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Office of Research Development, Wright State University

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WRIGHT STATE UNIVERSITY

Research News

Office of Research Development

September, 1973
Vol. VI, No. 3

GRANTS, CONTRACTS AND AWARDS

Dr. John R. Ray is supervisor of a research contract for "Precise Photometric Mensuration." The contract between AFSC Aeronautical Systems Division, Wright-Patterson Air Force Base, Ohio, and the Department of Geography is for an 18 month period ending December 31, 1974. The principal effort will be to identify error types that may be directly attributed to the human element in precise photographic measurement, using a coordinate reader. The Aeronautical Systems Division has loaned equipment for the project valued at \$100,000, which includes a Cook Coordinate Reader, a Wilde Heerbrug Stereomicroscope, and an IBM 2740 Remote Terminal. The Department of Geography will be responsible for designing and implementing tests which will allow several types of mensuration errors to be identified and analyzed for their effect upon accuracy in photogrammetry.

WELCOME NEW PERSONNEL

The Office of Research Development extends a hearty welcome to new faculty and staff members. This office is here to help you obtain extramural funds for research, educational, and community service programs. We try to keep you informed of funding opportunities through the Research News. It is possible that we can be of greater service if we know your specific interests.

A visit to the Office of Research Development (now located in the Office of Graduate Studies and Research, Room 254, Allyn Hall) will give us an opportunity to discuss with you in much greater detail the possibilities that are available. Our phone extension is 288.

This office has compiled a rather extensive library on extramural support and can be helpful in relating your ideas to the sources of support, as well as assisting in the preparation of preliminary and formal proposals. Included in our files are application forms and guidelines for submitting proposals, suggestions on proposal preparation, and other items necessary to give assistance in many ways toward making a successful application.

NURSING
PROGRAMS

October 15 is the deadline for three programs in the support of nursing education. The Special Project Grants are to assist an eligible applicant meet the costs of projects (1) to develop training programs and train; for new roles, types, or levels of nursing personnel, including programs for the training of pediatric nurse practitioners or other types of special purpose practitioners; (2) to effect significant improvements in the curriculums of schools of nursing; (3) to research, develop, or demonstrate advances in the various fields related to education in nursing; (4) to plan, develop, or establish new programs or modifications of existing programs; (5) to increase educational opportunities for disadvantaged students; and (6) to provide continuing education for nurses.

Start-Up Grants are to plan, develop, or initiate new programs of nurse training.

Grants for Full Utilization of Educational Talent for the Nursing Profession are to assist in meeting the need for additional professional personnel in nursing. This is primarily a recruitment program and provides for pre-preparation of persons entering the nursing profession.

GROUP PROJECTS
ABROAD

The Office of Education supports this program to help U. S. educational institutions improve their programs in foreign languages, area studies, and world affairs. Projects are limited to Arab Republic of Egypt, India, Pakistan, Poland, Tunisia, and Yugoslavia. The deadline for application is October 1.

FACULTY RESEARCH
ABROAD

This Office of Education program offers selected opportunities for research and study abroad in foreign languages, area studies, and world affairs. It is designed to aid in the improvement of international studies at institutions of higher education.

Deadline for application is October 15.

TEACHER TRAINING
FUNDS RETURNED

The Office of Education budget officials, claiming that no good proposals were received, are returning to the U. S. Treasury the funds appropriated in fiscal 1973 for improvement of teacher training at the undergraduate level. It is estimated that the amount to be returned approximates \$1 million.

* * * * *

Paychecks are now divided -- HIS and IRS.

CONTRACTED
RESEARCH

its operations.

The Department of the Navy, Office of Naval Research, contracts for research necessary to the planning, development, and support of

ONR is concerned with the discovery and exploration of fresh ideas, principles, or concepts which promise for improvement in its commitment. ONR contracts with universities for the performance of basic and applied research, usually on a long-term basis.

Contracts for fundamental studies are generally awarded in response to unsolicited proposals. Applied research and exploratory development are usually solicited and most frequently from pre-qualified sources. Substantial amounts of interdisciplinary research are being sponsored.

Research programs of current interest to ONR are in the following areas:

Atmospheric Sciences	Physics
Geography	Nuclear Physics
Earth Physics	Electronics
Arctic Research	Metallurgy
Oceanography	Chemistry
Ocean Technology	Power Program
Logistics	Operations Research
Mathematical and Numerical	Information Systems
Analysis	Acoustics
Fluid Dynamics	Medicine and Dentistry
Structural Mechanics	Group Psychology
Physiology	Physiological Psychology
Biochemistry	Engineering Psychology
Microbiology	Personnel and Training
Aeronautics	Undersea Warfare
Surface and Amphibians	Naval Analysis

A brochure giving more details and guidelines for proposal preparation is available in the Office of Research Development.

A COMPARISON

Although not all states have been heard from, including Illinois, New York, and Pennsylvania, here is a listing of the top three states on the basis of state appropriations for higher education of 34 reporting:

California	\$1, 141, 554, 000	- Texas	\$487, 874, 000
Ohio	345, 759, 000		

This state support may account, in part, for the high rank California has in the amount of federal support funds received for higher education.

DANFORTH FOUNDATION ANNOUNCES PROGRAM CHANGES

The Danforth Foundation (see ER Vol. 3, No. 6) has recently announced modifications to its extensive educational grants program.

Danforth Graduate Fellowship Program. Beginning in 1973-74.

Danforth and Kent Fellows will be encouraged to accept or to seek out an opportunity to engage in one year of part-time supervised undergraduate teaching while they are in graduate school and on stipend, if the experience promises substantial educational benefits for the Fellows. Typically, this will be as Teaching Assistants, Teaching Fellows, or part-time acting Instructors.

In addition, small intensive workshops on teaching replace regional conferences for Fellows in study beyond their first year in the program. Their participation will be timed to correspond with their teaching experience. Workshops will include Fellows from various disciplines, graduate schools, and types of teaching experience, and they will aim at assisting Fellows with their understanding of a commitment to teaching on the basis of their experience in teaching as well as the development of their awareness and skills as teachers. Conferences for newly appointed Fellows will continue to be held along present lines.

James E. Allen Internship Program.

