## Personnel Placement

Only those employers who will not discriminate on the basis of race, sex, religion, age, color, or na-tional origin should submit Personnel Placement advertising.

POSITIONS WANTED: 40¢ per word; use of Box Number counts as 10 additional words. Minimum charge \$10. Prepayment required. This rate applies to individuals only; personnel agencies and com-panies take display rate for all advertising.

DISPLAY (POSITIONS OPEN, MARKET PLACE, AND SO FORTH): \$110 per inch, minimum (1 inch is equivalent to 12 lines of 48 characters each). Ads over 1 inch billed to nearest quarter inch. No charge for Box Number. Rates net. No agency commission allowed for ads under 4 inches. No cash discount. Prepayment required for foreign advertising. Pur-chase orders and billing information must accom-pany all other advertising.

COPY for ads must reach SCIENCE by Wednesday, 3-1/2 weeks before issue date (Friday of each week) requested. Send copy for all positions wanted ads and display ads under 5 inches to:

SCIENCE, Room 207 1515 Massachusetts Ave., I Washington, D.C. 20005 . NW

Send copy for display ads, 1/6 page and larger, to:

Scherago Associates, Inc. 11 West 42nd Street New York, N.Y. 10036

BLIND AD replies should be addressed as follows:

Box (give number) SCIENCE 1515 Massachusetts Ave., NW Washington, D.C. 20005

#### **POSITIONS WANTED**

Biochemist, Ph.D. 1972. Postdoctoral experience, pubbictions. Training in neurochemistry includes lipids, tumor-related antigen, catecholamine area, enzymol-ogy. Experience with GC, TLC, LC, electrophoresis, nutrition, intracisternal injection, etc. Seeks research position. Box 244, SCIENCE. X

Biologist. Ph.D. botany/zoology. Publications. Experi-ence in phytoplankton/zooplankton dynamics as in-dicators of water quality. Postdoctorate experience in algal systematics. Seeks position in related field, in-cluding research or teaching. Box 228, SCIENCE. 6/6

Two positions, same geographic area, husband/wife. (i) M.D., Ph.D. Cell-Developmental Biologist, experience eukaryotic cell culture, hematology/oncology. Interest: control cell phenotype expression. Medical internship completed. (ii) Ph.D. Cell Biologist/Biochemist, exten-sive experience in eukaryotic membrane biology, hu-pan improgramatic tissue tuning. Both publications wan immunogenetics, tissue typing. Both: publications, postdoctoral training, want responsible, long-term po-sitions teaching/research/administration in academia, industry, or government. Available 1 September 1975. Box 245, SCIENCE. X

Geochemist/Physicist, Ph.D., 32, experience in stable isotope geochemistry, age determination, physical oceanography, mass spectrometry, computer program-ming; seeks research position. Publications, résume, references on request. Box 246, SCIENCE.

Histologist-Embryologist, Ph.D., postdoctoral. Desires teaching and/or research position. Experienced in transmission and scanning electron microscopy, auto-radiography, organ culture. Publications. Box 218, SCIENCE. 6/6

Ichthyologist/Ecologist. Ph.D. 1968. Publications. Teaching experience at a major university. Research experience with temperate stream and estuarine fishes, Caribbean nearshore ecosystems, power plant siting, Field oriented. Box 247, SCIENCE. X

Medical Microbiologist-Immunologist, Ph.D. Five years of industrial experience in diagnostic product development from idea conception through licensed kit.. Responsible for quality control as well as production control. Box 249, SCIENCE. X

Science Editor. Knows all phases of publishing from rough draft to printed product. Strongest areas: medi-cine, chemistry. Box 238, SCIENCE. 6/6

#### POSITIONS WANTED

Immunologist/Immunochemist. Ph.D. Postdoctorate, 4 years' experience, publications. Research emphasis has been on production and purification of antibodies to haptens. Extensive RIA development, tumor immunology. Desires position in research, industry, or government. Location open, available immediately. Box 248, SCIENCE.

Nutritionist. Ph.D. Trained in biochemistry and physi-Nutritionist, Ph.D. I rained in biochemistry and physi-ology. Four years of experience. Conducted research on amino acids, proteins, vitamin metabolism, and SCP development. Expertise in laboratory techniques and computer technology. Publications. Well recom-mended, Can communicate and work with others. Worked with most laboratory and domestic animals. Box 250, SCIENCE. X

SEM Specialist; 7<sup>1/2</sup> years of experience. Extensive experience in geology and biology; also have strong physical science application with energy dispersive x-ray analysis experience. Broad TEM background. De-sire to work in research-oriented laboratory as man-ager/operator of SEM unit. Prefer governmental agency or university position. For résumé detailing background, write Box 251, SCIENCE. X

Toxicologist: B.S. chemistry. Long experience in both the theoretical and pragmatic aspects of forensic and clinical toxicology. Have worked with law enforcement agencies, hospitals, universities, and industry. Possess the ability to communicate with the public in matters of drug abuse and drug education programs. Résumé on request. Box 252, SCIENCE. X

#### POSITIONS OPEN

A position is available at the Associate Professor rank A position is available at the Associate Professor rank in the Division of Allergy/Immunology, Department of Pediatrics, State University of New York at Buffalo. The position is open to individuals with the following qualifications. (i) M.D. degree. (ii) Board certification in Pediatrics and in Allergy/Immunology. (iii) Re-search capabilities in laboratory immunology, in addi-tion to the ability to supervise laboratory procedures for the evaluation of humoral and cellular immuno-logic competence nolumoorphonuclear lawlocute func-tions. for the evaluation of humoral and cellular immuno-logic competence, polymorphonuclear leukocyte func-tion, and the complement system. (iv) Able to assume clinical and teaching responsibilities. Apply to Chair-man, Department of Pediatrics, Children's Hospital, 219 Bryant Street, Buffalo, N.Y. 14222. Telephone: 716-878-7258. An Equal Opportunity/Affirmative Ac-tion Employer. tion Employer.

## TEXAS CHRISTIAN UNIVERSITY (TWO) ASSISTANT PROFESSORS OF GEOLOGY

Applications are invited for two permanent faculty positions. Structural Geology and Sedimentary Petrol-ogy, starting fall 1975. In addition to these major fields, the Department desires applicants with expertise in one or more of the following: petroleum geology, explora-tion geophysics, computer and statistical applications, environmental geology, and igneous and metamorphic petrology. The Ph.D. is required for a permanent ap-pointment but a temporary (non-Ph.D.) appointment will be considered. Send résumé, transcripts, and three letters of recom-

Send résumé, transcripts, and three letters of recom-mendation to A. J. Ehlmann, Chairman, Department of Geology, Texas Christian University, Fort Worth, Texas 76129. TCU is an Affirmative Action/Equal Opportunity

Employer.

