

**MINUTES OF THE
SEVENTY-SECOND ANNUAL MEETING
OF THE
SOUTH DAKOTA ACADEMY OF SCIENCE**

The Seventy-second Annual Meeting of the South Dakota Academy of Science was held at Northern State College, Aberdeen, South Dakota.

The meeting was called to order by President Stephen Metzner of the University of South Dakota at 11:00 A.M., April 24, 1987 in the Johnson Center on the campus of Northern State. Dr. Terence Brown, President of Northern, spoke in welcome. Academy President-elect Marvin Selnes of Sioux Falls Lincoln Senior High School gave the address, "Oh! Science — Ah! Science."

One hundred fifteen members registered for the senior academy meetings. Fifty-seven papers were presented in the senior academy sessions. Chris Quigg of the Fermi Laboratory was on hand to talk about the supercollider. Richard Wright, district representative of the National Science Teachers Association, was also present. One hundred twenty-six people attended the academy banquet, Friday evening.

The Outstanding Science Teacher Awards were given at the banquet. Lowell Christiansen of the 3M Company presented the Outstanding Physical Science Teacher Award to Gordon Horgen of Winner High School. Maureen Diggins of Augustana College read the citation for the Outstanding Biology Teacher, Jerry Opbroek of Mitchell High School.

Later Friday evening, following the Junior Academy Awards Program, Kari Dawson-Ekeland of Dow Chemical delivered the invited address, "Food Science — A Broad Perspective."

Preceding the Saturday morning business meeting, the Senior Academy heard the award-winning Junior Academy papers: "A Study of Indoor Concentrations of Radon Gas" by Randy Warren, Rapid City Stevens High School, and "An In Vitro Study of the Antibiotic Effect of Fruit Juices" by Mark Looyenga, Rapid City Stevens High School.

At the business meeting, reports were accepted from the Treasurer; the Audit, Membership, Resolutions, Awards, and Proceedings Committees; and from the Junior Academy. The reports are printed below.

The matter of the purchases of the Academy being subject to state sales tax was discussed at some length. The South Dakota

Department of Revenue, after auditing the books of Argus Printers, who have been printing and binding the Proceedings, had ruled that Argus must pay sales tax on the last several years of printing charges, and the Academy officers had judged that, although there was no legal obligation, it was proper to reimburse Argus. The taxes totalled \$1115.07. At the business meeting, President Metzner and Treasurer Knapp reported on efforts to have the Academy exempted from the tax. The conclusion is that there is virtually no chance of an exemption. In the future, page charges will have to be increased to cover the sales tax.

The Nominating Committee, composed of Donald Abraham, Nels Granholm, Dwayne Rehfeld, and Arlen Viste, distributed ballots for the annual election. Elected to the Executive Committee were Samuel Gingerich as 2nd Vice-president and Jeffrey Jung and Keith Perkins as Members-at-large. The complete list of 1987-88 officers follows.

PresidentMarvin Selnes, Sioux Falls
 President-electWarren Hein, SDSU
 1st Vice-presidentJames E. Martin, SDSM&T
 2nd Vice-presidentSamuel Gingerich, Northern
 Secretary-TreasurerEmil F. Knapp, Augustana
 Proceedings EditorCarroll Hanten, Pierre

Executive Committee

Terms expiring 1988

Mark Gabel, BHSC

William Jensen, SDSU

Terms expiring 1989

Jeffrey Jung, Colman

Keith Perkins, Sioux Falls College

Membership Committee

Robert Looyenga, SDSM&T

Robert Tatina, DWU

John Noughton, Northern

Roy Rissky, Mitchell

R. D. Reddin, SDSM&T

Junior Academy Committee

Mike Barondeau, Roscoe

Jan Palmer, Warner

Roberta Gaines, Rapid City

Delbert Goodwin, Belle Fourche

Robert Waddell, Belle Fourche

Pat Cheeseman, Brookings

Vijaya Ramakrishnan, Rapid City

An invitation for a joint meeting with the North Dakota Academy of Science was introduced by 2nd Vice-president James E. Martin. The meeting was proposed for late April 1988 in Bismarck. Don Hopkins moved that we accept North Dakota's invitation and move our previous schedule of sites back one year. (This means Black Hills State in 1989, Dakota State in 1990, and University of South Dakota in 1991.) The motion passed.

Steve Metzner passed the gavel on to Marv Selnes. Selnes expressed thanks to Metzner for his leadership as an officer and declared the 1987 meetings adjourned.

