Proceedings of the Iowa Academy of Science

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Reports: The Secretary-Treasurer; Financial Statement; The Board of Directors; Staff Reports; Committee Reports

Report of the Board of Directors

The Board of Directors met at 8:00 p.m. on April 17, 1958, in the Faculty Lounge at Drake University. All members of the board were present. President J. J. L. Hinrichsen presided.

Reports of the Secretary-Treasurer, Auditing Committee, Editor and Librarian were accepted.

Editorial policies were discussed and a motion was adopted that the Editor of the Proceedings be instructed to investigate the cost of reprints and explore the possibility of having the Academy subsidize a minimum number of reprints for contributors.

The report of the Finance and Endowment Committee was presented and accepted with the following actions on the recommendations of that committee:

A sum of $800 from the operating fund is to be earmarked for expenditure in behalf of science preferably during the fiscal year of 1958. The President, Secretary-Treasurer, and Chairman of the Finance and Endowment Committee will act on committee requests. The Secretary-Treasurer was instructed to inform various section and committee chairmen that they submit to him by December 1 their requests for funds for planned projects and activities for the succeeding budget year.

The Secretary-Treasurer was instructed to take the necessary steps toward elimination of the fee for new fellows and the transfer fee from associate to fellow. This is a constitutional provision and must be voted on at the 1959 Academy meeting after proper notice has been given to the membership.

The Board agreed to recommend to the membership at the annual business meeting that Article XI of the revised by-laws be rescinded and that a new Article XI be adopted to read as follows:

> "The formulation of basic policies concerned with the procurement, investment, and expenditure of Academy funds, and with the management of Academy property, shall be the function of the Committee on Finance and Endowment."

The Board also adopted the following recommendation:

That the President without delay appoint a Special Committee on Cooperation with National Programs of Visiting Scientists, charged with (a) accumulating full information on the several programs (b) providing this information to individual Academy members in Iowa colleges and encouraging them to take advantage of one or more of the programs, and (c) making recommendations to

the Board of Directors relating to financial aid that the Academy might give in defraying the costs of participation by the colleges.

The reports of the Membership, Conservation, Science Talent Search, High School Relations, and Science Training Committees were presented and accepted.

In connection with the report of the Conservation Committee it was agreed that the Iowa Academy become a contributing member of the Iowa Conservation Educational Council.

President Hinrichsen was instructed to appoint a committee to pass on the allotment of the 1958 AAAS Research Grants.

A one-day meeting is planned for 1959. This will be held on April 17 at Iowa Wesleyan College at Mount Pleasant. The 1960 meeting is to be held at Simpson College, the 1961 meeting at the State University of Iowa and the 1962 meeting at Wartburg College.

In response to a request by the AAAS that the history of the Iowa Academy be brought up-to-date, it was suggested that attempts be made to secure the interest of one or more graduate students who might use this as a thesis topic.

The meeting adjourned at 1:00 a.m., April 18, 1958.

CLARENCE H. LINDAHL, *Secretary*

Report of the Editor

The 1957 edition of The Proceedings of the Iowa Academy of Science, Volume 64, was distributed on December 12, 1957, to major libraries within the United States. This date establishes priority for scientific nomenclature. Seventeen hundred seventy copies of the 699-page Proceedings were printed by Wallace-Homestead Co., Des Moines, Iowa. Paper and printing costs, as well as technical assistance, were provided by the State of Iowa under the direction of Mr. Sherman W. Needham, State Superintendent of Printing. His interest and concern over the Proceedings are gratefully acknowledged. The retiring editor would like to express many grateful words of appreciation to all the membership of the Academy and to state explicitly his thanks to the retiring Secretary, Jean L. Laffoon, as well as his thanks to the retiring section chairmen for capable assistance in editing papers. Serving the Academy as its editor for three years has been a real joy. Passing the editorship to Dr. T. E. Rogers is done with every good wish but reluctantly because it signifies, for the retiring editor, the severing of many excellent professional friendship bonds established through the medium of the editor-author relationship.

DAVID G. MOBBERLY, *Editor,* 1957

Report of the Librarian Distribution of the Proceedings of The Iowa Academy of Science

The following statistics indicate the details of the distribution for Volume 64 of the Proceedings of the Iowa Academy of Science:

Sent to members	1243
Sent on exchange	338
Sent on subscription	23
Gifts to Libraries, Government agencies and Abstracting Journals	42
Total number of copies distributed	1646
Remaining copies available for exchange	124

Report of the Iowa Academy of Science sales fund

Balance on hand, December 31, 1956	$810.54
Sale of Proceedings (plus postage)	178.26
TOTAL FUNDS AVAILABLE	$988.80
Disbursements—postage	12.48
Balance on hand, December 31, 1957	$976.32

ROBERT W. ORR, *Librarian*

Report of the Committee on Finance and Endowment

The financial statement for fiscal year 1957 has been carefully studied by the Committee. Its most important single feature is the amount designated as total assets—$7,576.95. This amount represents a one-year gain (from December 31, 1956) of $1,196.75, and a two-year gain (from December 31, 1955) of $2,235.99. These gains in total assets are certain to be a source of gratification to any members of the Academy who favor a policy of hoarding money, but a source of dissatisfaction to those who believe that an alert policy of all-out spending in behalf of science should be pursued.

The Committee reaffirms its belief, placed on record a year ago, that the fiscal policy of the Academy should be to keep the intake and outgo of money balanced. To implement such a policy, expected income should be estimated at the beginning of each fiscal year and plans then made to allocate and expend it before the year is done. Therefore, the Committee recommends (for the second year in succession) that an annual budget be prepared by the Secretary-Treasurer, with whatever advice he may seek from the chairmen of standing committees. The budget should be sent to all members of the Board of Directors for suggested modifications prior to its final adoption, and presented to the membership at the annual business

meeting for discussion and concurrence. Once a budget has been approved by the Board of Directors, it should be adhered to by the President and the Secretary-Treasurer in their expenditures of Academy funds.

