The Iowa Academy of Science
92nd Session

Simpson College
April 18-19, 1980
GENERAL INFORMATION

Parking

The Simpson College campus is easily accessible from Interstates 80 and 35. See map on back of program and campus map in the centerfold.

Parking is available on one side of any street. There is one small lot just west of the football field and another 2 blocks north of there. You will probably have to walk a few blocks to the registration area. (There is also a city lot 2 blocks west of the one near the football field.)

Registration

Proceed directly to the Cowles Center on arrival (Building 7 on the map.) The registration area will be easily found there, along with complimentary coffee for all registrants. Additional information will also be available at registration.

Advance registration is strongly advised. Those who register by mail may pick up ID badges and meal tickets in the registration area without delay. However, the registration desk will be open only 7:45 a.m. - noon Friday and Saturday and 1:30-4:00 p.m. on Friday.

Overnight Lodging

Please make your own arrangements for motel accommodations from the information provided with the registration form.

Meal Functions

Reservations for the Awards Luncheon and the President’s Banquet (both on Friday) must be made in advance. Luncheon will be available through-the-line without tickets in Pfeiffer Dining Hall (ground level of Building 25) if you don’t care to attend the Awards Luncheon on Friday. All luncheon service on Saturday will be through-the-line. Some groups who wish to meet together for lunch may carry their trays to Great Hall on the second floor of this building, where reserved tables will be appropriately marked.

See Program Summary for location of reserved functions. Prices are shown on the advance registration form.

Annual Business Session

The 1980 Business Session of the Iowa Academy of Science will be held at 11:15 a.m. in the theater of the Blank Performing Arts Center (Building 6) following the opening General Session on Friday, April 18. Only Members and Fellows in good standing are eligible to vote on matters brought before the assembly at the business session, but visitors are most welcome and encouraged to attend.

Headquarters; Messages

Academy officers and the program coordinator may be contacted through the registration desk. A Message Center will be available for posting special notices or personal notes.
PROGRAM SUMMARY
(Numbers in parentheses refer to building number on campus map.)

Friday

8:00 - 11:45 a.m.  REGISTRATION  Foyer
                    Cowles Center (7)

8:15 - 10:00 a.m.  JUNIOR ACADEMY PAPERS I  Room 2
                    (See hand-out program available
                    in registration area.)
                    Sigler Hall (12)

10:15 - 11:15 a.m. GENERAL SESSION I  Theater
                    President C. G. McCollum, presiding
                    Blank Performing
                    Arts Center (6)

Welcome: Robert McBride, President, Simpson College

Speaker: Robert Buckmaster, Chairman of the Board,
Black Hawk Broadcasting Co., Waterloo, and Chairman,
Iowa Natural Heritage Foundation.

“The Iowa Natural Heritage Foundation: Its Genesis
and its Goals.”

ROBERT BUCKMASTER

Chairman of the Board, Black Hawk Broadcasting Co. (KWWL-AM, KFMW-FM
and KWWL-TV, Waterloo, and KLWW-AM, Cedar Rapids), KTIV Television Co.,
Sioux City, Minn.-Ia. Television Co. (KAAL-TV), Austin, MN and KCBC-AM,
Des Moines; Chairman, Iowa Natural Heritage Foundation (1979); chairman
of several state commissions related to environmental
quality (1965-79); recipient of the National Governor's Association Award for
Distinguished Service to State Government, 1978. Graduate of U. of Iowa Law
School; has held several offices as practicing attorney

11:15 - 12:15  BUSINESS SESSION  Theater
               Brief reports and parliamentary
               procedures.
               Blank Performing
               Arts Center(6)

11:30 - 12:15  JUNIOR ACADEMY PAPERS II  Room 2
               Sigler Hall (12)
12:30 - 2:00 p.m.  AWARDS LUNCHEON  Great Hall (25)
President C. G. McCollum, presiding

This served luncheon will honor groups and individual students
who have performed in an exemplary manner in science
activities throughout Iowa. Several individual awards will
be presented by Governor Robert Ray, if he is able to attend.
Several teachers will be honored as they receive the Iowa
Academy’s Excellence in Teaching Award.
(Reservations required.)

