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Annual Report of the Iowa Academy of Science, 1986-87

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PREFACE

Since 1975 when a history of the Iowa Academy of Science was written for the centennial of the founding of the Academy, an Annual Report has acted as a continuing record of the Academy's activities.

This report encompasses the year beginning July 1, 1986 to June 30, 1987 and is based on committee meetings, Board minutes and the recollections of the author. Each part represents a major activity of the Academy.

THE 99th ANNUAL MEETING

The 99th Annual Meeting was held April 24-25, 1987 on the Grinnell College campus.

Annual Meeting Committee

The Annual Meeting Committee which was chaired by Gary Downs, Director of Meetings and Programs, met October 1, 1986 in Grinnell to begin planning the program. The Annual Meeting Committee was composed of the Local Arrangements Committee, Benjamin Graham and Irving Fishman both of Grinnell and the chairs of the sections as follows:

Agricultural Sciences

Richard B. Hall, Iowa State University

Anthropology

James M. Gifford, Iowa State University

Biotechnology

Dwight T. Tomes, Pioneer Hi-Bred International

Botany

L.H. Durkee, Grinnell College

Chemical Education

Roland Stout, Drake University

Chemistry, Inorganic, Analytical & Physical

Gary W. Small, University of Iowa

Chemistry, Organic & Biological

Jon Hutchins, Buena Vista College

Conservation

Roger Bachmann, Iowa State University

Earth Science Teaching

Bill Peterson, Sioux City

Elementary Science Teaching

Gary E. Downs, Iowa State University

Engineering

Otto Buck, Iowa State University

Geology

Lynn A. Brant, University of Northern Iowa

Linguistics

Philip E. Webber, Central College

Nursing

Martha Craft, University of Iowa

Physics

Robert R. Cadmus, Jr., Grinnell College

Physiology

James A. Dykens, Grinnell College

Psychology

Lloyd L. Avant, Iowa State University

Science Teaching

Dean Hartman, Grant Wood AEA; **Karen Murphy**, Weeks Transitional School

Zoology

Richard W. Coleman, Upper Iowa University

The Annual Meeting Committee recommended General Session speakers, symposia and planned the blocking of the program. Details of the program were handled by the Executive Director, Director of Meetings and Programs and the Local Arrangements Committee. The section chairs planned the contributed paper programs for their sections.

Iowa Junior Academy of Science Program

The Director of the Iowa Junior Academy of Science, **Lynn Glass** and the chair of the Student Programs Committee, **Joe Moore**, planned the IJAS program of invited papers. The following 17 student poster papers and oral presentations were judged by a committee made up of vice chairs of the sections and members of the Student Programs Committee.

Bill Deninger, Marshalltown Senior High School

The Effects of Changing Electromagnetic Radiation on an Eco-system

Mark Griffith, Linn-Mar High School, Marion

Lectin Staining in Malignant Effusions

Richard R. Harms, Sentral High School, Fenton

Taking a "Byte" Out of Crime

Stephen Hise, Central High School, Davenport

Further Studies of Transient Responses in Glass Electrodes

Brett R. Iverson, Green Mountain High School

A Low Temperature Germination Study of *Amaranthus*

Laura Jones, Stuart-Menlo High School

Phenol: Physiological Effects of NaCl on *Rahus norvegicus*

Blane A. Krause, Rockwell City Community High School

The Mechanical Manipulation of Randomly Oriented Parts

Amy Louise Lemke, Guthrie Center High School

Antibiotic Residues Found in Lactating Cows

Melinda M. McFarlin, West High School, Davenport

Radiation Effect on Normal Flora of the Throat

Jeff Ryant, North Winneshiek High School, Decorah

What Are Composites?

Sara Schneckloth, Central High School, Davenport

The Effect of Methulxanthine Application on Mung Bean Plants

William E. Staib, Central High School, Davenport

Can Computers Compose Aesthetic Music with Applied Counterpoint?

Christine Stoffel, Bettendorf High School

Evidence for Allelopathy in Buckhorn Plantain: Experimentation and Chemical Analysis

Chair Tyne, Stuart-Menlo High School

"C" — A Virus Defender?

Gareth Wallace, Maharishi School of the Age of Enlightenment, Fairfield

Herbal Exogenous Biological Response Modifiers for Natural Killer Cells; A New Approach to Cancer Therapy

*Executive Director, IAS

Michelle Wells, Marshalltown Senior High School
 The Effect of Fertilizer Run-off on Pond Ecosystems
Julan White, Maharishi School of the Age of Enlightenment, Fairfield
 Universal Symbolic Language for Artificial Intelligence

BIOTECHNOLOGY: IMPACT ON IOWA'S AGRICULTURAL ECONOMY
TEACHING FOR, OF AND ABOUT THINKING SKILLS IN SCIENCE

Program Summary

The senior Academy program had 253 papers which included General Session speakers, symposia presentations and contributed papers. The following is a summary of the Annual Meeting program activities.

PROGRAM SUMMARY

THURSDAY, APRIL 23

1:00	Workshop
2:00	Board of Directors Meeting and Dinner

FRIDAY, APRIL 24

8:00	VIDEO FILM PREVIEW
8:00	IJAS POSTERS
8:00	SECTION MEETINGS Botany-Session A Session B (8:15) Conservation Zoology
8:30	IJAS PRESENTATIONS
10:00	GENERAL SESSION I President Paul Waite, presiding Welcome: George A. Drake, President, Grinnell College "Impact of Biotechnology on Agricultural Production" Dr. Roger A. Kleese, Molecular Genetics, Inc., 10320 Bren Road East, Minnetonka, Minnesota
11:15	ANNUAL BUSINESS MEETING
12:00	AWARDS LUNCHEON This served luncheon honored groups and individual students who have performed in an exemplary manner in science activities throughout Iowa. Several teachers were honored as they received the Iowa Academy's Excellence in Science Teaching Award.
1:00	SECTION MEETINGS Chemistry D Linguistics Psychology
1:30	CONCURRENT SYMPOSIA <i>THE IOWA SCIENCE FOUNDATION: REVIEW OF THIRD-YEAR PROJECTS</i> <i>IOWA'S INTERIOR STREAMS</i>

