1993

Annual Report of the Iowa Academy of Science, 1992-93

Paul E. Rider
University of Northern Iowa

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Annual Report of the Iowa Academy of Science, 1992-93

PAUL E. RIDER

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PREFACE

Starting in 1976, annual reports have served as a continuing record of the activities of the Iowa Academy of Science. These augment a 100 year history of the Academy which was written in the centennial year of 1975.

This report covers the period from July 1, 1992 to June 30, 1993. It is based on the official records of the Academy (committee reports, Board minutes, correspondence) as well as the recollections, impressions and thoughts of the author.

THE 105TH ANNUAL MEETING

The Luther College campus provided the setting for the 105th Annual Meeting of the Iowa Academy of Science, held on Friday and Saturday, April 23 and 24, 1993, in Decorah, Iowa. The Centennial Union, the Center for Faith and Life, and Valders Science Hall provided excellent facilities for the general sessions, symposia, and registration. The Awards Luncheon and the President's Banquet were also held in the Peace Dining Room.

The weather was reflective of the late spring that occurred in Iowa but the registration and general attendance were substantial. The beauty of northeast Iowa and the Decorah area was an enticement for members who enjoy such surroundings. The general sessions included a presentation on "Heirloom Vegetables" by Kent Whealy of the Seedsavers Exchange, located at Heritage Farm in the Decorah area. Other presentations included a program by Robert Monserrate, a state forensics expert from the Iowa Department of Criminal Investigation, who described the events associated with the crash of Flight 232 at Sioux City, and a presentation by Luther graduate Ivar Lovaas, who described studies involving autistic children.

The chair for local arrangements was Dr. Philip Reitan, Professor of Biology at Luther College. Other members of the committee included individuals from the Luther faculty from the other sciences.

The meeting was organized through the efforts of Gary Downs, Director of Meetings and Programs, who called the Annual Meeting Committee together at Luther in September of 1992. The committee consisted of the following individuals:

Annual Meeting Committee

Local Arrangements Committee Chair
Philip Reitan

Section Chairs:
Agricultural Sciences
Linda M. Pollak, Iowa State University

Anthropology
James Collins, University of Iowa

Cellular & Molecular Biology
Patrick Schnable, Iowa State University

Botany
Lenore Durkee, Grinnell College

Chemical Education
Don Langr, NIACC

Chemistry, Inorganic, Physical, Analytical
M.L. Caffery, Luther College

Chemistry, Organic and Biological
James G. Macmillan, University of Northern Iowa

Conservation
Dean Roosa, Ames, Iowa

Earth Science Teaching
Thomas Ervin, Wood Jr. High, Davenport

Elementary Science Teaching
Carol Houk, Waterloo

Engineering
P. Barry Butler, University of Iowa

Geology
Robert Dawson, Iowa State University

Linguistics
Orrin Frink, Des Moines

Nursing
Penny Y. Leake, Allen Hospital Nursing School

Physics
Billy Anderson-Pugh, Luther College

Psychology
Russell Rulon, Luther College

Science Teaching
Peg Steffen, Ottumwa High School, Ottumwa

Zoology
Steve Lehtinen, Buena Vista College

The committee discussed possible topics for symposia and general session speakers. The program was blocked and section chairs were briefed on their responsibilities. Details of implementation leading up to the meeting were handled by the Director of Meetings and Programs, the Executive Director, the Administrative Assistant, and the section chairs.

The meeting was held April 23-24, 1993. The various aspects of the meeting are described in the following sections.

Iowa Junior Academy of Science Program

Peggy Tilgner, Junior Academy Director, and the Student Programs Committee, under its Chair Larry Schwinger, planned a program of invited poster papers and oral presentations involving students who had been working on science projects during the year. Section vice chairs and committee members acted as judges for the selection of individuals to participate in the junior academy programs held in conjunction with the AAAS meeting in San Francisco, in February of 1994. Students and their projects are listed below.

"BUG OFF!" Creatures of the Corn. A Plot Study of the Effects of Ostrinia nubilalis on Zea mays
Andrea Clark, Algona High School

"POWERDAMS - A Look Into the Future"
Jamie Harding, West High School, Davenport
"Taking a Byte Out of Inefficiency - The Power of Computer-Controlled Programmable Peripheral Interfaces"

Nathan Holmes, West High School, Davenport

"The Effects of Various Central Cements and Tensions on the Tooth Enamel Surface"

Christine Micheel, Marshalltown High School

"Effects of Agricultural Herbicides on Lumbricus Terrestris"

Marie Peleck, Marshalltown High School

"Analysis of Aflatoxin Levels in Peanut Butter"

Nicole Rascon, North High School, Davenport

"The Effects of Metal Ions on Daphnia magna"

Sarah E. Renze, Marshalltown High School

"Association Studies of Candidate Genes in Congenital Heart Disease"

Sara Rohdy, Central Lee Community High School

"Electrophoresis and Determination of Passive Transfer of Colostral Immunoglobulins in Ovis aries"

Cameron Schmitt, Stuart-Menlo High School

"Use of Polymers to Reduce Trihalomethanes in Drinking Water"

Karin Wilhelm, Stuart-Menlo High School

"Estimation of Fractional Lengths"

Winston Yang, Central High School, Davenport

Program Summary

The program consisted of three general sessions, two symposia, and
14 section meetings involving 123 presentations (poster papers included). There were two formal meals including the Awards Luncheon and the President's Banquet. The Saturday box luncheon was held this year and was well attended. The following gives the details of the events on the program.

