

1982

Annual Report of the Iowa Academy of Science 1981-82

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Annual Report of the Iowa Academy of Science 1981-82

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PREFACE

Late in 1974, this writer completed the 100-year history of the Iowa Academy of Science. It appeared in the *Proceedings* in March, 1975, along with a history of the Parish farm, written by H. T. Horner. That issue was the Centennial issue of the *Proceedings*. Since that time, this Annual Report has been a running history of the Academy, dealing with the highlights of the most important activities of the Academy each year to provide a record for the future.

The report for 1981-82 is based on Board of Directors minutes, committee reports, etc., on file in the Academy office at the University of Northern Iowa. Academy records more than a few years old are catalogued in the Special Collections section of the Iowa State University Library in Ames.

THE 94TH SESSION

The Fort Dodge campus of Iowa Central Community College was the site of the Annual Meeting for 1982. This was the first time that the Academy held its Annual Meeting on the campus of a two-year college. The facilities were excellent and the local arrangements, handled primarily by Donald Langr, were conducive to another outstanding meeting.

The general planning for the 1982 meeting started in September 1981 when most of the Section Chairs met in Cedar Falls with two members of the Annual Meeting Committee. Eventually the program included the following, in addition to the contributed paper sessions:

Friday, April 16

- | | |
|--------------------|---|
| 9:00 - 10:30 a.m. | JUNIOR ACADEMY POSTER PAPERS |
| 10:30 - 11:45 a.m. | GENERAL SESSION I
President Stanley Grant, presiding
Welcome: Edwin Barbour, Superintendent, Iowa Central Community College
Speaker: Paul Barcus, Iowa State University:
"Perpetual Motion and Energy Frauds" |
| 12:00 - 1:30 p.m. | AWARDS LUNCHEON
President Stanley Grant, presiding
This served luncheon honored groups and individual students who have performed in an exemplary manner in science activities throughout Iowa. Several individual awards were presented. Several teachers were honored as they received the Iowa Academy's Excellence in Teaching Award. |
| 1:30 - 2:15 p.m. | ANNUAL BUSINESS SESSION |
| 2:30 - 5:00 p.m. | CONCURRENT SESSIONS
A. Symposium: "Iowa Wetlands"
(Sponsored by the Botany, Conservation, and Zoology Sections and by the Conservation and Preserves Committee.) |

- | | |
|------------------|--|
| 5:15 - 6:00 p.m. | B. Symposium: "The Applications of Recombinant DNA Research in Biology and in the Chemical Industry"
(Joint meeting of the Chemistry and Chemical Education Sections and the Cell Biology Section.) |
| 6:15 - 7:45 p.m. | C. Symposium: "Iowa Natural Resources: Issues in the '80's"
(Sponsored by the Engineering, Geology, and Agricultural Sciences Sections.) |
| 8:00 - 9:00 p.m. | D. Panel: "Microcomputer Applications and Computer Literacy"
(Sponsored by the Physics Section.) |

SOCIAL HOUR/RECEPTION

PRESIDENT'S BANQUET
President Stanley Grant, presiding
Presentation of Iowa Academy Awards
(Distinguished Fellow, Distinguished Scientist, Distinguished Service)
Installation of new president and remarks by outgoing President Grant
Response by President-elect H.T. Horner

GENERAL SESSION II
President H. T. Horner, presiding
Speaker: Robert Steiner, Psychic Investigator, El Cerrito, CA
"ESP - A Demonstration"

Saturday, April 17

- | | |
|--------------------|--|
| 8:00 - 11:00 a.m. | CONCURRENT SESSIONS
Agricultural Sciences
Anthropology
Botany
Chemistry: Inorg., Anal., Physical
Chemistry: Organic and Biological
Conservation
Engineering
Geology
Mathematics
Physics
Physiology
Psychology
Science Teaching
Zoology |
| 9:00 - 10:30 a.m. | POSTER PAPERS |
| 11:00 - 12:15 a.m. | GENERAL SESSION III
President H. T. Horner, presiding
Speaker: James Van Allen, The University of Iowa:
"Magnetospheres of the Planets" |

¹Executive Director, IAS

1:15 - 3:45 p.m. **CONCURRENT SESSIONS**
 Agricultural Sciences
 Botany
 Conservation
 Science Teaching

 Iowa section, AAPT

 Symposium: "Microprocessors in Science Education" (Sponsored by the Chemical Education Section.)

Six Junior Academy poster papers were presented on Friday morning. On Saturday, seven poster papers from the Agricultural Sciences Section, the Botany Section (and Geology), the Conservation Section, Physiology, and Zoology Sections, were on display in the registration area. Two microcomputer companies were represented among the commercial exhibits.

Section attendance and numbers of papers are displayed in Table 1. Table 2 summarizes registered attendance at the 1982 Annual Meeting. Actual attendance is estimated to be about 15% above registration counts.

Table 1. Attendance Summary, 94th Session, 1982

	No. of Papers	Attendance	Relative Section Interest (%)*
Contributed Papers:			
Agricultural Science	20	16	7.0
Anthropology	3	13	2.4
Botany	31	40	20.8
Chem. Educ.	-0-	22	6.9
Chemistry C	8	21	12.8
Chemistry D	6	24	9.5
Conservation	13	38	17.2
Engineering	8	23	5.2
Geology	3	18	12.6
Mathematics	-0-	2	5.6
Physics	5	31	8.6
Physiology	6	14	8.3
Psychology	7	22	2.8
Science Teaching	10	28	29.4
Zoology	12	20	18.0

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Invited Papers:			
Symposium: "Iowa Natural Resources"	3	80	
Symposium: "Iowa Wetlands"	7	115	
Symposium: "Applications of DNA Research"	2	100	
Symposium: "Microprocessors in Science Education"	3	26	
Panel: "Computer Applications and Literacy"	4	45	

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General Session I - Barcus	250
General Session II -Steiner	300
General Session III -Van Allen	300
Annual Business Session	80
Awards Luncheon	131
President's Banquet	168

*"Relative Section Interest" is based on percent of total members indicating a particular section interest. Percents are not additive.