A four-year program for a high school administrators internship program designed to respond to the need for pre- and in-service education for principals. The program will provide a major opportunity to devise a series of structured learning experiences which administrators cannot obtain by themselves or even a single city might not justify in terms of time, expense, or required leadership. The Danforth Foundation Administrators School Internship Program will span nine months for persons qualified for high school administration, but who have not yet so served. Selected schools will have an intern (previously selected as a potential administrator) placed as an assistant administrator for four-fifths of his time. A small stipend will be awarded to each participant. The administrator's salary will be continued by the school system and the Foundation will assume the responsibility for planning and coordinating the learning activities. Informal seminars, consultations, community work, and related sessions with educational and community leaders will be scheduled one day a week and occasionally on weekends. A qualified person in each community will be selected to serve as a coordinator of the local interns. The interns from the several cities will meet together from time to time. Negotiations will be conducted with representative universities for credit.

Institute for College Development.

Having previously been conducted as a three-year pilot project, the Institute began as a full program in the fall of 1972.

Through the Institute the Foundation seeks to assist a limited number of private colleges in planning and program development in ways which link educational reform and fiscal operation, with the aim of encouraging long-term institutional survival. The emphasis is upon the linkage--the inter-relatedness--between educational programs and fiscal matters. In terms of institutional survival the two must go hand in hand.

The limited resources of the Foundation clearly rule out any program of "survival grants". Instead, the sole aim of the Institute is to help colleges to help themselves through program development and fiscal management. The role of the Foundation is to provide the mechanisms as described below to accomplish this objective.

Colleges take part in the Institute by invitation. Each year the Foundation selects one or more geographic regions for concentration in issuing invitations. Such concentration brings together colleges which, more than likely, face common problems and facilitates joint efforts in working on these problems. Colleges coming to the Institute, therefore, may be able to continue to work with each other in various ways on an ongoing basis.

The Foundation covers all expenses of the workshops, including program, hospitality, and travel expenses for team members. In addition, the Foundation provides to each college the funds for a two-day visit to the campus by a consultant.

During the third year of the Institute the Foundation will commission an outside evaluation to assess the value of the Institute in terms of its purpose.

FEDERAL SUPPORT

Over 100 universities and colleges received in excess of \$10,000,000 of federal funding during fiscal year 1972. Included in this group was The Ohio State University (14th) receiving \$47,875,000, and Case Western Reserve University (37th) receiving \$25,378,000, and the University of Cincinnati (68th) receiving \$15,211,000. Total for the U. S.: \$4.1 Billion.

Massachusetts Institute of Technology was tops with \$112,472,000, the University of Washington was second with \$73,284,000 and the University of Michigan was third with \$66,810,000.

Distribution by State on the basis of those receiving in excess of \$10 million:

California	\$351,582,000
New York	247,983,000
Massachusetts	242,707,000
Pennsylvania	123,236,000
Illinois	119,742,000
Michigan	109,620,000
District of Columbia	94,913,000
Ohio	88,464,000
Texas	87,407,000
North Carolina	85,710,000

EXCESS GOVERNMENT PROPERTY

The National Science Foundation has issued a paper concerning the transfer of excess government property. This information is valid not only to NSF transfers but for any excess government property transfer.

Emphasis is placed on careful selection of these properties and inspection prior to transfer request. To obtain good usable property it is best to select from condition codes N₁, N₂, N₃, E₁, E₂, O₁, O₂, and O₃. Any item lower in condition code than those above should be inspected. On larger, more costly items, an inspection should be made to ascertain that proper coding has been provided.

Requests for items should be immediate since the release dates for most items in GSA catalog allow but one month for completion of the transfer.

* * * * *

Perhaps we'll be able to see everything more clearly in about forty-seven years: 2020.

NATIONAL ENDOWMENT
FOR THE HUMANITIES

The following deadlines have been set by NEH
covering 1974-75 programs:

Fellowships for Younger Humanists	Oct. 15, 1973
Summer Stipends	Oct. 15, 1973
Fellowships in Selected Fields *	Oct. 15, 1973
Summer Seminars for College Teachers	Feb. 11, 1974
Fellowships for the Professions	Information available in Nov.

- * 1. Historical, Social, and Cultural Studies of U. S. Ethnic Minorities
2. Studies on the Interrelationship between Human Values and Science and Technology.

NSF FELLOWSHIPS

Graduate fellowships are awarded by the National Science Foundation in the mathematical, physical, medical, biological, engineering, and social sciences, and in the history and philosophy of science.

Application deadline will be Mid-November, 1973.

NATO Postdoctoral Fellowships have an application deadline of Mid-October, 1973; NATO Senior Fellowships in Science have a deadline of Jan. 31, 1974.

The NSF Postdoctoral, Senior Postdoctoral and Science Faculty Fellowships for College Teachers were discontinued in 1971-72.

EDUCATIONAL PERSONNEL
DEVELOPMENT ACT - E

Tentatively there is an October 1 deadline for this program, if funded. Grants are awarded for the training of persons who are serving or preparing to serve as teachers, administrators, or educational specialists in colleges or universities. These grants may be fellowships for graduate study in carefully developed and coordinated programs other than those eligible under Title IV or short-term training programs and institutes of graduate level quality.

EDUCATION RESEARCH
FELLOWSHIPS

The International Association for the Evaluation of Educational Achievement is again offering Educational Research Fellowships in Stockholm for 1974-75. These fellowships are financed by the Spencer Foundation and are for a ten-month period. Two predoctoral and two postdoctoral fellowships are awarded each year.

Deadline for application is September 30, 1973.

AIDS TO INDIVIDUAL
SCHOLARS

A new brochure on Aids to Individual Scholars listing the various competitions for 1973-74 from the American Council of Learned Societies is on file in the Office of Research Development.

ACLS Fellowships are designed to provide opportunities for scholars to engage in research in: philosophy (including the philosophy of law and science); aesthetics; philology, languages, literature, and linguistics; archaeology; art history and musicology; history (including the history of science, laws and religions); cultural anthropology; and folklore.

Proposals with a predominantly humanistic emphasis in economics, geography, political science, psychology, sociology, and the natural sciences will also be considered.

Deadline for receipt of applications is October 15, 1973. Forms must be requested prior to October 9.

Other programs include: Study Fellowships with a deadline for receipt of application Nov. 1, 1973; Grants-in-Aid with a deadline of September 30, 1973 and later a February 15, 1974 deadline; Travel Grants to International Congresses and Conferences Abroad - Feb. 1, June 1, and Oct. 1 deadline dates each year; Grants for Research on Chinese Civilization - Dec. 3, 1973; Grants for Research on South Asia - Dec. 3, 1973; Grants for Soviet Studies - Dec. 31, 1973.

Programs in East European Studies:

1. Grants for Post-Doctoral Research - Dec. 31, 1973
2. Grants for Study of East European Languages - Feb. 1, 1974 (Forms must be requested prior to January 25, 1974.)
3. Travel Grants to International Conferences Abroad - Feb. 15, 1974.
4. Grants in Support of Conferences - Feb. 15, 1974.

