

**MINUTES OF THE  
FORTY-EIGHTH ANNUAL MEETING  
OF THE  
SOUTH DAKOTA ACADEMY OF SCIENCE**

The Forty-eighth Annual meeting of the South Dakota Academy of Science was called to order by President Morton Green at 10:30 A.M. on Friday, April 26, 1963 in Room 228 of the Chem-Chem E. Building of the South Dakota School of Mines and Technology, Rapid City, South Dakota.

The Academy was welcomed to the campus by President Fay L. Partlo of the South Dakota School of Mines and Technology.

The following committees were appointed by President Green:

Auditing Committee: Charles M. Vaughn; W. J. Doescher;  
Marvin DeYoung

Resolutions Committee: Victor S. Webster; Guy O. Karnes

The Presidential Address, entitled "Classical Biology—the Basic Science" was delivered by President Morton Green and appears below.

The Annual Academy Address in connection with the Dedication of the Mineral Industries Building was presented in room 228 of the Chem-Chem E. Building following the banquet which was held in Connolly Hall on the South Dakota School of Mines and Technology campus. Mr. Paul Zinner, Assistant Director, U. S. Bureau of Mines spoke on "Problems of Communications in the Sciences."

The annual business meeting was called to order by President Green at 10:30 A.M. on Saturday, April 27, in the Chem-Chem E. Building, Room 228 of the South Dakota School of Mines and Technology.

The Treasurer's report was presented and accepted. It appears below. The report of the Director of the National Science Foundation Grant project was given by Theodore Van Bruggen. He announced the grant of four projects by the National Science Foundation to the South Dakota Academy for the 1963-64 year. These were for (1) a Visiting Scientist Program, (2) a Traveling Kits Program, (3) a Junior Academy of Science Program, and (4) a Collegiate Section Program. The final report of the Director to the National Science Foundation for the 1961-62 South Dakota Academy of Science Grants No. 17015, 17018, 17249 appears below.

The Academy voted to accept the new NSF grants for 1963-64.

The report of the Auditing Committee was presented by Charles M. Vaughn. The committee found the accounts of the treasurer to be correct.

The report of the Membership Committee was presented by R. J. Landborg. It appears below.

W. O. Read, editor for the publications committee requested that all papers for publication be in the editors office by June 15. He also requested that all authors include their departmental address as well as their school or organizational address.

The report on the AAAS meeting was given by Charles M. Vaughn and appears below.

The report of the Resolution Committee was given by Victor S. Webster and appears below.

The report of the Nature Conservation Committee was given by Byron Harrell and appears below.

Byron Harrell presented the following motion in behalf of the Committee.

"The members of the Nature Conservation Committee wish to present a motion that the South Dakota Academy of Science give tangible support to the preservation of natural areas for scientific purposes by contributing the price of one acre (\$47.50) to the Altamont Prairie Project of the Nature Conservancy."

The motion was seconded. The floor was open for discussion. Following the discussion the President called for a vote. The motion carried.

The Nominations Committee presented the following list of officers and elected committee members who were unanimously elected by voice vote. As required by the By-Laws, the names of Robert Sandvig and Walter Morgan were presented for the position of second vice-president. Robert Sandvig was elected by ballot.

#### Officers for 1963-64

President: S. Gordon Froiland, Augustana College

President-elect: George P. Scott, University of South Dakota

1st Vice-President: Marvin Hanson, Huron College

2nd Vice-President: Robert Sandvig, South Dakota School of Mines and Technology

Editor: W. O. Read, University of South Dakota

Secretary-Treasurer: Theodore Van Bruggen, University of South Dakota

#### Executive Council Members-at-Large

Elmer Johnson, South Dakota State College

Robert J. Watson, Martin, South Dakota

Norman L. Tigner, Watertown, South Dakota

Jack Saunders, Northern State Teachers College

#### Membership Committee

J. E. Woods, Chm., Northern State Teachers College

Roger Davis, University of South Dakota

Edna Grieb, Black Hills Teachers College

John Gaines, South Dakota School of Mines and Technology

R. J. Landborg, Augustana College

#### Collegiate Section Committee

Roy Kintner, Chm., Augustana College

Richard Kucera, University of South Dakota

Sister Veronica Fasbender, Mount Marty College

George Morris, South Dakota School of Mines and Technology

Gerald Myers, South Dakota State College

#### Junior Academy Committee

Charles Sidlo, Chm., Washington High School, Sioux Falls

Roy Rissky, Mitchell High School, Mitchell

Everette Follette, Sturgis High School, Sturgis

Guy O. Karnes, Brookings High School, Brookings

Willard Rosine, Augustana College

The Executive Council consists of the officers listed above; the First Past-President, Morton Green; and the Second Past-President, Charles M. Vaughn.

The report of the Collegiate Committee was presented by R. L. Sandvig, Chairman and appears below.

The editor suggested that Collegiate members' papers that are published should include their instructor's name in the footnote as an advisor if not listed as a co-author.

The report of the Junior Academy Advisory Committee was submitted and appears below.

President Green informed the membership that \$100 is again available from AAS this year to be used as awards.

Lee Snyder thanked the membership for the opportunity of going to Philadelphia to the national AAAS meeting in 1962.

The prize-winning papers of the Junior Academy were presented to the Senior Academy by:

1. Lee Snyder, Huron High School
2. Ray Horn, Brookings High School

Edwin H. Shaw made a motion that the Executive Council review the two papers above, and if one or both are worthy and funds are available the two Junior Academy members be sent to the annual AAAS meeting to be held in December 1963. Motion carried.

