

1992


Annual Report of the Iowa Academy of Science, 1991-92

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University of Northern Iowa

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Annual Report of the Iowa Academy of Science, 1991-92

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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, 1991 to June 30, 1992. 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 104TH ANNUAL MEETING

The University of Northern Iowa campus provided the setting for the 104th Annual Meeting of the Iowa Academy of Science, held on Friday and Saturday, April 24 and 25, 1992, in Cedar Falls, Iowa. The expansion section of the J.W. Maucker Student Union was used for the general sessions, symposia, and registration. The Awards Luncheon and the President's Banquet were also held in the expansion.

The weather was cool and brisk, making the walk between the Union, Wright Hall, McCollum Science Hall, and Latham Hall somewhat more challenging than usual. There were over 425 registered for the meeting and additional attendees at the general sessions pushed the attendance to well over 500. The general sessions included a presentation on AIDS by June Osborn, the chairperson for the National Commission on Aids, and a description of Yellowstone Park after the 1988 fire season by Donald Despain, District Director of the park. Both received publicity in the Des Moines Register with the Aids presentation making the front page.

The chair for local arrangements was Dr. James Macmillan, former executive director of the Iowa Academy of Science and a chemistry professor at UNI. He was ably assisted by other members of the College of Natural Sciences (Roger Hanson, Daryl Smith, Lynn Brant), by Duane McDonald who directs conferences at UNI, and by Judith Harrington, a professor of communicative disorders and a member of the College of Humanities and Fine Arts.

The meeting was organized through the efforts of Gary Downs, Director of Meetings and Programs, who called the Annual Meeting Committee together at Loras in September of 1991. The committee consisted of the following individuals:

Annual Meeting Committee

Local Arrangements Committee Chair

Jim Macmillan

Section Chairs:

Agricultural Sciences

Thomas Colvin, Iowa State University

Anthropology

James Collins, University of Iowa

Cellular & Molecular Biology

David Grant, Pioneer Hi-Bred International

Botany

Doug Zehr, William Penn College

Chemical Education

Dave Hampton, Wartburg College

Chemistry, Inorganic, Physical, Analytical

Curtiss Hanson, University of Northern Iowa

Chemistry, Organic and Biological

Dan Quinn, University of Iowa

Conservation

Dennis Schlicht, Iowa Lepidoptera Study

Earth Science Teaching

Barbara Berquam, Waterloo, Iowa

Elementary Science Teaching

Kathy Field, Corning Elementary School

Engineering

David Wilder, Iowa State University

Geology

Kenneth DeNault, University of Northern Iowa

Linguistics

Bruce Willis, Luther College

Nursing

Nancy Stradley Kramer, Allen Hospital Nursing School

Physics

Roger Hanson, University of Northern Iowa

Physiology

Robert Simpson, University of Northern Iowa

Psychology

John Sorflaten, Fairfield, Iowa

Science Teaching

Dean Gorrell, West High School, Iowa City

Zoology

James Christiansen, Drake University

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 24-25, 1992. The various aspects of the meeting are described in the following sections.

Iowa Junior Academy of Science Program

Russ Wiley, 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 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 Boston, MA., in February of 1993. Students and their projects are listed below.

"A Comparison of Nitrate Use Between Different Corn (*Zea mays*)"

Eric G. Berggren, Marshalltown High School

"Cognitive Mediation Through Nonsimilarity-based Conceptualization" Kelley Burgess , Stuart-Menlo High School	4:00	SENIOR POSTERS
"Zinc Content and Histopathology of Normal and Rat Prostate" Roberta Davis , Davenport Central High School	5:00	SOCIAL HOUR
"Suspended Spans: Phase II" Pete Gulbranson , Stuart-Menlo High School	6:15	PRESIDENT'S BANQUET President Luther Erickson, presiding Presentation of Iowa Academy of Science Awards Installation of new president and remarks by outgoing president Erickson Response by President William Deskin
"How do Electromagnetic Fields Affect the Growth of Fish?" Nathan Holmes , Walcott School	8:00	GENERAL SESSION II President William Deskin, presiding "Observing High Speed Motions with Electronic Flash" Dr. Loren M. Winters , North Carolina School of Science and Mathematics, Durham, NC
"Subcloning of the 5' End of Oat Phytochrome" Brenda Kirchhoff , Waverly-Shell Rock High School		
"Effects of Far-Red Light and Nitrogen on the Vegetative Growth of Barley" Anne Pitts , Valley High School, West Des Moines		
"Compress It to the Max: Phase II" Cristi Taylor , Stuart-Menlo High School	8:00	EXHIBITS
"The Determination of Stress Factors and the Influence on Testing in the Elementary and Middle School Classroom" Becky Thielen , Glidden-Ralston High School	8:00	SECTION MEETINGS
"Validity and Reliability of Thermogravimetric Analysis for Determining Carbonate Impurities" Marci Lynne Thomas , Marshalltown High School	11:00	GENERAL SESSION III "Yellowstone After the Fire" Dr. Donald Despain , Yellowstone District Park Director, Yellowstone Park, WY
Carbon Filtration: A Solution for Removing Trihalomethanes from Drinking Water?" Karin Wilhelm , Stuart-Menlo High School	1:00	SECTION MEETINGS Iowa Natural History Association and Geological Society of Iowa Field Trip
"Phi and Pentagons" Winston Yang , Davenport Central High School	1:50	Joint AAPT and Physics Section Meeting

