

Personnel Placement

POSITIONS WANTED

Anatomist, Endocrinologist, and Reproductive Physiologist, Ph.D. 1969. Three years of postdoctoral training in female reproduction and 4 years of teaching experience in histology, gross anatomy, cell physiology, and endocrinology. Thirty publications. Seeking senior teaching and/or research position. Box 355, SCIENCE. 8/6; 10/1

Biochemical Nutritionist, Ph.D. 1975. Current status: postdoctorate. Interests: trace metal metabolism, heavy metal toxicity, nutrition, and disease. Desires research/teaching position. Box 356, SCIENCE. X

Biochemist, Ph.D. 1964. Broad industrial and academic experience in pharmacokinetics and metabolism of drugs, food additives, pesticides, proteins, cancer specific antigen, radioimmunoassay, supervisory, publications. Interested in responsible position in government or industry. U.S. citizen. Box 302, SCIENCE. X

Biologist, M.S. 1976. Seeks position in industry or academic institution. Two years of experience in tissue culture. Box 357, SCIENCE. X

M.S. Biology. Interested in immunology, tissue culture, virology, and biochemistry. Desires research position at junior level. Telephone B. Rudo at 215-438-4140; write 5740 Wissahik Avenue, Philadelphia, Pennsylvania 19144. X

Bio-organic Chemist, Ph.D. 1966. Enzyme structure and reaction mechanisms. Isolation, purification, and amino acid sequence determination of peptides and proteins. Organic synthesis of various radioactive inhibitors. Isolation and purification of cellular components. Familiar with UV, IR, NMR, ORD, CD, MS, paper TL and column chromatography, electrophoreses, immunochemical techniques. Seeks research/teaching position. Box 358, SCIENCE. 8/6, 13

Developmental/Reproductive Biologist/Ecologist. Doctorate. Publications cover developmental biology, experimental embryology, teratology, reproduction. Teaching experience: gross anatomy, reproduction, general biology. Seeks research/teaching/administrative position in related areas. United States or abroad. Box 359, SCIENCE. 8/16, 13

Histochemist, Ph.D. Emphasis on quality control of biological stains. Three years of postdoctoral experience. Numerous publications. Seeks university teaching/research position anywhere in the United States. P. N. Marshall, Department of Haematology, Royal Postgraduate Medical School, London W12, United Kingdom. X

Medical Entomologist, M.S., extensive research and teaching experience in bionomics and taxonomy; seeks associate or technical position in public health laboratory. Box 360, SCIENCE. 8/6, 13, 20, 27

Ex-Columbia professor in **Medical Science** seeks position with foundation or similar organization. East Coast preferred. Box 335, SCIENCE. X

Microbiology. Foreign veterinarian, D.V.M. (Hannover), 3 years of experience in veterinary and 1 year in medical microbiology. Seeks position in laboratory, institution, industry. Dr. A. K. Basu, Ahlener Fuhren Weg 3, (316) Lehrte/Hannover, West Germany. X

Pharmacist/Pharmacologist. Ph.D. Twenty years of experience in industry. Long record of high achievement, administrative experience, publications, and patents. Desires research/teaching/government position. Box 361, SCIENCE. X

Pharmacologist/Physiologist, Ph.D. 1971. Teaching experience. Several publications. Areas of interest: secretory mechanism of digestive glands, pharmacology of peripheral nervous system, biogenic amines. Desires teaching/research position. Box 362, SCIENCE. X

POSITIONS OPEN

AIR POLLUTION SCIENTIST. The Oregon Graduate Center has an opening at the assistant professor or higher level for fall 1976. Requirements: Ph.D. in engineering, chemistry, physics, meteorology, or related fields; postdoctoral experience or equivalent; research experience in aerosol science—particularly in chemical and physical characterization of aerosols. Send inquiries, curriculum vitae, a statement of research interests, and three letters of reference to: **Dr. James J. Huntzicker, Chairman, Department of Environmental Technology, Oregon Graduate Center, 19600 Northwest Walker Road, Beaverton, Oregon 97005.** An Equal Opportunity/Affirmative Action Employer.

ANATOMIST. Applications are solicited for a faculty position (rank negotiable) in research and teaching. Minimum training: doctorate (academic or professional) with postdoctoral experience indicating maturing research interests. Teaching may fall in the areas of cell biology—histology, mammalian gross anatomy, or electron microscopy. Research interests relatable to current problems in veterinary medicine preferred. Send résumé by 30 August to **Dr. John H. Venable, Chairman, Department of Anatomy, College of Veterinary Medicine, Colorado State University, Fort Collins, Colorado 80523.** Colorado State is an Affirmative Action/Equal Opportunity Employer.

DEPARTMENT OF ENTOMOLOGY UNIVERSITY OF WISCONSIN, MADISON

A full-time position at the assistant professor level will be available by mid-fall 1976. A **systematist** is desired. Duties will include curating the insect collection, teaching basic courses in insect taxonomy, and developing a research program.

Applicants must have a genuine interest in teaching and proven ability to carry out research in their field. Interested persons holding a recent Ph.D. degree should send, by 1 September 1976, a curriculum vitae, transcripts of undergraduate and graduate work, research papers, and a brief statement of research and teaching interests, and have four letters of recommendation sent directly to **Dr. G. M. Boush, Chairman, Department of Entomology, University of Wisconsin, Madison, Wisconsin 53706.**

An Equal Opportunity/Affirmative Action Employer

LEAVE REPLACEMENT IN BIOLOGY MIDDLEBURY COLLEGE

Two-year position, at level of assistant professor, for person actively engaged in ethological research. Teaching responsibilities include: one semester, laboratory course in animal behavior, one semester "Foundations" course in biology (primarily for nonmajors), and, as enrollments permit, an advanced seminar. The successful candidate will also be expected to direct research of undergraduate and M.S. candidates. **Position is available from 1 September 1977; deadline for completed application is 31 October 1976.** Résumé, statement of teaching and research interests, all undergraduate and graduate transcripts, and three letters of recommendation should be sent to: **Christopher Watters, Ph.D., Chairman, Department of Biology, Middlebury College, Middlebury, Vermont 05753.** An Equal Opportunity Employer.

The College of Pharmacy of The University of Toledo has a position immediately available for a full-time **ASSISTANT/ASSOCIATE PROFESSOR IN PHARMACY** to teach an undergraduate course in biopharmaceutics and pharmacokinetics in addition to research and other teaching activities at graduate and undergraduate levels. The candidate, having a B.S. in pharmacy and Ph.D. in pharmacuetics, should send his curriculum vitae with references to **Dr. Robert J. Schlembach, Interim Dean, College of Pharmacy, The University of Toledo, Toledo, Ohio 43606.** An Equal Opportunity/Affirmative Action Employer.

PHARMACOLOGIST

Applications are invited for the position of assistant professor of pharmacology beginning fall 1976. Duties include: undergraduate instruction, development of graduate-level courses, and establishment of a research program. B.S. in pharmacy preferred but not required. Applications should include curriculum vitae and three letters of reference. Address correspondence to: **Dr. Robert Schlembach, Interim Dean, College of Pharmacy, The University of Toledo, Toledo, Ohio 43606.** An Equal Opportunity/Affirmative Action Employer.