President Green read invitations from Augustana College and Black Hills Teachers College to hold the Annual meeting on their campus. A motion was made we hold our meeting at Augustana. Motion carried.

A motion was made and carried that the invitation from Black Hills Teachers College be considered at the next annual meeting, 1964.

A discussion followed to put memorials in the Proceedings of deceased members. The President instructed that this be done by the Resolutions Committee.

The newly elected President, S. G. Froiland, succeeded Past-President Morton Green to the chair and appointed the following committees:

#### **Nominating Committee**

John Willard, Chm., South Dakota School of Mines and Technology  
Loran Hills, Dakota Wesleyan University  
Howard Coker, University of South Dakota  
David Holden, South Dakota State College  
Dilwyn Rogers, Augustana College

#### **Nature Conservation Committee**

Byron Harrell, Chm., University of South Dakota  
Willard Rosine, Augustana College  
Frank Jobes, Yankton College

#### **Steering Committee—NSF State Academy Grants 1963-64**

Walter Morgan, South Dakota State College  
Elmer Johnson, South Dakota State College  
Morton Green, South Dakota School of Mines and Technology  
John C. Mickelson, South Dakota School of Mines and Technology  
James C. Schmulbach, University of South Dakota  
Howard Coker, University of South Dakota

#### **Director of the National Science Foundation—South Dakota Academy Project for 1963-64**

Theodore Van Bruggen, University of South Dakota

There being no further business to be considered, the Forty-eighth Annual session of the South Dakota Academy of Science was declared adjourned by President Froiland.

#### **Report of the Membership Committee**

The Membership Committee is pleased to report the approval of the applications for membership in the academy in the following categories: 15 from institutions of higher education and research, 6 from teachers in secondary education, 3 engaged in other scientific pursuits, and 7 graduate students. The combined total for the year is 31 new members.

In addition the committee is pleased to submit the name of Professor N. H. Mewaldt of Northern State Teacher's College, Aberdeen for life-member status. Our constitution provides that individuals who have reached the age of 65 and have been members of the academy for 25 years shall be eligible for election to life membership.

Respectfully,  
Richard J. Landborg,  
Chairman

#### **Report of the Collegiate Section Committee**

The Collegiate Section Committee met on Friday, April 26, with R. R. Kintner, G. I. Moller, and R. L. Sandvig present.

The following awards were made:

1. First place, Biological Science. "The Soluble Amino Acid Content in Leaf of the Corn Plant," Erwin Reimann, South Dakota State College.
2. First place, Physical Science. "Bromination of Olefins," Maureen J. Gilligan, South Dakota State College.
3. First place, Mathematics. "Uniform Convergence of Certain Improper Integrals," Leroy Benson, Augustana College.
4. Second place, Biological Science. "Nitrite Destruction of Carotene in the Rumen," David L. Nelson, South Dakota State College.
5. Second place, Physical Science. "Geometrical Isomerism: The System 4-Methylbenzophenone 2, 4-Dinitrophenylhydrazones," Jim May, Augustana College.
6. Third place, Biological Science. "A Laboratory Plant for a Controlled Nutrient Experiment," Roy W. Albin, Black Hills Teachers College.

7. Third place Physical Science. "Hollow Stalagmites," David M. Schnute, School of Mines and Technology.

In addition to Certificates of Merit, Cash Awards of \$15.00 to first place, \$10.00 to second place and \$5.00 to third place were made.

The Committee recommended that all 14 papers be published; however, R. F. Sprecher and David L. Nelson requested that neither the paper nor the abstract be published.

The Committee met in Chamberlain, S. Dak., on October 1, 1962 to hold the planning session as stipulated in the NSF Grant to the Collegiate Section. It was decided that the per diem for 25 associate members be allotted to the various schools with the stipulation that the name of the recipient together with the name of his paper be in the hands of the Chairman of the Collegiate Section no later than February, 1963. Any money left or unused at that time was to be distributed by the Chairman without regard to institutional allotments.

The Committee also made the following recommendations:

1. That a suitable award such as subscription to a science periodical be substituted for the Cash Award.
2. That Article X, Section 1 of the By-Laws be amended to include an Earth Science Award.

Officers elected were:

1. Chairman—James May, Augustana College
2. Vice Chairman—Erwin Reimann, South Dakota State College

R. L. Sandvig  
Chairman  
Collegiate Section Committee

#### Report of the Junior Academy Committee

The Junior Academy Advisory Committee has provided the guidance to implement the objectives of the Junior Academy of Science. These objectives are:

- 1) To stimulate the interest of high school students in science.
- 2) To encourage special projects on the part of such students.
- 3) To provide an annual meeting for the presentation of papers and for other scientific activities.
- 4) For the publication of outstanding papers in the Proceedings of the Academy.
- 5) To promote the exchange of ideas between students of various schools and between students and scientists of the Senior Academy.

Grant #17015 from the National Science Foundation made it possible to provide a unique type of science education for fifty-two high school students of South Dakota during the summer of 1962. These students were given the opportunity to study the geological and biological features of the western portion of the state under the guidance of professional scientists for six days. This Field Trip was designed to be a traveling classroom to enable the participants to receive instruction enroute as well as at selected areas. The selection of the students was based on their academic record and their interest, achievement, and potential in science.

