

1993


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

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*University of Northern Iowa*

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### Recommended Citation

Rider, Paul E. (1993) "Annual Report of the Iowa Academy of Science, 1992-93," *Journal of the Iowa Academy of Science: JIAS*: Vol. 100: No. 3-4, Article 8.

Available at: <https://scholarworks.uni.edu/jias/vol100/iss3/8>

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

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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 were 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

##### Physiology

Russell Rulon, Luther College

##### Psychology

David Lopatto, Grinnell 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 Dental 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 Schwinger, 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:

Biology - 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.

School, Woodward

Junior High - Lyn Countryman, Malcolm Price Laboratory School, Cedar Falls

Physics - Charles S. Gesiriech, Urbandale High School, Des Moines

### 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

Table 1. Registered Attendance 1993

	Pre-registered**	Walk-in		TOTAL
		Fri.	Sat.	
Members:				
Professional	149	29	15	193
Student	42	2	4	58
<b>SUB-TOTAL</b>	<b>201</b>	<b>31</b>	<b>19</b>	<b>251</b>
Nonmembers:				
Professional	14	1	—	15
Student	32	—	—	32
<b>SUB-TOTAL</b>	<b>46</b>	<b>1</b>	<b>—</b>	<b>47</b>
Guests	31	—	—	31
<b>TOTAL</b>	<b>278</b>	<b>32</b>	<b>19</b>	<b>329</b>

Table 2. Five Year Average Attendance

YEAR	Non-					No.			
	Members	%	members	%	Guests	%	Total Papers	Ratio	
1989 <sup>1</sup>	338	68.5	129	26.1	26	5.2	493	197	2.5
1990 <sup>2</sup>	447	77.2	103	17.7	29	5.0	579	229	2.5
1991 <sup>3</sup>	333	78.3	67	15.7	25	5.8	425	137	3.1
1992 <sup>4</sup>	308	72.3	69	16.1	49	11.5	426	158	3.7
1993 <sup>5</sup>	250	76.2	47	14.3	31	9.5	328	123	2.6

<sup>1</sup> Buena Vista College

<sup>2</sup> Drake University

<sup>3</sup> Loras College

<sup>4</sup> University of Northern Iowa

<sup>5</sup> Luther College

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 3. Attendance Summary, 105th Session, 1993

	Number of Papers	Attendance
Contributed Papers		
Agricultural Sciences	3	9
Anthropology	5	15
Botany	10	22
Cellular/Molecular Biology	8	15
Chemistry C	10	15
Chemistry D	9	
Conservation	7	
Engineering	14	
Geology	6	40
Nursing	5	
Physics	5	50
Physiology	10	26
Psychology	6	15
Zoology	22	
<b>TOTAL</b>	<b>122</b>	<b>207</b>
Computer Applications in the Chemistry Lab		12
Status of K-12 Science Education Reform in Iowa		50
General Session I		185
General Session II		230
General Session III		150
Special Events:		
Annual Business Meeting		
Awards Luncheon		108
President's Banquet		100

### MINUTES OF THE ANNUAL BUSINESS MEETING

Recital Hall, Center For Life, 1:30 p.m., April 23, 1993

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

fellows 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.

Blocking of the program sections was discussed and several suggestions were made as to possible topics and speakers. The committee did not meet again and all planning went smoothly up and through the meeting.

##### 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 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 Heiting 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

##### Election

Chair: Luther Erickson

The committee met and selected two candidates for President-elect and four for the Board of Directors from among nine nominations for president-elect and for the board positions. Ballots were mailed from the IAS office in March and returned by mid April, 1993. They were tallied and the results were reported on April 22, 1993 at the business meeting in Decorah. The President-elect was Daryl Smith of Cedar Falls, and new board members were Don Perschau from Hoover High School in Des Moines, and Richard Lampe who is Dean of the Faculty at Buena Vista College.