1:30	WORKSHOPS/DISCUSSIONS <i>THE HUMAN VOCAL TRACT: ANATOMY, FUNCTION, DEVELOPMENT AND EVOLUTION</i> <i>SCIENCE FAIRS: HOW THEY FLOW AND SCHEDULE FOR THE FUTURE</i> <i>COMPUTER-ASSISTED RESEARCH FOR STUDENTS</i> <i>GAMEPORT INTERFACING IN THE TEACHING OF CHEMISTRY (PREREGISTRATION REQUIRED)</i>
4:00	IAS POSTERS
5:00	SOCIAL HOUR
6:15	PRESIDENT'S BANQUET President Paul Waite, presiding Presentation of Iowa Academy of Science Awards Installation of new president and remarks by outgoing President Waite Response by President Lenore T. Durkee
8:00	GENERAL SESSION II President Lenore T. Durkee, presiding "I, the Great Paracelsus" Dr. Cathy Haustein and R. Bruce Haustein, Central College, Pella

SATURDAY, APRIL 25

8:00	SECTION MEETINGS Agricultural Sciences Anthropology Biotechnology Botany - Session A Session B Chemical Education Chemistry C Chemistry D Elementary Science Business Meeting Section Meeting Engineering - Session A Session B Session C Geology Nursing Physics Physiology Science Teaching Business Meeting Section Meeting Zoology
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8:00	AAPT MEETING
8:00	VIDEO FILM PREVIEW
11:00	GENERAL SESSION III President Lenore T. Durkee, presiding "The Gaia Hypothesis: The Basis for a New Kind of Global Biological Science" Dr. Lynn Margulis, Department of Biology, Boston University, Boston, Massachusetts
1:00	SECTION MEETINGS Agricultural Sciences Chemical Education (Joint with ISTS) Geology Nursing Physics Science Teaching (Joint with Chem. Educ.) Elementary Science

SUNDAY, APRIL 26

9:00 Geological Society Field Trip

The Awards Luncheon

One hundred and sixty persons attended the Awards Luncheon in Gardner Lounge on Friday 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 - Gary L. Garton, City High School, Iowa City
Chemistry - Mary Frances Feddersen, North High School, Sioux City
Earth Science - H. John Verdon, Waverly-Shell Rock Senior High
Elementary Science - Candace Kilburg, Center Point Consolidated
Junior High Science - Lynn Altemeier, Indian Hills Jr. High, Des Moines
Physics - Peter Harold Sweedy, Bettendorf High School

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 winners of the two \$500 scholarships and the students who would represent Iowa at the American Junior Academy of Science program in Boston in February 1988. The scholarship winners were:

Laura K. Jones, Stuart-Menlo High School
Christine Stoffel, Bettendorf High School

The AJAS representatives are:

William E. Staib, Central High School, Davenport
Gareth Wallace, Maharishi School of the Age of Enlightenment, Fairfield

Alternates:

Sara Schneckloth, Central High School, Davenport
Brett R. Iverson, Green Mountain High School

The President's Banquet

Following a social hour in the Main Hall lounge Friday evening, one hundred and eighty persons attended the President's Banquet in the Quad Dining Room. At the conclusion of the meal President Paul Waite introduced Robert Carmichael of the Recognition and Awards Committee, who introduced the nominators for the following Iowa Academy of Science Awards:

Distinguished Fellow Award
William M. Furnish, University of Iowa
Distinguished Iowa Scientist
Robert H. Shaw, Iowa State University
Distinguished Service Award
Council for Agricultural Science and Technology (CAST)

President Waite reviewed the Academy's activities for the year prior to presenting the gavel to the new President, Lenore Durkee. President Durkee presented her goals for the Academy during the next year. Both presentations appeared in the June Iowa Academy of Science Bulletin.

Attendance

Both the 1987 and five year attendance are shown in Tables 1 and 2.

Table 1. Registered Attendance 1987

	Pre-registered		Walk-in		TOTAL
	Papers*	Regular	Fri.	Sat.	
Members:					
Regular	98	188	47	9	342
Student	26	5	1	2	34
SUB-TOTAL	124	193	48	11	376
Nonmembers:					
Regular	48	34	18	7	107
Student	77	23	3	12	115
SUB-TOTAL	125	57	21	19	222
Guests, ect.	4	29		1	34
TOTAL	253	279	69	31	632

* Includes General Session, Symposia and contributed papers. Authors counted once.

Table 2. Five Year Average Attendance

YEAR	Members	Non-members	Guests	Total
1983	328 (65.0)	132 (26.1)	44 (8.7)	504
1984	361 (62.0)	179 (30.7)	42 (7.2)	582
1985	306 (65.5)	116 (24.8)	45 (9.6)	467
1986	316 (67.0)	131 (27.8)	24 (5.0)	471
1987	376 (59.4)	222 (35.1)	34 (5.3)	632

* Number in parentheses are percentages
3 Central College
1 Luther College
2 University of Iowa
4 Wartburg College
5 Grinnell College

The six hundred and thirty-two persons in attendance at the two-day meeting represent a 34 percent increase over last year and the largest Annual meeting ever for the Academy. With the increase in attendance there was also an increase in the number of contributed papers (16.5%). The distribution between members (59.4%) and nonmembers (35.1%) shows a slight increase in the number of nonmembers attending. Although there is no definitive reason for the large increase in attendance this year, the central Iowa location of Grinnell College may have been significant.

Table 3. Attendance Summary, 99th Session, 1987

	Number of Papers	Attendance
<i>Contributed Papers</i>		
Agricultural Sciences	16	18
Anthropology	5	30
Biotechnology	9	25
Botany	35	50
Chemical Education	7	35
Chemistry C	18	30
Chemistry D	8	15
Conservation	8	43
Elementary Science	3	42
Engineering	29	20
Geology	18	40
Nursing	11	22
Physics	18	35
Physiology	11	60
Psychology	11	24
Science Teaching	15	70
Zoology	15	21
TOTAL	223	
<i>Invited Papers</i>		
Symposium: Biotechnology Impact on Iowa's Economy		50
Symposium: The Iowa Science Fdn: Review of Third-Year Projects		100
Symposium: Iowa: Interior Streams		125
Symposium: Teaching for, of and about Thinking Skills in Science		75
Videotape & Panel Disc — "The Human Vocal Tract: Anatomy, Function, Development and Evolution"		26
TOTAL		
General Session I		219
General Session II		254
General Session III		321
Special Events:		
Annual Business Meeting		325
Awards Luncheon		160
President's Banquet		180

MINUTES OF THE ANNUAL BUSINESS SESSION

Roberts Theater, 11:15 a.m., April 24, 1987

The Annual Business Meeting of the Iowa Academy of Science was called to order by President Waite at 11:15 a.m. in the Roberts Theater on the Grinnell College campus in Grinnell, Iowa. With approximately 200 persons in attendance, a quorum was declared.