POSITIONS OPEN

ASSISTANT PROFESSOR—PHARMACEUTICAL BIOLOGY: Ph.D. Research and teaching in physiology and/or pharmacology required. Duties will include teaching responsibilities at the professional and graduate level, developing an active research program, and directing graduate students. Salary will be commensurate with experience and duties. Direct résumé and three letters of recommendation to **Dr. F. Peter Field, Chairman, Search Committee, Pharmaceutical Biology, College of Pharmacy, University of Florida, Gainesville, Florida 32610.** An Equal Opportunity/Affirmative Action Employer.

ASSISTANT RESEARCH BIOCHEMIST

Position available in UCLA School of Medicine, after 10 September, for a candidate with at least 5 years of postdoctoral experience in lipid biochemistry. Areas of research include use of tracers in animal models for studies on kinetics of lipid transport in neoplastic cells, autoxidation, and lipogenic activation with carbohydrates. Strong background in organic chemistry, analytical separation techniques, membrane isolation, and multicompartmental analysis required. Send résumé and references by 3 September to **Dr. Nome Baker, VA Wadsworth Hospital, Building 115, Room 316, Wilshire and Sawtelle Boulevards, Los Angeles, California 90073.** The University of California is an Equal Opportunity/Affirmative Action Employer.

ASSOCIATE SPECIALIST: Laboratory supervisor for research project to establish statistical data on a number of genetic markers in human blood on a statistically valid sample of the population of California. Candidates should have Ph.D. in biochemistry or analytical, physical, organic, or clinical chemistry, or genetics. Applicants with some background in blood banking, blood typing, and electrophoretic procedures are preferred. Salary \$16,000 per year. Funding is guaranteed to 30 June 1977, with continuation subject to renewal of the grant. Apply to **Dr. Benjamin W. Grunbaum, White Mountain Research Station, Building T-2251, University of California, Berkeley, California 94720.** Telephone: 415-642-0260, by 31 August 1976. The University of California is an Equal Opportunity Employer. Minorities and women are urged to apply.

BIOCHEMISTRY FACULTY

Applications are invited for appointment at the associate professor level for individuals with established, independent research programs. Preferred research interests are regulation of cell growth, molecular aspects of immunology, and regulatory enzymology. Applicants are expected to have an interest in and an ability to teach biochemistry to medical and graduate students. Candidates should submit curriculum vitae, a statement of research plans, and references to **Dr. Robert G. Kemp, Department of Biochemistry, The Chicago Medical School, 2020 West Ogden Avenue, Chicago, Illinois 60612.** An Equal Opportunity/Affirmative Action Employer

Wanted: **BIO- AND/OR IMMUNOCHEMIST** to do cancer research. Ph.D. preferable. Salary commensurate with experience. Duties to include sole management and running fully equipped laboratory. Technical assistance available. Contact **Glenn Tisman, M.D., Director, Whittier/Montebello Cancer Research Institute, 2101 West Beverly Boulevard., Montebello, Calif. 90640.** Telephone: 213-724-6858. Send résumé and curriculum vitae.

CELL BIOLOGIST

We seek applicants in the area of cell biology who combine effectiveness as teachers with outstanding potential as imaginative researchers. Appointment will be at the assistant or associate professorial level. Candidate must have formal training in molecular biology and biochemistry, and have experience in eukaryotic cell culture. Knowledge of electron microscopy desirable. Responsibilities include participation in an introductory biology course, an undergraduate course in cell biology with laboratory, and undergraduate and graduate seminars and direction of undergraduate and doctoral research. Send curriculum vitae, three letters of recommendation, and description of research interests by 17 October 1976 to:

**Biology Search Committee
Department of Biology
Bryn Mawr College
Bryn Mawr, Pa. 19010**

An Equal Opportunity/Affirmative Action Employer

CHAIRPERSON

Department of Physical Biology/ Section of Physiology

Cornell University invites applications and nominations for an individual to serve as chairperson of the Department of Physical Biology and of the newly created Section of Physiology. The Department of Physical Biology in the New York State College of Veterinary Medicine is responsible for teaching and research in physical biology, radiation biology, environmental studies, clinical radiology, and nuclear medicine. It also has responsibility for the clinical radiology and nuclear medicine service of the Veterinary Medical Teaching Hospital. The Section of Physiology in the Division of Biological Sciences is composed of members from several of the colleges in the University. The Section is responsible for the university-wide undergraduate program of instruction in animal physiology and for research and graduate teaching. Special research strengths exist in endocrinology and reproductive physiology, bone and mineral metabolism, gastrointestinal transport, food intake, comparative physiology, and neurophysiology. Candidates should have a distinguished academic background with demonstrated scientific accomplishment in one or more of the areas for which the Section and/or Department is responsible. The individual also should have broad experience and interests in order to provide administrative leadership for a group with diverse scientific backgrounds but with common needs and objectives. Several academic positions now open in the Section and Department will provide the opportunity to develop and integrate programs which have many notable scientific strengths. Correspondence concerning the position should be sent to **Dr. B. C. Tennant, Search Committee Chairman, Office of the Dean, New York State College of Veterinary Medicine, Cornell University, Ithaca, New York 14853.** *Cornell University is an Equal Opportunity Employer.*

MEDICAL EDUCATORS ORAL ROBERTS UNIVERSITY

Challenging opportunity to assist in developing Schools of Dentistry and Medicine in dynamic Christian environment. Biomedical science faculty and clinical science faculty needed. Department Chairperson level individuals in Pharmacology, Physiology, Pathology and Microbiology particularly needed. Positions open summer 1976; dental and medical schools open fall 1978. Applications accepted immediately. Academic rank, salary commensurate with preparation, experience. An equal-opportunity employer. Write: Dean, School of Medicine, Oral Roberts University, 7777 South Lewis Ave., Tulsa, Ok. 74102.

POSITIONS OPEN

BIOCHEMISTRY FACULTY POSITION

The Department of Biochemistry, University of Iowa, invites applications from well-qualified individuals for a faculty appointment. It is expected that the appointment will be made sometime after 1 September 1976. Applicants must hold a Ph.D. and/or M.D. degree, have postdoctoral training in any area of biochemistry, and have publications demonstrating productivity and promise in biochemical investigation. Candidates should be prepared to develop a strong, independent research program and participate in some aspect of the undergraduate, graduate, and health professional teaching programs of the department. Although a preference exists for candidates at the assistant professor level, consideration also will be given to more advanced applicants. Please send a curriculum vitae including complete bibliography, a brief description of anticipated future research directions, and three letters of reference by 1 October 1976 to:

**Arthur A. Spector, M.D.
Department of Biochemistry
University of Iowa
Iowa City, Iowa 52242**

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

CELL BIOLOGIST

Immediate opening for Ph.D. with 2 years of postdoctoral experience to join new research program. Must have background in tissue culture and karyology. Interest in small animal tumor models desirable. Position in clinical department with a joint appointment as assistant professor in Department of Microbiology. Salary commensurate with background and experience. Send curriculum vitae and names of three references to: **Dr. Russell K. Lawson, Chairman, Department of Urology, The Medical College of Wisconsin, 8700 West Wisconsin Avenue, Milwaukee, Wisconsin 53226.** *An Affirmative Action/Equal Opportunity Employer.*

CHAIRMAN OF BIOCHEMISTRY

State University of New York at Buffalo School of Medicine has an opening for the position of chairman, Department of Biochemistry. Qualifications should include an established research position, experience in medical, graduate, and allied health sciences education, demonstrated administrative competence, leadership ability, and interest and some experience in clinical biochemistry. *State University of New York at Buffalo, an Equal Opportunity/Affirmative Action Employer, is committed to all aspects of health education and research.* Correspondence with curriculum vitae should be directed to **Donald Rennie, M.D., Department of Physiology, State University of New York at Buffalo, Buffalo, N.Y. 14214.**

CHAIRPERSON, Department of Civil Engineering, University of Washington. The Department is a major unit of a large state-supported university with a strong orientation toward graduate education and research. Desired qualifications include an established reputation in civil engineering education, a strong record of research accomplishment, and competence in organizational leadership.