PROGRAM SUMMARY

THURSDAY, APRIL 22
6:00 Board of Directors Dinner and Meeting

FRIDAY, APRIL 23
7:30 REGISTRATION
8:00 EXHIBITS
8:00 IJAS POSTERS
8:00 IJAS PRESENTATIONS
10:30 GENERAL SESSION I
President William Deskin, presiding
"Heirloom Vegetables: Grass Roots Rescue Efforts in America, Eastern Europe, and Russia." Mr. Kent Whealy, Seed Savers Exchange, Decorah
12:00 AWARDS LUNCHEON
1:00 REGISTRATION
1:30 BUSINESS MEETING
2:00 General Viewing of Junior Academy Posters
2:00 STANDING COMMITTEE MEETINGS
2:30 CONCURRENT SYMPOSIA
The Status of K-12 Science Education Reform in Iowa
Computer Applications in the Chemistry Lab
Iowa Science Foundation
4:00 Open house at the Porter House Museum, 401 West Broadway, arranged by the Iowa Natural History Association
5:00 SENIOR POSTERS and SOCIAL HOUR

6:15 PRESIDENT'S BANQUET
President William Deskin, presiding
Presentation of Iowa Academy of Science
Distinguished Iowa Science Teaching Award
Awarding of Runkel-Roosa Natural History Research
Grant
Installation of new president and remarks by outgoing President Deskin
Response by President Jean Prior
8:00 GENERAL SESSION II
President Jean C. Prior, presiding
"Crime Scene Search and Forensic Analysis"
Robert Monserrate, Department of Criminal Investigation Crime Lab, Des Moines

SATURDAY, APRIL 24
8:00 REGISTRATION
8:00 EXHIBITS
8:00 SECTION MEETINGS
11:00 GENERAL SESSION III
President Jean C. Prior, presiding
"On the Merits of Inductive Procedures in Psychological Treatment Research"
Dr. O. Ivar Lovaas, University of California, Los Angeles
12:20 Iowa Natural History Assn. Meeting followed by field trip to Brush Creek Canyon State Preserve at 1:30
1:00 Joint Physics Section and AAPT Meeting
1:00 SECTION MEETINGS
Botany
Engineering
Physics
Science Teaching
Zoology

The Awards Luncheon
This took place in the Peace Dining Room of the Centennial Union. There were 108 individuals present. Student Program Committee Chair Larry Schwingler, recognized students who had participated in science fairs and other science related activities in Iowa during the past year.

Junior Academy Director Peggy Tilgner presented the two high school scholarship winners and the two representatives who will be a part of the AJAS activities at the AAAS meeting in San Francisco in February of 1994. The scholarship winners were:

Sarah Renze, Marshalltown High School
Karin Wilhelm, Stuart-Menlo High School

The AJAS representatives were:

Christine Micheel, Marshalltown High School
Marie J. Peleck, Marshalltown High School

The winners of the Excellence in Science Teaching Awards were also recognized by Roy Unruh, chair of the ESTA Committee and newly elected member of the IAS Board of Directors. This is always a highlight of the meeting because it showcases some of Iowa's finest science teachers. The winners were:

Biography - Richard Kruse, Ankeny Senior High School, Ankeny Chemistry - Jeffrey B. Hepburn, Dowling High School, West Des Moines
Earth Science - Beverly A. Iverson, Marshalltown Community High School, Marshalltown
Elementary - Barbara A. Ehlers, Wings Park Elementary School, Oelwein

Environmental Education - No award
General/Multiple - Michael F. Zeller, Woodward-Granger Comm.
The President's Banquet
The President's banquet was also held in Peace Dining Room following the social hour which was held in the lounge area outside of the dining room in Centennial Union. Attending were 106 members and guests. President William Deskin introduced Robert Carmichael, chair of the Recognition and Awards Committee, who introduced the nominator of this year's one award winner, who described the individual and why he was selected to be the first recipient of the IAS award for Distinguished Science Teaching.

Distinguished Fellow Award
(no award in this category)
Distinguished Iowa Scientist Award
(no award made in this category)
Distinguished Service Award
(no award made in this category)
Distinguished Iowa Science Teacher

Jay P. Kopp, Loras College
President Deskin presented the year in review for the Academy before presenting the gavel to incoming President Jean Prior. President Prior spoke to the gathering of her involvement in the IAS and her goals for the coming year.

The banquet adjourned so that those attending could attend the evening general session featuring Robert Monserrate, a forensics chemist from the DCI, who made a presentation on how investigators use scientific means to solve crimes.

Attendance
Tables 1 and 2 present attendance figures for the 1993 meeting and for the past five meetings, respectively.