#### UNIVERSITY OF MICHIGAN ASSISTANT PROFESSOR OF PHARMACOLOGY

Ph.D. in pharmacology or chemistry required, with at least 2 years of experience in drug analytical methods, including familiarity with gas chromatography-mass spectroscopy techniques. Some teaching experience in pharmacology essential. Applicant would participate in the research and teaching programs of the Department of Pharmacology and work closely with the director of the Clinical Pharmacology Center in a clinical phar-macology program. Please send résumé to **Box 255**. macology program. Please send résumé to **Box 255**, SCIENCE. Code #1912TO. A Nondiscriminatory, Affirmative Action Employer.

## UNIVERSITY OF MICHIGAN DEPARTMENT OF PHARMACOLOGY

Two Assistant Professor positions available in bio-chemical pharmacology and/or physiological pharma-cology. Candidates should have completed at least 2 years of postdoctoral training in pharmacological re-search and be prepared and interested in teaching phar-macology in the departmental academic programs. Ap-plicants should send curriculum vitae and bibliography with reference names and a short description of teach-ing experience and research interests to Box 256, SCI-ENCE. Code Nos. 900BO and 300FO. A Non-discriminatory, Affirmative Action Employer.

#### POSITIONS OPEN

#### ASSISTANT PROFESSOR OF BIOLOGY

position is available (September 1975) for an individual qualified to teach microbiology and genetics. Responsibilities will include participation in under-graduate biology instruction as well as encouragement graduate biology instruction as well as encouragement and supervision of undergraduate research. An earned doctorate is required, and undergraduate teaching ex-perience is desirable. Submit application, curriculum vitae, and three letters of recommendation by 20 June 1975 to: Dr. James S. Conroy, Chairman, Biology Search Committee, Widener College, Chester, Pa. 19013. An Affirmative Action/Equal Opportunity Em-nlover. plover.

The Biology Department of William Paterson College invites applications for the position of ASSISTANT PROFESSOR in the general area of development biol ogy. We particularly seek someone with teaching and research interests in neuroanatomical, neurophysio-logical, or endocrinological aspects of developmental biology; postdoctoral experience preferable. As an Af-firmative Action/Equal Opportunity Employer, we in-timative for the second vite applications from minority group and female ap-plicants. Send résumé and the names of three references to:

Affirmative Action Committee c/o Office of Academic Vice President Search and Screening Committee Drawer C Morrison Hall William Paterson College of New Jersey 300 Pompton Road Wayne, New Jersey 07470

### ASSISTANT PROFESSOR CONSERVATION-BIOLOGY

New position fall 1975 for doctorate plus postdoctoral teaching experience. Responsibilities include curricu-lum development and undergraduate instruction for an impending Department of Conservation and Recre-ation. Expertise is needed in Range Improvement, Range Inventory and Analysis, Watershed and Soils, Introductory Forestry, Wildlife Management Tech-niques, and possibly related areas such as Conservation of Natural Resources, Dendrology, and Agrostology. Salarv S13.000 for academic year plus potential for Salary \$13,000 for academic year plus potential for summer teaching. Closing date 1 July. Send all transcripts, references, application, and curriculum vitae to Dr. Karl Holte, Search Committee Chairman, P.O. Box 8007, Idaho State University, Pocatello, Idaho 83209. Telephone: 208-236-3530.

#### ASSISTANT PROFESSOR DEPARTMENT OF INTERNAL MEDICINE

The University of Michigan is seeking an M.D. with prior training in hepatology, immunology, and a com-mitment to the cure and investigation of patients with alcoholic liver disease. Please send résumé to **Box 254**, SCIENCE

A Nondiscriminatory, Affirmative Action Employer

#### ASSISTANT PROFESSOR-PHARMACOLOGY

Ph.D. who shows promise as an excellent teacher Ph.D. who shows promise as an excellent teacher and is dedicated to developing an independent research program. Postdoctoral experience preferred. Please send curriculum vitae, statement of research and teaching objectives, and three letters of recommenda-tion to: Chairman, Department of Pharmacology and Toxicology, School of Pharmacy, University of Kansas, Lawrence, Kansas 66045. The University of Kansas is an Equal Opportunity

Employer.

## THE UNIVERSITY OF MICHIGAN DEPARTMENT OF PSYCHIATRY

Board certified or eligible staff psychiatrist for Veter-ans Administration Hospital in Ann Arbor for in-patient unit that offers opportunity for innovative treatment program, teaching of residents and medical students, and research opportunities. Opportunity to develop liaison service to medical or surgical depart-ments in an academic setting. Academic appointment commensurate with qualifications and salary com-mensurate with experience. Please send résumé to **Box 257. SCIENCE.** A Nondiscriminatory. Affirmative 257, SCIENCE. A Nondiscriminatory, Affirmative Action Employer.

## ASSISTANT PROFESSOR DEPARTMENT OF SURGERY

The University of Michigan Medical School is seeking a board eligible M.D. in orthopedic surgery, with at least one additional year of graduate medical education in the field of orthopedic oncology. Code #600FO. Please send résumé to **Box 253**, **SCIENCE**. A Non-discriminatory, Affirmative Action Employer.

ASTRONOMER. Permanent position in Department of Physics and Astronomy beginning 16 August 1975. Required: Ph.D. and at least 2 years full-time teaching experience at university level. Duties will include teaching three or four sections of elementary astronomy and research participation (preferably observational). Rank and salary dependent upon experience. Areas of interest of present faculty: extragalactic astronomy (quasars), cosmology, astrophysics, planetary radio astronomy, atmospheric and space physics. Additional information will be supplied upon request. Western Kentucky University is an Equal Opportunity/Affirmative Action Employer. Send letter of application, résumé, and three letters of reference to: Dr. Frank Six

Dr. Frank Six Department of Physics and Astronomy Western Kentucky University Bowling Green, Kentucky 42101 Telephone: 502-745-4357

#### FACULTY POSITION OPEN BIOLOGIST/ECOLOGIST

Full-time teaching position in zoology, ecology, embryology, comparative anatomy, and comparative physiology. Small liberal arts college. Salary negotiable.