Table 2. Registered Attendance, 1982

Category	Pre-registered Papers*		Walk-in		Total
	Papers*	Others	Fri.	Sat.	
Members:					
Regular	55	93	60	33	241
Student	21	5	5	3	34
Subtotal	76	98	65	36	275
Nonmembers:					
Regular	10	11	9	4	34
Student	33	5	6	12	56
Subtotal	43	16	15	16	90
Guests, etc.	27	22	-	1	50
Total	146	136	80	53	415

*Contributed paper presenters only; some presented more than one paper.

The Awards Luncheon

David McCalley, UNI, coordinator of the Excellence in Science Teaching Awards Program, presented awards for excellence in teaching to the following teachers:

- Eugene Balk (Biology), Mason City Community High School
 - Larry A. Dean (Chemistry), Saydel Consolidated Schools - Des Moines
 - Mrs. Karen Murphy (Earth Science), Weeks Junior High School - Des Moines
 - Miss Chris Rohret (Elementary Science), Penn Elementary School - North Liberty
 - Donald J. Perschau (Junior High Science), Meredith Junior High School - Des Moines
 - Claison Groff (Physics), Grand Community School - Boxholm
- Three secondary students who had been invited to present poster papers were selected to represent Iowa at the 1983 meeting of the American Junior Academy of Science in Detroit in May, 1983. One of the three (as indicated below) will serve as an alternate:
- Douglas Grier, Marshalltown High School (an alternate in 1981)
 - Gina Serra, Oelwein High School
 - Jeffrey McKinney, Chariton High School (alternate)

All of the following programs for secondary school students were recognized and the directors were commended for their work with students:

The American Cancer Society Scholarship
 The Cedar Valley Science Symposium
 The Drake Physics Prize
 The Eastern Iowa Science and Engineering Fair
 The Quad-Cities Area Science and Engineering Fair
 The Hawkeye Science Fair
 The Iowa Science, Engineering & Humanities Symposium
 The Iowa Academy Science Talent Search
 The Iowa State University High School Energy Research Symposium

Two students and two alternates selected by a special committee appointed by the Governor's office were named to attend the National Youth Science Camp, sponsored by the State of West Virginia:

Lisa Crabill, Harmony High School - Farmington
 Mary Cummings, Maquoketa Valley High School - Delhi

Alternates:

Christy L. Scheidt, Thomas Jefferson High School - Cedar Rapids
 Debbie Weber, Cascade High School

Governor Ray expressed regret that he was unable to attend the Awards Luncheon to make some of the awards personally and to congratulate the teachers and students.

The President's Banquet

After the banquet on Friday evening, President Stanley Grant introduced Verner Jensen of UNI, chairman of the Recognition and Awards Committee, to present the following Academy awards:

Distinguished Service Award:

Dean M. Roosa, Iowa Conservation Commission
 Stanley L. Weinberg, Ottumwa
 Nels R. Lersten, Iowa State University
 Roger Q. Landers, San Angelo, Texas

Distinguished Iowa Scientist Award:

Richard V. Bovbjerg, The University of Iowa
 John D. Dodd, Iowa State University
 Alton K. Fisher, The University of Iowa
 Don C. Norton, Iowa State University
 Roger W. Tate, Delavan Corporation
 Lois Hattery Tiffany, Iowa State University

Three Iowa scientists were added to the roster of "Distinguished Fellows" of the Academy. Robert S. Hansen, Director of Ames Laboratory at I.S.U., was recognized for his pioneering achievements and extensive contributions to the field of surface chemistry and for his leadership in studies in energy and chemistry; Richard W. Pohl of I.S.U. was selected for his national and international reputation in agrostology and for his service to the academic community through his establishment of the Iowa State Herbarium. J. P. Long of The University of Iowa was cited for his extensive research in autonomic pharmacology and for his service to the health sciences. This brings the number of Distinguished Fellows to 17.

Following the awards, the evening session convened to hear an entertaining and informative expose of pseudoscientific frauds such as mind reading, water dousing, and ESP, by Robert Steiner, CPA and professional magician from El Cerrito, California.

MINUTES OF THE ANNUAL BUSINESS SESSION

April 16, 1982

The meeting was called to order by President Grant at 1:30 p.m. at Iowa Central Community College in Fort Dodge. Approximately 80 persons were present and President Grant declared a quorum.

Executive Director Hanson was introduced to give his "Report of the Board of Directors", the text of which is given under "Review of

Academy Activity 1981-82" elsewhere in this Annual Report.

Frank Starr presented the Treasurer's report showing that on March 31, 1982, the Academy's cash assets included the following: (Figures in parenthesis are the rates of interest being earned.)