Also associated with these programs are the Social Science Research Council and the International Research and Exchanges Board.

Programs with USSR:

Exchange of Senior Scholars - Dec. 1, 1973
Exchange of Graduate Students and Young Faculty - Nov. 1, 1973
Summer Exchange of Language Teachers - Dec. 1, 1973
Short-Term Travel Grants - Any Time

(continued on next page)

Programs with Eastern Europe:

Graduate Student - Nov. 15, 1973

Ad Hoc Grants - Sept. 30, 1973; Dec. 31, 1973; Mar. 31, 1974;
May 31, 1974.

Collaborative Projects - Oct. 31, 1973 and April 30, 1974.

U. S. /ISRAEL
SCIENCE GRANTS

The U. S. and Israel are opening a \$2.1 million annual program for cooperative research projects concerned with science and technology for peaceful purposes.

The program will be conducted through the U. S. /Israel Binational Science Foundation on a 50/50 funding base.

Efforts will concentrate on collaboration between Israeli and American scientists and organizations, carrying out basic and applied research programs, and programs dealing with scientific and technical information.

Initially, the Foundation will support research projects in the natural sciences; in agriculture and the health sciences; science services, such as translations; and special technologies of broad interest to both countries, covering mass transportation, energy, arid zone research and environmental problems.

ECONOMIC
DEVELOPMENT
GRANTS

The National Science Foundation will provide relatively substantial research/training and travel grants for U. S. Scientists and engineers interested in teaching, lecturing or conducting research in 42 underdeveloped nations.

The program is limited to applicants with at least five years of postdoctoral or equivalent experience in the fields of engineering, physical sciences, earth sciences, biological sciences, social sciences, and science education.

Proposals must be submitted by December 1.

DOCTORAL DISSERTATION RESEARCH ABROAD The Office of Education provides opportunities for advanced graduate students to engage in full-time dissertation research in modern foreign languages, area studies, and world affairs. There will be approximately 140 awards for graduate students who plan to teach in U. S. educational institutions at the post-secondary level. Deadline for application is Oct. 15.

* * * * *

It may be a little pill that will bring the world to its census.

WHITE HOUSE
FELLOWS

The President's Commission on White House Fellows has announced it will accept applications until November 15 for the 10th class to serve in Washington from September 1, 1974 to September 1, 1975. A total of 18 are in the current group. Applicants must be U. S. citizens and at least 23 years old, but not 36 by September 1, 1974. Those selected will serve as aides to Cabinet officers and White House officials and are paid up to \$28,692 for the period.

Women are urged to apply.

Application forms are available from the President's Commission on White House Fellows, 1900 E Street, N. W., Washington, D. C. 20415.

COMMUNITY ALCOHOLISM SERVICES GRANTS October 1 has been tentatively set as the deadline for application for grants in support of programs which provide:

1. Specialized training for professional and/or non-professional personnel involved in providing services in respect to alcoholism in either a specialized or general program.
2. Development of curriculum materials.
3. Special training in personnel to operate, supervise, and/or administer specialized alcoholism programs.

ARTS PUBLIC
MEDIA PROGRAMS

The National Endowment for the Arts has announced October 15 as the deadline for three Public Media Programs. Two of these programs, Programming in the Arts and the Regional Development Program, are aimed primarily at Educational TV stations.

The Media Studies Program provides matching grants for (1) the development of curriculum for film courses and (2) to sponsor accredited workshops and seminars for in-service training of film teachers. There is a modest amount of funding to support graduate students in meeting the cost of equipment rental, materials, and processing where demonstrated need is shown.

* * * * *

Whether it's because of aeronautical development or just the rainy weather -- a lot of people have their heads in the clouds.

* * * * *

NATIONAL ENDOWMENT OF THE HUMANITIES

PROGRAM INDEX AND DEADLINE SUMMARY

INFORMATION FOR ALL APPLICANTS 3

DIVISION OF EDUCATION PROGRAMS 8

Project Grants: for projects beginning after May 1, 1974, applications should be postmarked no later than November 1, 1973; for projects beginning after December 1, 1974, applications should be postmarked no later than March 15, 1974.

Institutional Grants

Planning Grants: same deadlines as Project Grants.

Program Grants: for projects beginning after August 1, 1974, applications should be postmarked no later than January 1, 1974; for projects beginning after January 1, 1975, applications should be postmarked no later than July 1, 1974.

Development Grants: for projects beginning after August 1, 1974, applications should be postmarked no later than January 1, 1974; for projects beginning after May 1, 1975, applications should be postmarked no later than July 1, 1974.

DIVISION OF PUBLIC PROGRAMS 13

Film/TV Grants: for projects beginning after April 1, 1974, applications should be postmarked no later than October 15, 1973; for projects beginning after June 1, 1974, applications should be postmarked no later than January 15, 1974; for projects beginning after December 1, 1974, applications should be postmarked no later than June 1, 1974.

Museums and Historical Societies Program

Interpretive Exhibition Grants: for projects beginning after August 1, 1974, applications should be postmarked no later than October 15, 1973; projects beginning after December 1, 1974, applications should be postmarked no later than February 15, 1974; for projects beginning after March 1, 1975, applications should be postmarked no later than April 15, 1974.

Community Education Grants: same deadlines as Interpretive Exhibition Grants.

Personnel Development Programs: applications for programs to be conducted between June 1974 and August 1975 should be postmarked no later than October 15, 1973.

DIVISION OF RESEARCH GRANTS 20

For projects beginning after August 1, 1974, applications should be postmarked no later than November 19, 1973; for projects beginning after January 1, 1975, applications should be postmarked no later than May 6, 1974; for projects beginning after August 1, 1975, applications should be postmarked no later than November 18, 1974.

DIVISION OF FELLOWSHIPS AND STIPENDS 23

Senior Fellowships: for fellowships beginning between January 1975 and April 1976, applications should be postmarked no later than June 17, 1974.

Fellowships for Younger Humanists: for the academic year 1974-75, applications should be postmarked no later than October 15, 1973.

Fellowships and Summer Stipends for Junior College Teachers: for the academic year 1974-75, applications should be postmarked no later than October 15, 1973.

Summer Stipends: for the summer of 1974, applications should be postmarked no later than October 15, 1973.

Fellowships in Selected Fields: for the academic year 1974-75, applications should be postmarked no later than October 15, 1973.

Summer Seminars: for the summer of 1974, applications should be postmarked no later than February 11, 1974. Applications should be submitted to seminar directors rather than to the Endowment.