Apply with curriculum vitae and references before 15 June to:

Chairman, Department of Biology Mount Mercy College 1330 Elmhurst Drive N.E. Cedar Rapids, Iowa 52402 Telephone: 319-363-8213

**BIOMEMBRANE RESEARCH**—The recently appointed Chairman of this Department wishes to assemble a group interested in biomembranes, especially as they are involved in cell-virus interactions. One appointment, to commence January 1976 or soon thereafter, will be made at the assistant professor level of an individual with expertise in mammalian cell membranes. Candidates having suitable credentials, preferably with at least 2 years of postdoctoral experience in the designated field, should submit by 1 July 1975 a curriculum vitae, pertinent reprints, and three names of individuals who can provide testimonials to: Dr. N. R. StC. Sinclair, M.D., Ph.D., Acting Chairman, Department of Bacteriology and Immunology, University of Western Ontario, London, Ontario N6A 5C1, Canada.

CARDIOLOGIST—The Division of Cardiology in the Department of Medicine at the University of Alabama in Birmingham has available two positions at the assistant professor or the associate professor level. The positions are open to qualified individuals at a senior level fulfilling three criteria. First, the individual must have expertise in the care and management of patients with cardiovascular disease and in cardiac catheterization. Second, the individual must have a firm commitment to teaching programs oriented to medical students, graduate students, house officers, and fellows. Finally, the individual should have a research background and be able to carry out independent research. Apply to the Division of Cardiovascular Disease, Department of Medicine, University of Alabama Medical Center, Birmingham, Alabama 35294 (Attention Ms. Norma McSweeney); telephone: 205-934-3285. An Equal Opportunity/Affirmative Action Employer. Expiration date for receipt of applications: 1 August 1975.

#### CHAIRPERSON DEPARTMENT OF PHARMACOLOGY

The Chicago Medical School of the University of Health Sciences invites applications for this position at rank of full professor with tenure. The individual would be expected to have had administrative and teaching experience and a strong background in basic research. Curriculum vitae should be sent to:

Chairman Department of Physiology and Biophysics The University of Health Sciences/ The Chicago Medical School 2020 West Ogden Avenue Chicago, Illinois 60612

The University of Health Sciences is an Equal Opportunity Employer with an Affirmative Action Program.

#### CHAIRMAN—OTOLARYNGOLOGY

University of Washington full-time appointment. Experience in research and teaching and certification by American Board of Otolaryngology required. Administrative experience and independent research grant support desirable. Send curriculum vitae to Robert E. Kalina, M.D., Department of Ophthalmology RJ-10, University of Washington, Seattle, Wash. 98195. Equal Opportunity and Affirmative Action Employer.

## The Best Deal on Life Insurance, by Far, is TIAA

Independent consumer studies continue to confirm that TIAA life insurance costs substantially less than policies sold through life insurance companies that serve the general public.

These days, when it's more important than ever to squeeze the most from every dollar, it makes more sense than ever for college employees and other eligible persons to look to TIAA for the new life insurance they need. By the way, TIAA policies include the unique "Cost of Living" provision to help prevent inflation from nibbling away the purchasing power of the death protection.

While TIAA offers plans to meet different situations, and a free advisory service to help select the right plan, most educators with TIAA policies prefer Term insurance because with Term they can easily afford to carry the high level of family protection they need. For example: \$100,000 of decreasing Term insurance costs only \$184 at age 30.

## Here are illustrative cost figures for different ages: \$100,000 20-Year Home Protection Policy

Age at Issue	25	30	35	40
Annual Premium (Payable only 16 years)	\$268	\$318	\$413	\$580
Cash Dividend End of First Year*	123	134	154	192
First Year Net Premium	\$145	\$184	\$259	\$388

\*Based upon the current dividend scale, not guaranteed.

This Home Protection policy is level premium Term insurance that gives its highest amount of protection initially, reducing by schedule over a 20 year period to recognize decreasing insurance needs. Home Protection policies are available for several other insurance periods in amounts of \$5,000 or more and are issued at ages under 56.

ELIGIBILITY to apply for TIAA policies is limited to employees of colleges, universities, and certain other nonprofit educational institutions that qualify for TIAA. If you are eligible, complete and send the coupon so we can mail the Life Insurance Guide and a personal illustration of TIAA policies issued at your age. TIAA is nonprofit and employs no agents.

#### Teachers Insurance and Annuity Association College Retirement Equities Fund

730 Third Avenue, New York, N.Y. 10017

Name

Ai

Please mail the Life Insurance Guide and a personal illustration.

- Tanio	- Curr	Butto of Birth
Address	Street	
City	State	Zip
Dependents' Ages		
Nonprofit Employer (colle scientific institution)	ege, university, other ed	ucational or

Your Date of Birth

ASSISTANT PROFESSOR OF ANIMAL SCIENCE (NUTRITION). Iowa State University is seeking a person with a Ph.D. degree in nutrition with broad background in biology and strong supportive training in physiology and biochemistry, including histological techniques, light and electron microscopy, and micro-photography. Experience and capability of working with laboratory animals, cattle, and goats. Demon-strated research capability and experience beyond the doctoral desirable. Apply to Dr. N. L. Jacobson, De-partment of Animal Science, Iowa State University, Ames, Iowa 50010. Iowa State University is an Equal Opportunity/Affirmative Action Employer.

Applications are invited for CHAIRPERSON of the Department of Biology.

The position (Associate or Full Professor) includes administrative and teaching responsibilities in a 4-year undergraduate program. The department offers con-centrations in botany, zoology, and preprofessional and allied health areas. Demonstrated evidence of achieveallied health areas. Demonstrated evidence of achieve-ment in research and teaching is desired. Salary com-mensurate with training and experience. Inquiries should be addressed to Dr. H. L. Stirewilt, Search Committee, Department of Biology (Telephone: 404-828-3201), Augusta College, Augusta, Georgia 30904. An Equal Opportunity/Affirmative Action Employer.

CHAIRPERSON, DEPARTMENT OF RADIOL-OGY. Applications are invited from radiologists trained in diagnosis, therapy, or nuclear medicine, for the position of Chairperson in a 628-bed teaching hos-pital affiliated with Temple University School of Medi-cine. Candidates should have demonstrated leadership capability, managerial skills, academic standing and teaching skills, and an interest in research. Address in-quiries: Robert M. Sigmond, Chairman, Radiology Search Committee, Albert Einstein Medical Center, Northern Division, York & Tabor Roads, Philadelphia, Pa. 19141. Affirmative Action Employer. CHAIRPERSON, DEPARTMENT OF RADIOL

#### CHANCELLOR FOR HEALTH AFFAIRS UNIVERSITY OF COLORADO MEDICAL CENTER

The University of Colorado Medical Center, which includes the Schools of Medicine, Dentistry, and Nurs-ing and the University Hospitals, is seeking a Chancel-lor for Health Affairs. Applicants must have exceptional qualities and possess outstanding administra-tive, financial, and academic qualifications. Each qualitive, nnancial, and academic qualifications. Each quali-fied individual is requested to submit (no later than 1 August 1975) a curriculum vitae, list of publications, and description of community activities to Edgar L. Makowski, M.D., Department of Obstetrics and Gyne-cology, University of Colorado School of Medicine, 4200 East Ninth Avenue, Denver, Colorado 80220. The University of Colorado is an Equal Opportunity/Af-firmative Action Employer. Women and members of winoving for the posiminority groups are encouraged to apply for the position.