##### 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 awardees.

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" Hector Ibarra, West Branch Middle School	\$4,959.00
"Molecular Basis of Plant Defense Strategies" Craig S. Tepper, Cornell College	\$4,991.25
"An Astronomical Telescope for the Grout Musuem of History and Science" Aaron J. Spurr, Grout Museum of History and Science	\$3,231.30
"LEGOS Enhancement for a Simple Machine Curriculum Unit" Jolane Otto and Marybelle Howard, Central Clinton Community School	\$1,100.00
"Manson Impact Structure Educational Project" Raymond R. Anderson, Geological Survey Bureau/Iowa DNR	\$2,100.00
"An Adult Education Program in Science" Mary L. Caffery, Clarke College, Dubuque	\$4,660.00
"Phytolith Analysis of Iowa Mammals and its Implications for Determining the Paleodiet of Extinct Species" Russell L. Ciochon, University of Iowa	\$5,000.00
"Environmental Education Audio/Visual Equipment" Mike Wallace, Lyon County Conservation Board	\$1,158.00
"Iowa Bat Conservation Education Project" Paula Bergstrom, Johnson County Conservation Board	\$1,751.00
"Patterns of Genetic Diversity for Three Rare and Endangered Plant Species of Midwestern Prairie" Kay Klier, University of Northern Iowa	\$3,000.00
"The Role of Some Parameters of Katydid Male Song in the Attraction of Conspecific Females (Amblycorypha paryipennis)" Kenneth C. Shaw, Iowa State University	\$3,469.00
"Origin of Methane Gas in Groundwater in Central Iowa" William W. Simpkins, Iowa State University	\$4,994.00
"Ecology of Native Grasslands in the Loess Hills" David Glenn-Lewin, Iowa State University	\$1,600

#### Membership

Chair: David Roslien

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 IJAS 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 Tilgner, 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 <i>Escherichia coli</i> "	\$179.45	Allison L. Erion, Marshalltown High School
"How do Different Concentrations of Various Metal Ions Affect the Population Growths of <i>Daphnia magna</i> ?"	\$200.00	Sarah E. Renze, Marshalltown High School
"Leeching 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, Rolscreen 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**

Registration	Pre-registration*	Walk-in	
Members	408	49	457
Non-members	248	32	280
Students	66	7	73
Guests	4	-	4
Exhibitors	42	-	42
Total Attendance			856

\*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 99 was published in 3 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

Category	1989	1990	1991	1992	1993
Member	1534	1715	1703	1739	1528
Student	146	187	181	179	170
Fellow	245	238	241	200	187
Life Member	47	46	46	46	45
Emeritus	97	94	99	98	104
Distinguished Fellow	25	26	27	28	29
Corporate	5	5	2	2	2
<b>TOTAL</b>	<b>2099</b>	<b>2311</b>	<b>2299</b>	<b>2292</b>	<b>2065</b>

Table 6. Membership by Section, June 30, 1993

Section		1992	Relative Section Interest*
Agricultural Sciences	(U)	145	7.0
Anthropology	(H)	41	1.9
Botany	(G)	241	11.6
Cellular/Molecular Biology	(K)	83	4.0
Chemical Education	(S)	167	78.0
Conservation	(J)	233	11.2
Engineering	(M)	70	3.3
Geology	(E)	159	7.6
Inorganic, Analytical			
Physical Chemistry	(C)	151	7.3
Linguistics	(R)	32	1.5
Nursing	(N)	22	1.0
Organic & Biological			
Chemistry	(D)	108	5.2
Physics	(B)	144	6.9
Physiology	(O)	126	6.1
Psychology	(I)	43	2.0
Science Teaching	(Q)	691	33.4
Earth Sci. Teaching	(Qg)	110	5.3
Elementary Sci. Teaching	(Qe)	546	26.4
Zoology	(F)	228	10.6

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

companies. This was also helped by a bequest from the estate of Myrle Burke, of Waverly, who donated 5% of her estate (\$50,000) to the IAS to establish an ornithology scholarship fund. The money was given to the IAS in the Spring of this year.

Table 8. IAS Income Allocation 1992-93

INCOME	ALLOCATION OF INCOME				
	Amount	Publications	Programs	Meetings	Administration
Corporate Gifts	\$ 6,350.00		\$6,350.00		
Dues	41,521.00	\$ 2,528.73		\$ 2,076.75	\$36,915.52
Individual Cont.	375.24		375.24		
Interest/Dividends	2,949.67				2,949.67
Miscellaneous	6,133.93				6,133.93
Other Fees	3,276.50	1,475.00		1,801.50	
Publications Sales	7,301.52	7,301.52			
Registration Fees	5,073.00		186.00	4,887.00	
Reimbursements	10,810.61				10,910.61
Reprint Sales	524.00	524.00			
State Aid	49,754.39	9,950.88	39,803.51		
<b>TOTAL</b>	<b>\$134,069.86</b>	<b>\$21,780.13</b>	<b>\$46,714.75</b>	<b>\$8,765.25</b>	<b>\$56,809.73</b>
UNI Subsidy	16,042.31				16,042.31
<b>TOTAL INCOME</b>	<b>\$150,112.17</b>	<b>\$21,780.13</b>	<b>\$46,714.75</b>	<b>\$8,765.25</b>	<b>\$72,852.04</b>

