

the general biology of these species but have little in the way of behavioral content. Papers on social organization in humpback dolphins by G. S. Saayman and C. K. Tayler and in sperm whales by P. B. Best are excellent and illustrate well the heroic inferential efforts required to study the behavior of cetaceans.

With respect to acoustic behavior, P. Beamish reports on vocalizations in several entrapped baleen whales and remarks on the production of pulsed sounds that may be suitable for echolocation. Graded whistle repertoires of North Atlantic pilot whales are described by A. G. Taruski as varying little over several behavioral and environmental conditions. D. W. Morgan reports variable vocal and behavioral reactions by wild and captive belugas to playbacks of conspecific vocalizations. M. C. and D. K. Caldwell present a good description of the ontogeny of whistles in Atlantic bottle-nosed dolphins. Whistles in the young dolphin are variable in structure and acquire stereotyped individual features only after the first year. Finally T. J. Thompson *et al.* give a brief review of mysticete sounds and discuss the possible social and orientation functions of known vocalizations.

There is some that is new in the present volume but little that is exciting for behaviorists. The volume does not attempt to give general reviews or directions for future work and is far from a general or balanced coverage of cetacean behavior. It is a disappointment compared with earlier volumes in the series.

JON LIEN

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Astrophysics

Nonradial Oscillations of Stars. WASABURO UNNO, YOJI OSAKI, HIROYASU ANDO, and HIROMOTO SHIBAHASHI. University of Toyko Press, Tokyo, 1979 (U.S. distributor, ISBS, Forest Grove, Ore.). x, 324 pp., illus. \$32.50.

As the authors of this book point out, recent observations have revealed that nonradial oscillations "are inherent to most of the stars that are the main constituents of the universe." This is therefore a timely book.

Fundamental advances in our understanding of nonradial oscillations have in recent years been made by a number of Japanese astrophysicists (most of whom are among the authors of the book). In

addition to summarizing much of the work on the subject, the book also provides information and details that usually cannot be found in research papers.

Chapter 1 is masterly and should be required reading for every astronomer or astrophysicist. In less than 20 pages, it gives a brief history of the subject, summarizes the reasons for studying nonradial oscillations in stars, discusses the kinds of objects in which nonradial oscillations are suspected and some of the physics involved, and gives some inkling of the mode classification problem and its difficulties.

Chapter 3, on adiabatic oscillations, gives an excellent and thorough discussion of "trapping" of nonradial oscillations in certain portions of a stellar interior. The concept of trapping is relatively new and was first applied to nonradial oscillations in stellar interiors by Unno and Osaki. The chapter also contains a good, thorough discussion of boundary conditions; surface boundary conditions are also considered in chapter 4.

A number of specific features of the book are attractive. Particularly welcome to this reviewer were three helpful drawings illustrating spherical harmonics for various values of ℓ and m , a detailed application of perturbation theory to slow rotation and a weak magnetic field, the application of perturbation theory to a general small perturbing force, a detailed and careful treatment of the ϵ -mechanism, and an analysis of the one-zone model of fully nonadiabatic oscillations. This reviewer also found useful the physical derivation of an equation expressing the growth rate of the most unstable modes as a function of surface gravity and effective temperature and discussions of the stability of rotating stars and of tidal forced oscillations in stars. There are even brief discussions of the Lin-Shu density wave theory of spiral galaxies and of toroidal modes.

There appears to be little on the debit side. However, a few criticisms should be mentioned. Perhaps of most importance is the attempt to include a discussion of the interaction between pulsation and convection. The subject is discussed at some length, but the conclusions and equations derived are not especially convincing. Our theoretical understanding of convection (particularly time-dependent convection) is in a rudimentary state, as the authors admit. One therefore wonders about the advisability of trying to discuss the subject in detail. There is little in the book about either nonlinear effects in general or about mode coupling in particular.

The book is an excellent complement to the encyclopedia article written in 1958 by Ledoux and Walraven and should become a standard reference on nonradial oscillations in stars.

JOHN P. COX

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Books Received

Accessory Glands of the Male Reproductive Tract. E. S. E. Hafez and Elinor Spring-Mills, Eds. Ann Arbor Science, Ann Arbor, Mich., 1979. xii, 304 pp., illus. \$30. Perspectives in Human Reproduction, vol. 6.

The Acquisition of Reading. Cognitive, Linguistic, and Perceptual Prerequisites. Papers from a symposium, Newark, Del., June 1975. Frank B. Murray and John J. Pikulski, Eds. University Park Press, Baltimore, 1979. xiv, 178 pp. \$14.50.

Basic Electronics. Devices, Circuits and Systems. Michael M. Cirovic. Reston (Prentice-Hall), Reston, Va., ed. 2, 1979. xviii, 568 pp., illus. \$19.95.

Basic Set Theory. Azriel Levy. Springer-Verlag, New York, 1979. xiv, 394 pp. \$24.90. Perspectives in Mathematical Logic.

Computer Graphics in Archaeology. Statistical Cartographic Applications to Spatial Analysis in Archaeological Contexts. Steadman Upham, Ed. Arizona State University Department of Anthropology, Tempe, 1979. vi, 156 pp., illus. Paper, \$8.50. Arizona State University Anthropological Research Papers No. 15.

Convex Analysis and Mathematical Economics. Proceedings of a symposium. Tilburg, The Netherlands. Feb. 1978. Jacobus Kriens, Ed. Springer-Verlag, New York, 1979. vi, 138 pp., illus. Paper, \$9. Lecture Notes in Economics and Mathematical Systems, vol. 168.

Countertransference and Related Subjects. Selected Papers. Harold F. Searles. International Universities Press, New York, 1979. xii, 626 pp. \$27.50.

The Coyote. Defiant Songdog of the West. François Leydet. University of Oklahoma Press, Norman, 1979. 224 pp., illus. Paper, \$5.95. Reprint of the 1977 edition.

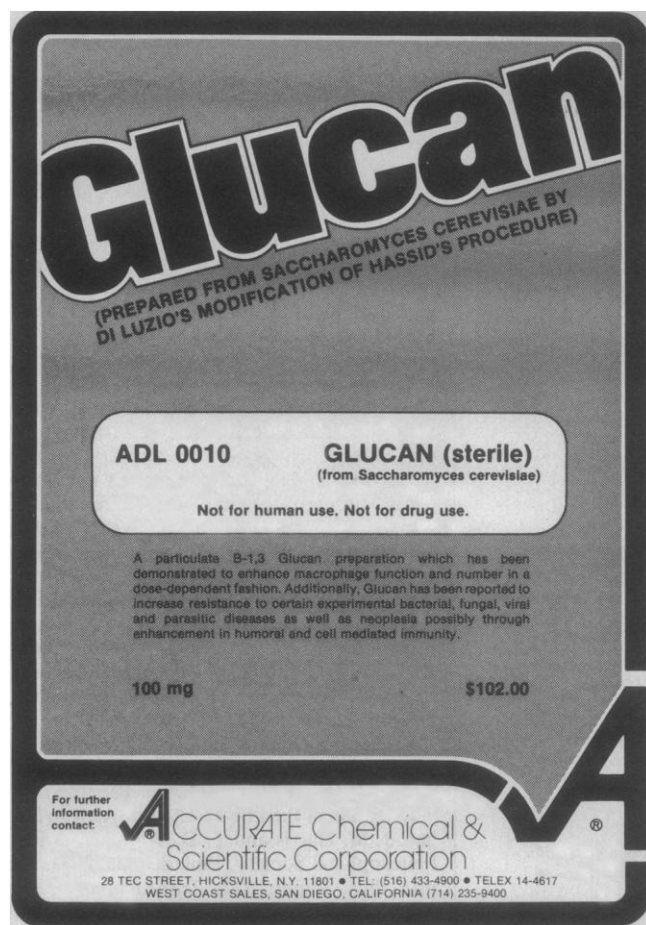
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Energy. The Countdown. A Report to the Club of Rome. Thierry de Montbrial with recommendations by Robert Lattés and Carroll Wilson. Pergamon, New York, 1979. xiv, 256 pp. Cloth, \$30; paper, \$10. Pergamon International Library.

The Energy Controversy. Soft Path Questions and Answers. Amory Lovins and his critics. Hugh Nash, Ed. Friends of the Earth, San Francisco, 1979. vi, 450 pp. Cloth, \$12.50; paper, \$6.95.

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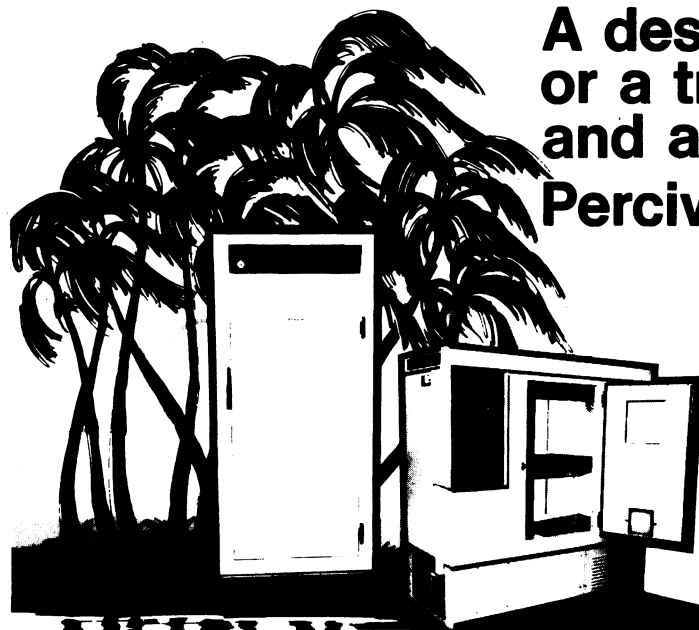
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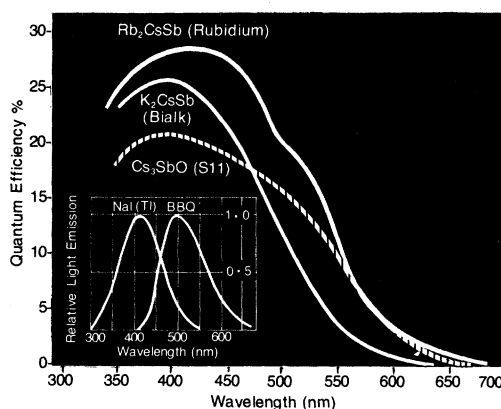
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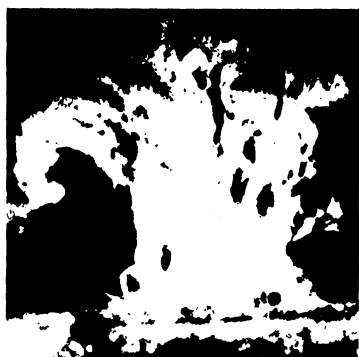
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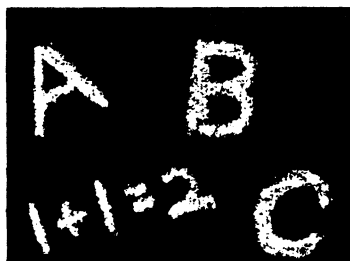
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BOOKS RECEIVED

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before Us. Sam H. Schurr, Joel Darmstadter, Harry Perry, William Ramsay, and Milton Russell. Published for Resources for the Future by Johns Hopkins University Press, Baltimore, 1979. xxviii, 556 pp., illus. Cloth, \$30; paper, \$10.95.

Energy Information. Description. Diagnosis, and Design. Proceedings of a workshop, Stanford, Calif., Dec. 1977. William W. Hogan, Ed. Institute for Energy Studies, Stanford University, Stanford, Calif., 1978. x, 326 pp. Paper, \$5.

Energy Resources in Colorado. Coal, Oil Shale, and Uranium. Jerome G. Morse. Westview Press, Boulder, Colo., 1979. xxxiv, 396 pp., illus. \$30.

Energy Use in Mining. Patterns and Prospects. Bernard A. Gelb and Jeffrey Pliskin with the assistance of Mark L. Wehle. Ballinger (Harper and Row), Cambridge, Mass., 1979. xviii, 216 pp., illus. \$22.50.

Engineering Plasticity by Mathematical Programming. Proceedings of a NATO Advanced Study Institute, Waterloo, Canada, Aug. 1977. M. Z. Cohn, G. Maier, and D. E. Grierson. Eds. Pergamon, New York, 1979. xxiv, 648 pp., illus. Cloth, \$50; paper, \$30.

Evaluating Federal Support for Poverty Research. National Academy of Sciences, Washington, D.C., 1979. xii, 112 pp. Paper, \$7.

Evolution of the Plio-Pleistocene African Suidae. J. M. Harris and T. D. White. American Philosophical Society, Philadelphia, 1979. 128 pp., illus. Paper, \$12. *Transactions of the American Philosophical Society*, vol. 69, part 2.