CLINICAL CHEMIST, Ph.D. for position of Labora-tory Director in a specialized radioimmunoassay endo-crinology laboratory located in Ohio. Experience in RIA essential. Send résumé to:

### **Personnel Department** Medical Sciences Laboratories, Inc. 11001 Cedar Avenue Cleveland, Ohio 44106

#### COMPARATIVE PATHOLOGIST

The Johns Hopkins University School of Medicine has available a full-time faculty position with joint appoint-ments in the Division of Animal Medicine and in the ments in the Division of Animal Medicine and in the Department of Pathology. Candidates must have ad-vanced training in pathology and academic and re-search interests. Rank and salary will be com-mensurate with experience. Résumés should be sent to Dr. John Strandberg, Associate Professor and Acting Director, Division of Animal Medicine, 720 North Rut-land Avenue, Baltimore, Maryland 21205.

An Equal Opportunity Employer M/F

**DEVELOPMENTAL NEUROBIOLOGIST:** For assistant professorship beginning fall 1975. Will teach one semester of general biology, an undergraduate course in developmental biology, and a graduate course in area of specialty. A research competency in the area of the development of behavior and/or the nervous system is desired. Teaching experience is preferred; a Ph.D. is required. Apply with all credentials no later than 2 weeks after publication of this notice to Dr. Ronald Barfield, Chairman, Search Committee, Department of Biology, Livingston College, Rutgers University, New Brunswick, N.J. 08903.

An Equal Opportunity/Affirmative Action Employer

#### POSITIONS OPEN

## CONSERVATION-SCIENTIST THERMOLUMINESCENCE

This position requires experience or willingness to learn procedures for dating by thermoluminescence and abil-ity to use them on a regular schedule; full understand-ing of the physics of the procedures; familiarity with ing of the physics of the procedures; familiarity with the use of computer programs in statistics; sufficient knowledge of electronics to be able to locate faults in the equipment and to take appropriate corrective ac-tion; and the ability to work and communicate with others. Familiarity with the materials and structure of ceramics would be helpful. Starting salary within the scale for Grade GS-11, \$15,481. Application forms and details may be obtained from **Robert M. Organ**, **Chief**, **Conservation Analytical Laboratory, Smithsonian Insti-tution, Washington, D.C. 20560.** Closing date for appli-cations: 30 June 1975.

#### UNIVERSITY OF DELAWARE DIRECTOR OF INSTITUTE OF ENERGY CONVERSION

Applications for this position are invited from individuals with proven experience in energy conversion, with emphasis on solar energy. The Director is responsible for organization, policy goals, and the technical re-search programs of the institute. The Director reports to the Dean of the College of Engineering. Minimum requirements are a doctorate or equivalent in either science or engineering with extensive experience in managing research programs. Applicant should be qualified for appointment to the professional staff of the univer-For appointment to the processional start of the univer-sity. Please send a complete résumé with a letter out-lining your significant qualifications for the position to: Dean, College of Engineering, University of Delaware, Newark, Delaware 19711. An Equal Opportunity/Af-firmative Action Employer.

#### ENVIRONMENTAL PATHOLOGIST

Board certified anatomical pathologist or veterinary pathologist with electron microscopic experience and research interest wanted for ongoing program at Flam-mability Research Center, University of Utah, to de-velop new techniques for screening hazardous materi-als prior to marketing. Now studying combustion products of burning polymeric materials and industrial environmental hazards. This is a new and exciting field. Salary and academic position negotiable. Send résum to Dr. Margaret L. Grunnet, Department of Pathology, University of Utah Medical Center, 50 North Medical Drive, Salt Lake City, Utah 84132.

#### FACULTY POSITIONS-MICROBIOLOGY

Applications are being accepted for two positions. IMMUNOLOGIST, with experience in basic or cellu-lar immunology, and VIROLOGIST, with experience in nucleic acid chemistry and/or biosynthesis. Mini-mum qualifications: 2 years of postdoctoral experience and potential to develop a vigorous research program. Applicants must demonstrate sufficient breadth to share teaching responsibilities in graduate, medical, and paramedical courses. Rank and salary are open. Submit curriculum viate. bibliography. and three let-

Submit curriculum viate, bibliography, and three let-ters of recommendation to: Dr. Audrey N. Roberts, Chairperson, Search Committee, Department of Micro-biology, The University of Tennessee Center for the Health Sciences, 858 Madison Avenue, Memphis, Ten-nessee 38163. An Equal Opportunity/Affirmative Ac-tion Employer tion Employer.

#### FACULTY VACANCIES

Intermountain university medical center has the fol-Intermountain university medical center has the fol-lowing faculty vacancies: medical microbiologist, re-search immunologist, and computer specialist. Rank and salary according to qualifications. *Female and mi-nority candidates are encouraged to apply.* Box 258, SCIENCE.

## DEPARTMENT OF HUMAN PHYSIOLOGY UNIVERSITY OF CALIFORNIA SCHOOL OF MEDICINE DAVIS, CALIFORNIA 95616

Applications are invited for a faculty position, nomi-nally at the assistant professor level. Candidates must have a M.D. or Ph.D. plus 2 years or more of post-doctoral experience in cell membrane transport or epi-thelial transport physiology, preferably in relation to the gastrointestinal system. Duties include teaching medical and graduate students, and development of an effective and independent research program. Send cur-riculum vitae, publications list, and the names of refer-ees to E. M. Renkin, Chairman. Qualified male female and minority candidates are

Qualified male, female, and minority candidates are encouraged to apply.

#### **POSITIONS OPEN**

IMMUNOLOGIST: Ph.D., assistant professor. Post-doctoral experience desirable. Teaching duties will in-clude immunology and pathogenic microbiology. Also expect active participation in M.S. program. Salary: \$12,000-512,700 per academic year. Applicants should send résumé and arrange for three letters of reference. Application deadline: 21 June 1975. Department of Mi-crobiology and Biochemistry, Idaho State University, Pocatello, Idaho 83209. Equal Opportunity (M/F) Af-firmative Action Employer.

