NARST NEWSLETTER

Winter 1961 Ellsworth S. Obourn

THIRTY-FIFTH ANNUAL MEETING OF NARST

Washington's Willard Hotel will be the site of the meetings from February 21-24. As in previous years, some of the sessions will again be devoted to contributed papers, a review of research in science education, business and executive committee meetings, and a joint program with the Council for Elementary Science International.

In addition, this year, there will be a colloquim on research design and criticism. At this session Fletcher G. Watson, William W. Cooley, and Leopold E. Klopfer, all of the Harvard University Graduate School of Education, will present suggestions for research design and criticism.

At a session entitled "New Directions in Science Education," there will be a panel discussion by John R. Mayor, Director of Education, American Association for the Advancement of Science; Jerrold R. Zacharias, Professor of Physics, Massachusetts Institute of Technology; and Gairdner B. Moment, Professor of Biology, Goucher College. They will present their views of recent developments in education in the biological and physical sciences at the elementary, secondary and college levels. This session will be followed by a discussion of implications of these new developments for research in science education.

John A. O'Keefe, Assistant Chief, Theoretical Division, Goddard Space Flight Center, National Aeronautics and Space Administration, will present the address at the annual luncheon meeting. His subject will be "The Surface of the Moon."

There will be a symposium on implications of the NSF-sponsored curriculum programs for research in science education. Discussants will be Jerome S. Bruner, Center for Cognitive Studies, Harvard University; Francis L. Friedman, Professor of Physics, Massachusetts Institute of Technology; J. Arthur Campbell, Chairman, Department of Chemistry, Harvey Mudd College; Leallyn B. Clapp, Professor of Chemistry, Brown University; H. Bentley Glass, Professor of Biology, Johns Hopkins University; Robert L. Heller, Associate Professor of Geology, University of Minnesota at Duluth; and J. Myron Atkin, Associate Professor of Education, University of Illinois.

ABSTRACT OF LUNCHEON MEETING ADDRESS, FEBRUARY 22, 1962

THE SURFACE OF THE MOON

By John A. O'Keefe
Theoretical Division, Goddard Space Flight Center
National Aeronautics and Space Administration

From the thermal properties of the moon's surface, it appears that it is a porous material. From its optical properties, it is apparently a sort of foam, rather than a powder. The chemical nature of the material is suggested by the fact that it seems to be capable of forming drops which return the light like a bicycle reflector, and by its ability to make a foam. These properties indicate an acid rock and tend to support the idea that in the tektites, we may have samples of the surface of the moon. Further information is obtained from a study of some features of the moon's surface structure suggesting acid volcanic processes.

NOTICE: Bring Your Ideas for Strengthening NARST. What ideas do you have for strengthening NARST? At this time when leadership in science education research is needed, fresh ideas regarding NARST's structure and function will be welcome. Present your ideas at the business meeting.

REMINDER: Letters have been sent to NARST members to review the Policy Statement in the Fall 1961 NARST Newsletter and send their immediate response to Cyrus W. Barnes, School of Education, New York 3, so that the Statement can be acted upon at the February meeting.

IDEAS FOR FINANCING NARST: The Executive Committee would welcome from the members any concrete suggestions for a plan to procure some type of outside financial assistance to help defray the expenses of NARST and to make possible other activities.

TEACHER CERTIFICATION STANDARDS

Some 15,000 copies of recommendations related to preparation programs for teachers of secondary school science and mathematics have gone out to State education departments, teacher preparing institutions, and academic and professional groups during the past four months.

These recommendations are embodied in a booklet entitled, Guidelines for Preparation Programs of Teachers of Secondary School Science and Mathematics They were prepared as a result of a study by the National Association of State Directors of Teacher Education and Certification and the American Association for the Advancement of Science with support from the Carnegie Corporation of New York, which began December 1, 1959 and ended in September of 1961. Already they have been adopted by the State Education Council of one State, are being reviewed seriously for adoption by several other States, and have been used in revising the programs of a number of higher institutions throughout the country. One major institution, while preparing to adopt the recommendations in revising its program, is making use of the Guidelines to evaluate candidates with baccalaureate programs which did not include teacher preparation. It is anticipated that they will be of use not only in raising the level of preparation for mathematics and science teachers throughout the country, but will also hasten teacher certification reciprocity.

At the close of the secondary school study, a new two-year study began which is concerned with the science and mathematics portion of the preparation program of the elementary school teacher. Like its predecessor, the study brings together teacher education, mathematics, and science representatives, as well as representatives of the public and private school personnel and State department of education officials.

During the course of the current study, effort will be made to implement recommendations of the secondary school study and later, the elementary school recommendations as they near completion.

Copies of the booklet are available through State teacher education and certification directors or through the NASDTEC-AAAS Studies, 1515 Massachusetts Avenue, N. W., Washington 5, D. C.

