

1994

Annual Report of the Iowa Academy of Science, 1993-94

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University of Northern Iowa

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Annual Report of the Iowa Academy of Science, 1993-94

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PREFACE

Since 1976, annual reports have served as a continuing record of the activities of the Iowa Academy of Science and an archive for its history. These augment the 100 year IAS history written in the centennial year of 1975.

This report covers the period from July 1, 1993 to June 30, 1994. 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 106TH ANNUAL MEETING

St. Ambrose University in Davenport, Iowa, was the location of the 106th Annual Meeting of the Iowa Academy of Science, held on the Friday and Saturday, April 22 and 23, 1994, in Davenport, Iowa. The facilities used included Galvin Hall (lobby used for registration and exhibition), The Chapel (for general session speakers), Lewis Hall, and the Lee Lohman Center, where the Awards Luncheon and the President's Banquet were held.

The weather was like a more typical spring in Iowa with the attendance exceeding 450 individuals. The mighty Mississippi River, which had flooded the area in 1993, had returned to its normal channel and the downtown area had been restored to some semblance of normalcy. One general session dealt with a presentation by Dr. Donald Schwert from North Dakota University on ice age insect studies. The second general session was a presentation by Dr. Ken Culver of Iowa Methodist Hospital on gene therapy (which excited all who attended) while the third session was a description of the great flood of 1993 by Dr. Nick Melcher who is District Chief for the Iowa Water Resources Division of the U.S. Geological Survey Bureau in Iowa City.

The chair for local arrangements was Dr. Richard Legg, Professor of Biology at St. Ambrose. 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 in Davenport in November in 1993. The committee consisted of the following individuals:

Annual Meeting Committee

Local Arrangements Committee Chair

Richard Legg

Section Chairs:

Agricultural Sciences

Joseph Sebranek, Iowa State University

Anthropology

William Green, University of Iowa

Cellular & Molecular Biology

James Johnson, U.O.M.H.S., Des Moines

Botany

George, Knaphus, Iowa State University

Chemical Education

Jeff Hepburn, Dowling High School, Des Moines

Chemistry, Organic, Physical, Analytical

M.L. Caffery, Clarke College

Chemistry, Organic and Biological

Kirk Manfredi, University of Northern Iowa

Conservation

Bill Pusateri, Iowa DOT

Earth Science Teaching

Sherman Lundy, Burlington High School

Elementary Science Teaching

Margaret Lyda, Longfellow Elementary, Waterloo

Engineering

Edward C. Jones, Jr., Iowa State University

Geology

Greg A. Ludvigson, University of Iowa

Linguistics

Judith F. Harrington, University of Northern Iowa

Nursing

(none designated)

Physics

Peter Bruecken, Bettendorf High School

Physiology

Richard Engen, Iowa State University

Psychology

Veronica Dark, Iowa State University

Science Teaching

Mark Brockmeyer, City High School, Iowa City

Zoology

Robert Seager, University of Northern Iowa

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 22-23, 1994. 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 Atlanta, in February of 1995. Students and their projects are listed below.

"Testing Iron to Oil Ratios in Magnetorheological Fluids"
Christopher Burke, Marshalltown Senior High School, Marshalltown.

"Development of a Computer Interface for Individuals with Mobility Impairments"
Jeremiah Esquig, Central High School, Davenport

"Powerdams 2: A Step Forward"
Jamie Harding, West High School, Davenport

"Taking a Byte Out of Inefficiency - Phase II"
Natha Holmes, West High School, Davenport

"The Effects of Mechanical Damage on Zea Mays and Glycine Max During Germination"
Matt Heuton, Glidden-Ralston Community School, Glidden

"The Effects of Cation Exchange Resins on Toxins in a Continent Jejunal Reservoir for Dialysis"
Arindam Kar, Northern University High School, Cedar Falls

"Cigarette Smoke Damage to DNA Protection by M-5 and Other Anti Oxidants"
Candice Kelly, Maharishi High School, Fairfield

"The Effect the Carbon Dioxide Laser has on Dentin Permeability"
Paul McCreight, Central High School, Davenport

"Effects of PG-600 and Depo-Provera on Activated Lambing in *ovus aries*"
Eric O'Brien, Stuart-Menlo High School, Stuart

