

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

The Seventy-first Annual Meeting of the South Dakota Academy of Science was held at South Dakota State University, in Brookings, April 17-19, 1986.

The Executive Council met Thursday evening to make final preparations for the sessions on Friday and Saturday.

The opening meeting was called to order by Academy President Don Hopkins of South Dakota School of Mines and Technology on Friday at 10:40 A.M. South Dakota State University President Robert Wagner welcomed the Academy to the campus. Academy President-elect Steven Metzner of the University of South Dakota delivered the presidential address, "Science: The Search for Solutions."

A total of sixty-four senior papers were presented on Friday in four sections.

The outstanding high school science teacher awards were presented at the Academy banquet, Friday evening. The recipients were Rollie Larson of Rapid City Central High School in biological science and David Peterson of Brookings High School in physical science. Reading the citations were Maureen Diggins of Augustana College and Warren Hein of South Dakota State University. Jerry Loomer of Rapid City Central read a proclamation from William Janklow, Governor of South Dakota, declaring Science Week and Vijaya Ramakrishnan Day. Gary Larson of South Dakota State University served as master of ceremonies.

After the Junior Academy Awards Program, Academy members were treated to the Annual Academy Address, which this year was one in South Dakota State University's Harding Lecture Series. The address was "Microbes: Friend or Foe," given by Dr. Mary Bromel, microbiologist with the A N G Coal Gasification Company of Buelah, North Dakota.

President Hopkins called the business meeting to order at 10:00 A.M., Saturday.

The Nominations Committee (Harry Hecht, chairman; Robert Looyenga; James Schmulbach; Robert Tatina) presented names of candidates for officers. Following that, and an opportunity for nominations from the floor, the membership elected James E. Martin as 2nd Vice-President and Mark Gabel and William Jensen as members of the Executive Committee.

The officers of the Academy for 1986-87 are as follows:

President .....	Steven Metzner, USD
President-elect .....	Marvin Selnes, Sioux Falls
1st Vice-president .....	Warren Hein, SDSU
2nd Vice-president .....	James E. Martin, SDSM&T
Secretary-Treasurer .....	Emil Knapp, Augustana
Proceedings Editor .....	Carroll Hanten, Pierre
Executive Committee	
terms expiring 1987 .....	Ronald Fahy, Belle Fourche Gary Larson, SDSU
terms expiring 1988 .....	Mark Gabel, Black Hills State William Jensen, SDSU

Membership Committee:

Robert Tatina .....	DWU
Robert Looyenga .....	SDSM&T
Leo Spinar .....	SDSU
Frank Einhellig .....	USD

Junior Academy —

Mike Barondeau .....	Roscoe
Jan Palmer .....	Warner
Roberta Gaines .....	Rapid City
Delbert Goodwin .....	Belle Fourche
Robert Waddell .....	Belle Fourche
Pat Cheeseman .....	Brookings
Vajaya Ramakrishnan .....	Rapid City

The Academy received and approved reports from the Junior Academy Committee, the Treasurer, the Audit Committee, the Membership Committee, the Awards Committee, the By-Laws Task Force, and the Resolutions Committee. The reports follow. In response to the Audit Committee's motion that the Academy consider splitting the office of Secretary-Treasurer, President-elect Metzner appointed a task force, consisting of Sr. Laetitia Kilzer, David Hilderbrand, and Norman Miller, to study the feasibility of the change.

Nels Granholm of South Dakota State University moved that the Academy seek to promote more fully the Proceedings. He recommended standardizing the referee process and making it more rigorous, with the goal of uniformity in the papers we are publishing, not fewer papers. After the membership passed the motion, President-elect Metzner announced the appointment of a task force on the Proceedings consisting of Nels Granholm, Carroll Hanten, and others to be named later.

The business of the meeting being at an end, Hopkins passed the gavel to Metzner, who pronounced the meeting adjourned.

The seventy-first annual meeting was well attended. One hundred fifty-eight people registered for the Senior Academy and eighty-four for the Junior, for a total of two hundred forty-two. The meeting was well run, thanks in large part to the arrangements committee chaired by David Hilderbrand of South Dakota State University.

### JUNIOR ACADEMY COMMITTEE REPORT

A total of fifty-two papers representing eleven schools were presented. Eighty-four students attended the activities and seventy joined the Junior Academy. The meetings were held at Shepard Hall and the Rotunda on the campus of South Dakota State University, Brookings, South Dakota.