YOUTHGRANTS IN THE HUMANITIES 30

For projects beginning after December 1, 1973, applications should be postmarked no later than July 31, 1973; for projects beginning after April 1, 1974, applications should be postmarked no later than November 15, 1973; for projects beginning after September 1, 1974, applications should be postmarked no later than April 1, 1974; for projects beginning after December 1, 1974, applications should be postmarked no later than August 1, 1974.

See your department chairman or college dean for more detailed information in a pamphlet which has been distributed, or come to the Office of Research Development (now in Room 254 of Allyn Hall) for additional information.

* * * * *

Visit the Geology Department to see earthy films.

Schedule of NSF Programs for Education in the Sciences—Fiscal Year 1974

This consolidated table presents important time-schedule information concerning NSF programs for education in the sciences. It is intended as a convenient reference for: (1) individuals applying for fellowships and (2) institutions submitting proposals for the conduct of all other listed programs and projects. Award announcement dates are approximate and on occasion may be somewhat later than the dates indicated.

INFORMATION FOR FELLOWSHIP APPLICANTS AND INSTITUTIONS

Programs	Program Announcement Dates	Application Closing Dates	Award Announcement Dates	Pertinent Publications
FELLOWSHIPS				
Graduate, AY 74-75	Sept. 1973	Nov. 26, 1973	March 15, 1974	E 74-12
North Atlantic Treaty Organization (NATO) ¹				
Postdoctoral	Aug. 1973	Oct. 9, 1973	Feb. 25, 1974	E 74-13
Senior	Open	Jan. 31, 1974	Periodically	E 74-14

Note: Because the dates above are subject to change, prospective applicants should consult specific program announcements for exact final dates.

INFORMATION FOR INSTITUTIONS SUBMITTING PROPOSALS

(NOT for Individuals Applying for Participation)

Programs	Program Announcement Dates	Proposal Closing Dates	Grant Award Dates	Pertinent Publications
HIGHER EDUCATION PROGRAMS (Graduate & Undergraduate)				
Alternatives in Higher Education	Aug. 1973	Open	Open	E 74-5
(Materials & Instruction Development; Alternative Degree Programs; Continuing Education for Scientists & Engineers)				
College Faculty Workshops	Aug. 1973	Open	Open	E 74-6
Minority Institutions Science Improvement	Aug. 1973	Open	Open	E 74-8
Student-Oriented Program				E 74-7
Undergraduate Research Participation	Sept. 1973	Nov. 2, 1973	Feb. 1, 1974	E 74-7
Student-Originated Studies	Sept. 1973	Nov. 30, 1973	Feb. 15, 1974	E 74-7
(Secondary School Students) see below				
Restructuring of Education Programs	Aug. 1973	Open	Open	E 74-10
(Pre-Service Teacher Education; Restructuring of the Undergraduate Learning Environment)				
Technological Innovation in Education	Aug. 1973	Open	Open	E 74-9
Field-Initiated Studies and Experimental Projects ..	Aug. 1973	Open	Open	E 74-11
PRE-COLLEGE EDUCATION PROGRAMS (Elementary & Secondary)				
Materials and Instruction Development	Aug. 1973	Open	Open	E 74-3
(Careers in Science/Science Literacy)				
Instructional Improvement Implementation	Aug. 1973	Oct. 15, 1973	Jan. 14, 1974	E 74-4
(Careers in Science/Science Literacy)				
Student-Oriented Program				
Secondary School Student Science Training	Sept. 1973	Nov. 16, 1973	Feb. 11, 1974	E 74-7
Restructuring of Education Programs				
Pre-College Systems	Aug. 1973	Open	Open	E 74-10
Field-Initiated Studies and Experimental Projects ..	Aug. 1973	Open	Open	E 74-11

¹ Programs administered by NSF for U.S. citizens at the request of the Department of State.

NATIONAL SCIENCE FOUNDATION

EDUCATION PROGRAMS

This summary of the Foundation's redirected activities in science education will provide a perspective of the thrusts and the relationships of the individual programs to the whole. It is not intended to be a guide for the preparation of proposals; such guides should be requested separately. Following the general statement is a brief description of the individual program elements. Information about specific guides for proposal submission will be found on the inside of the back cover.

The Science Education programs of the National Science Foundation will continue, in a more sharply focused way, the reorientation begun two years ago. While earlier NSF education activities have had a marked effect on science education in the United States, some of the problems toward which they were directed, such as a shortage of scientific research manpower, now have been reduced, to be replaced by others of growing importance. Nationwide efforts to make the benefits of education available to a much broader segment of the population are bringing into our schools a much wider variety of students with a broader range of abilities and talents. The increasingly technology-based character of both the production and service sectors of the economy requires that all citizens, scientists and non-scientists alike, have an understanding of science and technology, and be prepared for changes in their careers during their working lives. Moreover, in order that individuals can execute their responsibilities as citizens in a knowledgeable way, they must also learn to appreciate the potential of science and technology in contributing solutions to some of the major problems facing the Nation—for example, the physical, biological, and social aspects of environmental or energy crises. Further, and compounding the problems of providing education more responsive to the Nation's needs, are the rising costs of maintaining an educational system in which the quality of education does not deteriorate.

In recognition of these needs, the Foundation's science education activities will give greater emphasis to programs which reach a broader seg-

ment of the population than has been characteristic of programs in the past. Included are:

- Elementary and secondary school programs adopting a "hands-on" problem-solving approach, designed to appeal to the broader group of students whose orientation is more toward the "practical" than toward the "theoretical."
- College level programs incorporating self-paced, self-directed study in interdisciplinary as well as traditional discipline areas, to place more responsibility on the student for his own "learning," rather than on the faculty for "teaching."
- Alternative degree programs aimed less at producing basic science researchers, and more at developing scientists capable of doing research on some of the more pressing problems now facing the Nation, or who have the capability of applying existing scientific knowledge to the amelioration of those problems.

Coupled with the development of a broader range of teaching materials and teaching techniques will be more sharply focused efforts at dissemination of information, training of teachers, and assistance in implementation. The goal will be to get newly developed materials and techniques tried out and into actual use in a reasonable number of the Nation's schools and colleges. For example, instructional projects for teachers will deal directly with specific new teaching materials and modes rather than with a general upgrading of traditional substantive knowledge; college teacher programs will be targeted toward evaluation and development of

materials not only for formal classroom use, but some for direct use by students in self-paced, self-directed study.