"The Effects of Dental Cements and Tension on Tooth Enamel: Phase II"
Christine Micheel, Marshalltown Senior High School, Marshalltown

"Acid Precipitation on Agricultural Crops"
Alicia Schiller, Central Lee High School, Donnellson

"Using a Rotative Device to Improve and Strengthen Endurance with the Elderly"
Laura Schmitt, Stuart-Menlo High School, Stuart

"Applying Photo Voltaic Spectral Responses to Conditional Solar Spectra"
Justin Wilhelm, Stuart-Menlo High School, Stuart

Program Summary

The program consisted of three general sessions, three symposia, and 14 section meetings involving 126 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 details of the events on the program.

PROGRAM SUMMARY

THURSDAY, APRIL 21

Board of Directors Dinner and Meeting

FRIDAY, APRIL 22

REGISTRATION
 EXHIBITS

IJAS POSTERS

IJAS PRESENTATIONS

SECTION MEETINGS

GENERAL SESSION I: "A Faceted Eye's Perspective on Ice Age Environment in Iowa", Dr. Donald Schwert, North Dakota University, Fargo

AWARDS LUNCHEON

BUSINESS MEETING

STANDING COMMITTEE MEETINGS

CONCURRENT SYMPOSIA

Midwest Climate Change and Variability

Iowa's Preserve System

Issues facing K-12 Science Education During the 90's

SENIOR POSTERS

SOCIAL HOUR/PRESIDENT'S BANQUET

Presentation of Iowa Academy of Science Awards

Installation of new president, Daryl Smith and remarks by outgoing president, Jean Prior

GENERAL SESSION II: "Gene Therapy as a New Frontier in Medicine", Dr. Kenneth Culver, Iowa Methodist Hospital, Des Moines

SATURDAY, APRIL 23

REGISTRATION

EXHIBITS

SECTION MEETINGS/SPECIAL SESSIONS

GENERAL SESSION III: "The Floods of 1993", Dr. Nick Melcher, Iowa District Chief, U.S. Geological Survey Bureau, Iowa City

BOX LUNCH

PHYSICS SECTION/AAPT MEETING

SECTION MEETINGS/SPECIAL SESSIONS

SUNDAY, APRIL 24

EARTH SCIENCE TEACHERS SECTION/GEOLOGICAL SOCIETY OF IOWA FIELD TRIP

The Awards Luncheon

This took place on the mezzanine of the Lee Lohman Center. There were 130 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 Atlanta in February of 1995. The scholarship winners were:

Matt Heuton, Glidden-Ralston Community School, Glidden

Laura Schmitt, Stuart-Menlo High School, Stuart

The AJAS representatives were:

Nathan Holmes, West High School, Davenport

Eric O'Brien, 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 a member of the IAS Board of Directors. This program showcases some of Iowa's finest science teachers. The winners were:

Keven Loepnick (Biology), City High School, Iowa City

Danielle Spaete (Physics), Pleasant Valley Community High School, Pleasant Valley

Edward Saehler (Environmental Education), Helen Lemme Elementary School, Iowa City

Richard Ehlers (Chemistry), Perry Community High School, Perry

G. Dave Lewis (Earth Science), Northwest Junior High, Coralville

Roger Alvin Beane (Junior High Science), Oelwein Junior High School, Oelwein

Edward Robert Brown (General/Multiple Science), Bondurant-Parrar Junior-Senior High, Bondurant

Ernest Fisher (Elementary Science), Monroe Elementary, Des Moines

Recognition of Dr. Carl Bollwinkel as retiring editor of the Iowa Science Teachers Journal was made by ISTS President Peg Steffen, who presented him with a plaque.

The President's Banquet

The President's banquet was also held on the mezzanine of the Lee Lohman Center following the social hour which was held in the lower lobby of the Lee Lohman Center. Attending were 115 members and guests.

President Jean Prior introduced Richard Wacha, chair of the Recognition and Awards Committee, who introduced the nominators of IAS award winners, who described the individuals and why they were selected to be recipients of the IAS awards for Distinguished Iowa Scientist, Distinguished Iowa Science Teacher(s), and Distinguished Service.