Financial Report — Following President Waite's review of the Board's actions of the past year, Executive Director James G. Macmillan presented a financial report for the Academy as of March 31, 1987. He noted that as of March 31, 1987 the total assets of the Academy were \$107,822.61 which included (\$6,562.65) in checking, \$75,849.12 in savings and endowment, \$6,140 in bonds, \$273.50 and \$32,122.64 in uncollected state appropriation. He said that although the negative balance in the checking account looked unusual, the Academy does the accounting for several projects and the total checking for all accounts showed a positive balance. Macmillan pointed out that the state appropriation was for unexpended Iowa Science Foundation grants and that these funds would be completely expended by the end of June; consequently, when one subtracts the state appropriation from the assets the net assets of the Academy are

\$75,699.97. This represents an increase of \$12,639.88 over last year at the end of June 1986. He noted that the expenses of the Annual Meeting and additional farm income would change these figures by the end of June 1987.

Macmillan reported that by the end of March the farm income had been \$13,800 and that since the first of April an additional \$7,000 had been received. With an additional 2,800 bushels of soybeans yet to be sold he felt that the income from the farm should exceed the anticipated \$30,000 needed for the budget.

To complete this report, Macmillan presented a chart which showed the cash assets of the Academy on a monthly basis for the past three years. He noted that the increase in cash assets was probably due to several good years for the Academy farm, to an increase in membership and to the increase in dues to \$20 in 1984.

1987-88 Budget — Macmillan reported that the Board of Directors at the April 23 meeting approved a budget of \$148,815 based on an expected income of the same amount. This budget which was developed by the Finance Committee for presentation to the Board, assumes \$57,195 in state appropriations, \$30,000 in farm income, \$26,000 from dues and \$34,900 from publications, meeting registrations, and investment income. The projected expenses are \$53,740 for grants, \$36,925 for honoraria and wages, \$7,200 for postage, \$8,100 for supplies and services, \$25,300 for printing and \$17,500 for committee travel. Macmillan presented this budget from the Board of Directors to the membership for approval.

Horner moved to approve the budget. Durkee seconded the motion. The motion passed unanimously.

Election Report — Past President Downey reported that the Election Committee had selected a slate of candidates for President-elect and Board of Directors. This slate of officers was approved by the Board of Directors and a ballot was sent to all members. The ballots were counted on April 7. Paul Christiansen, Cornell College, was elected President-elect while Bruce Menzel, Iowa State University, and Samuel Tuthill, Iowa Electric Power and Light, were elected as Board members.

Membership — Gene Lucas, chair of the Membership Committee, presented a report of the Membership Committee. The membership of the Academy as of April 15, 1987 was 1596 members; regular members 1024, student members 138, fellows 265, emeritus 97, life members 47, corporate members 5 and distinguished fellows 20.

Although the committee reviewed applications for fellow no fellows were recommended this year.

During the year the following persons were granted emeritus membership.

- Warren Classon, Davenport
- Sister Marguerite Neumann, Dubuque
- James O. Osburn, Iowa City
- Gordon Searle, Iowa City
- Agnes Spera, Council Bluffs
- Donald Stout, Des Moines
- R.J. Vanden Branden, Des Moines
- Ralph Wallace, Mason City
- Joe Woods, Des Moines

Lucas recognized the following persons as members who had passed away since the last annual meeting.

- John Chellevoid, Waverly
- H.L. Dean, Iowa City
- Sister Joseph Therese Geiger, Chicago
- Henry Gilman, Ames
- Robert W. Hanson, Eden Prairie, MN
- Clarence Lindahl, Ames
- Reverend Warren E. Nye, Waverly

Resolutions — Wayne Anderson, Board liaison to the Conservation and Preserves Committee, presented the following resolutions which had been approved by the Board of Directors.

RESOLUTIONS

I. FIFTH ANNUAL STATE PRAIRIE HERITAGE WEEK

The Iowa Academy of Science hereby encourages Governor Terry Branstad to proclaim the week of September 6-12th, 1987, as the Fifth 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.

The resolution was moved and seconded for adoption. The question was asked about the date being so early in September. It was pointed out that the State Preserves Board had discussed the date and although it was early in the fall it was still the best date for visiting the prairies. The motion passed unanimously.

II. GROUNDWATER QUALITY IN IOWA

The Iowa Academy of Science recognizes that the continued contamination and degradation of our state's groundwater poses a significant threat to the environment and that the continued contamination of our water resources can result in impaired health of our citizens, severe economic losses in many sectors and serious long-term ecological consequences. In addition, we recognize that excessive reliance upon chemicals for fertilization and pest control contributes to groundwater contamination. Therefore, the Iowa Academy of Science urges the implementation of strategies that would both protect Iowa's groundwater from further degradation and also remedy existing pollution.

The resolution was moved and seconded for adoption. Following no discussion, the motion was passed unanimously.

Position Paper on Pseudo-sciences — Don Huffman, chair of the controversial Issues Committee, read the following position paper from the committee which had been approved by the Board of Directors.

STATEMENT OF THE POSITION OF THE IOWA ACADEMY OF SCIENCE ON PSEUDOSCIENCE (July, 1986)

The Iowa Academy of Science strongly opposes the public promotion of pseudoscience, whether through the media, the legislature, or classrooms of accredited educational institutions of Iowa.

Pseudoscience is a catch-all term for any mistaken or unsupported beliefs that are cloaked in the disguise of scientific credibility. Examples include assertions of scientific creationism, the control of actions at a distance through mediation, and the belief in levitation, astrology or UFO visitors. While the IAS opposes the promotion of such beliefs, it does not oppose critical examination of them, either in the public media or in classrooms. Indeed, there is much to be learned from critical examination of pseudoscience.