The Academy should segregate its total assets into four funds—Operating, Reserve, Endowment, and Revolving Publication. The Committee recommends that the allocation of money to these funds (as of December 31, 1957) be as follows:

Operating Fund	$1,226.95
Reserve Fund	2,000.00
Endowment Fund	4,000.00
Herbert Osborn Revolving Publication Fund	350.00
Total Assets	$7,576.95

The purpose of establishing a Reserve Fund is to make money readily available as it may be needed for special expenditures, especially those that are likely to arise in the handling of the Jessie A. Parish bequest. The justification for taking $2,000.00 for the Reserve Fund from what has been called the Endowment Fund is that more than $2,000.00 accrued to the Endowment Fund, during the period 1937-1950, from surpluses in the Current (Operating) Fund and from interest on bonds. Any interest that may in the future be earned on the Reserve Fund should automatically be transferred, at the end of each fiscal year, to the Operating Fund. The general aim should be to keep about $2,000.00 in the Reserve Fund. If the fund becomes temporarily depleted, it should be replenished as occasion permits, without serious curtailment of the Academy's on-going projects in support of science.

Interest earned on money in the Endowment Fund should be transferred to the Operating Fund at the end of each fiscal year. Any future increases in the Endowment Fund should come from gifts and bequests specifically intended for permanent investment. In line with this position on investments, the Committee recommends that Article XI of "Revised By-Laws, 1956" be rescinded *in toto* and that a new Article XI be adopted, to read as follows:

> "The formulation of basic policies concerned with the procurement, investment, and expenditure of Academy funds, and with the management of Academy property, shall be the function of the Committee on Finance and Endowment."

The proposed by-law eliminates the requirement that life membership fees and entry fees from fellows shall be invested, and thus removes present restrictions on the Committee's range of recommendations concerning fiscal matters. (It is left for the Membership Committee to propose changes, if any, in the constitutional provision that fellows, upon election, shall pay an entrance fee of $2.00.)

Of the amount shown above in the Operating Fund, the sum of

$800.00 should be earmarked for expenditure in behalf of science, preferably during fiscal year 1958. This would leave an operating balance on December 31, 1958, of $426.95, provided that the recommendation regarding the expenditure of 1958 income is adopted and implemented.

The Herbert Osborn Revolving Publication Fund contains $350.00. The purpose of this fund is to provide financial assistance to members of the Academy in their publication of special scientific monographs—monographs that might be expected, through their sale, to bring in enough money to reimburse the Academy, *eventually*. If the fund is to be of service to the membership, it must obviously be used. It now lies dormant.

The efforts of the Committee to obtain a grant from the National Science Foundation for launching two scientific lectureships in Iowa, under Academy management, have met with temporary failure. Very substantial financial support is currently being given by NSF to nationwide "programs of visiting scientists" under the auspices of several national scientific organizations, including the American Institute of Physics and the American Chemical Society. A postponement, but not an abandonment, of the Academy's general scheme of lectureships is deemed advisable. Meanwhile, the Academy need not, and should not, be idle. Two actions are proposed:

First, that the President without delay appoint a Special Committee on Cooperation with National Programs of Visiting Scientists, charged with (a) accumulating full information on the several programs, (b) providing this information to individual Academy members in Iowa colleges and encouraging them to take advantage of one or more of the programs, and (c) making recommendations to the Board of Directors relating to financial aid that the Academy might give in defraying the costs of participation by the colleges.

Second, that the Board of Directors establish a Standing Committee on Scientific Lectureships whose principal function shall be to make long range plans for the creation and financial support of a continuing program of scientific lectures in the colleges of Iowa, the activation date for which shall be on or before the termination of the national program. One of the Academy's pressing obligations, as yet largely unmet, is to promote the cause of science among undergraduate students in junior and senior colleges. The use of visiting lecturers for this purpose seems to have great promise.

The chairman of the Committee has kept himself generally informed concerning the condition and present management of the Parish farm. There have been no developments during the year

which require special mention. The status quo is believed to be fairly favorable to the Academy's interests.

DON LEWIS, *Chairman*
VICTOR W. BOLIE
IRVIN H. GERKS
LELAND P. JOHNSON
ROY A. NELSON
FRANK C. PENNINGTON

Report of the Membership Committee

The undersigned membership committee submits the following report. Each committee member has been active in his, or her, respective area. The chairman wishes to express his gratitude for the fine work and excellent cooperation of his committee, and to others who have solicited members or have supplied names of prospects.

The committee reports the passing of the following members: Edward W. Bartow, Jack J. Hinman, Jr., Thomas H. Liggett, and James Russell Jenness.

The committee elected 132 student associates and 60 associates to membership between August and April of this year.

The committee wishes to present the following for election to membership, or for change in status of membership, in the Iowa Academy of Science:

Transfer from fellow to emeritus fellow (1): Herbert J. Plagge.

Transfer from associate to fellow (4): Richard R. Clampitt, Virgil E. Dowell, Sherman W. Rabideau, Leonard C. Rossmann.

Election as fellow (13): Charles F. Allegre, Ned Ashton, Richard S. Bear, Carl J. Bell, Lisabeth H. Beynon, Lyman R. Caswell, Dean C. Foley, William L. Frantz, Carlo Michael Ignoffo, Clifford L. Meints, Robert A. Tolman, Milton W. Weller, Norman E. Williams.

H. L. DEAN, *Chairman*
R. W. GETCHELL
K. E. GOELLNER
I. J. GWINN
O. C. KREIDER
T. H. LIGGETT
W. C. OELKE
W. A. TEPPERT
MARY M. VINJE

Report of the High School Relations Committee

The 1957-58 year for the Iowa Junior Academy of Science began with a fall meeting of the executive council on Saturday, September 14, in the Commons at Iowa State Teachers College in Cedar Falls. Those present were:

Mary Hazard, Iowa City.....Vice-President
Dennis Littlejohn, Des Moines.....Secretary
Allan Kintzle, Dyersville.....Treasurer
Herman Kirkpatrick, Des Moines.....Senior Councilor
Ralph H. Dillon, Oskaloosa.....Junior Councilor
Milton Herwig, Riceville.....Senior Director of Essays
Sister Mary Janela BVM, Waterloo.....Junior Director of Essays
Ruth Mahon, Cedar Falls.....Iowa Science News Letter
J. W. Kercheval, Cedar Falls.....Chairman
High School Relations Committee, Iowa Academy of Science
Dean C. Stroud, Des Moines.....Executive Secretary

The group voted to place the position of editor-in-chief of the Iowa Science News Letter in the executive council. Miss Linda Andrews became the first person to represent the publication at the 1958 meeting.

