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## Annual Report of the Iowa Academy of Science, 1985-86

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## Annual Report of the Iowa Academy of Science, 1985-86

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### PREFACE

In 1975, when the Iowa Academy of Science celebrated its centennial year, a history of the Academy was written. In succeeding years the Annual Reports have acted as a continuation of that history.

This report encompasses the year beginning July 1, 1985 to June 30, 1986 and is based on committee reports, Board minutes and the recollections of the author. Each part represents a major activity of the Academy operation.

### THE 98th ANNUAL MEETING

The 98th Annual Meeting of the Iowa Academy of Science was held on the Wartburg College campus in Waverly, Iowa on April 24-26, 1986.

The Local Arrangements Committee, chaired by Gailen Eiben, biology, also included David Hampton, chemistry and Fred Ribich, physics. The committee was especially helpful to the Executive Director and the Director of Meetings and Programs in planning the Annual Meeting. The Annual Meeting Committee included the Local Arrangements Committee and the Section Chairs as follows:

- Agricultural Sciences
  - Marc C. Albertsen, Pioneer Hi-Bred, Intl.
- Anthropology
  - Stephen C. Lensink, University of Iowa
- Biotechnology
  - Duane Enger, Iowa State University
- Botany
  - Alan Orr, University of Northern Iowa
- Chemical Education
  - Karen Latas, Iowa Western Community College
- Chemistry C
  - Mark Arnold, University of Iowa
- Chemistry D
  - Donald Speckhard, Loras College
- Conservation
  - Doug Reeves, Wildlife Research Station - Boone
- Engineering
  - Richard L. Valentine, University of Iowa
- Geology
  - Raymond Anderson, Iowa Geological Survey
- Linguistics
  - Gregory Iverson, University of Iowa
- Nursing
  - Geraldene Felton, University of Iowa
- Physics
  - Donald Roiseland, Wartburg College
- Physiology
  - Darold Wolff, Wartburg College
- Psychology
  - Alice Thieman, Iowa State University
- Science Teaching
  - Rich Huber, Iowa City Community Schools

\*Executive Director, IAS

### Zoology

Thomas L. Kramer, Muscatine, Iowa

The Annual Meeting Committee met on Monday, October 14, 1985 to discuss the blocking of the meeting, possible General Session speakers and possible symposia. Although the Local Arrangement Committee, the Executive Director and the Director of Meetings and Programs handled many of the details of the meeting, the program of invited and contributed papers was planned by the 17 sections of the Academy.

The Director of the Iowa Junior Academy of Science, Lynn Glass of Iowa State University, organized the following program of 11 poster and oral presentations.

**Brett Ashford, Davenport Central High School**

Influencing of metallurgical structure on the corrosion rate of alithalite

**Shari Becker, Davenport Central High School**

Does acetylsalicylic acid affect ascorbic acid concentration?

**Jeff Bishop, Rockford Senior High School**

Finding the effect of gravity upon turbulence

**Geoffrey S. Francis, Marshalltown Senior High School**

Expanded study of radiation environment on integrated circuits under bias

**Rod Hauser, Marshalltown High School**

Growth of prairie grasses and forbs in competition

**Steven Hise, Davenport Central High School**

Characterization of transient responses in ion-selective glass membrane electrodes

**Leslie Reu, Central Lee High School, Argyle**

My aerodynamically designed car; The Challenger

**D. Scott Smith, Farragut Community School**

Computer system for the handicapped

**John Stoffel, Bettendorf High School**

The effects of radiation on bean seeds and seedlings

**Robert Theodore Wallace, Maharishi School for the Age of Enlightenment, Fairfield**

The role of Beta-Adrenergic Receptors in Lukemia

**Michael Wilson, Mid-Prairie High School, Wellman**

Improving the process to make 1,2,3,4,5-Pentamethylcyclopentadiene

The posters and presentations were judged by a committee composed of the vice chairs of the sections and the Student Programs Committee.

The senior Academy program had 5 poster papers and 183 contributed papers in addition to the four symposia which had 26 presentations.

The following program is a summary of the Annual Meeting program activities.

Thursday, April 24

2:00 Board of Directors Meeting and Dinner

Friday, April 25

8:00 VIDEO FILM FESTIVAL

8:00 IJAS POSTER PAPERS

8:30 IJAS PRESENTATIONS

8:45 SECTION MEETINGS  
Concurrent Sessions  
Botany - A  
- B

9:00 SPECIAL SESSION  
"Where is the Space Shuttle Headed?"  
Leverne K. Seversike, Professor of Aerospace Engineering, 328 Iowa Engineering, Iowa State University  
A brief history of the development of the shuttle program, current status of the program and future direction of the program will be presented.

10:30 GENERAL SESSION I  
President, John C. Downey, presiding  
Welcome: Dr. Edwin Welch, Dean of Faculty, Wartburg College  
"Halley and the Exploration of Comets"  
Speaker: John C. Brandt, Chief, Laboratory for Astronomy and Solar Physics, NSAS-Goddard Space Flight Center, Greenbelt, Maryland.

12:00 AWARDS LUNCHEON  
President John C. Downey, presiding  
This served luncheon will honor groups and individual students who have performed in an exemplary manner in science activities throughout Iowa. Several teachers will be honored as they receive the Iowa Academy's Excellence in Teaching Award.

1:30 ANNUAL BUSINESS MEETING

2:00 SECTION MEETINGS  
Chemistry C

2:00 CONCURRENT SYMPOSIA  
*CAN WE REALLY TEACH THINKING SKILLS IN THE SCIENCE CLASSROOM?*  
*RURAL CRISIS AND THE EFFECT ON FARM FAMILIES*  
*NON-POINT SOURCE GROUNDWATER CONTAMINATION IN IOWA*  
*THE IOWA SCIENCE FOUNDATION: REVIEW OF SECOND-YEAR PROJECTS*

4:00 ALL POSTERS

5:00 SOCIAL HOUR

5:45 PRESIDENT'S BANQUET  
President John C. Downey, presiding  
Presentation of Iowa Academy of Science Awards  
Installation of new president and remarks by outgoing President Downey  
Response by President Paul J. Waite

8:00 GENERAL SESSION II  
President Paul J. Waite, presiding  
"The Eighth Head of the Hydra and the Dawn of Modern Biology"  
Howard M. Lenhoff, Professor of Biological Sciences and of Political Sciences, University of California, Irvine

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Saturday, April 26

7:45 SECTION MEETINGS  
Anthropology  
Botany - A  
- B  
Chemical Education  
Physiology  
Science Teaching Section  
Business Meeting  
Executive Committee Meeting  
Zoology

8:00 VIDEO FILM FESTIVAL

9:00 GENERAL SESSION III  
President Paul J. Waite, presiding  
"Agriculture, Science and the Iowa Economy"  
Robert W. Jolly, Assistant Dean of Agriculture, Assistant Director of the Iowa Agriculture and Home Economics Experiment Station, and Professor of Economics, Iowa State University, Ames

10:00 SECTION MEETINGS  
Agricultural Sciences  
Botany - A  
- B  
Chemical Education  
Chemistry C  
Chemistry D  
Engineering - A  
- B  
Geology  
Nursing  
Physics  
Physiology  
Science Teaching  
Zoology