Table 7. Balance Sheet June 30, 1993

CATEGORY	IAS	COMBINED
	Assets	Assets
Checking	\$18,641.21	\$163,685.64
Savings	29,483.58	29,483.58
Office Equipment	17,450.13	17,450.13
Accumulated Depreciation	(14,181.29)	(14,181.29)
Heritage Book Inventory	332.50	332.50
State Appropriation	0.00	0.00
Sweatshirt Inventory	369.50	390.20
Certificates, ISTS		1,908.41
Saylorville Gift Shop Inventory/Cash Box		1,159.54
Parish Farm		
Deferred Coop Dividend	-	38,190.65
PIK Certificate Inventory	-	0.00
240 Acre Farm	-	66,550.00
<b>TOTAL ASSETS</b>	<b>52,095.63</b>	<b>304,969.36</b>
	IAS	COMBINED
	Liabilities	Liabilities
Taxes Payable	\$ 2,488.44	2,488.44
State Appropriations	0.00	0.00
<b>TOTAL LIABILITIES</b>	<b>2,488.44</b>	<b>2,488.44</b>
	IAS	COMBINED
	Fund Balance	Fund Balance
Restricted Fund Balance	\$33,288.96	\$151,075.41
Unrestricted Fund Balance	16,318.25	81,404.43
Farm Transfer to IAS	35,000.00	35,000.00
Farm Transfer from Farm	-	(35,000.00)
ISTS Fund Balance	-	15,319.94
WHEOS (Carver) Project	-	54,681.16
<b>TOTAL FUND BALANCE</b>	<b>\$84,607.21</b>	<b>\$302,480.94</b>
	IAS	COMBINED
	Total Fund Balance	Total Fund Balance
Total Fund Balance	\$84,607.21	\$302,480.94
Net Income (Loss)	(20,052.88)	46,541.35
Total Equity	64,554.33	349,022.29
<b>TOTAL EQUITY &amp; LIABILITIES</b>	<b>\$67,042.77</b>	<b>\$351,510.73</b>

#### 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



Table 9. Expense Allocation 1992-93

EXPENSES	ALLOCATION OF EXPENSES				
	Amount	Publications	Programs	Meetings	Administration
Accounting/Ins.	\$ 3,032.25				\$ 3,032.25
Banquet/meals	2,119.65			\$ 2,119.65	
Clerical	20,914.51				20,914.51
Equipment	0.00				0.00
Equipment Service	1,632.30				1,632.30
Grants	40,946.47		\$40,646.47		300.00
Honoraria	29,084.41	\$ 2,499.98	1,000.00	1,387.00	24,197.43
Misc. Expenses	5,975.88				5,975.88
Postage & Shipping	8,735.98	1,540.02	909.92	832.99	5,453.05
Printing	28,361.01	17,633.11	2,126.97	3,165.16	5,435.77
Special Proj.	0.00		0.00		
Supplies	4,673.94		1,020.62	230.72	3,422.60
Taxes	3,084.63				3,084.63
Telephone	298.23				298.23
Travel	5,263.48		2,660.98	1,029.73	1,572.77
TOTAL	\$154,122.74	\$21,673.11	\$48,364.96	\$8,765.25	\$75,319.42
UNI Subsidy	\$ 16,042.31				\$16,042.31
TOTAL EXPENSES	\$170,165.05	\$21,673.11	\$48,364.96	\$8,765.25	\$91,361.73
TOTAL INCOME	\$150,112.17				
NET IAS INCOME (LOSS)	(\$ 20,052.88)				

to fund grants for the Iowa Science Foundation. Some of those funds (less than \$10,000) are used for publication costs and other programs. The state aid remained at \$50,000 of which \$40,000 went to the Iowa Science Foundation grants with the rest covering printing and administrative costs.

The annual meeting came close to paying for itself this year. The Board left the registration fees at their previous level. Registration fees will remain the same for the meeting at St. Ambrose University, since the membership dues were raised to \$35.00 for the coming year.

The University of Northern Iowa continues to contribute a subsidy to Academy operations through released time for the executive director and facilities. Discussions about providing printing costs for the Iowa Science Teachers Journal, and student assistant costs continue.