1:30 - 4:00 p.m.  REGISTRATION  Foyer
Cowles Center (7)

2:00 - 4:15 p.m.  SYMPOSIUM: “Perspectives on Iowa’s
Declining Flora and Fauna” Carver Science Hall (17)
Arranged by D. R. Farrar, I.S.U., Dean M. Roosa,
I.C.C., and D. J. Roslien, Luther College.
(Sponsored by the Botany and Conservation Sections
and the Conservation and Preserves Committee.)
See Conservation Section Program for details.

2:00 - 4:15 p.m.  SECTION MEETINGS
Engineering
Geology
Mathematics/M.A.A.
Science Teaching

4:30 - 5:30 p.m.  GENERAL SESSION II
Theater, Blank Performing Arts Center (6)
Speaker: Doug Snyder, Director of Gasohol Development,
ADM Corn Sweeteners, Cedar Rapids

DOUG SNYDER

Mr. Snyder joined the staff of the nation’s largest fuel grade alcohol manufacturer in June of 1979. Prior to
that time, he had served as Director of Agricultural Development at the Iowa Development Commission,
State of Iowa.

During his five years with the State of Iowa, Mr. Snyder was responsible for developing marketing and
economic development programs to benefit Iowa’s agricultural industry and, during his last year, was
specifically responsible for the development of Iowa’s widely recognized consumer acceptance and marketing
studies, and subsequent promotion of gasohol.

5:30 - 6:15 p.m.  SOCIAL HOUR/RECEPTION
(Banquet ticket required.) Theater Foyer, Blank Performing Arts Center (6)

6:45 - 8:15 p.m.  PRESIDENT’S BANQUET
(Reservations required.) Great Hall (25)
President C. G. McCollum, presiding

Presentation of Iowa Academy Awards (Distinguished Fellow, Distinguished Iowa Scientist, Distinguished
Service Award.)

Installation of new president and remarks by outgoing President McCollum.

Response by President-elect Huffman.
8:30 p.m.

GENERAL SESSION III
Smith Memorial
President D. H. Huffman, presiding
Chapel (18)

Film Lecture: Kjell Sandved, Nature Photographer,
National Museum of Natural History, Smithsonian
Institution, Washington, DC: "Curious Creatures and
Mini-monsters."

This remarkable film demonstrates with great beauty
and often with humor the results of Mr. Sandved's activities as
a giant Peeping Tom, intruding peacefully upon the lives of
small creatures and catching them with his camera at their
least inhibited moments. Many of Sandved's enlarged color
photographs will also be on display in the foyer of the Blank
Performing Arts Center.

KJELL SANDVED

One of the world's leading nature photographers, Kjell Sandved delights in finding
beauty and artistic design in all aspects of nature, even in the smallest creatures. His
work producing documentary stills and scientific films for the Smithsonian's Museum of
Natural History has led him to study plants, animals, and insects in a variety of habitats
around the world, from the rain forests of the Amazon to the icy waters of the Anar-
tctic.

He has documented moth behavior in 30 countries, penguins and seals in the Antarctic,
orangutans in Borneo, and the world's largest flower in Sumatra - the endangered
Rafflesia. Most recently he recorded the remains of Bronze Age man near the Dead Sea
in Jordan. His self-taught mastery of high-magnification, high-speed, and time-lapse
techniques produces spectacular results, often revealing details impossible to detect with
the naked eye, and biological processes never before discovered.

In addition to presenting a film lecture on Friday evening, photography buffs are offered
a rare opportunity to accompany Mr. Sandved on a "photo safari" on Saturday morning.
He will cover the specialized methods and problems of photographing animals and plants
in their natural environment.