Individual written critiques by the students at the end of the Field Trip had these points in common:

- 1) They had received a new insight and understanding of a phase of science education which very few had experienced previously.
- 2) They had a new awareness of the natural factors that make up their environment.
- 3) They acquired a respect for the knowledge and methods of science through daily contact with professional scientists.
- 4) They discovered the enjoyment of learning when given the opportunity to study science at first hand.

Two students, John Early of Sioux Falls, and Lee Snyder of Huron were selected for honors for having outstanding research papers at the 1962 meeting. These two students represented South Dakota at the meeting of the National Junior Academy, held concurrently with the AAAS convention in Philadelphia, December 26-30, 1962.

At the time of the 1963 annual meeting of the Junior Academy, fifty-two students had been selected for the second Field Trip to be held in June, 1963. Essentially the same route will be traversed with a staff of professional scientists. Again the six day trip will be financed by the National Science Foundation.

The second new project of the Junior Academy was the publication of a science newspaper, also financed by a grant from the National Science Foundation. Because of the lack of effective Communication between areas of the state, the reluctance of local newspapers to give adequate coverage to science news and information, the Junior Academy newspaper became the instrument for conveying information of science activities and new developments to schools and individuals.

Five issues of the South Dakota Junior Academy NEWS were printed. Copies of each issue were sent to each high school administrator, each science teacher, each Junior Academy member, and to members of the Senior Academy that were concerned with

the administration of the Academy. For the first time, the Academy was able to acquaint many of the high school administrators, teachers and students with the objectives of the organization and the activities it encourages. One thousand copies were distributed each time, spaced approximately six weeks apart during the academic year.

Results of the two NSF sponsored projects were evident in the following forms:

- 1) Increased attendance and participation in the annual Junior Academy meeting at Rapid City, April 25-27, 1963.
- 2) Increased correspondence from science teachers and students expressing an interest in the activities of the Junior Academy and other science events.
- 3) Schools that previously had been indifferent to the Junior Academy permitted students to present papers at the annual meeting.
- 4) Senior Academy members voluntarily submitted articles of informational and educational value for publication in the newspaper.

The Junior Academy NEWS remedies a situation that has prevented the growth of the Junior Academy in South Dakota. The project will be continued during the 1963-64 academic year with a second grant from the National Science Foundation.

The Junior Academy Advisory Committee  
 Charles Sidlo, Chm. Sioux Falls  
 Edna Grieb, Black Hills Teachers College  
 C. Loran Hills, Dakota Wesleyan University  
 Guy Karnes, Brookings  
 Norman Tigner, Watertown

#### **Report of the Academy Representative to the AAAS Academy Conference and AAAS Council**

The Academy Conference convened in Philadelphia, Pennsylvania, December 27, 1962, with the annual business meeting held during the morning session. The AAAS Academy Conference Survey of Junior and Collegiate Academies by Dr. John D. Hopper-ton, University of New Mexico Institute of Mining and Technology was presented. The afternoon session dealt with problems of incorporating state academies, their tax exempt status, and a survey of activities and support of academies of science. This final part included the Development of an Institute for Scientific Research supported by the Virginia Academy of Science, Support of an Academy having a Museum, and Local State and Federal Support of Academies presented by your representative. This session continued into the initial session of the AASA Council.

The AAAS Council met in two sessions, first on December 27, and finally on December 30, 1962. The usual reports included interim reports from two Council Study Committees, the Natural Areas as Research Facilities, and Research in Small Colleges. The first named committee was continued for a second year and the latter committee was continued for a third year. Seven societies were recommended for affiliation by the Committee and were so elected. The other non-routine action was Council action to change the AAAS by-laws to increase the size of the Committee on Public understanding of Science from 5 to 7 members with the term of one or two members to expire on January 14, of each year (Amendment to Section 9 of Article V of AAAS By-Laws).

Respectfully submitted,  
 Charles M. Vaughn  
 Academy Representative

#### **Report of the Resolutions Committee**

I. Be it resolved that the South Dakota Academy of Science extend its appreciation to:

- (1) President F. L. Partlo for his address of welcome and for making the facilities of South Dakota School of Mines and Technology available to the Academy for this meeting.
- (2) To the Science Departments of South Dakota School of Mines and Technology and their local committees for making the necessary preparations for conducting these sessions.
- (3) To the graduate students of various departments who provided the necessary support for a successful meeting.

II. Be it resolved that the Secretary be instructed to send a letter of thanks to:

- (1) Mr. Paul Zinner, Assistant Director, U. S. Bureau of Mines for delivering the Academy Address.

Victor S. Webster, Chairman  
 Guy O. Karnes

#### **Report of the Nature Conservation Committee**

The committee wishes to emphasize the importance of the preservation of natural areas in accordance with the action of the Academy in the establishment of the committee. During the past year the Academy has supported the Altamont Prairie Project of the Nature Conservancy by a letter of the president which was sent to all of the members. Considerable support of this project

was received from members of this and other organizations, although more support of this project is still needed.

The committee has considered the specific role that it may play in furthering the interests of the Academy in scientific natural areas. We have four suggestions to guide the further work of the committee.

These are—

- (1) Continue and extend support of the Altamont Prairie Project. A motion by the committee that the Academy give tangible support will be made at the appropriate time.
- (2) Collect pertinent information on other areas of scientific importance.
- (3) Evaluate and recommend Academy action on other projects that may develop in the state.
- (4) Maintain a liaison with the Nature Conservancy and any other pertinent private and governmental organizations.