JUNIOR ACADEMY COMMITTEE REPORT

A total of forty-seven papers representing seven schools were presented. Sixty-six students attended the activities and fifty-one joined the Junior Academy. The meetings were held in Johnson Fine Arts Center on the campus of Northern State College, Aberdeen, South Dakota.

The 1986-87 officers were: President Tom Mittan, Vice-president Mike Murray, and Secretary-Treasurer Robyn Mehrer. The officers conducted two meetings which dealt respectively with nominations and elections of new officers. Elected for 1987-88 were: Tami Snoozy, President, Belle Fourche; Robyn McKay, Vice-president, Belle Fourche; Lezlie Snoozy, Secretary-Treasurer, Belle Fourche.

The following is a partial list of awards presented: His choice of scholarships of \$300 from SDSM&T, \$500 from Sioux Falls College or \$1000 from Augustana was won by Jared Smith of Rapid City Stevens. Her choice of scholarships of \$150 from SDSM&T, \$250 from Sioux Falls College or \$500 from Augustana was won by Denise Christiansen of Belle Fourche. The alternate is Kevin Benson of Sioux Falls Lincoln.

The Tri-State Symposium presenters in November, 1987 will be Randy Warren of Rapid City Stevens, Mark Looyenga of Rapid City Stevens and Jordon Leonard of Sioux Falls Lincoln. The three presenters will also receive \$100 research grants from the South Dakota Academy of Science through a grant from AAAS. The alternates, Steve Westby of Brookings and Michele Goetz of Roscoe will each receive \$50 research grants.

The two top overall winners who gave their presentations to the Senior Academy were Randy Warren of Rapid City Stevens on "A Study of Indoor Concentrations of Radon Gas" and Mark Looyenga of Rapid City Stevens on "An Invitro Study of the Antibiotic Effect of Fruit Juices."

All presenters received various awards provided by science teachers, science clubs, book companies, U.S. senators, professional science organizations and firms, science supply companies, public utilities, computer firms and science camp directors.

The Junior Academy Committee is grateful for assistance and cooperation from:

Northern State College and local arrangements chairman Sam Gingerich for the use of their facilities and the science faculty for their gracious hospitality throughout the event.

The judges who were willing to give their time to evaluate the many varied projects presented by the students and their help in the selection of awards.

The support of AAAS through their Merit Proposal program that enabled the funding of 4 grants of \$100; 5 grants of \$50; and 10 grants of \$25 as a part of the SD High School Research Program.

The cooperating South Dakota colleges and universities that enabled the committees to award two scholarships to the two top 12th grade presenters.

Thanks to Vijaya Ramakrishnan, SD Science Teachers Association Editor, for publishing the Junior Academy activities.

All the science teachers who gave that extra effort, support and encouragement which brought the junior and senior high students to the Junior Academy meeting.

Respectively submitted,
Pat Cheeseman
Delbert Goodwin
Roberta Gaines
Vijaya Ramakrishnan
Bob Waddell
Jan Palmer, Co-Chairman
Mike Barondeau, Co-chairman

RESOLUTIONS COMMITTEE REPORT

1. The South Dakota Academy of Science would like to express its appreciation to Dr. Terence Brown, President of Northern State, for making facilities available and for hosting the 1987 meeting of the Academy.

2. The members of the Academy extend their thanks to Sam Gingerich, the Local Arrangements Committee and others including: Lynn Hodgson, Dwayne Rehfeld, John Naughten, Dan Tallman, Erika Tallman, Duane Dolejsi, Sherry Theobald, Erin Holmes, and the students. Their work helped the meeting proceed smoothly and successfully.
3. A special thank you to Dr. Kari Dawson-Ekeland of Dow Chemical Company for her informative and enjoyable presentation, "Food Science — A Broad Perspective."
4. President-elect Marvin Selnes gave a thought-provoking address, "Oh! Science — Ah! Science." We appreciate the sharing of his perspective as a science educator of long experience.
5. We wish to express our continuing thanks to Carroll Hanten for her efforts in making the Proceedings of the Academy a successful publication. Many thanks, also to Emil Knapp for his work as Secretary-Treasurer.
6. Mike Barondeau, Jan Palmer, and others whose efforts make the Junior Academy a successful part of the Annual Meeting are sincerely appreciated.
7. The work of elected and appointed committee members on behalf of the Academy is appreciated.
8. Finally, President Steve Metzner is thanked for his work in the leadership of the Academy during this past year.