A Formal Background to Mathematics. Vol. 1, Logic, Sets and Numbers. R. E. Edwards. Springer-Verlag, New York, 1979. Two volumes. xxxviii, 934 pp. Paper, \$29.80.

Freeze-Drying Biological Specimens. A Laboratory Manual. Rolland O. Hower. Smithsonian Institution Press. Washington, D.C., 1979. 196 pp., illus. \$25.

Functional Disorders of Memory. John F. Kihlstrom and Frederick J. Evans, Eds. Erlbaum, Hillsdale, N.J., 1979 (distributor, Halsted [Wiley], New York). xii, 420 pp. \$24.95.

Geology and Palaeontology of Southeast Asia. Vol. 20. Teiichi Kobayashi, Ryuzo Toriyama, and Wataru Hashimoto, Eds. University of Tokyo Press, 1979 (U.S. distributor, ISBS. Forest Grove, Ore.). viii, 224 pp. + plates. \$59.50.

Give Us the Tools. Science and Technology for Development. David Spurgeon, Ed. International Development Research Centre, Ottawa, Canada, 1979. iv, 190 pp., illus. Paper, \$7. IDRC-131e.

Glaucoma Update. Papers from a symposium, Nara, Japan, May 1978. G. K. Kriegelstein and W. Leydhecker, Eds. Springer-Verlag, New York, 1979. xiv, 226 pp., illus. Paper, \$29.

GLC and HPLC Determination of Therapeutic Agents. Part 3. Kiyoshi Tsuji, Ed. Dekker, New York, 1979. xiv + pp. 931-1482. illus. \$45. *Chromatographic Science*, vol. 9.

The Global Carbon Cycle. Papers from a workshop, Ratzeburg, Germany, Mar. 1977. B. Bolin, E. T. Degens, S. Kempe, and P. Ketner, Eds. Published from the Scientific Committee on Problems of the Environment of the International Council of Scientific Unions by Wiley, New York, 1979. xxxvi, 492 pp., illus. Paper, \$45. SCOPE 13.

The Gourd Book. Charles B. Heiser, Jr.

University of Oklahoma Press, Norman, 1979. viii, 248 pp., illus. \$14.95.

Graceanna Lewis. Scientist and Humanitarian. Deborah Jean Warner. National Museum of History and Technology, Washington, D.C., 1979 (distributor, Smithsonian Institution Press, Washington, D.C.). 140 pp. Paper, \$3.95.

Immunopathogenesis of Rheumatoid Arthritis. Proceedings of a symposium. London. Nov. 1978. C. S. Panayi and P. M. Johnson, Eds. Reedbooks, Chertsey, Surrey, England, 1979. 164 pp., illus. Paper, £19.

Index of Galaxy Spectra. Galen R. Gisler and Eileen D. Friel. Pachart Publishing House, Tucson, Ariz., 1979. vi, 190 pp. \$38. Astronomy and Astrophysics Series, vol. 10.

Industrial Energy Conservation. A Handbook for Engineers and Managers. David A. Reay. Pergamon, New York. ed. 2, 1979. xiv, 372 pp., illus. \$22.

Internal Combustion Engines. Rowland S. Benson and N. D. Whitehouse. Pergamon, New York, 1979. Two volumes. xxiv, 430 pp., illus. + index. Cloth (single volume), \$50; paper, \$25.

International Directory of Psychology. A Guide to People, Places and Policies. Benjamin B. Wolman. Plenum, New York. 1979. xxxiv, 280 pp. \$19.95.

International Review of Cytology. Vol. 57. G. H. Bourne, J. F. Danielli, and K. W. Jeon, Eds. Academic Press, New York, 1979. x. 400 pp., illus. \$34.

International Symposium on Systems Optimization and Analysis. Rocquencourt, France, Dec. 1978. A. Bensoussan and J. L. Lions, Eds. Springer-Verlag, New York, 1979. viii, 332 pp. Paper, \$16. Lecture Notes in Control and Information Sciences, vol. 14.

Introduction to Automata Theory, Languages, and Computation. John E. Hopcroft and Jeffrey D. Ullman. Addison-Wesley, Reading, Mass., 1979. x. 418 pp., illus. \$20.95.

An Introduction to Homological Algebra. Joseph J. Rotman. Academic Press, New York, 1979. xiv, 378 pp., illus. \$26.50. Pure and Applied Mathematics.

Introduction to Mental Health. Field and Practice, Milton G. Thackeray, Rex A. Skidmore, and O. William Farley. Prentice-Hall, Englewood Cliffs, N.J., 1979. viii, 296 pp. \$11.95.

Introduction to Seismology. Markus Bath. Birkhauser Verlag, Boston, ed. 2, 1979. 428 pp., illus. \$29.80.

Invertebrate Structure and Function. E. J. W. Barrington. Halsted (Wiley), New York, ed. 2, 1979. xiv, 766 pp., illus. \$27.50.

Investigative Mycology. Robert F. Sharp. Drawings by Keith Jones. Heinemann. Exeter, N.H., 1979. viii, 136 pp. Cloth, \$16.25; paper, \$5.50.

Lipoprotein Metabolism. S. Eisenberg. Ed. Karger, Basel, 1979. vi, 262 pp., illus. \$84.25. Progress in Biochemical Pharmacology, Vol. 15.

Physical Science. A Dynamic Approach. Robert T. Dixon. Prentice-Hall. Englewood Cliffs, N.J., 1979. xiv, 402 pp., illus. \$15.95.

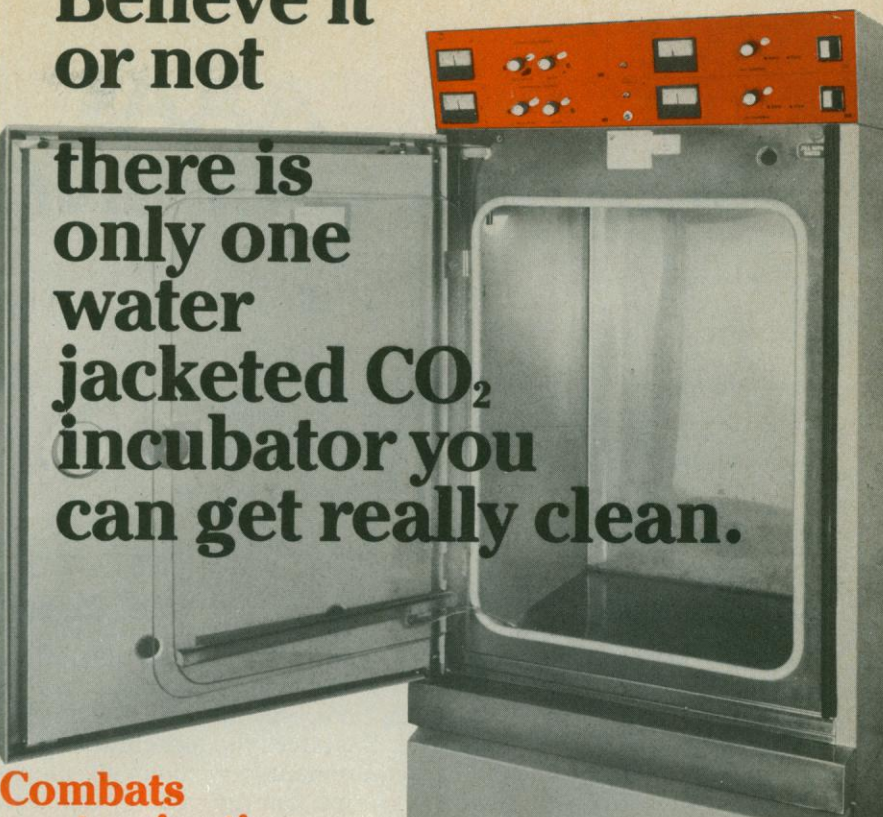
Physicochemical Measurement by Gas Chromatography. J. R. Conder and C. L. Young. Wiley-Interscience, New York, 1979. xx. 632 pp., illus. \$75.

The Profoundly Mentally Retarded. Charles C. Cleland. Prentice-Hall, Englewood Cliffs, N.J., 1979. xii, 212 pp. \$14.95.

Votre Enfant Apprend à Parler. Jean Rondal. Mardaga, Brussels, 1979. 110 pp. Paper, 320 BF. Psychologie et Sciences Humaines.

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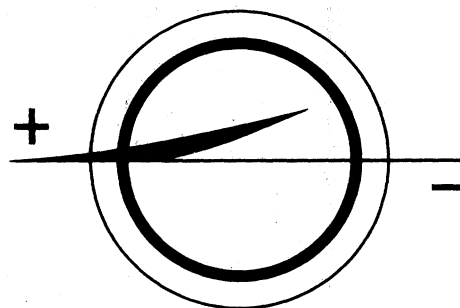
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Mass Spectroscopist. Ph.D., seeks analytical/research position. Background in carbohydrate, peptide, protein chemistry; experience with electron impact, positive/negative chemical ionization mass spectrometry, gas chromatography, high-performance liquid chromatography. J. M. Ballard, Chemistry Department, University of Virginia, Charlottesville, Va. 22901. 4/18, 25

Neurobiology, Electrophysiology. M.S. Seeks research position. Experience with measurement of evoked potentials, use of computers; neurochemistry, drug assay for neuropeptides; immunohistochemistry. Willing to relocate. Box 156, 325 Western Avenue, Albany, N.Y. 12203. X

June Ph.D. Interdisciplinary background in pharmacology, biochemistry, psychology, endocrinology, and genetics. Major interest in hormone-CNS interactions. Ten years of experience as technician. Seeking teaching/research. Box 98, SCIENCE. X

Ph.D. 1968, veterinary medicine, reproductive physiology, radioimmunoassay, radioreceptor-assay, toxicology, teratology. No geographic preference. Telephone: 513-872-4362, or 1289 Tallberry Drive, Cincinnati, Ohio 45230. 4/18, 25

Pharmacologist. Ph.D. Postdoctoral, teaching, and research experience. Strong background in transdermal, hepatic uptake, and drug interactions. Grants and publications. Seeks industrial, governmental, or academic position. Box 88, SCIENCE. 4/18, 25

Phycologist/Limnologist. Ph.D. 1978: 10 years of college teaching experience, phycology, limnology, ecology, environmental science, general biology, water and wastewater treatment. Ph.D. research involved eutrophication and the ecology of blue-green algae; also some TEM experience with algae: 2 years of experience in aquatic environmental impact studies. Additional responsibilities included chairman of standing faculty committee, environmental technology program, and ad hoc committees. Seeking tenure-track teaching position or responsible position in research or applied field; also interested in summer only employment. Available June 1980. Box 99, SCIENCE. 4/18, 25; 5/9

Physiologist/Biochemist. Ph.D. Developed highly sensitive embryo culture techniques useful as teratogenesis test system; numerous publications on hormones, oogenesis, and early embryo development; obtained research funding from NIH and other agencies. Available immediately; salary negotiable. Box 94, SCIENCE. X

Psychologist/Neuroscientist. M.A. 1979. Research experience with publications in the area of CNS mechanisms of obesity. Seeks position in university or industry where initiative, originality, and hard work are appreciated. Box 100, SCIENCE. X

POSITIONS OPEN

OKLAHOMA CITY—ACADEMIC PSYCHIATRIST. University of Oklahoma Health Sciences Center, full-time assistant or associate professor level. EEO Number 185. Director, 22-bed psychiatric unit. Duties: (i) designated attending, (ii) coordinator of educational/clinical program, (iii) supervision of residents and medical students, (iv) coordinate milieu therapy for admissions by other faculty. Treatment approach must be eclectic with multidisciplinary team; full-time psychologist and social worker are on unit; short-term crisis intervention and longer term treatment for older adolescents must be available; long-standing therapeutic community with active nursing participation is a tradition. Salary in competitive range plus private practice supplement. Excellent academic fringe benefits. Candidate must be Board-certified or eligible. Write: **Gordon Deckert, M.D., Chairman, P.O. Box 26901, Oklahoma City, Okla. 73120.**

ASSISTANT PROFESSORS (two). The Department of Entomology has regular, tenure-track faculty openings for a **forest entomologist** (Columbia Campus) and an **agricultural entomologist** (Southeast Missouri Delta Center—field crops/fruit). Salaries and benefits competitive; Ph.D. required. Closing date 1 June or until qualified applicants found. Telephone: 314-882-4445 or write: **Chairman, Department of Entomology, 1-87 Agriculture, University of Missouri, Columbia, Mo. 65211** for details. *Affirmative Action/Equal Opportunity Employer.*

POSITIONS OPEN

ADMINISTRATIVE DEPUTY OF COLLABORATIVE GROUP STUDY IN BLADDER CANCER. Experience in Cooperative Group studies, grant preparation, grants management, study logic and planning essential. Monitoring many of group's activities a major portion of function. M.B.A. or allied field preferred. Send curriculum vitae to: **George R. Prout, Jr., M.D., Chief, Urological Service, Massachusetts General Hospital, Boston, Mass. 02114.** We are an *Affirmative Action/Equal Opportunity Employer.*