Respectfully submitted,  
Byron Harrell, Chairman  
Willard Rosine  
Frank Jobes

**FINAL REPORT**  
**NATIONAL SCIENCE FOUNDATION**  
**SOUTH DAKOTA JUNIOR ACADEMY PROGRAM**  
**1961-1962**  
**GRANT NO. 17015**

During 1961-1962 the South Dakota Academy of Science sponsored a Junior Academy of Science program which was supported by the National Science Foundation. The objectives of the program were to acquaint science teachers and administrators of high schools with the Junior Academy activities, as well as to increase the role of the Junior Academy in the scientific training and activities of high school students. To accomplish this, three specific projects were implemented.

1. A series of three—one day Saturday conferences were held on the campuses of three colleges in the three districts set up for this purpose. They were held on the same day, October 7, 1961, at the following places: South Dakota School of Mines and Technology, Rapid City; South Dakota State College, Brookings; and University of South Dakota, Vermillion. The theme at each conference was to thoroughly inform participants of Junior Academy activities. In

addition, sessions were held with High School students to provide them with ideas and information on specific topics as, "How to select and prepare a scientific research project," "How to write a scientific Report of a Project," "How to present a Junior Academy paper." (See appended Programs.)

These conferences were attended by approximately 120 teachers and administrators at each campus.

2. A brochure describing Junior Academy of Science activities was printed and distributed as well as some mimeographed material which served to remind students and teachers of the spring meeting. This material was distributed to all science teachers in the high schools of the state of South Dakota. There was a gratifying increase in attendance at the annual meeting in the spring of 1962 at the University of South Dakota in Vermillion. Several administrators indicated that Junior Academy members in their schools would be sent to future meetings and that it would be financed as other school activities are in their annual budget. (See appended brochure and newsletter.)
3. A science field trip was held during the week of June 11-16 for a group of outstanding high school students for the purpose of studying first hand some biological and geological features of the western part of the state. Participants were carefully selected after recommendation by a sponsoring science teacher. Staff members who served as instructors and counselors were enthusiastic about the response received from participants. Although relatively few students were reached in this effort (50), they represented a nucleus of superior students who are forming a stimulating catalyst for the success of future Junior Academy activities. (See appended field trip information.)

A fiscal report covering this grant No. 17015 for the 1961-1962 period was submitted September 17, 1962.

Respectfully submitted,  
Theodore Van Bruggen, Director  
South Dakota Academy of Science  
Grant No. 17015  
Department of Botany  
University of South Dakota  
Vermillion, South Dakota

**TREASURER'S REPORT****For Fiscal Year Ended April 23, 1963**

Balance on Hand, April 27, 1962 (as per report April 27, 1962) -----	\$2,035.17	
Less: Funds of Junior Academy -----	53.69	
Funds of Senior and Collegiate Section -----		\$1,981.48
Receipts for fiscal year:		
Memberships:		
Senior Academy -----	\$ 583.00	
Collegiate Section -----	41.00	624.00
Interest on Certificate of deposit -----		23.45
Gift from C. M. Goethe -----		50.00
AAAS Junior Academy Award -----		100.00
Reprint service -----		47.90
Total receipts -----	\$ 845.35	
Cash Available -----		\$2,826.83
Disbursement for fiscal year:		
Collegiate Awards -----	\$ 60.00	
AAAS Junior Academy Awards -----	100.00	
Printing—Annual meeting & brochures -----	83.60	
Expenses of 1962 Annual meeting -----	15.32	
Mailing of 1962 Annual Proceedings -----	3.93	
Bank Charges -----	1.40	
Total disbursements -----	\$ 264.25	
Cash Balance, April 23, 1963 -----		\$2,562.58
Certificate of deposit, due 5/24/63 -----		600.00
Total Funds of South Dakota Academy of Science, April 23, 1963 -----		\$3,162.58
Funds of Junior Academy of Science 4/23/63 -----		93.89
Total of all funds controlled by the treasurer of the South Dakota Academy of Science -----		\$3,256.47
Balance per bank statement April 23, 1963 -----		\$2,656.47
Certificate of deposit -----		600.00
		\$3,256.47

**South Dakota Junior Academy of Science****Cash Report for Fiscal Year Ended April 23, 1963**

Balance April 27, 1962 -----		\$ 53.69
Receipts:		
Dues -----	\$ 65.50	
Sale of Junior Academy Pins -----	44.80	
		\$ 110.30
Cash Available -----		\$ 163.99
Disbursements:		
Purchase of 50 Junior Academy Pins @ \$1.40 each -----	\$ 70.00	
Bank Charges -----	.10	
		\$ 70.10
Cash balance April 23, 1963 -----		\$ 93.89

### MINUTES FOR THE COLLEGIATE SECTION OF THE SOUTH DAKOTA ACADEMY OF SCIENCE

The annual meeting of the Collegiate Section of the South Dakota Academy of Science was called to order by Howard Grams, April 26, 1963, at the Chem-Chem. E. Building of the South Dakota School of Mines and Technology, Rapid City, South Dakota.

The minutes of the last meeting were read by the secretary, and were approved as read. It was found that the constitution and by-laws which were to be presented at this year's meeting were not needed. Dr. Sandvig reported that the old constitution was found.

Augustana College is the potential location for the next Academy of Science meeting. Election of officers was held. Due to the location of the next meeting, the chairman was elected from this school. Erwin Reimann and James May were nominated. James May, Augustana College, is the chairman for the 1963-64 year.