Distinguished Fellow Award

(no award in this category)

Distinguished Iowa Scientist Award

Dr. M. Ali Tabatabai, Iowa State University

Distinguished Service Award

Dr. Lois Tiffany, Iowa State University

Distinguished Iowa Science Teacher

Dr. Thomas B. Moye, Coe College

Dr. Rodney Rogers, Drake University

President Prior presented the year in review for the Academy before presenting the gavel to incoming President Daryl Smith. President Smith spoke to the gathering about his goals for the coming year.

The banquet adjourned so that those attending could attend the evening general session featuring Dr. Ken Culver, a medical doctor from Des Moines who spoke on gene therapy.

Attendance

Tables 1 and 2 present attendance figures for the 1994 meeting and for the past five meetings, respectively.

Total attendance was larger than the 1993 meeting, both of which were held at the edge of our population region. Once again, much credit must go 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 (3.2) was similar to last year (3.4) and greater than the 2.5 ratios seen in previous years. Since the Iowa Science Teaching Section shifted its emphasis to presenting papers at its fall meeting and holding group discussion meetings in the spring, the number of papers has decreased as a consequence, accounting for some of the increase in the attendee-to-paper ratio.

The number of papers presented and number attending section meetings as well as other sessions are given in Table 3. The section meetings were well-attended and continue 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.

MINUTES OF ANNUAL BUSINESS MEETING

Room 160, Galvin Hall, 1:30 p.m., April 22, 1994

President Jean Prior called the meeting to order, 1:35 p.m.

1. President Prior made remarks on the status of Academy. She reviewed the year for the IAS in terms of activities. Described various projects and progress on them.

Table 1. Registered Attendance 1994

	Pre-registered**	Walk-in		TOTAL
		Fri.	Sat.	
Members:				
Professional	175	11	8	
Student	29			
SUB-TOTAL	204	11	8	223
Nonmembers:				
Professional	33	1	10	
Student	57	12	16	
SUB-TOTAL	90	13	26	129
Guests	50	2	-	52
TOTAL	344	26	34	404

Table 2. Five Year Average Attendance

Year	Members	%	Non-Members	%	Guests	%	Total	No. Papers	Ratio
1990 ¹	447	77.2	103	17.7	29	5.0	579	229	2.5
1991 ²	333	78.3	67	15.7	25	5.8	425	137	3.1
1992 ³	308	72.3	69	16.1	49	11.5	426	158	3.7
1993 ⁴	250	76.2	47	14.3	31	9.5	328	123	2.6
1994 ⁵	223	55.2	119	29.4	52	12.8	404	126	3.2

¹ Drake University

² Loras College

³ University of Northern Iowa

⁴ Luther College

⁵ St. Ambrose University

Table 3. Attendance Summary, 106th Session, 1994

	Number of Papers	Attendance
Contributed Papers		
Agricultural Sciences	10	17
Anthropology	10	17
Botany	10	20
Cellular/Molecular Biology	8	24
Chemistry C	8	15
Chemistry D	11	15
Conservation	12	30
Engineering	3	5
Geology	22	NA
Physics	4	NA
Physiology	10	NA
Psychology/Linguistics	7	25
Zoology	11	23
TOTAL	126	
Iowa's Preserve System		80
Issues Facing K-12 Science Education During the 90's		100
Midwest Climate Change and Variability		110
General Session I		133
General Session II		215
General Session III		150
Special Events:		
Annual Business Meeting		60
Awards Luncheon		130
President's Banquet		115

2. William Deskin reported the results of the election. Ross Iverson was elected the new President-Elect and new Board members were Neil Bernstein and Eugenia Farrar. They were introduced to those in attendance.
3. Membership Committee Chair James Walters gave the report of the membership including deceased members (a moment of silence was observed for James Kercheval, Richard Penney, and Robert Cook). New emeritus members were named (Arthur Bosch, C. Clinton Rila, and Stan Watkins). No new fellows were named.
4. Executive Director Paul Rider gave the financial report of the Academy (This information and other items are given later in this annual report).
5. Rider reported on the Saylorville Visitor Center project and how it succeeded despite serious flooding.
6. The meeting adjourned at 1:55 p.m. so that standing committees could hold short meetings starting at 2:00 p.m.

REVIEW OF ACADEMY ACTIVITIES 1992-93

Each year, the committees of the Academy attempt to fulfill their charges in an effective way. While some of them have found it difficult in recent years to do this, because of the changing ways in which the Academy operates, a summary of activities is presented below. Perhaps it will be prudent for the Board to consider changing the committee structure.