1:00 SECTION MEETINGS  
Agricultural Sciences  
Conservation  
Engineering - A  
- B  
Combined  
Geology  
Nursing  
Physics  
Science Teaching

**THE AWARDS LUNCHEON**

One hundred and sixty-two persons attended the Awards Luncheon on Friday at noon. The awards for Excellence in Science Teaching were presented by Roy Unruh, the Director of the Excellence in Science Teaching program. The following persons received awards:  
Biology - Paul D. Knapp, Linn-Mar High School, Marion  
Chemistry - Christine M. Fink, Abraham Lincoln High School, Council Bluffs  
Earth Science - John D. Rudisill, East High School, Des Moines  
Physics - Dennis Hewett, Fort Dodge Senior High School

**Junior High Science - Lowell Wiele**, Garfield Junior High School, Chariton Comm. School

**Elementary Science - Rebecca Andresen**, Eisenhower Elementary School, Davenport.

Following the ESTA awards, **Lynn Glass**, the Director of the Iowa Junior Academy of Science, introduced the participants in the IJAS morning program and announced the students who would be representatives of IJAS at the American Junior Academy of Science program in 1987. The representatives and alternates announced were:

**Rod Hauser**, Marshalltown High School

**John Stoffel**, Bettendorf High School

**Alternates:**

**Geoffrey S. Francis**, Marshalltown High School

**Shari Becker**, Davenport Central High School

**Joe Moore**, the Student Programs Committee chair recognized the following programs for secondary students:

Iowa Academy of Science Secondary Student Invited Papers

Iowa Academy of Science Outstanding Science Student Medals

Eastern Iowa Science and Engineering Fair

Hawkeye Science Fair

Greater Quad-Cities Area Science and Engineering Fair

National Energy Institutes

Lawrence-Livermore National Lab, California

Brookhaven National Lab, New York

Northeast Iowa Regional Science and Engineering Fair

University of Iowa Science, Engineering &

Humanities Symposium

UNI Science Symposium

Westinghouse Iowa State Science Talent Search

Governor's National Youth Science Camp

Physics Olympics

The annual business meeting followed the luncheon.

**The President's Banquet**

Following the Friday evening banquet, President **John Downey** introduced **Charles Wunder**, chair of the Recognition and Awards Committee, who introduced the nominators for the following Iowa Academy of Science Awards:

Distinguished Fellow Award

**Howard M. Lenhoff**, University of California, Irvine

Distinguished Iowa Scientist

**Marr D. Simons**, Iowa State University

Distinguished Service Award

**Donald R. Farrar**, Iowa State University

Following the awards, President **John Downey** reviewed some Academy activities of the past year and then presented the gavel to the new President, **Paul Waite**. In President Waite's remarks, he recognized the efforts of the many Academy members who have given so freely of their time and energy. Both presentations appeared in the May I.A.S. Bulletin. The program was reconvened in Neumann Auditorium for the General Session speaker, **Howard Lenhoff**.

**Attendance**

The 1986 attendance summary is shown in Table 1 while Table 2

**Table 2. Five Year Average Attendance**

YEAR	1982 <sup>1</sup>	1983 <sup>2</sup>	1984 <sup>3</sup>	1985 <sup>4</sup>	1986 <sup>5</sup>
Members	275 (66.2)*	328 (65.0)	361 (62.0)	306 (65.5)	316 (67.0)
Non-members	90 (21.6)	132 (26.1)	179 (30.7)	116 (24.8)	131 (27.8)
Guests	50 (12.0)	44 (8.7)	42 (7.2)	45 (9.6)	24 (5.0)
Attendance Total	415 (99.8)	504 (99.8)	582 (99.9)	467 (99.9)	471 (99.8)

\* Number in brackets are percentages

1 Iowa Central Community College

2 Luther College

3 University of Iowa

4 Central College

5 Wartburg College

shows the five year attendance figures. The 471 attending the 1986 meeting represented an increase of 4 persons (1%) over 1985. When one compares the total attendance and the percentages of member, non-member and students, for the 1986 meeting, it was very similar to the average of the past five years. The exception was the 1983 Annual Meeting which was held at Iowa City.

**Table 1. Registered Attendance 1986**

	Pre-registered	Walk-in		TOTAL
		Fri.	Sat.	
Members:				
Regular	226	33	16	275
Student	36	4	1	41
SUB-TOTAL	262	37	17	316
Nonmembers:				
Regular	38	10	3	51
Student	64	6	10	80
SUB-TOTAL	102	16	13	131
Guests, ect.	24			24
TOTAL	388	53	30	471
Presenters	217*			
Others	171			

\*Includes symposia presenters

**MINUTES OF THE ANNUAL BUSINESS SESSION**

April 25, 1986

The Annual Business Meeting of the Iowa Academy of Science was called to order by President **John Downey** at 1:30 p.m. in the Cafeteria of the Wartburg College Student Union in Waverly, Iowa. With approximately 45 persons in attendance a quorum was declared.

Following President Downey's report on the Board actions during 1985-86, **James G. Macmillan**, Executive Director, presented a financial report for the Academy. He noted that as a result of the exceptional 1984 income from the farm, the Board of Directors had placed \$15,000 in an endowment for future years when the farm income might not meet expectations. He reported that at the beginning of the 1985-86 year, all long term liabilities had been retired which would result in about a \$1,000 savings in interest over the next two years. The Board had placed \$2,500 in the Robert W. Hanson Publications Fund and had authorized the Public Information Committee to spend \$2,000 to support the Iowa Public Television Program "Nature" starting in the fall of 1986. **Macmillan** reported that at the end of June 1985 the total cash assets of the Academy were \$63,458.88 while at the end of April 1986 they were at \$58,245.42. The latter figure did not include \$15,000 recently transferred from the farm account, the 1500 bushels of soy beans not sold or some yet to be received government set aside payments. It was expected that the

**Table 3. Attendance Summary, 98th Session, 1986**

	Number of Papers	Attendance
<i>Contributed Papers</i>		
Agricultural Sciences	11	21
Anthropology	4	11
Biotechnology	8	30
Botany	36	40
Chemical Education	7	25
Chemistry C	12	22
Chemistry D	9	25
Conservation	7	12
Engineering	25	12
Geology	12	35
Nursing	12	28
Physics	7	40
Physiology	14	182
Science Teaching	15	25
Zoology	9	22
<b>TOTAL</b>	<b>188</b>	
<i>Invited Papers</i>		
Symposium: Can We Really Teach Thinking Skills in the Classroom?	4	75
Symposium: Rural Crisis and the Effect on Farm Families.	4	20
Symposium: Non-Point Source Groundwater Contamination in Iowa.	9	65
Symposium: The Iowa Science Foundation: Review of the Second Year Projects	9	75
<b>TOTAL</b>	<b>26</b>	<b>235</b>
Special Session		150
General Session I		200
General Session II		250
General Session III		200
Field Trip		50
Video Film Festival		75
Special Events:		
Annual Business Meeting		62
Awards Luncheon		162
President's Banquet		138

farm income would meet the expected \$30,000 for 1985-86. Macmillan reported that since June 1985 the farm operation had been operated on a cash basis saving over \$1,500 on short term operating loan interest.

Following the financial report Macmillan reported that the Board of Directors had approved two versions of the 1986-87 balanced budget which differ depending on what happened regarding the State Appropriation.