Respectfully submitted,
John Naughten, Chairman
William Houk
Fred Seymour

MEMORIAL FOR WILLARD L. ROBERTS

Willard "Bill" Roberts, Senior Curator of Mineralogy and Invertebrate Paleontology for the Museum of Geology at South Dakota School of Mines and Technology, and Senior Lecturer in the Geology-Geological Engineering Department, died on March 23, 1987. During his twenty-four years at South Dakota School of Mines, he co-authored the books, "The Mineralogy of the Black Hills" and "The Encyclopedia of Minerals," and authored thirty articles on mineralogy. His continual search for minerals for the museum led to the discovery of twenty new minerals.

Bill was a prolific researcher and a dedicated, caring teacher who will be missed by all whose lives he touched.

MEMBERSHIP COMMITTEE REPORT

The Membership Committee recommends to the Academy approval of the following people for membership:

Ron Batstone-Cunningham, USD	Jerry Opbroek, Mitchell
Marvis Bernard, Yankton	Christine Pharr, USD
Darrell Burekhardt, DWU	Sherri Price, Belle Fourche
James Effinger, SDSM&T	Mark Rahrck, SDSM&T
Delbert Goodwin, Belle Fourche	Karel Silvosky, SDSM&T
R. D. Gray, USD	Jennifer Stansbery, Augustana
Randy Gross, Yankton	Erika Tallman, Northern
Henry John Hughes, DWU	Arlyn Thomas, Sioux Falls
Leonard Huneke, National College	Charles Trautwein, EROS (Sioux Falls)
Jason Jenkins, SDSM&T	Kevin J. King, SDSU
Clifford Jensen, USD	Kari Webb, USD
Tammie-Rae Keeler, SDSM&T	Janet Palmer, Warner
Michael Kujak, USD	Ann Tribby, Belle Fourche
Jon Moyer, USD	Robert Wheeler, SDSM&T

We, furthermore, recommend that future membership committees function to promote membership and suggest the following as possible means of achieving this end:

First, to establish a network of contacts between the Membership Committee and member home institutions, and

Second, to use this network as a means of advertising the Academy, what it does and when and where it will meet.

Respectfully submitted,
Robert Tatina
Robert Looyenga

TREASURER'S REPORT

Statement of Receipts, Disbursements, and Changes In Cash Balances

Cash Balance (all accounts), January 1, 1986\$ 7,178.85

Receipts:

Regular Dues	\$1,428.00
Registrations	599.50
Banquet Tickets	1,020.50
Proceedings	4,824.22
AAAS Research Grant	1,500.00
National Science Week Grant	2,000.00
Junior Academy	134.00

Interest on Investments	452.12
Total Receipts	\$11,958.34
Cash Available for Disbursements	\$19,137.19
Disbursements:	
Proceedings	\$6,162.40
Academy Banquet	1,045.80
Supplies	45.84
Postage	269.59
Printing	132.71
Awards	1,025.00
Retroactive Sales Tax	1,115.07
National Science Week	856.35
Junior Academy	219.96
AAAS Meeting	200.00
Miscellaneous	117.85
Total Disbursements	\$11,190.57
Cash Balance, December 31, 1986:	
Certificates of Deposit	\$4,307.52
Passbook Savings	2,955.36
Checking Account	613.74
Petty Cash	70.00
Total Ending Cash	\$ 7,946.62

Emil F. Knapp,
Secretary-Treasurer

REPORT OF THE AUDITING COMMITTEE

The Auditing Committee has examined the records of the South Dakota Academy of Science. They have found the records to be in good order and have determined that the Statement of Receipts and Disbursements for the year ending December 31, 1986 is correct as presented to the committee by Emil Knapp, Treasurer.

The committee wishes to thank and commend Emil Knapp for his excellent work maintaining the financial records of the Academy.

Respectfully submitted,
Howard Coker
Arie Gaalswyk
Sister Laetitia Kilzer

SOUTH DAKOTA ACADEMY OF SCIENCE MEMBERSHIP

Letters in parentheses after names indicate fields of science as follows:
A, mathematics; B, physics; C, chemistry; E, geology; G, biological sciences;
J, psychology; O, agriculture; X, general science.

Life Members

Marjorie Beaty (A)
Henry V. Cobb (J)
Mark W. Delzell (G)
Louis Jack Dorland (G)
William Ekeman (A)
John Froemke (C)
Harold B. Goodell (G)
Morton Green (E)
Edna Grieb (C)
Al L. Halstead (C)
Marion Hilpert (G)
Elmer R. Johnson (C)
Harlan L. Klug (C)
William Kohlmeyer (O)
Richard John Landborg (C)
Willard John Martin (C)
Gottfried I. Moller (B)
Oscar E. Olson (C)
Fay L. Partlo (B)
Robert M. Pengra (G)
George Semeniuk (G)
Charles Sidlo (B)
Charles M. Vaughn (G)
Victor S. Webster (C)
John J. Willard (E)
Frank Wingfield (G)

