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ABSTRACT

This issue of the newsletter of the American Association for the Advancement of Science (AAAS) presents articles relating to interdisciplinary science instruction, declines in science skills, instructional television, college entrance examinations, career education, minorities in engineering, lab safety, inservice teacher education, and the use of minicalculators in schools. Higher education topics include physics computer projects, credit by examination, early entrance programs, special education, and outstanding engineering educators. Descriptions of recent publications, meetings, and opportunities are included. (SL)

SCIENCE EDUCATION NEWS

June 1976

The Educational Research Council of America, developers of *Individualized Science Investigations Allyn & Bacon, Inc.* and *You and the Environment* (Houghton Mifflin Co.) announce the development of 18 units for an activity-based interdisciplinary science program. These four- to nine-week units are designed for grades 6-12. Available units include "Analogies," "Patterns," "Consumer Science," "Metric Measurements," "Energy Sources," and "Ecosystems."

While the units are based on concepts or processes that cut across the disciplines of science, social and personal situations are often studied. Anyone interested in these materials should contact Gary D. Day, Director, Science Department, Educational Research Council of America, Rockefeller Building, Cleveland, Ohio 44113.

During the period 1969-73 science achievement in the South did not decline as much as it did in the rest of the nation. In fact, the science knowledge of black students in the elementary school (age 9) actually improved, according to a report just released by the National Assessment of Educational Progress.

In a study of regional trends in science achievement for students aged 9, 13, and 17 National Assessment found that between 1969 and 1973 declines in science achievement were smaller in the Southeast than in the rest of the country.

Early in 1975 National Assessment reported that, nationally, science achievement declined approximately 2 percentage points between 1969 and 1973. This decline in science achievement prompted National Assessment to further examine results from the two science surveys.

In the more detailed analysis National Assessment found that the achievement in science for Southeast blacks at age 9 improved 2.8 percentage points while the achievement of blacks at the same age in the rest of the country declined 3.5 percentage points. At age 13 an average of 1.1 percent fewer Southern blacks answered a question correctly in the second science assessment; however, the percentage of blacks in the rest of the nation able to answer a question correctly at this age dropped 5.1 percentage points. The achievement of 17-year-old blacks in the Southeast declined 1.2 percentage points compared to 2.5 percentage points for 17-year-old blacks elsewhere.

The Southeast region in the NAEP study included Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia. From *NAEP Newsletter* (April 1976), 1860 Lincoln Street, Denver, Colorado 80203.

The Corporation for Public Broadcasting (CPB), in cooperation with the Public Broadcasting Service, has completed a study of the utilization of instructional television (ITV) in the United States. CPB views this study as a first step toward providing comprehensive information about ITV and proposes periodic studies to determine trends in the utilization of ITV. Future studies, according to CPB, should give attention to the impact of ITV on instructional programs.

The report of the study is available from the CPB Office of Educational Activities, 1111 16th Street, N.W., Washington, D.C. 20036.

The College Board offers dozens of examinations in several different subject areas through its various testing programs. To help faculty, academic administrators and testing personnel sort them out, and particularly to understand how the various tests in the same subject compare to each other, the College Board has just issued the first eight in a series of guides to the examinations. Four of these are in science—biology, chemistry, mathematics, and physics.

In addition to describing the several exams available in each of the subjects, the new guides give information about their uses, the groups for whom they are intended, and the sources of more detailed descriptions of each examination.

All guides include information about faculty involvement in the development of the examinations and easy-to-follow charts that show the particular characteristics

of each test, the format (testing and type of questions), and when and where the test is given.

The guides are free of charge. To order copies, write to College Board Publication Orders, Box 2815, Princeton, New Jersey 08540.

Career Education

The Philadelphia Plan for Personalized Occupational Instruction substitutes a cluster concept of vocational-technical education for the traditional single-unit occupational program. Instruction is personalized in order to take into account the individual abilities of each student. Audiovisual instructional techniques are used to avoid stumbling blocks for students with poor reading skills and comprehension.