Annual Meeting

Chair: Gary Downs

The Annual Meeting Committee met on November 10, 1983 on the campus of St. Ambrose University in Davenport, to plan the program for the 106th 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, as well as 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: Daryl Smith

The committee met once during the 1993-94 year. The chair communicated with members by telephone and mail as individuals were identified as possible committee appointees. The committee held a meeting on the University of Northern Iowa campus in late March to finalize its selections. Most appointments were made prior to the annual meeting and were announced to the Board at its April meeting.

Conservation and Preserves

Chair: Richard Schultz

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

Controversial Issues

Chair: David Erkenbrack

The committee met twice during the year (9/11/93 and 4/22/94). Issues addressed included (1) assisting the ISTS in dealing with controversial issues; (2) submission of articles by committee members to the Iowa Science Teachers Journal for publication; (3) careful scrutiny of the efforts at MIU in Fairfield to advance doctrines of questionable scientific merit. Progress was made in these areas with two articles appearing in the ISTJ on the nature of science and on the logic of falsification, both from committee members. Chair Erkenbrack also was a presenter in the ISTS symposium on issues facing K-12 education.

The committee remains one of the more active and effective ones in the IAS.

Education

Chair: David Fagle

This committee (or some members of it) usually assists in the selection of the Presidential Awards for Excellence in Science and Mathematics Teaching. Tony Heiting (a committee member) of the State Department of Education provided information on nominees who were eventually selected. Those selected were the following individuals:

James Christensen, Galva-Holstein Middle School, Galva
Tim L. Houts, Cedar Heights Elementary School, Cedar Falls
Linda Scheuermann, Roland-Story Elementary School, Story City
Ernest Schiller, Central Lee Community School, Donnellson
Chris Soldat, Mid-Prairie Junior High School, Kalona
Mike Zeller, Woodward-Granger High School, Woodward

Election

Chair: William Deskin

The committee met on December 18, 1993, at Grinnell College. It selected two candidates (Ross Iverson and Constance Mutel) for President-elect and four for the Board of Directors (Neil Bernstein, Eugenia Farrar, David Grant, Richard Hall) from among several 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, 1994 at the business meeting in Davenport. The President-elect was **Ross Iverson** of Marshalltown, and new board members were **Neil Bernstein** from Mount Mercy College in Cedar Rapids, and **Eugenia Farrar** from Iowa State University in Ames.

Finance

Chair: Burton Loupee

This committee did not have a formal agenda during the year. 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: David Hampton

The committee solicited and evaluated proposals for the 1994-95 fiscal year. It met on April 4, 1994, at the University of Northern Iowa to distribute proposals to committee members for review. A second meeting on May 16, 1994, at Iowa State University, Ames was held to select awardees.

Award of grants in public understanding of science, in science education, and in research were made. The discussion continued on the emphasis in the three categories, on the reviewer evaluation forms, and other issues. A questionnaire to be developed by Bruce Menzel to evaluate the program after its first decade is still an item of committee interest.

There were 43 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:

"Getting the Scoop on Drinking Water and Local Dirt"	\$4995.00
Hector Ibarra , West Branch Middle School	
"An Astronomical Telescope Loan Program"	\$1900.00
Aaron J. Spurr , Grout Museum of History & Science, Waterloo	
"An Investigation of LHRH Neuron Migration within the Forebrain Using Olfactory Transplants Between Distantly Related Amphibia"	\$3300.00
Gerald W. Eagleson , Loras College, Dubuque	
"The Use of a Raptor Migration Research Program in Science Education"	\$4123.00
Robert W. Black , Cornell College, Mount Vernon	
"Brass Instrument Vibration Patterns"	\$4970.00