It was recommended that beginning with the 1958 convention individual recognition awards be made (1) to the winners in the essay project, (2) to those whose projects show unusual merit, and (3) to the officers who have served the Junior Academy during the year. Criteria for judging individual exhibits that would be recognized with a certificate were not developed but were left to the discretion of the judges.

In order to gain a wider distribution of the News Letter among club members, it was voted that ten or more copies would be sent to one address at the rate of ten cents per subscription for the school year. Single yearly subscriptions would remain at twenty-five cents each.

New applications for membership in the Junior Academy came from Forest City, Mason City, and Sac City. Several clubs that had been members did not enroll for 1957-58. The membership of clubs is as follows:

City	Club—School
Albia	Bi-Phy-Chem Club, Senior High School
Carroll	Keumper Knights of Science, Keumper High School
Cedar Falls	Alpha Beta Kappa, City High School
Cedar Falls	TCHS Science Club, T. C. High School
Cedar Rapids	Biology Club, Jefferson High School
Cedar Rapids	Students of Science Club, Jefferson High School
Clear Lake	PC_2 Club, City High School
Des Moines	General Science Club, Amos Hiatt Junior High

Des Moines.....Math-Science Club, Roosevelt Senior High
Dubuque....Stella Maris Science Club, Immaculate Conception Acad.
Dubuque.....Students of Science, St. Joseph Academy
Dyersville.....Xavier Science Club, Xavier High School
Forest City.....Tomorrow's Scientists Today, Junior High School
Fort Dodge.....Science Club, St. Edmond High School
Grinnell.....Echoes of Einstein Club, High School
Iowa City.....High School Science Club, City High School
Iowa City.....University Hi Science Club, University High School
Keokuk.....Bi-Phi-Chem Club, Senior High School
Mason City.....Science Club, City High School
Oskaloosa.....Senior Science Club, Senior High School
Riceville.....Science Club, High School
Sac City...Science and Photography Club, Junior-Senior High School
Sioux City.....Heelan Science Club, Heelan High School
Stacyville.....Visitation Science Club, Visitation School
Waterloo.....O.L.V.A. Scientists, Our Lady of Victory Academy
Waterloo.....Phi Beta Chi Club, East High

The regular affiliation with Science Clubs of America was continued. Clubs are appreciative of the service that the SCA renders to its membership.

Approximately three hundred registered for the 1958 meeting of the Iowa Junior Academy of Science convention which was held on the campus of Drake University on Friday, April 18. After setting up exhibits in the science laboratories of the University, a joint meeting was held with the Iowa Academy of Science at which time the winners in the Iowa Science Talent Search were presented. Immediately following this program, the Junior Academy people boarded busses for tours which included the Armstrong Tire and Rubber Company, the John Deere Company, the Firestone Tire and Rubber Company, the Meredith Publishing Company, and the Northwestern Bell Telephone Company. At the first four of these places the visitors were entertained by the company at a luncheon, either before or after the tour. Our Junior Academy people are very appreciative of the interest that industry has shown in providing tours for our clubs. Following the tours, the 135 exhibits were judged and the annual business meeting of the Junior Academy was held. Since the vice-president becomes president, the Junior Academy will be served during 1958-59 by Mary Hazard of City High, Iowa City, as president; Thomas Hesselmann of Xavier High, Dyersville, was named vice-president; the secretary is to be named by the science club of the Teachers College High School of Cedar Falls; and the treasurer will be Raymond Trausch, Keumper High of Carroll.

For the first time in the history of the Junior Academy a joint dinner meeting was held with the members of the Iowa Academy of Science. This meeting was attended by two hundred members from each group. At the close of the dinner the winners of the exhibit awards were announced by Director of Exhibits, Ruth Mahon. The Senior Director of Essays, Milton Herwig, announced the ratings given in the essay project. Following the dinner meeting the evening

session of the two academies was a joint meeting at which Dr. James A. Van Allen of the Department of Physics, University of Iowa, spoke on "Satellites of the Earth."

The awards for exhibits were as follows:

SUPERIOR

Xavier High School, Dyersville.....Biological
University High School, Iowa City.....Biological
Teachers College High School, Cedar Falls.....Biological
East High School, Waterloo.....Physical
Teachers College High School, Cedar Falls.....Physical

EXCELLENT

Visitation High School, Stacyville.....Biological
Lincoln Junior High School, Albia.....Biological
Lincoln Junior High School, Albia.....Physical
Heelan High School, Sioux City.....Physical
St. Edmond High School, Fort Dodge.....Physical
City High School, Iowa City.....Physical
Xavier High School, Dyersville.....Physical
City High School, Cedar Falls.....Physical
University High School, Iowa City.....Physical
Roosevelt High School, Des Moines.....Physical

HONORABLE MENTION

Riceville High School, Riceville.....Biological
Forest City Junior High, Forest City.....Biological
City High School, Cedar Falls.....Biological
Roosevelt High School, Des Moines.....Biological
Keumper High School, Carroll.....Physical
City High School, Albia.....Physical
Junior High School, Forest City.....Physical
Amos Hiatt Junior High School, Des Moines.....Physical

The awards for the essay projects were as follows:

SUPERIOR

David Ecklein, City High, Cedar Falls
Gary Becker, Xavier High, Dyersville
Anthony Dingbaum, Xavier High, Dyersville
Angela Kramer, Xavier High, Dyersville
Dianne Brakke, Junior High, Forest City
Mary Sue Rasmussen, Junior High, Forest City

EXCELLENT

Kay Conners, Keumper High, Carroll
Donna Spaen, Keumper High, Carroll
Duane Wurzur, Keumper High, Carroll
Allan Kintzle, Xavier High, Dyersville
Donald Ricken, Xavier High, Dyersville
Julie Ann Branstad, Junior High, Forest City
David Stoll, Junior High, Forest City
Richard Utesch, City High, Riceville
David Bush, Visitation School, Stacyville
Janice Halbach, Visitation School, Stacyville
Virginia Krebsbach, Visitation School, Stacyville
Kathryn Schmidt, Visitation School, Stacyville
Frederick L. Nordbrock, East High, Waterloo
Roger A. Primrose, East High, Waterloo