The Philadelphia school plan has attracted widespread attention. Negotiations are under way to establish a consortium of ten large school districts across the country. The goal is to have consortium members adopt the Philadelphia plan for their own use and to share the responsibility for producing curriculum materials.

The audiovisual hardware and software are expected to cost no more in the long run than conventional instructional materials. It is estimated that the total cost of implementing the program nationally would be approximately $25 million.—Adapted from *Industrial Education* (May/June 1976), One Fawcett Place, Greenwich, Connecticut 06830.

* * *

The Industry-Education Council of California (I-EC) is sponsoring with the U.S. Office of Education a career education project. USOE is putting up $150,000 and I-EC is matching with services and hard dollars. San Francisco and Sequoia School Districts are developing teacher training, school resource centers, off-campus learning opportunities with company participation in learning activities, and infusion of career education into the regular currriculum (science, mathematics, language, social studies). "How-to" materials are being prepared for teacher use throughout the state. Inquiries should be addressed to I-EC of California, P.O. Box 1582, Burlingame, California 94010.

Project City Science

Project City Science at New York University is an urban systems approach to the improvement of intermediate school science instruction in New York City. Over a fifteen-year period, the project will focus attention on the problems of science teaching and learning in urban intermediate schools, analyze these problems, and organize the school and university resources of New York City to solve them. Project City began its work in 1974 by confronting the problems faced by the teachers of intermediate schools. These problems include planning lessons, developing techniques for intermediate labs, using inexpensive and readily available materials, and making better use of limited facilities. Problems connected with inadequate reading and mathematics skills are also considered.

A major task is to provide the teachers with necessary scientific knowledge and instructional techniques as well as psychological and sociological understandings of their pupils and their schools. Appreciation of the administrative and economic problems of the school system is also of great importance. The enterprise is a cooperative one. It centers on the individual community school districts and brings science teachers and administrators together with outside specialists, university scholars, and students.

Inquiries should be sent to Project City Science, School of Education, Health, Nursing, and Arts Professions, New York University, 52 Press Building, Washington Square, New York, New York 10003.

NASA Facts

"The Viking Mission," one of a series of educational publications from the National Aeronautics and Space Administration, describes the Viking program including the nature and functions of the orbiter and the lander, and the experiments that will be carried out after the landing in July. A number of student projects are suggested. Other *NASA Facts* include "Mars as a Planet," "Mars as a Member of the Solar System," and "Mars and Earth." *NASA Facts* may be purchased (35¢ per copy) from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Minorities in Engineering

A program designed for 1400 minority group students in seven Chicago innercity high schools who may be potential engineers is being proposed by the University of Illinois at Urbana-Champaign. The program will be funded by the "CIC+ Midwestern Program for Minorities in Engineering" supported by the Alfred P. Sloan Foundation.

The "CIC+" program is being initiated by fourteen midwestern engineering schools as a significant new effort to motivate and prepare minority high school students for college-level engineering study. "CIC" stands for the Committee on Institutional Cooperation, the academic consortium of the Big Ten universities and the University of Chicago. The "+" indicates the participation of two non-CIC universities, the Illinois Institute of Technology and Notre Dame University.

The "CIC+" program is the result of two years of discussion and planning by the engineering deans of the participating universities. They have been concerned that engineering—traditionally a profession providing upward mobility to newcomers to America and to ethnic minorities in general—has not attracted many blacks, Hispano-Americans, and American Indians.

The seven Chicago high schools were selected for the UIUC project on the basis of both black and Latino student enrollments. The UIUC plan is aimed at increasing the pool of minority students eligible for engineering studies through a large-scale program in which large numbers of students will be identified and motivated.—From *Engineering Outlook* (March 1976), 112 Engineering Hall, University of Illinois, Urbana, Illinois 61801.

"RISE"

Business, industry and labor will soon be involved far more than ever before in policy-making and actual learning programs for California's intermediate and secondary schools.

This expanded involvement is the result of efforts now under way by the State Department of Education to implement a program recommended by the California Commission for the Reform of Intermediate and Secondary Education (RISE).