One main concern is public confusion over what science is and what it is not. This cannot be resolved merely by contriving tighter definitions of science or its methods. In fact, authoritative definitions inadvertently provide a model that counterfeiters need in order to better fashion their "cloaks of scientific credibility". To clear up the confusion between real and bogus science we must focus not on their definitions, but on their differences.

In contrast to pseudoscientists, scientists seek out, expose and correct any logical fallacies or other errors which could weaken their theories or interpretations. To assure complete scrutiny, open criticism is not only tolerated but often rewarded, particularly when it results in significant revisions of established views. The debate is held in refereed scientific journals and in meetings, and anyone, well known or not, can submit pro or con arguments for publication or presentation before peers.

By contrast, open criticism is not welcomed by pseudoscientists. They usually avoid publishing in refereed scientific journals, and subsequently their

theories are not self-correcting; thus they fail to experience the progressive changes characteristic of science. Astrology and creationism, for example, have experienced nothing comparable to Copernican or Darwinian revolutions (paradigm shifts) which have occurred in astronomy and biology.

The Iowa Academy of Science is prepared to assist citizens, teachers, public officials and the media who seek information on issues involving science and pseudoscience.

Huffman moved that the position paper be accepted. Ruth Swenson seconded the motion. It was asked if the position paper reflected the position of the Iowa Academy of Science Board of Directors. Huffman reported that it had been submitted to the Board and that they had revised it with the committee's approval. Motion passed unanimously.

The Business meeting adjourned at 11:50 p.m.

REVIEW OF ACADEMY ACTIVITIES IN 1986-87

Committee Activities

During 1986-87, the Academy affairs have been handled by the Board of Directors, the Executive Director, the Director of the Iowa Junior Academy of Science, thirteen committees, three ad hoc committees and three editors. In all, over 130 persons were involved in the Academy's committees 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 the committees were asked to set goals for the year. They submitted a year end report in May which summarized their activities for the year. These reports appeared in the June IAS BULLETIN.

Annual Meeting

Chair: Gary Downs

The committee met October 1, 1986 to begin planning for the 99th Annual Meeting to be held at Grinnell College in Grinnell, Iowa. The Committee agreed on blocking for the meeting, suggested names for General Session speakers and suggested symposium topics. Section chairs were instructed on how to prepare their section program. Details for the meeting were handled by the Local Arrangements Committee.

The final program was summarized earlier in this report.

Committee on Committees

Chair: President-Elect Lenore Durkee

The committee met on November 15, 1986 to discuss committee appointments for 1987-88. Recommendations for committee appointments were accepted by committee chairs and the Committee on Committees. The list of possible candidates prepared for each committee was acted upon by the IAS office. All appointments were made prior to the 1987 Annual Meeting.

Conservation and Preserves Committee

Chair: William Pusateri

The committee met three times during the year and carried out some of their activities by mail and phone. The committee submitted the two resolutions; 1. "Groundwater Quality in Iowa" and 2. "Fifth Annual State Prairie Heritage Week" mentioned earlier in this report. The committee submitted a list of nominees to the Governor for several positions available on the State Preserves Advisory Board and the Department of Natural Resources Commission.

Ad Hoc Controversial Issues

Chair: Don Huffman

The committee became a standing committee of the Academy. The committee submitted a position paper on pseudo-sciences to the Board of Directors. The final position paper was approved by the membership at the 99th Annual Meeting. The chair of the committee submitted an analysis of the position paper to the Des Moines Register which appeared June 11, 1987.

Education Committee

Chair: Janice Kemp

The committee met several times to conduct the Search for Excellence in Science Education for 1987. Council Bluffs Community School District was selected as the Iowa nominee for the award for Science Supervision. City High School, Iowa City, was selected as the Iowa nominee for the award in Biology.

They selected the nominees for the Presidential Award for Excellence in Science Education. The Iowa nominees were **Donald E. Murphy**, Herbert Hoover High School, Des Moines; **Sandra J. Walton**, Dubuque Senior High School; **Elwyn Maloy**, Linn-Mar Junior High School, Marion.

Election

Chair: Past President John Downey

The committee met January 26, 1987 and selected the following slate of candidates for President Elect and Board of Directors for the 1987-88 ballot.

President-elect: **George Burnet**
Paul Christiansen
 Director: **Irving Y. Fishman**
Bruce Menzel
Samuel J. Tuthill
Bernard J. White

The committee chair validated the election results and reported them at the Annual Meeting.

The committee maintained awareness of the foundation by conducting a symposium at the 1987 Annual Meeting.

Long Range Planning Committee

Chair: Harry Horner

The committee was not given a charge by the Board of Directors and consequently did not meet during 1986-87.

Membership Committee

Chair: Gene Lucas

The committee solicited nominations for Fellow through the fall issue of the IASB. The committee evaluated the nominations received but did not make any recommendations to the Board of Directors for Fellow appointments. The committee discussed ways of increasing membership.

Parish Farm

Chair: Daryl Smith

The committee met on the farm premises in October to review with the farm manager the crop plantings for the year and the success of the 1986 crop. The committee agreed that the Parish Farm was meeting the expectations of the Academy.

Public Information

Chair: Connie Mutel

The committee engaged Colleen Reilly as consultant to review the public relation activities of the Academy. As a consequence of the written and oral report to the committee and the Board of Directors, the committee recommended that an intern from the UNI public relations program be selected.

Finance Committee

Chair: George Karas

The committee met three times during the year to assist the Executive Director on several tasks. The committee advised the Executive Director in establishing a short and long term investment program with Merrill-Lynch and investigated approaches to endowment fund raising. The committee assisted in developing the 1987-88 budget which was submitted to the Board of Directors for the April board meeting.

Iowa Science Foundation

Chair: Lois Tiffany

The committee solicited and evaluated proposals for the 1987-88 fiscal year. The following thirteen proposals were funded for a total of \$52,040.