SATURDAY, APRIL 25

Program Summary

The program consisted of three general sessions, three symposia, and 18 section meetings involving 174 presentations (poster papers included). There were two formal meals including the Awards Luncheon and the President's Banquet. No box luncheon was held this year. The following gives the details of the events on the program.

PROGRAM SUMMARY

THURSDAY, APRIL 23	
6:00	Board of Directors Meeting/Dinner
FRIDAY, APRIL 24	
8:00	EXHIBITS
	IJAS POSTERS
	IJAS PRESENTATIONS
10:30	GENERAL SESSION I President Luther Erickson, presiding "The Second Decade of AIDS" Dr. June Osborn , Chair, National Commission on AIDS, University of Michigan, Ann Arbor
12:00	AWARDS LUNCHEON
1:30	BUSINESS MEETING
2:00	STANDING COMMITTEE MEETINGS
2:30	CONCURRENT SYMPOSIA
	<i>The Lighthouse Schools Project: Iowa's State Systemic Initiative for the Improvement of Mathematics and Science Education</i>
	<i>Iowa Space Grant Consortium Project: Land Grant to Space Grant</i>
	<i>Supercomputing in Science</i>

The Awards Luncheon

This took place in Room C of the Union Expansion. There were 130 individuals present. Student Programs Committee Chair Larry Schwinger, recognized students who had participated in science fairs and other science related activities in Iowa during the past year.

Newly appointed 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 Boston in February of 1993. The scholarship winners were:

Anne Pitts, Valley High School, West Des Moines
Becky Thielen, Glidden-Ralston High School, Glidden

The AJAS representatives were:
Cristi Taylor, Stuart-Menlo High School, Stuart
Karin Wilhelm, Stuart-Menlo High School, Stuart

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 - **Sharon Fisher**, North High School, Des Moines
Chemistry - **Vernon Slaymaker**, Ottumwa High School
Earth Science - **Mark A. Brockmeyer**, City High School, Iowa City
Elementary - **Mark E. Schneider**, Washington Township, Kalona
Environmental Education - **Horace S. Hendricks**, Lincoln High School, Des Moines
General/Multiple - **James A. Grife**, Colfax-Mingo High School
Junior High - **Chris S. Soldat**, Mid-Prairie Junior High School, Wellman
Physics - **Douglas E. Nauman**, Washington High School, Cedar Rapids

The President's Banquet

The President's banquet was held in Room C following the social hour which was held in the foyer of the Union Expansion. Attending were 125 members and guests. President Luther Erickson introduced

Paul Rider, IAS executive director who filled in for Robert Carmichael, chair of the Recognition and Awards Committee, who was traveling in China. Only two awards were made this year. Nominators were introduced who presented the award winners. The winners were:

Distinguished Fellow Award

Earl J. Hammond, Iowa State University

Distinguished Iowa Scientist Award

(no award was made in this category)

Distinguished Service Award

James L. Christiansen, Drake University

President Erickson presented the year in review for the Academy before presenting the gavel to incoming President William Deskin. President Deskin spoke to the gathering of his goals for the coming year.

The banquet adjourned so that those attending could attend the evening general session featuring Loren M. Winters, a physics teacher who made a presentation on high speed photography.

Attendance

Tables 1 and 2 present attendance figures for the 1992 meeting and for the past five meetings, respectively.

Table 1. Registered Attendance 1992

	Pre-registered**	Walk-in		TOTAL
		Fri.	Sat.	
Members:				
Professional	210	26	18	254
Student	48	3	3	54
SUB-TOTAL	258	29	21	308
Nonmembers:				
Professional	11	5	5	21
Student	47	—	1	48
SUB-TOTAL	58	5	6	69
Guests	49	—	—	49
TOTAL	365	34	27	426

**New Members included in member count

Table 2. Five Year Average Attendance

YEAR	Members		Non-members		Guests		No. Total Papers		Ratio
	%	%	%	%	%	%	%		
1988 ¹	471	67.0	182	25.9	49	6.9	702	285	2.5
1989 ²	338	68.5	129	26.1	26	5.2	493	197	2.5
1990 ³	447	77.2	103	17.7	29	5.0	579	229	2.5
1991 ⁴	333	78.3	67	15.7	25	5.8	425	137	3.1
1992 ⁵	308	72.3	69	16.1	49	11.5	426	174	2.4

¹ Iowa State University

⁴ Loras College

² Buena Vista College

⁵ University of Northern Iowa

³ Drake University

There was an expected decline in the total attendance, perhaps due to the economic recession or some other factor. But the attendance was still substantial and 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 (2.4) was similar to the 2.5 ratios seen in several previous years. This suggests that the meeting was attended by more individuals interested in presenting papers than last year.

