

Novak

National Association  
for  
Research in Science Teaching

PROGRAM

~~~~~  
*The Improvement of Research  
in  
Science Education*  
~~~~~

35th Annual Meeting

*All meetings will be held in the  
Congressional Room*

WILLARD HOTEL — WASHINGTON, D.C.

*February 21-24, 1962*

*Joint Meeting with the*

Council of Elementary Science International

# OFFICERS OF THE ASSOCIATION

1961-1962

*President*

HERBERT A. SMITH  
School of Education  
University of Kansas  
Lawrence, Kansas

*Immediate Past President*

CLARENCE H. BOECK  
College of Education  
University of Minnesota  
Minneapolis, Minnesota

*Vice-President*

ELLSWORTH S. OBOURN  
2122 Massachusetts Ave. N.W.  
Washington, D.C.

*Secretary-Treasurer*

HERMAN BRANSON  
Head, Department of Physics  
Howard University  
Washington, D.C.

*Research Coordinator*

PAUL E. BLACKWOOD  
3601 Wisconsin Ave. N.W.  
Washington, D.C.

*Members of Executive Committee*

CYRUS W. BARNES  
School of Education  
New York University  
New York, N.Y.

PAUL DEH. HURD  
School of Education  
Stanford University  
Stanford, California

*Public Relations Chairman*

THOMAS M. WEISS  
College of Education  
Arizona State University  
Tempe, Arizona

# N.A.R.S.T. MEETING SCHEDULE

THEME: The Improvement of Research in Science Education

## Tuesday, February 20

8:00 P.M. Evening Session  
Executive Committee

## Wednesday, February 21

9:00 A.M. Morning Session  
Executive Committee

## Wednesday Afternoon, February 21

12:30 - 1:00 P.M.  
Registration.....Congressional Room

✓ 1:00 - 3:30 P.M.  
Contributed Papers.....Congressional Room

PRESIDING: Herbert A. Smith

1. *The Development and Analysis of a Non-Verbal Test of Certain Concepts Children Have of Animals.* RICHARD E. HANEY, University of Wisconsin-Milwaukee, Milwaukee, Wisconsin
2. *A Comparison of Achievement in High School Biology When Taught to Ninth Grade and Tenth Grade Pupils.* LOUIS L. WALTERS, University of British Columbia, Vancouver, British Columbia.
3. *Facts and Concepts of Chemistry of Importance for Introductory High School Biology.* LEVERNE J. THELEN, University of Massachusetts, Amherst, Massachusetts.
4. *The Reading Difficulty of Chemistry and Physics Textbooks in Use in Minnesota Public Schools.* MILTON D. JACOBSON, University of Minnesota, Morris, Minnesota.
5. *A Comparison of the Objectives of Traditional High School Physics with the Objectives of the Physical Science Study Committee Course, and an Analysis of the Instructional Materials of the Physical Science Study Committee Course.* LESLIE W. TROWBRIDGE, University of Michigan, Ann Arbor, Michigan.
6. *Concepts in Science Are Broad Generalizations Regarding Some Aspects of the Physical or Biological World. They Are a Composite of Problem Solving Experiences, Emotional Experiences, and Indi-*

*vidual Facts and Observations.* JOSEPH D. NOVAK, Purdue University,  
Lafayette, Indiana.

General Discussion.

3:30 - 5:30 P.M. Colloquium on Research Design and Criticism

PRESIDING: Kenneth Anderson

EVALUATION OF SPECIFIC INNOVATIONS  
IN SCIENCE EDUCATION

1. *A Basic Objective of Science Education: Developing an Understanding of Science and Scientists.* FLETCHER G. WATSON, Harvard University.
2. *Design of an Instrument and an Experiment for Evaluating Procedures to Develop Student Understandings of Science and Scientists.* WILLIAM W. COOLEY, Harvard University.
3. *Results of the HOSC Instruction Project.* LEOPOLD KLOFFER, Harvard University.

**Thursday Morning, February 22**

9:00 - 10:00 A.M. Biennial Report of Research

PRESIDING: Cytus W. Barnes

Elementary School Level — JOHN NAVARRA

Secondary School Level — JOHN MASON

College Level — JOSEPH NOVAK

10:00 - 11:00 A.M. New Directions in Science Education

PRESIDING: Ellsworth S. Obourn

PANEL:

JOHN R. MAYOR, Director of Education, American Association for the Advancement of Science, Washington, D.C.

JERROLD R. ZACHARIAS, Department of Physics, Massachusetts Institute of Technology, Cambridge, Massachusetts.