REMINDER: It is hoped that members of the Association will make an effort to come to the Washington meeting. An unusually strong program has been planned and important matters related to the future of the Association will be discussed. Plan to attend.

U. S. OFFICE OF EDUCATION COOPERATIVE RESEARCH PROGRAM

The Office of Education provides support for research of significance to education through its Cooperative Research Program. This program is operated under the terms of Public Law 531, 83rd Congress, which authorizes the Commissioner of Education to "enter into contracts or jointly financed cooperative arrangements with universities and colleges and State educational agencies for the conduct of research, surveys, and demonstrations in the field of education." The purpose of the program is to develop new knowledge about major problems in education, or to devise new applications of existing knowledge in solving such problems.

The Cooperative Research Program was begun in July 1956 when an appropriation of about $1 million was made available. The appropriation for the present fiscal year, July 1961-June 1962, is $5 million. During these first six years some 1600 applications have been received and over 400 projects have been initiated with support from the Office.

Proposals for specific research projects are accepted at any time from staff members of institutions of higher education or State departments of education. There are three submission deadline dates each year -- September 1, December 1, and April 1. All proposals are submitted for review to the Cooperative Research Program Research Advisory Committee which meets to conside the proposals from 60 to 90 days following these dates. This Committee, which is composed of nine outstanding research specialists and educators, evaluates proposals in light of criteria dealing with: (1) Significance of the problem for education; (2) Soundness of the research design; (3) Personnel and facilities available; (4) Economic efficiency or relationship of procedure and probable outcomes to expenditure. If the Committee recommends that a proposal be approved and if recommendation is accepted by the Commissioner of Education, the Office negotiates a contract directly with the institution or agency for support of the project in terms of the funds available. The cooperating institution or agency is also expected to contribute to the total cost of the projec usually by providing some proportion of the professional services and/or facilities.

All applications and inquiries should be sent directly to: Cooperative Research Branch, Office of Education, U. S. Department of Health, Education, and Welfare, Washington 25, D. C.

TITLE VII CONTRIBUTIONS TO SCIENCE EDUCATION

Since 1958, the Advisory Committee on New Educational Media of the National Defense Education Act has approved 172 research grants, requiring Federal obligations of more than $9 million. Some 47 of these research grants (13 completed and 34 in progress) requiring over $3.19 million in Federal support have involved instruction in the physical or biological sciences. In summary, the chief characteristics of these 47 grants are as follows:

Subject Area	No. of Grants
Biological & Health Sciences	11
Physical Sciences	20
Combinations of Biological and Physical Sciences	16

Grade Level	No. of Grants
Elementary	10
Jr. High School	7
High School	12
College	20
In-Service Teachers	3
Gifted Children	1
Retarded Learners	1

Media Studied	No. Grai
Audio	
Still Projection	
Motion Pictures	
Closed-circuit TV	
Broadcast TV	
Teaching Machines	
Combinations of Media	

Title VI Contributions to Science Education (Cont'd)

A substantial number of the research projects listed above involve studies of comparative effectiveness, and, in effect, ask "Can physics be taught as well by film (or television) as by conventional means?" Other studies may be regarded primarily as field tests of specific instructional materials, or specific instrumentation. One example of the latter is a project supported at Baylor Medical College in which new means are being found to utilize a multiple-channel data broadcast system to provide improved observation for medical students.

A small, but growing number of studies are focusing on more fundamental and/or complex questions. Examples of these are:

1. "How can more effective instruction in the skills of scientific inquiry be developed, using motion pictures?" (University of Illinois)

2. "What combinations of film or television materials with teachers activity and laboratory work lead to more effective learning in the sciences?" (University of Alabama, Boston University, Oklahoma State Department of Education)

3. "What role can programmed instruction play in a well-rounded program of science instruction?" (American Institute for Research, Earlham College)

4. "For what kinds of science instruction objectives and for what kinds of student characteristics are the media best suited?" (Grambling College, Maine State Department of Education, University of Houston)

Inquiries should be sent to the Director, Educational Media Branch, Division of Statistics and Research Services, U.S. Office of Education, Washington 25, D. C.

A STUDY OF NEEDS IN ELEMENTARY SCHOOL AND JUNIOR HIGH SCHOOL SCIENCE

In January, February, and March of 1961 the American Association for the Advancement of Science held three conferences of scientists and educators to consider the present needs in elementary and junior high school science and to formulate recommendations on how improvement might be brought about. The conferences were held in St. Louis, Missouri, in Berkeley, California, and in Washington, D. C. At each conference there were approximately 50 participants representing college and university scientists, science supervisors, elementary and junior high school teachers of science, and school administrators.

Working papers, published in School Science and Mathematics in the Spring of 1961, were prepared for conference participants. The final report of the regional conferences appeared as an article under the title of "Science Teaching in Elementary and Junior High Schools," in Science for June 23, 1961.