HONORABLE MENTION

Jo Ann Berger, Keumper High, Carroll
David Charles Krejci, South Jefferson High, Cedar Rapids
Delores Boland, Junior High, Forest City
Douglas M. Fogerty, Junior High, Forest City
Rita Gardner, Junior High, Forest City
Jeffrey Hansen, Junior High, Forest City
David Dorn, St. Edmond High School, Fort Dodge
Jerry Fitzgerald, St. Edmond High School, Fort Dodge
Terrence H. Griffey, St. Edmond High School, Fort Dodge
Jule Meyer, St. Edmond High School, Fort Dodge
Rob Quarles, St. Edmond High School, Fort Dodge
Patricia Waggoner, St. Edmond High School, Fort Dodge
Mary K. Walsh, St. Edmond High School, Fort Dodge
David Bilyeu, City High School, Riceville

Recommendations of the High School Relations Committee to the Iowa Academy of Science are as follows:

1. That the appointment of the following persons as adult sponsors be made for the Junior Academy for 1958-59:

Senior Councilor, Ralph H. Dillon, Senior High, Oskaloosa
Junior Councilor, Frank Starr, East High, Waterloo
Senior Director of Essays, Sister Mary Janela, O.L.V.A., Waterloo
Junior Director of Essays, Duane B. Converse, Senior High, Grinnell
Director of Publications, Walter Gohman, Campus School, Cedar Falls
Director of Exhibits, Ruth Mahon, Campus School, Cedar Falls
Executive Secretary, Dean C. Stroud, Amos Hiatt, Des Moines

2. That the Iowa Academy of Science continue the policy whereby its members are encouraged to visit the Junior Academy exhibits and discuss the exhibits with the exhibitors.

3. That a grant of $75.00 be continued for the financial support of the work of the Junior Academy for 1958-59.

J. W. KERCHEVAL, *Chairman*
WILLIAM E. DIEDRICHSEN
D. D. MILLSPAUGH
WILLARD J. POPPY
DEAN C. STROUD
A. F. VOIGT

Report of the Committee on Science Talent Search for 1957-58

Under the date May 7, 1957, notices of the Twelfth Iowa Science Talent Search were sent to the teachers of science in the high schools of Iowa. A second notice was sent to each high school in Iowa by attaching two-color posters as a supplement to the fall number of the Iowa Science News Letter, the official publication of the Iowa Junior Academy of Science. For the year 1957-58, 93 teachers requested 504 sets of examination questions and entrance blanks, and 98 entries were completed and returned to Science Clubs of America. In

1956-57, the numbers were: teachers 59, examinations 375 and completed entries 59.

After preliminary evaluations by individual members of the committee had eliminated about three-fourths of the entries, the best 23 papers were rated individually and independently by each member of the committee. Finally the Committee on Science Talent Search met in Ames on March 15, and arranged in order of merit these selected 23 entries.

One Iowa entry had won a trip to Washington, D. C., and a $250.00 Westinghouse Science Scholarship in the Seventeenth Annual Science Talent Search. Five other Iowa entrants won honorable mention. This would leave only three additional places for winners in the Iowa search. The committee believed that others deserved recognition and it was agreed that about five names be added to the Iowa Honor Roll for 1958. When Clinton Corn Processing Company learned of this situation, their appropriation for 1958 and subsequent years was increased to $2,500.00, and the committee was authorized to create five fourth places and award to each winner of a fourth place $25.00.

The committee was requested to aid in choosing a recipient for a Dow Chemical Company Chemistry Fellowship at Iowa State College. The fellowship is $500.00 for the freshman year and renewable for three more years if high grades are earned. One of those receiving honorable mention nationally was selected for the Dow Chemical Company Fellowship. He was given a second place, but no cash award from the Clinton Scholarship funds. There were two tied for the lowest third place, so six third places were awarded.

Consequently, on Friday morning, April 18, in Harvey Ingham Hall of Drake University, 16 awards totaling $2,125.00 for the freshman year were made and Charles Paul Martens had already received $250.00 as a Westinghouse Science Scholarship.

The rankings are as follows:

1st place—$250—LeRoy Harrod Botten, 1735 Wood Street, Dubuque; Sponsor, Alice White, Dubuque High School.

1st place—$250—Dennis James Duven, 217 N. DaKosta, Orange City; Sponsor, O. B. Kreamer, Orange City High School.

2nd place—$200—Mary Katherine Knox, 1840 Muscatine Avenue, Iowa City; Sponsor, John R. Bolte, Iowa City High School.

*2nd place—$500—Allan Theodore Leffler II, 6010 Otto Road, Johnston; Sponsor, Paul Sloan, Johnston Consolidated High School.

**2nd place—$200—Charles Paul Martens, R. 4, Charles City; Sponsor, Edwin Roedel, Charles City High School.

3rd place—$100—Marvin Harry Caruthers, R. 1, Des Moines; Sponsor, Paul Sloan, Johnston Consolidated High School.

3rd place—$100—John Karl Kammermeyer, 116 Ferson Avenue, Iowa City; Sponsor, John R. Bolte, Iowa City High School.

3rd place—$100—Angela Ann Kramer, 1104 E. Victoria, Dyersville; Sponsor, Sister Mary Cecilia, O.S.D., Xavier High School.
3rd place—$100—Hiram Levy II, R. 1, Box 73, Middle Road, Bettendorf; Sponsor, Donald Schaefer, Bettendorf High School.
3rd place—$100—Kathleen Patricia Metcalf, R. 2, Dubuque; Sponsor, Sister Mary Edwina, B.V.M., St. Joseph Academy.
3rd place—$100—John Francis Strain, 220 27th Street Drive, S.E., Cedar Rapids; Sponsor, Iola Tillapaugh, George Washington High School.
4th place—$ 25—Stanley Browning Collins, 2002 S. Georgia, Mason City; Sponsor, H. H. Boyce, Mason City High School.
4th place—$ 25—Dennis Ellingson, 409 River Street, Decorah; Sponsor, David Stoppel, Decorah High School.
4th place—$ 25—Richard Allan Harris, 3420 Johnson Avenue, Cedar Rapids; Sponsor, Joseph A. Stolar, Jefferson High School.
4th place—$ 25—Michael John Kearney, Oakhurst Apt., Clinton; Sponsor, Thomas G. Kudzma, Clinton High School.
4th place—$ 25—Rose Marie McGovern, 158 Bluff Street, Dubuque; Sponsor, Sister Mary Edwina, B.V.M., St. Joseph Academy.

*Dow Chemical Company special award.
**Received also $250 from Westinghouse Science Scholarships, making his total award $450.