Total attendance was somewhat lower than other meetings, but it still was quite good and reflected the fact that the meeting was held at the edge of our population region. This was a credit to the planning committee and the local arrangements people who put a good meeting together to attract members and others.

The ratio of attendees to papers presented (3.4) was higher than the 2.5 ratios seen in several previous years. This suggests that the meeting was attended by more spectators than individuals interested in presenting papers.

The number of papers presented and number attending section meetings as well as the other sessions are given in Table 3. The section meetings were not as well-attended in relation to other years, but this continues to be an important part of the function of the IAS in providing an opportunity for the presentation of research results by Iowa scientists and their students.

Table 2. Five Year Average Attendance

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Members</th>
<th>%</th>
<th>Non-members</th>
<th>%</th>
<th>Guests</th>
<th>%</th>
<th>Total Papers</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989</td>
<td>338</td>
<td>68.5</td>
<td>129</td>
<td>26.1</td>
<td>26</td>
<td>5.2</td>
<td>493</td>
<td>197</td>
</tr>
<tr>
<td>1990</td>
<td>447</td>
<td>77.2</td>
<td>103</td>
<td>17.7</td>
<td>29</td>
<td>5.0</td>
<td>579</td>
<td>229</td>
</tr>
<tr>
<td>1991</td>
<td>333</td>
<td>78.3</td>
<td>67</td>
<td>15.7</td>
<td>25</td>
<td>5.8</td>
<td>425</td>
<td>137</td>
</tr>
<tr>
<td>1992</td>
<td>308</td>
<td>72.3</td>
<td>69</td>
<td>16.1</td>
<td>49</td>
<td>11.5</td>
<td>426</td>
<td>158</td>
</tr>
<tr>
<td>1993</td>
<td>250</td>
<td>76.2</td>
<td>47</td>
<td>14.3</td>
<td>31</td>
<td>9.5</td>
<td>328</td>
<td>123</td>
</tr>
</tbody>
</table>

1 Buena Vista College
2 Drake University
3 Luther College
4 University of Northern Iowa

Table 3. Attendance Summary, 105th Session, 1993

<table>
<thead>
<tr>
<th>Number of Papers</th>
<th>Attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contributed Papers</td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Sciences</td>
<td>5</td>
</tr>
<tr>
<td>Anthropology</td>
<td>10</td>
</tr>
<tr>
<td>Botany</td>
<td>8</td>
</tr>
<tr>
<td>Cellular/Molecular Biology</td>
<td>10</td>
</tr>
<tr>
<td>Chemistry C</td>
<td>9</td>
</tr>
<tr>
<td>Conservation</td>
<td>14</td>
</tr>
<tr>
<td>Engineering</td>
<td>6</td>
</tr>
<tr>
<td>Geology</td>
<td>5</td>
</tr>
<tr>
<td>Nursing</td>
<td>5</td>
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<tr>
<td>Physics</td>
<td>10</td>
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<tr>
<td>Physiology</td>
<td>6</td>
</tr>
<tr>
<td>Psychology</td>
<td>22</td>
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<tr>
<td>Zoology</td>
<td>122</td>
</tr>
<tr>
<td>Computer Applications in the Chemistry Lab</td>
<td>12</td>
</tr>
<tr>
<td>Status of K-12 Science Education Reform in Iowa</td>
<td>50</td>
</tr>
<tr>
<td>General Session I</td>
<td>185</td>
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<tr>
<td>General Session II</td>
<td>230</td>
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<tr>
<td>General Session III</td>
<td>150</td>
</tr>
<tr>
<td>Special Events: Annual Business Meeting</td>
<td>108</td>
</tr>
<tr>
<td>Awards Luncheon</td>
<td>100</td>
</tr>
<tr>
<td>President's Banquet</td>
<td>100</td>
</tr>
</tbody>
</table>

MINUTES OF THE ANNUAL BUSINESS MEETING
Recital Hall, Center For Life, 1:30 p.m., April 23, 1995
President William Deskin called the meeting to order, 1:30 p.m.

1. President Deskin made remarks on the status of Academy. He reviewed the year for the IAS in terms of activities and described some new initiatives, including a possible joint meeting with the Minnesota Academy of Science in 1999 or 2000. He expressed his appreciation to members for their efforts and support.

2. Luther Erickson reported the results of the election. Daryl Smith was elected as the new President-Elect and new Board members were Don Perschau and Rick Lampe. They were introduced to those in attendance.

3. Membership Committee Chair Dave Roslien gave the report of the membership including deceased members (a moment of silence was observed for Myrle Burk, Winston Hackbarth, Harvey Diehl, and James Stewart). New emeritus members were named (Ben Clausen, Howard Lyon, Bob Simpson and Wanda Wehner). New
fellow's were named by Chair Roslien, who were Connie Mutel, Dean Roosa, Gary Phillips, Roy Unruh, and David Lopatto.

4. Executive Director Paul Rider gave the financial report of the Academy (this information and other items are given later in this annual report). He presented data suggesting that a dues increase is justified for the 1994 calendar year. Members who pay the annual dues and attend the annual meeting pay $50.00 a year to the IAS.