GAIRDNER MOMENT, Department of Biology, Goucher College, Baltimore, Maryland.

11:00 - 12:00 Noon Implications for Science Education Research

PRESIDING: Ellsworth S. Obourn

PANEL:

KENNETH E. ANDERSON, University of Kansas.

FLETCHER G. WATSON, Harvard University.

J. DARRELL BARNARD, New York University.

## 12:00 Noon Annual Luncheon Meeting

**PRESIDING:** Herbert A. Smith

**ADDRESS:** *Surface of the Moon.*

JOHN O'KEEFE, Asst. Chief, Theoretical Division, Goddard Space Flight Center, National Aeronautics and Space Administration.

## Thursday Afternoon, February 22

2:30 - 5:30 P.M. (Closed meeting for members only)

**PRESIDING:** Herman Branson

**DISCUSSION:** Program, Policy and Structure of N.A.R.S.T.

1. *Report on reaction of members to policy statement.* CYRUS W. BARNES.
2. *Reports on background of proposed policy.* Members of the Executive Committee.
3. Discussion from the floor.

## Thursday Evening, February 22

7:30 P.M. Annual Business Meeting

1. *President's Report,* HERBERT A. SMITH.
2. Report of the Secretary-Treasurer, HERMAN BRANSON.
3. *Report on the Activities of the Council for Research in Education,* KENNETH E. ANDERSON.
4. *Report on the Activities of the Cooperative Committee,* GEORGE G. MALLINSON.
5. *Report of a Delegate to the TEPS Conference,* H. CRAIG SIPE.
6. *Report of Research Coordinator,* PAUL BLACKWOOD.
7. *Report on Curtis Digest Project,* GEORGE G. MALLINSON.
8. *Relations with CESI,* ARNOLD M. LAHTI.
9. *Relations with NSTA,* J. DARRELL BARNARD.
10. *Relations with the U.S. Office of Education,* ELLSWORTH S. OBOURN.
11. *Report of Standing Committees:*
  - Audit
  - Program
  - Publications
  - Nominating
12. *Report of Special Committees:*
  - Criteria for Research
13. Election of Officers
14. New Business
15. Adjournment

## Friday Morning, February 23

9:30 - 10:30 A.M. Dimensions for Research Centers

**PRESIDING:** Paul Blackwood

1. *Report on questionnaire sent to cooperating institutions.*
2. *Report of how one center is organizing and proceeding,* J. STANLEY MARSHALL, Florida State University.

10:30 - 12:00 Noon Clinical Discussion on Research Centers

**DISCUSSION LEADER:** H. Craig Sipe

1. Proposals.
2. Decision on next steps.

**Friday Afternoon, February 23**

1:30 - 4:00 P.M. Contributed Papers (Continuation of Wednesday afternoon session)

**PRESIDING:** Clarence H. Boeck

1. *Offerings and Enrollments in the Secondary School Sciences in Kansas in 1960-1961.* RALPH P. FRAZIER and JOHN BREUKELMAN, Kansas State Teachers College, Emporia, Kansas.
2. *Scientific Research in the High School.* EDMUND S. BROCH and PHILIP G. JOHNSON, Cornell University, Ithaca, New York.
3. *Career Development of Science Teachers: Personality Determinants.* EUGENE C. LEE, University of Texas, Austin, Texas.
4. *Development of a Measure of Conservation Attitudes.* KENNETH H. HOOVER and RICHARD E. SCHUTZ, Arizona State University, Tempe, Arizona.
5. *An Experimental Study in the Direct Teaching of Critical Thinking in Grades 4-6.* JOHN M. MASON, Michigan State University, East Lansing, Michigan.
6. *The Critical Thinking Ability of College Freshman Physical Science Students.* RUSSELL K. RICKERT, State Teachers College, West Chester, Pennsylvania.

**Friday Evening, February 23**

7:30 P.M. Symposium: Implications from NSF Curriculum Programs for Research in Science Education

**PRESIDING:** Paul DeHart Hurd

1. *For Learning.* JEROME S. BRUNER, Center of Cognitive Studies, Harvard University, Cambridge, Massachusetts.
2. *From PSSC.* FRANCIS L. FRIEDMAN, Department of Physics, Massachusetts Institute of Technology, Cambridge, Massachusetts.
3. *From CHEMS.* J. ARTHUR CAMPBELL, Harvey Mudd College, Claremont, California.
4. *From CBA Project.* LEALLYN B. CLAPP, Department of Chemistry, Brown University, Providence, Rhode Island.

