POSITIONS OPEN

ASSISTANT PROFESSOR: Ph.D. biochemistry. Anticipated opening. Postdoctoral experience in protein chemistry or enzymology or immunology. Teaching and research interest in natural science program for nonscience majors; remainder biochemistry, general chemistry. Direct research for B.S., M.S. students. Review of summary of research program, three letters of recommendation, should be sent to: Cyril Swenberg, Chair, Department of Science, University of Alabama in Huntsville, Huntsville, Alabama 35807. Application deadline: 25 May 1976. An Equal Opportunity/Affirmative Action Institution.

ASSOCIATE PROFESSOR
A tenured position is vacant in the Chemistry Department, Aarhus University, Denmark, on 1 November 1976. The salary range is Dkr. 127,000 to Dkr. 160,000 before taxes. The position is to be filled by a scientist who has research experience and who can direct teaching and research in the field of inorganic chemistry. Preference will be given to applicants with experience in fields already established in the Department (spectroscopy, electrochemistry, chemical and biochemical separation techniques, automation). Participation in analytical aspects of environmental problems is desirable. The successful applicant is expected to undertake an equal share with other members of the Department in teaching duties extending from elementary to graduate level. Experience to teach in Danish is required. The report of the evaluation committee will be sent to all applicants. Applications are requested to send three copies of curriculum vitae, including publications, and a brief description of research activities to the Department, Aarhus University, 1 Ndr. Ring-pedek, DK-8000 Aarhus C, Denmark. Deadline: 1 June 1976.

ASSISTANT PROFESSOR, Ph.D., anatomist with 3 to 4 years of postdoctoral experience, to teach gross anatomy. Research expertise in electron microscopy evidenced by publications. Salary dependent upon qualifications. A curriculum vitae, references of three letters of recommendation, and supporting statement, should be sent to: Dr. G. Eaton, Chair, Department of Psychology, University of Montana, Missoula, MT 59812.

GEOPHYSICAL INSTITUTE UNIVERSITY OF ALASKA, FAIRBANKS
Applications are invited for the position of assistant professor of geology: specialization in the field of satellite remote sensing, with emphasis on resource evaluation and land-use classification. Preference will be given to candidates with teaching experience using satellite data for vegetation and forest mapping. Candidates should have a doctoral degree in an appropriate field and geographic equivalent in training and experience. Applications will be judged primarily on documented evidence of the research and teaching potential. Salary will be paid to experienced teaching.

DEPARTMENT OF BIOLOGY North Dakota State University, Grand Forks, North Dakota 58201. The University of North Dakota is an Equal Opportunity/Affirmative Action Institution.

DEPARTMENT OF ENTOMOLOGY UNIVERSITY OF WISCONSIN, MADISON
A full-time position at the ASSISTANT PROFESSOR level is available to begin on 1 December 1976. Duties will include teaching introductory entomology and developing a research program. An entomologist with past research experience in arthropod behavior, taxonomy, or ecology would be of particular interest: (i) insect pathology, (ii) genetics, (iii) insect behavior.

Assistant/Associate Professor Physiological Psychology
The University of Iowa College of Medicine invites applications from well-qualified individuals for several openings at the assistant and associate professor levels. Applicants are expected to have Ph.D. degrees and have a minimum of 2 years of postdoctoral training in cellular and behavioral neurochemistry or related areas. The Department of Physiology, as well as other departments in the College of Medicine, has active programs and considerable research facilities. Applications should be addressed to: Dr. G. E. Miller, Chair, Department of Physiology, The University of Iowa, Iowa City, Iowa 52242. The University of Iowa is an Equal Opportunity Employer.
UNIVERSITY OF MICHIGAN
ASSOCIATE PROFESSOR OR PROFESSOR

Position available beginning in the fall 1976 semes-
ter for qualified Ph.D. to teach introductory cell biol-
ogy or histochemistry. Preferably must supervise microtome
and electron microscopy laboratories. Duties will
include developing laboratory exercises and materi-
als, advising students, and coordinating laboratories.
Preference will be given to candidates with a strong
background in cell biology.
Applications should be submitted to:
Dr. F. C. Kafatos, Biology
Pepaneiopolis, Kuponias, Athens.