Erwin Reimann and Ray Pike were nominated for vice-chairman. Erwin Reimann, Augustana College, is the vice-chairman for the 1963-64 year.

Dr. Sandvig also reported that the Collegiate Division was again given a grant which was for \$1,939.10. The grant is governed by the same regulations as the one for the previous year. It shall be used for:

- 1) It is to support transportation for the Academy members.
- 2) It granted publication of twelve papers.
- 3) It is to pay for communication between members of the Academy.

Expansion of the divisions is being considered by the Collegiate Committee for earth science papers. Also a position for papers concerned with engineering will be considered.

David Nelson moved the meeting adjourn. The motion was seconded and carried.

Secretary,  
Coleen Povondra

### MINUTES OF THE SOUTH DAKOTA JUNIOR ACADEMY OF SCIENCE

Registration for the Junior Academy of Science began at 9:00 A.M. Friday, April 26, 1963 at the South Dakota School of Mines and Technology in Rapid City.

A general session with the Senior Academy was held at 10:00 A.M. The meeting was called to order by Dr. Morton Green, President of the Senior Academy. The welcome address was given by Mr. F. L. Partlo, President of the South Dakota School of Mines and Technology. Dr. Morton Green gave an address entitled: "Classical Biology—the Basic Science."

The Junior Academy met for the presentation of papers at 11:00 A.M.

Following are the papers presented to the Junior Academy:

- Variation in Snow Crystals Due to Different  
Atmospheric Conditions ----- Nancy Carlson,  
Sioux Falls Washington.
- Crystal Face Modification of Sodium Chlorate ----- Robt. Fousek,  
Sturgis.
- A Concidence Counter for Cosmic Rays ----- Charles Banwart,  
Sioux Falls Washington.
- Paleoecology of the Brule Formation ----- Kenneth Kietzke,  
Sturgis.
- Marine Life ----- Linda Gross,  
Yankton.
- A Study of the Growth of Sorghum Before and  
During Pollination ----- Ray Horn,  
Brookings.
- A Machine for Solving Simultaneous Linear  
Algebraic Equations ----- Steve Wiersma,  
Brookings.
- A Study of Bone Development in the Embryonic  
Chicken ----- Curtis Johnson,  
Sioux Falls Washington.
- Limited Urinanalysis ----- Keith Triebwasser,  
Mitchell.
- Development of Aerodynamic Design by  
Equipotential Lines ----- Richard Devries,  
Sioux Falls Washington.
- A Limited Analysis of Nigerian and  
South Dakotan Soil ----- Bruce Traub,  
Mitchell.
- Asto-photography ----- John Hornby,  
Vermillion.



Milikan's Oil Drop Experiment	Max Gors, Sioux Falls Washington.
A Study of Thermo-electricity	Earnest Steen, Brookings.
Measurement of Speed of Sound in Solids	Harold Bross, Sioux Falls Washington.
Combinational Tones	Arnor Larson, Brookings.
Effects of Gibberellic Acid on F. Oxysporus	Cathy Colwell, Vermillion.
Color-blindness in the Garter Snake	George Robertson, Sioux Falls Washington.
Aromatics Possibly Help to Determine Plant Radio-sensitivity	Bonnie Lievan, Brookings.
Mutations in Saintpaulias With X-rays	Dennis Ragans, Belle Fourche.
A Simple Logic Computer	Finlay McMartin, Sioux Falls Washington.
How Much Radiation Do You Eat For Dinner?	Carol Jorgenson, Vermillion.
Sound Frequency Circuit Actuator	Robert Wood, Sioux Falls Washington.
Modification of Plumage Color in Domestic Pigeons by Chronic Administration of Phenylthiourea	Lee Snyder, Huron.

The Junior Academy banquet was held in Meadowood Lanes at 6:30 P.M. The Academy Address was given by Emily Frisby of Raven Industries entitled, "Meteorology in Ballooning."

The Junior Academy met Saturday at 8:00 A.M. for the presentation of the following papers:

Van De Graff Particle Generator	James Halbig, Miller.
Abelian Group	James Halbig, Miller.
Crystal Growing	Lynn Von Seggren, Huron.
A Study of the Viscosity of Certain Water-Alcohol Mixtures	Martin Johnson, Brookings.
The Separation of Caffeine From Coffee	Kath McMillan, Huron.

The History of Transistors	Tom Lawless, Huron.
Photomicrography	Phil Doto, Huron.
A Study of Spectra	Dale Ibis, Sioux Falls Washington.

The Junior Academy joined the Collegiate Section at 9:00 A.M. to hear Dr. L. G. Morey, Technical Specialist, Hercules Power Company. A film "Minuteman Missile" was shown.

Mr. Sidlo announced the winners of the research papers. The two grand winners who gave their papers before the Senior Academy of Science were Lee Snyder of Huron and Ray Horn of Brookings. Receiving \$25 future research grants were Lee Snyder, Ray Horn, James Halbig and Kenneth Kietzke. Keith Triebwasser of Mitchell received honorable mention.

The Junior Academy business meeting was called to order by President Dean Kubicek at 10:30 A.M., April 27, 1963. The minutes and treasurer's report were read and approved.

Kenneth Kietzke, chairman of the Resolution Committee, read the report of that committee.