The membership paid $22.07 per member to IAS in dues and registration fees in 1992 (includes those not attending annual meeting). Expenses per year per member in 1992 (excluding the Iowa Science Foundation) were $55.48. The difference between what members pay and what costs are, is made up through farm income, grants, state aid, donations, and other miscellaneous income. IAS expenses, not including any administrative salary/ wages (i.e., just operational costs and journal costs, excluding ISF costs), amounts to over $33.00 per member per year. It was moved (and seconded) that member dues for the 1994 calendar year be raised from $30.00 to $35.00 per member (and all other dues, such as student, etc. be raised accordingly and consistent with this amount and standing policies). The motion passed.

5. Rider urged members to submit manuscripts to Ken Windom, editor of the Journal of the Iowa Academy of Science.

6. The meeting adjourned at 1:50 p.m. so that standing committees could hold short meetings starting at 2:00 p.m.

REVIEW OF ACADEMY ACTIVITIES 1992-93

The year was another successful one for the Academy, its leadership and its committees. Goals were established and most committees were able to perform their tasks in an effective way. The following information describes committee activities.

Annual Meeting
Chair: Gary Downs

The Annual Meeting Committee met on October 7, 1992 on the campus of Luther College, Decorah, to plan the program for the 105th Annual Meeting. Director of Meetings and Programs, Gary Downs, called the group together after an initial meeting with the local arrangements committee. Several of the section chairs attended. Administrative Assistant Doris Mitchell attended on behalf of Executive Director Paul Rider.

The meeting adjourned at 1:50 p.m. so that standing committees could hold short meetings starting at 2:00 p.m.

Committee on Committees
Chair: Jean Prior

The committee met twice during the 1992-93 year. It met at the annual meeting held on the University of Northern Iowa Campus in April, 1992, and also on November 14, 1992, on the Oakdale Campus of the University of Iowa (Charles Wunder supplied the facilities and hospitality, with the gratitude and appreciation of the committee).

During the November meeting, the committee selected individuals to be asked to serve on the various committees during the coming year. These individuals were contacted by letter in late December or early January and asked to respond to President-Elect Jean Prior about their willingness to serve. President-Elect Prior also consulted with potential committee chairs and had the process of selection and confirmation completed in time for the annual meeting at Luther.

The committee also discussed the matter of the Data Base Committee, which has been trying to establish a larger, more useful data base for the IAS and its committees. Charles Wunder, who has been particularly helpful in this regard, indicated his desire to no longer work on this matter. President-Elect Prior expressed her interest in continuation of the effort and her willingness to be involved.

Committee Chair Prior also expressed her appreciation for the assistance of Doris Mitchell in the IAS Office.

Conservation and Preserves
Chair: Lois Tiffany

The committee did not hold any formal meetings, and no report was available at the time this report was written.

Controversial Issues
Chair: Edwin Powell

The committee met four times during the year (9/19/92; 12/5/92; 2/6/93; and 4/23/93). Issues discussed included (1) requests from Maharishi University to rewrite position paper on pseudo-science; (2) articles to be sent to the Iowa Science Teachers Journal for publication; (3) the importance of critical thinking in countering pseudo-science, creationism; (4) ways that committee members could assist teachers in dealing with pseudo-science issues in their classrooms; (5) other controversial issues such as fetal tissue research, animal rights; (6) the efforts of conservative Christian groups to push their agenda into the public school domain; and (7) content of the current position paper on pseudo-science (which remained unchanged).

Education
Chair: Richard Kruse

This committee usually assists in the selection of the Presidential Awards for Excellence in Science and Mathematics Teaching. Tony Hetting of the State Department of Education provided information on nominees who were eventually selected. Those selected were the following individuals:

Virginia Elliott, South Tama Elementary School, Tama
Candace Kilburg, Center Point/Urbana Elementary School, Center Point
Cindy Roberts, Lake View-Auburn Schools, Lake View
Hector Ibarra, West Branch Middle School, West Branch
Doug Nauman, George Washington High School, Cedar Rapids
John Zietlow, West Delaware Middle School, Manchester

Finance
Chair: Burton Loupee

This committee did not have a formal agenda during the year and fund raising activities were carried on by Executive Director Rider. This committee does not usually advise the executive director on budget matters which are regarded as a Board responsibility. The Board believes this committee might be more involved in decisions on investing IAS reserve funds, as well as fund raising.

Iowa Science Foundation
Chair: Warren Dolphin

The committee solicited and evaluated proposals for the 1992-93 fiscal year. It met in March of 1993, at the University of Northern Iowa to distribute proposals to committee members for review. A second meeting on May 18, 1993 at Iowa State University was held to select awards.

Award of 2 grants in public understanding of science, 3 in science education, and 6 in research. The committee recommended that discussion continue on the emphasis in the three categories, on the reviewer evaluation forms, and other issues. Interest was expressed in developing a questionnaire (to be done by Bruce Menzel) to evaluate the program after its first decade (ending this current year).