UNIVERSITY OF MICHIGAN
ASSOCIATE DIRECTOR FOR MARINE SCIENCES

The Institute for Marine and Coastal Studies (IMCS) of the University of Southern California invites applications for this position. The Institute will be headquartered at the University of Southern California in Los Angeles. Applications will be considered until the position is filled. Applicants should send a curriculum vitae and the names of three references to Dr. W. T. G. Berger, Director, Institute for Marine and Coastal Studies, University of Southern California, Los Angeles, California 90007.

BIOLGEOGRAPHY AND COMPLD AND SOIL SCIENCE

The University of Arizona invites applications for the position of Associate Professor of Biology. Duties include teaching a 15-credit load and supervising graduate students. Applicants must have a Ph.D. in biology or a related field and an active research program. Applications should be submitted to:
Dr. W. T. G. Berger, Department of Biology, University of Arizona, Tucson, Arizona 85721.

DEAN, SCHOOL OF FARMACY

The University of Arizona invites applications for the position of Dean of the College of Pharmacy. Applicants should have a Ph.D. in pharmacy or a related field and at least 10 years of experience in pharmacy education. Applications should be submitted to:
Dr. R. T. Thompson, Department of Pharmacy, University of Arizona, Tucson, Arizona 85721.

FACULTY OPENING - HARVARD UNIVERSITY

The Harvard School of Public Health has two positions open at the level of assistant professor. Applications should be submitted to:
Dr. M. E. Kaukonis, Chairman, Department of Environmental Health, Harvard University, Cambridge, Massachusetts 02138.

FACULTY OPENING - UNIVERSITY OF MICHIGAN

The Department of Microbiology invites applications for a position at the level of assistant professor, with a strong background in microbial ecology and/or molecular biology. Applicants should have a Ph.D. in microbiology or a related field and an active research program. Applications should be submitted to:
Dr. M. E. Kaukonis, Chairman, Department of Environmental Health, Harvard University, Cambridge, Massachusetts 02138.

FACULTY POSITION - UNIVERSITY OF MICHIGAN

The Department of Microbiology invites applications for a position at the level of assistant professor, with a strong background in microbial ecology and/or molecular biology. Applicants should have a Ph.D. in microbiology or a related field and an active research program. Applications should be submitted to:
Dr. M. E. Kaukonis, Chairman, Department of Environmental Health, Harvard University, Cambridge, Massachusetts 02138.
ASSOCIATE/SENIOR BIOCHEMIST

General Foods Technical Center is seeking a person with MS or Ph.D. in biochemistry, and knowledge of mammalian physiology. This bench-level position requires 1-2 years experience in biochemical techniques. Experience in enzymology and microbiology helpful. Good written and oral communications skills necessary. Position provides commensurate salary and full range of benefits. Reply fully with resume (please do not include work and salary requirements to Personnel Asst.),

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MULTIPLE POSTDOCTORAL POSITIONS

Postdoctoral positions available in the laboratories of: Dr. Arthur L. Beaudet, Department of Pediatrics, Baylor College of Medicine, Houston, Texas 77030, and Dr. Barry Jacobs or Dr. Charles Gross, Department of Psychiatry, Princeton University, Princeton, N. J. 08540. Please send resume and letters of recommendation to:

Dr. Arthur L. Beaudet
Department of Pediatrics
Baylor College of Medicine
Houston, Texas 77030
An Equal Opportunity Employer

Ph.D. MARINE BIOLOGIST

Immediate opening for a marine biologist to be responsible for comprehensive biological and oceanographic studies. Ph.D. and field experience required. Plankton or benthos specialist preferred. Position will involve data analysis and report writing. Panduloo Quirk Associates attractive benefits program includes 4-day week. Please send resume and salary requirements to:

director of Personnel
PANDULO QUIRK ASSOCIATES
Gateway 80 Office Park
Wayne, N.J. 07470

ASSISTANT/RESEARCH ASSOCIATE

Ph.D. DEPARTMENT OF BIOLOGY

Immediate opening for a Ph.D. in marine biology to conduct research on the ecology of tropical marine ecosystems. Position will involve data analysis and report writing. Panduloo Quirk Associates attractive benefits program includes 4-day week. Please send resume and salary requirements to:

Dr. Barry Jacobs or Dr. Charles Gross
Department of Psychiatry
Princeton University
Princeton, N. J. 08540

MULTIPLE POSTDOCTORAL POSITIONS

Postdoctoral positions available in the laboratories of: Dr. Arthur L. Beaudet, Department of Pediatrics, Baylor College of Medicine, Houston, Texas 77030, and Dr. Barry Jacobs or Dr. Charles Gross, Department of Psychiatry, Princeton University, Princeton, N. J. 08540. Please send resume and letters of recommendation to:

Dr. Charles Gross
Department of Psychiatry
Princeton University
Princeton, N. J. 08540

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RESEARCH ASSOCIATE IN PHYSICAL OCEANOGRAPHY

Position available for recent Ph.D. in physical sciences, working background in hydrodynamics, meteorology, or physical oceanography, an ability to inject independent research. Strong interests in relationship of ocean circulation theory to observations and willingness to plan and participate in field programs. Initial 2-year appointment will be supported primarily by ongoing research programs. Apply to Dr. Peter Miller, School of Oceanography, University of Washington, Corvallis, Ore. 97331. An Equal Opportunity Employer.
Audiologist
(GS-665-13/14)

or

Psychologist
(GS-180-13/14)

Communicative Disorders Program
National Institute of Neurological Diseases
and Stroke, NIH, PHS

Required:
Minimum of three years experience in experimental design, research methodology and experimental evaluation procedures. Successful candidate should possess a Ph.D. or equivalent in the hearing sciences.

Desirable Qualifications:
Clinical auditory experience with infants, children and adults; demonstrated research competence in acoustics, noise trauma and auditory rehabilitation (amplification and speech reading); and experience in the administration of grants and/or contract clinical research programs.

The Communicative Disorders Program is responsible for the planning, coordination and conduct of research aimed at the diagnosis, treatment and prevention of varied disorders of human communication and other sensory systems. Incumbent assists the Director in planning and formulating the Institute's communicative disorders research programs, including the development of scientific policy, evaluation of the current status of programs, and the development of recommendations concerning areas for program emphasis. Incumbent's primary responsibilities will be developing, encouraging and overseeing research projects, with special concern for problems of audibility. Although incumbent's responsibilities involve primarily research administration, it is possible that opportunities for independent research will exist. This position is in the Career Civil Service.

To Apply:
Submit SF-171 to:
NINCS Personnel Office
NATIONAL INSTITUTES OF HEALTH
Public Health Service
Bldg. 31, Room 8A-23, Bethesda, Md. 20014, (301) 496-6334
Deadline for receipt of application is May 31, 1976

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Nutrition-Physiology Lab Manager
PhD in Biochemical Sciences

General Foods Technical Center has immediate opening for a Manager of Nutrition and Physiology Research. Candidate we seek must have a good record of accomplishment in research, an interest in the pharmacology of food-related materials, and demonstrated managerial abilities.

You will be fully responsible for leading the research activities of a highly professional group of Ph.D. scientists and support personnel. Objectives offer both stimulating challenges and opportunities to make meaningful contributions in the health sciences. The General Foods Technical Center provides excellent laboratory facilities, a thorough professional environment, and potential for full career development. Our location in suburban Westchester County, offers choice of urban or suburban living in an attractive area just north of New York City. Please send resume (do not phone) with salary history and requirements to: Personnel Associate, Room 5075.

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A multi-discipline text that supplies readers with an overview of the techniques useful for their systematic analysis of environmental systems. Systems are not constrained to physical structure, but include economic, social factors. Emphasis is on the common basis for attacking a wide variety of environmental problems. Students, city planners, environmental engineers, and economists will find this a diverse guide with a wide-range of possibilities.

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Arpad Barna & Dan I. Porat

A complete introduction to the hardware (circuit) and software (programming) facets in this ever-growing field. Provides basic knowledge required to comprehend data sheets and literature supplied by manufacturers of microcomputers and microprocessors. 120 examples and problems make self-study easy. References provide additional material.