Peter L. Hoekje , University of Northern Iowa "Odonata of Northwestern Iowa: Have any Gone Extinct in the Past 80 Years?"	\$3930.00
Robert W. Cruden , University of Iowa, Iowa City "Paleoclimate Record of the Dakota Formation in Iowa?"	\$2150.00
Greg A. Ludvigson , University of Iowa, Iowa City Nature Center Exhibit: "Children of the Loess"	\$4000.00
Dawn M. Snyder , Woodbury County Conservation Board "Forest Structure and Composition in Ledges State Park: Eleven Years of Change in an Iowa Forest"	\$2600.00
James W. Raich , Iowa State University, Ames "A Teacher/Student Plant Database"	\$4988.00
Ed Peterson , Des Moines Public Schools "Illustrations for Descriptions of Iowa Prairie Plants"	\$4000.00
Paul A. Christiansen , Cornell College, Mount Vernon "Synthesis of Triptycene Related Compounds"	\$1000.00
Adrian M. Docken , Luther College, Decorah	

Membership

Chair: James Walters

The committee selected no individuals for Fellow status this year to be recommended to the Board of Directors for approval. 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 at the farm and also held an additional meeting. It continues to be very active. Matters of interest this year included:

1. Replacement of the sign, which was accomplished in grand fashion.
2. Improvement of the prairie (it was burned in May, new plants were provided by Carol Thompson and Lynette Seigley, concern about additional spraying of the southern section).
3. Groundwater sampling was continued (by Dr. Luis Gonzalez at the University of Iowa).
4. An article for publication in the Journal of the Iowa Academy of Science was completed by Dave Dozark (was accepted).
5. The buffer strip of grass was re-seeded.

Public Information

Chair: James Christiansen

The committee was very active in running the Saylorville Dam Visitors Center. Chair Christiansen and Dr. Phyllis Kingsbury continue to make the display at the center attractive and effective.

The committee is still interested in issues related to making the activities of the IAS more visible (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: Richard Wacha

The committee met and discussed possible award winners. Those selected this year are mentioned earlier in the report.

Student Program

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:
"Electromagnetic Fields and Their Effect on Seed Germination and Plant Growth" \$200

Adam Thomas Hohl, Central Lee High School, Donnellson
"A Study of the Relationship Between Energy Output of Certain Types of Photovoltaic Cells and Various Wavelengths of Available Sunlight" \$ 92

Justin Wilhelm, Stuart-Menlo High School, Stuart
"Food or Mutagen?" \$ 98

Deborah Guthrie, Stuart-Menlo High School, Stuart
"Will Electromagnetism Affect Observable Gene Traits in *Drosophila*?" \$200

Niki Taylor, Stuart-Menlo High School, Stuart
"Using a Rotative Device to Help Build Strength and Endurance in the Elderly" \$200

Laura Schmitt, Stuart-Menlo High School, Stuart
"The Effects of Depo-provera and PG-600 on out-of-season Lambing in *Ovis aries*" \$199

Eric O'Brien, Stuart-Menlo High School, Stuart

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:

Matt Heuton, Glidden-Ralston Community School, Glidden

Laura Schmitt, Stuart-Menlo High School, Stuart

Representatives chosen for the AJAS trip to San Francisco in February of 1994 were:

Nathan Holmes, Davenport

Eric O'Brien, Stuart

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

Ethan Bonebrake, Delhi

Blaine Grady, Monona

Those selected for National Energy Institutes were:

Argonne National Laboratory

Kari Ellingson, Ames

Brookhaven National Laboratory

Annagreta Birch, Ames

Fermi National Laboratory

Chris Krapfl, Cascade

Lawrence-Berkeley National Laboratory

Grant Robbins, Dubuque

Lawrence-Livermore National Laboratory

Andy Vogel, Ames

Oak Ridge National Laboratory

Jennifer Dolan, Dubuque

Sandia National Laboratory

Kyle Wehring, Treynor

The Outstanding Science Student Award and medallion was awarded to 80 science students from Iowa high schools.

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 made at the Awards Luncheon at the Annual Meeting at St. Ambrose. 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 similar to last year.

Iowa Science Teachers Fall Conference

The fall conference of the ISTS was held on October 21, 1993 at the Convention Center in Des Moines, Iowa. The attendance was overwhelmingly good. Details of the attendance appear in Table 4.

Convention speaker was Dr. Robert Bakker of the University of Colorado science. He is a recognized expert on dinosaurs and was an advisor on the "Jurassic Park" movies. He spellbound the noon luncheon meeting.