Checking account	486.24 (5.25%)
Money market fund	20,392.00 (13.66%)
Gulf Power bonds	6,140.00 (15.00%)
SW Gas Corp. notes (face value \$5000)	4,286.00 (12.50%)
Total	<u>\$31,304.24</u>

Value of the grain in storage was estimated at \$15,000. The market value of the Academy automobile used by the Executive Director was presented as \$3200. The sum of these "liquid" assets (cash, grain, automobile) was \$49,504. Starr pointed out that the Academy's assets continue to drop, although by reducing expenditures in some areas and eliminating research grants, we have managed to stay in the black.

Sister Marguerite Neumann presented the Membership Committee report. The following Members had been promoted to Fellow in the past year:

Raymond Anderson
 Clayton Armstrong
 Richard Baker
 Clyde Berry
 John B. Bowles
 Robert Carmichael
 George Hallberg
 Darrel Hoff
 Bernard Hoyer
 Robert Lancaster
 Howard Larson
 Howard Laster
 Greg Ludvigson
 Jean C. Prior
 Orville Van Eck
 Carl Vondra
 Paul Waite
 Stanley Weinberg

The names of the following members who had died in 1981-82 were read and the audience observed a moment of silence in respect to their memory:

Charles Allegre
 Maureen Danks
 Delma Harding
 Elmer Hertel
 Robert Hulbary
 Orlando Kreider
 Paul Meglitsch
 Abraham Pilicer
 Edward Prill
 L. H. Schwarte

Donald Huffman presented the report of the Election Committee indicating that the following had been elected for 1982-83:

Directors: Jean C. Prior, Iowa Geological Survey
 Richard Wacha, Drake University

President-elect: Duane Anderson, The University of Iowa
 Treasurer: Frank Starr, Waterloo Community Schools
 Those elected were asked to rise to be recognized.

It was also reported that the following Bylaw amendment was passed by mail ballot along with the election of officers:

Article V - Committees

Section 7. Social Implications Committee

Delete entire section and renumber remaining sections 7 through 10.

President Grant then indicated that the Board of Directors had approved an amendment to the Bylaws making the Conservation and Preserves Committee a standing committee. The amendment is reproduced here for the record:

Article V. Bylaws

Section _____. The Conservation and Preserves Committee

- _____a. The Conservation and Preserves Committee shall consist of six Members or Fellows each serving three year terms, two being appointed each year.
- _____b. The chair shall be designated by the President.
- _____c. Duties. Matters relating to conservation and preservation within Iowa and involving the Academy shall be referred to this committee by the Board of Directors. The Committee shall inform Academy members in matters related to conservation and preservation and shall encourage their participation in related activities. The Committee shall make recommendations to the Board in matters relating to conservation and preservation. The Committee shall make recommendations to the Governor for appointments to the State Preserves Advisory Board as indicated by the Code of Iowa.

The Bylaw amendment was moved for adoption and seconded. The motion carried without dissent.

Before adjournment at 2:15 p.m. President Grant offered commendation to the outgoing Board members — Donald Huffman, Joe Woods, and John Downey.

REVIEW OF ACADEMY ACTIVITY IN 1981-82

The following "Report of the Board of Directors" was read at the Annual Business Session on April 16, 1982 by Executive Director Hanson. It briefly surveys the more important Academy activities from July 1, 1981 through June 30, 1982, as reflected in the deliberations of the Board:

As you know, the new Board takes over right after the Annual Meeting, but last summer the level of activity in the Academy was rather low, and the Board met the first time on October 31, having transacted several items of business by mail.

At the meeting the Board reconsidered the location of our 1985 meeting, and we have a recent invitation from Central College for that year. Our meeting in 1983 will be at Luther College, and we are hoping to attract some Minnesota and Wisconsin Academy members to that meeting.

The usual reports heard by the Board in October indicated that Academy programs were running smoothly for the most part, particularly the Academy's publications and Student Programs. They approved a Bylaw amendment making the Conservation and Preserves Committee a standing committee.

The financial condition of the Academy continues to occupy the Board's attention, and we will soon be getting into active fund-raising campaign from industry.

The Academy's low level of activity in the area of public understanding of science (except for the creationism issue) was discussed by the Board in October, and a decision was made to recommend the dissolution of the Social Implications Committee in favor of *ad hoc* efforts to accomplish Academy objectives in this area. On the other hand, the IAS panel on Controversial Issues, an *ad hoc* group concerned with opposing efforts to promote creationism as appropriate content in science classes, was very active and effective under the leadership of Stanley Weinberg. He has been very active in Iowa and on the national level in counteracting this movement.

The Board and most Academy committees were snowed in during the winter months, both literally and intellectually, and the quietness was not disturbed until February 24 when the Executive Director announced his planned resignation, to be effective at the end of the summer of 1983. The need to find an Associate to assist next year in planning the Annual Meeting was pressing, and a special joint meeting of the Long Range Planning Committee and the Board took place on March 11 to deal with the problem. At that time, after much discussion of the mechanics of staff replacement, a plan was approved by the Board to appoint an *interim* Executive Director for a three-year period, in order to give the Board and the LRPC time to make definite plans about the future of the IAS office—its staffing, its location, and whether a full-time Executive Director should be part of the Academy's future.

For purely logistical reasons the Board decided to limit the search for an interim appointee to UNI so that the Academy office could remain there in order to continue receiving the obvious benefits of a long-term relationship. If no satisfactory UNI Academy member were found, then the Board was to open up the search statewide.