Augustana College

Gilbert W. Blankespoor (G)
Maureen Diggins (G)
Richard Forman (A)
Harold Foss (G)
S. Gordon Froiland (G)
Arie Gaalswyk (A)
Milton P. Hanson (C)
Leland G. Johnson (G)
Rebecca L. Johnson (G)
Robert Roy Kintner (C)
Emil F. Knapp (A)
V. Ronald Nelson (B)
Lansing M. Prescott (G)
Jennifer Stansbery (A)
J. D. Thompson (B)
Larry L. Tieszen (G)
Karel Vander Lugt (B)
Arlen Viste (C)
Duane E. Weisshaar (C)

Black Hills State College

Audrey Gabel (G)

Mark Gabel (G)
Thomas M. Juntti (G)
James E. Minkel (G)

Dakota State College

Robert Buckman (G)
Michael Foss (B)

Dakota Wesleyan University

Darrell Burckhardt (A)
Carroll Loran Hills (C)
William F. Houk (G)
Henry John Hughes (G)
Todd R. Monroe (G)
Robert Tatina (G)

Huron College

Marvin Hanson (B)

Mount Marty College

Sharokh Ghaffari (C)
Sr. Laeticia Kilzer (C)
James Rasmussen (G)
John W. Stene (A)

National College

Leonard Huneke (A)

Northern State College

Duane A. Dolejsi (B)
Samuel B. Gingerich (G)
Lynn M. Hodgson (G)
John C. Naughten (G)
Kathleen A. Pukas (G)
Dwayne W. Rehfeld (C)
Dan Tallman (G)
Erika Tallman (G)

Sinte Gleska College

Robert D. Hempel (G)

Sioux Falls College

W. F. Klawiter, Jr. (B)
L. Cliff Lewis (C)
Hsi-Chiu Liu (G)
Keith Perkins III (G)
William J. Soeffing (G)

South Dakota School

of Mines and Technology

Jane Abbott (E)
Bruce H. Bessert (C)
James A. Effinger (E)

Mark D. Fahrenbach (E)
John Paul Gries (E)
David Gutierrez (C)
Joanne M. Holzheimer (E)
Don C. Hopkins (B)
Jason Jenkins (B)
J. Haworth Jonte (C)
Tammie-Rae Keeler (E)
Robert W. Looyenga (C)
James Reid MacDonald (E)
F.D.S. Marques (B)
James E. Martin (E)
John C. Mickelson (E)
Jamal H. Qadri (B)
Perry H. Rahn (E)
Mark Rahrick (B)
Robert D. Redin (B)
Karel Silovsky (B)
Kenneth Wesche (B)
Robert D. Wheeler (B)
Janet Whitmore (E)

South Dakota State University

Sherwood O. Berg (G)
Arvid Boe (G)
Bernard J. Brandwein (C)
Charles H. Butterfield (G)
Chen H. Chen (G)
Randall L. Chilson (B)
Darrell W. DeBoer (O)
George H. Duffey (B)
Julie Rae Duimstra (G)
Lauriston Elliott (C)
Royce J. Emerick (C)
Anne Espinasse-Gellner (G)
Harry A. Geise (O)
Jeffrey L. Gellner (G)
Hans G. Graetzer (B)
Nels H. Granholm (G)
John A. Grove (C)
Lois Haertel (G)
Harry G. Hecht (C)
Warren Hein (B)
Teresa Hein (B)
David C. Hilderbrand (C)
Daniel E. Hubbard (G)
Ernest J. Huggins (G)
H. L. Hutcheson (G)
William P. Jensen (C)
Leslie Kamstra (G)
Kevin J. King (G)
Gary E. Larson (G)
Orie Leisure (B)
Gary D. Lemme (G)
Robert H. Lynch (B)
Charles McMullen (G)
Donald McRoberts (C)
Walter Morgan (G)
Gerald A. Myers (G)

Jeanie Nelson (G)
Lawrence Novotny (C)
Dean I. Olson (O)
Gary Omodt (C)
Gregory J. Pazour (C)
Gary B. Peterson (G)
Joel Rauber (B)
Mary N. Rosholt (G)
Rolland R. Rue (C)
Nina L. Runner (G)
Charles Scalet (G)
Mary Ann Schoessler (G)
Fred R. Seymour (C)
Kristin K. Sletten (G)
James D. Smolik (G)
Leo Spinar (C)
Dean D. Steele (O)
Charles A. Taylor, Jr. (G)
Nancy Thiex (C)
Robert Todd (G)
Silva Trautman (G)
Solomon Tuwafe (G)
William S. Wadsworth, Jr. (C)
Everett M. White (G)
Peter J. Wilkin (G)
Richard Wynia (G)
Ken Yocom (A)