- "A Project to Operationalize the Iowa Alliance for Science"
Lynn W. Glass, Iowa State University \$5,000
- "Blycoproteins as Markers of Regional Differentiation in the Ectoderm of Chicken Embryos"
Charles H. Sullivan, Grinnell College \$5,000
- "Protein Analysis of Flowering in a Rapid-Cycling *Brassica* using 2-D PAGE"
Alan R. Orr, University of Northern Iowa \$1,910
- "Accessory Chlorophyll Analyses of Selected Diatoms"
David B. Czarnecki, Loras College \$2,880
- "Investigations of the Effects of the Mutant Eyeless (*e/e*) gene upon the Developing Hypothalamus in the Axolotl"
Gerald W. Eagleson, Loras College \$4,000
- "A comparative and developmental study of polyacetylene ducts in native and weedy ragweed (*Ambrosia*) species (Asteraceae)" \$3,500
Nels R. Lersten, Iowa State University
- "An Interactive Science Museum Exhibit of Transmission Holography"
Kirk E. Brocker, Dale W. Olson, The Science Center of Iowa \$4,900
- "Mineralogy, Paragenesis, and Stable Isotopic Compositions of Sulfide Mineral Deposits Associated with Late Paleozoic Karst Fills in Devonian Limestones in Eastern Iowa"
Paul L. Garvin, Cornell College \$2,100
- "In vitro effects of an unusual insulin, bullfrog insulin"
Eugenia S. Farrar, Iowa State University \$4,200
- "The role of chorusing behavior in the reproductive behavior of a prairie katydid"
Kenneth C. Shaw, Iowa State University \$4,800
- "Dispersal of the European Alder Leafminer in an Intensive Culture Plantation"
Richard B. Hall, **Elwood R. Hart**, Iowa State University \$3,750
- "Laser Nucleation of Catalyst Clusters"
David G. Rethwisch, University of Iowa \$5,000
- "Promoting Science Careers for Women Through Education: A Pilot Program"
Ruth W. Swenson, Iowa State University \$5,000

The committee continued to make contacts with radio and newspa-

pers to encourage them to carry science stories. The committee obtained science story leads from Academy membership and provided them to newspapers and radio stations.

In addition to discussing ways of improving the Annual Meeting publicity, the committee recommended that the Board of Directors continue to support the IPT program "Nature".

Ad Hoc Publications

Chair: Don Norton

The committee was not given a charge by the Board of Directors and consequently did not meet in 1986-87.

Recognition and Awards

Chair: George Burnet

The committee worked with the Governor's office in evaluating the nomination for the Governor's Science Medal. The Governor selected the following recipients.

Science Application - **Velmer A. Fassel**, Ames Lab, Iowa State University

Science Achievement - **Donald A. Gurnett**, University of Iowa
Science Teaching - **Kenneth A. Christiansen**, Grinnell College
George Knaphus, Iowa State University

The Committee solicited and evaluated the nominations for the Iowa Academy of Science Awards. The committee made and the Board of Directors approved the recommendations for the IAS awards. (These are listed elsewhere in this report.) The committee also reviewed and revised the nomination guidelines and forms for the IAS awards.

Student Programs

Chair: Joe Moore

The committee worked with **Lynn Glass**, Director of the Iowa Junior Academy of Science, in soliciting and evaluating student research grant applications. The committee approved \$1824.79 in grants to the following secondary schools:

"The Effects of a Space Station Environment on the Growth and Germination of Plants"

Julie Wigton, Stuart-Menlo Community School

"Up in Smoke Flame Retardation"

Anne Wagner, Stuart-Menlo Community School

"How Does the Shape of Objects Affect Airflow?"

Robert Dean Gast, Stuart-Menlo Community School

"C" — A Virus Defender?"

Chari Tyne, Stuart-Menlo Community School

"The Effects of Environmental Conditions on the Mental Growth of a Rat"

Heather Christiansen, Stuart-Menlo Community School

"High Pressure Liquid Chromatography and Cigarette Smoke"

Matt Millard, Stuart-Menlo Community School

"Pictures/Colors Reveal Personalities as the Pupils 'Talk'"

Brenda Mains, Stuart-Menlo High School

"Humboldt County Rural Well Water Analysis"

Jeffrey Richard Wittrock, Humboldt Community High School

"The Effects of Tradescantia as an Effective Radiation Detector (Geiger counter)"

Christopher Howells, Miller Junior High School

"The Antibiotic Affect of Giant Puffballs"

Cort Iverson, Green Mountain Jr. High School

"*Agrobacterium tumefaciens* (At) as a Neoplastic Agent in Insectivorous Plants"

Angie Fish, Marshalltown Senior High School

"An Investigation of the Effects of Selected Invertebrates in the Formation of Neo-plasias in *Lycopersicon esculentum*"

Douglas Joseph Renze, Marshalltown Senior High School

"The Effect of Aloe Vera Extracts Upon Pure Cultures of Bacteria"

Rachel Tiernan, Marshalltown Senior High School

"The Etiology of Insects and the Manifestation of Microbes as Related to Livestock and Domesticated Animals"

Justin Edward Jordebrek, Marshalltown Senior High School

"The Effect of Commercial Fertilizers on Pond Fauna and Flora"

Michelle Wells, Marshalltown Senior High School

"Is There a Direct Relationship Between Caffeine and Plant Disease?"

Sara E. Schneckloth, Davenport Central High School

"The Effects of Aspartame on Growth of Bean Seeds as Compared with Sugar and a Control"

Pam Atkinson, Davenport Central High School

"Studies of the Relationship Between pH and Transient Response Height in Glass Electrodes"

Steve Hise, Davenport High School

"The study of Chymopapain and its catabolic effects on disc tissue"

Angela Marie Wilson, Davenport North High School

The committee conducted a program at the Iowa Science Teachers Section Fall conference on conducting student research projects in addition to conducting programs at several Iowa science fairs to help teachers work with students on research projects.