Calling for a comprehensive, systematic reform of the state's 1,528 junior and senior high schools, the RISE plan insists on an end to assembly line education and is seeking to achieve what it calls *personalized education.*

The movement to improve education in the junior and senior high schools was launched in July 1974 when Wilson Riles, state superintendent of public instruction and vice chairman of the Industry Education Council of California, appointed the RISE Commission. It was a broad-based, blue-ribbon group of 37 persons representing parents, teachers, school administrators, students, business, labor, and industry.—From *Annual Report,* Industry Education Council of California, P.O. Box 1582, Burlingame, California 94010.

Safety in the Chemistry Lab

In the past few years, teachers have become decidedly more concerned about safety in their laboratories because of the growing tendency of students to sue their instructors or schools for negligence if they are injured in a laboratory. In one such case, three Lanham, Maryland, junior high school students were badly burned in 1973 when a can of methanol they were using in the laboratory near an open flame exploded. They sued the local board of education and were awarded $200,000.

A report, "Chemical Lab Safety and the Impact of OSHA," has been prepared by Howard J. Sanders of *Chemical and Engineering News.* The report considers the impact of the regulations of the Occupational Safety and Health Administration on safety in educational and industrial laboratories.

The report is available from C&EN Reprint Department, American Chemical Society, 1155 16th Street, N.W., Washington, D.C. 20036. Price: $2.00 per copy; for 10 or more copies, $1.25.

School Enrollment Declines Projected

The National Center for Education Statistics estimates that fall enrollments in elementary and secondary schools will continue to decline for at least six more years. The prediction is included in *Projections of Education Statistics to 1984-85,* the twelfth in a series of annual forecasts of education data.

Marie D. Eldridge, NCES administrator, said the enrollments at that level peaked in 1970 and 1971 at 51.3 million pupils, and began a decline which is expected to continue through the coming years until they level off at approximately 44.5 million in 1982-83. Also, she said the number of high school graduates is expected to decrease from 3.1 million to 2.7 million per year between 1974-75 and 1984-85. The number of elementary and secondary teachers is projected to remain unchanged at 2.4 million between 1974 and 1984.

Total enrollments (degree and non-degree-credit) at colleges and universities are expected to rise during most of the decade, she said. While not growing at the rate of past years, she said, the projections nevertheless show increasing figures at least until 1982. Projected increases in the number of degrees awarded between 1974-75 and 1984-85 are from 944,000 to 1,076,000 for bachelor's degrees, from 291.700 to 339,800 for master's degrees, from 36,100 to 42,900 for doctoral degrees, and from 54,700 to 66,900 for first-professional degrees. The total instructional staff at colleges and universities is expected to increase from 633,000 in 1974 to 695,000 in 1984.

The 173-page report is $3 from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Junior Academy Research Funds

A fund for support of research is available to each academy of science that is affiliated with AAAS. Each affiliated academy is eligible to receive annually $1.00 per academy member who is also a member of AAAS—but not less than $100. Affiliated academies use these funds mainly to support small research projects by high school students. Application for the funds should be made annually and the research projects supported should be described. Write to Hans Nussbaum, Business Manager, AAAS, 1515 Massachusetts Avenue, N.W., Washington, D.C. 20005.

Short Courses for Secondary School Teachers

The experimental short course program for secondary school teachers for 1976-77 will consist of three courses—Water Pollution, Atmospheric Sciences, Population and the Environment.

Each course will be taught at two of the six field centers located in Georgia, Louisiana, Missouri, New York, Texas, or Wisconsin. The format consists of two-day sessions in the fall and spring with a course-related project in the interim.

A brochure with course descriptions, schedules, and application form is available from the Office of Science Education, Dept. S, AAAS, 1776 Massachusetts Avenue, N.W., Washington, D.C. 20036.

Minicalculators in Schools

The National Council of Teachers of Mathematics (NCTM) continues to endorse the minicalculator as a valuable instructional aid for mathematics education and to recommend the use of the minicalculator in the classroom.

"With the decrease in cost of the minicalculator, its accessibility to students at all levels is increasing rapidly. Mathematics teachers should recognize the potential contribution of this calculator as a valuable instruc-

tional aid. In the classroom the minicalculator should be used in imaginative ways to reinforce learning and to motivate the learner as he becomes proficient in mathematics."