Kjell Sandved has worked at the Smithsonian for over 20 years, and has published five
books of his own work.

Saturday

8:00 - 11:00 a.m.  REGISTRATION
                      Foyer
                      Cowles Center (7)

8:00 - 11:15 a.m.  SECTION MEETINGS
(See Section Programs for locations.)

Anthropology
Botany
Cell Biology
Chemistry: Organic and Biological
Conservation
Engineering
Geology
History & Philosophy of Science
Mathematics
Physics
Physiology
Psychology
Science Teaching
Zoology

8:00 - 12:30 and 1:30 - 3:30
SYMPOSIUM: "Stewardship of the Soil"
(See separate program, page 10.)
11:30 a.m.  GENERAL SESSION IV  Smith Memorial
President D. H. Huffman, presiding  Chapel (18)

Speaker: Bob Bergland, U. S. Secretary of Agriculture; "The Federal Solution to the Soil Erosion Problem." (Tentative)

12:30 p.m.  LUNCH BREAK
(Lunch is available on campus through-the-line at Pfeiffer Dining Hall, Building 25.)

1:30 p.m.  SECTION MEETINGS
(See Section Programs for locations.)

Anthropology
Botany
Conservation
Geology (Soil Erosion Symposium)
Mathematics

JOINT SESSION: Chemistry and Chemical Education  Room 11
W. Hutton, presiding

Speaker: Dr. Derek Davenport, Department of Chemistry, Purdue University: "From Genesis to the Book of Revelations: 200 Years of Chemistry Texts Written in America(n)"

(Over the years the term "general chemistry" has evolved from near tautology through pedagogy to near appropriation. Today's general chemistry texts try to be the "Alpha and Omega, the beginning and the end, the first and the last", and though Dr. Johnson may have been right when he averred that "no man ever read a book of science from pure inclination", they sell to the tune of one million a year. Some are tasted, others swallowed, some few chewed and digested. Eighty slides will be used to illustrate those fossils of forgotten importance - the general chemistry texts of the past 200 years. They in turn will serve to prompt an idiosyncratic and at times peevish commentary on the past and present state of the art of teaching chemistry.)

2:30 p.m.  Continuation of Joint Session of Chemistry and Chemical Education  Room 11
(See Chemical Education Section program.)

DEREK A. DAVENPORT

Dr. Davenport was born in Leicester, England, and received his early education there and in London. He received the B.Sc. and Ph.D. degrees from the University of London. In 1950 he came to the U.S. After a year at Reed College in Portland, Oregon, and two years at the Ohio State University in Columbus he joined Purdue University where he is now Professor of Chemistry.

His primary interests are in undergraduate and beginning graduate teaching and he is presently head of Purdue's large general chemistry program. He carries on a modest research program in organometallic chemistry and in chemical education. Recently he has developed an interest in the history of chemistry, particularly in early American chemical education.

Since 1966 he has served as a member of the Editorial Board of the Journal of Chemical Education. In 1970 he won the Standard Oil Undergraduate Teaching Award, in 1973 the Visiting Scientist Award of the Western Connecticut Section of the ACS and in 1974 the Manufacturing Chemists Association Award in Chemical Education. In 1979 he will serve as Chairman both of the Division of Chemical Education and of the Purdue Section of the American Chemical Society.

SPECIAL FUNCTIONS

Several groups and committees will be holding meetings during the lunch hour on Saturday, April 19. Please consult the bulletin board near the Registration Desk in Cowles Center for announcement of any such meeting for your group.

All such luncheon meetings will be held in Great Hall (one floor above the Pfeiffer Dining Hall - Building 25 on the map). Lunch will be available through-the-line in the Dining Hall; proceed up the stairs with your tray to Great Hall and locate the reserved table(s) for your group.
SYMPOSIUM: "Stewardship of the Soil"

Sponsored by the Social Implications Committee and the Geology Section.