By the April 9 deadline, 2 UNI Academy members had expressed interest along with one other Cedar Falls member. The Board met yesterday at its usual spring meeting and interviewed all three candidates. After several hours of deliberation, a decision was made to offer the appointment to James Macmillan, Associate Professor of Chemistry at UNI. Jim will serve as Associate Executive Director this coming year (starting this fall) and will take over all responsibility for the 1983 meeting. The Board is confident that good hands have been found in Jim Macmillan, and during the changeover I will assist him in any way I can. Then in the fall of 1983 Jim will take over completely as Executive Director. During the subsequent 2 years the Board will evaluate the arrangement (as will Jim) and Jim will either continue or else someone else will be sought to fill the position.

That takes us through the summer of 1985, so far as the location and staffing of the Academy office is concerned.

The Board met yesterday from 2:30 till 11:00 p.m., covering the usual gamut of reports and recommendations. The report from the Editor included Nels Lersten's planned resignation, to be effective no later than the end of 1982. The *Proceedings* is pretty well taken care of through this year, but the Board will be actively seeking candidates to take over this important position in the Academy.

The Board heard that the Academy's most ambitious publishing project "Iowa's Natural Heritage" will come to fruition in late July when 30,000 copies will be off the presses. Academy members will receive a special mailing soon offering the book at special pre-publication prices, and those here today should see the display of the book in the registration area.

The LRPC is active and will continue for another year to study future directions for the Academy. They have come in with several tentative recommendations, and I'm sure they would be glad to hear from any Academy member who has suggestions.

This report doesn't cover everything that the Board took up yesterday, but some things will appear in more suitable form at other times. For example, this evening the Recognition and Awards Committee will honor several persons with our usual Academy Awards. The work of the Student Programs Committee is apparent in the 6 outstanding poster papers on exhibit this morning in the Auditorium lobby.

A Bylaw amendment concerning the Conservation and Preserves Committee was approved for presentation at this Annual Business Session and will be read later in the agenda.

Committee Activity

Seven standing Committees and four *ad hoc* committees conducted the affairs of the Academy in 1981-82.

The Annual Meeting Committee as a whole was unable to meet in September when the blocking of the 1982 meeting was planned, with only two members of the AMC present with several Section Chairs. In effect, this group of Section Chairs, meeting with the local arrangements chairman and the Executive Director, served as the planning body for the 1982 meeting. As a result of this fact and similar experiences in previous years, the Board tentatively approved a plan to make the Section Chairs the Annual Meeting Committee in fact starting in 1984, provided the membership approves an appropriate amendment to the Bylaws. A survey of the Section Chairs in May indicated that such a plan would be acceptable to them, with few exceptions.

Shortly after the 1982 meeting in Fort Dodge, Executive Director Hanson and Associate Director Macmillan traveled to Decorah to meet with the local arrangements committee from Luther College, to inspect the facilities and discuss program ideas in a general way. The existing Annual Meeting Committee will work with Macmillan to continue plans for the meeting at Luther College.

Future meeting sites and dates for the Annual Meeting have been set, as follows:

1983: Luther College, Decorah, April 22-23

1984: The University of Iowa, April 27-28

1985: Central College, Pella, April 26-27

An invitation from Wartburg College has been received for the 1986 meeting but has not been formally accepted.

The **Conservation and Preserves Committee** summarized its year's activity in a report by Chairman Daryl Smith to the Board dated March 31, 1982, as follows:

The special (ad hoc) Committee was formed by Board action on 9/16/78 and committee members were appointed 11/29/78. Those appointed were James Christiansen, Jean Prior, Duane Anderson, Sylvan Runkel and Daryl Smith. James Peck was appointed to membership at a later date. All have served on the committee since that time with the exception of James Peck who resigned effective June 1, 1981, when he took a job in Arkansas. The Committee has been chaired by Daryl Smith except for the period of August 1979 - January 1980 when it was chaired by Duane Anderson as Smith was out of the state on leave.

The Committee has been involved in the following activities:

1. Participation in and support of the Iowa Biological Forays of 1979, 1980, and 1981.
2. Initiation and leadership in fall natural area workshops in 1979, 1980, and 1981.
3. Nomination of members on the State Preserves Advisory Board to the Governor as required by Iowa Code in 1979, 1980, 1981. Four of six nominations were favorably acted upon by the Governor and in an additional case he did not sit upon our nomination but rather appointed Daryl Smith.
4. Organization of symposia at the Annual Meeting - 1980 Symposium: "Iowa's Declining Flora and Fauna" (the papers were subsequently published in the *Proceedings*); 1981 Symposium: "Biogeography of Iowa"; 1982 Symposium: "Iowa's Wetlands."
5. Played a major role in initiating the formation of the Iowa Natural History Association.
6. Presentation of resolutions related to conservation and preservation to the Board of Directors.
7. Encouragement of its members and other Academy members to be involved in conservation and preservation endeavors.
8. The Committee had discussed a number of other potential activities for the future but to date these have not been initiated.

The Committee is of the opinion that its activities are important in the area of conservation and preservation and that the Academy should have such a standing committee. Committee members are willing to continue in an ad hoc status until the constitutional ballot is completed. We further recommend that a summary of the committee activities be provided to the voting members so that they can be informed as to the merits of the committee's formation.