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 well-attended in relation to other years and this con-

tinues 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, 104th Session, 1992

	Number of	
	Papers	Attendance
Contributed Papers		
Agricultural Sciences	12	15
Anthropology	9	18
Botany	9	35
Cellular/Molecular Biology	10	17
Chemistry C	10	
Chemistry D	11	20
Conservation	11	
Elementary Science Teaching	7	15
Engineering	15	
Geology	20	52
Linguistics	6	9
Nursing	6	8
Physics	10	31
Physiology	7	16
Psychology	10	16
Science Teaching	20	55
Zoology	12	26
TOTAL	158	
The Lighthouse Schools Project		
Iowa's State Systemic		65
Initiative for the Improvement of Mathematics and Science Education		
Supercomputing in Science		30
Iowa Space Grant Consortium: Land Grant to Space Grant		15
TOTAL	130	
General Session I		201
General Session II		175
General Session III		300
Special Events:		
Annual Business Meeting		65
Awards Luncheon		130
President's Banquet		125

MINUTES OF THE ANNUAL BUSINESS MEETING

Room A Maucker Expansion, 1:30 p.m., April 24, 1992

President Luther Erickson called the meeting to order at 1:30 p.m.

1. President Erickson made remarks on the status of Academy. He indicated that Paul Rider had been reappointed as Executive Director of IAS for another three year term (until June 30, 1995). He also reported on the grants received during the year that included a \$100,000 Carver Charitable Trust grant to the Iowa Science Teaching Section (due to the good work of Jim Kubichek and some effort by Wayne Anderson and Paul Rider), a \$15,000 grant from the Iowa Utility Association (for which a symposium on health effects of EMFs was held on February 12th in Des Moines, with Anderson, Rider, and Sam Tuthill working on this grant, and Rider arranging the symposium), and a \$12,000 grant from the Iowa Space Grant Consortium for the Elementary Science Teaching Section (due to the work of Gary Downs and Dave Fagle). He reported on a Dec. 10, 1991 symposium on technology transfer co-sponsored by the IAS, the Iowa Business Council, and the Wallace Technology Foundation. He indicated summary reports on that event (which he wrote) were available at the registration desk. He

- announced that Dr. Peggy Tilgner, of the Wartburg College Biology Department, had been appointed as Director of the Junior Academy of Science to replace Russ Wiley (who was commended for an excellent job during his term as director).
2. Ruth Swenson reported the results of the election. Jean Prior was elected as the new President-Elect and new Board members were Roy Unruh and Dean Hartman. 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, Clifford Johnson, Robert Lambert, Ester Poneck, and Claflin Von Yeast). New emeritus members were named (Verner Jensen, Paul Waite, David Wilder). No new fellows were named and Chair Roslien expressed concerns that nominations for fellows be prepared in a rigorous and appropriate fashion.
 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 might be justified for the 1994 calendar year (the membership would vote on this in 1993). Members who pay the annual dues and attend the annual meeting pay \$50.00 a year to the IAS. The membership pays \$22.73 per member per year to IAS in dues and registration fees (includes those not attending annual meeting). Expenses per year per member (excluding the Iowa Science Foundation) is \$54.75. 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), amount to almost \$32.00 per member per year. Rider also called attention to the newly printed Index of the Proceedings of the Iowa Academy of Science (a project of former editors Marilyn and Roger Bachmann, and University of Iowa librarian Jeff Dodd), which was available to members at cost (\$14.00 per copy).
 5. There was no old or new business brought before the gathering.
 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 1991-92

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 September 29, 1991 in the Royal Oak Dining Room in Maucker Union on the UNI Campus to plan the program for the 104th Annual Meeting. Director of Meetings and Programs, Gary Downs, called the group together after an initial meeting with the local arrangements committee. 14 of the 19 section chairs attended. Executive Director Paul Rider also attended.

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: Sam Tuthill

This committee met on October 21, 1991 in Iowa City, Iowa, to consider the pool of potential committee members developed through solicitation of one-third of the membership, requests to standing committee chairs, and requests of Board members. Individuals were considered relative to IAS service and JIAS publications. Balancing committee membership was sought in relation to geographic location, gender, affiliation, IAS involvement (long and short term, both).

Through efficient and careful consultation, most committee assign-

ments were made before the end of the calendar year. Some were made near the time of the annual meeting. President-Elect Tuthill resigned his position following this meeting, since he had left the state and taken up residence in Minnesota. Executive Director Rider assumed the responsibilities of contacting individuals identified for possible service as well as committee chairs.