At the same time, the programs will be responsive to the need to find ways to stem the rising costs of education, by investigating or attempting to develop more cost-effective teaching modes and more effective use of technical aids to teaching. Attention to the question of cost-effectiveness will not be confined to activities in support of new teaching modes or the use of technical aids to instruction. In all education activities, an important criterion in determination of supportable projects will be the ultimate (i.e., long-range) cost-effectiveness of the proposed operation.

I. IMPROVEMENT OF EDUCATION FOR CAREERS IN SCIENCE

The central objective is to help assure an appropriate number, variety, flexibility, and quality of professional scientific and technological manpower, with greater participation by ethnic minority groups and women, to meet the Nation's needs. Programs are addressed not only to the problem of maintaining the quality of training in the traditional science disciplines, but also to the development of new instructional patterns and new instructional programs, single- or interdisciplinary, leading to a wider variety of scientific and technical career options for individuals ranging from secondary school graduates to graduate degree holders.

The following programs are included:

1. Secondary School Program

The primary objective is improvement of science courses and curricula offered at the secondary school level to give high school students the best possible foundation for science- or technology-related careers. There are two main lines of attack: Materials and Instruction Development, and Instructional Improvement Implementation.

a) Materials and Instruction Development

This activity provides support for major course development and curriculum improvement projects of national import which will produce entire course packages or modules which can be flexibly fitted into existing or new courses. The package includes, in addition to the

One element of the proposed program that is completely new is that dealing with the plan to conduct a group of studies of current educational practice, current problems, and future needs, in the hope that such studies will provide a rational guide for program changes.

Program activities are structured around four major themes:

- Improvement of Education for Careers in Science
- Development of Science Literacy
- Increasing the Efficiency of Educational Processes
- Experimental Projects and Problem Assessment

basic text, auxiliary materials such as laboratory exercises and investigations, teacher education packages, and supplementary audio-visual materials. The objective is to enhance the capability of the educational system to interact with learners in ways that will maximize educational benefits. Appropriate kinds of activities include, but are not limited to, generation of guidelines for curricula through conferences and seminars, analysis of curriculum materials, development of resource centers for teachers, and research into the learning process.

b) Instructional Improvement Implementation

Activities associated with improving classroom instruction will be directed toward the implementation of new course materials in the classroom. Although projects will be supported which resemble in format some of the teacher training activities supported in the past, their emphasis and structure will be substantially different. There will be opportunities to combine these formats in new ways and to develop new approaches for implementing science education improvements. Attention will be focused on working with key individuals, and with groups of schools and school systems.

All activities, including in-service teacher education, will be directed toward fostering

successful implementation of major curriculum and course developments in school systems. Attention will generally be given to new approaches developed with Foundation support. However, assistance will be provided for implementation of educational programs developed through non-NSF supported activities when thorough, comprehensive evaluations support their effectiveness. The decision to support an implementation project will be governed, primarily, by the quality of the material and by its demonstrated potential for gaining wide acceptance. Other criteria will also be applied in assessing the merits of the proposed implementation plans, including the extent of commitments of schools and associated institutions, the appropriateness of the instructional staff, cost effectiveness of operating plan to achieve desired results, etc.

Each proposal will be expected to designate those aspects of the implementation process which are its primary concern. These might include familiarization with alternative curricula or approaches; exploration in depth of a selected curriculum for committed users; training of resource teams for long-term dissemination and maintenance; installation in a significant segment of a school system; or some other formulation of an implementation scheme most appropriate for a given local situation.

2. Alternatives in Higher Education

In order to encourage and facilitate change in higher education to meet changing requirements for academic training, this program will support the creation and testing of alternative undergraduate and graduate programs in science and technology that will provide the professional skills needed in today's society, by assisting in the development of new modes of delivering education and the exploration of economical alternatives for introducing new program options into the existing system of higher education. AHE represents a major Foundation effort focusing on the development of quality science education that will give students greater flexibility and a broader range of career choices than former programs that were largely single-discipline oriented. This activity is designed to test alternatives to meet these needs and will pursue three separately-identified approaches:

Development of Instructional Materials and Modes, Alternative Degree Programs, and College Faculty Workshops.

a) *Development of Instructional Materials and Modes*

One of the major avenues for the improvement of higher education in science in the past has been the development of curricular materials for use in a traditional lecture-recitation-laboratory format. NSF priorities are now shifting toward newly emerging, interdisciplinary, problem-relevant subject areas, and toward the search for more effective and efficient modes of delivery. Thus, the focus of this element of AHE will be on the creation of modules, courses, curricula, or instructional sequences in newly significant science- or engineering-based problem areas, and on studies of novel delivery systems for both on-campus and off-campus instruction.

There will be considerable flexibility in project format or topic, including experimentation with alternative instructional modes, with new materials aimed at development of problem-solving competences, with applications of modularization and self-pacing, and with independent study. Only those projects that demonstrate the likelihood of use on a national scale will be supported.

b) *Alternative Degree Programs*

Support will be provided to colleges and universities for design and implementation of curriculum prototypes that, as alternatives to typical basic science research-oriented Baccalaureate, Master's or Ph.D. degrees, lead to a wider variety of career options in areas of recognized national need. Institutions may propose entirely new undergraduate or graduate degrees or the restructuring of existing degree programs. In either case, a significant element of experimentation must be present, resulting in a meaningful departure from traditional degree programs.

c) *College Faculty Workshops*

In designing College Faculty Workshops, the Foundation is advancing further in the direction in which College Teacher Programs have already

been moving. Over the past several years, there has been a gradual transition from the longer (8-10 week) summer institute-type activity, directed to some extent toward up-dating activities, toward shorter courses (up to 2 weeks) directed toward more specialized topics of immediate interest in the undergraduate classroom. The programs of many of the institutes and short courses have resulted in books or monographs, some intended mainly for teacher use, some for student use. The workshop program now being developed will have as its ultimate target the preparation of modules and monographs for student use, either as collateral reading associated with formal courses or as the basis for independent, self-directed study. College teachers will be invited to participate in "workshop" operations, joining their talents as teachers with the expertise of research scholars to create and test study materials for use by undergraduates.

While the administration of operations may be somewhat altered, the basic format of short courses is expected to remain in evidence.

3. Continuing Education for Scientists and Engineers

The objective is to find effective ways to continue the professional education of scientists and engineers in the non-academic labor force. With the steadily increasing rate of accumulation of scientific and technical knowledge has come an increasing rate of obsolescence, at great economic and social cost to employers, employees, and the Nation. Economically feasible means must be found to afford to the scientist and engineer in the labor force opportunities to keep up-to-date and to do it in a cost-effective manner. Development of appropriate subject-matter and delivery systems which give promise of increasing the availability, utility, and effectiveness of continuing education will be supported, although the principal focus is on experimental projects rather than on the support of proven mechanisms.