The 1985-86 officers were: President, Sarah Clapp; Vice President, Ryan Bucher; Secretary-Treasurer, Lori Mednansky. These officers conducted two meetings which dealt respectively with nominations and elections of new officers. Elected for 1986-87 were: Tom Mittan, President, Brookings; Mike Murray, Vice President, Rapid City Stevens; and Robyn Moyers, Secretary-Treasurer, Belle Fourche.

The following is a partial list of awards presented: The \$300 college scholarship was won by Steve Simon, Lincoln, Sioux Falls. The \$150 scholarship was won by Christine Eixenberger of Belle Fourche. Alternates are Trey Karlen of DeSmet and Denise Emmett of Belle Fourche.

The Tri-State Symposium presenters in November, 1986 will be Jeff Rahn of Rapid City Central, Sherril Sievers of Rapid City Stevens, and Michelle Vallery of DeSmet. The three presenters received \$100 research grants from the South Dakota Academy of Science through a grant from AAAS. The alternates, Lance Dahlinger of Belle Fourche and Adam Trautwein of Lincoln, Sioux Falls each received \$50 research grants.

The two top overall winners who gave their presentations to the Senior Academy were Richard Anderson, Belle Fourche, entitled "Degradation of carbon based compounds by bacteria from cryptograms," and Jeff Rahn, Rapid City Central, on "Effects of Reduced Acceleration on Pendulums."

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:

1. South Dakota State University for the use of their facilities, and science faculty for their gracious hospitality throughout the event.
2. The judges who were willing to give their time to evaluate the many varied projects presented by the students and to help in the selection of awards.
3. The support of AAAS through their Merit Proposal program that enabled the funding of 3 grants of \$100; 2 grants of \$50; and 7 grants of \$25 as a part of the S.D. High School Research Program.
4. The cooperating South Dakota colleges and universities that enabled the committee to award two scholarships to the two top 12th grade presenters.
5. Thanks to Vijaya Ramakrishnan, S. D. Science Teacher Association Editor, for publishing Jr. Academy activities.
6. 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.

Respectfully submitted,  
 Chester VanderZee  
 Jerry Loomer  
 Roberta Gaines  
 Vijaya Ramakrishnan  
 Bob Waddell  
 Michael Barondeau  
 Pat Cheeseman, Co-Chairman  
 Joyce Gawell, Co-Chairman

#### REPORT OF RESOLUTIONS COMMITTEE

The South Dakota Academy of Science and its members express their thanks and appreciation to Dr. Robert Wagner, President of South Dakota State University, for providing the facilities and hosting the 1986 annual academy meeting.

The members of the academy extend their thanks to David Hilderbrand, Warren Hein, Gary Larson, Robert Pengra, Ken Yocom, and others assisting the Local Arrangements Committee for their help in planning and guiding the sessions resulting in a successful meeting.

Dr. Mary Bromel, microbiologist for ANG Coal Gasification Co., Beulah, ND, presented a very enjoyable and enlightening address and slide presentation entitled, "Microbes—Friend or Foe," for which the Academy is grateful.

The Presidential Address by President-elect Steve Metzner was informative, challenging and thoroughly enjoyed. Thanks go to him for his contribution to the meeting.

We wish to express our thanks to Carroll J. Hanten, editor and organizer of the annual "Academy Proceedings," for her careful and meticulous work. We also wish to thank Dr. Emil Knapp for his contribution as Secretary-Treasurer for the organization.

Last, but not least, thanks and appreciation are extended to President Don Hopkins for his work, leadership and contribution to the South Dakota Academy of Science.

Respectfully submitted,  
 Marvin Hanson, Chairman  
 Charles McMullen  
 Howard Coker

#### REPORT OF THE AWARDS COMMITTEE

The following people were selected by the Awards Committee to receive the Outstanding Biology and Outstanding Physical Science Teacher Awards.

Outstanding Biology Teacher Award, Rollie Larson, Rapid City Central High School.

Outstanding Physical Science Teacher Award, David Peterson, Brookings High School.

The following high school science and mathematics teachers will be retiring this year after many years of service to the youth of South Dakota:

Mr. Louis Gresslin, Lincoln High School; Mr. Jack Williams, Lead High School.