APPRENTICESHIP in ecological consulting firm: B.S. Activities include report writing, data analysis, all office procedures, environmental management, legal, and field. Good office skills required. Minimum B.S. or B.A. in biology, chemistry, or environment; for 1 year, renewable. Start 1 May to 15 June; \$200 per week with raises. **Applied Marine Ecological Services, Inc., Suite 4EN, 600 Grapetree Drive, Miami, Fla. 33149; telephone: 305-361-3340.**

ASSISTANT PROFESSOR

University of California, Irvine, Department of Pathology, is recruiting for a faculty position at the assistant professor level. Required: M.D., must be Board-certified in anatomic pathology and eligible for licensure in California. Subspecialty experience highly desirable. Demonstrated interests in clinical service functions, teaching, and research. Duties: assist the division chief in such administrative activities as the functioning of the histology laboratory, maintenance of clerical support and the Residency Teaching Program; instructing medical students and residents in pathology; and presenting conferences for the clinical staff and the community. *Affirmative Action Employer.* Send curriculum vitae and references to: **Stephen G. Romansky, M.D., Department of Pathology, University of California, Irvine, 101 City Drive South, Orange, California 92668, by 26 May 1980.**

ASSISTANT PROFESSOR. Botanist, beginning 1 September 1980. Ph.D. in botany with major concentration and interest in taxonomy of vascular plants required. The qualified applicant must have a demonstrated record of excellence in teaching. Responsibilities include teaching courses in introductory botany, field botany and taxonomy, curatorial duties in established herbarium, and developing an active research program with potential of directing thesis and dissertation research. Send curriculum vitae, a brief outline of research plans, and four letters of reference by 24 May 1980 to: **Dr. Carl Dee Brown, Chairman, Department of Biology, Memphis State University, Memphis, Tenn. 38152.**

An Equal Opportunity University, M/F

Starting 15 August 1980, a 9-month temporary appointment will be available in the **DEPARTMENT OF BOTANY**, University of Iowa. Applicants should have the Ph.D. degree and experience in teaching undergraduates. Teaching duties during the first semester involve offering a course for advanced undergraduates and graduate students in the appointee's area of research interests. During the second semester the appointee will share teaching duties with a member of the Zoology Department in human biology, a large introductory biology course for non-science majors. The salary ranges from \$15,000 to \$18,000, depending upon the experience and qualifications of applicants. Office and laboratory space is available and some research support can be provided. Submit curriculum vitae, including a résumé of teaching experience, current research interests, a brief outline for a proposed advanced course, and a list of persons qualified and willing to write letters of recommendation. Before 15 May 1980 send to: **J. T. Schabillon, Chairman, Search Committee, Department of Botany, University of Iowa, Iowa City, Iowa 52242.** The University of Iowa is an *Equal Opportunity/Affirmative Action Employer.*

CARDIOLOGIST—The Division of Cardiovascular Disease in the Department of Medicine at the University of Alabama in Birmingham has available a position at the associate professor level. The position is open to qualified individuals at a senior level fulfilling two criteria. First, the individual must have expertise and an extensive background in cardiovascular research, being able to carry out independent research. Second, the individual must have a firm commitment to teaching programs oriented to medical students, graduate students, and fellows. Apply to: **Division of Cardiovascular Disease, Department of Medicine, University of Alabama Medical Center, Birmingham, Alabama 35294 (attention: Norma McSweeney).** An *Equal Opportunity/Affirmative Action Employer.* Expiration date for receipt of applications: 15 May 1980.

POSITIONS OPEN

ASSISTANT PROFESSOR OF CELL BIOLOGY-PHYSIOLOGY with plant or animal interests, July 1980. Preference to applicants with active research interests. Postdoctoral experience preferred. Applicants expected to develop vigorous research program and teach undergraduate and graduate programs. Send résumé, research interests, and three references to: **Dr. Frank Fisher, Biology Department, Rice University, Houston, Texas 77001. Equal Opportunity/Affirmative Action Employer.**

The **DEPARTMENT OF POULTRY SCIENCE** at Oregon State University invites applications for a position at the **ASSISTANT PROFESSOR** level in the field of poultry genetics-endocrinology, involving both research and teaching responsibilities. The Ph.D. degree is required. Salary range: \$19,500 to \$22,000. The position will be available 1 October 1980 but no later than 1 January 1981. Application deadline is 15 June 1980. *Oregon State University is an Affirmative Action/Equal Opportunity Employer and complies with Section 504 of the Rehabilitation Act of 1973.* For information about the department and the requirements for the position write:

**Dr. G. H. Arscott, Head
Department of Poultry Science
Oregon State University
Corvallis, Oregon 97331**

The National Oceanic and Atmospheric Administration (NOAA) is recruiting for an **ASSISTANT PROGRAM DIRECTOR** (animal aquaculture), GS-13 (\$29,375) or GS-14 (\$34,713), Office of Sea Grant, Office of Research and Development. This is a challenging career opportunity in which the incumbent serves as the animal aquaculture specialist, developing and directing Sea Grant Programs in this area. Also serves as program monitor for assigned institutions and projects with a view toward development, improvement, and sound management of grantee programs. Considerable travel is required in the conduct of onsite reviews. Bachelor's degree or equivalent in marine or biological science plus 3 years of professional experience directly related to these duties are required.

Applicants must forward Standard Form 171 applications by 5 May 1980 to: **NOAA, Office of Personnel, 6001 Executive Boulevard, Rockville, Md. 20852, attention: Rebecca Williams, MB/PER 11.** *The Department of Commerce is an Equal Opportunity Employer.*

The University of California, Irvine, College of Medicine, offers a position for an **ASSISTANT RESEARCH NEUROPHYSIOLOGIST**, Ph.D., to direct study of clinical uses of evoked potentials in neurological disorders with particular attention to electrophysiological correlates of cognitive disorders. Knowledge of digital computer use and programming, and prior experience in human evoked potentials required. Position available 1 July 1980. Deadline for receipt of applications is 2 May 1980. Send curriculum vitae and request three referees to send letters of reference to: **Arnold Starr, M.D., Department of Neurology, University of California, Irvine, Calif. 92717.** Appointment is for 3 years duration, contingent on grant funding. *Affirmative Action Employer.*

The Boston Veterans Administration (VA) Medical Center invites applications for the position of **ASSOCIATE CHIEF OF STAFF FOR RESEARCH**. Candidate should possess administrative and research skills to warrant appointment at associate or full professorial rank. Address inquiries to: **Daniel Deykin, M.D., Chief, Medical Service, Boston VA Medical Center, 150 South Huntington Avenue, Boston, Mass. 02130.** *An Equal Opportunity/Affirmative Action Employer.*

BOTANIST. Rollins College anticipates a faculty opening in botany for September 1980. Teaching responsibilities include plant kingdom, general biology, and may include courses in environmental studies as well as other appropriate courses for nonmajors. The candidate should possess the Ph.D. and have strong interest in both teaching and interaction with undergraduate students. Interested persons should send curriculum vitae, statement of interest in teaching, and three letters of recommendation to:

**Dr. James W. Small, Head
Department of Biology
Box 2493
Rollins College
Winter Park, Florida 32789**

An Equal Opportunity/Affirmative Action Employer

CLINICAL RESEARCH ASSOCIATE.

Cordis Corporation, a recognized leader in cardiac pacemaker technology, has a position available for a **Clinical Research Associate**. The individual will be responsible for preparing protocols and monitoring clinical investigations of cardiovascular and/or neuro-surgical medical devices. Duties will also include data analysis and writing of reports. The position requires a scientist who can interface with clinicians and engineers with facility.

A masters degree in a biological science or engineering is required. Ph.D. is desirable. Experience in a health care environment,

technology research, or cardiovascular physiology helpful.

Send curriculum vitae and summary of professional interests to: **Professional Recruitment, Cordis Corporation, P.O. Box 370428, Dept. A-2, Miami, Florida 33137.** For a brief recorded message about the past, present and future of Cordis, call toll free 800-327-7894. (With the exception of Florida residents.)

cordis.

An Equal Opportunity Employer M/F

ECOLOGISTS

Be part of far-reaching environmental studies at a renowned research organization.

Argonne National Laboratory is engaged in finding practical solutions to the nation's energy problems, investigating the fundamentals of physical sciences, and in protecting our natural and human environments.

We have two immediate Ecologist/Assistant Ecologist openings for candidates with a PhD or equivalent in Terrestrial Biology, and the following backgrounds:

1. A strong academic emphasis on wildlife management; research experience with North American fauna (special emphasis on vertebrate life forms); and preferably working knowledge of State and Federal legislation relative to terrestrial environmental issues. Will be part of a multidisciplinary team preparing independent assessments of the impact of a wide variety of energy facilities on the environment. Will participate as expert witness at Federal hearings.
2. Strong background in soil chemistry, soil biology, or soil modeling. Will join team preparing assessments of the environmental impacts of energy facilities, concentrating on evaluating the effects atmospheric pollutants, trace elements, or other toxic substances and factors have on soil/plant relationships in ecosystems. Will include assessment, determining transport, transformation and fate of these substances.

Investigate fine salary, benefits, and potential for recognition by sending full curriculum vitae and salary history to:

Mr. Walter McFall, Box E15, Argonne National Laboratory, 9700 So. Cass Avenue, Argonne, Illinois 60439.



**ARGONNE
NATIONAL
LABORATORY**

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POSITIONS OPEN

The Department of Biology, Spelman College, Atlanta, Ga., is seeking applicants for a **CELLULAR AND MOLECULAR BIOLOGIST** for an anticipated tenure-track position beginning August 1980. All requirements for Ph.D. must be fulfilled. Salary negotiable. Send résumés, transcripts, and three letters of recommendation to: Dr. Kathryn A. Brisbane, Dean of the College, Spelman College, Box 49, 350 Spelman Lane, SW, Atlanta, Ga. 30314.

An Equal Opportunity Employer

The Department of Biology, Spelman College, Atlanta, Ga., is seeking applicants for a **DEVELOPMENTAL BIOLOGIST** for an anticipated tenure-track position beginning August 1980. All requirements for Ph.D. must be fulfilled. Salary negotiable. Send résumés, transcripts, and three letters of recommendation to: Dr. Kathryn A. Brisbane, Dean of the College, Spelman College, Box 49, 350 Spelman Lane, SW, Atlanta, Ga. 30314.

An Equal Opportunity Employer

POSITIONS OPEN

The **DEPARTMENT OF CHEMISTRY—TEXAS TECH UNIVERSITY** invites applications for a temporary 1-year appointment for the 1980-1981 academic year from persons qualified to teach undergraduate and first-year graduate biochemistry courses. A Ph.D. is required. Facilities are available for independent or collaborative research. Send résumé and two letters of recommendation to: Dr. D. B. Knaff, Department of Chemistry, Texas Tech University, Lubbock, Texas 79409. *An Equal Opportunity/Affirmative Action Employer.*

ECOLOGIST—BOTANIST

Growing Atlanta-based consulting firm seeks experienced ecologist/botanist with excellent writing skills, Ph.D. in botany, and knowledge of Florida flora. Two or more years of experience with environmental consulting firm desired. Send résumés and salary requirements to: Dr. S. McCuskey, Applied Biology, Inc., 641 DeKalb Industrial Way, Decatur, Georgia 30033.

POSITIONS OPEN

ASSISTANT PROFESSOR BIOCHEMISTRY IN PEDIATRICS

The Departments of Pediatrics and Biochemistry, Case Western Reserve University, will fill at the rank of assistant professor a tenure-track position in biochemical genetics. Applicants should have a Ph.D. plus 2 years of postdoctoral training with strong evidence of research productivity.

Send résumé and name of three references to: Dr. Irwin A. Schafer, Division of Medical Genetics, Cleveland Metropolitan General Hospital, 3395 Scranton Road, Cleveland, Ohio 44109. *Equal Opportunity/Affirmative Action Employer.*

CHAIRPERSON

The Department of Chemistry at Indiana University-Purdue University at Indianapolis (IUPUI) invites applications for the position of chairperson. Candidates must have strong leadership abilities to represent the department externally, be successful in program development, and be established contributors to the chemical literature. The department of 15 has excellent programs at both the undergraduate and graduate (master's) levels. Active research complements excellent teaching. A novel master's program links the department with local industry. The university of 21,000 plus students provides a challenge for growth in an urban setting. Application deadline is 15 May 1980. Send curriculum vitae to: Dr. Erwin Boschmann, Department of Chemistry, Indiana University-Purdue University at Indianapolis, 1201 East 38 Street, Indianapolis, Ind. 46205. *IUPUI is an Equal Opportunity/Affirmative Action Employer.*

CHAIRMAN, DEPARTMENT OF GEOLOGY DALHOUSIE UNIVERSITY

The Department of Geology, Dalhousie University, seeks a chairman from July 1981. The post could carry the rank of full professor. The new chairman should be able to provide leadership to the department and develop the present teaching and research activities, which emphasize marine earth science, Appalachian geology, and undergraduate teaching, including a proposed new B.Sc. programme in marine geological resources.