Richard Wacha, past president and chair of the Election Committee, reported that Lenore Durkee of Grinnell College was elected President-Elect while Arthur Bosch of Central College and Don Koch of the Iowa Geological Survey were elected to the Board of Directors. Wacha thanked the unsuccessful candidates for being on the ballot.

President Downey presented a recommendation of the Board of Directors to make the ad hoc Public Information Committee a standing committee. Horner moved the formation of such a committee; Huffman seconded the motion. The motion passed.

Paul Christiansen, Board liaison to the Conservation and Preserves

**Proposed Budget 1986-87**

	Without State Appropriation	With State Appropriation
<b>Income</b>	<b>\$75,780</b>	<b>\$133,695</b>
<b>Expenses</b>		
Grants/Dues	1,200	48,275
Honoraria/Wages	30,555	31,870
Postage	5,300	6,450
Supplies/Services	5,550	8,150
Printing	22,000	25,200
Travel/Committees	11,175	13,750
<b>Total Expenses</b>	<b>\$75,780</b>	<b>\$133,695</b>

Committee, presented the following resolutions which had been acted on by the Board of Directors.

**RESOLUTIONS**

**I. FOURTH ANNUAL STATE PRAIRIE HERITAGE WEEK**

The Iowa Academy of Science hereby encourages Governor Terry Branstad to proclaim the week of September 7-13th, 1986, as the Fourth Annual State Prairie Heritage Week, thereby promoting statewide appreciation and preservation of Iowa's prairie heritage. It urges all schools, colleges, universities, state and county agencies to take an active lead in developing and implementing the programs which encourage public awareness of Iowa's prairie history. The Academy recognizes the leading role of the State Preserves Advisory Board for originating this observance and its continuing effort to sponsor prairie preservation through state-wide educational activities.

**II. REORGANIZATION OF THE IOWA CONSERVATION COMMITTEE**

In view of the impending state reorganization plans, the Iowa Academy of Science hereby endorses the present commissioner form of government of the Iowa Conservation Commission (DNR). The Academy believes that it is in the best interest of conservation and preservation to retain the commission with full legislative authority to administer its needs, including the powers to appoint and to recall a professionally trained Director, exclusive of political influences.

**III. REORGANIZATION OF THE STATE PRESERVES ADVISORY BOARD**

The Iowa Academy of Science hereby endorses the legislative authority of the State Preserves Advisory Board. At this time of impending state reorganization, the Academy commends the 20-year accomplishments of the Board in developing Iowa's very progressive State Preserve System. We recognize the Board's function as a forum for both professional and nonprofessional consultation and advice. This platform for citizen input is essential in ensuring the future of Iowa's quality State Preserve System.

Christiansen moved the adoption of the resolution, Lenore Durkee seconded the motion. The question was asked if resolution #2 would effect the State Forester. Christiansen said that the resolution would not effect that forester position directly but would effect the director of the Department of Natural Resources. Motion passed.

President Downey asked if there was any other business. Hearing none the meeting was adjourned.

**REVIEW OF ACADEMY ACTIVITIES IN 1985-86**

**Committee Activities**

During 1985-86, the Academy affairs have been handled by the Board of Directors, the Executive Director who acts as their agent, a Director of Meetings and Programs, a Director of the Iowa Junior

Academy of Science, thirteen committees, three ad hoc committees and two editors. In all, over 125 persons were involved in the Academy's programs and administration. The membership on the Board of Directors, committees and special program directors is listed at the end of this report.

At the beginning of the year each committee was asked to outline their goals and objectives for the year. They submitted a year end report in May which summarized their accomplishment for the year. These reports appeared in the September 1986 I.A.S. BULLETIN.

#### Annual Meeting Committee

Chair: Gary Downs, Director of Meetings and Programs

The Annual Meeting Committee which is formed from the chairs of the sections and the local arrangements committee, met for a dinner meeting October 14, 1985 on the Wartburg College Campus in Waverly, Iowa. The committee agreed on the blocking for the meeting, suggested General Session Speakers and discussed topics for possible symposia. The section chairs were instructed in how to arrange their contributed paper program. During the year details of the meeting were handled by the Director of Meetings and Programs and the Executive Director.

The final program summary has appeared earlier in this report.

#### Committee on Committees

Chair: Paul Waite

The committee met on November 6, 1985 to review the present membership on all IAS committees and made recommendations for vacancies. The nominees were contacted by mail and although there was a high acceptance percentage, some positions needed to be filled by a second mailing. All committees were complete by the Annual Meeting.

#### Ad Hoc Committee on Controversial Issues

Chair: Don Huffman

The committee began discussion of several issues relating to the public's perception of science which were of concern to committee members. A position paper on "pseudoscience" was prepared and submitted to the Board of Directors for consideration. The committee reviewed its role and that of the panels. The committee requested permanent committee status.

#### Conservation and Preserves Committee

Chair: William Pusateri

The committee met three times and conducted some of their business by mail. Three resolutions were drafted and submitted to the Board of Directors for consideration. The resolutions (see Annual Business Meeting) were voted on and approved at the Annual Business Meeting.

The committee helped the INHA facilitate the Natural History field trip at the IAS Annual Meeting in Waverly.

The committee submitted three nominees to Governor Branstad for the appointment to the State Preserves Advisory Board.

#### Elections Committee

Chair: Richard Wacha

The Election Committee met on December 14, 1985 to select a slate of candidates for the 1986-87 election. The committee selected a slate of candidates, collected biographical information on each and verified the counting of the ballots. The final ballot contained the following names:

President: Lenore Durkee, Grinnell, Iowa

Kenneth Frey, Iowa State University

Directors: Marc C. Albertsen, Pioneer Hi-Bred International

Arthur J. Bosch, Central College

Donald L. Koch, Iowa Geological Survey

Don C. Norton, Iowa State University

The Committee reported the results of the election at the Annual Meeting (see Annual Business Meeting).

#### Education Committee

Chair: Carolyn Brockway

The committee met four times during the year to deal with several issues. The committee promoted and administered the Search for Excellence in Science Education Program in Iowa for the National Science Teachers Association.

The committee evaluated the nominees for the Presidential Award for Excellence in Science Teaching. The following three nominees were submitted to NSTA.

Charles W. Windsor, Ames Senior High School, Ames

G. Henry Veldhuis, Sheldon Community High School, Sheldon

Ross L. Iverson, Miller Junior High School, Marshalltown

Ross L. Iverson was selected by NSTA to receive the Presidential Award for Iowa in Washington, D.C. on October 23, 1986.

#### Finance Committee

Chair: George Karas

The committee discussed with a Merrill-Lynch representative how the Academy could best invest their funds both on a short and long term basis.

The committee considered the possibility of organizing a fund-raising workshop for the Board of Directors for 1986-87.

#### Heritage Project Steering Committee

Representative: Richard Wacha

Although the book "Iowa's Natural Heritage" is complete, the Academy has a representative on the Iowa Natural Heritage Board. The representative keeps the IAS Board informed on the activities of the Iowa Natural Heritage Foundation and the progress on the sale of the book.