Respectfully submitted,  
 Warren Hein  
 Gilbert Blankespoor  
 Maureen Diggins-Hutchinson  
 Dan Tallman

#### REPORT OF THE MEMBERSHIP COMMITTEE

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

<b>MEMBERS —</b>	Mark D. Fahrenback, SDSM&T
Jane Abbott, SDSM&T	Audrey Gabel, Black Hills State
Randall L. Chilson, SDSU	David Gutierrez, SDSM&T
George H. Duffey, SDSU	Jeff Hawley, USD
Anne Espinasse-Gellner, SDSU	Lynn M. Hodgson, Northern State

## MEMBERS, Cont.—

Joanne M. Holzheimer, SDSM&T  
 Norm Kopecky, Sioux Falls  
 Rollie Larson, Rapid City  
 Orie W. Leisure, SDSU  
 F. D. S. Marques, SDSM&T  
 James E. Minkel, Black Hills State  
 Todd R. Monroe, Dakota Wesleyan  
 Jeanie Nelson, SDSU  
 Lawrence Novotny, SDSU  
 Dean I. Olson, SDSU  
 Christian Paech, SDSU  
 Gregory J. Pazour, SDSU  
 Katheleen A. Pukas, Northern State  
 Jamal H. Quadri, SDSM&T  
 Joel Rauber, SDSU  
 Mary N. Rosholt, SDSU  
 Rolland R. Rue, SDSU  
 Nina L. Runner, SDSU  
 Nancy Smith, USD  
 Dean D. Steele, SDSU

John Stoebner, Cresbard  
 Robert Todd, SDSU  
 Brent Wegher, USD  
 Duane E. Weisshaar, Augustana  
 Michelle White, Sioux Falls  
 Janet Whitmore, SDSM&T  
 Ken Yocom, SDSU

## ASSOCIATE MEMBERS—

Craig E. Crismon, Sioux Falls College  
 Judy Harpenau, Mount Marty  
 Bryce Iwerks, Northern State  
 Kim Jundt, Northern State  
 Omar Kafawin, SDSU  
 Ted Lovecik, Augustana  
 Sally Rodriguez, Augustana  
 Kenneth Wesche, SDSM&T  
 Carl A. Westby, SDSU  
 LIFE MEMBERS—  
 Walter Morgan, SDSU  
 John C. Mickelson, SDSM&T

Respectfully submitted,  
 Robert D. Redin, Chairman  
 Royce Engstrom  
 Walter Morgan  
 William Soeffing

## REPORT OF THE BY-LAWS TASK FORCE

We move the following changes in the By-Laws of the South Dakota Academy of Science:

1. Bring the By-Laws up to date with respect to the status of undergraduate students in the Academy.
  - a. Delete Article I, Section 6, which refers to officers and procedures in the Collegiate Section.
  - b. In Article IV, Sections 1 and 3, delete mention of a Committee on Associate Members.
  - c. In Article VI, Section 1, change the phrase "papers, presented by members of the Academy" to "papers, presented by members and associate members of the Academy."
  - d. In Article VI, Section 2, delete mention of the Collegiate Section.
  - e. Delete Section X on administration of the funds of the Collegiate Section.

- f. Replace Article XI, Section 2, on dues and assessments for associate members, with: "Undergraduate students shall become associate members through recommendation by a member and payment of an annual fee as determined by the Academy."
  - g. To Article XIII, Section 1, add: "Papers presented by associate members must, in addition, be co-authored, sponsored, or approved by a member."
  - h. Renumber articles and sections as required by the deletions above.
2. Remove sexist language and make minor changes in wording.
    - a. Replace "chairman" by "chairperson."
    - b. Avoid use of the generic "he."
    - c. Use "shall" or "will" consistently.

By-Laws Task Force:

Cliff Lewis  
 Sr. Laetitia Kilzer  
 Walter Morgan

## TREASURER'S REPORT

Statement of Receipts, Disbursements, and Changes  
In Cash Balances

Cash Balance (all accounts), January 1, 1985 .....	\$ 5,468.23
Receipts:	
Regular Dues .....	\$1,064.00
Registrations .....	449.00
Proceedings .....	858.34
Banquet Tickets .....	918.00
AAAS Research Grant .....	1,000.00
Junior Academy .....	235.00
Interest on Investments .....	469.39
<b>Total Receipts .....</b>	<b>\$ 4,993.73</b>
<b>Cash Available for Disbursements .....</b>	<b>\$10,461.96</b>
Disbursements:	
Proceedings .....	\$ 96.06
Awards .....	1,204.00
Junior Academy .....	128.07
Academy Banquet .....	1,044.00
Postage .....	332.76

Printing .....	68.94
Supplies .....	81.04
AAAS Meeting .....	200.00
Miscellaneous .....	128.24
<b>Total Disbursements .....</b>	<b>\$ 3,283.11</b>
<b>Cash Balance, December 31, 1985:</b>	
Certificates of Deposit .....	\$4,000.00
Passbook Savings .....	2,810.76
Checking Account .....	368.09
<b>Total Ending Cash .....</b>	<b>\$ 7,178.85</b>

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, 1985 is correct as presented to the committee by Emil Knapp, Treasurer.