The department has a faculty of 12 with excellent technical support, is well equipped for marine work, geophysics, and geochemistry, and graduates around 20 B.Sc. and 10 M.Sc.'s and Ph.D.'s each year.

Confidential enquiries from suitable persons in all the subdisciplines of the earth sciences should be directed to: D. J. W. Piper, Chairman, Department of Geology, Dalhousie University, Halifax, Nova Scotia, Canada B3H 3J5; telephone: 902-424-2363. Formal applications, giving the names of three referees, should be made to: Dean of Arts and Science, Dalhousie University, Halifax, Nova Scotia, Canada B3H 3J5.

CHILD PSYCHIATRIST at instructor or assistant professor level to work on 34-bed child (ages 5 to preadolescence) inpatient unit. Responsibilities would include supervision of intensive psychotherapy, psychopharmacological medication, consultation to milieu programs, teaching of residents, fellows, and medical students. Research interests pertinent to inpatient setting required. Applicants should be Board-eligible or Board-certified in child psychiatry. Please send curriculum vitae to:

Jose Carrera, M.D.
Chief, Youth Inpatient Program
Children's Psychiatric Hospital
Department of Psychiatry
University of Michigan
Ann Arbor, Michigan 48109

Code 180010. *A nondiscriminatory, Affirmative Action Employer.*

CLINICAL CHEMIST. Doctoral degree and experience in general clinical chemistry, toxicology, and endocrinology is required for position as assistant head of Clinical Chemistry Laboratory, with a faculty appointment in the Department of Pathology. Responsibilities will be for service work within the Clinical Laboratories, teaching residents and graduate students, and the performing of research. Applicants will be reviewed without regard to race, color, sex or creed. We encourage applications from women and minorities. The University of California is an Equal Opportunity Employer. Send curriculum vitae to: Denis O. Rodgers, Ph.D., Professor of Pathology, Center for the Health Sciences, University of California, Los Angeles, Calif. 90024.

DIRECTOR

PRINCETON PLASMA PHYSICS LABORATORY

PRINCETON UNIVERSITY

The Director of the Princeton Plasma Physics Laboratory is the Laboratory's Chief Executive Officer, responsible for providing scientific and administrative leadership for the Laboratory's research and development programs in thermonuclear fusion. The Laboratory employs approximately 1,125 persons, including 125 scientists, 200 engineers, 480 technicians, and 320 administrative and support staff members. The annual operating budget currently is in excess of \$50,000,000 in addition to substantial plant and capital equipment funds for the Tokamak Fusion Test Reactor, now under construction.

The Plasma Physics Laboratory is a research and development activity funded by the United States Department of Energy. The Director reports to the Provost of Princeton University, and is the University Officer responsible for establishing and carrying out the Laboratory's scientific program, which is developed in close consultation with and approved by the Department of Energy as part of the National Fusion Program. In addition to his primary responsibility in relation to the fusion program, the Director is also responsible for coordination and liaison with appropriate academic departments and programs within the University.

Requirements for the position include demonstrated successful executive leadership in managing research and development programs and a record of exceptional scientific achievement in either the field of plasma physics or a related field.

Nominations and applications (including resume) should be sent to:

PROVOST NEIL L. RUDENSTINE
3 NASSAU HALL



Princeton University
PRINCETON, NEW JERSEY 08544

*An Equal Opportunity/Affirmative Action Employer
Minority/Female/Handicapped/Veteran*

POSITIONS OPEN

DEVELOPMENTAL BIOLOGISTS are invited to submit their curriculum vitae for consideration for an appointment as assistant or associate professor of anatomy at the University of California, San Francisco. Requirements include demonstrated capabilities in instruction of health professions and graduate students, a funded independent research program, a Ph.D. or M.D. degree, and appropriate postdoctoral experience. Preference will be given to applicants with research experience in immunological, biochemical, and morphological approaches to problems of early mammalian development. *The University of California is an Equal Opportunity/Affirmative Action Employer and encourages applications from women and minority persons.* Applications or nominations together with the names of three references should be forwarded to: **Professor L. E. Glass, Chair, Developmental Biology Search Committee, Department of Anatomy, University of California Medical School, San Francisco, California 94143.** Deadline for these applications is 30 May 1980.

ENDOCRINOLOGIST. Department of Physiology seeks molecular endocrinologist interested in teaching and joining a program investigating the mechanism of steroid-induced gene expression in mammals. Appointment at assistant professor level limited to 5 years. Postdoctoral experience required. Position available 1 July 1980. Send curriculum vitae and two references to: **Dr. N. Briggs, Chairman, Department of Physiology, Medical College of Virginia, Box 551, Richmond, Va. 23298.**

ENVIRONMENTAL MICROBIOLOGIST: Ph.D. academic staff for fall to teach half-time in biology in the areas of microbiology for medical technicians, medical microbiology, general biology and/or botany. Additional half-time appointment aimed at development of a research program in the area of natural aquatic microbiology and/or interactions between microbes and pollutants. Send résumé, transcripts, and three letters of reference by 12 May 1980 to: **Dr. Donald Bahnick, Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, Wis. 54880.** *An Equal Opportunity/Affirmative Action Employer.*

PHARMACOLOGISTS PULMONARY

Last Fall we opened a modern Pharmaceutical Research and Administration Center, doubling our capacity to discover and develop potentially valuable ethicals. We are the US subsidiary of ICI Ltd. (UK) whose research efforts introduced the first beta blocker, clofibrate, halothane, tamoxifen citrate, and chlorhexidine. Our STUART Division is the manufacturing and marketing arm for discoveries which promise to place us in a leading position among research-intensive drug firms in the U.S. In addition to established programs, our expanding Immuno-Pharmacology/Pulmonary group has these immediate manpower needs:

RESEARCH BIOCHEMIST

Ph.D. in Biochemistry to perform in vitro evaluation of enzyme inhibitors. Should demonstrate familiarity with kinetic behavior, and isolation and purification of naturally occurring proteases. Will collaborate with biologists in model development characterization. Post-doctoral research experience preferred, but not required.

RESEARCH PHARMACOLOGIST

Ph.D. in Pharmacology, Pathology, or Biology to evaluate drug candidates of potential therapeutic utility. Will utilize in vivo models of emphysema, and requires small animal experience. Post-doctoral experience preferred, but not required.

We also have a need for a Biochemist/Immuno-Chemist (BS/MS) with experience in chromatography and electrophoretic separation of natural products. To work on isolation of serum and tissue components and in vivo anti-arthritis testing.

Campus setting, 26 miles south of Philadelphia. Comprehensive benefits, including unique tax sheltered investment program. Please submit detailed CV in confidence. Principals only.

C. T. Brodigan, Employee Relations



ICI Americas Inc.
Wilmington, Delaware 19897

An Equal Opportunity Employer M/F

Glaxo Research Director U.K.

Applications are invited from outstanding Scientists for the position of Research Director of our Greenford Division located immediately west of London, which is the largest laboratory research centre in the Glaxo Group. Its scientific staff numbers about 650 and includes 110 PhD's and 540 other graduates.

The main current projects are concerned with microbiology especially bacterial chemotherapy, and pharmacology of the brain, and there are growing research efforts in immunology, oncology and animal health.

The successful candidate will probably be a Biochemist or Cell Biologist with a medical or other broad biological background. He/she must be genuinely interested in the search for better medicines for human and veterinary use and will have every opportunity to pursue his/her own ideas. The salary and other conditions of employment will be appropriate for such a senior appointment.

Applications should be sent to the Director of Administration, Glaxo Group Research, Clarges House, Clarges Street, London W1Y 8DH, England.

POSITIONS OPEN

DEAN, COLLEGE OF ENGINEERING UNIVERSITY OF WASHINGTON

Applications and nominations are invited for the position of dean, College of Engineering. Desired starting date: 1 September 1980, or as soon as possible thereafter. The University of Washington is the largest public university in the northwest region with an orientation towards graduate education and research. The College of Engineering has a faculty of 182, 3574 undergraduate students, and 753 graduate students in master's and doctorate programs. Desired qualifications include an earned doctorate, an established reputation in engineering education as an engineer or applied scientist, a strong record of research accomplishment, and competence in organizational leadership and management. Salary open. Deadline for nominations and applications: 10 May 1980.

Nominations or applications with résumés should be sent to:

Office of the Provost
301 Administration Building, AH-30
University of Washington
Seattle, Washington 98195

An Equal Opportunity/Affirmative Action Employer

DIRECTOR—University of California Center for Occupational Health and Safety and
PROFESSOR, Occupational Medicine, Department of Community and Environmental Medicine, College of Medicine, University of California, Irvine.

The University of California, Irvine, seeks an internationally recognized scholar in the field of occupational health for appointment as director of a developing Center for Occupational Health and Safety. A high level of achievement is required in occupational health-oriented research and teaching as is a strong interest in developing multidisciplinary programs which focus on health hazards in the workplace. The selected candidate shall qualify for a professorship with Academic Senate membership.

Evidence of effective relationships with governmental agencies, labor organizations, and industrial management is highly desirable.

The University of California is an Affirmative Action Employer. Please send curriculum vitae, a brief statement of current research interests, and the names of three or more references to:

Frederick Reines
Chair of Search Committee and Professor of Physics
University of California, Irvine
Irvine, Calif. 92717

FACULTY POSITION

The Department of Biochemistry, State University of New York (SUNY) at Buffalo, Schools of Medicine, Dentistry and Pharmacy, is seeking an assistant or associate professor. Qualifications for this tenure-track position include a positive, long-term commitment to teaching, a demonstrated proficiency in research and interest in training Ph.D. candidates. Preference will be given to applicants interested in the regulation of metabolism in mammalian systems. Complete applications must include curriculum vitae, a statement of long-term research objectives, and preprints or reprints of publications. Applicants should have three letters of recommendation sent to:

Dr. Daniel J. Kosman
Department of Biochemistry
SUNY at Buffalo
102 Cary Hall
Buffalo, New York 14214

Applications should be postmarked no later than 1 June 1980.

An Equal Opportunity/Affirmative Action Employer

GENETICS FACULTY POSITION

Applications are invited from individuals interested in an assistant or associate professorship (12-month, tenure-track appointment) who have an outstanding record of achievement and innovation. Duties include teaching graduate/undergraduate genetics students and conducting a vigorous and creative research program. Send curriculum vitae, summary of research interests, and three letters of recommendation by 15 May 1980 to: Dr. Alan G. Atherly, Department of Genetics, Iowa State University, Ames, Iowa 50011.

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

POSITIONS OPEN

ECOLOGY AND EVOLUTION FACULTY. The Department of Ecology and Evolution, State University of New York (SUNY) at Stony Brook, announces two positions to be filled as of 1 September 1980. **FIRST**, a 1-year temporary position: instructor or assistant professor level, with primary teaching responsibilities in introductory biology and elementary population biology. Research interests should lie within the area of population biology. **SECOND**, a tenure-track position, to be filled at the level of assistant professor. Applicants should have demonstrated research potential within the area of terrestrial ecology. Teaching duties will be undergraduate and graduate instruction in ecology and the applicant's specialty. Please state clearly position for which you are applying. For both positions, please forward curriculum vitae, copies of publications, and three letters of recommendation to: Dr. Douglas J. Futuyma, Search Committee, Department of Ecology and Evolution, SUNY at Stony Brook, Long Island, N.Y. 11794. An Equal Opportunity/Affirmative Action Employer.

FACULTY POSITION IN PATHOLOGY. The Department of Pathology at University of California, Los Angeles (UCLA) School of Medicine invites applications for the position of **ASSISTANT PROFESSOR**. Candidates must be Board-eligible or Board-certified in anatomic pathology or anatomic and clinical pathology and must have an active interest in research. *Qualified women and minority candidates are encouraged to apply.* Send curriculum vitae, publication list, brief résumé of research program, and names of four referees to: Julien L. Van Lancker, M.D., Department of Pathology, UCLA School of Medicine, Los Angeles, California 90024. An Equal Opportunity/Affirmative Action Employer.