5. *From BSCS.* H. BENTLEY GLASS, Johns Hopkins University, Baltimore, Maryland.
6. *From American Geological Institute.* ROBERT L. HELLER, American Geological Institute, Washington, D.C.
7. *From Elementary School Science Project.* J. MYRON ATKIN, University of Illinois, Urbana, Illinois.

### **Saturday Morning, February 24**

Joint Meeting of the Council of Elementary Science,  
International and N.A.R.S.T.

9:00 - 12:00 Noon    New Developments in Elementary School  
Science Programs

**PRESIDING:** Willard J. Jacobson

1. *The University of California Elementary School Science Project.*  
ROBERT KARPLUS, Professor of Physics, University of California.
2. *The University of Illinois Elementary School Science Project.*  
J. MYRON ATKINS, Professor of Education, University of Illinois.
3. A discussion of *New Developments in Elementary School Science Programs:*  
MILLIE ALMY, Professor of Education, Teachers College, Columbia University.  
HAROLD E. TANNENBAUM, Chairman of the Department of Curriculum and Instruction, Graduate School of Education, Yeshiva University.  
ROBERT E. HENZE, Director Membership Activity American Chemical Society.  
ARNOLD M. LAHTI, Western Washington College of Education, and President, Council of Elementary Science, International.

Discussion from the floor.

### **Saturday Afternoon, February 24**

12:30 P.M. Luncheon

Executive Committee, N.A.R.S.T. (Closed Meeting)

*National Association For Research  
In Science Teaching*

THE NATIONAL ASSOCIATION FOR RESEARCH IN SCIENCE TEACHING is an organization devoted to the pursuit of research in curriculum organization, course content and teaching methods in the field of the sciences. Membership in the Association includes science teachers and administrators at all levels, elementary, secondary and college. The organization was founded in 1928, at Cambridge, Massachusetts.

N.A.R.S.T. meets annually, usually alternating between an eastern seaboard location and a mid-western location. At the meetings, research papers in the field of science education are presented, along with symposia on topics of interest to teachers and educational research workers. Since 1947 the Association has included committees for the review of science education research at the elementary, secondary and college levels in cooperation with the U. S. Office of Education. The reviews have been published annually. Beginning with 1959 the reviews will be completed on a biennial basis.

Membership in N.A.R.S.T. is by nomination and election. The constitution provides for membership drawn from those active in research in science education, and those outstanding in science educational leadership. N.A.R.S.T. is affiliated with the American Association for the Advancement of Science, and for the past several years has cooperated with the other science teaching organizations in sponsoring a program at the annual meeting of the A.A.A.S.



**PRESIDENTS OF  
NATIONAL ASSOCIATION FOR RESEARCH IN  
SCIENCE TEACHING**

1928.....	W. L. Eikenberry	1945.....	Florence G. Billig
1929.....	W. L. Eikenberry	1946.....	C. L. Thiele
1930.....	W. L. Eikenberry	1947.....	Earl R. Glenn
1931.....	Elliot R. Downing	1948.....	Ira C. Davis
1932.....	Elliot R. Downing	1949.....	Joe Young West
1933.....	Francis D. Curtis	1950.....	N. Eldred Bingham
1934.....	Ralph K. Watkins	1951.....	Betty Lockwood
1935.....	Archer W. Hurd	1952.....	Betty Lockwood
1936.....	Gerald S. Craig	1953.....	J. Darrell Barnard
1937.....	Walter G. Whitman	1954.....	George G. Mallinson
1938.....	Honor A. Webb	1955.....	Kenneth E. Anderson
1939.....	S. Ralph Powers	1956.....	W. C. Van Deventer
1940.....	Otis W. Caldwell	1957.....	Waldo W. E. Blanchet
1941.....	Harry A. Carpenter	1958.....	Nathan S. Washton
1942.....	G. P. Cahoon	1959.....	Thomas P. Fraser
1943.....	Florence G. Billig	1960.....	Vaden W. Miles
1944.....	Florence G. Billig	1961.....	Clarence H. Boeck
	1962.....		Herbert A. Smith

**NOTES**

Wedday - AM

Thurs - PM

Confer Room - Concept Paper 1 - 3:30

Thurs AM

9:00 Research Reviews

Lunch - with Green  
Rep Brademas 3:00

1800 PM  
928

Thurs PM

NARST meeting

7:30 - annual bus meeting

Fri AM

Research Centers

10:00 Green

Fri PM

Lunch with Obase

11:30 Papers