We wish to thank:

1. South Dakota School of Mines and Technology for the time, expense, and excellent accommodations and President Partlo for his fine address.
2. The Senior Academy Advisory Committee for their guidance.
3. The Senior Academy for providing the opportunities, supervision, and stimuli for the growth of the Junior Academy.
4. The high school teachers who have provided transportation and given their time and counsel.
5. Dean Kubicek, Lee Snyder and Robert Fousek, our officers, who have given much time and effort to make this meeting a success.
6. The four Academy judges:  
Edna Grieb, Black Hills Teachers College  
Howard Coker, University of South Dakota  
Dilwyn Rogers, Augustana College  
Frank Jobes, Yankton College

7. The members and visitors of the Academy for their participation and interest.
8. The high schools which participated in the Academy.
9. Jim Cox the leader of the Rapid City Science Club for his help in accommodation at this meeting.

Old Business: none.

New Business:

It was moved and seconded that the registration and fees for the Junior Academy meeting be paid two weeks in advance. The motion was ammended to include a list of projects and a copy of the paper be sent at the same time. Motion passed by unanimous vote.

Report from the Nominating Committee:

President	Charles Neal, Rapid City
Vice-President	Ray Horn, Brookings
Secretary-Treasurer	Harold Bross, Sioux Falls

Nominations from the floor:

President	Lee Snyder, Huron
Vice-President	Robert Fousek, Sturgis
Secretary-Treasurer	None

New officers of the Junior Academy

President	Lee Snyder, Huron
Vice-President	Ray Horn, Brookings
Secretary-Treasurer	Harold Bross, Sioux Falls

The meeting of the Junior Academy was adjourned by President Dean Kubicek, April 27, 1963.

Secretary-Treasurer  
Harold Bross, Sioux Falls

## MEMBERSHIP LIST

1963-64

### Senior Section

Abbott, Howard C.	Sioux Falls College
Allen, John	Minneapolis, Minnesota
Anderson, Paul H.	School of Mines
Backens, Vern W.	Black Hills Teachers
Bartels, Richard L.	School of Mines
Bauer, George	Yankton
Beaty, Marjorie	University
Bell, Thomas N.	St. Paul Park, Minnesota
Benson, Norman	Yankton
Bentley, Orville G.	State College
Berry, Charles E.	Black Hills Teachers
Billey, John	Yankton College
*Binnewies, E. R.	State College
Bjork, Philip R.	School of Mines
Boldt, Charles	School of Mines
Brage, B. L.	State College
Brandwein, Bernard J.	State College
Briggs, H. M.	State College
Brummel, Cletus	Springfield, Illinois
Burden, H. Robert	Hill City
Byrne, Jeffrey E.	University
Carlson, Charles W.	State College
Carlson, H. D.	University
Chace, G. Earl	Rapid City
Christensen, Alton R.	University
*Churchill, Edward P.	University
Clafin, W. Joseph	Watertown
Cohen, David S.	Gen. Beadle State Teachers
Coker, E. Howard	University
Connors, Howard	University
Cope, J. H.	School of Mines
Cox, Earl	Belle Fourche
Critz, Jerry B.	University
Davis, Briant L.	School of Mines
Delinger, William G.	School of Mines
Delzell, Mark	University
Dendinger, D. C.	Yankton
Dewey, Charles S.	Dakota Wesleyan University
De Young, Marvin	Dordt College, Sioux Ctr., Ia.
Doescher, Wilmer J.	Dakota Wesleyan University
Dracy, Arthur E.	State College
Dunger, George A.	Sioux Falls
Dunlap, Donald	University
Dyer, Charles F.	Huron

Ekman, W. E. University  
 Ellis, Michael J. Huron  
 Emreick, Royce J. State College  
 Emerson, David N. University  
 Eslick, Rudolph Vermillion  
 Estee, Charles R. University  
 \*Evans, Gregg M. Yankton College  
 Sisetr M. Veronica Fasbender Mount Marty College  
 Follette, Everett LeRoy Sturgis  
 Forman, Richard Augustana College  
 Foss, Harold Augustana College  
 Foss, Michael D. Augustana College  
 \*Fossler, H. R. University  
 \*Frary, Guy G. University  
 Frick, Charles H. University  
 Frisby, E. M. Sioux Falls  
 \*Froemke, John A. Augustana College  
 Froiland, S. Gordon Augustana College  
 Gaines, Jack R. School of Mines  
 Geise, Harry A. State College  
 George, Keith Yorkshire, England  
 \*Goethe, C. M. Sacramento, California  
 Goodell, Harold B. School of Mines  
 Graetzer, Hans G. State College  
 Gray, Grant G. Rapid City  
 Greb, Magnhild Torvik State College  
 Greb, Raymond J. State College  
 Green, Morton School of Mines  
 Grieb, Mrs. Edna Black Hills Teachers  
 Gries, John Paul School of Mines  
 Gutzman, Wayne W. University  
 Haeder, Paul A. University  
 \*Haines, A. L. University  
 Halsted, Alfred Yankton  
 Halverson, Andrew W. State College  
 Hampshire, Alan A. University  
 Hansen, Richard A. Sioux Falls  
 Hanson, Marvin Huron College  
 Harrell, Byron E. University  
 Hasse, Merten M. University  
 Haynie, Suzanne Vermillion  
 Heckman, Russell F. School of Mines  
 Heemstra, John G. University  
 Hempel, Robert D. Springfield  
 Hershberger, A. R. Westmar College, LeMars, Ia.  
 Hettler, Frances M. State College  
 Hills, Carroll Loran Dakota Wesleyan University  
 Hilpert, Marion M. Black Hills Teachers