#### Iowa Science Foundation Committee

Chair: Lois Tiffany

The committee solicited proposals for the 1986-87 fiscal year and received 54 proposals totaling \$272,275. By limiting the grants to one year and reducing the amounts of the grants, 20 proposals were funded for a total of \$49,217. The following proposals were funded:

Density and Atomic Arrangements in Borate Classes \$3,525

Steven A. Feller, Coe College, Cedar Rapids

Understanding Groundwater in the Driftless Area \$4,950

Don R. Menken, Clayton County Conservation Board, Elkader

Quaternary Landscape Evolution of the Turkey River Valley,

Northeast Iowa \$1,700

Curtis M. Hudak, University of Iowa, Iowa City

Iowa Centipede Project \$1,530

Donald J. Perschau, Meredith Trans. School,

West Des Moines

Lyme Disease: An Emerging Public Health Problem in Iowa

Nixon Wilson, Univ. of Northern Iowa, Cedar Falls \$4,000

Study of *Conotrachelus seniculus* life history in the laboratory and develop a method of rearing \$3,000

Richard L. Wilson, Iowa State University, Ames

Solvent Considerations in Room Temperature Phosphorescence

Catherine Hausteine, Central College, Pella \$ 990

Astronomy Newsletter	\$1,300
Larry A. Kelsey, University of Northern Iowa, Cedar Falls	
Late- and Post-glacial Vegetational History of the Roberts Creek Basin, Northeastern Iowa	\$2,500
Richard G. Baker, University of Iowa, Iowa City	
Equipment for Science Station Programming	\$4,946
Susan W. McDermott, Cedar Rapids Science Station, Cedar Rapids	
Development and Implementation of a Locally Relevant 9th Grade Science Program	\$1,500
Gary McVey, Ft. Madison Comm. Sch. Dist., Fort Madison	
An Experimental Approach to Understanding Stuttering	\$1,957
H.S. Venkatagiri, Iowa State University, Ames	
A Systematic Inventory of Potential Natural Areas of Clinton County, Iowa	\$2,000
William P. Pusateri, Box 161, Ames	
The Chemical Evolution of Fluids in the Formation of Outlying Upper Mississippi Valley Lead-zinc Occurrences	\$2,500
Paul G. Spry, Iowa State University, Ames	
Holocene Stratigraphy and Geomorphic History of the Ames Bog Drainage	\$2,500
Julieann Van Nest; E.A. Bettis, III, University of Iowa, Iowa City	
Demography of Compass Plant ( <i>Silphium laciniatum</i> - Asteraceae)	\$2,000
John M. Pleasants, Iowa State University, Ames	
Data Analysis, Blood Run Archaeological Site	\$3,335
Dale R. Henning, Luther College, Decorah	
Effect of Protein Deprivation on Egg Growth and Juvenile Hormone Synthesis in an insect	\$1,400
Andrea P. Woodhead, University of Iowa, Iowa City	
Vibrations of Plucked Strings	\$2,090
Roger J. Hanson, University of Northern Iowa, Cedar Falls	
<sup>13</sup> C-Nuclear Magnetic Resonance Spectroscopy of Sperm Metabolism Under Aerobic and Anaerobic Conditions	\$2,880
George G. Brown, Iowa State University, Ames	

The committee sought funds from Iowa industries as a result of unsure future state funding. This resulted in \$3,000 being raised.

#### Long Range Planning Committee

Chair: Harry Horner

The Long Range Planning Committee was not given a charge by the Board of Directors for the 1985-86 year. Consequently, they did not meet during the year.

#### Membership Committee

Chair: Donald Norton

The committee conducted the annual membership drive. A new group of members were found to receive the pocket posters with membership application material.

The committee reviewed and made recommendations concerning the criteria for Fellow membership status. The committee recommended two individuals for Fellow status.

Vasu Nair, Department of Chemistry, University of Iowa  
Bernard J. White, Department of Biochemistry, Iowa State University

#### Parish Farm Committee

Chair: Daryl Smith

The committee reviewed the management of the farm by Hertz

#### Farm Management.

The committee recommended to the IAS Board of Directors the Parish farm be included in the Iowa Natural Heritage Resourceful Farming Demonstration Project. The recommendation was approved.

#### Ad Hoc Public Information Committee

Chair: Connie Murel

The committee worked with Iowa Public Television and the Des Moines Register to increase the coverage of IAS awards and the IAS Annual Meeting. The Des Moines Register established a weekly science page and sent three individuals to the IAS Annual Meeting.

The committee recommended that IAS cosponsor the IPT program "Nature". The support for the program will begin with the 1986 season.

The committee considered the possibility of obtaining a science writing intern but were unable to find a suitable candidate.

The committee requested from the IAS membership "ideas" which would make good science stories. These ideas were provided to the media as leads for future science stories.

#### Ad Hoc Publications Committee

Chair: Don Norton

The committee conducted a survey of the Academy concerning several changes to the *Proceedings of the Iowa Academy of Science* and the *Iowa Academy of Science Bulletin*. The responses were analyzed and a series of recommendations were made to the IAS Board of Directors.

#### Recognition and Awards Committee

Chair: Charles Wunder

The committee reviewed and evaluated the nominations for the Governor's Science Medal. A slate of candidates was submitted to the Governor for his selection of the final candidates.

Science Application - Don Kirkham, Ph.D., Iowa State University  
Science Teaching - John P. Long, Ph.D., University of Iowa  
Science Achievement - William L. Mengeling, Ph.D., National Animal Disease Center, ARS, USDA

The committee evaluated the nominations for the IAS awards; Distinguished Fellow, Distinguished Iowa Scientist and Distinguished Service. The recommendations of the committee were accepted by the IAS Board of Directors.

Distinguished Fellow - Howard M. Lenhoff, University of California - Irvine

Distinguished Iowa Scientist - Marr D. Simons, Iowa State University

Distinguished Service - Donald R. Farrar Iowa State University.

#### Student Programs Committee

Chair: Joe Moore

The Student Programs Committee assisted Lynn Glass, IJAS Director, with the Fall Inservice for Student Research Grants at the ISTS Fall Conference held in Ames. They also assisted in the evaluation of the IJAS Grant applications. A total of 20 grants were awarded for a total of \$1745.00 to the following secondary schools:

Streamlining Cars - Phase II.

Leslie Reu, Central Lee High School, Argyle

Experimental Design of Solar Heating Systems — Phase II

Jason Yoder, Central Lee High School, Argyle

Characterization of Transient Potential Responses in Ion-Selective Glass Membrane Electrodes.

Stephen M. Hise, Davenport Central High School

Effectiveness of Tetraglycine Hydroperiodide in Removing Patho-

gens from Drinking Water.

**Jennifer C. Rigdon**, Davenport Central High School

A Field Test of the Effects of Pesticides on Soil Protozoa.

**Brett Iverson**, Green Mountain Independent School

The Antibiotic Effects of Common Fungi

**Cort Iverson**, Green Mountain Independent School

Will Extracts from Invertebrates Cause Neoplasia?

**Mike Foley**, Marshalltown High School

Effects of Calcium on a Total Environment.

**Carol Cope**, Marshalltown High School

Investigation into the Effects of the Environment on Advanced Electronics Technologies and How to Protect Integrated Circuits.

**Geoffrey S. Francis**, Marshalltown High School

A Study of the Interactive Effects of Crop Seeds when Grown in Competition with Selected Weed Seeds.

**Jennifer Lander**, Marshalltown High School

The Effect of Acid Rain on Protozoa.

**James Burger**, Miller Junior High

The Effect of Antibiotics upon Wound Healing off(in) Planaria.