Please address correspondence, nominations, applications, and résumés to:

**Dr. Morris E. Childs, Chairman
Department of Mechanical Engineering FU-10
University of Washington
Seattle, Washington 98195**

by 30 September 1976.

An Equal Opportunity/Affirmative Action Employer

CHAIRMAN—DEPARTMENT OF RADIOLOGY

The University of Pittsburgh is recruiting a Chairman for the Department of Radiology. This individual will also serve as radiologist-in-chief of the University Health Center of Pittsburgh. The candidate must have expertise and demonstrated leadership in the field of radiology and the required certification for assuming the clinical responsibilities of radiologist-in-chief.

Candidates should submit curriculum vitae to:

**Thomas J. Gill III, M.D.
Chairman, Radiology Search Committee
University of Pittsburgh
School of Medicine
Department of Pathology
Pittsburgh, Pa. 15261**

POSITIONS OPEN

CELL BIOLOGIST

Postdoctoral trainee position available for 2 to 3 years. Regulation of cell proliferation—cell aging. Send curriculum vitae together with names of three references to:

**Sandy D'Ambrosio
The Wistar Institute
36th and Spruce Streets
Philadelphia, Pa. 19104**

COMPARATIVE PATHOLOGIST: M.D., or D.V.M. with Ph.D. Pathology Board or ACVP eligibility or certification desirable. Experience in rodent pathology, carcinogenesis, clinical pathology, immunology, histochemistry, autoradiography, or electron microscopy helpful. Duties include: (i) involvement in multidisciplinary projects with some individual research time available, (ii) participation in histopathologic examination of tissues from rodents involved in carcinogenic, mutagenic, and teratogenic studies, (iii) teaching, (iv) involvement in graduate and undergraduate education, and (v) involvement in interdisciplinary graduate toxicology program. Excellent clinical pathology and electron microscopy support. Salary commensurate with qualifications/experience. Send résumé to **Project Director, Pathology Services Project, National Center for Toxicological Research, Jefferson, Arkansas 72079.** *Equal Opportunity Employer.*

DEAN UNIVERSITY OF MINNESOTA SCHOOL OF DENTISTRY

Applications and nominations are invited for the position of Dean at the University of Minnesota School of Dentistry in Minneapolis. The School of Dentistry is one of six Health Science schools on the campus. Presently, there are 449 dental students, 258 dental hygiene students, 69 dental assistant students, and 68 graduate students.

Responsibilities: The Dean reports directly to the Vice President for Health Sciences. Responsibilities include the overall management of the School, with emphasis on the development, improvement, and evaluation of a quality research and instructional program of dental education.

Qualifications: Applicants should have demonstrated administrative experience necessary to assume management of the School, financial expertise, and skills to interact effectively with other components of the University Health Science area and the community.

Applications: Applications from minorities and women are encouraged. Forward nominations or letters of interest with résumé by 1 October 1976 to:

**Dr. Lawrence H. Meskin
Chairman, Search Committee
Division of Health Ecology 15-136
School of Dentistry
University of Minnesota
Minneapolis, Minnesota 55455**

An Equal Opportunity/Affirmative Action Employer

DEAN, COLLEGE OF PHARMACY THE UNIVERSITY OF TOLEDO

The University of Toledo, a fully state supported institution, invites applications and nominations for the position of Dean, College of Pharmacy. Candidates should have an earned doctorate in the pharmaceutical discipline, a demonstrated capability for administration and management, a record of scientific accomplishment, professional contributions, and university teaching.

Candidates should have a knowledge concerning extramural sources of funding and support, possess enthusiasm and creativity for undergraduate and graduate pharmaceutical programs, be perceptive to the needs of the pharmaceutical community, and be capable of maintaining a close alliance with area health-care personnel and institutions.

Complete applications must include a résumé of prior education, scientific and professional accomplishments, and the names and addresses of four references. Applications must be received no later than 1 November 1976.

Applications and nominations should be sent to:

**Dr. William H. Leckie
Vice President for Academic Affairs
The University of Toledo
Toledo, Ohio 43606**

An Equal Opportunity/Affirmative Action Employer

POSITIONS OPEN

DRAKE UNIVERSITY

Invites applications and nominations for

DEAN OF THE COLLEGE OF PHARMACY

Qualifications include an undergraduate degree in pharmacy, an earned doctorate, academic experience, demonstrated administrative abilities, and evidence of leadership in educational and professional activities and development. Registration as a pharmacist is desirable.

Complete applications must include a résumé of education, experience, and scientific and professional accomplishments, and the names and addresses of five references. Applications must be received no later than 1 October 1976.

Nominations and applications should be addressed to:

Dr. C. Boyd Granberg, Chairperson
Dean Search Committee
College of Pharmacy
Drake University
Des Moines, Iowa 50311

An Equal Opportunity/Affirmative Action Employer

DIRECTOR, REPRODUCTION-TERATOLOGY

The International Research and Development Corporation, a quality independent laboratory performing toxicological research on a contract basis, is seeking a scientist to direct the research program in its recently expanded reproduction and teratology department. A Ph.D. with applicable experience or an M.S. equivalent is required. Responsibilities include supervision of technical staff, protocol preparation, data evaluation, report writing, and client consultation.

If you are interested in a rapidly growing and aggressive company and would like to live in a desirable location in the Midwest, send your résumé (including salary history) to: **International Research and Development Corporation, Mattawan, Michigan 49071** (a few miles from Kalamazoo). Attention: **J. M. Ragen, Director of Personnel**. *An Equal Opportunity Employer.*

DIRECTOR OF CANCER RESEARCH CENTER

The Cancer Research Center of Columbia, Missouri, invites applications and nominations with curriculum vitae for the position of director. Basic science/administration background preferred. Senior candidate with M.D. and/or Ph.D. degree of professorship level necessary. Primary area of development to be basic science-oncology related. Early responses will receive prompt review. Deadline date for response is 31 August 1976. Write to:

Ned D. Rhodes, M.D.
Breast Demonstration Project
Cancer Research Center
Columbia, Missouri 65201

An Equal Opportunity/Affirmative Action Employer

TWO FACULTY POSITIONS available: associate professor and assistant professor; Ph.D. in pharmacology required. Applicants should have a strong background in either toxicology, psycho-, neuro-, or endocrine pharmacology. Teaching assignments are in pharmacology at the medical school and graduate program level. Independent research is expected. Send curriculum vitae and three references to

David Lehr, M.D.
Professor and Chairman
Department of Pharmacology
New York Medical College
Valhalla, New York 10595

The School of Medicine, University of Missouri-Columbia, affiliated with the Harry S. Truman Veterans Administration Hospital, also in Columbia, has **FACULTY POSITIONS** open for: anesthesiologist, obstetrician-gynecologist, gynecologist-oncologist, pathologist, clinical pharmacologist, physiologist, psychiatrist, and radiologist.