FACULTY POSITION IN PLANT BIOLOGY UNIVERSITY OF CHICAGO

The Department of Biology invites applications for a faculty position in plant biology. We are seeking an individual who is preferably working in part at the whole organism level, and with research and teaching interests that will complement the existing program. Areas of interest include, but are not limited to, ecology and physiology. Applicants must have demonstrated potential for development of an independent research program and excellence in teaching. Curriculum vitae, bibliography, and the names and addresses of references may be sent to:

Chairman
Plant Biology Search Committee
Department of Biology
The University of Chicago
5630 South Ingleside Avenue
Chicago, Illinois 60637

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

FACULTY POSITION IN BIOLOGY

Applications are invited for an anticipated opening in the Biology Department at Tougaloo College, a private liberal arts college, beginning 15 August 1980. The candidate must have a strong background in zoology and must be capable of teaching general biology, comparative anatomy, histology, and developmental biology. Applicants must have a Ph.D. or must be a candidate for the degree. Salary and rank will be dependent upon the qualifications. Send curriculum vitae and letters of reference to: Dr. Asoka Srinivasan, Chairman, Biology Department, Tougaloo College, Tougaloo, Miss. 39174.

FACULTY POSITION IN CLINICAL NUTRITION

Southwestern Medical School, of the University of Texas Health Science Center at Dallas, is seeking a distinguished research scientist with expertise in clinical nutrition to direct the development of a major academic and research program in clinical nutrition. Teaching responsibilities include participation in the medical education of undergraduate students and residents. Applicants should have an M.D. degree and demonstrated scientific contributions in clinical nutrition. Interested individuals should send curriculum vitae and a description of research interests to:

Dr. Ronald W. Estabrook, Chairman
Search Committee in Clinical Nutrition
Department of Biochemistry
Southwestern Medical School
University of Texas Health Science Center
5323 Harry Hines Boulevard
Dallas, Texas 75235

Equal Opportunity/Affirmative Action Employer

POSITIONS OPEN

UNIVERSITY OF CALIFORNIA FACULTY POSITION IN BIOCHEMISTRY

The Department of Biochemistry invites applications for a tenure-track appointment anticipated to be at the level of **assistant professor**. Candidates should have broad training and interests in biochemistry and molecular biology. Postdoctoral experience is desirable. Preference will be given to persons with expertise in one of three areas: (i) chemistry of nucleic acids and nucleoproteins, and including their interaction with drugs, mutagens, and carcinogens, (ii) application of recombinant DNA technology to study gene organization and expression, or (iii) use of physical or chemical methods to study the structure and function of biological membranes. Responsibilities will include development of an independent research program and teaching at the undergraduate and graduate level. The position is available 1 January 1981. Candidates should send detailed curriculum vitae, names of four persons who may be contacted for reference, and a summary of research interests to: **Chair, Biochemistry Search Committee, Department of Biochemistry, University of California, Riverside, California 92521** before 15 June 1980. *The University of California is an Equal Opportunity/Affirmative Action Employer; all qualified candidates, minorities and women are encouraged to apply.*

HYBRIDOMAS

Wanted: vice president for research and development for a new company creating products utilizing monoclonal antibodies. Contact: Robert F. Johnston, Pretty Brook Road, Princeton, N.J. 08540; telephone: 609-924-3131.

IMMUNOLOGY FACULTY POSITION. The University of Florida, Department of Immunology and Medical Microbiology in the College of Medicine, invites applicants for a faculty position in immunology. Teaching responsibilities include professional (M.D., D.V.M., D.D.S.) and graduate students in immunology. Development of an independent research position is required. The position is anticipated to be open as of September 1980. Candidates should send curriculum vitae and names of three references by 1 June to: Dr. Kenneth I. Berns, Department of Immunology and Medical Microbiology, University of Florida, College of Medicine, Box J-266, Gainesville, Florida 32610. *Equal Opportunity/Affirmative Action Employer, M/F.*

LABORATORY-ELECTRON MICROSCOPIST—Experience in electron microscopy, histology, and staining, dealing with skin desirable. A research setting background is preferred. Opportunity for a faculty appointment. Please send résumé to: **Personnel Department, THE MOUNT SINAI MEDICAL CENTER, 19 East 98 Street, New York, N.Y. 10029.** An Equal Opportunity Employer.

UNIVERSITY OF OXFORD ENGLAND CHRIST CHURCH UNIVERSITY LECTURESHIP IN MOLECULAR BIOPHYSICS

Applications are invited for a University Lectureship in Molecular Biophysics (protein chemistry) in the Zoology Department. The lectureship may be associated with a stipendiary official studentship (tutorial fellowship) in biochemistry at Christ Church. Further particulars from: **Professor Sir David Phillips, F.R.S., Department of Zoology, South Parks Road, Oxford, OX1 3PS, England.** The closing date for applications (eight copies, one in the case of overseas candidates), naming three referees, is 2 May 1980. Late applications will be considered.

Wisconsin—MEDICAL GENETICIST. The Department of Pediatrics of the Medical College of Wisconsin is seeking a geneticist with interest in biochemical genetic disorders. Faculty appointment and salary appropriate to experience. The Genetics and Birth Defects program is located at Milwaukee Children's Hospital, which is a 180-bed comprehensive health care facility for children. Send inquiries with curriculum vitae to: **Jurgen Herrmann, M.D., Director of Genetics and Birth Defects, Milwaukee Children's Hospital, 1700 West Wisconsin Avenue, Milwaukee, Wis. 53233; telephone 414-931-4039.** An Equal Opportunity/Affirmative Action Employer, M/F/H.

MOLECULAR BIOLOGISTS

Openings are available at New England Biolabs' new laboratory in Beverly, Massachusetts, USA.

Ph.D. level: Experience in cloning eukaryotic DNA, *in vitro* translation and other recombinant DNA techniques is essential.

MS or BS level: Minimum of two years experience in the isolation and purification of proteins, enzymology and quantitative biochemistry.

New England Biolabs, Inc. is a small group of microbiologists and molecular biologists involved in the production of restriction endonucleases and other enzymes useful for DNA research. New programs are being initiated to use genetic engineering for the production of proteins applicable to world health problems.

Send curriculum vitae to N.E. Biolabs, Inc., 283 Cabot Street, Beverly, MA 01915, USA.



283 Cabot Street
Beverly, MA 01915

AIBS Conference on Photobiology and Radiation Biology University of Chicago 29 June—12 July 1980

The AIBS is offering an intensive two-week course covering the 14 major subdivisions of photobiology and the biological effects of ionizing radiation at the molecular, cellular, and organismal levels. Because photobiology has emerged as a distinct discipline in recent years, there is a need to introduce it into the curriculum. The conference is designed to help two- and four-year college faculty set up new courses or update existing ones.

To be held at the University of Chicago Center for Continuing Education, the minicourse will be headed by Drs. Winslow R. Briggs and Kendrick C. Smith. Visiting lecturers will include Drs. Martyn M. Caldwell (environmental photobiology), Robert Kallman (radiation biology), John Lisman (vision), Beatrice M. Sweeney (chronobiology and bioluminescence), and Frederick Urbach (photomedicine).

All applications must include curriculum vitae, summary of teaching experience, and a brief statement of how attendance will strengthen teaching performance or institutional programs. Female, minority, and handicapped faculty are specifically encouraged to apply. **Send applications to Dr. Winslow Briggs, Director, Department of Plant Biology, Carnegie Institution of Washington, Stanford, CA 94303.**

Application Deadline: 20 May 1980

(Notice of Acceptance: 1 June 1980)

For brochure and further information, write to:

Dr. Arthur C. Gentile
American Institute of Biological Sciences
1401 Wilson Blvd.
Arlington, VA 22209

*This conference is supported by the National Science Foundation,
Division of Scientific Personnel Improvement.*

CHIEF, PULMONARY TOXICOLOGY SECTION

The National Institute of Environmental Health Sciences, National Institutes of Health, Public Health Service, invites applications for individuals interested in planning and supervising a new pulmonary toxicology section. The incumbent will plan, lead, and conduct studies on biochemical and cellular mechanism of pulmonary injury caused by environmental agents. Research goals and objectives will be developed by the incumbent in consultation with the Chief of Laboratory of Pulmonary Function and Toxicology. The incumbent will supervise 7 to 10 permanent employees (some of which will have to be recruited) in addition to several students and postdoctoral level investigators. Research facilities are equipped to conduct *in vitro* and *in vivo* studies on the tissue, cellular, ultrastructural and molecular level. Inhalation exposure laboratories are available.

This is a permanent position that will be filled through Federal Civil Service, or PHS Commissioned Officer appointment. A Ph.D., M.D., or equivalent and extensive postdoctoral research experience in pulmonary biology, toxicology and/or biochemistry is required. Only individuals with an outstanding research record and the ability to conduct and direct research independently will be considered.

Salary range: \$32,000 to \$50,112 per annum.

The NIEHS is an equal opportunity/affirmative action employer and applications from minority and women candidates are encouraged.

If interested, please send letter of application, CV, career goals, and names and addresses of references by May 23, 1980, to: Dr. Paul Nettiessheim, Chief, Laboratory of Pulmonary Function and Toxicology, NIEHS, P.O. Box 12233, Research Triangle Park, NC 27709.

NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES

POSITIONS OPEN

LABORATORY DIRECTOR— DEPARTMENT ADMINISTRATOR Department of Biochemistry, Rice University

Responsibility for the administrative and service operations of the department. Duties will include fiscal management of budgets, personnel management of staff, research administration of grants and contracts. Substantial previous experience in the above areas and a reasonable scientific background are required. Send résumé and three letters of reference to: **Professor George J. Schroepfer, Jr., c/o Jan Griffin, Allen Center, Rice University, Houston, Texas 77001.**

An Equal Opportunity/Affirmative Action Employer

MICROBIOLOGIST—ASSISTANT PROFESSOR

Available September 1980. Ph.D. in immunology or microbial physiology. Postdoctoral experience desirable. Applicants should be able to develop a strong research program, attract external funding, and participate in teaching undergraduate and graduate students. Curriculum vitae, reprints, statement of research goals, and three letters of recommendation should be sent to: **Dr. Caryl E. Heintz, Chairman, Search Committee, Department of Biological Sciences, Texas Tech University, Lubbock, Texas 79409** by 1 July 1980. *An Affirmative Action/Equal Opportunity Employer.*

MOLECULAR BIOLOGISTS

If you are interested in a challenging career at the Ph.D., M.S., or B.S. level with a leader in molecular biology, Bethesda Research Laboratories (BRL) is offering senior and junior positions in the areas of:

ENZYMOLGY—Purification of nucleic acid enzymes using state-of-the-art techniques; improving these techniques and exploring alternative methods;

DNA SEQUENCING—Contract and R & D sequencing of nucleic acids;

DNA SEPARATION/PURIFICATION—Contract DNA separation and exploring alternative methods for separating nucleic acids; large-scale purification of DNA from cells and viruses;

CLONING/MICROBIOLOGY—Experience in cloning technology or basic microbiology to work in challenging contract R & D program;

BIO-ORGANIC SYNTHESIS—Organic chemists to work on protein chemistry, nucleic acid synthesis, and affinity matrices; and

HYBRIDOMA—General background in immunology and cell culture; specific experience in hybridoma techniques to work on clinical applications.

For information, telephone or write:

BETHESDA RESEARCH LABORATORIES, INC.
411 North Stonestreet Avenue
Rockville, Maryland 20850
Telephone: 301-840-8000 or 8043

BRL is an Equal Opportunity Employer

POSTDOCTORAL (BIOCHEMISTRY, MOLECULAR BIOLOGY). Position in molecular and endocrinology available immediately for studying peptide hormone synthesis and regulation. Experience in peptide purification and characterization; cell-free translation, nucleotide chemistry and sequencing, and recombinant DNA methods. Send curriculum vitae and three letters of reference to: **Dr. David Orth, Professor of Medicine, Vanderbilt University School of Medicine, Nashville, Tenn. 37232.**

POSTDOCTORAL FELLOW: available 1 July 1980 to investigate cation transport and phospholipid metabolism in lens. Primary training in biochemistry is desirable. Previous training in ocular studies would be valuable but not necessary. Salary is approximately \$15,000. Send curriculum vitae and three letters of recommendation to: **Dr. Douglas R. Pfeiffer, The Hormel Institute, University of Minnesota, 801 16th Avenue, NE, Austin, Minn. 55912.** *An Equal Opportunity Educator and Employer.*

POSTDOCTORAL FELLOW in reproductive biology. Available immediately to study hormone-mediated differentiation of ovarian cells. Experience in electron microscopic autoradiography and/or immunocytochemistry, hormone binding desirable. Salary: \$14,000. Send curriculum vitae and three letters of reference to: **Dr. Thomas M. Crisp, Department of Anatomy, Georgetown University, 3900 Reservoir Road, NW, Washington, D.C. 20007.** *An Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

PHYSIOLOGIST, M.S. Immediate opportunity to teach physiology courses at first professional degree level at National College of Chiropractic. Appointment includes supervision and coordination of physiology laboratories. Good opportunity for advancement. Research is encouraged. Credentials and experience should warrant full-time rank. To apply, send curriculum vitae, and have official transcripts of all undergraduate and graduate education and at least three letters of reference forwarded to: **Dr. C. C. Kuehner, Director, Division of the Basic Sciences, National College of Chiropractic, 200 East Roosevelt Road, Lombard, Ill. 60148.**