The committee invited the winners of State and Local Science Fairs and Symposia to present their research at the IJAS Program at the IAS Annual Meeting. The papers presented are listed elsewhere in this report. As a result of judging the presentations at the Annual Meeting the following awards were made: \$500 scholarships to graduating seniors and American Junior Academy of Science delegates (both are listed elsewhere in this report). During the year the committee also selected the delegates and alternates to the following national programs:

National Youth Science Camp

Sheila Schmidt, Bellevue-Marquette High School

Lisa Laxson, Maquoketa Valley High School, Delhi

National Energy Institutes

Livermore National Laboratory, California: **Thomas Koch**, Clarinda High School

Brookhaven National Laboratory, New York: **Jason McDermott**, Cascade High School

Lawrence Berkeley Laboratory, California: **Michelle Enger**, Treynor High School

Fermi National Accelerator Laboratory, Illinois: **Michael O'Mara**, Don Bosco High School

Alternates to N.Y.S.C. and Energy Institutes:

Ronald Fox, Abraham Lincoln High School, Council Bluffs

Michael Christensen, Rolfe High School

National Institute of Health

Steven Hise, Central High School, Davenport

The committee selected 176 high school seniors to receive the Outstanding Science Student Award. One award was allowed for each accredited high school in Iowa. The names of the students appeared in the June 1987 IAS 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 awards. The awards were presented at the Awards Luncheon held at the IAS Annual Meeting in Grinnell, Iowa. (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 meetings during the year.

Chemical Education

The Chemical Education Section held an afternoon and evening meeting at the Des Moines Area Community College, Ankeny Campus on Friday, September 26, 1986. Workshops on "Electroforming and Electroplating", "Coulometric Titrations" and "Chemical Hazards and the Employee Right to Know Law" were presented. Approximately 25 persons were in attendance.

Iowa Science Teachers Fall Conference

The Iowa Science Teachers Fall Conference was held October 30, 1986 at the Stouffer Five Seasons Hotel in Cedar Rapids, Iowa. In addition to the 36 small group presentations, Carolyn Sumners, director of Astronomy and Physics, Museum of Natural History, Houston, Texas gave a presentation on "The Science of Informal Experiences" at the noon luncheon. The attendance figures are shown in Table 4.

Table 4. ISTS Fall Conference Attendance

Registration	Pre-registrations	Walk-in
Members	146	22
Students	32	19
Non-members	161	13
Guests	65	1
Total	404	55
Exhibitors	24	
Total Attendance	483	

The Iowa Science Teachers Outstanding Service Award for 1986 was presented to Charles Haman, former editor of the Iowa Science Teachers Journal.

ADMINISTRATION

Personnel

During the 1986-87 year there were no changes in the Academy office personnel. Doris Mitchell continued as office manager and James Macmillan as executive director. Debra Davis continued as a student office assistant.

Grants

The Academy continued involvement with the PRISMS project by selling PRISMS guides and keeping accounts of the expenses for the printing and mailing of guides. NSP support for the project was assumed by the University of Northern Iowa. The Academy continued support of the Iowa Department of Education grant to conduct teacher workshops on microcomputer interfacing with funds received in 1985-86. The project is directed by Kenneth Hartman of Ames High School, Ames, Iowa and Donald Murphy of Hoover High School in Des Moines, Iowa. The Iowa Department of Education

awarded the Academy a grant of \$7,250.00 for the establishment of an Elementary Science Education Section and newsletter. The Board of Directors established a new section with special membership dues of \$10 for a two year trial period. The grant paid the dues of the new members for the first year. The Academy received \$1,000 from AAAS to support the IJAS secondary student research grants while \$5,000 was received from Pioneer Hi-Bred International to support the student activities.

Publications

The Proceedings of the Iowa Academy of Science, edited by Roger and Marilyn Bachmann of Iowa State University, is published on a calendar year basis. In 1986, Volume 93, four issues were published containing 24 articles, and 192 pages from 42 authors. Several persons authored more than one article. Issue number 3 constituted the second of two issues dedicated to the Loess Hills Symposium held during the 96th Annual Meeting at the University of Iowa April 24, 1984. The Iowa Science Teachers Journal, edited by Carl W. Bollwinkel of the University of Northern Iowa, is published on a yearly basis. In 1986, Volume 23, had three issues containing 92 pages, with 12 articles from 15 authors. The Academy has three newsletters; the I.A.S. Bulletin edited by James G. Macmillan, the IJAS Newsletter edited by Joe Moore, Keystone AEA, Elkader, Iowa and SPARKS, the newsletter for the Elementary Education Section, edited by Susan Kelley, Meeker Elementary, Ames, Iowa.

National Activities

President-elect Lenore Durkee and Executive Director James Macmillan were the Iowa Academy of Science representatives to the National Association of Academies of Science held in conjunction with the AAAS meeting in Chicago, Illinois, February 14-17, 1987. They attended the NAAS meetings as well as the AJAS banquet and the meeting to form the new Section Y of AAAS.

Table 5. Membership 1983-1987

Category	1983	1984	1985	1986	1987
Associate	1	3	—	—	—
Member	806	941	876	921	1103
Student	142	160	151	148	145
Fellow	349	334	310	289	265
Life Member	37	41	41	40	47
Emeritus	89	91	93	92	93
Distinguished Fellows	14	18	20	20	21
Corporate	2	3	3	6	6
TOTAL	1440	1491	1494	1516	1680

Table 5 shows the membership trends for the years 1983-87. In 1985 the Associate Membership category was eliminated and Associate members were made regular members. The membership which stood at 1680 as of June 30, 1987, represents an increase of 164 members over the same date in 1986. This 10.8% increase is due largely to the growth in the new Elementary Science Teaching Section. This section which was formed in 1986 has attracted a large amount of attention from elementary school teachers. Student membership which now stands at 145, has been on a slow decline since 1984 when there were 160 student members. This may be due to the lack of sufficient membership publicity at the colleges and universities. Of concern is the slow decline in the number of Fellows. In 1983 there were 349 fellows while at the end of 1987 there were 265. When one considers that candidates for President Elect and Board of Director must be fellows, the pool is getting smaller for potential candidates. This year there was an increase in the number of Life Members. Several persons took advantage of taking out life memberships before the new tax laws went into effect January 1, 1987. Emeritus members has stayed constant over the past five years as has

the number of Distinguished Fellows.