**Jennifer Riess**, Miller Junior High

The Effect of Substances on Earthworm Habitats.

**Sarah Wheeler**, Miller Junior High

Detection of Gaseous Pollutants given off by Portable Kerosene Heaters

**Jonathan C. Keck**, Mount Pleasant High School

What is the Status of Genetic Engineering Today?

**Lisa Exey**, North Winneshiek High School

An Entire Computer Controlled Solar Radiation System to Maximize the Efficiency Collector Throughout the Winter.

**Dean Peterson**, Ogden Community Schools

The Effects of Aloe Vera on Bacteria Growth

**Michelle Hoek**, Stuart-Menlo Comm. School

Physiological Effects of NaCl on *Mus Musculus* and Their Progeny

**Laura K. Jones**, Stuart-Menlo Comm. School

Using High-Pressure Liquid Chromatography to Determine the Amounts of Benzo(a)pyrene in Smokers and Non-smokers.

**Matt Millard**, Stuart-Menlo Comm. School

Altering Minimal Inhibitory Concentrations of Antimicrobics

**Chari Tyne**, Stuart-Menlo Comm. School

Winners of State and Local Science Fairs and Symposia were invited to present their research at the IJAS Program at the IAS Annual Meeting. The papers presented are listed elsewhere in this report.

The Committee selected the students as delegates and alternates to the following national programs:

National Youth Science Camp

Delegates

**Marla J. McFadden**, Hempstead High School, Dubuque

**John Christian Victor**, Creston Senior High

Alternates

**Jane M. Burlage**, Cascade High School

**John Crosheck**, Janesville High School

National DEO Summer Student Research Program - Lawrence-Livermore

Delegate

**John Crosheck**, Janesville High School

Alternate

**Steve VanHook**, Unity Christian High School, Orange City

Brookhaven National Laboratory

Delegate

**Jane M. Burlage**, Cascade High School

Alternate

**Jean K. Petrides**, Columbus High School, Waterloo

The committee selected 184 high school seniors to receive the Outstanding Science Student Award. The names of the recipients appeared in the May 1986 I.A.S. BULLETIN.

The IJAS helped sponsor the Iowa Physics Olympics and several other student activities.

Support for the student programs came from contributions from Pioneer Hi-Bred International, Rolscreen Company, and AAAS.

#### Excellence in Science Teaching Award

The Excellence in Science Teaching program was directed by **Roy Unruh** of University of Northern Iowa. Six subcommittees reviewed approximately 45 nominations to select the recipients of the Excellence in Science Teaching Awards. The awards were presented at the Awards Luncheon held at the 1986 Annual Meeting. (See Awards Luncheon for names of recipients.)

#### SECTION ACTIVITIES

In addition to the programs organized by the sections for the Annual Meeting, two sections held other meetings during the year.

##### Chemical Education

The Chemical Education Section held an afternoon and evening meeting September 27, 1985 on the Drake University campus in Des Moines. The program included presentations on spectroscopy by **Roland Stout** and **James Lindberg**, both from the department of chemistry at Drake, and demonstration of several spectroscopy experiments used in Drake chemistry program. Approximately 35 persons were in attendance at the meeting.

##### Iowa Science Teachers Fall Conference

The Iowa Science Teachers Fall Conference was held on October 31, 1985 at the Starlite Inn in Ames, Iowa. In addition to the 26 small group presentations, **George Vanderkuur**, Chief Scientist for the Ontario Science Centre, Toronto, Canada was the keynote speaker at the noon luncheon. The attendance figures are shown in Table 4.

Table 4. ISTS Fall Conference Attendance

Registration	
Professional	405
Guest	42
Student	62
Total	509
Exhibitors	16

The Iowa Science Teachers Outstanding Service Award for 1985 was awarded to **Roy Unruh**, Department of Physics at the University of Northern Iowa, for his continued involvement in the Iowa Science Teachers Section and for his innovative program for motivating students in the study of physics (PRISMS).

#### ADMINISTRATION

##### Personnel

During the 1985-86 year the only personnel changes in the Academy office were with student help. Doris Mitchell continued as office manager and James Macmillan as executive director. The Board of Directors discussed the possibility of an editor for the IAS Bulletin but no action was taken.

##### Grants

The U.S. Department of Education grant, PRISMS, was com-



pleted on June 30, 1986. The Academy will still be involved through the distribution of the PRISMS material.

Academy accepted a grant for \$2,750 from the Iowa Department of Public Instruction to conduct teacher workshops on microcomputer interfacing. The project is directed by **Kenneth Hartman** of Ames Community Schools and **Donald Murphy** of Hoover High School in Des Moines, Iowa.

The Academy received \$1,000 from AAAS for high school student research grants and \$5,000 from Pioneer Hi-Bred International to support the student programs activities. The Iowa Science Foundation received \$1,000 from Amana Refrigeration and \$2,000 from Rockwell International. These funds are to be used in the 1986-87 fiscal year.

**Publications**

The PROCEEDINGS OF THE IOWA ACADEMY OF SCIENCE, edited by **Roger** and **Marilyn Bachmann** of Iowa State University, is published on a calender year basis. In 1985, Volume 92, five issues were published containing 31 articles, 220 pages from 51 authors. Several persons authored more than one article.

Issue 1 of Volume 92 was a special issue devoted to a biography of **Louis H. Pammel**, an Iowa botanist of the late 1800's and president of the Academy in 1892-93 and again in 1923-24.

Issue 5 of Volume 92 was the first of two issues containing papers resulting from the "Iowa's Loess Hills" symposium held at the 96th Annual Meeting in Iowa City, April 27, 1984.

The IOWA SCIENCE TEACHERS JOURNAL, edited by **Carl W. Bollwinkel** of the University of Northern Iowa, is published on a yearly basis. In 1985, Volume 22, had three issues containing 84 pages, 12 articles from 15 authors.

The Academy has two Newsletters; the I.A.S. Bulletin, edited by **James Macmillan** and the Iowa Junior Academy of Science Newsletter, edited by **Joe Moore** of the Keystone AEA in Elkader. Each of these newsletters had two issues during the year.

**National Involvement**

President-elect **Paul Waite** and Executive Director **James Macmillan** were the Iowa Academy of Science representatives to the National Association of Academies of Sciences held in conjunction with the AAAS meeting in Philadelphia, Pennsylvania from May 24-29, 1986. **Lynn Glass**, Director of the Iowa Junior Academy of Science and sponsor of the two Iowa student delegates to the American Junior Academy of Science program, was elected president-elect of the NAAS at the meeting.

**Table 5. Membership 1982-1986**

Category	1982	1983	1984	1985	1986
Associate	1	1	3	—	—
Member	777	806	841	876	921
Student	146	142	160	151	148
Fellow	367	349	334	310	289
Life Member	38	37	41	41	40
Emeritus	83	89	91	93	92
Distinguished Fellows	17	14	18	20	20
<b>TOTAL</b>	<b>1429</b>	<b>1438</b>	<b>1488</b>	<b>1491</b>	<b>1510</b>

**Membership**

Table 5 shows the membership trends for the years 1982-86. In 1985 the Associate Member category was combined with regular membership. The membership which stood at 1510 as of June 30, 1986, represents an increase of 19 persons or 1.2%. In all categories,

other than regular member, there was a decrease in membership. Student members decreased the most which is expected in light of the mobile nature of students. The 5.6% increase in membership over the last five years is encouraging although one would expect the total membership could be much greater.