There were 39 proposals for grants of which the following were
awarded a total of $40,000.00. This amount consisted of $40,000 in state funds. Those receiving grants were:

- **Student Research: An Investment in the Future** $4,959.00
  - Hector Ibarra, West Branch Middle School

- **Molecular Basis of Plant Defense Strategies** $4,991.25
  - Craig S. Tepper, Cornell College

- **An Astronomical Telescope for the Grout Museum of History and Science** $3,251.30
  - Aaron J. Spurr, Grout Museum of History and Science

- **"LEGOs Enhancement for a Simple Machine Curriculum Unit"** $1,100.00
  - Jolane Otto and Marybelle Howard, Central Clinton Community School

- **"Manson Impact Structure Educational Project"** $2,100.00
  - Raymond R. Anderson, Geological Survey Bureau/Iowa DNR

- **"An Adult Education Program in Science"** $4,660.00
  - Mary L. Caffery, Clarke College, Dubuque

- **"Phytolith Analysis of Iowa Mammals and its Implications for Determining the Paleodiet of Extinct Species"** $5,000.00
  - Russell L. Ciochon, University of Iowa

- **"Environmental Education Audio/Visual Equipment"** $1,158.00
  - Mike Wallace, Lyon County Conservation Board

- **"Iowa Bar Conservation Education Project"** $1,751.00
  - Paula Bergstrom, Johnson County Conservation Board

- **"Patterns of Genetic Diversity for Three Rare and Endangered Plant Species of Midwestern Prairie"** $3,000.00
  - Kay Klier, University of Northern Iowa

- **"The Role of Some Parameters of Katydid Male Song in the Attraction of Conspecific Females (Amblycorypha paryipennis)"** $3,469.00
  - Kenneth C. Shaw, Iowa State University

- **"Origin of Methane Gas in Groundwater in Central Iowa"** $4,994.00
  - William W. Simpkins, Iowa State University

- **"Ecology of Native Grasslands in the Loess Hills"** $1,600.00
  - David Glenn-Lewin, Iowa State University

**Membership**

Chair: David Rosien

The committee selected five individuals for Fellow status who were recommended to the Board of Directors and approved. The committee chair reported this as well as other membership matters at the annual business meeting.

**Parish Farm**

Chair: Carol Thompson

The committee met twice during the year and also, at the annual meeting. It continues to be very active.

Matters of interest this year included attention to the ongoing need to use appropriate agricultural practices to keep the farm operating as a "model farm," improvement of the prairie area, ground water sampling, improvement of the woodlot, focus on publicity with articles in several publications and visitors from Russia, development of an article for IAS about the farm, and other matters. The sign was rejuvenated last year, only to have it blown down by storm winds this summer.

**Public Information**

Chair: James Christiansen

The committee was very active in developing a cooperative association between the IAS and the Army Corps of Engineers at the Saylorville Dam Visitors Center. Chair Christiansen arranged meetings between corps personnel and IAS personnel and details were worked out to start the dissemination of informative, education materials at the center.

Professor Phyllis Kingsbury of Drake University agreed to serve as the IAS liaison person with the Corps and keep track of the inventory and funds.

The committee also discussed issues related to making the activities of the IAS more visible and recommended that (1) presenters at the annual meeting consider submitting their abstracts to Charles Wunder for review for possible publicity in local media, (2) the PI committee have a liaison person with the local arrangements committee for the annual meeting, (3) the list of IAS experts should be updated, and (4) the Recognition and Awards Committee work with the PI committee to publicize IAS award winners.

**Recognition and Awards**

Chair: Robert Carmichael

The committee met and discussed possible award winners. The only individual selected this year was Dr. Jay Kopp, Loras College, who received IAS Distinguished College Teaching Award.

**Student Programs**

Chair: Larry Schwinger

The committee worked with Peggy Tilgen, Director of the Iowa Junior Academy of Science, in soliciting and evaluating student research grants. Grants were made to the following students:

- "Determination of Antibody Transfer in Newborn Lambs" $200.00
  - Cameron Schmitt, Stuart-Menlo High School

- "The Antibacterial Effects of Fruit Juices on Escherichia coli" $179.45
  - Allison L. Erion, Marshalltown High School

- "How do Different Concentrations of Various Metal Ions Affect the Population Growth of Daphnia magna?" $200.00
  - Sarah E. Renze, Marshalltown High School

- "Leaching Water Through Fly Ash and Cement Concrete" $200.00
  - Cristi Taylor, Stuart-Menlo High School

- "Effectiveness of Home-Made Ovine Ecthyma Vaccine Versus Pharmaceutical Ovine Ecthyma Vaccine in Sheep" $200.00
  - Eric O'Brien, Stuart-Menlo High School

- "The Effects of Common Agricultural Insecticides on Earthworm Populations" $200.00
  - Timothy Ray O'Brien, Stuart-Menlo High School

- "Use of Polymers in Reducing Trihalomethane Levels Within Water Municipalities" $200.00
  - Karin Wilhelm, Stuart-Menlo High School

The committee was involved in science fair activity through the state and several individuals were invited to give papers at the annual meeting. Scholarship awards in the amount of $500 each were made after these papers were judged which were given to:

- Sarah Renze, Marshalltown High School
- Karin Wilhelm, Stuart-Menlo High School