4. Student-Oriented Program

The primary goal of the Student-Oriented

Program is to increase the variety of instructional modes and of institutional patterns of instruction by demonstrating to both students and faculties the capacity of students to be motivated by independence and thus to accept greater responsibility for planning and carrying out their own learning activities.

Students learn easily and well when they feel that the need to learn is in harmony with their own self-interest and sense of what is important. A central mechanism for developing this feeling of connection between academic studies and the real world is to organize instruction around problems which a student can perceive as being significant, problems which are stated in ways which allow a young person to recognize and understand, from his own perspective, the nature and importance of those problems.

To bring the potential benefits of this mode of instruction directly to the attention of those who determine teaching patterns, the Foundation supports the active participation of students with faculty in specially designed instruction and/or investigative work. In the various types of projects, the role of the faculty ranges from central and directive to strictly advisory, but in all cases the projects should stress increasing independence and responsibility for the student.

The Foundation invites submission of proposals for support of three types of activity directed toward achieving the primary goal stated above.

a) For high ability secondary students: Student Science Training (SST)

SST will continue to support summer science programs, established by academic institutions and non-profit laboratories, aimed at testing the aptitude of outstanding secondary school students for science by bringing them into direct contact with teachers and research scientists of recognized competence who can provide them with educational experiences in science and mathematics beyond those available in the usual high school courses.

b) For undergraduate students: Undergraduate Research Participation (URP)

URP projects are aimed at providing experiences, through participation in research, that will enable undergraduate students to grow in independence, and will at the same time demonstrate the potential of this kind of activity as an adjunct to or as a replacement for tradi-

tional formal classroom instruction. Over the years, the Foundation has provided support under URP for student participation in all areas of research within the purview of the National Science Foundation; that is, in mathematics, engineering, and the biological, social, and physical sciences; in traditional discipline and interdisciplinary areas. Reorientation of the program is now planned. While the disciplinary areas will be unchanged, the program's focus will be narrowed to those research projects that can be justified in terms of relevance to a particular national problem.

For the initial year under this narrower focus, the central themes of the program's activities will be "The Energy Problem" and "Management of Renewable Natural Resources." Proposers will be expected to indicate, concisely but clearly, the applicability of the proposed research to some facet of the problem or problems of (a) providing an increased energy supply or reducing the energy demand, or (b) optimizing the utilization and replenishment of the Nation's renewable natural resources.

c) *For undergraduate and graduate students: Student-Originated Studies (SOS)*

The general aim of SOS is much the same as that of URP—the provision of student experience in independent, self-directed study, and demonstration of the effectiveness of such study as an adjunct to or replacement for traditional, formal course work—but the mechanism is different. In SOS, the projects are wholly student-originated and student-managed, with faculty in a strictly advisory role, in contrast to URP, in which the faculty plays a guiding role and the student participates as a junior colleague. While the program has been addressed primarily to undergraduates (with some graduate students permitted in principally undergraduate groups), it will now be open also to groups of graduate students. The general requirement is that the studies be conducted by multi-disciplinary groups and be concerned with problems of the physical, biological, or social environment.

5. Ethnic Minorities and Women in Science

The objectives of EMWS are to study and test

educational mechanisms and to support experimental models aimed at discovering and promoting more effective methods of increasing the flow of women and ethnic minority group members into careers in science. The program will move along two lines: (a) support for college science improvement, to establish model operating science education programs designed to surmount the roadblocks hindering the movement of ethnic minority group members into careers in science, and (b) support to academic institutions or education-related organizations to assist in developing a better understanding of the nature and origin of the roadblocks to science careers for women and minorities and in designing methods of overcoming these obstacles.

a) *College Science Improvement Program (COSIP D)*

The College Science Improvement Program provides support for self-determined improvement projects in 2- and 4-year colleges that have historically provided educational opportunities to disadvantaged ethnic minority students and continue to do so. Institutions are expected to develop plans for a course of action that is designed to effect long-range improvement in the basic scientific strength of the institution. To qualify for Foundation support, a project will be expected to map out an acceleration of this development that can be maintained after grant termination. Facilities, equipment, methods of instruction, and curricula are some elements of focus which may be supported under this program.

In cases where two or more institutions define a common problem and find it advantageous to attempt a cooperative solution, COSIP will entertain proposals prepared jointly. Activities that lend themselves easily to cooperative efforts are curricula development, course content improvement, teaching materials, and other software development.

b) Support is also provided under *Experimental Projects and Problem Assessment* for projects concerned with improving the flow of women and minority group members into careers in science. Information regarding these activities is included in the discussion of *Experimental Projects and Problem Assessment* beginning on page 7.

II. DEVELOPMENT OF SCIENCE LITERACY

In developing science literacy, the goal is to increase substantially the number of persons who are able to make use of the methodology of science, as well as the results of scientific discovery, in their work and personal lives, whether or not they are engaged in scientific or technical occupations.

Historically the major concern of the Foundation's science education programs has been for the student who had already decided, or who might decide, on a career in science. Only in more recent years has attention begun to turn in a more specific way to the needs of people who might not become scientists, engineers, or technicians. That even more attention should be given to this group has become increasingly apparent.

As our society becomes more and more technologically based, more and more people are becoming engaged in activities or in making decisions that require a scientific or technical background, and there is an increasingly wide range of jobs at all levels for which science training is highly useful, if not essential.

Concurrently, the Nation is making the benefits of more education available to more of its citizens. Our schools are now accommodating almost the entire school age population and are thus faced with an increasing diversity of talents, capabilities, and career aspirations. To meet the needs of these students, a wider variety of teaching materials must be developed, which provide an assortment of approaches to the teaching-learning process. There must be available teaching materials that can be matched to

the learning abilities of both the theoretically inclined student who learns readily from the printed page and the more practically oriented student who learns best from "hands-on" materials and tangible models.

The Development of Science Literacy activity is subdivided into two elements: an *Elementary School Program* and a *Secondary School Program*. The common objectives include the development and implementation of materials which:

- offer a meaningful introduction to the fields concerned;
- are based on topics of inherent interest to children or teenagers;
- require a "hands-on" learning approach;
- serve as a sound foundation for later educational experiences;
- offer superior educational returns for little or no increase in investment;
- can be used without long-term reorientation of school personnel.

These programs, which are directed at persons who may or may not choose careers in science or engineering, will operate within a format essentially the same as that of the science career-oriented Secondary School Program under Improvement of Education for Careers in Science (see page 2), and the same proposal submission guidelines apply. See brochure numbers E-74-3 and E-74-4.