Before the final rankings were announced on April 18, fourteen of the sixteen had selected colleges or universities at which they expected to enroll and a recommendation had been sent for each of them. The schools were asked to send to the honorees the blanks necessary to apply for remission of tuition and such other concessions as could be made to students who have shown exceptional promise in science.

The honorees were entertained at the plant of the Clinton Corn Processing Company in Clinton on Thursday, April 17, and brought to Des Moines for the meeting of the academies at which time the awards were made.

The Clinton Corn Processing Company, a Division of Standard Brands, Inc., has authorized the announcement of the Thirteenth Iowa Science Talent Search for Clinton Science Scholarships to be awarded in 1959. They have appropriated $2,500.00 for scholarships and expenses. Announcements were mailed to science teachers in Iowa high schools under the date of April 10, 1958.

The committee again wishes to thank: Clinton Corn Processing Company for its financial support; Science Clubs of America for the use of their examinations and other papers; The Iowa Academy of Science and the Iowa Junior Academy of Science for a place on their programs; the already overworked high school teachers who have given added time and energy to sponsor these contestants; and the newspapers, radio, and television programs which aid in spreading

information about the program. Every one of these is necessary to the success of the Iowa Science Talent Searches.

F. E. BROWN, *Chairman*
E. R. BECKER
R. V. DREXLER
LEROY EYRING
J. V. MCKELVEY
J. I. ROUTH

Report of the Committee on Conservation

Wise use of natural resources is widely accepted as a principle in industry today. In practice this principle raises many problems. The recent water laws of Iowa give order of precedence to needs and uses among several interests, and the Iowa Natural Resources Council has the difficult task of establishing a comprehensive state-wide program for the conservation, development and use of the water resources of the state. The Council has prepared reports for six major river basins on inventories of water supply and use, water control problems, and recommendations for establishment of comprehensive basin-water plans. Two more similar reports to complete the state-wide inventories are planned. The Iowa State Conservation Commission, after operating notably since 1933 under The Iowa Twenty-five Year Conservation Plan, has announced the employment of The Wildlife Management Institute to prepare a new Ten-year Conservation Plan.

The problems of water allotment do not vanish with increased precipitation. The U. S. Weather Bureau reported that Iowa received more rain than usual in 1957, and crop production exceeded that of 1956 by 25 percent and the 1940-'55 average by 18 percent. Yet, the flow in Iowa's streams for the water year of 1957 was still below average except in northwestern counties, according to the U. S. Geological Survey. Water levels in most water-table wells of the State remained below average throughout the year, except in southwestern counties, where above-average levels were recorded in several wells. And at the close of the water year water levels generally were higher than at the beginning. Each of the groups interested in water usage continues to press for its share of water. Only more scientific data gathered by each interest can furnish the basis for equitable water usage. And that requires more scientists to improve methods of measurement, to supervise collection of data, and to evaluate them.

Steady progress in water and soil conservation on farmland is shown by an increase of 4,910 cooperators to bring the total to 61,733, with increase in area of 868,968 acres to a total of 11,202,205 acres, increase in basic conservation plans of 3,432 to total 42,200

involving, respectively, 618,695 acres, and 7,594,699 acres. Increases and totals in representative practices were, respectively, contour farming 202,980 and 2,832,607 acres; pasture plantings 34,202 and 315,-851 acres; tree planting 941 and 25,760 acres; hedgerow plantings for wildlife 34,555 and 330,008 rods; pond construction 2,077 and 18,333; terracing 3,455 and 31,010 rods; waterway development 5,575 and 92,239 acres.

The figures do not necessarily mean that only this amount of conservation has been applied to the land, because many farmers are applying practices on their own accord which often do not get on the official records. The volume of work and extent of activities participated in by local soil conservation districts and Soil Conservation Service personnel becomes such that it is relatively hard to maintain an accurate record of conservation practices physically applied to the land, except those in which Service personnel have had a hand in application or participation.

Small watershed activities have increased considerably throughout the year. Watershed applications, under Public Law No. 566, approved by the State Soil Conservation Committee include: Indian Creek in West Pottawattamie District; Picayune Creek in Harrison and Shelby Counties Soil Conservation Districts; Mill Creek in Crawford, Harrison, Shelby Districts; Big Park in Crawford District; David's Creek in Audubon and Guthrie Districts; Blue Grass in Audubon District; Big Wyacondah in Davis District; Badger Creek in Madison, Dallas, and Warren Districts; Turkey Creek in Cass, Guthrie, Audubon, Adair Districts; Held in Plymouth District; Hamburg in Fremont District; and Davis-Battle Creek in Monona District.

Field construction, started in the Harmony Creek Watershed in the Harrison County Soil Conservation District in 1957, will be completed in 1958. In addition, work plans have been developed by Soil Conservation District Commissioners, County Boards of Supervisors, and Soil Conservation Service personnel for the Rocky Branch Creek Watershed in the Jefferson County Soil Conservation District and the Simpson Creek Watershed in the Fremont County Soil Conservation District and have been approved for construction. Presently, work plans are being developed for clearance and approval by the local folks and the Department of Agriculture for the Crooked Creek Watershed in the Audubon, Guthrie, and Cass County Soil Conservation Districts; the Big Creek Watershed in the Decatur County Soil Conservation District; and the Big Park Watershed in the Crawford County Soil Conservation District.

The Conservation Reserve phase of the Soil Bank Program has stimulated a great deal of interest in public expansion of the wildlife program as it relates to food and cover for wildlife. As in previous

years, several wildlife practices again were provided in the Iowa Docket for calendar year 1958.

Activity continued with the Teachers Conservation Camp at Springbrook State Park, the Soil Conservation District Commissioners Short Course, the conservation award programs sponsored by the Goodyear Tire and Rubber Company, the Des Moines Register and Tribune, the Omaha World-Herald, the Sioux City Journal-Tribune, and many others.

The Soil Conservation Service has been assigned the leadership responsibility for the Conservation Needs Inventory to work in cooperation with other agencies of the Department of Agriculture and those representatives from State agencies who are interested in and can contribute to the over-all field of conservation on a State basis. This Conservation Needs Inventory is developing on a cooperative basis among all agencies, both State and Federal, for the purpose of coming up with a realistic figure in terms of the conservation problem, the treatments needed, along with a good, sound expected land-use program by 1975. This again should do much toward coordinating the over-all activities of both State and Federal agencies working in the field of soil and water conservation. This program is carried on at the county level, thus giving district commissioners and others at the grassroots an opportunity to assist in developing the expected 1975 figures. This should aid considerably in assisting those interested and in a position to guide and direct local programs in accomplishing a much greater and worthwhile over-all objective.