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, 1987

Section		1987	Relative Section Interest* Percent
Agricultural Sciences	(U)	136	8.1
Anthropology	(H)	46	2.7
Biotechnology	(K)	33	2.0
Botany	(G)	287	17.1
Chemical Education	(S)	107	6.4
Conservation	(J)	247	14.8
Engineering	(M)	69	4.1
Geology	(E)	177	10.6
Inorganic, Analytical			
Physical Chemistry	(C)	176	10.5
Linguistics	(R)	4	0.2
Nursing	(N)	32	1.9
Organic & Biological			
Chemistry	(D)	128	7.6
Physics	(B)	144	8.6
Physiology	(O)	128	7.6
Psychology	(I)	41	2.4
Science Teaching	(Q)	608	36.3
Earth Sci. Teaching	(Qg)	9	0.5
Elementary Sci. Teaching	(Qe)	147	8.8
Zoology	(F)	242	14.5

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

Table 7. Balance Sheet June 30, 1987

	IAS		Combined	
		Assets		Assets
Checking	\$ 553.22		\$10,312.15	
Savings	63,901.08		64,901.08	
Certificates, ISTS			2,438.73	
PRISMS Guides			1,808.59	
Bonds	6,140.00		6,140.00	
Book Inventory	693.50		693.50	
Total Assets		\$71,287.80		\$86,294.05
	Fund Balance & Liability		Fund Balance & Liability	
Taxes Payable	\$ 1,476.12		\$ 1,476.12	
Total Liabilities		1,476.12		1,476.12
1985 Fund Balances				
State Appropriation	0.00		0.00	
Restricted Fund				
Balance	20,214.18		20,214.18	
Unrestricted Fund				
Balance	41,133.25		41,133.25	
PRISMS Co. Fund				
Balance		6,438.82		
ISTS Fund Balance			2,316.00	
Iowa DE Grant Fund Balance			616.40	
Total Fund Balance		61,347.43		70,718.65
Net Income (Loss)		8,464.25		14,099.28
Total Fund Balance and Liabilities		71,287.80		86,294.05

FINANCIAL REPORT

Balance Sheet

Table 7, the balance sheet for the year ending June 30, 1987, is for both the Academy and for the combined assets of IAS, ISTS, and several grants. The total assets of the Academy were \$71,287.80 and \$86,294.05 for the combined organizations. The liabilities at year's end were for payroll taxes to be paid in July for \$1,476.12. The combined restricted and unrestricted fund balances from 1986 were \$61,347.43. Consequently, the net income for the year was \$8,464.25 for the Academy. The combined fund balance for all organizations was \$70,718.65, which results in a net income for all organizations of \$14,099.28.

INCOME STATEMENT

At the April 25, 1986 Annual Business Meeting, a balanced operating budget of \$133,695 was adopted. This budget assumed a state appropriation of \$57,494.

Table 8 shows that the actual income was \$154,278.49 which was \$20,583.49 greater than expected. Table 8 also shows how the income was distributed to the various program and activities of the Academy.

Table 9 shows that the actual expenses for the year were \$145,814.24. Although this was higher than the budget expectations it was well below the actual income.

Tables 10 and 11 show the income and expenses, respectively, for all the programs and projects that the Academy administers. For all projects there was \$187,114.03 in income and \$173,014.75 in expenses.

In Tables 8-11 it is shown that the University of Northern Iowa makes a contribution of \$10,829.42. This represents the released time provided for the Executive Director and for some printing and the mailing of the Iowa Science Teachers Journal.

During 1986-87 the Academy received funds from the Iowa Department of Education to form an Elementary Science Teaching Section (ESTS) and to conduct workshops on computer interfacing (Micro). The funds available at the end of 1987 will be carried over as fund balances for 1987-88.

The PRISMS Co. which was an outgrowth of the U.S. Department of Education project, showed a net income of \$836.50 which resulted from the sale of the PRISMS materials. This income was made available to the PRISMS project for expenses not covered by the grant.

Endowment

For a number of years the Academy has had some investments which have served as an endowment. These are funds which have been set aside for specific purposes. Table 12 shows the status of these funds as they are presently invested with Merrill-Lynch. The column marked "investment" indicates the invested funds and the dividends received while the column marked "market value" indicates what would be received if these funds were redeemed.

The dues paid by Life Members are placed in a special fund of which only the interest can be used for operating expenses. This year a number of persons purchased Life Memberships; consequently, the fund has grown from \$783.44 in 1986 to \$2,557.90 in 1987. Dividends from this fund are used for operating expenses.

The Robert W. Hanson Publications Fund was established when Robert W. Hanson retired as Executive Director of the Academy. This account has grown from \$4,141.38 on June 30, 1986 to \$5,203.39 as of June 30, 1987 due to the reinvestment of dividends and further contributions by members. The market value, if redeemed, is \$5,724.78. The Board of Directors can use the dividends from this

Table 8. IAS Income Allocation 1985-86

INCOME	ALLOCATION OF INCOME					
	Amount	Publications	Programs	Meetings	Administration	Reserves
Corporate Gifts	\$6,841.00		\$5,041.00	\$ 1,800.00		
Dues	27,637.60	\$15,668.06		562.43	7,349.10	4,058.01
Farm Transfer	33,800.00				30,000.00	3,800.00
Grants	1,000.00		1,000.00			
Individual Cont.	421.00					421.00
Interest/Dividends	5,663.17			5,477.93	185.24	
Miscellaneous	1,252.46				1,252.46	
Other Fees	4,750.50	1,410.00		3,340.50		
Publications Sales	7,432.50	7,432.50				
Registration Fees	6,370.75		425.00	5,945.75		
Reimbursements	598.51				598.51	
Reprint Sales	1,017.00	1,017.00				
State Aid	57,494.00	4,150.00	53,344.00			
TOTAL	\$154,278.49	\$29,677.56	\$59,810.00	\$11,648.68	\$44,678.00	\$8,464.25
UNI Subsidy	11,349.19	1,650.00			9,699.19	
TOTAL INCOME	\$165,627.68	\$31,327.56	\$59,810.00	\$11,648.68	\$54,377.19	\$8,464.25