Among the points of very strong agreement were the following:

Science should be a basic part of general education for all students at the elementary and junior high school levels.

Instruction at the elementary level should deal in an organized way with science as a whole.

There should be no single national curriculum in science.

Science teaching should stress a spirit of discovery, a characteristic of science itself.

The preparation of instructional materials for which there is great urgency would require the combined efforts of scientists, classroom teachers, and specialists in learning and in teacher preparation.

It was also recommended in the conferences that there be organized a planning group for course content work in science in the elementary and junior high schools and that the course content work be carried on in a number of centers which would work rather independently, but for purposes of communication and advantages of some common services, would have association with a central agency, such as a commission on elementary science.

Since the time of the conferences, AAAS has been giving very serious consideration to the organization of such a commission and to various kinds of activities that the commission might carry out, including the direct sponsorship of some course content work.

STEPS - A Program for Improving Science Teaching

Throughout the past year the U.S.O.E. Specialists for Science have been working with State Science Supervisors and local school personnel in pilot projects for strengthening science teaching. The Science Teaching--Exploring for Excellence--Program Steps emphasize the identification and effective use of available resources and the stimulation of local initiative and leadership. As methods of working are developed in the pilot projects in a State, it is hoped that they will be adapted by other communities to their own schools.

The general pattern followed in a pilot program includes:

1) an appraisal of the science program,

2) a definition of problems arising from the strengths and weaknesses disclosed in the appraisal,

3) a long-range program to strengthen the weak areas, and

4) an identification of the resources needed to carry out the program.

Pilot projects are currently under way in more than a dozen States. In some instances a single school district is participating, while in others the schools in a county or even a group of counties are involved. Regardless of the size of the pilot area, each school is attacking the problems identified by its own teachers to upgrade its own program.

HAVE YOU PAID YOUR DUES?

Many members are in arrears for the past year, some for the past several years. They are payable now to NARST treasurer, Herman Branson, Department of Physics, Howard University, Washington 1, D. C.

NEWS ITEMS about yourself and other NARST members should be sent to Herman Branson for the next issue of the NARST Newsletter.

News items

Zachariah Subarsky is on leave for the present school year from the Bronx High School directing a program of teacher education in science in Nairobi, Africa.

Hubert F. Evans, Head of the Department of the Teaching of Science, has returned to his position at Teachers College, Columbia University, from a field mission in science education in Africa.

Ralph W. Lefler of the Department of Physics, Purdue University, has taken a position as educational advisor with the American Association of Physics Teachers in New York City.

Kenneth E. Anderson, Dean, School of Education, University of Kansas, has been chairman of the Council of Research in Education since its organization in January 1960.

John W. Renner has resigned from his position as Associate Executive Secretary of the National Science Teachers Association to accept a position as Associate Professor of Education at the University of Oklahoma. Walter B. Brown, Assistant Professor, Florida State University, will shortly become a staff member of N.S.T.A.

It has recently come to our attention that there is a growing interest in research in science education in Great Britain and other members of the United Nations. NARST should find ways to cooperate with educators in other countries.

NARST members will be interested in Organizing New York State for Educational Change, a publication by the State Education Department, Albany, New York. It outlines a plan for State organization which would allocate responsibility for educational research and development between State and local government, and among other organizations shaping school programs.

1. White House
2. Washington Monument
3. Treasury Department
4. Bureau of Engraving
5. Department of Agriculture
6. Department of Commerce
7. Patent Office
8. District Building
9. Coast Guard Building
10. Labor Department
11. Audit Department
12. I. C. C.
13. Post Office Department
14. Internal Revenue
15. Justice Department
16. F. B. I.
17. Museum of Natural History
18. Smithsonian Institute
19. Freer Art Gallery
20. Medical Museum
21. Air Museum
22. Archives
23. Lincoln Museum
24. Veterans Administration
25. Department Stores
26. Theater
27. Movie Houses
28. Parking Garage

Fill out the reservation below, tear off, and mail to .....
WILLARD HOTEL
Attention: Mrs. Payne
14th & Pennsylvania Ave., N. W.
Washington 4, D. C.
Keep the above portion as a handy guide for a walking tour of Washington.

NATIONAL ASSOCIATION FOR RESEARCH IN SCIENCE TEACHING
February 21 - 24, 1962

Arrival date.................................... Hour.................. Departure date....................................

SINGLE ☐ $10.50 DOUBLE ☐ $15.00 TWIN ☐ $17.00

Plus 3% D. C. Sales Tax

Reservations held until 6:00 P. M. unless otherwise indicated. Check-out time is 3:00 P.M. Reservations should be received by February 14, 1962.

NAME.. NAME..

ADDRESS.. ADDRESS..