Interest among farmers in managing their woodlands and planting their less productive lands to trees increased steadily during the past year to the extent that the tree farm foresters of the State Conservation Commission were unable to provide sufficient technical help to those landowners who requested it. It is still the opinion of those who have studied Iowa's forestry needs that at least 17 technically trained foresters are needed to help landowners in applying forest conservation practices to their land. A total of 497 woodland owners were assisted by the farm foresters and 3,641 additional acres of woodlands were improved by the owners. In addition, 115 sawmill operators and processors were advised. Cooperating woodland owners netted a gross sum of over $100,000.

A summary of the Blister Rust Control Program protecting white pine trees from infection shows that a total of 236 acres was covered and over 17,000 Ribes plants were destroyed. Significant to foresters and landowners is that very probably white pine can be planted anywhere north of U. S. Highway 30 without fear of the white pine becoming infected with blister rust.

The first occurrence of the Dutch elm disease in a southeast county requires drastic control measures. The State Conservation Commis-

sion and other authorities are planning carefully to safeguard wildlife in the treated area. The insecticidal program for Japanese beetle control in a southeast county earlier this year was carefully supervised, and to date no serious loss to penned wildlife or that in the open was indicated.

The program of forestry research sponsored jointly by the Conservation Commission and the Iowa State College included projects on oak wilt, rehabilitation of forest areas now in very low state of productivity, species determination, bottom-land hardwood management and rate of decay of forest trees. The State Conservation Commission Nursery provided trees and shrubs at a nominal cost to landowners for erosion control, soil bank and wildlife plantings. Approximately 2,500,000 woody plants of 17 species, including multiflora rose and various species of pine, were dispensed. Forest fire and grassland educational programs were most satisfactory. Rural firemen, radio and television stations, schools, youth and civic groups, and sportsmen's clubs cooperated to make the programs highly successful.

The 90 State Parks played host to 6,465,000 visitors during 1957. The increase in use of these parks may be expected to continue, for present economic conditions suggest that out-of-state travel may decrease to favor more local recreation. The desire for water recreation increases, as borne out in the attendance at the water recreation areas compared with the parks that are without water resources, and as reflected in the outboard motor and boat sales. The 61,000 visitors registered in the State Park camp grounds during 1957, compared to 47,000 in 1956, required expansion of camp ground facilities wherever possible, although much less than adequate, because of the lack of improvement funds.

The only major undertaking of a new area at this time is the development of Viking Lake State Park in Montgomery County, where picnic grounds, camp grounds, bathing and sanitary facilities are in preparation for the 1958 season. It is almost impossible to meet the necessary operating expenses without even taking into consideration the demands for expansion that are made upon State Parks by the yearly increase in park visitors. Iowa with some of the finest State Parks in the nation ranked ninth in recent attendance figures compiled by the National Park Service. The Parks continue to be operated with the meager appropriated funds comparable to 10 years ago.

Conservation Boards have been organized in 16 counties to provide and administer county parks.

Good progress has been made with controlled burning experiments on prairie preserves to reduce introduced species and encourage

native grasses and forbs. Studies made on the Hayden tract in 1957 showed that burning for two consecutive years induced a greater forcing effect in the prairie vegetation than was anticipated. Five treatments were applied to an upland prairie area in the tract which had been under complete protection from grazing, mowing and burning from 1945 to 1956. The treatments were: (1) complete protection till yields were taken in 1957, (2) mowed in 1956, (3) burned in early spring of 1956, (4) burned in early spring of 1957, (5) burned in 1956 and 1957. Vegetation yields in each treatment were taken in 1957 on July 2 and October 19 from one set of plots and only on October 19 from another set of plots. The July yield, computed as the percentage of the yield for the season, was 43 for the two unburned areas, 50 for the two once-burned areas and 74 for the twice-burned area. The season yields for these three treatments in tons per acre were 1.44, 2.00 and 2.31 respectively. The seedstalk production in the five treatments in thousands per acre were 56, 120, 116, 160 and 288, respectively.

Additional management practice studies were continued on the two state prairie reserves during 1957 and future studies are projected. Management practice plans for the two preserves have been made on the basis of past studies and will be modified from time to time as new information is obtained which definitely indicates desirable changes.

Generally, only small representative areas of each tract are reserved for intensive study in order to have practically the entire area of each tract subject to the recommended management plan. Mowing and removal of hay as needed appears to be the most feasible practice. Care is being taken to distribute the mowed areas of each tract in a manner that will cause as little disturbance as necessary to the wildlife of the tracts.

Because of increasing demands by other interests for water from streams and lakes, the State Conservation Commissions continued with improved, and more detailed methods to collect and evaluate data on fish and wildlife habitat, populations and uses, as required by law. Routine fisheries surveys of 27 natural and three artificial lakes in northern counties indicated little basic change in fish populations, except in the shallow lakes where recovery from oxygen depletion was retarded. At Five Island Lake, near Emmetsburg, and Blue Lake at Onawa, fish populations were so out of balance that complete elimination of fishes by chemicals was necessary. Creel censuses of the natural lakes showed that the average fisherman, in comparison with past records, had about normal success, ranging from a low of 0.14 fish per hour at Ingham Lake to a high of 4.43 at Lost Island Lake. A calculated total of 170,000 bullheads were caught from the latter lake during the single month of June.

The annual fisheries surveys on 41 southern artificial lakes and city water supply reservoirs showed reproduction of largemouth bass and bluegill was above the 10-year average, whereas crappie was about normal. Adult game fish populations appeared similar to the past two years. A creel census conducted on six most important southern lakes indicated that bluegill and crappie were the most frequently sought and taken species, with white bass and yellow perch of significance at several of the lakes. The average rate of fishing success ranged from 0.37 fish per hour at Green Valley Lake to 0.67 fish per hour at Nine Eagles Lake. Most of the southern fishermen drove in excess of 25 miles to a lake. At Thayer Lake, Union County, studies were initiated to establish maximum fish populations and maintain them for public angling. Williamson Pond, Lucas County, was utilized to study the largemouth bass-bluegill populations in a typical artificial lake. The bluegill population was reduced by one-fifth to depress interspecific competition and increase growth. The water level was lowered to increase predation of young bluegill and stimulate reproduction of largemouth bass. Cold, high water during the normal spawning season limited natural reproduction in most of the eastern smallmouth bass to result in 60 percent reduction in the 1957 survival as compared with that of 1956.