Conservation and Preserves

Chair: E. Arthur Bettis III

The committee did not hold any formal meetings but there was communication between the State Preserves Advisory Board and the committee chair, who shared information with other members. This was done through correspondence and the committee felt that it was in a better position to understand concerns of the Board and to select appointees to the Board in the future.

Controversial Issues

Chair: Lenore Durkee

The committee met three times during the year. Its goal was to continue to investigate a number of issues that could lead to position papers on behalf of the IAS. In particular, the committee decided to submit articles to the Iowa Science Teachers Journal with reference lists to assist teachers who needed information on controversial issues.

The committee held a lengthy session at the Annual Meeting to discuss some issues relative to the pseudo-science position paper and decided to recommend to the Board that the paper remain in its current form.

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:

Elementary

C. David Christiansen, Malcolm Price Laboratory School, Cedar Falls

Margaret Sadeghpour, Lincoln Community Elementary School, Mechanicsville

Robert G. Wilson, North Winneshiek Community School, Decorah

Secondary

Verlin Fleagle, Central Clinton Community High School, DeWitt

Daniel McGrail, Carlisle Community High School, Carlisle

Lowell Wiele, Garfield Junior High School, Chariton

Election

Chair: Ruth Swenson

The committee met twice and selected two candidates for President-elect and four for the Board of Directors from among nine nominations for president-elect and 30 for the board positions. Ballots were mailed from the IAS office in March and returned by mid April, 1992. They were tallied and the results were reported on April 23, 1992 at the business meeting in Dubuque. The President-elect was Jean Prior of Iowa City, and new board members were Roy Unruh of the University of Iowa, and Dean Hartman of Grant Wood AEA.

The new election procedures (no required signatures) resulted in the receipt of 643 valid and only 7 invalid ballots.

Finance

Chair: Burton Loupee

This committee did not have a formal agenda during the year and fund raising activities were carried on by Past-President Anderson and Executive Director Rider. This committee does not usually advise the executive director on budget matters which are regarded as a Board responsibility.

Iowa Science Foundation

Chair: Warren Dolphin

The committee solicited and evaluated proposals for the 1991-92 fiscal year. It met on February 26, 1992, at the University of Northern Iowa to distribute proposals to committee members for review. A second meeting on May 13, 1992 at University of Iowa was held to select awardees.

Committee Chair Dolphin held a workshop on proposal writing at the ISTS Meeting in October of 1992 in Des Moines. Several individuals attended.

Award categories were emphasized by awarding of 3 grants in public understanding of science, 4 in science education, and 6 in research. The committee recommended that (1) funding preference be given to proposals with impact on Iowa which do not have other funding sources, (2) matching fund arrangements be encouraged by those submitting proposals, and (3) that cover sheets have a space to indicate in which category a given proposal is supposed to be judged.

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:

"The Biochemistry and Genetics of Medium-Chain Triglyceride Biosynthesis"	\$3,500
B.J. Nikolau, W.W. Roath, Iowa State University	
"Social Comparison and Risk Perception: Factors Promoting Smoking Cessation and Abstinence"	\$5,000
Frederick X. Gibbons, Iowa State University	
"Radon Exposure Levels in Northeast Iowa"	\$4,350
James D. Langhus, MFL Community School District	
"Expansion of the Loras College Diatom Culture Collection"	\$4,500
David B. Czarnecki, Loras College	
"Survey of Iowa Stream Mayflies"	\$2,209
Larry Pedigo; Tom Klubertanz, Iowa State University	
"Dinosaurs: A Hands-on Curriculum Guide for Primary Teachers"	\$2,148
John Karn, Science Station, Cedar Rapids	
"Paleo-ocean Chemistry of Devonian Seas in Iowa"	\$5,000
Greg A. Ludvigson, University of Iowa	
"Recycling and Solid Waste Management Programs Within Iowa Park and Recreation Areas: Park Manager Study"	\$4,803
Robert A. Robertson, Iowa State University	
"Stereochemical Micro-mapping of Enzyme Active Sites with Inert Metal Complexes"	\$5,000
David Speckhard, Loras College	
"Ecology of Native Grassland Communities in the Loess Hills"	\$3,500
David Glenn-Lewin; Thomas Jurik, Iowa State University	

Membership

Chair: David Roslien

The committee did not meet during the year. It discussed the matter of fellow nominations over the phone among its members. Two nominations for fellow status were considered but it was concluded that the applications were not sufficiently documented to allow for appropriate consideration.

Parish Farm

Chair: Richard Hall

The committee met three times during the year and was very active in a number of ways. It invited Rich Pirog, Education Coordinator of the Leopold Center, to visit the farm. He made several suggestions that seemed worthy (have the Extension Service host field days, work with local 4H clubs, build picnic tables and encourage public use, have self-guided tours, have continuous review of conservation practices, approach farm magazines about featuring the farm, work with the

Leopold Center and Hawkeye Tech on research projects at the farm).