Table 6 shows the number of persons showing an interest in the 19 sections. Since an individual can indicate an interest in more than one section the percentages are not additive.

**Table 6. Membership by Section, June 30, 1986**

Section	1986	Relative Section Interest* %
Agricultural Sciences	(U) 29	8.5
Anthropology	(H) 43	2.8
Biotechnology	(K) 19	1.2
Botany	(G) 290	19.2
Chemical Education	(S) 103	6.8
Conservation	(J) 244	16.1
Engineering	(M) 70	4.6
Geology	(E) 176	11.6
Inorganic, Analytical Physical Chemistry	(C) 184	12.1
Linguistics	(R) 15	0.9
Nursing	(N) 27	1.7
Organic & Biological Chemistry	(D) 132	8.7
Physics	(B) 143	9.4
Physiology	(O) 130	8.6
Psychology	(I) 39	2.5
Science Teaching	(Q) 460	30.4
Earth Sci. Teaching	(Qg) 1	0
Elementary Sci. Teaching	(Qe) 13	0.8
Zoology	(F) 245	16.2

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

**FINANCIAL REPORT**

**Balance Sheet**

Table 7 which is the balance sheet for the fiscal year ending June 30, 1986, shows both the assets and liabilities for the Academy and all the combined accounts (IAS, ISTS, PRISMS and other Grants). The total cash assets of the Academy were \$63,060.09 and the combined were \$72,724.30. The liabilities for the Academy and the other organizations were only for taxes payable. The fund balances for the Academy were \$19,889.07 (unrestricted) and \$41,598.60 (endowment and special projects). The fund balances for PRISMS Grant and ISTS were \$28,497.68 and \$2,109.12 respectively. Since the PRISMS Grant was expended by the end of June the net income for the combined operation showed a loss of (\$19,583.98) while the Academy show a net income of \$1,365.67.

**INCOME STATEMENT**

At the April 26, 1985 Annual Business Meeting, a balanced operating budget of \$139,400 was adopted. This budget assumed a state appropriation of \$60,400. In July the state required a 3.85% reversion in addition to the 1.00% of the previous year. The final state appropriation was \$57,494 making the Academy expected income \$139,494.

Table 8 shows that the actual income received in 1985-86 was \$146,373.28 which was \$6,973.28 greater than expected even with

the state appropriation reversion. Table 8 also shows how the income was distributed to the various program and activities of the Academy.

Expenses, shown in Table 9, for 1985-86 were \$145,007.79. Although they were higher than the approved budget they were less than income which resulted in a net income of \$1,365.49.

The Academy administers several grants and does the accounting for ISTS and the PRISMS Co. The latter is an outgrowth of the PRISMS Grant that was completed in 1986. Tables 10 and 11 reflect the combined income and expenses for all Academy projects.

In 1986 the Academy became the accounting office for the Iowa Science Teachers Section (ISTS). During the year there was a transfer of ISTS funds to the Academy's accounting system.

In 1986 the Academy received two grants with the Iowa Department of Education; one for Workshops on Microcomputer Interfacing for \$2,750 and another for the formation of an Elementary Science Teaching Section. The money for the Elementary Science Teaching Section was not received until after July 1, 1986 and thus is not included as income of Table 10. Some expenses for this grant were incurred in 1985-86.

Table 7. Balance Sheet June 30, 1986

	IAS Assets	Combined Assets
Checking	\$46,691.14	\$53,205.54
Savings	5,758.69	5,758.69
Certificates, ISTS	0.00	2,254.51
PRISMS Grant	0.00	0.00
PRISMS Guides	0.00	895.30
Bonds	6,140.00	6,140.00
Notes	4,285.76	4,285.76
Book Inventory	184.50	184.50
<b>Total Assets</b>	<b>\$63,060.09</b>	<b>\$72,724.30</b>
	Liabilities and Equity	
	IAS	Combined
Taxes Payable	\$ 206.93	\$ 213.81
<b>Total Liabilities</b>	<b>206.93</b>	<b>213.81</b>
<b>1985 Fund Balances</b>		
PRISMS Grant	0.00	0.00
State Appropriation	0.00	0.00
Restricted Fund Balance	\$19,889.07	\$19,889.07
Unrestricted Fund Balance	\$41,598.60	\$41,598.60
PRISMS Grant Fund Balance	0.00	\$28,497.68
PRISMS Co. Fund Balance	0.00	0.00
ISTS Fund Balance	0.00	2,109.12
Iowa DOE Grant Fund Balance	0.00	0.00
<b>Total Equity</b>	<b>\$61,487.67</b>	<b>\$92,094.47</b>
Net Income (Loss)	\$ 1,365.49	(\$19,583.98)
<b>Total Equity and Liabilities</b>	<b>\$63,060.09</b>	<b>\$72,724.30</b>

Table 8. IAS Income Allocation 1985-86

INCOME	ALLOCATION OF INCOME					
	Amount	Publications	Programs	Meetings	Administration	Reserves
Corporate Gifts	\$8,000.00		\$ 7,652.82		\$ 347.18	
Dues	23,586.50	\$12,309.86		\$5,015.47	5,861.17	\$400.00
Farm Transfer	30,000.00				29,191.01	808.99
Grants	1,000.00		1,000.00			
Individual Cont.	156.50					156.50
Interest/Dividends	3,530.62				3,530.62	
Miscellaneous	3,295.53				3,295.53	
Other Fees	4,109.50	1,694.50		2,415.00		
PRISMS Grant	0.00					
Publications Sales	8,095.00	8,095.00				
Registration Fees	4,809.00			4,809.00		
Reimbursements	1,541.21				1,541.21	
Reprint Sales	756.80	756.80				
State Aid	57,492.62	4,150.00	53,342.62			
<b>TOTAL</b>	<b>\$146,373.28</b>	<b>\$27,006.16</b>	<b>\$61,995.44</b>	<b>\$12,239.47</b>	<b>\$43,766.72</b>	<b>\$1,365.49</b>
UNI Subsidy	10,829.42	1,650.00			9,179.42	
<b>TOTAL INCOME</b>	<b>\$157,202.70</b>	<b>\$28,656.16</b>	<b>\$61,995.44</b>	<b>\$12,239.47</b>	<b>\$52,946.14</b>	<b>\$1,365.49</b>

**Table 9. IAS Expense Allocation 1985-86**

EXPENSES	ALLOCATION OF INCOME				
	Amount	Publications	Programs	Meetings	Administration
Accounting	\$ 548.25				\$ 548.25
Banquet/meals	2,730.50			2,730.50	
Book Expenses	1,333.00	1,333.00			
Clerical	12,663.72		2,225.35		10,438.37
Contract Services	1,901.23				1,901.23
Equipment	426.95				426.95
Equipment Service	1,417.30				1,417.30
Grants	47,799.10		47,799.10		
Honoraria	17,094.25	2,000.00	500.00	1,500.00	13,094.25
Postage & Shipping	7,147.41	\$1,634.60	1,305.23	2,107.36	2,100.22
Printing	29,623.60	22,038.56	1,914.25	2,689.40	2,981.39
Special Proj.	4,901.95		4,901.95		
Supplies	5,444.55		825.31	943.60	3,675.64
Taxes	1,982.35				1,982.35
Telephone	1,017.72				1,017.72
Travel	8,975.91		2,524.25	2,268.61	4,183.05
<b>TOTAL EXPENSES</b>	<b>\$145,007.79</b>	<b>\$27,006.16</b>	<b>\$61,995.44</b>	<b>\$12,239.47</b>	<b>\$43,766.72</b>
UNI Subsidy	\$ 10,829.42	\$ 1,650.00			\$ 9,179.42
<b>TOTAL EXPENSES</b>	<b>\$155,837.21</b>	<b>\$28,656.16</b>	<b>\$61,995.44</b>	<b>\$12,239.47</b>	<b>\$52,946.14</b>
<b>TOTAL INCOME</b>	<b>\$157,202.70</b>				
<b>NET IAS INCOME</b>	<b>\$1,365.49</b>				