# INSTRUCTOR/ASSISTANT PROFESSOR DEPARTMENT OF MICROBIOLOGY UNIVERSITY OF HEALTH SCIENCES THE CHICAGO MEDICAL SCHOOL

THE CHICAGO MEDICAL SCHOOL The University of Health Sciences/The Chicago Medical School has an opening for an instructor or as-sistant professor in the Department of Microbiology. QUALIFICATIONS—Candidates should be aca-demically oriented and possess a Ph.D. degree or its equivalent. Primary responsibilities include teaching mycology to medical and graduate students, con-ducting independent research, and usual administrative work such as committee assignments, and so forth. ORGANIZATION—UHS/CMS is a private, non-profit, nonsectarian, coeducational university, and an *Equal Opportunity/Affirmative Action Employer*. APPLICATION—Applicants should be able to fill the position beginning 1 July 1975. Please send curricu-lum vitae to:

lum vitae to:

William C. Dolowy Professor of Microbiology University of Health Sciences/ The Chicago Medical School 2020 West Ogden Avenue Chicago, Illinois 60612

LAB TECHNOLOGISTS, ASCP Registered B.S. MT's or M.S. degree in chemistry or biology, for rap-idly expanding southeastern university. Positions avail-able in clinical or research laboratories. Contact: Ms. M. Sheriffs, A.R.R.T., Employment Division, Depart-ment of Personnel, Medical University of South Caro-lina, 80 Barre Street, Charleston, S.C. 29401.

An Equal Opportunity Employer

MUSEUM PUBLIC EDUCATION DIRECTOR who can plan, direct, and present innovative education programs for a university museum of natural history and cooperate with other museums. Requires superand cooperate with other museums. Requires super-visory ability, competence in natural history, and a ca-reer interest in working with young people and the adult public. Master's degree in biological sciences or bachelor's plus considerable teaching experience in the field. Starting salary \$12,500 (Grade 26, State Civil Service). An Equal Opportunity Employer. Send résumé to: Public Education Search Committee, Mu-seum of Natural History, The University of Kansas, Lawrence, Kansas 66045.

NEUROANATOMIST: Medical school faculty posi-tion with responsibility for neuroanatomy course and participation in anatomy program of the medical and graduate school curriculum. Research experience in ul-trastructure of the nervous system desirable. Interested trastructure of the nervous system desirable. Interested individuals should promptly forward a complete résumé and have four letters of recommendation sent to: Dr. Alvin S. Levine, Director, Indiana University School of Medicine, Terre Haute Center for Medical Education at Indiana State University, Terre Haute, In-diana 47809. Indiana University is an Equal Opportu-nity/Affirmative Action Employer.

#### NEUROBIOLOGIST

Candidates with research interests in neurobiology are invited to apply for a position as assistant profes-sor. Areas of particular interest include but are not limsoit. Areas of particular interest interest into the method of the second secon University is an Equal Opportunity/Affirmative Action Employer.

PHYSIOLOGICAL PLANT ECOLOGIST. Full-time position for Ph.D. beginning September with chief re-sponsibilities in ecological instruction at introductory, intermediate and graduate levels, including doctoral study. Research program expected; interest in prob-lems of land vegetation preferred. Send résumé, state-ment of research interest (expression expected) ment of research interest/experience, and arrange for three reference letters by 30 June to Chairman, Search Committee, Department of Botany, Miami University, Oxford, Ohio 45056. An Equal Opportunity Employer.

SCIENCE, VOL. 188

#### MARINE INVERTEBRATE ECOLOGIST

Caltech Kerckhoff Marine Lab, Recent Ph.D. to investigate ecological and nutritional parameters governing fertility and fecundity in sea urchins. Purpose is to de-velop a year-round supply of fertile sea urchins for mo-lecular studies of development as well as to approach lecular studies of development as we as to approach an understanding of their ecology. Project requires qualified scuba diver, entails extensive fieldwork and development of laboratory culture systems for fertility maintenance. Funded for 3 years with possible renewal. Salary commensurate with experience. Send curricu-lum vitae, résumé of research, and three letters of refer-ance to Employment Supervisor. California Institute of ence to Employment Supervisor, California Institute of Technology, Pasadena, Calif. 91125. An Equal Oppor-tunity Employer, M/F.

PHYSIOLOGY AND/OR ANATOMY—Position to help to develop modules for self-teaching in anatomy and physiology and abnormal human biology. New biomedical communication center in progress. Unique opportunity in working with a new curriculum. All health sciences involved—nursing and allied health programs most active now. Responsibility for both for-mal and clinical teaching. Master's degree required— nursing background not necessary. Salary and rank commensurate with preparation and experience. Con-tact, send résumé to Mary I. Crawford, Ed.D., Asso-ciate Dean (Nursing), Columbia University, 179 Fort Washington Avenue, New York, N.Y. 10032. Equal Employment Opportunity Institution. PHYSIOLOGY AND/OR ANATOMY-Position to

#### **POSTDOCTORAL APPOINTEE**

Postdoctoral appointment available in the Center for Human Radiobiology as part of an ongoing research program in in vitro studies of human immune re-sponses and their relation to oncogenesis. The applicant should be familiar with tissue culture techniques and some of the more common immuno-logical tests such as cell-mediated immunity, detection

of sera antibodies, and antigenic stimulation of lymphocytes.

Position available immediately. Send résumé to Ronald A. Johns, Professional Placement Department, Argonne National Laboratory, Department 1001D, 9700 South Cass Avenue, Argonne, Illinois 60439. An Equal Opportunity Employer M/F.

#### **POSITIONS OPEN**

#### NEUROBIOLOGIST

Applications are invited from individuals with a Ph.D. Applications are invited from individuals with a Ph.D. and/or M.D. degree and independent research experi-ence for a senior or junior faculty position. Candidates must have interest in and ability to conduct research programs relating cellular and molecular function to neuronal ultrastructure, a working knowledge of regu-latory biochemistry and neuromorphology, and re-search experience in areas such as neuronal differentiation, cellular plasticity, or synaptic and active membrane function. Please send curriculum vitae, a brief description of experience and current interests, a statement of present research support, and the names and addresses of at least three references to: Neurobiology Search Committee, Worcester Foundation for Ex-perimental Biology, 222 Maple Avenue, Shrewsbury, Mass. 01545. An Equal Opportunity/Affirmative Action Employer.