The position statement above, adopted by the NCTM Board of Directors in September 1974, is still relevant today. At its September 1975 meeting the NCTM Board of Directors approved a report from the Council's Instructional Affairs Committee that identified nine ways in which the minicalculator can be used in the classroom: (1) to encourage students to be inquisitive and creative as they experiment with mathematical ideas; (2) to assist the individual to become a wiser consumer; (3) to reinforce the learning of the basic number facts and properties in addition, subtraction, multiplication, and division; (4) to develop the understanding of computational algorithms by repeated operations; (5) to serve as a flexible "answer key" to verify the results of computation; (6) to promote student independence in problem solving; (7) to solve problems that previously have been too time-consuming or impractical to be done with paper and pencil; (8) to formulate generalizations from patterns of numbers that are displayed; and (9) to decrease the time needed to solve difficult computations.

For further information write NCTM, 1906 Association Drive, Reston, Virginia 22091.

Higher Education

Report on Teaching Twice each year *Change* Magazine publishes a special Report on Teaching, devoted to describing some of the best undergraduate teaching now going on in American colleges and universities. The major disciplinary associations are cooperating in this effort by serving as the initial screening mechanism for identifying good teaching efforts, after which leading authorities from each field assist *Change* in making the final selection of those projects to be featured in each report.

The basis for selection is a set of carefully developed criteria which define improved teaching in terms of learning goals and outcomes, with special emphasis on the adaptability of the learning experience to other institutions and other disciplines.

The March 1976 issue of *Change* reports on innovations in the teaching of chemistry, psychology, and history. Address inquiries to *Change* Magazine, NBW Tower, New Rochelle, New York 10801.

Short Courses for College Teachers Forty-five courses with places for over 3,000 college teachers of the natural and social sciences will be held at 13 short course centers during the 1976-77 academic year. The 13 centers are grouped into three circuits—Western, Central, and Eastern. The program, which is administered by AAAS, is a cooperative enterprise with the National Science Foundation. The primary objective of the program is to make available to college teachers as quickly as possible new knowledge about topics of current interest that will be directly useful in current or planned educational programs.

The courses range in content and thrust from disciplinary topics (e.g., Cosmology, Five Topics in Physics), to interdisciplinary topics of social concern (e.g., Genetics and Society, Perspectives in Bioethics, Social Impact Assessment), to applications (e.g., Mathematical Modeling in the Biological Sciences, Microcomputers Applied to Science Education).

A bulletin board poster listing the courses and course directors is now available. A brochure giving course schedules and containing course descriptions will be available in July. For further information write to Office of Science Education, Dept. S, AAAS, 1776 Massachusetts Avenue, N.W., Washington, D.C. 20036.

Physics Computer Development Project Under development during the past six years, with support from the National Science Foundation, the project aims to produce compelling examples of effective use of the computer in learning situations, primarily in physics and the other sciences, at the undergraduate level. The materials produced so far include dialogs that can be introduced into standard undergraduate programs. Graphics are extensively used in the computer-based teaching materials. The group is interested in the process of transferring their materials to other campuses. For further information write Alfred Bork, Department of Physics, University of California, Irvine, California 92717.

Credit by Examination A college credit-by-examination program will be administered by the American College Testing Program on a nationwide basis, beginning next fall.

The new ACT program will feature 46 proficiency examinations based on course requirements. The tests cover a broad range of academic areas, including arts and sciences, nursing and other health areas, business, education, and criminology.

The examinations will certify levels of knowledge in various college course areas and provide an opportunity for colleges to award credit based on the assessed level of proficiency demonstrated by students in particular subject areas.

The tests, to be made available through ACT's new credit-by-examination program, were developed and have been used extensively for more than a decade as part of two widely respected statewide programs in New York—the College Proficiency Examinations and the Regents External Degree Examinations. For further information contact American College Testing Program, P.O. Box 168, Iowa City, Iowa 52240.—From *ACTivity*, May 1976.