**Table 10. Combined Income Allocation 1985-86**

INCOME	ALLOCATION OF INCOME						
	Amount	IAS	ISTS	ESTS	Micro	PRISMS	PRISMS Co.
Corporate Gifts	\$ 8,000.00	\$ 8,000.00					
Dues	23,586.50	23,586.50					
Farm Transfer	30,000.00	30,000.00					
Fund Bal. 1985	31,247.68				2,750.00	28,497.68	
Grants	29,448.00	1,000.00				28,448.00	
Individual Cont.	156.50	156.50					
Interest/Dividends	3,986.19	3,530.62	152.00			303.57	
Miscellaneous	5,618.23	3,295.53	1,150.24			1,172.46	
Other Fees	4,109.50	4,109.50					
Publication Sales	17,313.17	8,095.00					9,218.17
Registration Fees	10,690.00	4,809.00	5,881.00				
Reimbursements	3,984.81	1,541.21				2,443.60	
Reprint Sales	756.80	756.80					
State Aid	57,492.62	57,492.62					
<b>TOTAL</b>	<b>\$226,390.00</b>	<b>\$146,373.28</b>	<b>\$7,183.24</b>	<b>\$0.00</b>	<b>\$2,750.00</b>	<b>\$60,865.31</b>	<b>\$9,218.17</b>
UNI Subsidy	\$ 10,829.42	\$ 10,829.42					
<b>TOTAL INCOME</b>	<b>\$237,219.42</b>	<b>\$157,202.70</b>	<b>\$7,183.24</b>	<b>\$0.00</b>	<b>\$2,750.00</b>	<b>\$60,865.31</b>	<b>\$9,218.17</b>

Table 11. Combined Expense Allocation 1985-86

EXPENSES	ALLOCATION OF INCOME						
	Amount	IAS	ISTS	ESTS	Micro	PRISMS	PRISMS Co.
Accounting	\$ 548.25	\$ 548.25					
Banquet/Meals	5,196.80	2,730.50	\$2,466.30				
Book Expenses	1,333.00	1,333.00					
Clerical	13,278.40	12,663.72				\$614.68	
Contract Services	5,063.63	1,901.23				3,162.40	
Equipment	426.95	426.95					
Equipment Service	1,417.30	1,417.30					
Grants	47,799.10	47,799.10					
Honoraria	57,329.12	17,094.25	215.00			40,019.87	
Misc. Expenses	549.66		25.00	40.00		484.66	
Postage & Shipping	8,361.71	7,147.41	492.96			392.05	329.29
Printing	34,488.98	29,623.60	405.01			922.17	3,538.20
Special Proj.	4,901.95	4,901.95					
Supplies	16,427.63	5,444.55	916.72		1,804.95	7,942.03	319.38
Taxes	2,033.57	1,982.35				51.22	
Telephone	1,723.05	1,017.72	22.06			683.27	
Travel	15,479.00	8,975.91	1,942.40	288.65		4,094.04	178.00
Workshops	501.80		501.80				
<b>TOTAL EXPENSES</b>	<b>\$216,859.90</b>	<b>\$145,007.79</b>	<b>\$6,987.25</b>	<b>\$328.65</b>	<b>\$1,804.95</b>	<b>\$58,366.39</b>	<b>\$4,364.87</b>
UNI Subsidy	\$ 10,829.42	\$ 10,829.42					
<b>TOTAL EXPENSES</b>	<b>\$227,689.32</b>	<b>\$155,837.21</b>	<b>\$6,987.25</b>	<b>\$328.65</b>	<b>\$1,804.95</b>	<b>\$58,366.39</b>	<b>\$4,364.87</b>
<b>TOTAL INCOME</b>	<b>\$237,219.42</b>	<b>\$157,202.70</b>	<b>\$7,183.24</b>	<b>\$ 0.00</b>	<b>\$2,750.00</b>	<b>\$60,865.31</b>	<b>\$9,218.17</b>
<b>NET INCOME</b>	<b>\$ 9,530.10</b>	<b>\$ 1,365.49</b>	<b>\$ 195.99</b>	<b>(\$328.65)</b>	<b>\$ 945.05</b>	<b>\$ 2,498.92</b>	<b>\$4,853.30</b>

The Academy completed the U.S. Department of Education grant for PRISMS. In addition to the \$56,945.68 received as part of the grant the project generated \$3,919.63 in income. The remaining \$2,498.92 of the \$60,865.31 for the grant was expended by the end of the fiscal year. With June 30, 1986 the PRISMS grant with the Department of education was complete. While the PRISMS project is now operating through the University of Northern Iowa, the Academy acts as an agent to sell the PRISMS material. Thus at the end of 1985-86 the PRISMS Co. had shown a net income of \$4,853.30 (Table 11) after expenses.

#### Endowment

For a number of years the Academy has had some investments which have served as an endowment. With the excellent income from the Parish farm in 1984-85 additional funds were placed in an endowment. Table 12 lists the assets which make up the Academy fund.

Table 12. Endowment Assets

Life Member Fund	\$ 783.44
Robert W. Hanson Publications	4,141.38
Notes	4,285.76
Bonds	6,140.00
Savings	15,000.00
<b>Total</b>	<b>\$30,350.58</b>

At the beginning of 1985 the Life Member fund contained \$739.67. The \$43.77 increase in this fund was from interest since there were no new Life Members during the year. Although the interest on the Life Member fund can be used for operating expenses according to the Bylaws this was not done during 1985-86; interest was reinvested.

In 1985-86 \$2,500 of the Robert W. Hanson fund was used to support the special issue of the Proceeding on the biography of Louis Pammel. The Board of Directors, however, placed an additional \$2,500 into the fund at the end of the year. The 1985 beginning balance in the fund was \$3,725.96. The \$415.42 increase in the fund was the result of several contributions and interest earned.

The bonds and notes are listed at their cost, not their market value. Each year the interest obtained is used for operating expenses.

At the beginning of 1985 the Board established the farm savings of \$15,000 consequently at the beginning of this year the savings was zero. Interest from the saving was used for operating income during the year. With this addition, the endowment values has increased from \$15,565.59 at the end of 1984-85 to \$30,350.58 at the end of this year. The intent is for the endowment to grow and thus building a firm financial base for future growth of the Academy.