Some efforts to implement these suggestions were pursued in subsequent actions by the committee. The effort to prepare a video on the farm is continuing. The sign was refurbished and repainted. The water testing program is ongoing with Roger Bachmann of Iowa State University providing analysis.

Public Information

Chair: Tom Fenton

The committee met at the University of Northern Iowa on April 24, 1992, at the annual meeting in Cedar Falls.

There has not been great deal of activity this year for the committee. Its recommendation that sponsorship of Nature on IPTV has been implemented by support of \$2500 to cover the program once each month for a year.

Recognition and Awards

Chair: Robert Carmichael

The committee was not able to persuade the Governor's office to provide support this year for the Governor's Science Medals. These awards have recognized and honored achievement in Iowa's science and technology community. Hopefully, they will be continued when support is found for the program.

The committee reviewed and selected awardees for the Academy's own awards. These are described in the annual meeting section.

Student Programs

Chair: Larry Schwinger

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

"The Effects of Common Agricultural Fertilizers and Chemicals on Earthworm Populations"	\$200.00
Timothy Ray O'Brien, Stuart-Menlo High School	
"Testing Susceptibility of Rats to Trichinosis"	\$200.00
Justin Wilhelm, Stuart-Menlo High School	
"The Stress and Strain of Cement Structures"	\$200.00
Cristi Taylor, Stuart-Menlo High School	
"Environmental and Economic Feasibility of Alcohol Blended Fuels"	\$ 85.20
Sara K. Winnike, Marquette Catholic High School, West Point	
"A Comparison of Nitrate Use by Different <i>Zea mays</i> Hybrids"	\$157.36
Eric G. Berggren, Marshalltown High School	
"The Effects of Lawn-care Treatments on <i>lumbricus terrestris</i> "	\$130.00
Marie Peleck, Marshalltown High School	
"The Effects of Metal Ions on Cerio Daphnia"	\$200.00
Sarah E. Renze, Marshalltown High School	
"Validity and Reliability of Termogravimetric Analysis for Determining Carbonate Impurities"	\$200.00
Marci Lynne Thomas, Marshalltown High School	
"Laughing Gas (N ₂ O) Isn't Just Funny Anymore"	\$200.00
Allison Lynn Erion, Marshalltown High School	
"Relationship Between the Octane Level of a Gasoline Engine and the Power and Fuel Consumption of a 4-stroke Engine"	\$200.00
Joseph M. Kosinski, Marshalltown High School	
"Water Along the Platte River"	\$200.00
Mindy Sue Carson, Diagonal High School	
"Particulate Matter in Our Air"	\$184.00
Larelle L. Kunkle, Stuart-Menlo High School	

The committee was involved in science fair activity throughout 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:

Anne Pitts, Valley High School, West Des Moines

Becky Thielen, Glidden-Ralston High School, Glidden

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

Cristi Taylor, Stuart-Menlo High School, Stuart

Karin Wilhelm, Stuart-Menlo High School, Stuart

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

Dawn M. Simon, Cascade High School, Cascade

Paul A. Wolf, Hempstead High School, Dubuque

Alternates: **Megan Neilsen**, Dike High School

Jayson Gesme, South O'Brien High School

Those selected for National Energy Institutes were:

Argonne National Laboratory

Terry Koch, Beckman High School, Dyersville

Brookhaven National Laboratory

Nicole Brunkan, Bishop Heelan Catholic High School, Sioux City

Fermi National Accelerator Laboratory

Scott Thompson, MFL Community Schools, Monona

Lawrence-Berkeley Laboratory

Laurel Andersen, Treynor High School

Lawrence-Livermore National Laboratory

Kara M. Kohler, Ankeny High School

Oak Ridge National Laboratory

Megan Nielsen, Dike High School

Pacific Northwest Laboratory

Jeffrey K. Lake, Fort Madison High School

General Alternates:

Jayson Gesme, South O'Brien High School, Paullina

Coquelicot Fossland, Abraham Lincoln High School,

Council Bluffs

Deann E. Hodge, Clarinda High School

A total of 125 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 UNI. The names are given in the section on the program for the Annual Meeting.

The awards for the 1990-91 year were made in October at the annual meeting of the ISTS, since the process had not been completed in time for the Loras College meeting in April of 1991.

SECTION ACTIVITIES

The sections held sessions as part of the annual meeting. The response to calls for papers was good.

Iowa Science Teachers Fall Conference

The fall conference of the ISTS was held on October 24, 1991 at the Convention Center in Des Moines, Iowa. The attendance was improved over the previous year (804 compared to 586), probably because no NSTA regional meeting was held near the date of this meeting. The details of the attendance appear in Table 4.