A. Technical Aspects of the Problem
   8:00 - 10:00 a.m.
   (See papers 15-20, Geology Section program.)
   Arranged by Richard Baker, presiding.

B. The Public Concern
   Erwin Richter, Social Implications Committee, presiding
   10:00  Margo Underwood, Mason City
   10:20  Dr. William J. Schaefer, Jr., Executive Director, National
         Catholic Rural Life Conference
   10:40  Representative from League of Women Voters of Metropolitan Des Moines

C. The Solutions
   11:30  GENERAL SESSION IV
         President D. H. Huffman, presiding
         Speaker: Bob Bergland, U. S. Secretary of Agriculture
         "The Federal Solution to the Soil Erosion Problem"

Phyllis Kingsbury, presiding
   1:30  Lawrence G. Vance, Director, Iowa Department of Soil
         Conservation:
         "Present Programs to Control Soil Erosion."
   1:50  Senator Forrest Schwengels, Iowa Legislature:
         "The Proposed Legislative Solution"
   2:10  Charles McLaughlin, Farmer, Britt, Iowa:
         "Solutions from the Farmer's Point of View"
   2:30  Summary; Questions and Answers
         Phyllis Kingsbury, Moderator
POSTER PAPERS

All of the following Poster Papers are listed in their appropriate sections and will be set up for viewing in Rooms 1 and 2, Cowles Center, unless otherwise indicated, during the hours 2:00 - 4:15 p.m., Friday, and 8:00 - 11:00 a.m. on Saturday. A placard on the display will indicate hours when the author(s) will be present to discuss the paper with interested parties (The number in parentheses refers to the number in the program and abstract booklet.)

Botany: The natural forest communities of Iowa; a resource in trouble. G. L. HIGHTSHOE. (6)

Conservation: An initial investigation of changes occurring in an intensively cultivated soil taken out of production for forty years. R. L. TABOR and R. DAVIS. (10)

Game animals of Africa: a photographic safari. H. S. KUYPER*, D. M. HUFFMAN, and J. B. BOWLES. (14)

Geology: Changes in the channel area of the Missouri River in Iowa, 1879-1976. G. R. HALLBERG, J. M. HARBAUGH, and P. M. WITINOK. (5)

The Iowa landscapes of Orestes St. John. J. C. PRIOR* and C. F. MILLIGAN. (6)

Zoology: Visceral fibrosis in bluegills in central Iowa. W. C. BAILEY, J. GINAL, and L. G. MITCHELL. (14)

PHOTOGRAPHIC DISPLAY

Kjell Sandved, world-famous photographer of the infinitesimal of nature, will have a display of some of his best work in the foyer of the Blank Performing Arts Center on Friday afternoon and Saturday. (Mr. Sandved is our featured speaker at the General Session on Friday evening.)

ANTHROPOLOGY

Chairmen: D. C. Anderson
J. A. Tiffany
Room 200, Heckert Hall (22)

Saturday, April 19
8:30 - 11:15 a.m.

8:30 1. Site catchment theory: applications to Iowa archaeology. JOSEPH A. TIFFANY* and LARRY R. ABBOTT, Office of the State Archaeologist, The University of Iowa, Iowa City, IA 52242.

8:45 2. Loess deposition, soil development and archaeological sites. LARRY R. ABBOTT*, Office of the State Archaeologist, The University of Iowa, Iowa City, IA 52242.

9:00 3. The McKinney Oneota village. RICHARD G. SLATTERY*, Office of the State Archaeologist, The University of Iowa, Iowa City, 52242.


9:30 5. Human use of prairie lakes and marshes in Iowa's prehistoric past. S. C. LENSKINK*, Department of Anthropology, The University of Iowa, Iowa City, IA 52242.