Send pertinent information and applications to individual department chairman of specialty interest: **School of Medicine, University of Missouri-Columbia, Columbia, Missouri 65201**. *University of Missouri-Columbia is an Equal Opportunity Employer.*

Ph.D. MEDICAL MICROBIOLOGIST, assistant professor or above depending on qualifications. Postdoctoral experience required. Research in bacterial genetics and/or gram-negative microbiology. Send résumé with bibliography and three references to **Vernon Scholes, Chairman, Department of Microbiology and Immunology, University of South Alabama College of Medicine, Mobile, Alabama 36688**. *Equal Opportunity Employer*

POSITIONS OPEN

FACULTY POSITION IN BIOLOGY—Earned doctorate in a biological science. Must have interest in quality undergraduate teaching research. Principal teaching responsibilities will include general zoology, comparative vertebrate anatomy, heredity, or cellular physiology with the opportunities to develop the aquatic biology program (limnology, ichthyology, and so forth). Teaching of field course or field station experience preferred. Send résumé, transcripts, and three letters of reference or names and addresses of references by 16 August 1976 to: **Everett M. Grigsby, Chairman, Division of Natural Science and Mathematics, Northeastern Oklahoma State University, Tahlequah, Oklahoma 74464**. *Northeastern Oklahoma State University is an Equal Opportunity/Affirmative Action Employer.*

The Australian National University invites applications for appointment as **FELLOW or SENIOR FELLOW**, Department of Population Biology, Research School of Biological Sciences. Applicants should be genetically trained biologists with interest and experience in the characterization of DNA. In addition to establishing his own program of research relating to the study of variation and evolution of DNA in natural populations of either plants or animals, the successful applicant would be expected to undertake collaborative work with other members of the Department currently analyzing the cytogenetics of insect populations. This is a senior post and suitable only for applicants with substantial research and at least 5 years of postdoctoral experience or equivalent. Appointment for 5 years in first instance with possible extension to retirement age (65 years). Salary: senior fellow A\$20,619 to A\$23,064 per year; fellow A\$15,350 to A\$20,603 per year; exchange rate A\$1 = U.S.\$1.23. Reasonable travel expenses and assistance with housing. Superannuation benefits available. Further information from **Academic Registrar, Australian National University, P.O. Box 4, Canberra, A.C.T., 2600, Australia**, with whom applications close 30 August 1976.

Applications are invited for a position at the **INSTRUCTOR or ASSISTANT PROFESSOR** level in the Department of Anatomy. Ph.D. in anatomy, specialization in gross anatomy and neuroanatomy required. Individuals should be qualified to conduct an active independent or collaborative research program. This full-time position involves teaching medical, nursing, and graduate students. Qualified applicants should send curriculum vitae and references to **Dr. H. N. Schnitzlein, Chairman, Department of Anatomy, College of Medicine, University of South Florida, Tampa, Florida 33620**. *The University of South Florida is an Affirmative Action/Equal Opportunity Employer.*

MICROBIOLOGY AND ANATOMY

Two positions available immediately in the areas of microbiology and anatomy. Salary and rank appropriate for level of training and experience. Ph.D. required. Responsibilities include developing basic core courses for the students in the health professions. Interested applicants should submit curriculum vitae and three letters of recommendation to: **Dr. Patsy C. Covey, School of Allied Health Professions, 3074 Medical Science Building, University of South Alabama, Mobile, Alabama 36688**.

Equal Opportunity Employer

NEUROSCIENTIST: assistant professor of anatomy (in neurology). Ph.D. or M.D. degree required plus postdoctoral experience. Strong background in neuroanatomy and neurophysiology. Knowledge of sensory systems, and, in particular, the characteristics of the mammalian vestibular system. Experienced in investigating mammalian systems with neuroanatomical tracing methods, and with single unit and evoked potential recording. Participate in teaching neuroanatomy and neurophysiology to medical students.

MUSCLE PHYSIOLOGIST/BIOCHEMIST: research associate in neurology. To work with multidisciplinary group in muscle research. Requires experience in single muscle fiber studies particularly in the use of skinned fiber and isolated sarcoplasmic reticulum techniques.

Interested parties should send complete curriculum vitae to **Dr. Lewis P. Rowland, Neurological Institute, 710 West 168 Street, New York, New York 10032**. *An Equal Opportunity/Affirmative Action Employer.*

UNIVERSITY OF OTAGO

Dunedin—New Zealand

LECTURERS OR SENIOR LECTURERS IN ANATOMY

Applications are invited from suitably qualified persons who are able to teach neuroanatomy or histology or embryology and who in addition either have or are prepared to acquire the capacity to teach gross anatomy. While preference may be given to applicants with combined experience in neuroanatomy and gross anatomy or one of the other subjects, applications from persons well qualified in gross anatomy alone are welcome. Candidates are expected to be active in biological research as shown by recent publications, but research or tangible evidence of creative work in teaching itself will be given due weight.

These are established posts but short-term appointments may be negotiated. Appointment available as from 1 November 1976.

Further particulars including details of salary scales should be obtained from the Secretary-General, Association of Commonwealth Universities (Appointments), 36 Gordon Square, London WC1H 0PF or from the undersigned.

Applications, quoting reference number A.76/41 close in New Zealand and London on 15 August 1976.

D. W. GIRVAN
Registrar

SEROLOGIST

The Australian Commonwealth Serum Laboratories require a qualified and experienced blood group serologist/immunohematologist to take charge of the World Health Organization National Blood Group Reference Laboratory.

The Commonwealth Serum Laboratories is a semigovernment statutory authority which operates under the control of an independent Commission. Its function is to undertake research into and to produce biological products. It is located in the city of Melbourne and comprises well-equipped laboratories and a comprehensive technical library. Its total staff exceeds 1000 and approximately 120 graduates are employed.

The current work of the Blood Group Reference Laboratory involves blood group genetic studies, the investigation of difficult blood group and cross-matching problems, and research related to the antigenic characteristics of blood constituents destined for diagnostic or therapeutic use. Original work in these and related areas will be encouraged.

Conditions are excellent and include liberal leave provisions and superannuation. Salary will be dependent upon the qualifications and experience of the successful applicant. The cost of travel to Australia for the appointee and his/her family will be paid by Commonwealth Serum Laboratories.

