ACADEMY OFFICERS
President—Stanley Wawzonek, The University of Iowa
President Elect—Arnold Haugen, Iowa State University
Past President—Herbert Hendriks, Cornell College
Treasurer—Harry T. Horner, Jr., Iowa State University
Editor—Paul Meglitsch, Drake University
Executive Secretary—Robert W. Hanson, University of Northern Iowa

DIRECTORS
Richard Bovbjerg, The University of Iowa
R. V. Drexler, Coe College
Edwin M. Vaughan, Bettendorf
Robert E. Buckles, The University of Iowa
Sylvan Runkel, Des Moines
Clifford L. Meints, Simpson College

SECTION CHAIRMEN FOR 1971
Archeology—Adrian D. Anderson, Iowa City
Botany—Harry T. Horner, Jr., Ames
Chemistry, Inorganic and Physical—D. C. Tardy, Iowa City
Chemistry, Organic and Biological—George N. Schulte, Dubuque
Conservation—Lee Gladfelter, Boone
Engineering (cochairmen)—Everett D. Alton, Iowa City; George E. Lamp, Jr., Ames
Geology—Harrel L. Strimple, Iowa City
Mathematics—George W. Peglar, Ames
Physics—Alvin Moen, Pella
Psychology—Charles C. Wender, Iowa City
Science Teaching—Verlin Fleagle, De Witt
Zoology—Gene A. Lucas, Des Moines

STANDING COMMITTEE CHAIRMEN
Annual Meeting—L. E. Ernsdorff and W. E. Nye
Election—George Knudsen
AAAS Research Grants—Frank Starr
Finance—Harry T. Horner
Membership—William Azbell
Publications—William A. Deskin
Recognition and Awards—Leland Johnson
Social Implications—Kenneth Carlander
Student Programs—Daryl Smith

ISTS OFFICERS
President—Verlin Fleagle, De Witt
Past President—Mrs. Lena Kelthahn, Mason City
Vice-President—Milbert Krohn, Spirit Lake
Secretary—Don Murphy, West Des Moines
Treasurer—Donald Lange, Davenport
Editor—Robert Yager, Iowa City

REGIONAL DIRECTORS
Northwest—Carl Gochenauer, Lake Park
Northeast—To be filled
East Central—Joe Beach, Cedar Rapids
North Central—Gerald Hansen, Mason City
South Central—Arlan Brown, Indiana
Southeast—Gary Tilleres, Bettendorf
Central—Robert Sandquist, Newton

STANDING COMMITTEE CHAIRMEN
Election—To be filled
Membership—Royce Kreul, De Witt
Fall Program—Milbert Krohn, Spirit Lake
Spring Program—Lena Kelthahn, Mason City
Short Course—Clay Armstrong, Roland
Policy and Resolution—Verlin Fleagle, De Witt

SECTION CHAIRMEN FOR 1971
Elementary Science—Carl Gochenauer, Lake Park
Biology—Lena Kelthahn, Mason City
Chemistry—Jim Mowry, Mason City
Physics—Harry Pals, Manson
Earth Science—Lynn Glass, Des Moines

AFFILIATION REPRESENTATIVES
NABT—David Fagle, Marshalltown
AAPT—Donald Schaefer, Bettendorf
SSMA—Lynn Schwandt, Cedar Falls
NSTA—Lynn Glass, Des Moines
ISEA—Thomas Scott, Des Moines
IJA—Robert Yager, Iowa City
IJAS—Frank Starr, Waterloo

STAFF
Managing Editor—Melton E. Golmon, Iowa City

Advertising Committee
William Azbell, Wartburg College, Waverly
Walter DeKock, UNI, Cedar Falls
Milbert Krohn, Spirit Lake High, Spirit Lake
James Merritt, Keokuk High, Keokuk

Editorial Board
Leland Wilson, UNI, Cedar Falls
Ray Haun, Drake, Des Moines
Donald Biggs, ISU, Ames
Delma Harding, ISU, Ames
George Cossmann, U of I, Iowa City

News and Notes Editor—Lynn Glass, Des Moines

Photographic Editor—H. L. Dean, Iowa City

The Iowa Science Teachers' Journal

The IST Journal is published each October, January and April by the Iowa Academy of Science for its members and special subscribers. Its central theme is science teaching at all academic levels.

Subscription Rates: Single copies $.75; subscription, $2.25. For subscription, circulation data, additional copies, and changes of address, contact Dr. Robert Hanson, Iowa Academy of Science, University of Northern Iowa, Cedar Falls, Iowa.

Advertising Rates: Full page, single issue $50; $160 per annum. For advertising information contact: Walter DeKock, Science, University of Northern Iowa, Cedar Falls, Iowa.

Publication: Open to all persons interested in science education; preferential consideration for Academy members. For information as to policy as well as submission of new items of general articles, contact: Robert E. Yager, Science Education, U of I, Iowa City. All manuscripts should be typewritten, double-spaced on one side of the paper and submitted in duplicate. They must reach the editor three months prior to publication date if they are to be considered for a given issue.
IN THIS ISSUE

Open Letter to Science Teachers ........................................ 2
The Only True Multi-Medium is the Human Being
Milbert Krohn

Science Education in the Elementary School:
A Modern In-Service Offering ........................................ 4
James P. Hale

Science for the Educationally Uninvolved Child ..................... 8
Joe R. Moore

A Comparison of the Effects of a Team Approach and a Conventional
Approach on Achievement in High School Biology .................. 12
Paul Joslin, John Montean and John Schmitt

What is A.T.T.V. Biology? ............................................. 17
Charles Frederick

A Study of Physics, Chemistry and Advanced Science Enrollments in Iowa's
Area Ten with Reference to Enrollment Patterns in the State of Iowa .. 22
Richard E. McQueen

A Simple Machines Lab for Seventh Grade Students ................ 31
Peter H. Sweedy

COVER PICTURE—Most readers will recognize the antheridia of Marchantia
shown on the cover. This widely studied liverwort was photographed by H. L.
Dean, Department of Botany, The University of Iowa.