#### POSTDOCTORAL POSITION

Applications are invited for a postdoctoral position Applications are invited for a postdoctoral position involving studies of soil invertebrate decomposers and their role in the successional dynamics of subalpine spruce-fir communities. The opportunity to teach in-vertebrate biology with the possibility that this might lead to a tenurable position may be available to a prop-erly qualified candidate. Salary \$9,500 to \$10,500. Let-ters of application including curriculum vitae and names and addresses of three references should be sent to Dr. Letters of Biothere and the sent of Biothere. to Dr. James A. MacMahon, Department of Biology, UMC 53, Utah State University, Logan, Utah 84322. An Equal Opportunity Employer.

## POSTDOCTORAL RESEARCH POSITION AVAILABLE IMMEDIATELY

For recent Ph.D. in Biochemistry for studies of deriva-For recent Ph.D. in **Biochemistry** for studies of deriva-tives of adenine nucleotide coenzymes. Emphasis is on enzymic behavior of soluble macromolecular coen-zymes (NAD, ATP, and so forth). Good training and practical experience in enzyme kinetics and general en-zymology is essential, and facility in simple organic synthetic procedures would be highly desirable. Send curriculum vitae and three letters of recommendation to: Dr. Harold J. Bright, Department of Biochemistry, School of Medicine, University of Pennsylvania, Phila-delphia, Pa. 19174. Equal Opportunity Employer.

#### POSITIONS OPEN

#### POSTDOCTORAL-ECOLOGY

The Natural Resource Ecology Laboratory is seeking to fill two to four of the following positions. Appoint-ments for 1 to 2 years, available immediately. Closing date 23 June.

Plant Physiological Ecologist Invertebrate Ecologist Vertebrate Ecologist Microbial Ecologist—Nutrient Cycling

Applicants must have strong quantitative/simulation modeling experience. Degree must be in hand. Submit curriculum vitae and names of three references to J. H. Gibson, Director, Natural Resource Ecology Laboratory, Colorado State University, Fort Collins, Colo. 80523.

**POSTDOCTORAL POSITION** in Biochemistry (\$12,000 minimum) available on or before 1 September 1975. Research involves the synthesis of radioactive analogs of ATP for affinity labeling of enzymes. Send curriculum vitae and three letters of recommendation to Dr. Louis Schiselfeld, Department of Biological Chemistry, University of Illinois at the Medical Center, 1853 West Polk St., Chicago, Illinois 60612. An Equal Opportunity Employer. **Opportunity** Employer.

POSTDOCTORAL POSITION—To study gene mu-tation and regulation in haploid frog cell cultures. Available September 1975, in the laboratory of Dr. Liselotte Mezger-Freed. Send résumé and three refer-ences to: Ms. Mary T. Dixon, The Institute For Cancer Research, Fox Chase Cancer Center, Philadelphia, Pa. 19111. An Equal Opportunity/Affirmative Action Em-loyer nlover

#### POSTDOCTORAL POSITION

Recent Ph.D. to undertake research in genetics or cell biology. Appointment to begin on or before 15 September 1975. Submit, by 24 June 1975, curriculum vitae, graduate transcripts, brief statement of research interests, and three letters of reference to Frederick Forro, Jr., Head, Department of Genetics and Cell Biol-ogy, 250 BioScience Center, University of Minnesota, St. Paul, Minn. 55108. An Equal Opportunity Em-ployer: applications from women and minority persons encouraged.



POSTDOCTORAL POSITION: Immediate opening POSTDOCTORAL POSITION: Immediate opening in hormone and breast cancer research; work involves mechanism of prolactin-estrogen action. Duration 1 to 3 years, \$10,000 per year. Candidates with experience in cell surface receptors or molecular biology are pre-ferred. Send curriculum vitae and three references to Dr. Benjamin S. Leung, Director, Clinical Research Center Laboratory, University of Oregon Health Sci-ences Center, Portland, Oregon 97201.

#### POSTDOCTORAL POSITION

Three-year position; study will emphasize human cell culture techniques, and cytological/kinetic/meta-bolic analyses in response to biomedical ultrasound. Send curriculum vitae, names of references and state-ment of research interests to **Box 259, SCIENCE.** 

#### **RESEARCH ASSOCIATES**

Positions available for skillful, enthusiastic Ph.D. applicants with training in biochemistry, preferably protein synthesis or RNA synthesis, to study steroid hormone action. Only those interested in a resarch ca-reer should apply. Send curriculum vitae, three refer-ences and at least one letter of recommendation to Dr. S. Liao or Dr. E. DeSombre, Ben May Laboratory for Cancer Research, University of Chicago, 950 East 59th Street, Chicago, Illinois 60637.

#### **RESEARCH ASSOCIATE-MICROBIOLOGIST**

Position available starting July 1975, for research on in vitro antimicrobial effect of a device for continuous in vitro antimicrobial effect of a device for continuous release of antimicrobial compounds in the oral cavity. Duration 2 years. Salary up to \$13,700. The candidate for this position should be a microbiologist (Ph.D.). Background in oral microbiology desirable. Send ap-plications, including curriculum vitae, and names and addresses of references to: Dr. J. H. Kraal, Department of Periodontics, College of Dentistry, University of Kentucky Medical Center, Lexington, Ky. 40506.

The University of Kentucky is an Affirmative Ac-tion/Equal Opportunity Employer.

### PROJECT SCIENTIST (Interdisciplinary Position) GS-13/14 \$21,816 to \$25,581 per annum

Incumbent is responsible for the development, coordination and reporting of collaborative research projects and contracts in conjunction with the National Caries Program. Initiates and monitors relevant research and develops contracts aimed at the fundamental objectives of this Program. Must be thoroughly conversant and knowledgeable in the field of dental clinical trials and community dentistry. Experience and/or education in these fields is essential. Organizes and participates in seminars and symposia on caries research and on the prevention of dental carles disease.

Send SF-171, C.V. and bibliography to:

DHEW **Public Health Service** National Institutes of Health National Institute of Dental Research Bldg. 31, Rm. 2C-23 9000 Rockville Pike Bethesda, Md. 20014 An Equal Opportunity Employer

#### POSITIONS OPEN

#### **POSTDOCTORAL POSITIONS**

The Biomechanics Laboratory of the Division of Biomedical Engineering at the University of Virginia has several openings for postdoctoral senior scientists. The research position requires a Ph.D. in mechanics, biomedical engineering, physiology, or equivalent subjects

The postdoctoral positions will involve research in one of these areas: (i) Biomechanical application of holographic interferometry, (ii) Pulmonary mechanics, and (iii) Microvascular blood flow.