Representatives chosen for the AJAS trip to Boston, in February, 1993 were:

- Christine Micheel, Marshalltown High School
- Marie J. Peleck, Marshalltown High School

Students selected for the Governor's National Youth Science Camp were:

- Taia Pals, Clinton High School
- Thomas Kang Rhee, Pleasant Valley Community High School

Those selected for National Energy Institutes were:

- Argonne National Laboratory
- Brian Schuster, Cascade High School
- Brookhaven National Laboratory
- Lily Kim, Bettendorf High School
- Fermi National Accelerator Laboratory
- Mike Dawson, MFL Community Schools, Monona
- Lawrence-Berkeley Laboratory
- John Dohrman, Heelan High School, Sioux City
Alternate: Stephanie J. Franks, Lincoln H.S., Council Bluffs
Oak Ridge National Laboratory
Amy Dreyer, Farragut Community School
Alternate: Brent Buckalew, Hamburg High School
Sandia National Laboratory
Aaron Wilt, Westwood High School, Sloan

Several students were selected from Iowa high schools to receive the Outstanding Science Student Award and medallion.

The IJAS assisted in the Iowa Physics Olympics and support for student programs came from Pioneer Hi-Bred, Rolfscreen Company, and the AAAS.

The committee also awarded three high school teachers and three students cash awards to recognize participation in science related activities.

Excellence in Science Teaching Award

This program was directed by Dr. Roy Unruh of the University of Northern Iowa. Eight subcommittees reviewed several applicants and selected winners. The awards were not made at the Awards Luncheon at the Annual Meeting at Luther College. The names are given in the section on the program for the Annual Meeting.

SECTION ACTIVITIES

The sections held sessions as part of the annual meeting. The response to calls for papers was down from previous years.

Iowa Science Teachers Fall Conference

The fall conference of the ISTS was held on October 22, 1992 at the Convention Center in Des Moines, Iowa. The attendance was improved over the previous year Details of the attendance appear in Table 4.

Convention speaker was Dr. Tik Liem of Science Inquiry Enterprises who presented his views on how to stimulate student interest in science.

Table 4. ISTS Fall Conference Attendance

<table>
<thead>
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<th>Walk-in</th>
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<tbody>
<tr>
<td>Members</td>
<td>408</td>
<td>49</td>
</tr>
<tr>
<td>Non-members</td>
<td>248</td>
<td>32</td>
</tr>
<tr>
<td>Students</td>
<td>66</td>
<td>7</td>
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<td>Guests</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Exhibitors</td>
<td>42</td>
<td>-</td>
</tr>
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</table>

*includes presenters

New Members (included in counts) - 119 (25 students; 94 professional)
Presenters - 113 (73 members; 40 nonmembers)
13 people attended only the workshops

ADMINISTRATION

Personnel

Administrative Assistant Doris Mitchell completed her 20th year of service to the Academy and continues providing excellent leadership. She assumed another half-time position in the University of Northern Iowa Museum during the spring semester, and now works for both organizations. This arrangement has worked well because Doris has been willing to work extra hours to make certain that IAS matters receive appropriate attention.

Student helpers Sara Paar and Kathy Rider both became graduates of the University of Northern Iowa in May. Kathy even managed to get married one week later (to UNI graduate Eric Haage from Des Moines). Both have taken full-time jobs in the area, but have continued to assist in our office as the need has arisen.

Executive Director Paul Rider completed his fifth year in his position and the first year on his present three-year appointment.

Dr. Peggy Tilgner of the Biology Department of Wartburg College had a productive year as Director of the Junior Academy. She attended the American Junior Academy of Science in Boston and accompanied our two young scientists who presented papers.

The membership voted to have all five appointed positions reviewed on a regular schedule, meaning the two journal editors will have their reviews in Spring, 1994, during the St. Ambrose meeting. The other three directors will be reviewed in 1995 at the Wartburg meeting.

Facilities

The new suite of offices in Baker Hall at UNI continue to serve the Academy well. The conference room was used for board meetings and other uses.

Grants

The Academy received a $1000 grant from the AAAS for IJAS activities. Pioneer Hi-Bred also supplied $5000 for these activities, which was a restoration to the amount they originally provided during the middle 1980s.

The Iowa Science Foundation grant from the state continues to be administered through the University of Northern Iowa. The amount of funds continues to be $40,000 per year.

The Elementary Science Teaching Section received an additional $6,000 grant from the Iowa Space Grant Consortium through the efforts of Dave Fagle and Gary Downs. These funds will continue paying dues for members as well as for publications of interest to that section.

The Iowa Science Teaching Section implemented the WEHOS Project using the $100,000 grant from the Roy J. Carver Trust of Muscatine, Iowa. Cherin Lee of UNI served as director and 53 teachers participated in a week long workshop on the UNI campus in June. They are not utilizing materials in their own teaching areas.

Publications

The Journal of the Iowa Academy of Science was edited by Ken Windom, of Iowa State University. The calendar year 1992 Volume 90 was published in 4 issues. There were 17 articles and 111 pages by 30 authors.