Table 4. 1993 ISTS Fall Conference Attendance

TOTAL ATTENDANCE	1132
NEW Q AND Qe SECTION MEMBERS	211
<u>Registration</u>	<u>Advance Registration</u> <u>Walk-in</u>
Presenters	125 13
Members	424 44
Nonmembers	335 28
Students/Spouse	93 23
Exhibitors	47 -

ADMINISTRATION

Personnel

Administrative Assistant Doris Mitchell in her 21st year of service to the Academy, continued providing excellent leadership. Her half-time position in the University of Northern Iowa Museum continues to challenge her and the director, in terms of getting things done for the IAS, but we try to keep on top of them. 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 Haage both worked in the office part-time but have ended their associations with the Academy. They are gems and we really miss them.

Executive Director Paul Rider completed his sixth year in his position and the 2nd year on his present 3-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 San Francisco and accompanied our two young scientists who presented papers.

Both journal editors chose not to continue and were, therefore, not evaluated by the Board. Carl Bollwinkel ended his 12-year stint as editor of the Iowa Science Teachers Journal and was recognized at the annual meeting with a plaque for his service. Kenneth Windom also received a plaque for his four years as editor of the IJAS. Both will be missed, and are greatly appreciated.

Facilities

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

Grants

The Academy received a \$1000 grant from AAAS for IJAS activities. Pioneer Hi-Bred also supplied \$2500 for these activities, which was half 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 continue to be \$40,000 per year.

The Elementary Science Teaching Section used the remaining part of the grant from the Iowa Space Grant Consortium and is no longer supported by grant money.

The Iowa Science Teaching Section completed the WEHOS Project using the \$100,000 grant from the Roy J. Carver Trust of Muscatine, Iowa. Cherin Lee of UNI served as director.

Publications

The Journal of the Iowa Academy of Science was edited by Ken Windom of Iowa State University. The calendar year 1993 Volume 100 was published in 3 issues. There were 14 articles and 100 pages by 30 authors.

The Iowa Science Teachers Journal was edited by Carl Bollwinkel with Volume 30, 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 Susan 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 San Francisco. He attended meetings of the National Association of Academies of Science and Section Y of the AAAS. He was elected as the Secretary of the NAAS for the coming year.

MEMBERSHIP

The membership data for the past five years are presented in Table 5. The latest membership figures show a decrease, which continues to be related 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.

Table 5. Membership 1990-1994

Category	1990	1991	1992	1993
Member	1715	1703	1739	1582
Student	187	181	179	140
Fellow	238	241	200	176
Life Member	46	46	46	46
Emeritus	94	99	98	101
Distinguished Fellow	26	27	28	28
Corporate	5	2	2	2
TOTAL	2311	2299	2292	2075

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 farm deficit, which was \$35,000 this year, which is actually a transfer of farm funds), becomes an actual positive gain, approximately \$2,000. This is the difference between the built-in \$35,000 farm transfer and the actual \$32,921.64 deficit.

Table 6. Membership by Section

Section		6/30/94	*Relative Section Interest
Agricultural Sciences	(U)	129	6.2
Anthropology	(H)	36	1.7
Botany	(G)	223	10.7
Cellular/Molecular Biology	(K)	75	3.6
Chemical Education	(S)	159	7.6
Conservation	(J)	223	10.7
Engineering	(M)	59	2.8
Geology	(E)	147	7.0
Inorg., Anal., & Phys. Chemistry	(C)	141	6.8
Linguistics	(R)	27	1.3
Nursing	(N)	16	.07
Organic & Biological Chemistry	(D)	98	4.7
Physics	(B)	118	5.7
Physiology	(O)	110	5.3
Psychology	(I)	33	1.6
Science Teaching	(Q)	570	2.7
Earth Science Teaching	(Qg)	102	4.9
Elementary Science Teaching	(Qe)	644	31.0
Zoology	(F)	201	9.7

*Relative Section Interest is the percentage of all IAS members (2075) indicating a particular section interest.

Total IAS assets remain strong for the IAS and the combined companies. The large total deficit is due to the fact that the WEHOS grant funds, which were income in a previous year, were part of this year's expenses. The money has been on hand.

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 appears to almost be paying for itself, although it may be necessary to raise registration fees in the near future. The Board left the registration fees at their previous level. Registration fees will remain the same for the meeting at Wartburg College.

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 have been placed on hold while the fate of the journal is being determined.