The salary for the senior scientist will be \$12,000 or higher dependent on qualifications. For further details, please send the résumé and two letters of recommenda-tion to Dr. J. S. Lee, Division of Biomedical Engineer-ing, Box 224, Medical Center, University of Virginia, Charlottesville, Virginia 22901.

Affirmative Action, Equal Opportunity Employer

#### RESEARCH ASSOCIATE

Immediate opening for recent Ph.D. with strong back-ground in biochemical endocrinology to work on the control of steroid hormone biosynthesis in the adrenal cortex. Salary up to \$11,000. Send curriculum vitae with names of three references to: Alexander C. Brownie, Ph.D., Department of Pathology, State Uni-versity of New York at Buffalo, 180 Race St., Buffalo, N V 14707 N.Y. 14207.

**RESEARCH PARASITOLOGIST.** Ph.D. veterinary helminthologist position available at our Agricultural Research Center near Princeton, New Jersey, for re-cent graduate with 1 to 2 years' experience. Duties will include the design, execution, evaluation, and reporting on screenings and trials. Will provide consultation in area of specialization, and supervision of personnel. In-terested candidates are invited to forward resume and terested candidates are invited to forward résumé and salary requirements to: Employment Supervisor, Amer-ican Cyanamid Company, Agricultural Division, P.O. Box 400, Princeton, N.J. 08540. An Equal Opportunity Employer M/F

## SENIOR ENDOCRINOLOGIST AND STEROID BIOCHEMIST

The National Center for Toxicological Research is The National Center for Toxicological Research is seeking a senior endocrinologist to assume the scien-tific leadership of a major research program in the area of steroidal and nonsteroidal estrogens and a steroid biochemist to actively pursue the metabolism of these chemicals in a variety of experimental animals. Senior Endocrinologist—Responsible for overall sci-entific content of the estrogen research program; iden-tify research needs, priorities, and resource require-ments, and implement research through in house

tify research needs, priorities, and resource require-ments and implement research through in-house projects or extramural contracts/grants. Must be knowledgeable in comparative endocrinology with em-phasis on laboratory animals and possess a Ph.D. in physiology/endocrinology with 10 years or more of ex-perience as demonstrated by publications, presenta-tions at national/international meetings, and com-mittee memberships. Beginning salary will be commensurate with training and experience ranging from \$29,800 to \$36,000.

Steroid Biochemist-Responsible for active research on routes and rates of metabolism of steroid and non-steroid estrogens in a variety of laboratory animals; steroid estrogens in a variety of laboratory animals; must be knowledgeable in experimental design and iso-lation and identification of parent compound and me-tabolites in biological samples. Must have had prior ex-perience or training in the use of radioisotopes and chromatographic techniques (GC and LC) for the iso-lation of chemicals and techniques such as IR, MS, and NMR for structural confirmations. Prior training in pharmacokinetic modeling and simulation in metabo-lism studies desirable but not required. The incumbent must nosses a Ph. D. degree in chemistry/biochemistry

lism studies desirable but not required. The incumbent must possess a Ph.D. degree in chemistry/biochemistry with 1 to 4 years of postdoctoral training. Starting sal-ary will be commensurate with education and experi-ence but should range from \$18,463 to \$21,816. All applicants will be reviewed without regard to race, color, sex, or creed. Qualified applicants should submit a complete curriculum vitae, Form 171 (Appli-cation for Federal Employment), and any pertinent supportive documents to: Mrs. Judy Casali, Personnel Office, National Center for Toxicological Research, Jefferson, Artkansas 72079. An Equal Opportunity Em-ployer.

STATISTICIAN-Assistant Professor Ph.D. Statis-STATISTICIAN—Assistant Professor Ph.D. Statis-tics, biostatistics, biomathematics. Teaching and con-sulting in College of Agriculture. Thorough knowledge of nonlinear models and multivariate techniques re-quired. Closing I July 1975; effective date I August 1975 if possible. Send transcript, résumé, publication list, and references to T. S. Russell, Statistical Services, Washington State University, Pullman, Wash. 99163.

Equal Opportunity/Affirmative Action Employer

#### **POSITIONS OPEN**

VIROLOGISTS. Two positions open, immediately available; postdoctoral, salary range \$10,000 to \$13,500 per annum. Applicants should have experience in tissue culture and contemporary methods of molecu-lar virology. Experimental background in interferon area desirable. Applicants expected to send résumé (in-cluding reprints of major publications) and three letters of reference to: Dr. W. A. Carter, Chairman, Depart-ment of Medical Viral Oncology, Roswell Park Memo-rial Institute, 666 Elm St., Buffalo, N.Y. 14263.

#### ZOOLOGIST/ECOLOGIST

Temporary position for academic year 1975-76, assistant professor rank, for Ph.D. with preferred special-ization in systems or population ecology, to begin 24 August 1975. Expected to teach courses in vertebrate August 1975, Expected to teach courses in vorteorate natural history, ornithology, animal behavior and to participate in general biology. To be considered, appli-cations must be submitted by 10 July 1975. Previous applications for temporary position for 1974-75 aca-demic year may be reconsidered. Send curriculum vitae demic year may be reconsidered. Send curriculum vitae and three reference letters to Dr. J. A. Sealander, Chairman Search Committee, Department of Zoology, University of Arkansas, Fayetteville 72701. An Equal Opportunity/Affirmative Action Employer

#### **GRADUATE STUDY**

## GRADUATE RESEARCH ASSISTANTSHIPS AND POSTDOCTORAL TRAINEES

Beginning 1 July 1975 research assistantships at the M.S. and Ph.D. levels are available in population mod-eling, sensory ultrastructure, and insect biology. Sti-pends range from \$3,600 to \$4,500 per year. Post-doctoral positions in insect biochemistry and popu-lation modeling at \$9,000 and \$12,000, respectively, are also available. also available. For further information contact **Dr. James L. Fra**-

zier, Department of Entomology, Mississippi State University, Mississippi State, Mississippi 39762.

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

#### **FELLOWSHIPS**

SUMMER RESEARCH ASSISTANTSHIPS in Arc-Scinitz Alaska. Comparative environmental physiology. Mammalian respirometry, heat exchange, modeling of energy budget. Send résumé and references to: Dr. Robert E. Henshaw, Office of Environmental Analysis, Department of Environmental Conservation, 50 Wolf Road, Albany, N.Y. 12233.

#### POSTDOCTORAL FELLOWSHIP

An NIMH postdoctoral fellowship is available in Animal Behavior-Biopsychology at the American Mu-seum of Natural History. Support includes salary (\$10,000), travel to field stations, and supplies. Appli-cants should send curriculum vitae (with names of three references) and outline of research plans to: Dr. Howard Topoff, The American Museum of Natural History, New York, New York 10024.