POSTDOCTORAL FELLOW

NIH-sponsored Institutional Training Grant position available for postdoctoral fellow in heart muscle ultrastructure. Applicant must have a Ph.D. and experience in electron microscopy and in some aspect of muscle research. The candidate must also possess a resident visa or be a U.S. citizen. Send letter of application, curriculum vitae, and the names of references by 15 May to: **Dr. Thomas F. Robinson, Cardiovascular Research Laboratories, Albert Einstein College of Medicine, 1300 Morris Park Avenue, Bronx, N.Y. 10461.**

The University of California, Irvine, College of Medicine, offers a **POSTDOCTORAL POSITION IN NEUROPHYSIOLOGY** of evoked potentials beginning July through 1 September 1980. Experience in auditory and/or somatosensory physiology in experimental animals required. Projects to be investigated are the neural mechanisms of evoked potentials. Deadline for receipt of applications is 2 May 1980. Send curriculum vitae and request three referees to send letters of reference to: **Arnold Starr, Department of Neurology, University of California, Irvine, Calif. 92717.** *Affirmative Action Employer.*

POSTDOCTORAL POSITION available July 1980 in area of membrane biosynthesis and assembly in prokaryotic organisms. Ph.D. in biochemistry or related field. Please send curriculum vitae and names of three references to: **Dr. C. H. MacGregor, Department of Microbiology, Georgetown University Medical School, Washington, D.C. 20007.**

Equal Opportunity/Affirmative Action Employer

POSTDOCTORAL POSITION to work on the hormonal control of glycogen metabolism, protein phosphorylation, and protein kinases. Projects could range from studies with purified proteins to hormone action in whole tissue systems. Please send curriculum vitae and the names of three referees to: **Dr. Peter J. Roach, Department of Biochemistry, Indiana University School of Medicine, Indianapolis, Indiana 46223.** Telephone: 317-264-2931. *An Equal Opportunity/Affirmative Action Employer, M/F.*

POSTDOCTORAL POSITION in male reproductive biology is immediately available at McGill University. Experience desired in tissue culture, steroid biochemistry, protein purification, and/or animal surgery. Send résumé and letters of recommendation to: **Dr. B. Robaire, Department of Obstetrics and Gynecology, Royal Victoria Hospital, 687 Pine Avenue West, Montréal, Québec, Canada H3A 1A1.**

POSTDOCTORAL POSITION available for biochemist or virologist interested in studying the role of protein, phospholipid, and nucleic acid methylations in viral infections. Experience with cell culture systems would be desirable. Position available starting summer or fall 1980 and renewable. Salary: \$11,000 to \$13,000 per annum, depending on qualifications. Send curriculum vitae and two letters of recommendation to: **Dr. Ronald T. Borchardt, Smissman Research Laboratories, 2095 Avenue A, West Campus, University of Kansas, Lawrence, Kansas 66045.** Deadline for application: 15 May 1980. *Kansas University is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL RESEARCH ASSOCIATE

Position available immediately for Ph.D. or M.D. with strong background in biochemistry of membrane proteins. This laboratory has isolated somatic mutant cells with lesions in a human genetic disease, pseudohypoparathyroidism. These mutations are used in a combined genetic and biochemical effort to define the molecular components of hormone-sensitive adenylate cyclase. Send résumé and three letters of reference to: **Dr. Henry R. Bourne, 1089 Moffitt Hospital, University of California Medical Center, San Francisco, Calif. 94143.** *An Equal Opportunity Employer.*

POSITIONS OPEN

POSTDOCTORAL POSITION IN BIOCHEMISTRY, available 1 September 1980. Modification of proteins and study of protein-hormone interaction using optical and magnetic resonance techniques. Experience in protein chemistry and some knowledge of organic chemistry essential. Send curriculum vitae and names of references to: **Dr. M. Blumenstein, Department of Biochemistry and Pharmacology, Tufts University School of Medicine, 136 Harrison Avenue, Boston, Mass. 02111.**

POSTDOCTORAL POSITIONS—CELL BIOLOGY. Recent Ph.D.'s to study composition, function, and membrane attachment to the cytoskeleton in cultured cells. Salary negotiable. Send curriculum vitae, publications, and references to: **Dr. John Condeelis, Department of Anatomy, Albert Einstein College of Medicine, 1300 Morris Park Avenue, Bronx, N.Y. 10461.**

An Equal Opportunity/Affirmative Action Employer

POSTDOCTORAL POSITION for physical chemist or surface chemist to study basic mechanism in calcium oxalate urinary stone formation. Strong interaction with Material Science Department. Salary \$14,000 per annum. Starting date: June or July 1980. Send résumé and the names of three references to:

Birdwell Finlayson, M.D., Ph.D.
Urology, Box J-247 JHMHC
University of Florida
Gainesville, Fla. 32610

Equal Opportunity/Affirmative Action Employer

POSTDOCTORAL POSITION available immediately. Organic or medicinal chemistry Ph.D. with strong background in synthesis to join multidisciplinary group working in the areas of chemical carcinogenesis and organ imaging agents. Send résumé and names of three references to: **Dr. Thomas J. Curphey, Department of Pathology, Dartmouth Medical School, Hanover, N.H. 03755.**

POSTDOCTORAL RESEARCH ASSOCIATE position available immediately in a group studying lymphocyte responses to proliferating cells. Emphasis on T-cell responses to EB virus induced B-cell proliferation. Individuals preferred with experience in lymphocyte separation, cytotoxicity and lymphokine assays, serology, and tissue culture. Three-year grant; salary: \$17,000. Send curriculum vitae and references to:

Dr. Thomas C. Shope
Children's Hospital of Michigan
3901 Beaubien Boulevard
Detroit, Michigan 48201

An Equal Opportunity/Affirmative Action Employer

POSTDOCTORAL RESEARCH ASSOCIATES (three), plant biology: (i) EM cytochemistry, (ii) physiology, (iii) immunochemistry, to study developmental and biosynthetic mechanisms of alkaloid and cannabinoid formation. Two years plus. Salary: \$13,000 to \$15,000. Send curriculum vitae to: **Dr. Paul Mahlberg, Department of Biology, Indiana University, Bloomington, Ind. 47401.** *Equal Opportunity Employer.*

POSTDOCTORAL RESEARCH ASSOCIATE position available immediately to participate in pharmacological study of excitatory amino acid transmitters. Prior experience with electrophysiological techniques is desirable. Send curriculum vitae and names of at least two references to: **Dr. J. Victor Nadler, Department of Pharmacology, Duke University Medical Center, Durham, North Carolina 27710.** *Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL RESEARCH ASSOCIATE position available immediately to Ph.D. with biochemical experience. For research on tubulin and mitosis in mutant mammalian cells with defective tubulin and/or mitosis. Salary to \$16,000. Send curriculum vitae and names of three references to: **Dr. Richard Wang, Dalton Research Center, University of Missouri, Columbia, Mo. 65211.** *Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL RESEARCH POSITION. Strong background in biochemistry, physiology, or pharmacology. Excellent research and training opportunities in the cardiovascular, renal, and endocrine areas. Send curriculum vitae and three letters of recommendation to: **Dr. A. Michelakis, Department of Pharmacology and Toxicology, Michigan State University, East Lansing, Mich. 48824.** *Michigan State University is an Affirmative Action/Equal Opportunity Institution.*



Research Director

Molecular Genetics
Agriculture

AGRIGENETICS CORPORATION is a vigorous medium-sized seed company enjoying rapid growth, with excellent base-line positions in most major crops. The company seeks to broaden its existing plant breeding and research activities to include programs in cell culture and the molecular genetics of higher plants. Accordingly, it is inviting applications for the newly created position of Director of Advanced Research, Vice-President.

Responsibilities will include the design and establishment of laboratory facilities, recruitment and supervision of a qualified scientific staff, consultation with colleagues in this and related fields, and the coordination and management of several research projects.

Minimum requirements for this position are a Ph.D. in molecular biology and several years of experience in the techniques of nucleic acid manipulation at the postdoctoral level. Applicants must be familiar with:

- basic plant genome organization;
- roles of nucleic acids in plant morphogenesis;
- genetics of host-pathogen interactions;
- physiological genetics of stress;
- genes coding for the proteins of chloroplast ribosomes;
- genetic interactions of the rhizosphere;
- development of molecular vectors for the integration and replication of foreign DNA in plant cells;
- the development of plant cell culture systems, including the isolation of biochemical mutants suitable for the selection of recombinants or transformants.

Qualified applicants with proven ability in the conduct and administration of the activities of a research laboratory, with a sense of human relations and the capacity for organization, are invited to submit, in confidence, their resumes together with publications and salary history to:

President, AGRIGENETICS CORPORATION,
Post Office Box 2260,
Evergreen, Colorado 80439.

Real World Entrepreneurial Environment - Classic Situation - Equity Opportunity.

POSTDOCTORAL TRAINEESHIPS IN ATHEROSCLEROSIS RESEARCH

Support for postdoctoral training in research related to problems of atherosclerosis and especially in the chemistry and metabolism of lipids as related to atherosclerosis, is available at the University of California, Los Angeles. Participating faculty include:

ROSLYN ALFIN-SLATER

(Nutrition in atherosclerosis; studies on trans fatty acids);

PETER EDWARDS

(Regulation of sterol metabolism);

C. FRED FOX

(Membrane biochemistry and biophysics);

ARMAND FULCO

(Biochemistry of lipids—specifically the control of membrane lipid biosynthesis);

JAMES MEAD

(Biochemistry of unsaturated fatty acids; brain lipid metabolism);

GEORGE POPJAK

(Intermediary metabolism, enzymology, lipid biosynthesis, enzyme regulation);

MICHAEL SCHOTZ

(Lipoprotein lipase structure and function; regulation of fatty acid metabolism, enzyme secretion, lipid transport);

VERNE SCHUMAKER

(Molecular biology of lipoproteins; sedimentation, diffusion and electron microscopy of VLDL).

Candidates should send curriculum vitae, and three letters of recommendation either directly to the desired laboratory or to: Dr. V. N. Schumaker, Molecular Biology Institute, University of California, Los Angeles, California 90024. An Equal Opportunity/Affirmative Action Employer.



UNIVERSITY OF RIYADH SAUDI ARABIA

The University of Riyadh invites applications to fill the following vacancies in its College of Science for the academic year 1980-81:

PHYSICS DEPARTMENT

Assoc. Professors, specialized in Spectrum Analysis

Demonstrators, holders of B.S. or M.S. in Physics

Asst. Professors (female), specialized in Physics

MATHEMATICS DEPARTMENT

Professors, specialized in Group Theory, Rings Theory

Assoc. Professors, specialized in Functional Analysis

Asst. Professors, specialized in Real or Complex Analysis, Measure Theory, Computer Science, Numerical Analysis

Asst. Professors (females), specialized in any branch of Pure Mathematics

Research Assistants, specialized in Computer Science

CHEMISTRY DEPARTMENT

Asst. Professors, specialized in Industrial Inorganic Chemistry

Demonstrators, holders of M.S. in Inorganic Chemistry, Electronic Spectra

Research Assistants, specialized in Inorganic Chemistry, Inorganic and Analytical Chemistry, Analytical Chemistry, General Chemistry

Laboratory Technicians, holders of M.S. in Organic Chemistry, Bio-Chemistry, Analytical Chemistry, General Chemistry

STATISTICS DEPARTMENT

Asst./Assoc. Professors, specialized in Stochastic Programming, Probabilistic Models in Operations Research, Biostatistics, Econometrics, Quality Control, Demography, Theory of Games and Decisions, Theory of Inference, Reliability and Life Testing

BOTANY DEPARTMENT

Assoc. Professors, specialized in Genetics, Plant Ecology, Plant Physiology, Virology

Research Assistants for Industrial Microbiology, (to work as Demonstrators), holders of M.S. at least in Plant Ecology, Plant Physiology, General Microbiology, Anatomy, Plant Taxonomy

ZOOLOGY DEPARTMENT

Assoc. Professors, specialized in Animal Genetics

Demonstrators, holders of M.S. in Fish Taxonomy

Research Assistants, specialized in Vertebrate Morphology, Parasitology, Marine Biology, Environmental Physiology

Assoc./Asst. Professors (female), holding Ph.D. in Zoology

CONDITIONS

Professor and Assoc. Professor:

Already holds the title at an accredited university.

Asst. Professor:

Holder of a Ph.D. in the specialization.

Demonstrator:

Holder of B.S. with a general grade average no less than "Very Good" unless a higher qualification is required above.

Research Assistant:

Holder of B.S. with a general grade average no less than "Good" unless a higher qualification is required above.

GENERAL PROVISIONS

Applications accompanied by non-returnable copies of academic and experience certificates and a recent photograph should be mailed, within one month from date, to:

The Dean
College of Science
P. O. Box 2455
Riyadh, Saudi Arabia

Previous applications should be renewed under the above provisions.
Selected candidates only will be notified for personal interview.