University of South Dakota

Donald Abraham (B)
Mary Abraham (C)
Ron Batstone-Cunningham (C)
Frank O. Brady (G)
Howard Coker (C)
Ray D. Dillon (G)
Frank A. Einhellig (G)
Royce C. Engstrom (C)
Charles R. Estee (C)
R. D. Gray (B)
Jeff Hawley (G)
Clifford Jensen (B)
Gary D. Johnson (E)
Andrew E. Karantinos (A)
Michael Kujak (B)
Stephen R. Metzner (C)
Norman Miller (C)
Jon R. Moyer (B)
Otto W. Neuhaus (G)
Robert J. Peanasky (G)
Christine Pharr (C)
James C. Schmulbach (G)
William Schutte (C)
Gary D. Small (G)
Nancy Smith (G)
Paul F. Smith (G)
M. Robert Stoner (C)
Theodore Van Bruggen (G)
Kari Webb (C)
Brent Wegher (G)

High Schools and**Middle Schools**

Mike Barondeau (C)
 Roscoe
 Marvis Bernard (X)
 Yankton
 Lillian M. Colberg (G)
 De Smet
 Ron Fahy (G)
 Belle Fourche
 Jeff Foubert (A)
 Mitchell
 Roberta Gaines (C)
 Rapid City
 Joyce Gawell (B)
 Brookings
 Delbert Goodwin (X)
 Belle Fourche
 Randy Gross (X)
 Yankton
 Larry Hines (B)
 Sturgis
 John Landegent (G)
 Sioux Falls
 Rollie Larson (G)
 Rapid City
 Jerry Loomer (B)
 Rapid City
 James M. Martin, Jr. (C)
 Brookings
 Ralph H. McGregor (A)
 Parkston
 Tom Merrill (G)
 Yankton
 Jerry Opbroek (G)
 Mitchell
 Janet Palmer (X)
 Warner
 David Peterson (B)
 Brookings
 Sherri Price (X)
 Belle Fourche
 Vijaya Ramakrishnan (C)
 Rapid City
 Roy W. Rissky (C)
 Mitchell
 Marvin D. Selnes (C)
 Sioux Falls
 John Stebner (G)
 Cresbard
 J. Ternes (G)
 Spearfish
 Arlyn Thomas (B)
 Sioux Falls
 Richard J. Thomas (C)
 Aberdeen
 Ann Tribby (G)
 Belle Fourche

Chester Vander Zee (G)
 Sioux Valley
 Robert Wadell (C)
 Belle Fourche
 Michelle White (X)
 Sioux Falls

Out-of-State Schools

Dennis T. Disrud (G)
 Minot State College, N. D.
 Lowell M. Duffey (G)
 Jacksonville State Univ., Ala.
 Joseph A. Kawatski (G)
 Viterbo College, Wisc.
 Glenn E. Kietzmann, Jr. (G)
 Iowa State University
 Robert S. Kreber (G)
 University of Wisconsin
 Peter Maldonado (C)
 Findlay College, Ohio
 James D. Patterson (B)
 Florida Institute of Technology
 John B. Shultz (G)
 Marshall University, W. Va.
 Russell H. Stanhope (G)
 Worcester Schools, Mass.
 Arthur W. Struempfer (C)
 Chadron State College, Nebr.
 Jerome J. Tichy (G)
 Konocti Schools, Calif.

Non-academic

Charles C. Coffman (G)
 W. V. Dept. of Agriculture
 Steven C. Fransen (O)
 Western Wash. Research Center
 Carroll Hanten (G)
 S. D. Dept. of Agriculture, Pierre
 Robert L. Hanten (G)
 S. D. Game, Fish & Parks, Pierre
 Joe Ideker (G)
 McDonnell Nat. Hist. Center, Tex.
 Jeffrey D. Jung (C)
 T & R Service, Colman
 Norm Kopecky (G)
 Community Aviary, Sioux Falls
 Edmund F. LeRoux (E)
 U. S. Geological Survey, Huron
 Eugene L. Miller (G)
 N. G. I. Research Lab, Brookings
 David J. Ode (G)
 S. D. Game, Fish & Parks, Pierre
 Steven P. Riley (G)
 S. D. Game, Fish & Parks, Pierre
 Charles M. Trautwein (E)
 EROS Data Center, Sioux Falls
 George Vandel (G)
 S. D. Game, Fish & Parks, Pierre