Early University Entrance Program The Freshman Honors Program of the University of Delaware will start operation in September 1976. This program is specifically designed to allow qualified students a full university experience one year earlier than their contemporaries (that is, after completing the eleventh grade). Although the program is designed and taught by the university faculty, it will

be housed separately from the main campus in space leased from a small private college.

In this setting, the students will be exposed to an honors program specifically designed for them and subject to reevaluation each year. An important advantage for the university is that this program provides an opportunity to try out teaching techniques that can be incorporated later into the regular university curriculum. The faculty benefits from the opportunity to work intensively with a group of superior students. Most important, though, is that the students have a chance to start college a year early under supervised conditions. The small classes will provide greater interaction with faculty and greater possibilities for individual work than is normally obtained.

Persons interested in this program should contact Professor Donald W. Harvard, Freshman Honors Program, College of Arts and Sciences, University of Delaware, Newark, Delaware 19711.—From *Intellectually Talented Youth Bulletin*, 15 April 1976.

Special Education

The Commission on the Education of Teachers of Mathematics is seeking the names and addresses of resource people in special education who could be of assistance to mathematics educators. Please send the names of such people to A. D. Hendrickson, Master of Education Degree Program, 240 Bohannon Hall, University of Minnesota, Duluth, Minnesota 55812. If possible, please include the person's area of specialty. Hendrickson has compiled a bibliography on special education, which may be obtained from him on request.

The Value of College

In an article, "The Value of College: A Non-Economist's View," Harold Howe II points out that an education system based primarily on economic motivations tends to aggravate the disparities between the haves and the have-nots in the world. An economic analysis of higher education fails to consider the contribution that higher education makes to the personal lives of people and to their lives as citizens. Howe assesses the personal values to be gained through advanced education and puts the system in perspective as an agent of the 1970s society.—From *Educational Record*, Winter 1976, American Council on Education, One Dupont Circle, Washington, D.C. 20036.

Graduate Studies in Education Discontinued

The University of Notre Dame will discontinue its Department of Graduate Studies in Education effective 31 August 1977. The decision was made by the university's academic council which also approved the transfer of the education department's counseling psychology program to the psychology department. *The Notre Dame Journal of Education*, started in 1970, also will be suspended. High cost of instruction and narrowness of program were among reasons cited for the action.—From *Higher Education and National Affairs*, 4 June 1976.

Outstanding Engineering Educators

The American Society for Engineering Education presented six national awards recognizing outstanding contributions to teaching and research in engineering at its 84th Annual Conference at the University of Tennessee, Knoxville, 14-17 June 1976.

ASEE's most prestigious award, the Lamme Award, was presented to John J. McKetta, the E. P. Schoch Professor of Chemical Engineering at the University of Texas at Austin. The award is bestowed for excellence in teaching, and for contributions to the art of teaching, research and technical literature, the advancement of the profession, and engineering college administration.

Other awards for excellence in engineering education went to Jerome B. Cohen, chairman of Northwestern University's Department of Materials Science and Engineering, for his role in the development of a new integrated teaching program for freshman engineering students; to James E. Shamblin, professor of industrial engineering and director of the Center for Local Government Technology at Oklahoma State University for developing a system linking the resources of a state university's engineering faculty to units of local government; and to Eugene W. Smith, president emeritus of Cogswell Polytechnic College in San Francisco for developing the school's mechanical engineering technology curriculum, strengthening the civil and mechanical technology programs, obtaining accreditation for the electronics technology program, and establishing bachelor of science programs in engineering technology. Smith also developed the "Richmond Plan," a specialized program for high school students combining mathematics, science, and technical laboratory experience to provide preparation for engineering technology at the college level.—From "Newsbrief," American Society for Engineering Education, One Dupont Circle, Washington, D.C., 20036.

International

SEED

The National Science Foundation has recently announced the Scientists and Engineers in Economic Development (SEED) Program. NSF, through a special program funded by the Agency for International Development (AID), will provide support for individual U.S. scientists and engineers to apply their experience to specific problems of development in some 40 countries, including such regional institutions as the Asian Institute of Technology in Thailand and the Regional Center for Education in Science and Mathematics (RECSAM) in Malaysia.