POSITIONS OPEN

POSTDOCTORAL RESEARCH POSITIONS—IMMUNOLOGY. Available immediately in areas related to regulation of the immune response, immunology, and membrane phenomenology. Applicants should have background in immunology and/or protein chemistry. Please send curriculum vitae and have letters of three referees sent directly to: **Dr. A. Sehon, Head, Department of Immunology, Faculty of Medicine, University of Manitoba, Winnipeg, Manitoba, Canada R3E 0W3.**

PROTEIN BIOCHEMISTRY. Research associate to carry out a continuing study of variation in sequence and structure of *Drosophila* proteins in the context of evolutionary problems. Position will continue for at least 2½ years. A broad knowledge in techniques of protein purification and sequencing is necessary. Salary range: \$13,000 to \$16,000. Should be available 1 July 1980. Curriculum vitae and names of references to be sent to: **R. C. Lewontin, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts 02138. Harvard University is an Equal Opportunity Employer.**

RESEARCH ASSISTANT PROFESSOR POSITION

The Department of Biochemistry and Biophysics has a position available immediately for a research assistant professor. The position is nontenured. Applicants should have a Ph.D. degree and at least 5 years of research experience in the area of biological electron transfer and energetics, particularly in photosynthetic organisms. Please send applications to: **Dr. D. R. Trentham, Department of Biochemistry and Biophysics, 358 Anatomy-Chemistry Building/G3, University of Pennsylvania, Philadelphia, Pa. 19104. The deadline for applications is 5 May 1980. An Affirmative Action/Equal Opportunity Employer.**

RESEARCH ASSOCIATES POSITIONS—Molecular biology. Several positions available. Research involves working phages, animal viruses, yeast, nucleic acids, DNA sequencing and cloning. Stimulating projects in DNA tumor viruses, mammalian cell genetics, DNA repair, replication and new technologies for in vitro and in vivo genetic manipulations. Relevant experience desirable, but will train the right candidates. Educational requirement a Ph.D. Superbly equipped, stimulating and rapidly growing department, 10 miles from Downtown Manhattan and minutes from pleasant suburbs. Apply with résumé and references to: **Dr. G. DiMayorca, Professor and Chairman, Department of Microbiology, College of Medicine and Dentistry of New Jersey—New Jersey Medical School, 100 Bergen Street, Newark, N.J. 07103. Affirmative Action/Equal Opportunity Employer, M/F.**

RESEARCH ASSOCIATE LASER LIGHT SCATTERING IN SEMICONDUCTORS

The Department of Physics at Kansas State University expects to have a postdoctoral position available beginning 1 July 1980 to participate in a program of inelastic light scattering studies of laser annealing mechanisms in semiconductors. Techniques will include ion implantation and Raman scattering with tunable pulsed and cw lasers. A background in semiconductor physics and/or laser light scattering is desirable. The initial appointment will be for 1 year but by mutual agreement may be extended for a second year. Applications should be sent prior to 1 June 1980 to: **Professor A. Compaan, Department of Physics, Kansas State University, Manhattan, Kansas 66506. Kansas State University is an Equal Opportunity/Affirmative Action Employer.**

RESEARCH SCIENTISTS to perform experimental and theoretical radio-frequency radiation (RFR) bioeffects studies. Investigate the biological consequences of radio-frequency radiation, the physiological effects, and the fundamental mechanisms through which pulsed RFR may interact with biological tissues. Must be familiar with RFR fields and their generation; with homeostatic mechanisms and their interaction with external stimuli; with physiological instrumentation; with high-speed data acquisition and analysis. Critical expertise: animal handling and physiological experimentation; radiation (nonionizing) and thermal effects on homeostatic mechanisms; computerized data collection and analyses; data base management. Send résumé and other credentials, including salary history and requirement, to: **TECHNOLOGY INCORPORATED, P.O. Box 32644, San Antonio, Texas 78216. Equal Opportunity/Affirmative Action Employer.**

POSITIONS OPEN

Massachusetts Institute of Technology (MIT)—RESEARCH ASSOCIATE. Earth and Planetary Sciences Department, in aqueous trace element geochemistry. Individual will work on the analysis of trace elements in natural waters by electron capture gas chromatography of volatile organic chelates. Will be required to go to sea. Candidates should have at least 4 years of experience in using the above-mentioned techniques. A Ph.D. in chemical oceanography or analytical chemistry and at least 1 year of postdoctoral experience are required. Individuals must demonstrate proven capability in the development and implementation of new methods and in the analysis and publication of the resulting data. Extensive seagoing experience using such techniques is necessary. Annual salary: \$17,500 to \$22,000. Please submit résumé to: **MIT Personnel Office, 400 Main Street, Cambridge, Mass. 02139. Attention: Job Number R80-95. MIT is an Equal Opportunity/Affirmative Action Employer.**

RESEARCH ASSOCIATE—Grant position. Salary: \$14,500 to \$16,500. M.S. or Ph.D. desirable. To study the etiology of diabetic neuropathy in animals. Investigation will include electron microscopy, biochemistry, and electrophysiological approaches. Send résumé and references to: **Personnel, Attention: Dr. Robert M. Gould, Position Number 151, Institute for Basic Research, 1050 Forest Hill Road, Staten Island, N.Y. 10314. Affirmative Action/Equal Opportunity Employer.**

RESEARCH ASSOCIATE/POSTDOCTORAL to investigate specific interactions between cytoskeletal proteins and coated vesicles; \$13,000 to \$17,000. Send résumé to: **Dr. Douglas Murphy, Department of Cell Biology, The Johns Hopkins School of Medicine, Baltimore, Maryland 21205. University of Maryland Baltimore County is an Equal Opportunity/Affirmative Action Employer.**

RESEARCH SCIENTIST FLOW CYTOMETRY SPECIALIST

The University of Southern California (USC) Medical School and Cancer Center are soliciting applications for a research scientist in flow cytometry. The position involves responsibility for operating and maintaining a Becton-Dickinson FACS IV and participation in research projects using the cell sorter. The ideal candidate will have a M.S. or Ph.D. degree in biophysics, biochemistry, or immunology and experience with the operation of a cell sorter. Experience in computer programming (FORTRAN/BASIC) is desirable. Position open 1 July 1980. Please submit curriculum vitae and names of three references to: **Dr. Scott Linthicum, USC Medical School, Department of Microbiology, 2025 Zonal Avenue, Los Angeles, Calif. 90033.**

RICE TISSUE CULTURE. Louisiana State University Rice Experiment Station. Requires Ph.D. in plant physiology, genetics, agronomy, or related discipline with emphasis on tissue culture and its application to crop plants, preferably rice. Appointee will initiate and develop a rice tissue culture research program for application to genetic and breeding programs. Position available 1 July 1980. Send résumé, transcripts, and three or more reference letters by 15 June 1980 to: **D. Marlin Brandon, Chairman, Search Committee, P.O. Box 1429, Crowley, La. 70526. Equal Opportunity/Affirmative Action Employer.**

SENIOR SYSTEMS MODELER

Research associate position available 1 June 1980, in the Natural Resource Ecology Laboratory, Colorado State University. Position will be jointly funded by several departments involved with research in ecosystems analysis. Salary commensurate with experience. Ph.D. is required. Emphasis is on simulation modeling of belowground processes involving decomposition and nutrient cycling. Expertise in all areas of soil biology and biochemistry and experience in simulation modeling is essential. Application deadline: 15 May 1980. Send curriculum vitae and three letters of recommendation to: **Dr. James E. Ellis, Natural Resource Ecology Laboratory, 145 Grasslands Laboratory, Colorado State University, Fort Collins, Colo. 80523. Telephone: 303-491-5571.**

Colorado State University is an Equal Opportunity Employer and complies with Title IX requirements. Complaints should be filed with the Office of Equal Opportunity, Student Services Building.

POSITIONS OPEN

SENIOR RESEARCH BIOCHEMIST in the area of gastroenterology for the chemical and physiological characterization of gastrointestinal hormones. A Ph.D. with extensive experience in this field, teaching ability, and knowledge of immunometric procedures and protein chemistry is required. Extensive administrative ability will be an asset. Candidates will be evaluated on scientific stature, proven teaching capability, and administrative competence. Starting date of 1 August 1980. Submit curriculum vitae, bibliography, and three letters of reference to: **Josef E. Fischer, M.D., Department of Surgery, University of Cincinnati, 231 Bethesda Avenue, Cincinnati, Ohio 45267.**

SYSTEMATIC MALACOLOGIST—Applications are invited for a 3-year appointment as assistant curator of invertebrates, Department of Zoology, Field Museum of Natural History. Specialist on freshwater or marine mollusks preferred. Twelve months annually, full-time, with both research and curatorial responsibilities, starting 1 January 1981. Appointee must have a Ph.D. and commitment to an active research program in systematic malacology and curation of a major mollusk collection. Salary dependent on qualifications and experience. Curriculum vitae, description of research experience and future plans, reprints of publications, and letters from three referees must be sent before 15 September 1980 to: **Dr. Robert K. Johnson, Chairman, Search Committee, Department of Zoology, Field Museum of Natural History, Roosevelt Road at Lake Shore Drive, Chicago, Illinois 60605.**

An Equal Opportunity Employer

Permanent **TEACHING POSITION** available in **BIOLOGY.** Primary teaching responsibilities in physiology (cell physiology and general animal physiology). Other teaching assignments appropriate to individual's training. Rank and salary open. Send résumé, undergraduate and graduate transcripts, and three letters of recommendation to: **Paul C. Bailey, Chairman, Science and Mathematics Division, Birmingham-Southern College, Birmingham, Ala. 35204.**

Applications from Ph.D.'s are invited for **TEACHING POSITIONS** in the following courses:

**Physiology
Biochemistry
Anatomy
Immunology
Pathology**

The University is located in the West Indies. Please send curriculum vitae to:

**St. George's University
c/o Foreign Medical School Service
Corp.
One East Main Street
Bay Shore, New York 11706**

ZOOLOGY/EMBRYOLOGY/CELL BIOLOGY Ph.D. required. The position is for teaching general zoology, embryology, and assisting in a team-taught course in introductory cell biology. Assistant professor level starting 25 August 1980. Application deadline is 2 May 1980. *An Equal Opportunity/Affirmative Action Employer.* Apply to: **V. Thiesfeld, Chairman, Department of Biology, University of Wisconsin-Stevens Point, Stevens Point, Wis. 54481.**

COURSE

MARINE BIOLOGY COURSES for graduate credit. Summer 1980 Session I: Coelomate Invertebrates, Marine Algae—23 June to 26 July; Session II: Lower Invertebrates, Ichthyology—28 July to 30 August. For applications and information about this program (or about various graduate programs and teaching assistantships in biology at Northeastern University, Boston), send request to: **Summer Program, Marine Science Institute, Northeastern University, East Point, Nahant, Mass. 01908 or telephone: 617-581-7370.**

Recombinant DNA Research *Group Leader*

Connaught Laboratories Limited is currently expanding its involvement in recombinant DNA research and applications are invited for the position of Group Leader. The successful candidate will be leading an active and growing team in the field of recombinant DNA research oriented towards the obtaining of materials of biological and medical significance. The Group Leader will be interacting with other research scientists in the biological and health sciences fields with a view to building a major research presence in these fields in Canada.

Candidates should have a successful research record in the field of molecular biology, be recognized as an authority in the field, and have experience in leading a research group.

Curriculum vitae and reprints should be sent, in confidence, to Linda L. Bell, Director of Personnel, Connaught Laboratories Limited, 1755 Steeles Avenue West, Willowdale, Ontario M2N 5T8 Canada.



HEALTH SCIENTIST ADMINISTRATOR

The National Institutes of Health, National Institute of Child Health and Human Development has a career Civil Service opening for a Health Scientist Administrator GS-601-14 (\$32,442-\$42,171 per annum) in the Center for Research for Mothers and Children, Mental Retardation and Developmental Disabilities Branch. The incumbent will be responsible for planning, formulation, guidance, direction, consultation, evaluation and development of program plans, operating policies and procedures relative to comprehensive programs in the 12 Mental Retardation Research Centers located throughout the country.

This position requires a Ph.D., M.D., or equivalent degree in an academic field of health or pertinent sciences allied to health or health related research; expert knowledge in the field of research in mental retardation; knowledge of public health service extramural activities and knowledge of grants policies and procedures, experience in dealing with institutions of higher education; superior writing and speaking skills; and a high degree of skill in interpersonal relationships, tact, and judgement.

Please send Personal Qualifications Statement (SF-171), current performance appraisal, curriculum vitae and bibliography by May 30, 1980, to: Ms. Mary Jane Meyers, Personnel Officer, NICHD Personnel Office, Building 31, Room 2A25, National Institutes of Health, Public Health Service, 9000 Rockville Pike, Bethesda, MD 20205. An Equal Opportunity Employer.