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Edited by Daniel Jean Stany van Dam and Donald J. P. Swift

Describes principles of continental margin sedimentation and their application to marine environmental management. Four major sections feature: patterns of water circulation, mechanics of sediment entrainment and transport by flowing water, regional patterns of sedimentation, and fluid dynamics and principles of sedimentation applied to environmental management problems—for those concerned with problems of sediment transport in the marine environment. Discusses management of mineral resources, food resources, beach and harbor defense, waste disposal, construction of offshore structures, more.

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Burdeett E. Bostwick

A management-oriented guide that gives a step-by-step approach to writing an effective resume. Describes and gives examples of 10 types of resumes and shows job seekers how to bring out their goals, personalites, and attributes. Includes coverage of what employers want in a resume, what to omit, a glossary of motivating words, phrases, sentences, and paragraphs. Gives valuable source lists of companies.

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Microprocessors and Microcomputers
Branko Souček

Here's a description of the application, programming, and interfacing techniques common to all microprocessors, concentrating on detailed descriptions of representative microprocessor families. Engineers, scientists, managers, professors, and students will find this the perfect reference to microprocessor techniques.

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Am Zoologischen Institut 1 der UNIVERSITAT HEIDELBERG ist zum WS 1977/78 die Stelle eines
ordentlichen Professors (AH 4)

wieder zu besetzen. Der Stelleninhaber soll in Forschung und Lehre Morphologie, Ökologie, und Systematik (vorzugsweise der Evertreata) vertreten.

Bewerbungen mit Schriftenverzeichnis und Lebenslauf werden bis zum 31 Mai 1976 an die Universität Heidelberg, Postfach 105760, 6900 Heidelberg 1, Federal Republic of Germany, erbeten.

POLITICAL SCIENTIST/POLICY ANALYST
TO DO TECHNOLOGY ASSESSMENT

The Science and Public Policy Program and Department of Political Science are seeking a political scientist (policy analyst) for a minimum 2-year visiting professor position as a member of an interdisciplinary technology assessment team. The position will be available 1 June 1976. Although primarily a research position, there will be teaching opportunities. Required qualifications are a background in policy analysis, preferably applied, and the ability to work as a part of a team comprised of natural scientists, engineers, and social scientists. Rank and salary will be commensurate with qualifications.

The University is an Equal Opportunity Employer; women and members of minority groups are encouraged to apply. Please send a copy of your curriculum vitae, letters from three professionals, and reprints or copies of any papers you deem appropriate to Don E. Kash, Director, Science and Public Policy Program, 1740 LeConte Hall, Berkeley, California 94720. An Affirmative Action Employer.

POSTDOCTORAL POSITIONS available at the University of California–San Diego.
1) Somatostatin and Immunoregulatory Peptides
Dr. Jimmie Scheffer
2) Molecular Biology of Tumor Viruses
Dr. Melvin H. Green

Send résumé and two letters of recommendation to one of the above.

Department of Biology B-022
University of California–San Diego
La Jolla, California 92030

An Affirmative Action Employer

POSTDOCTORAL POSITION
Available 1 September 1976, a 1-year postdoctoral appointment at $10,000. Research on cytoxicity of mesophyll protoplasts of potato and of plants regenerated therefrom. Training in plant cytoxicology and experience with plant cell tissue cultures preferred. Send résumé and two letters of reference to:

James F. Shepard
Department of Plant Pathology
Montana State University
Bozeman, Montana 59715

POSTDOCTORAL RESEARCH FELLOW
Ph.D. in biochemistry with interest and competence in protein chemistry. To study biosynthesis, structure, and function of human hemoglobin variants, including investigation of the sickling phenotype. Available 1 July 1976. U.S. citizens and permanent residents. Salary: $10,000 to $12,500 depending on previous experience. Submit curriculum vitae, three letters of reference, and brief statement of research interests to Dr. H. Franklin Bunn, Peter Bent Brigham Hospital, Mass. 02115. Harvard Medical School is an Equal Opportunity/Affirmative Action Employer.