A total of 1,155 walleye pike and sauger taken with an electric shocker below Lock and Dam No. 10 on the Mississippi River were tagged and released. During the succeeding 11 months, 139 were retaken, of which 62 percent were at the same pool in which they were tagged, 23 percent moved upstream, and 15 percent down. Five fish traveled over 100 miles before recapture.

The routine inland river surveys were supplanted in 1957 by a three-month investigation into the physical, climatic and edaphic factors which could potentially affect trap and bait net catches. This project was accomplished in anticipation of a 1958 change in survey techniques and timing.

In 1957, under more favorable netting conditions, the per-set catch of trap nets was 40 percent more than in identical locations in 1956 and 1957. The game fish population showed no appreciable qualitative change, with the exception of the bluegill which averaged smaller in 1957 than in 1956. The lamprey scarring incidence was 35 percent lower in 1957 than in the previous year. As in 1956, the pan fish were of a larger average size at the upstream stations than those below Dubuque.

For the second year, two men were employed on a year-round basis to gather information on the success and effort of the Mississippi River angler. The 1957 data indicated that the summer quarter was the most remunerative time to fish with an average angler's catch of 1.17 fish per hour, followed by winter with 0.92, fall with 0.86,

and spring with 0.64. The three most caught fish were black crappie, sauger and sheepshead. Further analyses found that the average angler came from less than 25 miles away just to fish, used minnows and worms for bait, preferred the casting rod and had about $90 invested in gear.

Nine aerial survey flights were made over Pools 9 through 11, and 11 flights over Pools 12-19 of the Mississippi River in 1957. Counts covering the numbers of fishing boats, boat fishermen, bank fishermen, barge fishermen, ice fishermen and pleasure craft on these navigation pools determined that the heaviest fishing pressure was concentrated in Pools 9-11, and fall was the time of heaviest angler activity. The daily range of pressure, from a low of 1.5 angler per mile to a high of 7.5 anglers per mile, indicated that the river was quite under-utilized.

Water stages in western streams improved steadily from the early summer of last year to the spring of 1958. This has resulted in slightly expanded habitats, and fall surveys in 1957 revealed increased numbers of smallmouth bass and walleye pike in those streams that normally carry these species. Channel catfish populations composed largely of small fish continued at high levels, and age studies revealed slow growth. The population was dominated by three to four-year-old fish ranging from eight to twelve inches in length. Rough fish, principally carp, quillback and other suckers, persisted as the most important segment of the total fish population. They made up as much as 95 percent of the total fish poundage in many areas and possibly more in some streams. These vast numbers of rough fish severely limited the development of game fish populations and contributed much to the slow growth of the channel catfish.

Preliminary experimental work indicated that the use of hormones improved hatchery techniques to assure more fish for lake and stream rehabilitation programs and farm pond stocking. Increased facilities in the laboratory are planned to enable more precise bio-assay of pollutants, herbicides, and pesticides in stream, farm pond and lake waters. Many new chemicals developed for control of fish populations, aquatic vegetation and algal bloom were investigated.

The Federal Aid in Fish and Wildlife Restoration Program of the State Conservation Commission continued to acquire land and water for fish and game habitat. Under the Dingell-Johnson program 123.6 acres of land were purchased last year. This acreage included the purchase of one public access area to the West Ford River in Franklin County and three tracts providing access to state lakes in Emmet and Dickinson Counties. In Floyd County 126 acres were optioned as fishing access to the Cedar River. During the year creel censuses were conducted on the Mississippi River and six natural lakes. The development of the Hales Slough area in Dickinson County included

building a rough fish control trap, access road, boundary fences and posting of the area. An access road, boundary fence and posting were completed on the Matsell Bridge Access area in Linn County. The development of the Edgewater Beach area in Des Moines County included the building of a stairway over the dike to provide access to the Mississippi River.

In the Pittman-Robertson part of the program 270 acres were purchased last year. Development work on the Christopherson Slough area in Dickinson County and the Weise Slough area in Muscatine County consisted of building water control structures, access roads and constructing boundary fences on both areas.

For the combination Pittman-Robertson and Dingell-Johnson projects 944 acres were purchased in Guthrie and Black Hawk Counties. Development under the combination projects included construction of an access road, parking lot and boat ramp on the Odessa Area in Louisa County and the construction of an access road on the Randolph Area in Iowa County. A water control structure was built on the Diamond Lake Area in Dickinson as a part of the development under the combination projects. During the year an Area Investigations project was set up to investigate all possible fish and wildlife lands as to the desirability for acquisition.

In the Federal Aid cooperative state-wide Farm Game Habitat Program of the State Conservation Commission, on a total of 77 areas containing 244 acres, 164,856 trees and shrubs were planted and parts of the areas were seeded to grass during the past year.

The winter waterfowl survey of the Mississippi River flyway showed 40 percent increase over the index of the past eight years for ducks, 8 percent increase for geese and 3 percent decrease for coots. In comparison with the index for 1956 ducks increased 4 percent, geese decreased 4 percent, and coots increased 37 percent. For all waterfowl the index for the two years is about the same, and the 1957 production of waterfowl was about as in the previous year. Mass migrations of waterfowl into Iowa occurred on October 24 and November 8. Hunters averaged a take of one duck in 2.9 hours, slightly better than in recent past years. Mallards supplied about one-half of the harvest and blue-winged teal were taken in large numbers. Because of the low numbers, the wood duck was favored with full protection the past year.

The DeSoto Bend National Wildlife Refuge of some 7,000 acres to be developed in Missouri River bottoms, Harrison County, will aid materially the some 300,000 blue, snow, and Canada geese, as well as many other water birds, in the spring migration, particularly.

Among upland game birds, bobwhite numbers were about as in the past two years in the more suitable areas, and better reports came

from marginal areas where until recently they were rarely noticed. Ruffed grouse, resident in five northeast counties, declined slightly. No prairie chicken flocks are known in the state. While occasional nesting birds are reported, none used the booming grounds that were occupied until a few years ago. Although spring surveys in 1957 indicated a slight drop in the brood stock of pheasants, improved hatching success resulted in a higher fall population than in 1956. The average hunter in the dense cover of much unpicked corn, bagged a bird in 3.7 hours compared with 3.6 hours in 1956. Only about 48 percent of the available roosters were harvested during the season, and crippling loss was much higher than usual because of the dense cover.