**ACADEMY LEADERSHIP 1985-86**

**Officers**

President — John Downey, University of Northern Iowa  
 Past-President — Richard S. Wacha, Drake University  
 President-elect — Paul Waite, Des Moines State Climatologist  
 Executive Director — James G. Macmillan, University of Northern Iowa

**Directors**

Lenore T. Durkee, Grinnell College, 1986  
 Burton Loupee, Cedar Rapids, 1986  
 Paul Christiansen, Cornell College, 1987  
 Jack A. Gerlovich, Des Moines, 1987  
 Wayne I. Anderson, University of Northern Iowa, 1988  
 Ruth W. Swenson, Iowa State University, 1988

**Section Chairs**

Agricultural Sciences — Marc C. Albertsen, Pioneer Hi-Bred, Intl.  
 Anthropology — Stephen C. Lensink, University of Iowa  
 Biotechnology — Duane Enger, Iowa State University  
 Botany — Alan Orr, University of Northern Iowa  
 Chemical Education — Karen Latas, Iowa Western Community College  
 Chemistry C — Mark Arnold, University of Iowa  
 Chemistry D — Donald Speckhard, Loras College  
 Conservation — Doug Reeves, Wildlife Research Station - Boone  
 Engineering — Richard L. Valentine, University of Iowa  
 Geology — Raymond Anderson, Iowa Geological Survey  
 Linguistics — Gregory Iverson, University of Iowa  
 Nursing — Geraldene Felton, University of Iowa  
 Physics — Donald Roiseland, Wartburg College  
 Physiology — Darold Wolff, Wartburg College  
 Psychology — Alice Thieman, Iowa State College  
 Science Teaching — Rich Huber, Iowa City Community Schools  
 Zoology — Thomas L. Kramer, Muscatine, Iowa

**Standing Committees**

*Annual Meeting Committee*

(The Section Chairs constitute the Annual Meeting Committee.)

*Committee on Committees*

Paul Waite, Des Moines  
 Laura E. Sweets, Iowa State University  
 G. Edgar Folk, Jr., University of Iowa  
 Sr. Marguerite Neumann, Clarke College  
 Kenneth M. Cook, Coe College  
 Benjamin F. Graham, Grinnell  
 Donald L. Koch, Iowa Geological Survey  
 Board Liaison: Paul Waite

*Conservation and Preserves Committee*

William P. Pusateri (chair), Iowa Conservation Commission  
 George D. Schrimper, Museum of Natural History, The University of Iowa  
 Neil P. Burnstein, Mount Mercy College  
 Paul Whitson, University of Northern Iowa  
 Karl Goellner, Ex-officio, Cedar Rapids  
 James L. Christiansen, Drake University  
 Robert H. Hibbs, Marshalltown  
 Board Liaison: Paul Christiansen

*Education Committee*

Jack Gerlovich, Des Moines  
 Catherine Cate, Des Moines  
 Carolyn Brockway (chair), Cedar Rapids  
 Trevor G. Howe, Iowa State University  
 Paul H. Joslin, Drake University  
 Janice Kemp, Central College  
 Joe R. Moore, Ex-officio, Luana  
 Lynn Glass, Ex-officio, Iowa State University

Darrell Phillips, University of Iowa  
 Board Liaison: Jack Gerlovich

*Election Committee*

Richard S. Wacha (chair), Drake University  
 Gene G. Wubbels, Grinnell College  
 Duane Anderson, University of Iowa  
 Nels Lersten, Iowa State University  
 David Roslien, Luther College  
 Richard Bovbjerg, The University of Iowa  
 Board Liaison: Richard Wacha

*Finance Committee*

George G. Karas (chair), Iowa State University  
 James L. Christiansen, Drake University  
 Irving Y. Fishman, Grinnell College  
 Maxine F. Huffman, Central College  
 Burton Loupee, Cedar Rapids  
 Donald Duvick, Pioneer Hi-Bred Intl., Inc.  
 Board Liaison: Burton Loupee

*Iowa Science Foundation*

Lois H. Tiffany (chair), Iowa State University  
 Duane C. Anderson, University of Iowa  
 Harry T. Horner, Iowa State University  
 George G. Karas, Iowa State University  
 Burton Loupee, Cedar Rapids  
 Robert Yager, University of Iowa  
 Board Liaison: Wayne Anderson

*Membership Committee*

Don C. Norton (chair), Iowa State University  
 Gene A. Lucas, Drake University  
 William Jagiello, Des Moines  
 Bill Gilbert, Simpson College  
 Arthur J. Bosch, Central College  
 Katherine A. Spielmann, University of Iowa  
 Board Liaison: Lenore Durkee

*Parish Farm Committee*

Daryl Smith (chair), University of Northern Iowa  
 Wallace E. Akin, Drake University  
 George Knaphus, Iowa State University  
 Bruce Menzel, Iowa State University  
 Abraham Epstein, Iowa State University  
 David L. Lyon, Cornell College  
 Board Liaison: Burton Loupee

*Recognition and Awards Committee*

Charles C. Wunder (chair), The University of Iowa  
 George Burnet, Iowa State University  
 Robert S. Carmichael, University of Iowa  
 Paul Rider, University of Northern Iowa  
 Lois H. Tiffany, Iowa State University  
 L. H. Durkee, Grinnell College  
 Board Liaison: Lenore Durkee

*Student Programs Committee*

Joe R. Moore (chair), Luana  
 Ross L. Iverson, Marshalltown  
 Joe D. Woods, Drake University  
 Lynn W. Glass, Iowa State University, Director IJAS (ex-officio)  
 Mary E. Sievert, Davenport  
 Shirley Crawford, Ankeny  
 Jack A. Gerlovich, Des Moines (ex-officio)  
 Steven A. Feller, Cedar Rapids  
 Board Liaison: John Downey

**Special Committees***Controversial Issues Committee*

Donald Huffman (chair), Central College  
 Peter DeJong, Coe College  
 Warren Dolphin, Iowa State University  
 Harlo Hadow, Coe College  
 George Magrane, Ottumwa  
 Donald Shepherd, St. Ambrose College  
 John W. Patterson, Iowa State University  
 Board Liaison: Ruth Swenson

*Iowa's Natural Heritage Steering Committee*

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**PAPER PRESENTATIONS, ANNUAL MEETING 1986**

## Invited Junior Academy Papers

Brett Ashford, Davenport Central High School — Influence of metallurgical structure on the corrosion rate of alithalite  
 Shari Becker, Davenport Central High School — Does acetylsalicylic acid affect ascorbic acid concentration?  
 Jeff Bishop, Rockford Senior High School — Finding the effect of gravity upon turbulence  
 Geoffrey S. Francis, Marshalltown High School — Expanded study of radiation environment on integrated circuits under bias  
 Rod Hauser, Marshalltown High School — Growth of prairie grasses and forbs in competition  
 Stephen Hise, Davenport Central High School — Characterization of transient responses in ion-selective glass membrane electrodes  
 Leslie Reu, Central Lee High School, Argyle — My aerodynamically designed car; The Challenger  
 D. Scott Smith, Farragut Community School — Computer system for the handicapped  
 John Stoffel, Bettendorf High School — The effects of radiation on bean seeds and seedlings  
 Robert Theodore Wallace, Maharishi School for the Age of Enlightenment, Fairfield  
 Michael Wilson, Mid-Prairie High School, Wellman — Improving the process to make 1,2,3,4,5-Pentamethylcyclopentadiene

**Contributed Papers**

(All abstracts of contributed papers received on time appeared in the March 1986 PROCEEDINGS as an insert).