The **Panel on Controversial Issues** had an active role in Iowa in 1981-82 in working to inform schoolboards and teachers about the issues in the creation/evolution controversy, as reported by Coordinator Stanley Weinberg. Edited excerpts of his report follow:

The Panel has had a year of mixed success. As background for our teams' intervention in local situations, we prepared brief position papers dealing with various aspects of evolution. These papers have been distributed to members of the Panel. Our members have intervened in about a dozen local confrontations or potential confrontations, and have quieted them or have seen them quieted spontaneously. More difficult cases involve teachers who are harried and repressed but are afraid to ask for help. They have recourse to CPI but do not use it, because department regulations require that all complaints be sent up through DPI channels and then be transmitted to the appropriate district superintendents. The teachers are afraid - sometimes with good reason - that the superintendents will come down on them as agents of disruption in the community. None of this type of case comes to us. We have informally discussed several possible ways of getting access to such tough cases but have found no good solution to the problem. We recommend that the Panel be continued despite our meager results this year. Our expenditures are relatively low, and we hope that with time and patience we can resolve the problem of getting access to the tough cases.

The **Election Committee** was chaired by past-president Don Huffman and offered the following slate of candidates:

President-elect: Duane Anderson*, The University of Iowa
Kenneth Christiansen, Grinnell College

Treasurer: Frank Starr*, Waterloo Community Schools
Wanda Wehner, University of Northern Iowa

Directors: Jean C. Prior*, Iowa Geological Survey
Richard Wacha*, Drake University
Janice Kemp, Simpson College
Phillip Reitan, Luther College

The starred candidates were elected. Starr continues in office for another 3-year term.

The Treasurer serves as the chairman of the **Finance Committee**. The group met on June 4, 1982, after a hiatus of more than a year. An enlarged committee was brought up to date on the financial structure of the Academy, its needs and resources, and the continually postponed plan to develop a fund-raising campaign. The Board approved the budget for 1981-82 by mail canvass during the summer of 1981, without Finance Committee input. Prior to the April 1981 Board meeting (see Annual Report for 1980-81) the Finance Committee had reported on a study of the potential of the Parish farm as an improved Academy endowment if converted at least in part to other forms of investment. A recommendation to the Board to that effect was later referred to the **Long Range Planning Committee**. At this writing the LRPC has not considered this issue, but the Board as a whole has undertaken steps to develop a consultative relationship with development officers from institutions represented on the Board to plan a comprehensive fund-raising campaign during 1982-83. The **Finance Committee** met on May 16, 1981, and agreed to try to raise about \$8,000 to balance the budget for 1981-82, by calling on companies to which letters had been written asking for an appointment. The responses to those letters were either negative or non-existent, and there was no follow-up on that plan. The budget approved for 1981-82 came to \$72,216, \$8,000 of which was contingent on additional corporate support. The approved budget included a state appropriation of \$4,293 and UNI support of the *Iowa Science Teachers Journal* of \$680, plus work study clerical assistance of \$900.

Contact with Pioneer Hi-Bred International by Executive Director Hanson yielded a 3-year commitment on their part to support the Academy's Student Programs at the rate of \$5,000 per year. A proposal by Hanson to the American Association for the Advancement of Science on behalf of the Student Programs Committee resulted in an \$800 grant to support secondary school research.

The **Parish Farm Committee** was chaired by Robert Hibbs in 1981-82. Having completed the program of soil conservation improvements to a practical extent, the committee turned its attention to the eventual razing of the farm house and negotiating seed corn contracts with Pioneer Hi-Bred. The modular classroom building that had stood unused for so many years was finally sold for \$1500 to the Black Hawk County Unitarian Universalist Society and was removed from the farm in the summer of 1981. The foundation remains for some possible future use. The farm house was vacated at the end of May, 1982, and was to be razed during the summer.

A farm poster display was exhibited in the Agriculture Building at the State Fair in 1981 and at the Annual Meeting of the Academy in Fort Dodge in April.

The committee's report of March 15, 1982, indicated that "exceptional yields" have compensated for depressed farm prices, keeping our net return at or above prior years. On 200 cropped acres, the estimated net income equals \$145 per acre. The transfers from Hertz Management from the sale of 1981 crops eventually came to \$25,500, which amounts to \$128 per acre. (This is the Academy share of a 50/50 crop-share lease with Melvin Schildroth.)

During the year the Board of Directors considered the desirability of approaching the goal of public understanding of science on an *ad hoc* basis, rather than continuing the **Social Implications Committee** as a standing committee. A Bylaw amendment was recommended to the membership deleting the Social Implications Committee, and it passed by a large majority by mail ballot. The committee was dismissed

with thanks for the work they had accomplished in helping the **Panel on Controversial Issues** get into their own special area of concern. The Long Range Planning Committee and the Board will be looking for effective approaches to develop programs for the public understanding of science in the coming year or two.

The *ad hoc* Long Range Planning Committee met for the first time on February 23, 1982. The main concern of the committee was the impending search for a replacement of R. W. Hanson as Executive Director and for assistance in that office immediately. It was generally agreed that the Academy should increase its activity in the area of the improvement of science education in the schools at all levels and in the promotion of the public understanding of science. Increased activities in these areas would require more administrative time, and the committee spent much of its time talking about the future of the Academy office. Hanson suggested the creation of a new standing committee called the "Education Committee" to deal with all education-related matters, to add coherence to Academy efforts in the improvement of instruction. The public understanding of science effort was not defined but the demise of the Social Implications Committee seemed to call for at least a concerted *ad hoc* effort in this area.

Two days after that meeting Hanson submitted his resignation as Executive Director to be effective at the end of the summer of 1983, on the condition that the Board find someone to assist him, particularly with the plans for the 1983 Annual Meeting, by the fall of 1982. Hanson said that his decision to submit a definite date was based on the realization that neither the LRPC nor the Board could function effectively to find a replacement otherwise.