The Board formed a committee at the April meeting to discuss the matter of IAS publications. Since the Board approved funding for an ISTS newsletter (which is now being published each year), the role of the ISTJ is now being examined.

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 opera-

Table 7. Balance Sheet June 30, 1993

Category	IAS Assets	Combined Assets
Checking	\$18,240.78	\$39,627.26
Savings	29,776.96	29,776.96
Office Equipment	17,450.15	17,450.15
Accumulated Depreciation	(16,439.21)	(16,439.21)
Heritage Book Inventory	488.33	488.33
State Appropriation	0.00	0.00
Sweatshirt Inventory	369.50	369.50
Certificates, ISTS, promotional inventory		2,436.04
Saylorville Gift Shop Inventory/Cash Box		1,779.33
Parish Farm		
Deferred Coop Dividend		38,518.81
PIK Certificate Inventory		0.00
240 Acre Farm		66,550.00
Burk Fund (Pershing Money Mark.)		52,775.46
TOTAL ASSETS	\$49,886.51	\$233,332.63
	IAS Liabilities	COMBINED Liabilities
Taxes Payable	\$666.48	\$666.48
State Appropriations	0.00	0.00
TOTAL LIABILITIES	\$666.48	\$666.48
	IAS Fund Balances	COMBINED Fund Balance
Restricted Fund Balance	\$30,569.69	\$148,219.44
Unrestricted Fund Balance	16,571.98	81,185.25
Farm Transfer to IAS	35,000.00	35,000.00
Farm Transfer from Farm	-	(35,000.00)
ISTS Fund Balance	-	15,819.94
WEHOS (Carver) Project	-	54,681.16
TOTAL FUND BALANCE	\$82,141.67	\$299,905.79
	IAS	COMBINED
Total Fund Balance	\$82,141.67	\$299,905.79
Net Income (Loss)	(\$32,921.64)	(\$67,239.64)
Total Equity	43,220.03	232,666.15
TOTAL EQUITY & LIABILITIES	\$49,886.51	\$233,332.63

tions, 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 that 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 which was less than total expenses. This loss was a due to the spending of the Carver grant money. The Parish Farm experienced a terrible crop year, due to wetness and poor growing conditions. Government supports and careful planning by Hertz Farm Management and the Schildroths were sufficient to overcome this problem.

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.

Table 8. Income Allocation 1993-94

INCOME	ALLOCATION OF INCOME				
	Amount	Publications	Programs	Meetings	Administration
Corporate Gifts	\$ 3,900.00		\$ 3,900.00		
Dues	40,337.00	\$ 2,441.42		\$ 2,454.65	\$33,440.93
Individual Contributions	212.50		212.50		
Interest/Dividends	3,442.07				3,442.07
Miscellaneous	80.77				80.77
Other Fees	3,976.50	1,985.00		1,991.50	
Publication Sales	7,432.68	7,432.68			
Registration Fees	6,829.00		555.00	6,274.00	
Reimbursements	6,470.59				6,470.59
Reprint Sales	823.00	823.00			
State Aid	43,455.14	2,741.25	40,113.89		
TOTAL	\$116,959.35	\$11,423.36	\$45,381.39	\$10,720.15	\$43,434.36
UNI Subsidy	16,419.11				16,419.11
TOTAL INCOME	\$133,378.36	\$17,423.35	\$45,381.39	\$10,720.15	\$59,853.47

Table 9. Income Allocation 1993-94

INCOME	ALLOCATION OF EXPENSES				
	Amount	Publications	Programs	Meetings	Administration
Accounting/Ins.	\$ 1,357.00				\$ 1,357.00
Banquet/Meals	2,747.50		\$2,747.50		
Clerical	16,171.36				16,171.36
Equipment	1,117.80				1,117.80
Equipment Service	1,672.69				1,672.69
Grants	41,354.89		41,104.89		250.00
Honoraria	28,503.49	\$1,666.68	1,000.00	1,000.00	24,836.81
Misc. Expenses	817.72				817.72
Postage & Shipping	10,657.42	1,682.39	687.34	563.22	7,724.47
Printing	26,806.80	14,014.28	3,554.34	2,738.30	6,439.88
Special Projects	0.00		0.00		
Supplies	6,275.58		1,586.53	1,024.93	2,684.12
Taxes	3,661.85				3,661.85
Telephone	672.05				672.05
Travel	9,064.74		4,742.46	2,645.20	1,676.08
TOTAL	\$149,880.89	\$17,423.35	\$52,655.56	\$10,720.15	\$69,081.83
UNI Subsidy	16,419.11				16,419.11
TOTAL EXPENSES	\$166,300.00	\$17,423.35	\$52,655.56	\$10,720.15	\$85,500.94
TOTAL INCOME	\$133,378.36				
NET IAS INCOME (LOSS)	(\$32,921.64)				