The Iowa Science Teachers Journal was edited by Carl Bollwinkel with Volume 29, issues 1, 2, and 3 being published.

The publication of the IAS Bulletin did not occur during the year in order to save money, but will be reinstated to provide the membership with needed information. The IJAS Newsletter was not published but the SPARKS newsletter was edited by Suzanne Kelley of Meeker Elementary School in Ames, Iowa.

National Activities

Executive Director Paul Rider represented the Iowa Academy of Science at the AAAS Meeting in February in Boston, Massachusetts. He attended meetings of the National Association of Academies of Science and Section Y of the AAAS.

MEMBERSHIP

The membership data for the past five years are presented in Table 5.

The latest membership figures show a decrease, which may in part be due to a drop in those we have counted as members of the QE (Elementary Science Teachers) Section.

The section membership figures are given in Table 6 for the current year.

FINANCIAL REPORT

Balance Sheet

The balance sheet for the Iowa Academy of Science as a comprehensive organization (combined) as well as an operational unit (IAS) within that comprehensive organization is given in Table 7.

The net income loss for the IAS, discounting the built-in $30,000 deficit due to the artifact in the accounting system that treats the transfer of farm funds as a debit in the IAS account, becomes an actual positive gain, approaching $10,000. This is the difference between the built-in $30,000 deficit and the actual $20,052.88 deficit.

Total IAS assets remain strong for the IAS and the combined
Table 5. Membership 1989-93

<table>
<thead>
<tr>
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<th></th>
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<td>1713</td>
<td>1703</td>
<td>1739</td>
<td>1528</td>
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<td>146</td>
<td>187</td>
<td>181</td>
<td>179</td>
<td>170</td>
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<tr>
<td>Fellow</td>
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<td>238</td>
<td>241</td>
<td>200</td>
<td>187</td>
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<td>46</td>
<td>46</td>
<td>46</td>
<td>45</td>
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<tr>
<td>Distinguished Fellow</td>
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<td>26</td>
<td>27</td>
<td>28</td>
<td>29</td>
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<td>5</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<tr>
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<td>2099</td>
<td>2311</td>
<td>2299</td>
<td>2292</td>
<td>2065</td>
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Table 6. Membership by Section, June 30, 1993

<table>
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<tr>
<th>Section</th>
<th>1992</th>
<th>1993</th>
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<tbody>
<tr>
<td>Agricultural Sciences (U)</td>
<td>145</td>
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<tr>
<td>Anthropology (H)</td>
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<td>Botany (G)</td>
<td>241</td>
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<tr>
<td>Cellular/Molecular Biology (K)</td>
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<tr>
<td>Chemical Education (S)</td>
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<td>Conservation (J)</td>
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<tr>
<td>Engineering (M)</td>
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<tr>
<td>Geology (E)</td>
<td>159</td>
<td>7.6</td>
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<tr>
<td>Inorganic, Analytical</td>
<td>151</td>
<td>7.3</td>
</tr>
<tr>
<td>Physical Chemistry (C)</td>
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<tr>
<td>Linguistics (R)</td>
<td>22</td>
<td>1.0</td>
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<tr>
<td>Organic &amp; Biological</td>
<td>108</td>
<td>5.2</td>
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<tr>
<td>Chemistry (D)</td>
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<td>6.9</td>
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<tr>
<td>Physics (B)</td>
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<td>6.1</td>
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<tr>
<td>Physiology (O)</td>
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<td>2.0</td>
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<tr>
<td>Psychology (I)</td>
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<td>33.4</td>
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<tr>
<td>Science Teaching (Q)</td>
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<tr>
<td>Earth Sci. Teaching (Qg)</td>
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<td>26.4</td>
</tr>
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<td>Zoology (F)</td>
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<td>10.6</td>
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</table>

*Relative Section Interest is the percentage of all IAS members (2065) indicating a particular section interest.

INCOME STATEMENT

Tables 8 and 9 show the income and expenses for the IAS portion of the combined organization. Dues and state aid provide the largest amounts of income for the organization. The state aid is primarily used for operating expenses.
ANNUAL REPORT 1992-1993

Table 9. Expense Allocation 1992-93

<table>
<thead>
<tr>
<th>EXPENSES</th>
<th>Amount</th>
<th>Publications</th>
<th>Programs</th>
<th>Meetings</th>
<th>Administration</th>
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<td>Accounting/Ins.</td>
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<tr>
<td>Banquet/meals</td>
<td>2,119.65</td>
<td></td>
<td>2,119.65</td>
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<td></td>
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<tr>
<td>Clerical</td>
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<td>20,914.51</td>
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<tr>
<td>Equipment</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
<td>0.00</td>
</tr>
<tr>
<td>Equipment Service</td>
<td>1,632.30</td>
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<td></td>
<td></td>
<td>1,632.30</td>
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<td>Grants</td>
<td>40,946.47</td>
<td>$40,646.47</td>
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<td>1,387.00</td>
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<td>Honoraria</td>
<td>29,084.41</td>
<td>$2,499.98</td>
<td>1,000.00</td>
<td>24,197.43</td>
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<tr>
<td>Misc. Expenses</td>
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<td>5,975.88</td>
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<td>Postage &amp; Shipping</td>
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<td>Printing</td>
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<td>2,126.97</td>
<td>5,435.77</td>
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<td>Special Proj.</td>
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<td>Supplies</td>
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<td>230.72</td>
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<td>Telephone</td>
<td>298.23</td>
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<td>Travel</td>
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<td>TOTAL</td>
<td>$154,122.74</td>
<td>$21,673.11</td>
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<td>UNI Subsidy</td>
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<td>TOTAL EXPENSES</td>
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<td>TOTAL INCOME</td>
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Table 10. Combined Income Allocation 1992-93