Perhaps the biggest reason for Hanson's decision to resign was the serious auto accident that he and his wife Margaret suffered on January 9, 1982, in a blizzard on Highway 63 South of New Hampton. The long and painful convalescence made it difficult to keep up the pace of Academy work for several months following the accident, and the decision to step aside was made easier by these circumstances.

Because of the resignation, the Board and the LRPC met together on March 11 to discuss the immediate administrative needs of the Academy. After much discussion of the pros and cons of a state-wide search for a new executive officer, it was decided that the question of a full-time administrator should be deferred as a long range matter, and that a search among Academy members at the University of Northern Iowa should be undertaken. The motion passed by the Board was "that the Board appoint an interim Executive Director beginning Fall 1982 and continuing for 3 years, the first year as Associate Executive Director as "intern", working with the present Executive Director; the appointment to be subject to evaluation by the Board and the individual during the period, in the light of long range planning; compensation and/or released time subject to negotiation with the present Executive Director and approval by the Board of Directors."

A letter was sent to all UNI Academy members immediately thereafter, and a deadline for applications was set for April 9. Two UNI candidates expressed interest along with one Waterloo member. All three were interviewed by the Board on April 15 and James Macmillan, Associate Professor of Chemistry at UNI, was offered the position. He accepted, and at the Business Session next day he was introduced.

The long range plans advanced by the LRPC at their March 30 meeting generally called for some definite plan for raising additional support for the Academy. The recurrent question of whether to employ professional fund-raisers was set aside by the Board when they met on June 17 in favor of developing a volunteer cadre using approaches that would come out of consultative sessions with some of the directors of development from the institutions represented on the Board.

Some of the recommendations considered by the LRPC for increased Academy activity included the following:

- that more issues of the Iowa Science Teachers Journal be publish-

- ed each year and that it be sent to all Iowa secondary schools —that none of the anticipated revenue from the book "Iowa's Natural Heritage" be used for operating expenses of the Academy but that such income become part of the Academy's endowment, with earnings to be used to promote further special publication projects

- that additional recognition programs be developed for the recognition of high school students for high achievement in science and that special recognition programs be developed for organizations, societies and non-member individuals or groups who contribute to Iowa's scientific enterprise

- that a task force be established for the recruitment of science teachers, particularly from the elementary and secondary schools and that the improvement of instruction in science at all levels be the subject of an all-Academy symposium at the 1983 Annual Meeting.

On May 18 the LRPC reviewed this list of possible recommendations. A specific outgrowth of LRPC and Board action was the creation in the early summer of 1982 and an *ad hoc* Education Committee of 8, charged to develop ways of recruiting more students for science and math teaching as well as other related matters. Before the end of June, the new committee's charge was extended to assist the Governor's Science Advisory Council in assembling data for the Governor's office, presumably to be used in the Governor's state of the state message to the legislature in January.

Realizing that the LRPC would be working for some time to come, President Horner increased the size of the committee early in the summer of 1982.

The philosophy of the Recognition and Awards Committee continued to include active solicitation of nominations from industry and institutions. Again, as in the previous year, the committee received a large pool of worthy nominations for all award categories. Combining these with some hold-overs from 1981, the committee came up with the awardees mentioned previously under "The President's Banquet." The Board of Directors, in taking note of the relatively large number of awards, expressed interest in considering some kind of quota system in the future.

Late in May, the long-time director of the Academy's Excellence in Science Teaching Awards program indicated his intention to resign from that responsibility. David McCalley of UNI had handled this ambitious program almost from its inception. The program takes on even greater importance in view of the need to recognize excellence in teaching and to recruit more students into the teaching profession.

On April 23, 1981, the Board of Directors appointed Mary Sievert of Davenport High School and Don Murphy of Hoover High School in Des Moines as Director and Associate Director of the Iowa Junior Academy of Science, respectively. The continued support of the Student Programs budget by Pioneer Hi-Bred International made it possible to plan with continuity for more than one year at a time. In addition to Pioneer support, \$800 was received from AAAS to provide research grants for secondary school students. The grant program was announced to the schools early in the fall, but few applications came in. A proposal for funds for 1982-83 was sent to AAAS by Executive Director Hanson in June, 1982, and an additional \$1,000 was received for 1982-83, to supplement left-over grant funds from the year before. The lack of success of the research grant program in 1981-82 provided incentive for the SPC to plan more definitely to encourage student research through workshops for teachers in the fall of 1982. Four regional meetings were planned for September 24.

Only six students presented papers at the Academy's Annual Meeting in Fort Dodge - half the number of previous years. The SPC took measures to insure broader participation in 1983. The papers presented at Fort Dodge are listed at the end of this Annual Report. The students selected to represent Iowa in Detroit in May 1983 at the American Junior Academy of Science meeting (and the AAAS Con-

vention) were mentioned earlier under "Awards Luncheon."

The work of the **Membership Committee** was mentioned in the Minutes of the Annual Business Session above. The committee met on October 25 in Iowa City and on April 17 in Fort Dodge. During the year the group considered ways of increasing Academy membership, by, for example, distributing "pocket posters" with brochures and application cards throughout the state.

Table 3 shows changes in membership counts by categories during the five years preceding and including 1981-82.