Applications or inquiries should be directed by airmail to:

Personnel Manager
Commonwealth Serum Laboratories
45 Poplar Road
Parkville, Victoria, 3052
Australia

POSITIONS OPEN

The Division of Biology, University of Iceland, is seeking applicants for the position of **VISITING LECTURER IN DEVELOPMENTAL BIOLOGY** to teach an introductory course during the academic year 1976-1977. Applicants should provide curriculum vitae, list of publications, and a description of research and teaching interests. Salary (per year) about 1kr 1.440.000 (about £4300). Send applications before 20 August 1976 to **Chairman, Division of Biology (Liffræðiskor), University of Iceland, Grensávegur 12, Reykjavik, Iceland.**

MARINE INVERTEBRATE BIOLOGIST. Postdoctoral position for a marine benthic invertebrate biologist/ecologist for deep ocean manganese nodule project. Immediate opening for 1 year. Extension possible. Send résumé and names of three references to **Dr. Allen Z. Paul, Lamont-Doherty Geological Observatory of Columbia University, Palisades, N.Y. 10960.**

PHYSIOLOGIST

The University of Massachusetts Medical School, Department of Physiology, invites applications for a faculty position at a rank and salary dependent upon qualifications. Candidates must be committed to a development of an active research program and must be able to teach medical and graduate physiology. Preference will be given to candidates with a molecular or biophysical orientation. Please send curriculum vitae, reprints, and references to **Dr. H. Maurice Goodman, University of Massachusetts Medical School, 55 Lake Avenue North, Worcester, Mass. 01605.** An Equal Opportunity/Affirmative Action Employer, M/F.

POSTDOCTORAL INTERNSHIP IN MAMMALIAN ETHOLOGY

The National Zoological Park is seeking applicants for a temporary appointment of up to 2 years in the Office of Zoological Research. The position would involve research of mammalian behavior, but the successful candidate would be required specifically to initiate and develop projects concerned with ungulate breeding and management. Salary up to \$14,000 per year depending on candidate's experience and qualifications. Must have Ph.D. in zoology and previous experience in description and analysis of mammalian behavior, either in captivity or the field, particularly with ungulates. Submit a résumé, an SF-171 Personal Qualifications Statement (obtainable at any Civil Service Job Information Center) and three references to: **Dr. J. F. Eisenberg, Office of Zoological Research, National Zoological Park, Smithsonian Institution, Washington, D.C. 20009,** before 27 August 1976. This position is restricted to U.S. citizens. *The U.S. government is an Equal Opportunity/Affirmative Action Employer.*

Wayne State University's Department of Immunology and Microbiology has openings for **POSTDOCTORAL POSITIONS IN CELLULAR IMMUNOLOGY AND IMMUNOPATHOLOGY** for 2-year periods. Immediately available. Direct inquiries and/or biographies to: **Noel R. Rose, Chairman, Department of Immunology and Microbiology, Wayne State University, 7374 Scott Hall, 540 East Canfield Avenue, Detroit, Michigan 48201.** We are an Equal Opportunity/Affirmative Action Employer.

POSTDOCTORAL POSITION

For Ph.D. chemist or M.D. interested in the physical chemistry of the hardening of arteries. Send résumé and two letters of recommendation to **Dr. C. A. J. Hoeve, Department of Chemistry, Texas A & M University, College Station, Texas 77843.**

Equal Opportunity Employer

POSTDOCTORAL POSITION (2 years) for characterization of proteins produced by lymphocytes and their effects on cell-mediated immune responses. Ph.D. in biochemistry (isoelectric focusing, . . .) essential. Available immediately. Send curriculum vitae, references, and publications to: **Dr. B. F. Mackler, Dental Science Institute, P.O. Box 20068, Houston, Texas 77025.**

An Equal Opportunity/Affirmative Action Employer

POSITIONS OPEN

The experimental high energy physics group at the Ames Laboratory of Iowa State University expects to have an opening for a **POSTDOCTORAL ASSOCIATE** to begin at a mutually convenient time after 1 October 1976. The major responsibilities are expected to be associated with a proposed experiment using the LASS facility at SLAC. In addition to this we have data from previous Fermilab experiments using the 30-inch bubble chamber and wide-gap spark chambers and applicants may wish to devote part of their time to the analysis of this data.

It is expected that applicants will have significant experience with electronically based experiments. Experience with PWC Systems on-line to a computer or similar techniques would be very helpful.

Applications should include a curriculum vitae and three letters of reference.

Applications or inquiries should be addressed to:

**Professor W. J. Kernan, Jr.
Department of Physics
Iowa State University
Ames, Iowa 50010**

The Ames Laboratory and Iowa State University are Equal Opportunity/Affirmative Action Employers.

POSTDOCTORAL POSITION—IMMUNOPATHOLOGY

Position starting October 1976 involves participation with a team of immunologists and pathologists studying mechanisms of immunologic injury to the lung. Applicants must possess an M.D. or Ph.D. degree; experience in immunology or protein chemistry preferred. Send résumé to **Dr. W. F. Willoughby, Department of Pathology, The Johns Hopkins University School of Medicine, Baltimore, Maryland 21205.** An Equal Opportunity/Affirmative Action Employer.

POSTDOCTORAL POSITION available for an American Cancer Society-supported project on the assembly of chromosomal proteins onto regions of DNA damaged by carcinogens. Background in biochemistry with particular interest in protein-nucleic acid interactions required. Please send résumé and references to: **Dr. Lorne Taichman, Department of Oral Biology and Pathology, School of Dental Medicine, State University of New York, Stony Brook, New York 11794.** Equal Opportunity/Affirmative Action Employer.

POSTDOCTORAL POSITION—to be filled before 1 July 1977. Research on the eye and visual system. Program includes biophysics, biochemistry, histochemistry, electrophysiology, and psychophysics. Beginning salary range \$10,000 to \$13,200. Send résumé and letters of recommendation to: **Dr. H. G. Sperling, University of Texas Graduate School of Biomedical Sciences, Sensory Sciences Center, 6420 Lamar Fleming Boulevard, Houston, Texas 77025.** An Equal Opportunity Employer.

POSTDOCTORAL RESEARCH ASSOCIATE

Grant-supported basic biochemical research involving plasma membrane hormone receptors in human and animal systems, accentuating insulin, glucagon, and prostaglandins. Cyclic nucleotide and tissue culture experience helpful. Salary \$10,000 to \$13,000 depending on experience; faculty-level benefits. Send curriculum vitae and references to **Dr. Melvin Blecher, Department of Biochemistry, Georgetown University Medical Center, Washington, D.C. 20007.** An Affirmative Action/Equal Opportunity Employer.

The Departments of Rehabilitation Medicine and Pharmacology at the College of Physicians and Surgeons of Columbia University wish to recruit a **SCIENTIST** who is an established investigator to develop a research program in areas of mutual interest. First preference will be given to those working in the general area of the microcirculation, although other fields such as muscle activity and temperature regulation also will be considered. The appointment would carry a joint appointment in both departments commensurate with training and experience and would involve teaching responsibilities for medical and graduate students. Participation in the design and implementation of clinical research projects in collaboration with physicians is desirable. Write to: **John A. Downey, M.D., Chairman, Department of Rehabilitation Medicine, Columbia-Presbyterian Medical Center, 630 West 168 Street, New York, N.Y. 10032.**

Affirmative Action/Equal Opportunity Employer

POSITIONS OPEN

ASSISTANT PROFESSOR

Applications are invited for a position at the level of assistant professor in the Laboratory for Experimental Oncology. Applicants should have an M.D. or Ph.D. degree, and a minimum of 3 to 5 years of postdoctoral experiences in somatic cell hybridization, modern chromosome banding techniques, and an interest in biochemical genetics. Applicants should have demonstrated productivity in research and a commitment to collaborative research in gene expression in neoplasia. Interested candidates should send curriculum vitae, transcripts, reprints, description of research experience, and the names of three possible references by 1 September 1976 to **Dr. George Weber, Professor and Director, Laboratory for Experimental Oncology, Indiana University School of Medicine, Indianapolis, Indiana 46202.**