The program's objectives are to enable U.S. scientists and engineers to share experiences with their counterparts in developing countries; to establish long-term collaborative relationships between U.S. and foreign institutions; and to increase the capability of scientific and technical institutions in developing countries to contribute to economic development.

Proposals will be considered in the fields of engineering; physical, earth, biological, and social sciences; and science education.

The closing date for submission of proposals is 15 December 1976. For more details about the program, eligibility, criteria for selection, and guidelines for the preparation of proposals, write or call the Division of International Programs, National Science Foundation, Washington, D.C. 20550. Tel.: (202) 632-7864.

ALECSO During 1975 the Department of Natural Sciences of the Arab League Educational, Cultural, and Scientific Organization (ALECSO) held five training courses for secondary school mathematics teachers—three in Egypt and two in Syria. The courses were attended by teachers from eight of the fifteen member states of ALECSO. In addition, a seminar to evaluate an experiment in teaching modern mathematics in secondary school was held in Damascus in July.

Other activities of the department included a seminar on integrated science teaching at the intermediate level and training sessions for biology teachers. Plans are being made by ALECSO and UNESCO for an Arab center for the development of science and mathematics teaching.—From *ALECSO Newsletter*, Department of Documentation and Information, 109, El-Tahrir Street, Dokki, Giza, Arab Republic of Egypt.

Open Enrollment in Italy In 1972 the universities in Italy became accessible to graduates of not only the *Liceo* (the Italian high school with very high standards) but also any secondary school such as a trade school. This open admissions policy caused a flood of students in the universities, especially the most highly respected institutions. This flood is still continuing. It has made the University of Rome one of the largest universities in the world, with an enrollment of 150,000, and the University of Milan also has a staggering enrollment—over 100,000. With the university fees set at the equivalent of about $100 per year, the enrollment figures will continue to increase.—From *European Scientific Notes* (30 April 1976, p. 155), Office of Naval Research, London, England.

Meetings

World Game Workshop 1976 An international conference on long-range planning and the development of viable alternatives for "Spaceship Earth" is scheduled for 3-31 July 1976 at the University of Pennsylvania, Philadelphia. The purpose of the conference is to develop technologically, socially, and environmentally sound plans for employing the world's resources to better meet the needs of all of humanity. It is sponsored by Earth Metabolic Design, Inc., in conjunction with R. Buckminster Fuller and the University City Science Center of Philadelphia.

The workshop will be conducted in two parts: (1) the Planning Symposium, 3-9 July, at which distinguished scientists and humanists will present their views on global development and problem solving; and (2) World Game Workshop, 10-31 July, at which work teams will focus on the design of alternative strategies for resolving specific global problems.

Participants may register for the one-week symposium only or for the complete four-week program. For application, scholarship, housing, and other information write: Workshop, Earth Metabolic Design, Box 2016, Yale Station, New Haven, Connecticut 06520.

Jeunes Scientifiques A provincial congress of scientific youth will be held in Montreal, Canada, in October 1976. The three-day congress, the seventh to be held since 1963, will include conference sessions, films, industrial and scientific visits and a scientific exhibition. Members of science clubs in Quebec province will participate.—From *Jeunes Scientifiques*, Bulletin Periodique du Conseil de la Jeunesse Scientifique, Vol. 1, No. 5, Mai-Juin 1976.

Publications

Let SMC Do Your Reading Frustrated at your inability to read and digest all those newsletters, magazines, press releases, and so forth, that reach your desk regularly? Unable to keep abreast of the latest supply/demand situation, the latest salary data, what Congress is doing that will affect scientific, engineering, and technical personnel, what's going on in academe?

If the answer to these questions is yes, try subscribing to an invaluable digest of these materials pulled together and capsulized ten times a year. *Scientific, Engineering, Technical Manpower Comments* tells you enough to give you the gist of all the things you need to know about scientists and engineers and where to get more details.

Subscriptions, at $15 a year, may be ordered from the Scientific Manpower Commission, 1776 Massachusetts Avenue, N.W., Washington, D.C. 20036. A sample issue will be sent on request.