III. INCREASING EFFICIENCY OF EDUCATIONAL PROCESSES

The objective of these activities is to improve effectiveness and efficiency in science education. The cost of education in the United States is increasing at a rate greater than that of any other component of the economy except the cost of medical service. In 30 years, the cost of education has risen from less than two percent of the GNP to 7.5 percent. The rising cost of education, coupled with a decreasing ability of academic institutions to meet educational needs, poses a serious problem for our Nation today.

Two major approaches to attaining a better balance between costs and productivity are planned. The first involves support of the application to the education process of technological devices such as computers, TV, and films; the major portion of this effort is supported through Technological Innovation in Education. The second approach, which is supported under Educational Program Restructuring, focuses on a few major models of new approaches to the organization, management, delivery, and content of education.

1. Technological Innovation in Education

Support is provided for the exploration and development of innovative uses of the computer and related communication technologies in education. The objectives of this program activity are pursued through three separate program elements:

- Technology and Systems, which provides support for research in computer technology and techniques applicable to education and for projects focused on the testing and evaluation of special systems.

- Applications and Courseware, which supports projects aimed at (1) the development, testing, and evaluation of applications and courseware in selected disciplines to support innovative uses of computing in instruction; (2) the development, testing, and evaluation of new instructional concepts related to computer-based education; and (3) the development of mechanisms to disseminate and facilitate the widespread use of these products and concepts.

- Special Projects, which provides support for efforts to explore and develop the use of modern communication technologies for effective and efficient instruction.

2. Educational Program Restructuring

The Educational Program Restructuring activities are experiments designed to lead to major changes, rather than to relatively minor modifications, in the way education is done, with the goal of improving the effectiveness and efficiency of the educational process. To this end, support will be provided to assist in the design, development, and evaluation of a few major experimental models of new approaches to the

organization, management, delivery, and content of education. Emphasis will be placed on design and development for results that can be evaluated and documented. The aim is the production of generalizable and transportable results. The principal program efforts for the near future will be focused on (1) extensive revision of pre-service teacher education programs; (2) major restructuring of the undergraduate learning environment; and (3) state-wide, regional, or urban systems projects for large-scale science education improvement at the pre-college level. More specifically, support will be provided to carry out:

- An assessment of the effectiveness of pre-service teacher education programs and the development of models through which the pre-service education of teachers can result in improvement of science education at the pre-college level.

- Experiments and demonstrations of mechanisms for effecting comprehensive changes in undergraduate learning environments.

- Experiments and demonstrations of coordinated mechanisms, involving schools, colleges, universities, and other interested institutions, to effect comprehensive changes in science curricula and in instructional modes at the pre-college level.

Proposals may provide for collaborative arrangements and funding with other universities, non-profit, and/or profit-making organizations.

IV. EXPERIMENTAL PROJECTS AND PROBLEM ASSESSMENT

To increase the effectiveness and impact of NSF programs and others directed toward the improvement of science education, research and problem assessment activities will be concerned with a variety of studies, some staff-initiated and some field-initiated, and with the support of experimental projects designed to provide understanding of the problems connected with the effective dissemination of information about

new educational developments and the barriers to acceptance and implementation of these developments.

Studies:

Plans for several studies are now being formulated by NSF staff. Details of these plans will be released when they are completed, with an invitation to interested academic institu-

tions, non-profit and other agencies to submit proposals. The invitation will indicate whether support will be provided via a grant or a contract. Studies currently being planned include:

- Investigation of barriers to implementation of newly developed teaching materials and modes of instruction at the pre-college and post-secondary levels, and of ways to overcome them.

- Studies and experimentation to identify effective means of moving new knowledge from the research community into the educational system.

- Studies of the current state and effectiveness of continuing education for scientists and engineers.

- Studies of barriers to the movement of women into careers in science and technology.

- Studies of barriers to the movement of ethnic minority group members into careers in science and technology.

Those who may be interested in conducting one or more of the above studies are invited to send a postcard (a separate card for each study) expressing that interest. Details will be mailed as soon as study plans are completed.

Experimental Projects:

Proposals for field-initiated experimental projects directed toward the solution of proposer-

identified problems in science education, as well as proposals for projects designed to test mechanisms to accomplish the three following staff-identified missions, are invited:

- Increasing the availability of high school student project activity as part of the high school curriculum.

- Increasing the flow of ethnic minority students into careers in science.

- Increasing the flow of women into careers in science.

Program guidelines, brochures, and application forms have been requested by the Office of Research Development and will be on file in Room 254 Allyn Hall.

V. GRADUATE STUDENT SUPPORT

The primary objective of the Foundation's Graduate Student Support Program is to assure that the Nation's most talented graduate students in the sciences obtain the education necessary to become a cadre of first-line researchers needed by our technologically based society. It is expected that in Fiscal Year 1974 the nationally competitive Graduate Fellowship Program will provide approximately 500 new three-year fellowships, to be awarded to beginning graduate students. In addition, approximately 1,000 prior-year awardees will be supported. The competition is open only to citizens or nationals of the United States.

FELLOWSHIP OFFICE
NATIONAL RESEARCH COUNCIL
2101 CONSTITUTION AVENUE, N.W.
WASHINGTON, D. C. 20418

Deadline: November 26, 1973

Award Date: March 15, 1974

The Foundation also administers two postdoctoral programs funded by the North Atlantic Treaty Organization; see program announcements of the NATO Postdoctoral (E-74-13) and NATO Senior (E-74-14) Fellowships in Science Programs.

CALENDAR OF DEADLINES

SEPTEMBER

	<u>Guide No.</u>	<u>Deadline</u>
Research in Special Areas of Education	E79	Fall
Research in Education - Small Grants	E77	Fall
Research in Education	E75	Fall
Undergraduate Programs in International Studies	E44	Fall *
Summer Language and Area Program	E49	Fall *
Graduate Programs in International Studies	E51	Fall *
Non-Commercial Educational Broadcasting Facilities	E 5 (probable)	15
State Agricultural Experiment Station - Research Programs	K29	15
Postdoctoral Research Associateships NASA (NRC)	M69	15
Special Projects to Prepare Personnel to Work with Handicapped Children	D 7	30
Special Demonstration Projects in Adult Education	C 9 (probable)	30
Teacher Training for Adult Education	C 5 (probable)	30