Table 3. Membership Counts 1978—82

Category	1978	1979	1980	1981	1982
Associate	-	-	-	1	1
Member	698	701	706	773	777
Student Assoc.	202	218	186	162	146
Fellow	435	421	395	374	367
Life Member	38	39	38	39	38
Emeritus	67	72	76	84	83
Distinguished Fellow	7	10	12	14	17
TOTAL	1440	1461	1414	1437	1412

The committee changes in the Academy this year were extensive. To summarize: the **Social Implications Committee** was dropped; a new *ad hoc* **Education Committee** was created; the **Conservation and Preserves Committee** became a standing committee; the **Long Range Planning Committee** began an important look at the Academy's futures. In addition, President Horner proposed the creation of a **Committee on Committees** as a new standing committee at the June 1982 Board meeting. This Bylaw amendment will be presented to the membership for vote by mail ballot in March 1983.

With the resignation of the Editor-in-Chief of the *Proceedings* in 1982, the resignation of the Executive Director in 1983, and the resignation of the Director of the Excellence in Science Teaching Awards program, new approaches, new faces, and new directions appear to be imminent.

Publications

Not long after Hanson submitted his resignation as Executive Director, **Nels Lersten** requested that the Board find a replacement for him by the end of 1982, or sooner. The Board invited applications from the entire Academy membership for consideration at its meeting on June 17 and received six bids for the position. At this writing, the field had been narrowed to two candidates. A decision was to have been made at a July 15 Board meeting.

The Board was gratified to have such response to the opening, noting that Lersten's work during his tenure to improve the *Proceedings* in terms of content and currency had much to do with the interest in the position. The Associate Editors deserve credit, also, for their careful and prompt reviewing of manuscripts. Again in the fall of 1981, Lersten met with the Associate Editors for dinner to discuss improvements and review procedures and minor format changes in the *Proceedings*. Some increased emphasis on the publishing of symposia from the Annual Meeting program was developed, but there were concerns about the relatively few papers submitted in the physical sciences.

The authors of "**Iowa's Natural Heritage**" were called together on November 13 for a dinner meeting at Little Amana to put the finishing touches on chapter manuscripts and to see sample page designs prepared by the designer and the executive editor, Tom Cooper. Fewer problems than were anticipated at the beginning of

this ambitious project actually developed, and the completion of the book on schedule was foreseen. The budget for the book eventually reached approximately half a million dollars, and it was determined by the **Heritage Project Steering Committee** that the sale of 20,000 copies would be needed to break even. The first printing of 30,000 copies was to be completed by August 1, 1982, and an agreement with the Iowa Bankers Association included the sale of the book through local banks.

The joint Steering Committee met on September 24, 1981, and on February 23, 1982. At the first of these meetings, printing bids were considered, and a list of possible technical reviewers was provided by Hanson from the authors' suggestion. At the second meeting it was decided that the Iowa Bankers Association would have exclusive selling privileges through member banks for a three month period after the book's release. Cash flow problems for the Foundation were becoming serious, and it was necessary to develop a special contract agreement with Graphics Corporation in order to proceed. An agreement was developed with the Iowa Bankers Association whereby they would conduct a concerted publicity campaign to sell 15,000 copies of the book during the three-month period. After that, the Foundation will promote the sale of the book to the general public at regular prices.

A major concern of the IAS Board of Directors was the relatively low visibility of the Academy under the agreement with the Iowa Natural Heritage Foundation that leaves all promotion and marketing to the latter. The Steering Committee will address this issue to assure that the Academy is properly recognized as the originator and creator of this important publication.

National Involvement of the Iowa Academy of Science

R. W. Hanson continued to serve on the Board of Directors of the **National Association of Academies of Science (NAAS)** in 1981-82, and, as past president, was responsible for the NAAS program at the 1982 meeting of the AAAS in Washington, DC. An all day symposium entitled "Science and Belief" had been arranged by Hanson, working with Rolf Sinclair of the National Science Foundation and Joseph Dasbach of the Office of Science and Technology Education of AAAS. The afternoon session, "Problems for Science Education," included seven speakers arranged by Hanson to represent various solutions to the impact of the "scientific creationism" movement on the teaching of science. Hanson's intent was to find speakers who had first-hand information or experience with the ways that the religious convictions of students could be respected while dealing honestly with the evidence for or against evolution and/or creation. The AAAS Publications Office selected the full symposium, including the morning session on theological and geological perspectives on the issue, to be taped and published. It will appear late in 1982 as a paperback that will be useful to teachers at all levels.

In May of 1982, Hanson attended the National Congress on Science and Mathematics Education sponsored by the National Academy of Sciences, followed back-to-back by a conference of AAAS affiliate representatives. The objective of the first meeting was to draw national attention to the shortage of qualified science and mathematics teachers and to the need to improve both the quality and quantity of education in these areas as a national priority. The second meeting was for the purpose of developing a coalition of AAAS-affiliated organizations to deal with the perceived crisis in science and mathematics education. Local and state academies of science are expected to play a significant role in responding to this urgent need.

The NAAS Board, meeting in Detroit on May 28, 1982, determined to follow up on these two national meetings by encouraging member academies to sponsor symposia or other focusing activities during the 1982-83 year. At the Detroit meeting of AAAS in May 1983 it is expected that various academies will report on local and state response to the crisis.

In Iowa, the Governor's Science Advisory Council was asked by Governor Ray to gather some pertinent facts about the shortage of science teachers for inclusion in his state-of-the-state message in January, prior to the inauguration of the new governor. The Academy's new Education Committee was asked to serve as a GSAC task force to gather this information. This fact, plus the planned symposium at the 1983 Annual Meeting, is indicative of Iowa's continued leadership through Academy initiatives.