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POSTDOCTORAL OR RESEARCH ASSOCIATE

The Laboratory for Experimental Oncology invites applications for two positions for research in metabolic regulation and control of enzyme activity, synthesis, and breakdown in normal and neoplastic tissues. Applicants with recent Ph.D. who have demonstrated productivity and have a commitment to collaborative research programs directed to an understanding of the molecular biology of transcription and translation in normal and neoplastic cells should send a curriculum vitae, transcripts, reprints, description of research experience, and the names of three possible references by 1 September 1976 to **Dr. George Weber, Professor and Director, Laboratory for Experimental Oncology, Indiana University School of Medicine, Indianapolis, Indiana 46202.**

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POSTDOCTORAL RESEARCH IMMUNOLOGIST: Candidate must have Ph.D. and training and research experience in immunology to conduct research in the following areas: (i) immunological detection of embryonic antigens in virus and chemical carcinogen-induced mammary tumors in mice and rats, (ii) immunization of mice and rats with embryonic antigens to prevent initiation and/or growth of mammary tumors, (iii) detection of transformed mammary epithelial cells in vitro by using immunological and other methods, and (iv) immunological detection of mammary tumor virus antigens in mammary cells infected with MTV and/or transfected with cellular DNA. Salary \$10,000 to \$12,000 depending on relevant experience. Appointment will be for 1 year with option for renewal if mutually agreeable and funds become available. Send curriculum vitae and three letters of recommendation to: **Director, Cancer Research Laboratory, 230 Warren Hall, University of California, Berkeley, Calif. 94720.**

An Equal Opportunity/Affirmative Action Employer. Minorities and women are encouraged to apply.

PROFESSOR AND CHAIRPERSON

**New Department of Neurology
University of Massachusetts Medical School**

Candidate should be a faculty member of an established department, of proven strength and dedication as a clinical teacher, active in some area of basic or clinical neuroscience research. *Applications welcomed from women and nonwhites.* An Equal Opportunity/Affirmative Action Employer. Send curriculum vitae to:

**Merrill K. Wolf, M.D.
Chairman, Search Committee
Department of Anatomy
University of Massachusetts Medical School
55 Lake Avenue North
Worcester, Massachusetts 01605**

PROFESSOR AND HEAD, BIOCHEMISTRY

Applications are invited for the position of professor and head of the Department of Biochemistry, Louisiana State University Medical Center in New Orleans. Responsibilities include direction of teaching and research programs in medicine, dentistry, nursing, and allied health as well as promotion of an active M.S. and Ph.D. program.

Applicants should submit curriculum vitae and any other supporting documents to **Dr. Gerald S. Berenson, Chairman, Biochemistry Search Committee, Louisiana State University School of Medicine, 1542 Tulane Avenue, New Orleans, La. 70112.** Louisiana State University is an Equal Opportunity/Affirmative Action Employer.

PHARMACOLOGISTS

Capital expansion of our Wilmington Biomedical Research laboratories has made possible significantly increased effort in our Gastrointestinal Program.

We seek a senior level (Ph.D.) scientist and three or four scientists at the MS/BS level. Experience may be industrial or academic, but should demonstrate superior work in Gastrointestinal, Cardiovascular, or Autonomic pharmacology. A strong background in chemistry would be advantageous in competition for these positions.

ICI United States Inc., is a major subsidiary of Imperial Chemical Industries Ltd., one of the largest chemical/pharmaceutical manufacturers in the world. Our Biomedical Research group will play an important role in the development of ICI drug programs originating here and in England. Growth opportunities will be unique. Salaries and benefits compare favorably in the American pharmaceutical industry. Location is our campus-like setting in suburban Wilmington, 25 miles south of Philadelphia.

Interested candidates should submit curriculum vitae in confidence to:

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Senior Toxicologist

Rapidly growing division of NYSE drug company located in the Northeast seeks a Toxicologist to take charge of safety evaluation program.

Must have PhD plus 5 years' experience with emphasis on experimental design, data evaluation, federal regulatory requirements.

Submit resume, including list of publications and salary requirements to:

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If qualified and interested
send pertinent information to:

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POSITIONS OPEN

PRE- AND POSTDOCTORAL POSITIONS are available for studies on the protein synthesizing system with special emphasis on ribosomes—topography, biogenesis, and function—under various conditions of growth and development. Teaching opportunities available. Reply with résumé to: **Professor Bruce H. Sells, Laboratories of Molecular Biology, Faculty of Medicine, Memorial University of Newfoundland, St. John's, Newfoundland, Canada A1C 5S7.**

POSITION IN RADIOLOGICAL SCIENCES AT THE UNIVERSITY OF CALIFORNIA, IRVINE, COLLEGE OF MEDICINE

Applications are invited for a post at the assistant professor level in the Section of Therapeutic Radiology at the University of California, College of Medicine, Irvine. This will be a full-time position with responsibilities for teaching at undergraduate and graduate levels and for clinical research and service in the University of California, Irvine, Medical Center. The applicant should be a Board-certified radiologist preferably with a minimum of 3 years of experience in Therapeutic Radiology in a University Medical School, and must be prepared to engage in ongoing research and to develop new research protocols. *Applications from all qualified candidates are welcome; minorities and women are encouraged to apply.* Applications, including a short biography and copies of any publications, should be sent to:

**Eric N. C. Milne, M.B., Ch.B., F.F.R.
Professor and Chairman
Department of Radiological Sciences
College of Medicine
University of California, Irvine
Irvine, California 92717**

Closing date: 27 August 1976.

University College, Galway, Ireland RESEARCH ASSISTANT

Applications are invited from graduates in physiology, biochemistry, or allied subjects to study relationships between acid-base disturbances and ammonia metabolism. The research is supported by the Medical Research Council of Ireland.

Applications should be sent to **Professor D. J. O'Donovan, Physiology Department, University College, Galway, Ireland**, not later than 20 August 1976.

KANSAS GEOLOGICAL SURVEY RESEARCH ASSOCIATE POSITIONS

The Kansas Geological Survey, a Division of The University of Kansas, invites applications for two permanent research associate positions in programs representing an integrated approach to resource research, development, and management in an academic environment. A minimum academic degree of M.S. (Ph.D. preferred) is required in the described appropriate field for each position. Salary range for each position is from \$13,500 to \$20,000 depending upon academic preparation and experience. Deadline for applications is 15 September 1976. *We are an Equal Opportunity Employer. Qualified men and women of all races are encouraged to apply.*

1) HYDROLOGIST-PLEISTOCENE SPECIALIST

Research in Pleistocene geology with special reference to groundwater problems. Position requires degree in geology (hydrology emphasis) or related field, with interest and background in midwestern Pleistocene geology.

2) RESEARCH HYDROLOGIST

Research involves mathematical and economic modeling by computer methods with the objective of assessing options in groundwater utilization. A degree is required in geology, hydrology, petroleum engineering, or other field related to the above objective.