**NATIONAL INSTITUTES
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DIRECTOR NATIONAL MEDICAL AUDIOVISUAL CENTER

The National Library of Medicine is seeking a creative experienced health sciences educator-manager with an understanding of the use of educational technology in the health sciences to serve as Director of its National Medical Audiovisual Center. Applicants should have made recognizable contributions to health sciences education and must demonstrate an ability involve the health sciences community in the programs of the Center.

At the GS-15 level (\$40,832-\$50,112) this position is in the career Civil Service.

Send resume or SF-171 by May 30, 1980 to Personnel Officer, National Library of Medicine, NATIONAL INSTITUTES OF HEALTH, Public Health Service, 8600 Rockville Pike, Bethesda, MD 20209. An Equal Opportunity Employer.

**NATIONAL INSTITUTES
OF HEALTH**

RESEARCH SCIENTIST Ph. D. BIOLOGICAL SCIENCES

We are currently seeking a pharmacologist and biochemist to fill newly created positions in our ophthalmic research program. Candidates are required to have a Ph. D degree or equivalent with 2 years or more of experience and a strong record of research accomplishment and publications. Previous experience in eye research may be helpful but is not required. A working knowledge of both written and spoken French and English is desirable.

An excellent salary, complete benefits program, plus a professional atmosphere accompany this position at our modern recently completed research facility in pleasant surroundings at Mirabel, France in the Puy-de-Dôme region of Auvergne.

Please send curriculum vitae complete with publication record to :

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COURSE

UNIVERSITY OF MINNESOTA ADVANCED LABORATORY COURSE ON CLONING AND SEQUENCING WITH THE SINGLE-STRANDED DNA PHAGE M13mp2 AND ITS DERIVATIVES 15 to 19 September 1980

The course will cover three topics:
1) Cloning; screening for recombinant phage,
2) Preparation of phage, single- and double-stranded DNA, and primer, and
3) Dideoxy-sequencing of M13 clones.
Lectures will cover the structural analysis of eukaryotic DNA genomes using this cloning system. Speakers are: Steve Anderson (Cambridge, England), Richard Gelinas (Seattle, Wash.), James Roberts (New York), Peter Seeburg (San Francisco), and Dan Vapnek (Athens, Ga.).
Laboratory space will be available for 20 participants. The course fee will be \$200, exclusive of meals and lodging. Inexpensive accommodations close to the campus will be reserved. Address applications not later than 1 June 1980 to:

Dr. Joachim Messing
Department of Biochemistry
University of Minnesota
St. Paul, Minnesota 55108

CONFERENCE



COLD SPRING HARBOR LABORATORY CONFERENCE ON PROTEIN PHOSPHORYLATION 2 to 7 September 1980

Dr. Ora M. Rosen,
Albert Einstein College of Medicine
Dr. Edwin G. Krebs, University of Washington

A meeting on *Protein Phosphorylation* will be held at the Cold Spring Harbor Laboratory. The main purpose of the meeting is to bring together leading investigators who are actively involved in studying the biochemical mechanisms and biological consequences of protein phosphorylation. Topics to be discussed include: cyclic nucleotide-dependent protein kinases, phosphorylase kinase, phosphorylase, phosphoprotein phosphatases, glycogen synthase, regulatory role of phosphorylation in carbohydrate and lipid metabolism, cyclic AMP-independent hormonal phosphorylation, phosphorylation of contractile and cytoskeletal proteins, viral-mediated protein phosphorylation, role of protein phosphorylation in protein synthesis and interferon action, phosphorylation of membranes and neural proteins, nuclear protein phosphorylation.

Further information and registration materials can be obtained by contacting: Gladys Kist, Meetings Secretary, Cold Spring Harbor Laboratory, P.O. Box 100, Cold Spring Harbor, N.Y. 11724.

TRAINEESHIPS

POSTDOCTORAL TRAINEESHIP—BIOCHEMISTRY OF AGING. Positions are available 1 July at Boston University School of Medicine, supported by the National Institute on Aging. Projects include study of nuclear and chromosomal changes in the brain, connective tissue and kidney, and comparative studies of Alzheimer's disease, Down's syndrome, and aging. Send curriculum vitae and the names of at least two references to: F. Marott Sinex, Ph.D., Head, Section on Bio-Medical Gerontology, Boston University School of Medicine, 80 East Concord Street, Boston, Mass. 02118. *An Equal Opportunity Employer.*

POSTDOCTORAL TRAINEESHIPS IN PARASITOLOGY/VECTOR BIOLOGY available in: biochemistry of parasites (Saz); mosquito biochemistry (Fuchs); mosquito cytogenetics (Rai). Appointments start 1 July 1980 for a period of 1 year. Reappointment possible for second year subject to NIH grant renewal. Stipends start at \$13,380 a year. Candidates must be U.S. citizens or permanent residents. Send résumé and names of three references to: Dr. Paul P. Weinstein, Department of Biology, University of Notre Dame, Notre Dame, Ind. 46556. *Notre Dame is an Equal Opportunity/Affirmative Action Employer.*

FELLOWSHIPS

CARDIAC ELECTROPHYSIOLOGY

Postdoctoral research positions (two) to study electrophysiology and pharmacology of human heart muscle and animal models of disease and dysrhythmia. Studies employ standard glass microelectrode and ion selective electrode techniques. Voltage clamp also available. Experience with glass microelectrode methodology highly desirable. Excellent facilities and environment. Send curriculum vitae and three professional references to: Dr. D. H. Singer, Department of Pharmacology, c/o Reingold ECG Center, Northwestern University Medical School, 310 East Superior Street, Chicago, Ill. 60611.

One- to 2-year **RESEARCH FELLOWSHIP** available beginning 1 January 1981. Requirements are M.D. degree with preference given to candidates with neurology, endocrinology, and/or biochemistry background. Research focus is carbohydrate metabolism in neurologic and neuromuscular disease with emphasis on insulin receptors, hexose membrane transport and carrier mechanisms in animal models and human disease. Stipend equivalent to NIH fellowship with possibility of entry into VA Career Development program. Send curriculum vitae and three letters of recommendation to: Barry W. Festoff, M.D., Neurobiology Research Laboratory, VA Medical Center, 4801 Linwood Boulevard, Kansas City, Mo. 64128.

GRADUATE TEACHING and RESEARCH ASSISTANTSHIPS in BIOLOGICAL SCIENCES

Teaching and research assistantships are available for September 1980 for graduate study leading to the M.S. or Ph.D. degree in biological sciences. Stipend level is currently \$4500 for 9 months, plus tuition waivers. Limited summer support is also available. For information on faculty research interests and applications, write to: Dr. S. K. Shapiro, Head, Department of Biological Sciences, University of Illinois at Chicago Circle, Box 4348, Chicago, Illinois 60680.

POSTDOCTORAL FELLOWSHIP available immediately in mechanisms of human autoimmunity and cancer-associated defects in immune function. Apply with curriculum vitae to: Dr. Arthur D. Bankhurst, Department of Medicine, University of New Mexico, Albuquerque, New Mexico 87131. Telephone: 505-277-4761. *Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL FELLOWSHIPS are available in cardiovascular bioengineering (NRS awards from NIH) for training to begin 1 July 1979 at stipends of \$10,000 to \$13,200. The program is designed to provide a broad spectrum of training for medical scientists preparing for careers in research and teaching. Studies may be clinically related or in basic sciences, for example, cardiac mechanics, ion regulation. A strong background in basic sciences is desirable. Write: James B. Bassingthwaite, M.D., Ph.D., Cardiovascular Training Program, Center for Bioengineering RF-52, University of Washington, Seattle, Wash. 98195. *The University of Washington is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL FELLOWSHIP—Recent Ph.D. for research in cancer biology, biochemical mechanisms, immunology, differentiation, or somatic cell genetics. Available 1 July 1980. Send curriculum vitae, graduate transcript, and three references to: Dr. S. Silagi, Cornell University Medical College, 515 East 71 Street, New York, N.Y. 10021. *Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL FELLOWSHIPS are available for training in: (i) protein chemistry and function with emphasis on conformation, chemical modification, cleavage, and sequence of proteins as well as peptide synthesis; (ii) molecular immunology, involving studies on the molecular basis of the immune response to allergens and other proteins; and (iii) cellular immunology to study the cellular events in the immune recognition of allergens and other proteins. Competitive stipend. Candidates must be U.S. citizens or permanent residents. Send curriculum vitae and three letters of recommendation to: Dr. M. Z. Atassi, Department of Immunology, Mayo Medical School, Rochester, Minnesota 55901.

Mayo Foundation is an Equal Opportunity/Affirmative Action Institution.

FELLOWSHIPS

POSTDOCTORAL RESEARCH TRAINING FELLOWSHIPS IN SENSORY NEUROPHYSIOLOGY

NIH-NRSA fellowships provide multidisciplinary training in audition, vision, somesthesia, or the chemical senses. Two positions available immediately, two additional anticipated after 1 July 1980. Initial appointment for 1 year, renewable for two additional years. Candidates must be pursuing a career which includes, as an important component, research in sensory neurophysiology. Applicants should submit a letter outlining career plans, curriculum vitae, and two letters of reference to: J. E. Hind, Chairman, Department of Neurophysiology, University of Wisconsin Medical School, Room 283 Medical Sciences Building, Madison, Wisconsin 53706. *An Equal Opportunity/Affirmative Action Employer.*

GRADUATE STUDY

GRADUATE TRAINING IN BASIC MEDICAL SCIENCES

The College of Medicine, University of South Alabama, invites applications from qualified individuals interested in pursuing the Ph.D. degree in basic medical sciences. Applications are now being accepted for September 1980 entrance into the graduate program leading to the doctorate with specialization in either anatomy, biochemistry, microbiology/immunology, pharmacology, or physiology. This is a unique program designed to accept both qualified nondegree holding students after only 3 years of appropriate undergraduate study as well as applicants holding degrees. Tuition is waived. A \$5000 per year stipend is awarded to each student accepted into the program. Applications are accepted at any time but must be completed by 31 May. For further information write:

Edwin R. Hughes, M.D., Director,
Graduate Program in Basic Medical Sciences
University of South Alabama
MSB 2152
Mobile, Alabama 36688

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Analytical Chemist

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Inter-American Observatory

The Association of Universities for Research in Astronomy, Inc. (AURA) invites applications and nominations for the directorship of Cerro Tololo Inter-American Observatory (CTIO), located in La Serena, Chile. The Director reports to the Association's President and is primarily responsible for the scientific excellence of the Observatory and for its planning and operations. Appointment will be for an initial 5 year term, renewable, starting on or before January 15, 1981.

The new Director must have an earned doctorate in a physical science, preferably astronomy, and a thorough understanding of the nature and purpose of a visiting-observer-oriented ground-based optical astronomical observatory. Experience in management of major scientific research programs, proficiency in the Spanish language, and an understanding of Latin American culture are assets in candidates and nominees.

CTIO, operated by AURA, Inc., is funded by the National Science Foundation as a National Astronomical Center. La Serena is about 300 miles north of Santiago. The Observatory itself is located about 50 miles to the east on one of the finest developed sites for observing the southern skies. The CTIO staff numbers 166, of which 86% are Chileans, and 13 are scientists. The Observatory's complex of observing instruments (including the 4-meter telescope) is used by about 350 visiting scientists annually, both U.S. and foreign, as well as by CTIO staff.

Application, accompanied by a resume and names and addresses of at least 3 professional references, or nominations with supporting statements should be submitted as soon as possible and no later than June 1, 1980 to:

**Professor David Pines, Chairman
CTIO Director Search Committee
AURA Corporate Office
P.O. Box 26732
Tucson, Arizona 85726**

Biochemist/ Biochemical Pharmacologist

American Cyanamid's Medical Research Division has a challenging position available in its Metabolic Disease Research Department for a Biochemist or Biochemical Pharmacologist. Duties will include the study of alterations in the arachidonic acid metabolic cascade related to asthma, inflammation, dermatological diseases and atherosclerosis. The investigator will be expected to develop means of identifying novel effectors of arachidonic acid metabolism with potential therapeutic utility.

Preference will be given to those candidates having two years post-doctoral experience in this area of research. Consideration will be given to recent Ph.D.'s demonstrating a high degree of knowledge and practical training in this field. Applicants are expected to be well versed in the analytical techniques needed to study arachidonic acid/prostaglandin biochemistry.

As a major research facility for the development of a broad range of health care products, the Medical Research Division offers an opportunity for professional growth and recognition in a challenging and rewarding industry. In addition, our location in Pearl River, N.Y. offers a variety of recreational and cultural activities with easy access to major transportation arteries.

American Cyanamid offers competitive salaries and comprehensive benefits, including a dental and savings plan.

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**Ms. S.L. Johnson
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