RESEARCH ASSOCIATE. Experimenter required for research on turbulent and lower-hybrid resonance heating of laboratory plasma, some supervision of graduate students, and occasional teaching of laboratory plasma courses. Ph.D. in plasma physics, relevant research and teaching experience, and a substantial publications record are required. Salary: about $16,000. Send letter of application and curriculum vitae before 1 June 1976 to: F. W. Crawford, Chairman, Plasma Research, Stanford University, Stanford, Calif. 94305. An Equal Opportunity/Affirmative Action Employer.

PHYSICAL OCEANOGRAPHER

The Chesapeake Bay Institute of The Johns Hopkins University has an opening for a physical oceanographer. Applicants should have a Ph.D. or equivalent research experience and an interest in working on either theoretical or practical estuarine and coastal problems. Experience in numerical modeling helpful. Rank and salary negotiable, depending on experience. Initial appointment will be made in summer 1976. Applicants should write to Department of Oceanography, The Johns Hopkins University, 3400 North Charles Street, Baltimore, Maryland 21218. The Johns Hopkins University is an Equal Opportunity/Affirmative Action Employer.

UNIVERSITE LAVAL
DEPARTEMENT DE PHYSIQUE
POSTE DE PROFESSEUR EN PHYSIQUE OPTIQUE

Le département de Physique de l’Université Laval requiert les services d’un professeur pour des tâches d’enseignement et de recherche en astronomie optique. Le candidat devra participer à la mise au point de l’équipement scientifique d’un nouvel observatoire astronomique dont l’instrument principal sera un télescope d’environ 1.5 mètre d’ouverture. Il pourra profiter en outre d’un télé-scope de 0.5 mètre et de d’expériences sur la photo-électricité, comme par exemple en spectroscopie ou en traitement des images, sera vivement souhaitée.


Les candidats sont priés de faire parvenir leur curriculum vitae, deux lettres de référence, et toute autre documentation appropriée à:

Le Directeur
Département de Physique
Université Laval
Québec G1K 7P4
Canada

RANK: PROFESSOR
SALARY: $12,500 TO $17,000

RESEARCH ASSOCIATE - WORLD BANK

The World Bank is an international institution with research, policy formulation, and lending responsibilities. The position will be available in September 1976. At least two years of experience in an international organization. Rank and salary negotiable.

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UNIVERSITY OF ALASKA, FAIRBANKS

VICE CHANCELLOR
FOR RESEARCH AND ADVANCED STUDY

The Vice Chancellor will have overall responsibility for the research and advanced study beyond the baccalaureate degree at the University of Alaska at Fairbanks, subject to the general policy and intent of the Chancellor. This person will represent the University’s research interests at the international, national, and state level.

Qualifications include high academic achievement (Ph.D. or equivalent in training and experience) and superior record of scholarship as demonstrated by research publications and professional recognition; broad interests in scholarly endeavors and advanced study; administrative and organizational capability, including financial management; familiarity with the policies and programs of federal and state agencies.

Salary is dependent upon qualifications and experience. Applications and résumés should be sent to: Dr. Charles Ray, Chairman, Search Committee, School of Education, University of Alaska, Fairbanks, Alaska 99701. Applications must be postmarked by 21 May 1976. The University of Alaska is an Equal Opportunity/Affirmative Action Employer.

VIROLOGIST. Position available immediately to join research group working on mammalian RNA oncogenic viruses. Experience in tissue culture and viral technology required. Rank and salary will be determined by qualifications.

Box 230, SCIENCE.

ZOOLOGICAL LIMNOLOGIST

Must be able to teach invertebrate zoology, teach and/or coordinate general zoology. Ph.D. required. Salary: $10,000 to $12,000 and/or coordinate major professors level. Position is tenure earning. Postdoctoral or industrial experience of 0.5 to 1.0 years desirable. Send curriculum vitae, copies of all undergraduate and graduate transcripts, and three names for references to:

Chairman of Search Committee
Department of Biology
The University of Alabama in Huntsville
Huntsville, Alabama 35807

Application deadline is 15 June 1976.

The University of Alabama in Huntsville is an Affirmative Action/Equal Opportunity Employer.