Convention speakers included Roger Johnson of the University of Minnesota Cooperative Education Center, Roger Knutson, head of the Luther College Biology Department, who was the featured luncheon

speaker, and Tom and Monta Manney from Kansas State University who provided a workshop on genetics.

Table 4. ISTS Fall Conference Attendance

Registration	Pre-registration*	Walk-in
Members	329	62
Non-members	284	40
Students	39	1
Guests	13	-
Exhibitors	36	-
Total Attendance	804	

*counts include new members and presenters

ADMINISTRATION

Personnel

Administrative Assistant Doris Mitchell completed her 19th year of service to the Academy and continues providing excellent leadership. Student helpers Sara Paar and Kathy Rider did a first-rate job in assisting the functions of the IAS Office and will be with the Academy through the next year.

Executive Director Paul Rider completed his fourth year in his position and the third year on his present appointment. The Board reviewed his performance in April and reappointed him to a second three-year term (until 1995).

The Board also appointed Dr. Peggy Tilgner of the Biology Department of Wartburg College to be the new Director of Junior Academy. She is active in the American Junior Academy of Science and had been active in junior academy efforts in Nebraska before coming to Iowa. She replaces Russell Wiley of UNI who provided two excellent years of leadership to the Junior Academy.

Facilities

One of the more exciting developments this past year was the joint decision reached by UNI and the IAS to move the office of the Academy from the Chemistry Department in McCollum Science Hall to a new and larger space in Baker Hall. The suite of rooms includes adequate storage space and a conference room. The rooms were redecorated and provide beautiful views of the campus.

This decision by the UNI administration represents a commitment to the Academy to assist it in being more visible and effective on campus and throughout the state.

Grants

The Academy received a \$1000 grant from the AAAS for IJAS activities. Pioneer Hi-Bred also supplied \$3000 for these activities.

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 a \$12,000 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 through the efforts of Jim Kubichek, Wayne Anderson, and Paul Rider secured a \$100,000 grant for the WEHOS Project from the Roy J. Carver Trust of Muscatine, Iowa.

Rider and Anderson, with assistance from Sam Tuthill, also secured a \$15,000 grant from the Iowa Utility Association. This money was used to assist the IAS in sponsoring a symposium on the possible health effects of electromagnetic radiation on February 12, 1992 at the Embassy Suites Hotel in Des Moines, Iowa.

Publications

The Journal of the Iowa Academy of Science was edited by Ken Windom, of Iowa State University. The calendar year 1991 Volume 98 was published in 4 issues. There were 31 articles and 200 pages by 61 authors.

The Iowa Science Teachers Journal was edited by Carl Bollwinkel with Volume 28, 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 Kelly of Meeker Elementary School in Ames, Iowa.

The IAS also published a limited number of copies of the total Index of the Proceedings of the Iowa Academy of Science. This index, prepared by Jeff Dodd at the University of Iowa Library at the urging of former editors Marilyn and Roger Bachmann, includes author and subject classifications for the entire publication sequence from the beginning of the Proceedings up to the point in 1987 when the name was changed to the Journal of the Iowa Academy of Science. It was dedicated to former executive director Robert W. Hanson and paid for by his memorial publication fund. Copies are available at cost from the IAS Office (\$14.00 each).

National Activities

President-elect William Deskin and Executive Director Paul Rider represented the Iowa Academy of Science at the AAAS Meeting in February in Chicago, Illinois. They attended meetings of the National Association of Academies of Science and Section Y of the AAAS.

Table 5. Membership 1988-92

Category	1988	1989	1990	1991	1992
Member	1331	1534	1715	1703	1739
Student	131	146	187	181	179
Fellow	245	245	238	241	200
Life Member	47	47	46	46	46
Emeritus	94	97	94	99	98
Distinguished Fellow	24	25	26	27	28
Corporate	6	5	5	2	2
TOTAL	1878	2099	2311	2299	2292

Table 6. Membership by Section, June 30, 1992

Section	1992	Relative Section Interest*
Agricultural Sciences (U)	161	7.0
Anthropology (H)	47	2.0
Botany (G)	255	11.1
Cellular/Molecular Biology (K)	82	3.5
Chemical Education (S)	163	7.1
Conservation (J)	259	11.3
Engineering (M)	77	3.3
Geology (E)	178	7.7
Inorganic, Analytical Physical Chemistry (C)	158	6.8
Linguistics (R)	37	1.6
Nursing (N)	30	1.3
Organic & Biological Chemistry (D)	122	5.3
Physics (B)	151	6.5
Physiology (O)	124	5.4
Psychology (I)	51	2.2
Science Teaching (Q)	121	5.2
Earth Sci. Teaching (Qg)	121	5.2
Elementary Sci. Teaching (Qe)	717	31.2
Zoology (F)	228	9.9

*Relative Section Interest is the percentage of all IAS members (2292) indicating a particular section interest.