CAES Films and Videotapes The Center for Advanced Engineering Study at the Massachusetts Institute of Technology has published a new 100-page catalog listing more than 500 instructional films and videotapes available by purchase or rental for the teaching of sciences, engineering, mathematics, and management.

Information and catalogs may be obtained by writing to Russell Seidel, Room 9-230, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139.

Teaching Metric Proceedings of the conference, "Successful Experiences in Teaching Metric," have recently been published by the Government Printing Office. The conference, held on 20-21 May 1975, commemorated the 100th anniversary of the Treaty of the Metre. More than 300 educators from all areas of the country attended the conference,

which was sponsored by the National Bureau of Standards, the American National Metric Council, the National Education Association, the U.S. Metric Association, and the U.S. Office of Education, in cooperation with the National Council of Teachers of Mathematics.

The 115-page report contains the presentations of 17 metric education experiences, plus the remarks of Senator Claiborne Pell and the keynote address of Richard Roberts, NBS director at the time of the conference. Copies of the report, NBS Special Publication 441, are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Order by SD Catalog No. C13.10:441. Price $2.30 (add 25 percent for other than U.S. mailing).

Environmental Education

An updated state directory *Environmental Education 1975: A State by State Report* will be available soon through ERIC/SMEAC, Ohio State University, 1200 Chambers Road, Columbus, Ohio 43210. The more than 300-page volume should be of interest to field practitioners in environmental education in that it provides a quick reference to current state activities.

Global Geography

An open-ended classroom game/activity which deals with population, food, distribution of resources, the role of women, and so on. A complete blueprint for this game, including discussion questions, may be obtained by sending $1.00 to Global Geography, The Population Institute, 110 Maryland Avenue, N.E., Washington, D.C. 20002.—From "Population Can Be Fun and Games," *Zero Population Growth National Reporter*, February 1976.

Minority Women in Science

The Double Bind: The Price of Being a Minority Woman in Science, by Shirley Mahaley Malcom, Paula Quick Hall, and Janet Welsh Brown is a recent publication of the AAAS Office of Opportunities in Science. The publication is a report of the Conference of Minority Women Scientists held in December 1975 and supported by the National Science Foundation.

The report summarizes the position and status of minority women who were trained and who now work in science, engineering and biomedical professions *in spite of* the many obstacles which they have faced because of race- or ethnic- and gender-based discrimination.

Thirty Black, Mexican-American, Puerto Rican and Native American women share their very personal histories of struggle and differentness which have brought them to the "deviant" life-styles of scientist, engineer, dentist, or physician. This differentness is based not only on the dissimilarity of these women to most practitioners of their professions but also on the strangeness of these professions to the minority communities, especially in the light of the traditional cultural role of women in these communities.

Racism and sexism has been a large part of these women's lives, particularly in the context of their careers in science. The recommendations which they propose are set in terms of removing the barriers which they had to overcome. They see a tremendous need to establish a network of women like themselves for communication, mutual support and group action; to increase visibility for the minority women in science; to remove all educational, counseling, and attitudinal barriers which prevent minority females from contemplating, working toward, and working in careers in science and science-related fields.

Single copies of *The Double Bind* are available free upon request from the AAAS Office of Opportunities in Science, 1776 Massachusetts Avenue, N.W., Washington, D.C. 20036.

Opportunities

Women in Science

In a spring class at Purdue University Mary Beth Stearns, senior researcher at Ford Scientific Laboratory in Michigan, and Vera Kistiakowsky, research physicist at MIT, talked to women students about nuclear physics, then unhesitatingly changed directions and spoke about how much they enjoy their children.