#### PROGRAM

MASTER OF SCIENCE IN ECONOMIC AS-PECTS OF CHEMISTRY (MSEC). Program for chemists interested in the economic ramifications of chemical science. Of special interest to foreign students chemical science. Of special interest to foreign students who wish to contribute to the economic growths of their region. Combination of advanced chemistry courses, industrial chemistry with courses in indus-trial economic analysis, administration and manage-ment. Industrially oriented projects replace traditional thesis. Contact **Professor H. Harry Szmant**, **Depart-ment of Chemistry**, **University of Detroit**, 4001 West **McNichols Road**, **Detroit**, Mich. 48221.

#### COURSES

SCANNING ELECTRON MICROSCOPY, a series of identical classes, 5 days each commencing 9, 16, and 23 June, which are designed to introduce the partici-pants to the theory and practical aspects of scanning electron microscopy. Primary emphasis will be on specimen preparation, operation of the scanning elec-tron microscope, and introduction to x-ray analysis. Enrollment is limited to four persons per class. Tuition \$500. For information write or phone: Fred Lightfoot, George Washington University, Department of Anat-omy, Washington, D.C. 20037. Telephone: 202-331-2881 or 6511.

SCIENCE, VOL. 188

# **BIOSCIENTISTS**

The UNIVERSITY OF CALIFORNIA LAWRENCE LIVERMORE LABORATORY has two openings in the Biomedical Research Program for experienced research scientists who can rise to the challenge of new projects and who wish to grow scientifically and professionally. They will direct research projects in cell biology related to carcinogenesis and tumor biology. Each of these projects is concerned with applying novel and advanced techniques in cytochemistry and bio-physics to fundamental studies of cells and cell physics to fundamental studies of cells and cell populations. Candidates for these positions should possess advanced academic training, scientific creativity and proven research and leadership ability.

We invite applications for the following positions: **Chemical Carcinogenesis** 

To provide scientific leadership for a multidisci-plinary research team that will develop new methods for detecting and assaying the carcinogenic activity of compounds associated with energy production. A conventional cell culture test system will be established, and novel cytochemical and flow-system approaches will be used to monitor the early appearance of markers for cell transformation.

Candidates should have Ph.D., M.D., or equivalent degree, with a background in experimental pathology, oncology or a related dis-cipline plus several years' experience in the field of chemical carcinogenesis, including the use of animal and cell culture assay systems.

#### **Cell Cycle Kinetics**

To investigate the kinetics of the cell cycle as they relate to tumor growth and cancer therapy. Responsibilities will include the biological and therapeutic aspects of a collaborative research effort to develop and apply experimental tumors to new methods of kinetic analysis based on the techniques of flow sorting and fractional labelling of cycling cells.

Candidates should have Ph.D., M.D., or equivalent degree, and several years' experience in tumor biology and cell cycle analysis.

The Lawrence Livermore Laboratory is situated in a pleasant valley close to the San Francisco Bay Area of Northern California. Close collaborative ties exist between Livermore and the other campuses of the University of California and with many local colleges and research establishments. The Laboratory is one of the major National Laboratories of the U.S. Energy and Research Development Administration; Livermore's Biomedical Research Program is undergoing rapid expansion in response to the health and environmental issues of our national energy policies. If you would like to play a role in this expanding program, and if your background meets the stated requirements, please send your resume, a statement of career goals, your bibliography and selected reprints to:

Ms. Sherry Mattson Personnel Department LAWRENCE U.S. Citizenship Required LAWHENCE LIVERMORE LABORATORY University of California P.O. Box 808 (SC-065) Livermore, California 94550 University of California

LAWRENCE LIVERMORE LABORATORY

Salaries are open and are based on ability and experience

Equal Opportunity Employer M/F

## ENVIRONMENTAL RESEARCH

The UNIVERSITY OF CALIFORNIA LAWRENCE LIVERMORE LABORATORY is seeking candidates for an important position in its Biomedical & Environmental Research Program.

The position involves:

- Leading Environmental Research within the Program at Livermore
- Directing, coordinating and managing broadranging research activities in
  - terrestrial ecology
  - marine and freshwater sciences atmospheric-terrestrial exchange and
  - transport processes
  - instrumentation development
  - environmental chemistry
  - analysis and evaluation ٠
- Planning, promoting and furthering research into the health, environmental, sociological, and economic aspects of energy development within the general framework of the Division of Biomedical & Environmental Research, ERDA.

Interested candidates who have a Ph.D. degree in an environmental science discipline and who have experience in the direction and management of scientific research programs are invited to submit applications. A proven record of scientific achievement in areas of physical and/or biological sciences relevant to the ongoing program is essential.

The Lawrence Livermore Laboratory is situated in a pleasant valley close to the San Francisco Bay Area of Northern California. Close collaborative ties exist between Livermore and the other campuses of the University of California and with many local colleges and research establishments. The Laboratory is one of the major National Laboratories of the U.S. Energy and Research Development Administration; Livermore's Biomedical and Environmental Research Program is undergoing rapid expansion in response to the health and environmental issues of our national energy policies. If you would like to play a role in this expanding program, and if your background meets the stated requirements, please send your resume, a statement of career goals, your bibliography and selected reprints to:





University of California

LAWRENCE LIVERMORE LABORATORY Salaries are open and are based on ability & experience

# We are in the pretty picture business ... yes indeed



These are fragments of a geophysical "playback" recording from an oil company's exploration department. A pattern of sensors responded to a shock. The signals were taped. A computer "massaged" the tapes. But need remains for human judgment. The program is not quite capable of typing out a letter to the Finance Committee: "Invest \$[ ] at Latitude [ ], Longitude [ ]. You won't be sorry."

Human judgment draws assurance from the human eye. "I see, I see," someone must say.

The company that was kind enough to permit reproduction of the above pictures was not kind enough to toss their costly secrets to the four winds. So you are not going to learn here how to read these pictures. You might, however, learn something applicable to your own work.

Note that **B** is **A** in color, and **D** is **C** in color. **A** uses the two dimensions of the paper and variable area of the blips.

In C it's variable density instead of variable area. In B and D the added dimension of color has allowed more information to be brought together for judgment. See? Unless someone does see, the data is just a lot of tape.

We just make the color photographic materials. Others make the instruments which exploit human color sensation to make sense out of complicated data. The data need not be geophysical, of course. A. L. Sullivan can give you the names of companies in the business. His address is Kodak, Graphic Data Markets, Rochester, N.Y. 14650. Phone him at 716-724-4484.