MEMBERSHIP

The membership data for the past five years are presented in Table 5. A slight decrease in membership has occurred during the current year, amounting to a loss of 7 members.

The section membership figures are given in Table 6 for the current year. There were nine sections that gained membership and nine that lost membership or remained about the same.

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, was \$6900, approximately. This is approximately half the amount of funds that were requested from the Space Consortium grant for the Elementary Science Teaching Section for the last half of the fiscal year (first half of the calendar year) but which were not released to the IAS by UNI as of June 30, 1992. With that in mind, the budget condition would have been slightly on the positive side of the ledger, which is appropriate for a non-profit organization.

Table 7. Balance Sheet June 30, 1992

CATEGORY	IAS	COMBINED
	Assets	Assets
Checking	\$ 7,361.50	\$123,830.75
Savings	29,405.34	29,405.34
Office Equipment	17,072.15	17,072.15
Accumulated Depreciation	(10,747.96)	(10,747.96)
Heritage Book Inventory	157.50	157.50
State Appropriation	0.00	0.00
Sweatshirt Inventory	615.45	615.45
Certificates, ISTS		5,011.86
Parish Farm		
Deferred Coop Dividend	-	29,842.92
PIK Certificate Inventory	-	0.00
240 Acre Farm	-	66,550.00
TOTAL ASSETS	43,863.98	261,738.01
	IAS	COMBINED
	Liabilities	Liabilities
Taxes Payable	\$ 2,525.20	2,525.20
State Appropriations	0.00	0.00
TOTAL LIABILITIES	2,525.20	2,525.20
	IAS	COMBINED
	Fund Balances	Fund Balance
Restricted Fund Balance	\$30,166.78	\$96,716.78
Unrestricted Fund Balance	10,926.05	50,547.42
Farm Transfer to IAS	32,000.00	32,000.00
Farm Transfer from Farm	-	(32,000.00)
ISTS Fund Balance	-	11,775.97
WHEOS (Carver) Project	-	100,172.64
TOTAL FUND BALANCE	\$73,092.83	\$259,212.81
	IAS	COMBINED
	Total Fund Balance	Total Fund Balance
Total Fund Balance	\$73,092.83	\$259,212.81
Net Income (Loss)	(36,897.57)	106,551.91
Total Equity	36,195.26	365,764.72
TOTAL EQUITY & LIABILITIES	\$38,720.46	\$368,289.92

Table 8. IAS Income Allocation 1991-92

INCOME	ALLOCATION OF INCOME				
	Amount	Publications	Programs	Meetings	Administration
Corporate Gifts	\$ 4,500.00		\$4,500.00		
Dues	38,449.50	\$ 6,042.32		\$ 1,107.50	\$32,229.68
Individual Cont.	290.00		290.00		
Interest/Dividends	1,172.89				1,172.89
Miscellaneous	8,479.43				8,479.43
Other Fees	5,665.00	3,650.00		2,015.00	
Publications Sales	6,840.80	6,840.80			
Registration Fees	8,250.71		1,261.21	6,989.50	
Reimbursements	697.33				697.33
Reprint Sales	637.00	637.00			
State Aid	52,500.00	10,483.70	42,016.30		
TOTAL	\$127,482.66	\$27,653.82	\$48,067.51	\$10,112.00	\$41,649.33
UNI Subsidy	14,770.80				14,770.80
TOTAL INCOME	\$142,253.46	\$27,653.82	\$48,067.51	\$10,112.00	\$56,420.13

Total IAS assets (\$43,618.03) were below last year (\$51,668.20) while combined assets increased (\$261,738.01 from \$157,788.73), largely due to the fact that the Carver Trust provided the \$100,000 in grant money to the IAS accounts, although the grant period will start in summer, 1993.

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 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, again, cost more than the income taken in from registration fees, banquet ticket purchases, and contributions

from the host institution. The difference amounted to approximately the same as last year. The Board left the registration fees at their previous level. Registration fees will remain the same for the meeting at Luther College and additional attempts will be made to economize even further in order to bring meeting costs in line with registration and other meeting income.

The University of Northern Iowa continues to contribute a subsidy to Academy operations through released time for the executive director, although it has discontinued providing any printing costs for the Iowa Science Teachers Journal, and student assistant costs used by the ISTJ editor. This amount is \$14,770.80. Provision of physical facilities and utility costs are not included in this amount.