Tables 10 and 11 show the combined income and expenses for the organization. The accounting procedures recognize "companies" in the combined organization. These include the IAS operations, the Parish

Farm, the Iowa Science Teaching Section (ISTS), and the Carver Trust grant. The Elementary Science Teaching Section grant was not treated as a separate company because it is being administered through the University of Northern Iowa. Funds from this grant show up as miscellaneous income.

The net incomes of the Parish Farm and ISTS were positive while those for IAS was negative. As mentioned previously, some of the farm funds are transferred to the IAS budget, which reduces its deficit. These combined companies experienced a total income of \$350,708.70 and a total expense of \$304,167.35, for a net gain of \$46,541.35. This gain was a combination of spending the Carver grant money and receiving the Burke Estate money. The Parish Farm experienced a record income year.

The executive director is anticipating that a dues increase approved by the membership will be of help to avoid deficits caused by increased expenses in several categories.

Table 10. Combined Income Allocation 1992-93

INCOME	ALLOCATION OF INCOME				
	Amount	IAS	ISTS	PARISH FARM	GRANTS
Corporate Gifts	\$ 6,350.00	\$6,350.00			
Dues	41,521.00	41,521.00			
Parish Farm	111,736.03			\$111,736.03	
Grants	51,099.75				\$51,099.75
Individual Cont.	375.24	375.24			
Interest/Dividends	5,774.42	\$2,949.167	\$ 481.72	605.36	1,737.67
Miscellaneous	18,945.93	6,133.93	11,662.75	1,092.00	
Other Fees	3,276.50	3,276.50			
Publications Sales	7,301.52	7,301.52	0.00		
Registration Fees	27,197.00	5,073.00	22,124.00		
Reimbursements	10,810.61	10,810.61			
Reprint Sales	524.00	524.00			
State Aid	49,754.39	49,754.39			
TOTAL	\$334,666.39	\$134,069.86	\$34,268.47	\$113,433.39	\$52,837.42
UNI Subsidy	\$ 16,042.31	\$16,042.31			
TOTAL INCOME	\$350,708.70	\$150,112.17	\$34,268.47	\$113,433.39	\$52,837.42

Table 11. Combined Expense Allocation 1992-93

EXPENSES	ALLOCATION OF EXPENSES				
	Amount	IAS	ISTS	PARISH FARM	GRANTS
Accounting	\$ 3,038.53	\$ 3,032.25			\$ 6.28
Banquet/meals	12,429.23	2,119.65	\$10,231.78		77.80
Clerical	20,914.51	20,914.51			
Contract Services	0.00	0.00			
Equipment	0.00	0.00			
Equipment Service	1,632.30	1,632.30			
Parish Farm	56,179.07			\$56,179.07	
Grants	40,946.47	40,946.47			
Honoraria	33,089.95	29,084.41	4,005.54		
Misc. Expenses	17,552.30	5,975.88	5,860.77		5,715.65
Postage/Shipping	9,625.81	8,735.98	889.83		
Printing	33,206.64	28,361.01	4,845.63		
Special Proj.	500.00	0.00	500.00		
Supplies	47,253.21	4,673.94	1,280.27		41,299.00
Taxes	3,084.63	3,084.63			
Telephone	1,080.43	298.23	782.20		
Travel	7,591.96	5,263.48	2,328.48		
Regional Prog., ISTS	0.00		0.00		
<b>TOTAL</b>	<b>\$288,125.04</b>	<b>\$154,122.74</b>	<b>\$30,724.50</b>	<b>\$56,179.07</b>	<b>\$47,098.73</b>
UNI Subsidy	\$ 16,042.31	\$ 16,042.31			
<b>TOTAL EXPENSES</b>	<b>\$304,167.35</b>	<b>\$170,165.05</b>	<b>\$30,724.50</b>	<b>\$56,179.07</b>	<b>\$47,092.45</b>
<b>TOTAL INCOME</b>	<b>\$350,708.70</b>	<b>\$150,112.17</b>	<b>\$34,268.47</b>	<b>\$113,433.39</b>	<b>\$52,837.42</b>
<b>NET INCOME (LOSS)</b>	<b>\$46,541.35</b>	<b>(\$20,052.88)</b>	<b>\$3,543.97</b>	<b>\$57,254.32</b>	<b>\$5,744.97</b>

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.

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Table 12. Restricted Assets

	Investment
Life Member Fund	\$ 8,756.00
Hanson Publication Fund	\$ 4,450.08
Savings	\$19,871.06
<b>Total</b>	<b>\$33,077.14</b>

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**Contributed Papers**

All abstracts of contributed papers received on time for the 1993 meeting were printed in an abstract booklet which is available from the IAS Office upon request.

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