Financial Matters

The operating budget for 1981-82 was approved by mail canvass of the Board after recommendations by the Finance Committee. It entailed a total of \$72,216 of operating expenses, of which \$6,000 for Student Programs and \$2,000 for post-secondary research grants were contingent upon corporate contributions. A contribution of \$5,000 for Student Programs was all that came in during the year; therefore no research grants other than those for secondary school students were available. Other anticipated income to support this budget totaled \$64,216, including a state appropriation of \$4,293, UNI work study assistance of \$900, UNI support of the *Iowa Science Teachers Journal*

of \$680, and additional corporate contributions of \$3,248. The latter was not forthcoming. At year's end, the actual total of operating expenses came to \$70,310.83 and operating income came to \$80,518.46 not including \$14,056 of UNI support for released time and services. The difference between these income and expense figures (\$10,207.63) is the best indication of the growth or decrease in Academy assets during the year.

Table 4 presents Academy expenditures and income during the year, somewhat arbitrarily distributed among four activity areas and "reserve." The allocation of administrative expense is based on good approximations of actual time spent in each area. However, it is not fair to overlook the overall and overlapping benefits for the Academy when looking at these specific allocations of administrative expense.

Table 5 is the Balance Sheet for June 30, 1982, showing a comparison with the same date a year ago. Strict comparison is not entirely valid, however. The item "Net income (loss)" is a fair but imperfect basis for estimating the status of Academy assets. The table does not show the value of the Parish farm, the Academy's most valuable asset from the standpoint of market value. However, the farm is not saleable because of a 75-year proscription on selling it imposed by the bequest in 1960.

Table 4. Sources and Disposition of Operating Funds, 1981-82

Resources		Disposition				
Source	Amount	Publications	Programs; Projects	Meetings, Etc.	Admin.	Reserves
Farm (net)	\$27,000.00	\$ 1,446.42	\$ 1,252.57	\$11,861.11	\$ 2,232.26	\$10,207.64
Interest & Div.	3,414.49	-0-	3,414.49	-0-	-0-	-0-
Dues (regular)	16,419.75	15,238.32	-0-	-0-	1,181.38	-0-
Dues (Jr. Acad.)	538.50	-0-	538.50	-0-	-0-	-0-
Page Charges	1,415.50	1,415.50	-0-	-0-	-0-	-0-
Annual Meeting	4,808.50	-0-	-0-	4,808.50	-0-	-0-
Gifts and Grants	7,811.38	1,181.38	6,630.00	-0-	-0-	-0-
Reprints	1,385.50	1,385.50	-0-	-0-	-0-	-0-
Other sales	9,627.24	9,627.24	-0-	-0-	-0-	-0-
Services	693.43	-0-	-0-	-0-	693.43	-0-
Miscellaneous	1,531.17	-0-	677.00	-0-	854.17	-0-
State aid*	4,293.00	4,293.00	-0-	-0-	-0-	-0-
UNI Subsidy*	15,645.00	6,226.71	2,612.72	4,537.05	2,268.52	-0-
Reserve	-0-	-0-	-0-	-0-	-0-	-0-
TOTAL	94,583.46	40,814.12	15,125.28	21,206.66	7,229.76	10,207.64
Percent of Total	100.0	(43.2)	(16.0)	(22.4)	(7.6)	(10.8)
Allocation of Administrative Expense						
Percent (included)	100.0	19,844.46 (39.8)	8,326.70 (16.7)	14,459.53 (29.0)	7,229.76 (14.5)	-0-

*Do not appear in IAS accounts.

(Note: This summary differs from the same one for 1981-82 because all UNI support is included this time, not just the amount for the *Iowa Science Teachers Journal*.)

Table 5. Balance Sheet

Assets	June 30, 1981	June 30, 1982
Checking	\$ 1,002.04	\$ 8,597.56
Passbook savings	850.00	-0-
Money market fund	5,835.00	15,146.49
Certificates of deposit	10,000.00	-0-
Automobile	3,343.00	1,576.00
Bonds, incl. accr. int.	6,140.00	6,140.00
Promissory note	-0-	4,285.76
	<u>\$27,170.04</u>	<u>\$35,745.81</u>
Net Worth		
Retained Earnings	29,095.18	26,705.18
Net income (loss)	(1,790.00)	9,040.63
	<u>\$27,170.04</u>	<u>\$35,745.81</u>

Not including interest earned through 6/30 and not deposited until after 7/1, nor value of farm or office equipment. For IRS purposes, the farm is valued at \$60,000, its appraised value in 1960 when it was given to the Academy. The depreciated value of the automobile is not its market value.

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Mary Sievert, Davenport

PAPER PRESENTATIONS, ANNUAL MEETING 1982

Invited Junior Academy Papers

Douglas Grier, Marshalltown High School—The Enhancement of *Glycine max* Through the Use of Controlled Levels of Electro-magnetic Radiation
 John Immesoete, Central High School (Davenport)—Designing and Testing an Ultralight Airplane
 Jeffrey McKinney, Chariton High School—A Methylene Blue Reductase Indicator for Escheria Coli Infant Formula Contamination
 Rhonda Schon, Glidden-Ralston Jr./Sr. High School—Determination of Visible Injury Threshold Levels of Sox/Nox and Effects on Food Production
 Gina Elizabeth Serra, Oelwein High School—*Gycine max* Inoculation Stimulates Growth and Produces Higher Yields - Part II
 Andrew James Sinning, Central High School (Davenport)—Subject Awareness of Subliminal Stimulation

Contributed Papers

(All abstracts of contributed papers received on time appeared in the March 1982 PROCEEDINGS as an insert. Some symposium abstracts will appear in subsequent issues, including this one.)