Because of the large workload of the office of secretary-treasurer, the committee recommends that consideration be given to dividing this office into three offices: Secretary, treasurer, and managing editor of the Proceedings.

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

Respectfully submitted,  
Sister Laetitia Kilzer, Chairperson  
Norman Miller  
David Hilderbrand

## 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; W, atmospheric 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)  
Harold Foss (G)  
S. Gordon Froiland (G)  
Arie Gaalswyk (A)  
Milton P. Hanson (C)  
Rebecca L. Johnson (G)  
Robert Roy Kintner (C)  
Emil F. Knapp (A)  
V. Ronald Nelson (B)  
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

Michael N. Farney (A)  
Carroll Loran Hills (C)  
Todd R. Monroe (G)  
Robert Tatina (G)

### Huron College

Marvin Hanson (B)

### Mount Marty College

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

### 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)  
Mark D. Fahrenbach (E)  
John Paul Gries (E)  
David Gutierrez (C)  
Joanne M. Holzheimer (E)  
Don C. Hopkins (B)  
J. Haworth Jonte (C)  
Timothy J. Kroger (E)  
Robert W. Looyenga (C)  
James Reid MacDonald (E)  
F.D.S. Marques (B)

**S. D. School of Mines, Cont. —**

James E. Martin (E)  
John C. Mickelson (E)  
Jamal H. Qadri (B)  
Robert D. Redin (B)  
Kenneth Wesche (B)  
Janet Whitmore (E)

**South Dakota State University**

Sherwood O. Berg (G)  
Arvid Boe (G)  
Bernard J. Brandwein (C)  
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)  
Harry G. Hecht (C)  
Warren Hein (B)  
Teresa Hein (B)  
David C. Hilderbrand (C)  
Daniel E. Hubbard (G)  
Ernest J. Hughins (G)  
H. L. Hutcheson (G)  
William P. Jensen (C)  
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)  
Christian Paech (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)  
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)  
William S. Wadsworth, Jr. (C)  
Peter J. Wilkin (G)  
Richard Wynia (G)  
Ken Yocom (A)

**University of South Dakota**

Mary Abraham (C)  
Frank O. Brady (G)  
Howard Coker (C)  
Ray D. Dillon (G)  
Frank A. Einhellig (G)  
Royce C. Engstrom (C)  
Jeff Hawley (G)  
Gary D. Johnson (E)  
Andrew E. Karantinos (A)  
Stephen R. Metzner (C)  
Norman Miller (C)  
Otto W. Neuhaus (G)  
Robert J. Peanasky (G)  
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)  
Brent Wegher (G)

**High Schools and****Middle Schools**

Mike Barondeau (C)  
Roscoe  
Lillian M. Colberg (G)  
DeSmet  
Ron Fahy (G)  
Belle Fourche  
Jeff Foubert (A)  
Mitchell  
Roberta Gaines (C)  
Rapid City  
Joyce Gawell (B)  
Brookings  
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  
David Peterson (B)  
Brookings

Vijaya Ramakrishnan (C)  
Rapid City  
Roy W. Rissky (C)  
Mitchell  
Marvin D. Selnes (B)  
Sioux Falls  
John Stoebner (G)  
Cresbard  
J. Ternes (G)  
Spearfish  
Richard J. Thomas (C)  
Aberdeen  
Chester Vander Zee (G)  
Sioux Valley  
Robert Wadell (C)  
Belle Fourche

**Out-of-State Schools**

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.  
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. Acad. of Sci. Proc., 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  
Edmund F. LeRoux (E)  
U.S. Geological Survey, Huron  
Eugene L. Miller (G)  
N. G. I. Res. Lab., Brookings  
David J. Ode (G)  
S. D. Game, Fish & Parks, Pierre  
George Vandel (G)  
S. D. Game, Fish & Parks, Pierre