug metabolism in animals and cells, medicinal chemistry of nucleosides, carbohydrates and antifolates, immunotherapy, immunosuppression, experimental chemotherapy, mechanisms of carcinogenesis, toxicology, genetic basis for drug action, molecular pharmacology, endocrine pharmacology and metabolic regulators, hematology, preclinical and clinical pharmacology. U.S. citizens and permanent residents may send applications to:

E. Mihich, M.D., Chairman
Graduate Pharmacology Program
Roswell Park Memorial Institute
666 Elm Street
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POSTDOCTORAL FELLOWSHIP IN GLYCOPROTEIN BIOCHEMISTRY. Studies of the biosynthesis and regulation of posttranslational modification of the oligosaccharide units of glycoproteins (for example, O-acetylation of sialic acids, phosphorylation of mannose residues) in normal and malignant cells. NIH supported position requires citizenship or permanent visa. Available immediately or August 1983. Send résumé and names of three references to: Dr. A. Varki, University of California, San Diego, Cancer Center, T-011, La Jolla, Calif. 92093.

POSTDOCTORAL FELLOWSHIPS at Duke University Center for the Study of Aging and Human Development in adult development and/or aging. Research training is available in many biomedical, behavioral, and social science disciplines. To request application materials, reply with curriculum vitae and brief description of proposed research area. Completed applications should be received by 1 April 1983 for positions starting in June 1983 and positions for the 1983-1984 academic year. Contact: Dr. Ilene C. Siegler, Box 2969, Duke University Medical Center, Durham, N.C. 27710. An Equal Opportunity/Affirmative Action Employer.

POSTDOCTORAL FELLOWSHIPS for U.S. citizens or permanent residents to begin between 1 April and 1 October 1983 are available in the Laboratory of Neuroendocrinology of the Brain Research Institute, University of California, Los Angeles (UCLA), School of Medicine. Training is offered in developmental, aging, electrophysiological, behavioral, or pharmacological aspects of the neuroendocrinology of reproduction in the laboratory of A. Arnold (psychology), R. George (pharmacology), R. Gorski, J. Lu, C. Sawyer, A. Taylor, D. Whitmoyer, or E. Zimmerman (anatomy). Applications should be submitted prior to 15 March 1983 to any of the above faculty. Additional information may be obtained from: Dr. Roger Gorski, Department of Anatomy, UCLA School of Medicine, Los Angeles, California 90024. The University of California is an Equal Opportunity/Affirmative Action Employer.



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The University of Massachusetts Medical School is seeking a distinguished scientist and academic leader for the position of Professor and Chair, Department of Anatomy. The successful candidate must demonstrate outstanding leadership ability, and will have the opportunity to direct a department which has significant growth potential. The institution is particularly interested in further developing strength in the areas of cell biology and neurosciences. The department is well-equipped and has access to outstanding institutional core facilities such as those for tissue culture, fluorescence-activated cell sorting, and protein sequencing. Other basic science departments in the institution provide a stimulating environment conducive to contemporary scholarship in the bio-medical sciences. The department chair will be responsible for promoting excellence in research and teaching, and for administering the financial resources in the department. Candidates may be nominated or may apply by sending a letter of interest, a curriculum vitae, and names of three individuals to be contacted as references. Please address correspondence to: Dr. Michael P. Czech, Anatomy/Cell Biology Search Committee, Department of Biochemistry, University of Massachusetts Medical School, Worcester, MA 01605.

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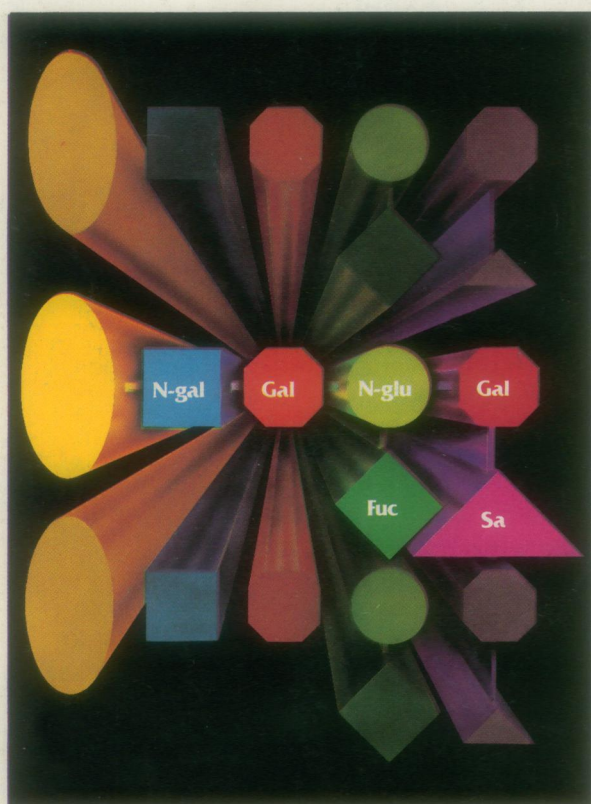


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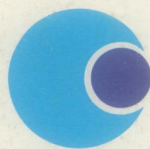
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