Game mammals populations have increased somewhat. Cottontail numbers remained high in most southeast and south central counties, with the most successful hunting reports in recent years. January snow cover encouraged hunters to harvest many of the available animals. In extreme southwest counties cottontails remained few, and little change from recent years could be seen in most central and northern counties. The index of cottontails seen during the July roadside counts was 4.9 as compared to the average of 4.1 for seven previous years. The summer age ratio of 3.2 juveniles seen per adult also was higher than the average of 2.5 from seven previous years. The local abundance of jackrabbits in northwest Iowa continued in 1957. Probably the population had declined slightly in some areas as the major markets for jackrabbits reported a 30 percent drop in numbers purchased.

Little change in the squirrel population was detected in 1957. Squirrels remained numerous in most woodlands and hunters reported a successful season. The mast crop was normal in all parts of the state. Squirrel numbers seemed to have recovered in the northeast where a mast failure in 1956 had forced a local decline.

Deer in Iowa numbered nearly 10,300 individuals early in 1957 as compared to 10,800 early in 1956. All counties except Grundy reported deer. In general, herd size continued to increase in the southeast and decrease in the northwest. The shift of population resulted from statewide hunting and relative vulnerability of the herds in various sections, for deer were easier to hit in the less wooded northwest than in more wooded southeast.

Data gathered at deer checking stations during the two-day shotgun hunting season indicated 69 fawns were produced by every 100 adults during 1957. During the hunting season, 2,805 deer were killed legally, of which 138 were taken by bow hunters during a 31-day season. No complaints of deer damage to crops were received by the State Conservation Commission during last year.

General improvement of water levels in most lakes, ponds, and streams resulted in increased populations of mink and muskrats, except in considerable marsh habitat in the northwest. Populations have not fully recovered from the drought of recent years. Some areas in the east, especially along the Mississippi River, had high populations of aquatic fur-bearers. Raccoons and beaver populations remained stable. Little change was noted in fox numbers.

Emmett Polder's article on Recent Distribution Records of Some Iowa Mammals appears in the Zoology section of these Proceedings.

The three summer sessions of the Eighth Iowa Teachers Conservation Camp, 1957, attracted a total attendance of 114 Iowa teachers. Scholarship assistance to campers reached an all-time high of $3,552.70. Soil Conservation Districts and numerous local groups of sportsmen and conservationists participated in the scholarship program.

A State Conservation Education Committee met several times during the spring and summer of 1957. The Committee made plans for a second state-wide conference which was held at the State 4-H Camp, Luther, in October, 1957. Attended by 60 persons, the conference resulted in detailed plans for a conservation education source book to be published and distributed to teachers, conservation organizations, youth groups, and others. The source book will include background material on Iowa resources, suggested teaching aids and activities in conservation, field trip suggestions, personnel and material available for teaching activities, and program suggestions. A committee to direct writing, editing, and printing of the source book on conservation education became active early in 1958.

The Conservation Education Conference in October also recommended the organization of a permanent Iowa Conservation Education Council to be made up of one representative from each college and other groups concerned directly or indirectly with conservation education. The Council would serve to stimulate and coordinate conservation education activity in Iowa. At a meeting held in Ames on March 21, 1958, a temporary organization of the Council with representatives from about 30 groups was arranged.

Respectfully submitted,

G. O. HENDRICKSON, *Chairman*
J. M. AIKMAN
M. A. ELLERHOFF
H. G. HERSHEY
F. H. MENDELL
E. B. POLDER
E. B. SPEAKER
G. W. WORLEY

Report of Resolutions Committee

1. Be it resolved that we express our thanks to Professor L. P. Johnson and the other members of the committee on local arrangements, and to Drake University for its hospitable welcome and its provision of the many facilities essential to a successful meeting.
2. Be it resolved that we express appreciation to the Clinton Corn Processing Division of Standard Brands, Inc., for its continued support of the high school scholarship award program, and to Dr. F. E. Brown for his many contributions to the development of the Iowa Science Talent Search.
3. Be it resolved that we express appreciation to the Iowa Section of the American Chemical Society and to those who through it provide support for the Iowa Science Teachers Award, for their recognition of the importance of able teaching in the production of scientists for the coming year.
4. Be it resolved that we express appreciation to Mr. Jean L. Laffoon and to Mr. David G. Mobberley for their several years of service to the Iowa Academy of Science in their roles of Secretary-Treasurer and Editor, respectively.

LESTER T. EARLS, *Chairman*
NEAL F. MOREHOUSE
EDWIN N. OBERG

Report of the Science Teaching Committee

As reported last year, the committee feels that for the Academy to have a real impact on the improvement of science teaching an action program should be developed. However, such a program requires funds and the time and interest of members of the Academy beyond the committee. These problems have not been solved.

A letter has been written to Mr. J. C. Wright offering the services of the committee in helping develop increased standards for the high schools and in certification.

The AAAS has now available some funds for projects in science teaching through grants from NSF. These are to be used through the state Academies of Science. The committee has considered the possibility of developing a proposal for submission to the AAAS.

The Iowa State Department of Public Instruction does not operate on a plan of supervisors for subject matter areas, but with gen-

eral regional supervisors. At present there seems little possibility of change in this philosophy. From the experience with the STIP program and consultant work in general, it appears that one of the most effective means of improving teaching is to provide help to the individual teachers. Few school systems in Iowa can hire full time consultants for subject matter areas. However, it might be feasible to release a teacher for part-time consultative service to less well-trained teachers. If the Academy could secure a grant to try this program in one or two school systems, and lend its prestige to the program, it might be helpful in creating interest in such a program on the part of school superintendents.

For such a project to be proposed, the committee would need to have a school system interested in trying the program, a capable teacher interested in trying the work, and a college science group who would be interested in sponsoring and encouraging the program. These should all be in one town. The proposal would be to provide part of the salary of the consultant, and related expenses for administration of the program.

If there are members of the Academy interested in participating in such a program, or in developing other possible projects, the committee would be glad to hear from them.

DOROTHY MILLER MATALA, *Chairman*
H. S. APOSTLE
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