<table>
<thead>
<tr>
<th>INCOME</th>
<th>Amount</th>
<th>IAS</th>
<th>ISTS</th>
<th>PARISH FARM</th>
<th>GRANTS</th>
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<tbody>
<tr>
<td>Corporate Gifts</td>
<td>$6,350.00</td>
<td>$6,350.00</td>
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<td>$111,736.03</td>
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<td>Reimbursements</td>
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<tr>
<td>TOTAL INCOME</td>
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<td>$34,268.47</td>
<td>$113,433.39</td>
<td>$52,837.42</td>
</tr>
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</table>
Table 11. Combined Expense Allocation 1992-93

<table>
<thead>
<tr>
<th>EXPENSES</th>
<th>Amount</th>
<th>IAS</th>
<th>ISTS</th>
<th>PARISH FARM</th>
<th>GRANTS</th>
</tr>
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<tbody>
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</tr>
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<td>40,946.47</td>
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<td>29,084.41</td>
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<td>TOTAL INCOME</td>
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<td>$150,112.17</td>
<td>$113,433.39</td>
<td>$52,837.42</td>
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<tr>
<td>NET INCOME (LOSS)</td>
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<td>($20,052.88)</td>
<td>$5,744.97</td>
<td>$57,254.32</td>
<td>$5,744.97</td>
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</table>

Table 12. Restricted Assets

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<tr>
<th>Investment</th>
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</thead>
<tbody>
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<td>Life Member Fund</td>
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</tr>
<tr>
<td>Hanson Publication Fund</td>
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<tr>
<td>Savings</td>
<td>$19,871.06</td>
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<tr>
<td>Total</td>
<td>$35,077.14</td>
</tr>
</tbody>
</table>

The goal of the annual meeting paying for itself is still illusive but could be realized through careful planning and the cooperation of the host institution. Registration fees for the meeting will remain at their present level for the time being, although these may require an increase in the near future.

Restricted Assets

Table 12 shows the restricted assets of the Academy. These are distributed among three funds. The Life Member Fund is in a different investment program (Merrill-Lynch Capital Fund) that provides ongoing operating income for the IAS budget as well as reinvestment of income to make the fund grow.

The Savings listed are in reserve funds to be used in emergencies associated with possible drops in farm income or other unanticipated situations. There is also a Merrill-Lynch cash management fund that allows the office to respond to cash flow needs (in addition to a local checking account at Norwest Bank in Cedar Falls). The CMA fund usually has $5,000 to $10,000 in it.

The amounts listed are based on the market value of the Merrill-Lynch funds in which the money is invested, as of June, 1992. These amounts may shift as the market experiences change.

ACADEMY LEADERSHIP 1992-93

Officers

President - William Deskin, Mount Vernon
President-elect - Jean C. Prior, Geological Survey Bureau/DNR
Past President - Luther E. Erickson, Grinnell College
Executive Director - Paul E. Rider, University of Northern Iowa

Table 12. Restricted Assets

<table>
<thead>
<tr>
<th>Investment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Member Fund</td>
<td>$8,756.00</td>
</tr>
<tr>
<td>Hanson Publication Fund</td>
<td>$4,450.08</td>
</tr>
<tr>
<td>Savings</td>
<td>$19,871.06</td>
</tr>
<tr>
<td>Total</td>
<td>$35,077.14</td>
</tr>
</tbody>
</table>

Directors

Marilyn D. Bachmann, Iowa State University
Paul L. Garvin, Cornell College
Bill Gilbert, Simpson College
Connie Mutel, University of Iowa
Dean Hartman, Grant Wood AEA, Cedar Rapids
Roy D. Unruh, University of Northern Iowa

Associate Director of Meetings and Programs
Gary E. Downs, Iowa State University

Director, Iowa Junior Academy of Science
Peggy Tilgner, Wartburg College

Director, Excellence in Science Teaching Award Program
Roy Unruh, University of Northern Iowa

Editor, IOWA SCIENCE TEACHERS JOURNAL
Carl Bollwinkel, Price Laboratory School, University of Northern Iowa

Editor, JOURNAL OF THE IOWA ACADEMY OF SCIENCE
Kenneth E. Windom, Iowa State University

Editor, S.P.A.R.K.S. Newsletter
Suzanne Kelly, Meeker Elementary, Ames

Committee on Committees
Jean C. Prior (Chair), Iowa Geological Survey Bureau/DNR
A.H. Epstein, Iowa State University
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Carl Bollwinkel, University of Northern Iowa
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