Holden, David J. State College  
 Howell, S. W. Yankton College  
 Huggins, Ernest State College  
 Jensen, Robert R. Sturgis  
 Jobes, Frank W. Yankton College  
 Johnson, Elmer R. State College  
 Johnson, James W. Huron  
 Jones, Lloyd D. Denver, Colorado  
 Kamstra, Leslie D. State College  
 Karnes, Guy O. Brookings  
 Sister M. Laetitia Kilzer Mount Marty College  
 Kintner, Robert Augustana College  
 Kleibacker, Wilson Yankton College  
 Klug, Harlan L. State College  
 Kohlmeyer, William State College  
 Kommes, Willis C. Hot Springs  
 Konsler, Gerald Ray Huron College  
 Kucera, Richard E. University  
 Landborg, Richard J. Augustana College  
 Landegent, John, Jr. Sioux Falls  
 Lillegraven, Jason A. School of Mines  
 Lindstrom, Lester Manhattan, Kansas  
 Linstrom, Kenneth R. Rapid City  
 Lund, Lillian O. State College  
 McHugh, Alexander E. School of Mines  
 McMurphy, Wilfred E. State College  
 McRoberts, Donald State College  
 Manske, Dennis University  
 Martin, Harold E. School of Mines  
 Martin, James M. Belle Fourche  
 Martin, W. J. School of Mines  
 \*Mewaldt, N. H. Northern State Teachers  
 Mickelson, John C. School of Mines  
 Miller, Edward C. Edgemont  
 Miller, Gertrude N. Northern State Teachers  
 \*Miller, Ward L. State College  
 Mitchell, D. J. University  
 Moller, Gottfried I. University  
 Moller, Margot L. University  
 Morgan, E. S. Miller  
 Morgan, Walter State College  
 Morris, Robert G. School of Mines  
 Musson, Alfred L. State College  
 Myers, Gerald A. State College  
 Nelson, V. Ronald Augustana College  
 Olson, Edwards S. State College  
 Olson, Oscar E. State College  
 Olwell, James F. Buffalo Gap

Osterhof, G. G.	School of Mines
Partlo, Fay L.	School of Mines
Pengra, Robert M.	State College
Penicnak, A. John	Amherst, Massachusetts
Petsch, Bruno	University
Pettyjoin, Wayne A.	Bradford, Massachusetts
Plumart, Phillip	State College
Pribyl, Darell	Milbank
Progulske, Donald R.	State College
Rapp, George, Jr.	School of Mines
Read, Willard O.	University
Rehin, R. Daniel	School of Mines
Redman, Kenneth	State College
Reid, Theodore L.	University
Rhodes, Marie B.	Southern State Teachers
*Richmond, Mark G.	Black Hills Teachers
Ricketts, C. E.	Rapid City
Rinker, George C.	University
Rissky, Roy W.	Mitchell
Roberts, Willard L.	Rapid City
Rogers, Dilwyn J.	Augustana College
Rosine, Willard N.	Augustana College
Ross, James G.	State College
*Rothrock, E. P.	University
Rue, Rolland R.	State College
Sandvig, Robert L.	School of Mines
Saunders, Jack K.	Northern State Teachers
Schmulbach, James C.	University
Schuck, Cecilia	State College
Schwinghamer, James M.	University
Scott, George P.	University
Selness, Marvin D.	Sioux Falls
*Severin, H. C.	State College
Shaw, Edwin H., Jr.	University
Shaw, Ross F.	Greenville, Illinois
Sherman, J.	New York, New York
Sidlo, Charles	Sioux Falls
Smith, H. C.	Sioux Falls
Smith, John T.	Alcester
Smith, Paul F.	University
Smith, Ross W.	School of Mines
Spencer, Joseph N.	University
Spurgeon, Kenneth R.	State College
Stalcup, Rex C.	Rapid City
Stanhope, Russell H.	Worcester, Massachusetts
Steece, Fred V.	University
Stevenson, Robert E.	University
Stolle, Louise C.	Northern State Teachers

Strong, Ralph K.	Huron College
Swanson, Edgar L.	School of Mines
Tanaka, John	State College
Thapar, Nirwan Tilak	State College
Thiesfeld, Virgil A.	University
Thomas, Howard M.	Superior, Wisconsin
Throckmorton, Carl R.	University
Tichy, James J.	Meckling
Tichy, Jerome J.	Northridge, California
Tigner, Norman L.	Watertown
Tullis, E. L.	School of Mines
Tullis, Mrs. Meryl	School of Mines
Uken, Leo E.	Colome
Van Bruggen, Theodore	University
Vaughn, Charles M.	University
Walker, Ian R.	Trenton, New Jersey
Weaver, Frank	Sioux Falls College
Webster, V. S.	State College
Welbourne, Frank F.	University
Welty, Joseph Douglas, Jr.	University
White, Everett M.	State College
White, Stewart N.	Rapid City
Whitney, C. B.	Augustana College
Wick, Ralph E.	Rapid City
Wieb, Jack	Huston, Texas
Willard, John W.	School of Mines
Willigman, Melvin G.	School of Mines
Wilson, Robert W.	School of Mines
Wingfield, Frank J.	Dakota Wesleyan University
Winter, Clara	Vermillion
Winter, John	University
Wood, J. Edmund	Northern State Teachers
*Life Member	
<b>Collegiate Section</b>	
Adrian, Bill	Yankton College
Albin, Roy W.	Black Hills Teachers
Benson, Leroy C.	Augustana College
Buswell, Joy	Augustana College
Castonguay, Virginia	Black Hills Teachers
Clark, Floyd	Dordt College
DeHaan, Sander	Dordt College
Gilligan, Maureen J.	South Dakota State College
Grams, Howard	School of Mines
Jorgensen, Spike	Black Hills Teachers
Keester, Kenneth L.	School of Mines
Kullbom, Jim	Augustana College
Kurvink, Karen	Augustana College