Table 9. IAS Expense Allocation 1986-87

EXPENSES	ALLOCATION OF INCOME				
	Amount	Publications	Programs	Meetings	Administration
Accounting	\$ 693.76				\$ 693.76
Banquet/meals	3,171.00			3,171.00	
Clerical	14,150.94		892.07		13,258.87
Equipment	686.80				686.80
Equipment Service	1,839.60				1,839.60
Grants	50,699.12		50,699.12		
Honoraria	17,854.68	1,415.00	500.00	1,500.00	14,439.68
Postage & Shipping	8,440.67	\$2,045.17	1,206.89	827.09	4,361.52
Printing	29,677.56	21,322.79	2,205.14	3,240.82	2,908.81
Special Proj.	2,500.00		2,000.00		500.00
Supplies	2,532.22		772.18	314.82	1,445.22
Taxes	1,822.63				1,822.63
Telephone	605.51				605.51
Travel	11,139.75	112.63	2,295.86	3,094.95	5,636.31
TOTAL EXPENSES	\$145,814.24	\$24,895.59	\$60,571.26	\$12,148.68	\$48,198.71
UNI Subsidy	\$ 11,338.19	\$ 1,650.00			\$ 9,688.19
TOTAL EXPENSES	\$157,152.43	\$26,545.59	\$60,571.26	\$12,148.68	\$57,886.90
TOTAL INCOME	\$165,627.68				
NET IAS INCOME	\$8,475.25				

fund to support publication projects in honor of Robert W. Hanson.

At the beginning of this year the Academy held a note with a face value of \$4,285.76 that was called in September. This note sold for \$5,200.00. This represented a net gain of \$714.24 in addition to the interest received over the time that the note was held. The Academy also holds a bond for \$6,140 which pays 15% interest.

In 1985 the Board of Director established a restricted savings of \$15,000 as a result of the exceptional income from the Parish Farm. Dividends from this fund have been reinvested in the account. As of June 30, 1987 the investment value of this account was \$16,358.46 with a market value of \$18,044.51.

In addition to the restricted funds shown in Table 12, the Academy has \$39,781.33 in unrestricted savings. These funds are available for use by the Board of Directors. At present only the interest from these unrestricted funds are being used for operating expenses.

ACADEMY LEADERSHIP 1986-87

Officers

President — Paul Waite, Des Moines State Climatologist
 Past-President — John C. Downey, University of Northern Iowa
 President-elect — Lenore T. Durkee, Grinnell College
 Executive Director — James G. Macmillan, University of Northern Iowa

Directors

Arthur J. Bosch, Central College, 1989
 Donald L. Koch, Geological Survey Bureau, Iowa City
 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

Table 10. Combined Income Allocation 1986-87

INCOME	ALLOCATION OF INCOME					
	Amount	IAS	ISTS	ESTS	Micro	PRISMS Co.
Corporate Gifts	\$ 6,841.00	\$ 6,841.00				
Dues	27,637.60	27,637.60				
Farm Transfer	33,800.00	33,800.00				
Grants	8,250.00	1,000.00		\$7,250.00		
Individual Cont.	421.00	421.00				
Interest/Dividends	6,238.56	5,663.17	\$262.85	97.30	\$31.66	\$183.58
Miscellaneous	8,285.61	1,252.46	1,275.00		648.70	5,109.45
Other Fees	4,750.50	4,750.50				
Publication Sales	14,367.99	7,432.50				6,935.49
Registration Fees	17,412.26	6,370.75	9,858.00	45.00	1,138.51	
Reimbursements	598.51	598.51				
Reprint Sales	1,017.00	1,017.00				
State Aid	57,494.00	57,494.00				
TOTAL	\$187,114.03	\$154,278.49	\$11,395.85	\$7,392.30	\$1,818.87	\$12,228.52
UNI Subsidy	\$ 10,829.42	\$ 10,829.42				
TOTAL INCOME	\$197,943.45	\$165,107.91	\$11,395.85	\$7,392.30	\$1,818.87	\$12,228.52

Table 11. Combined Expense Allocation 1986-87

EXPENSES	ALLOCATION OF INCOME					
	Amount	IAS	ISTS	ESTS	Micro	PRISMS Co.
Accounting	\$ 693.76	\$ 693.76				
Banquet/Meals	8,923.83	3,171.00	\$5,752.83			
Clerical	14,150.94	14,150.94				
Contract Services	3,504.00			\$1,370.00	\$150.00	\$1,984.00
Equipment	686.80	686.80				
Equipment Service	1,839.60	1,839.60				
Grants	50,699.12	50,699.12				
Honoraria	18,348.03	17,854.68	479.35	14.00		
Misc. Expenses	250.00			250.00		
Postage & Shipping	9,478.46	8,440.67	329.32	559.15		149.32
Printing	32,278.14	29,677.56	1,253.93	1,165.75		180.90
Special Proj.	2,500.00	2,500.00				
Supplies	9,788.60	2,532.22	148.60	243.60	1,790.16	5,074.02
Taxes	1,822.63	1,822.63				
Telephone	613.71	605.51	6.41			1.79
Travel	17,069.70	11,139.75	1,651.49	276.47		4,001.99
Regional Prog., ISTS	367.43		367.43			
TOTAL EXPENSES	\$173,014.75	\$145,814.24	\$9,989.36	\$3,878.97	\$1,940.16	\$11,392.02
UNI Subsidy	\$ 10,829.42	\$ 10,829.42				
TOTAL EXPENSES	\$183,844.17	\$156,643.66	\$9,989.36	\$3,878.97	\$1,940.16	\$11,392.02
TOTAL INCOME	\$197,943.45	\$165,107.91	\$11,395.85	\$7,392.30	\$1,818.87	\$12,228.52
NET INCOME	\$ 14,099.28	\$ 8,464.25	\$1,406.49	\$3,513.33	(\$121.29)	\$836.50

Standing Committees

Annual Meeting Committee

(The Section Chairs constitute the Annual Meeting Committee.)

Committee on Committees

Lenore Durkee (chair), Grinnell College
 Laura E. Sweets, Iowa State University
 Don Norton, Iowa State University
 Charles C. Wunder, University of Iowa
 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: Lenore Durkee

Table 12. Restricted Assets

	Investment	Market Value
Life Member Fund	\$ 2,557.90	\$ 2,736.11
Robert W. Hanson Publications	5,203.39	5,724.78
Bonds	6,140.00	6,140.00
Savings	16,358.46	18,044.51
Total	\$30,259.75	\$32,645.40