Applicants should submit résumés to:

**William W. Hambleton, Director
Kansas Geological Survey
1930 Avenue "A," Campus West
The University of Kansas
Lawrence, Kansas 66044**

RESEARCH ASSOCIATE in ultrastructural cryobiology with doctoral training in physics. \$13,200 per year. **Box 363, SCIENCE.**

POSITIONS OPEN

POSTDOCTORAL TRAINING IN CELLULAR IMMUNOLOGY

The Department of Microbiology and Immunology, University of Colorado School of Medicine, invites applications for postdoctoral NIAID traineeships from individuals with a Ph.D., M.D., or equivalent degree and an interest in immunology teaching and research. Training projects offered by our faculty focus on the cellular biology and immunology of induction and repression of immunologic responses. Address inquiries to **A. J. Crowle, Ph.D., B-122, University of Colorado School of Medicine, 4200 East 9 Avenue, Denver, Colorado 80220.** *An Equal Opportunity/Affirmative Action Employer.*

STAFF OFFICER

The National Academy of Sciences/National Research Council is seeking a staff officer for a Committee on Radioactive Waste Management. Candidate's qualifications should include a Ph.D. or equivalent in physical or earth sciences or nuclear engineering, with experience in fields related to Radwaste management (radiobiology, geology, ocean engineering, and so forth). Send résumé to **Dr. John H. Pomeroy, National Academy of Sciences, 2101 Constitution Avenue, NW, Washington, D.C. 20418.** *An Equal Opportunity Employer*

TERRESTRIAL PLANT ECOLOGIST

Opening for plant ecologist with environmental impact analysis experience. Responsibilities include field investigations, report preparation, and interdisciplinary project management. Requires master's degree in plant ecology, minimum of 3 years of experience, and demonstrated communications and managerial skills. Salary range \$15,000 to \$17,000. Send résumé to: **Robert Maestro, Environmental Planning Department, Betz Environmental Engineers, One Plymouth Meeting Mall, Plymouth Meeting, Pa. 19462.** *An Equal Opportunity Employer.*

TOXICOLOGIST

Due to expanding work load, major ethical drug firm has a new position open for a toxicologist. Responsibilities will include the design and supervision of drug safety evaluation studies, supervision of the preparation of draft toxicology reports, preparation of final reports, and assisting in conducting, reviewing, and reporting special toxicity reproductive or mutagenicity studies.

Ph.D. in toxicology, pharmacology, or related area required. Paid relocation to an outstanding rural environment in the Northeast.

Send résumé and salary history to

Box 364, SCIENCE
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TOXICOLOGIST

The National Academy of Sciences is seeking a staff officer for its Advisory Center on Toxicology. Responsibilities will include preparing reviews of toxicity of selected materials and assistance in report preparation. A Ph.D., or equivalent, in toxicology, pharmacology, or related science is desirable. Send résumé to **Ralph C. Wands, Advisory Center on Toxicology, National Academy of Sciences, 2101 Constitution Avenue, NW, Washington, D.C. 20418.**

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VICE DEAN RESEARCH/GRADUATE STUDIES FACULTY OF MEDICINE LAVAL UNIVERSITY

Duties: provide leadership in the development and strengthening of the Faculty research and graduate programs; direct and supervise the Faculty research budget and the research and graduate studies office; participate in the direction of the Faculty with the dean and other vice deans.

Qualifications: M.D. or Ph.D.; established research reputation in biomedical science; experience in graduate education and administration; fluency in French.

Salary: negotiable. Starting date: upon nomination.

Applications, including a curriculum vitae and references, should be submitted by 1 October 1976 to **Dr. Pierre Potvin, Secretary, Faculty of Medicine, Laval University, Quebec, Quebec, Canada, G1K 7P4.**

POSITIONS OPEN

STAFF FELLOW OR RESEARCH ASSOCIATE: Ph.D. with strong background in enzymology or biophysics to work on membrane resolution and reassembly in the oxidative phosphorylation system. Starting date December 1976. This Institute has good working conditions and benefits. Salary range \$11,000 to \$14,000 depending upon experience. **D. R. Sanadi, Boston Biomedical Research Institute, 20 Staniford Street, Boston, Massachusetts 02114.**

SYSTEMS ECOLOGIST (ASSISTANT PROFESSOR): Full-time research in the application of concepts and procedures of systems ecology to solve resource management problems associated with natural and man-modified ecosystems. Ph.D. in systems ecology, one degree (or demonstrated experience) in resource management field, and the desire to work cooperatively with wildlife, range, and forest scientists are essential. Tenure-accruing 12-month appointment. Salary commensurate with qualifications. To apply, send transcripts, curriculum vitae, three letters of recommendation, and a statement of research and teaching interests to: **Systems Ecology Search Committee, Attention: Dr. W. H. Smith, School of Forest Resources and Conservation, University of Florida, Gainesville, Florida 32611.** *The University of Florida is an Equal Opportunity/Affirmative Action Employer.*

FELLOWSHIPS

King's College, Cambridge: **SOCIOBIOLOGY.** Applications are invited from men and women graduates for **FELLOWSHIPS** in sociobiology (including behavioral ecology) tenable in the College's Research Centre. Closing dates: 15 November 1976 for junior fellowships (candidates must be under 28 on 1 December 1976 and with not more than about 3 years of research experience); and 1 October 1976 for other fellowships. Tenure: up to a maximum of 4 years. Details from: **The Convener, Research Centre, King's College, Cambridge CB2 1ST, England.**

HARVARD UNIVERSITY DEPARTMENT OF BIOLOGY

POSTDOCTORAL RESEARCH FELLOWSHIPS become available from time to time in this Department. Appointments are usually for 1 year and sometimes are renewable. Those interested should write to a member of the biology faculty in whose laboratory they would like to work or, for general information, to **Chairman, Department of Biology, Harvard University, 16 Divinity Avenue, Cambridge, Mass. 02138.** *Harvard University is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL TRAINING FELLOWSHIP IN RENAL PHYSIOLOGY. Support for a fellowship has recently become available allowing the immediate appointment of a postdoctoral trainee to study acid-base and electrolyte physiology using micro-puncture methodology. Write **Dr. F. John Gennari, Box 56, Tufts-New England Medical Center, 171 Harrison Avenue, Boston, Massachusetts 02111.**

Two NIH **POSTDOCTORAL FELLOWSHIPS** are available immediately. Candidates who wish to expand their research training in (i) the relationship of human electrophysiological and psychophysical functions or (ii) eye movement control and its visual consequences should send their curriculum vitae and three letters of recommendation to:

**Dr. John Armington
Department of Psychology
Northeastern University
Boston, Mass. 02115**

Northeastern University is an Affirmative Action/Equal Opportunity Employer.

REEF FOUNDATION POSTDOCTORAL FELLOWSHIP available immediately for marine biologist interested in studies of the sediment/water interface, in particular the effect of resuspended sediments on the productivity of the water column and food chain dynamics of zooplankton. Applicants should recently have completed the Ph.D. or be in the process of completing their dissertation. Stipend \$13,000 per year for 1 to 2 years. Send curriculum vitae and names of three references to:

**Dr. F. Williams, Chairman
Division of Biology and Living Resources
Rosenstiel School of Marine and Atmospheric Science
4600 Rickenbacker Causeway
Miami, Florida 33149**

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Introducing the first pocket programmable that remembers your programs and data even when it's turned off. The new HP-25C. \$200.00*



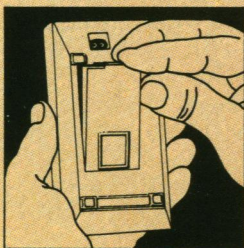
Meet the first Scientific Programmable calculator that lets you take a breather midway through your solution *without* having to start all over again when you get back. The reason: Its memory and storage registers stay ON even when you shut it OFF†—during a phone call, a meeting or a weekend.