May, James  
 Meyer, Richard L.  
 Neison, David L.  
 Pike, Roy W.  
 Povondra, Coleen  
 Rehfeld, Dwayne W.  
 Reimann, Erwin  
 Reyelts, DeAnna  
 Reynolds, Jim  
 Schuurte, David  
 Smith, Verda L.  
 Smolik, Jim  
 Sprecher, R. F.  
 Thiessen, Carolyn  
 Thompson, Lester  
 Vos, Paul E.  
 Wilde, Roger D.

#### Junior Academy of Science

Akin, Diane  
 Albers, Rodger D.  
 Anderson, Craig R.  
 Anderson, Sue  
 Bachmeier, Matt  
 Ballenger, Gale  
 Bieberdorf, Bob  
 Boe, Gordon  
 Bolleryt, Suzie  
 Bross, Harold  
 Brown, Becky  
 Busdicker, John  
 Carlsen, Nancy  
 Carlson, Gary  
 Colwell, Cathy  
 Countryman, Kay  
 Dahlberg, Ellwood E.  
 Definbaugh, Brant M.  
 DeRoos, Fred  
 DeVries, Richard  
 Diegel, Bill  
 Doto, Philip  
 Emmer, Elaine  
 Erickson, Don  
 Fitzpatrick, Mike  
 Fousek, Bob  
 French, Bob  
 Ginsbach, Mary

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 Dordt College  
 Augustana College  
 South Dakota State College  
 Mount Marty College  
 South Dakota State College  
 Augustana College  
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 Augustana College  
 School of Mines  
 Black Hills Teachers  
 School of Mines  
 School of Mines  
 Augustana College  
 Augustana College  
 Dordt College  
 School of Mines

Belle Fourche  
 Sturgis  
 Wash. High, Sioux Falls  
 Belle Fourche  
 Sturgis  
 Belle Fourche  
 Wash. High, Sioux Falls  
 Wash. High, Sioux Falls  
 Yankton  
 Wash. High, Sioux Falls  
 Belle Fourche  
 Belle Fourche  
 Wash. High, Sioux Falls  
 Belle Fourche  
 Vermillion  
 Belle Fourche  
 Milbank  
 Hot Springs  
 Yankton  
 Wash. High, Sioux Falls  
 Belle Fourche  
 Huron  
 Hot Springs  
 Wash. High, Sioux Falls  
 Belle Fourche  
 Sturgis  
 Belle Fourche  
 Belle Fourche

Ginsbach, Patty  
 Gordon, Douglas  
 Gorman, Mike  
 Gors, Max  
 Graham, Pat  
 Gross, Linda  
 Haniisch, Tom  
 Hasse, John  
 Heemstra, Kris  
 Herzog, Ted  
 Hoffman, Linda  
 Horn, Ray  
 Hornby, John  
 Howard, Frances  
 Hughes, Sue  
 Hurd, Clara  
 Ibis, Dale  
 Jobs, Frances  
 Johnson, Curtis  
 Johnson, Martin  
 Jorgensen, Dennis  
 Jorgenson, Carol  
 Kelsey, Charles  
 Kietzke, Kenneth  
 King, E. J.  
 Kirby, Dan  
 Kahler, Terry  
 Kuper, Beth  
 Kyrk, D'Ann  
 Larson, Arnor  
 Laughlin, Mike  
 Lawless, Thomas  
 Laywell, Robert  
 Lewandowski, Bobby  
 Lievan, Bonnie  
 Limbo, Ronald  
 Loup, Patricia  
 Lucca, Diana  
 Lucca, Linda  
 Luft, John  
 Lund, Paul R.  
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 Lutgens, Richard  
 McClure, Debbie  
 McMartin, Finlay  
 McMillan, Kathy  
 McPherson, David  
 Mace, Carol

Belle Fourche  
 Wash. High, Sioux Falls  
 Sturgis  
 Wash. High, Sioux Falls  
 Sturgis  
 Yankton  
 St. Mary's, Dell Rapids  
 Vermillion  
 Yankton  
 Wash. High, Sioux Falls  
 Wash. High, Sioux Falls  
 Brookings  
 Vermillion  
 Milbank  
 Sisseton  
 Winner  
 Wash. High, Sioux Falls  
 Yankton  
 Wash. High, Sioux Falls  
 Brookings  
 Yankton  
 Vermillion  
 Winner  
 Sturgis  
 Sturgis  
 Wash. High, Sioux Falls  
 Winner  
 Wash. High, Sioux Falls  
 Milbank  
 Brookings  
 Sturgis  
 Huron  
 Belle Fourche  
 Sturgis  
 Brookings  
 Sturgis  
 Belle Fourche  
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 Belle Fourche  
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 Sturgis  
 Wash. High, Sioux Falls  
 Belle Fourche  
 Wash. High, Sioux Falls  
 Huron  
 Sturgis  
 Winner