Restricted Assets

Table 12 shows the restricted assets of the Academy. These are distributed among four 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 \$5000 to \$10,000 in it. The Burk Scholarship fund has been invested in bonds associated with the Pershing, Colonial Utilities, and Putnam. Wayne Jacobsen, of Cedar Falls, has been the financial adviser relative to these investments.

The amounts listed are based on the market value of the Merrill-Lynch funds, as well as the bond investments, in which the money is invested, as of June, 1994. These amounts may shift as the market experiences changes.

Table 12. Restricted Assets

	Investment
Life Member Fund	\$ 8,876.00
Hanson Publication Fund	4,221.20
Savings	17,593.80
Burk Scholarship Fund	47,173.16
Total	\$77,864.16

Table 10. Combined Income Allocation 1993-94

INCOME	ALLOCATION OF INCOME				
	Amount	IAS	ISTS	Parish Farm	Grants
Corporate Gifts	\$ 3,900.00	\$ 3,900.00			
Dues	40,337.00	40,337.00			
Parish Farm	65,176.16			\$65,176.16	
Grants	13,088.33				13,088.33
Individual Contributions	212.50	212.50			
Interest/Dividends	6,705.83	3,442.07	\$322.58	691.90	2,250.28
Miscellaneous	6,958.41	80.77	6,877.64	0.00	
Other Fees	3,976.50	3,976.50			
Publications Sales	8,347.11	7,432.68	0.00		914.43
Registration Fees	36,589.50	6,829.00	29,760.50		
Reimbursements	6,470.59	6,470.59			
Reprint Sales	823.00	823.00			
State Aid	43,455.14	43,455.14			
TOTAL	\$236,041.07	\$116,959.25	\$36,960.72	\$65,868.06	\$16,253.04
UNI Subsidy	16,419.11	16,419.11			
TOTAL INCOME	\$252,460.18	\$133,378.36	\$36,960.72	\$65,868.06	\$16,253.04

Table 11. Combined Expense Allocation 1993-94

EXPENSES	ALLOCATION OF EXPENSES				
	Amount	IAS	ISTS	Parish Farm	Grants
Accounting	\$ 1,391.68	\$ 1,357.00			\$ 34.58
Banquet/Meals	21,670.82	2,747.50	\$15,362.32		3,561.00
Clerical	16,171.36	16,171.36			
Contract Services	\$7,485.78	0.00	7,485.78		
Equipment	1,117.80	1,117.80			
Equipment Service	1,672.69	1,672.69			
Parish Farm	45,708.04			\$45,708.04	
Grants	41,854.89	41,854.89	0.00		
Honoraria	42,091.61	28,503.49	4,816.12		8,772.00
Misc. Expenses	32,603.12	817.72	1,973.20		29,574.49
Postage & Shipping	11,990.57	10,657.42	1,333.15		
Printing	32,942.63	26,806.80	6,135.83		
Special Projects	500.00	0.00	500.00		
Supplies	26,010.36	5,275.58	1,402.09		19,571.00
Taxes	3,661.85	3,661.85			
Telephone	1,283.35	672.05	611.30		
Travel	14,791.16	9,064.14	3,977.67		1,748.75
Regional Prog., ISTS	332.50		332.50		
TOTAL	\$303,280.71	149,880.89	43,929.96	45,708.04	63,261.82
UNI Subsidy	16,419.11	16,419.11			
TOTAL EXPENSES	\$319,699.82	166,300.00	43,929.96	45,708.04	63,261.82
TOTAL INCOME	\$252,460.18	133,378.36	36,960.72	65,868.06	16,253.04
NET IAS INCOME (LOSS)	(\$67,239.64)	(\$32,921.64)	(\$6,969.24)	\$20,160.02	(\$47,008.78)

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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.