SYMPOSIUM

The THIRD ANNUAL NATIONAL CENTER FOR TOXICOLOGICAL RESEARCH (NCTR) HORMONE RESEARCH SYMPOSIUM will be held 15 to 17 November 1976 at Little Rock, Arkansas. The 1976 symposium will consist of formal presentations by invited speakers and informal poster sessions by attendees desiring to exhibit posters related to topics discussed by the invited speakers. Topic areas are hormonally active substances in the food chain, regulatory mechanisms involved in estrogen-gonadotropin secretion and action, metabolism, toxicity and clinical studies with oral contraceptives, and hormone receptors and cellular response in reproductive tissue.

For additional information, please write Michael Norvell, Ph.D., Chairman, Third Annual Hormone Research Symposium, NCTR, Jefferson, Arkansas 72079.

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Quenching of Singlet Molecular Oxygen in Solution by Azomethine Dyes

Wendell F. Smith, Jr., William G. Herkstroeter, and Kenneth L. Eddy

Contribution from the Research Laboratories, Eastman Kodak Company, Rochester, New York, 14650. Received August 16, 1974 [Journal of the American Chemical Society, 97, 2764 (1975)]

Background: The two valence electrons of the O₂ molecule in its lowest energy state have parallel spins. This is unusual. Most molecules with an even number of electrons have singlet ground states. "Singlet" implies that every electron is paired with another of opposite spin. For the oxygen molecule, that state (written \(^{1}\text{O}_2\)) represents excitement. To attain it, radiation must be absorbed or energy must be acquired from some other excited molecule. Evidence has been accumulating in recent years that singlet molecular oxygen is involved in the formation of air pollutants and in such fundamental business as photosynthesis and the digestion of microbes by white blood cells. While the list of molecules which will react with \(^{1}\text{O}_2\) is growing rapidly, the list of molecules which will quench \(^{3}\text{O}_2\) back to \(^{1}\text{O}_2\) is much smaller. This is because the excitation energy of \(^{3}\text{O}_2\) is unusually low; a quencher molecule to relieve \(^{3}\text{O}_2\) of this energy must have an even lower excited state.

Gist: A new class of \(^{1}\text{O}_2\) quenchers has been discovered: azomethine dyes. Yellow azomethine dyes, absorbing light in the blue, are the least efficient \(^{1}\text{O}_2\) quenchers. The most efficient are the cyan ones, absorbing in the red, the low-energy end of the visible spectrum. Magenta dyes, which absorb green light, are intermediate in their quenching efficiency. The quenching proceeds by the formation of an excited complex of the dye with \(^{1}\text{O}_2\). The binding energy of the excited complex varies with the structure of the particular azomethine dye.

An inquisitive outsider to this field might ask these chaps:

Are azomethine dyes new?  
Eddy: Not exactly. All three dyes in Kodak color prints and negatives and in Kodachrome and Ektachrome slides have been azomethines. An azomethine contains this structure:

\[
\begin{array}{c}
\text{C} \\
\text{N}
\end{array}
\]

Does efficiency in quenching singlet molecular oxygen influence dye stability as a practical matter?  
Smith: Quenching of singlet oxygen by the dye is a reaction that competes with the reaction of dye destruction by singlet oxygen. Therefore the faster the quenching reaction relative to the chemical reaction, the better.

What is the significance of the binding energy of the excited complex?  
Smith: Other things being equal, the greater the binding energy, the better the dye would be as a quencher.

What happens to the azomethine dyes after they have been quenched?  
Herkstroeter: The quenching reaction with singlet oxygen raises them from their ground state to their lowest excited electronic state. Because of their ability in this state to twist about the carbon-nitrogen double bond, the return to the ground state is rapid. The overall result is to protect the dye.

A published paper like the above is fallout from a continuing prime effort directed toward improved dye stability in color films and color prints. Conditions that foster long life for photgraphic color images are low temperature, low humidity, pure air, and darkness. For display, tungsten illumination with its low ultraviolet content is usually less damaging than fluorescent lights. If satisfactory color appearance demands daylight viewing, make it indirect daylight. For long-term storage of color transparencies and negatives, we recommend 35°F or lower and moistureproof wrapping. (The lower the better.) Detailed suggestions are offered in Pamphlet E-30, "Storage and Care of KODAK Color Films," available on request from Dept. 55W, Kodak, Rochester, N.Y. 14650.