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

Table 9. Expense Allocation 1991-92

EXPENSES	ALLOCATION OF EXPENSES				
	Amount	Publications	Programs	Meetings	Administration
Accounting/Ins.	\$ 3,960.25				\$ 3,960.25
Banquet/meals	2,395.39			\$ 2,395.39	
Clerical	22,002.02				22,002.02
Equipment	457.88				457.88
Equipment Service	1,609.50				1,609.50
Grants	43,791.09		\$43,516.09		275.00
Honoraria	26,676.86	\$ 2,500.00	1,000.00	1,000.00	22,176.86
Misc. Expenses	183.00				183.00
Postage & Shipping	9,110.80	1,712.40	722.26	695.58	5,980.56
Printing	35,361.75	23,441.42	914.70	3,165.12	7,840.51
Special Proj.	2,500.00		2,500.00		
Supplies	5,344.24		1,256.87	549.80	3,537.57
Taxes	2,837.75				2,837.75
Telephone	623.86				623.86
Travel	7,525.84		3,010.25	2,306.11	2,209.48
TOTAL	\$164,380.23	\$27,653.82	\$52,920.17	\$10,112.00	\$73,694.24
UNI Subsidy	\$ 14,770.80				\$14,770.80
TOTAL EXPENSES	\$179,151.03	\$27,653.82	\$52,920.17	\$10,112.00	\$88,465.04
TOTAL INCOME	\$142,253.46				
NET IAS INCOME (LOSS)	(\$ 36,897.57)				

Table 10. Combined Income Allocation 1991-92

INCOME	ALLOCATION OF INCOME				
	Amount	IAS	ISTS	PARISH FARM	GRANTS
Corporate Gifts	\$ 4,500.00	\$4,500.00			
Dues	38,449.50	38,449.50			
Parish Farm	77,250.33			\$77,250.33	
Grants	100,000.00				\$100,000.00
Individual Cont.	290.00	290.00			
Interest/Dividends	2,182.34	\$1,172.85	\$ 595.81	241.00	172.64
Miscellaneous	25,564.93	8,479.47	9,660.00	7,425.50	
Other Fees	5,665.00	5,665.00			
Publications Sales	6,862.95	6,840.80	22.15		
Registration Fees	28,660.71	8,250.71	20,410.00		
Reimbursements	697.33	697.33			
Reprint Sales	637.00	637.00			
State Aid	52,500.00	52,500.00			
TOTAL	\$343,260.09	\$127,482.66	\$30,687.96	\$84,916.83	\$100,172.64
UNI Subsidy	\$ 14,770.80	\$14,770.80			
TOTAL INCOME	\$358,030.89	\$142,253.46	\$30,687.96	\$84,916.83	\$100,172.64

University of Northern Iowa. Funds from this grant will show up on next year's tables 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 \$358,030.89 and a total expense of \$251,478.98, for a net gain of \$106,551.91. This gain was largely due to the Carver grant and the ISTS meeting income.

The executive director is anticipating that a dues increase will be necessary after the 1993 calendar year to avoid deficits caused by increased expenses in printing, postage, and other necessary expenditures.

The goal of the annual meeting paying for itself was almost achieved and should be realized through careful planning and the cooperation of the host institution. It is hoped that the registration fees for the meeting can 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 Robert W. Hanson Publication Fund was used to pay for the publication of the Index of the Proceedings, prepared by Jeff Dodd at the University of Iowa Library. This

Table 11. Combined Expense Allocation 1991-92

EXPENSES	ALLOCATION OF EXPENSES				
	Amount	IAS	ISTS	PARISH FARM	GRANTS
Accounting	\$ 3,960.25	\$ 3,960.25			
Banquet/meals	12,512.04	2,395.39	\$10,116.65		
Clerical	22,002.02	22,002.02			
Contract Services	0.00	0.00			
Equipment	457.88	457.88			
Equipment Service	1,609.50	1,609.50			
Parish Farm	45,809.86			\$45,809.86	
Grants	43,791.09	43,791.09			
Honoraria	29,187.96	26,676.86	2,511.10		
Misc. Expenses	4,942.91	183.00	4,759.91		
Postage/Shipping	9,864.39	9,110.80	753.59		
Printing	39,149.26	35,361.75	3,787.51		
Special Proj.	3,000.00	2,500.00	500.00		
Supplies	6,001.77	5,344.24	657.53		
Taxes	2,837.75	2,837.75			
Telephone	934.08	623.86	310.22		
Travel	10,647.42	7,525.84	3,121.58		
Regional Prog., ISTS	0.00		0.00		
TOTAL	\$236,708.18	\$164,380.23	\$26,518.09	\$45,809.86	\$0.00
UNI Subsidy	\$ 14,770.80	\$ 14,770.80			
TOTAL EXPENSES	\$251,478.98	\$179,151.03	\$26,518.09	\$45,809.86	\$0.00
TOTAL INCOME	\$358,030.89	\$142,253.46	\$30,687.96	\$84,916.83	\$100,172.64
NET INCOME (LOSS)	\$106,551.91	(\$36,897.57)	\$4,169.87	\$39,106.97	\$100,172.64

reduced the amount by \$3,000. 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 \$5000 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.

Table 12. Restricted Assets

	Investment
Life Member Fund	\$ 8,055.79
Hanson Publication Fund	\$ 4,394.01
Savings	\$19,620.71
Total	\$32,070.51

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