* If program is to be operational in 1974-75

OCTOBER

Metropolitan Mental Health Problems	G43	1
Minority Mental Health Programs	G44	1
Mental Health Epidemiology	G45	1
Academic Career - Teacher Awards (Medical) in Narcotic Addiction and Drug and Alcohol Abuse	G46	1
Career - Teacher Training Centers	G47	1
Training for Health and Health Related Professionals in Narcotic Addiction and Drug Abuse	G48	1
Clinical Investigator Awards in Narcotic Addiction and Drug Abuse	G49	1
Academic Career - Teacher Awards (non-medical) in Narcotic Addiction and Drug Abuse	G50	1
Research on Narcotic Addiction and Drug Abuse	G51	1
Drug Abuse Education Projects	G53	1
Alcohol Abuse and Alcoholism	G55	1
Occupational Safety and Health Research	F1	1
Occupational Safety and Health Demonstrations	F2	1
Research Support - Food and Drug Administration	F7	1
Exploratory Research Grants	F38	1
Research Projects Grants	F39	1
Development and Demonstration Projects	F40	1
Research Project Grants NIH	G 1	1
Biotechnology Resources	G17	1
General Clinical Research Centers NIH	G18	1

(continued on next page)

OCTOBER (cont.)

	<u>Guide No.</u>	<u>Deadline</u>
Projects to Support Animal Resources	G19	1
Medical Library Science Research Projects	G23	1
Biomedical Publications Grants	G24	1
Construction of Cancer Research Facilities	G29	1
Mental Health Research Grants	G31	1
Mental Health Program - Project Grants	G33	1
Mental Health of Children and Families	G57	1
Mental Health of Aging	G58	1
Studies of Crime and Delinquency	G59	1
Research and Development in the Field of Aging	H 1	1
Training and Curriculum Development in the Field of Aging	H5	1
Transportation Research Opportunities for Universities	L90	1
Summer Institutes and Short Courses for Secondary School Teachers of Science and Mathematics	N3	1 (tent)
Smithsonian Institution Foreign Currency Progress (Systematic and Environmental Biology and Museum programs)	O31	1
Woodrow Wilson Center for Scholars	O35	1
Radiation Training	M46	1
Foreign Curriculum Consultants	E35	1
Group Projects Abroad	E37	1
American Heart Association, MVC		1
Environmental Research, Development, and Demonstration	M33	1
Manpower-Related Doctoral Dissertation Grants	K60	1
MDTA Research Projects	K58	1
Higher Education Personnel Training	D101	1
Cooperative College/School Science Program	47.109	15
Summer Institutes for Secondary School Teachers of Science and Mathematics	47.019	15
Inservice Institutes for Pre-College Personnel	47.019	15
Resource Personnel Workshops and Administrative Conferences	47.019	15
Leadership Development Projects (formerly Academic Year Institutes for Secondary Teachers)	47.019	15
Fellowships and Summer Stipends for Younger Humanists	NEH	15
Public Media Programs in the Arts	NEA	15
Youthgrants in the Humanities	NEH	15
Cooperative Education Programs	D95	15
Special Projects to Improve Nurse Training	F11	15
Reactor Fuel Cycle Assistance	M15	15
Faculty Research Abroad	E39	15

(continued on next page)

OCTOBER (cont.)

	<u>Guide No.</u>	<u>Deadline</u>
Doctoral Dissertation Research	E41	15
Undergraduate Programs in International Studies	E44	Mid-
Graduate Programs in International Studies	E51	Mid-
Undergraduate Research Participation	N39	Mid-
NATO Postdoctoral Fellowship in Science	N28	29

NOVEMBER

Teacher Exchange Program	E53	1
Teaching Abroad and Summer Seminars for Teachers	E57	1
Guaranteed Loans and Interest Subsidies to Schools of Nursing	F3	1
Special Health Career Opportunity Grants	F23	1
Medical Library Resources (Project Grants)	F48	1
Water Pollution Control Training	M44	1
Water Pollution Control Research Fellowships	M45	1
Education Programs (Project and Planning)	M64	1
Student Originated Studies	N37	1 (prob)
Smithsonian Institution Foreign Currency Program (Archaeology and Related Disciplines)	O31	1
Business and Administration Fellowships	O43	1
Graduate Fellowships in Science	N26	1 (prob)
Assistance to Health Professions Schools in Financial Distress	F13	1 (prob)
College Work-Study Program	D125	1 (prob)
Educational Opportunity Grants	D121	1 (prob)
National Direct Student Loans	D109	1 (prob)
Medical Library Resources (Project Grants)	G25	1
Special Health Careers Opportunity Grants	F33	1
Supplemental Educational Opportunity Grants	D123	Probably
Council on Library Resources Fellowships (CLR)		1
Study Fellowships (ACLS)		1
Strengthening Developing Institutions	D97	1
Research Programs, NEH	M66	19
Exchange Programs with the USSR and Eastern Europe NAS (NRC)	47.014	21

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Classification? You make things happen.
 You watch things happen.
 You wonder what happened.

DECEMBER

	<u>Guide No.</u>	<u>Deadline</u>
Preparation of Professional Personnel to Educate Handicapped Children	D1	1 (prob)
Special Education Programs in University Affiliated Facilities for the Mentally Retarded	D5	1 (prob)
Environmental Education Programs	E95	1 (prob)
Research in Maternal and Child Health and Crippled Children's Services	F55	1
Agricultural Research - Cooperative State Research Service	K31	1 (prob)
University Research and Training in Urban Mass Transportation	L87	1 (prob)
Engineering Research Initiation Grants	N71	1 (prob)
Child Service Demonstration Program	D8	15 (prob)
Research in Modern Foreign Language Instruction	E31	15 (prob)
Loans to Student Nurses	F15	15 (prob)
East-West Center	L65	15
Scholarships for Student Nurses	F17	15 (prob)
White House Fellows	O17	15 (prob)
Training in Family Medicine	F28	31 (prob)
Minority School Biomedical Support Programs	G12	Prob. Dec.
Institutional Grants for Research Management Improvement	N73	31
Graduate Fellowships in the Atmospheric Sciences	N84	31 est.
Postdoctoral Appointments - National Center for Atmospheric Research	N85	31 est.

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COOPERATIVE EDUCATION PROGRAMS

The Bureau of Higher Education has announced Oct. 15 as the deadline for this program. These programs should provide an opportunity for students to alternate periods of academic study with periods of off-campus employment. The work experience should be closely integrated to the academic career goals of the student.

Priorities - Programs that establish a choice of career opportunities through specifically designed curricula and off-campus experience for students from educationally or economically deprived backgrounds.

Programs designed to serve needs for particular urban areas.

Programs that provide well planned off-campus experiences in industry and business, social service, and government agencies.

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