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3. It enables you to gather data one place (such as at a survey jobsite) and retain your results until you get back to work with them later (just think of the time you'll save and the accuracy you'll gain because you *won't* have to re-enter information).

4. You don't lose data when you lose battery power. Here's why: when all the decimal points display—indicating a low battery—your data and program will not be lost provided the calculator is turned OFF and the recharger is promptly connected. The HP-25C will even retain your data and program for at least 5 seconds—without *any* battery at all—while you are replacing a discharged battery with a charged one.



But there's more. Aside from Continuous Memory, the HP-25C is identical to our popular HP-25. Both give you a total of 72 pre-programmed functions and operations; complete keystroke programmability; branching and conditional test capability and fixed decimal, scientific and engineering (exponent in

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The HP-25C. There's never been a Scientific Programmable Calculator like it before.

Best of all, the HP-25C's got HP's name on it. And you know what that means. Design, performance and a back-up support system you just can't get anywhere else.

Why not "test touch" one for yourself? Or, if Continuous Memory is not important to your particular application, try our standard HP-25, \$145.00*. For complete HP-25C specs and the name of your nearest dealer, call toll-free **800-538-7922 (in Calif. 800-662-9862)**.

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- RPN logic system with 4-memory stack.
- \$200.00*

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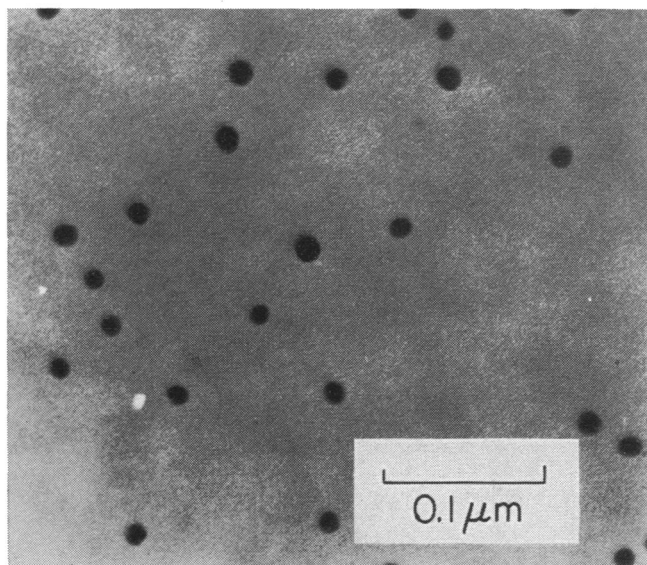
†The HP-25C's C-MOS memory chips consume only 1/80,000 of the calculator's normal operating power. Thus, a fully charged battery pack can hold your programs and data for at least 1½ months with the HP-25C turned off.

OLIGO-CHEMISTRY

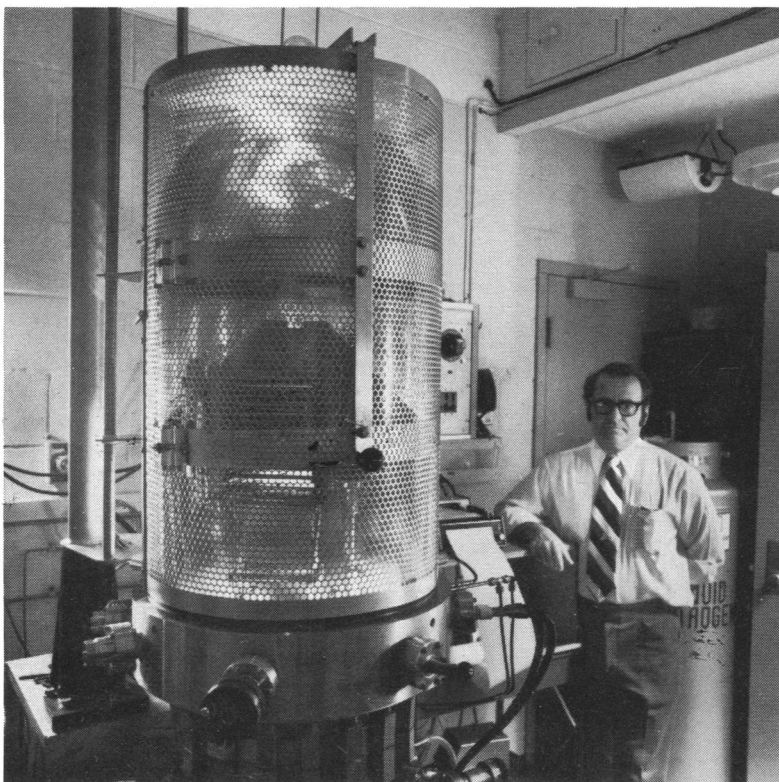
(don't look for it in the dictionary—yet)

Meet Jack Hamilton, electron microscopist and specialist in few-atom chemistry, a little-traveled branch of the big subject of catalysis. The petrochemical industry, of course, wants its catalysts finely divided—which has to mean chunks of only, say, a few hundred atoms each. There is also such a thing as catalysis by single atoms in gas- or liquid-phase reactions, dubbed homogeneous catalysis. Catalysis by a *few* atoms is something else.

Hamilton's gadget exposes a substrate to silver vapor through a slotted belt whose speed gives good control of the number of incident atoms per unit area. At the lower ranges of flux, even electron microscopy reveals no visible deposition until some of the silver clusters are built up with additional silver, chemically deposited. Then the electron microscope shows spots like this:



From Poisson statistics, if the number of spots per unit area on such micrographs is plotted on log-log paper as a function of incident silver atoms per unit area, the slope gives the number of atoms per nucleating cluster.



The critical number turns out to be 4. Four seems to be the smallest number of silver atoms capable of making a cluster that can catalyze the conversion of dissolved silver ions to silver atoms in the presence of a reducing agent. (For gold it's 2.) There are lots of single silver atoms lying there on the substrate that can't catalyze deposition of additional silver from solution but can collect zinc from its vapor to make their presence known.

It is fortunate for our business that a single silver atom rarely acts as a catalyst to convert to silver all the silver ions in the silver halide crystal it inhabits. All the silver halide in a photographic emulsion would turn developable without waiting for light to initiate the proceedings. If a lone atom doesn't spring the trap (although four may not be required, as in solution), several photons must hit that crystal within a microsecond or so. Then it's no fooling, and that particular crystal has really been marked to go, and photography becomes possible, and we all live happily forever after.

Lest one marvel overmuch at operating on single atoms, Hamilton points out that in electron micrography it takes only a single electron per square micrometer of image to build up a density of 2 or 3 on the negative. That's why electron micrographs are grainier than light photographs on the same photographic material. To improve signal-to-noise ratio, one contrives to reduce effective photographic speed and thus use more electrons in forming the image.

One other thing. When we say catalysis, we really mean it. Hamilton has colleagues adept at calculating the lowest unoccupied molecular orbitals of clusters of some 5 or 10 atoms of various metals and relating them to the highest occupied molecular orbitals of reactant molecules. If you want to get into that, drop Jack a note at the Kodak Research Laboratories, Rochester, N.Y. 14650.