Stearns and Kistiakowsky were two of the 18 women scientists who were brought to one class at Purdue to give freshmen women personal insights into the lives of women in science. The scientists' visits were part of an experimental course—Women in Science—designed to give encouragement and provide role models for female science students, as well as to teach the stuff that

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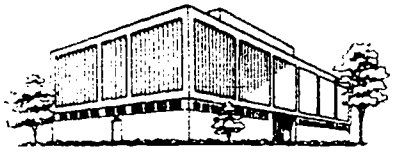

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WILLIAM D. CAREY, *Executive Officer*
ARTHUR H. LIVERMORE,
Head, Office of Science Education
JOSEPH M. DASBACH, *Program Associate*
ORIN MCCARLEY, *Managing Editor*

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is science. The course was part of a School of Science program to reduce the number of women students who switch to nonscience majors.

A major goal of the course was to determine whether role models would, in fact, encourage women students to stay in science. Very few women science professors at Purdue are "visible" to undergraduates; hence, there is little reassurance for a female student who may wonder if there is a place for her in science.

In evaluations students claimed that, in addition to learning scientific facts and concepts, they also gained a much better understanding of the many professional and personal options open to women scientists. For further information write Martha Oakley Chiscon, Department of Biology, Purdue University, West Lafayette, Indiana 47907.—From *STPP News*, June 1976.

Hispanic Engineering Program The Hispanic Engineering Program at the University of New Mexico was developed to attract more Hispanic (Mexican, Chicano, Spanish, Puerto Rican, South American) students to the engineering professions. The program is funded from contributions by four corporations. Presently there are about 160 Hispanic (mainly Chicano) students in the UNM College of Engineering. For further information about the program, write the director, Richard S. Sanchez, University of New Mexico, Albuquerque, New Mexico 87131.—From *The Society of Hispanic Professional Engineers National Newsletter*, April 1976.

Other Items of Interest

Earth Watch This is a national effort to involve citizens of all ages in field research. Special skills in scientific knowledge are not required. Earth Watch helps scientists who need people and funds to mobilize expeditions. Participants in the expeditions share the costs. Participants to date have helped support 150 research teams in the United States and abroad. For further information write Earth Watch, Box 127, Belmont, Massachusetts 02178.

AAAS-AAS Workshop The AAAS Office of Science Education and the Association of Academies of Science (AAS) held an all-day workshop at the AAAS Annual Meeting in Boston on 23 February 1976. Half of the 46 academies affiliated with AAS were represented, plus one nonaffiliated academy of science. Also, several junior academy members participated. Discussions at the workshop were aimed at developing a 3-year plan of action for AAAS-AAS cooperation.

After reviewing the problems of the various academies of science and current AAAS programs, four working groups outlined some 50 recommendations. Few of them are entirely new. Some are intended for the immediate future; others are clearly long-range. Some appear low-cost; others will require more money and time for development. For many, the details must yet be worked out. The recommendations are directed not only to the AAAS, but also to the executive officers of the academies.

For further information about the recommendations see *Science*, Vol. 192, p. 545, 7 May 1976, or write to AAAS Office of Science Education, 1776 Massachusetts Avenue, N.W., Washington, D.C. 20036.

Averch Nominated to Position at NSF President Ford will nominate Harvey Allan Averch to be an assistant director of the National Science Foundation, the White House announced June 1. Averch will succeed Lowell J. Paige who resigned in August 1975. Averch has been acting assistant director for science education since that time.

Averch, 40, received the A.B. degree at the University of Colorado and the Ph.D. at the University of North Carolina. He was an economist with the Rand Corporation from 1961 until he joined the NSF staff in 1971 as director of the Division of Social Systems and Human Resources.—From *Higher Education and National Affairs*, 4 June 1976.

SITES The Smithsonian Institution Traveling Exhibition Service (SITES) now circulates over 200 exhibitions on a wide variety of science topics. One of these is *Australia Goes Metric*, produced by the Australian Government to explain the history of measurement and of the metric system, to compare metric to customary measurement, and to show how metrication is being achieved.

Understanding the Environment, a new series of exhibitions developed by SITES with support from the National Science Foundation, includes exhibits on Population, Pollution, Energy, and Ecology. For further information contact Smithsonian Institution Traveling Exhibit Service, Washington, D.C. 20560. Tel.: (202) 628-4422.—From UPDATE, Spring 1976.

American Association for the Advancement of Science
1515 Massachusetts Avenue, N. W.
Washington, D. C. 20005

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