9:45 BREAK

10:00 6. Oneota subsistence in northwest Iowa: the Milford site (13DK1). L. S. TATUM*, Department of Anthropology, The University of Iowa, Iowa City, IA 52242.


11:00 10. Cultural variations in the use of personal space. G. N. GIPSON*, Iowa State University, Ames, IA 50011.

ANTHROPOLOGY
Chairmen: D. C. Anderson
J. A. Tiffany

SYMPOSIUM
1:30 - 3:45 p.m.

"Studies of Modern Scandinavians: Anthropology, Government, Sociology"

Deborah R. Fink, presiding

1:30 11. Reforming local government in Scandinavia. ROBERT WESSEL*, Department of Political Science, Iowa State University, Ames, IA 50011.

1:50 12. Urban Danish women: formal equality and everyday ethic within the welfare state. J. G. SCHIRMER*, Department of Anthropology, Washington University, St. Louis, MO 63130.

2:10 13. The Viking ethnic revival. M. B. McKUSICK*, Department of Anthropology, The University of Iowa, Iowa City, IA 52242.

2:30 BREAK


3:05 15. Danish farm women: inheritance rights in transition. D. R. FINK*, Department of Sociology and Anthropology, Iowa State University, Ames, IA 50011.

3:25 DISCUSSION

Robert Wessel, Associate Professor of Political Science, Iowa State University, Ames, IA

Deborah R. Fink, Assistant Professor of Sociology and Anthropology, Iowa State University, Ames, IA

BOTANY
Chairman: Donald R. Farrar

Friday, April 18
1:30 - 3:50 p.m.

SYMPOSIUM

Room 11, Carver Science Hall (17)

"Perspectives on Iowa's Declining Flora and Fauna" (Sponsored jointly by the Botany and Conservation Sections and by the Conservation and Preserves Committee, I.A.S. Arranged by Donald R. Farrar, Iowa State University, Dean M. Roosa, Iowa Conservation Commission, and David J. Roslien, Luther College. See Conservation Section Program for details.)

Saturday, April 19

CONCURRENT SESSIONS
8:30 - 10:45 a.m.

Session A.
Room 201, Wallace Science Hall (20)

Donald R. Farrar, presiding

8:30 1. Some unusual and unique features of the leaf anatomy in the Legume tribes Psoraleae and Amorpheae. GLENN W. TURNER*, Department of Botany, Iowa State University, Ames, IA 50011.
2. Increased DNA content of raphide crystal idioblasts in young leaves of Typha angustifolia (Typhaceae). A. P. KAUSCH*, Molecular, Cellular and Developmental Biology, Iowa State University, Ames, IA 50011.

3. Staminal vascular architecture in five dicot species. L. D. HUFFORD*, Department of Botany, Iowa State University, Ames, IA 50011.

4. The tracheid bar and vestured pits in seeds of papilionoid legumes (Papilionoideae; Leguminosae). N. R. LERSTEN*, Department of Botany, Iowa State University, Ames, IA 50011.

5. Stomata in the seed coat of some Bauhinia species (Leguminosae; Caesalpinioideae). S. R. RUGENSTEIN* and N. R. LERSTEN, Department of Botany, Iowa State University, Ames, IA 50011.

6. The natural forest communities of Iowa; a resource in trouble. G. L. HIGHTSHOE*, Department of Landscape Architecture, Iowa State University, Ames, IA 50011.

7. Citrus and Citrus relatives pollen grain morphology and taxonomy. J. L. JORDAN* and D. A. GUZON, Department of Plant Pathology, Seed and Weed Sciences, Iowa State University, Ames, IA 50011.

8. Dormancy and seed coat morphology of prostrate spotted spurge (Euphorbia supina Raf.). J. L. JORDAN* and D. A. GUZON, Department of Plant Pathology, Seed and Weed Sciences, Iowa State University, Ames, IA 50011.

9. Further evidence for a dual auxin response. R. R. DUTE* and L. N. VANDERHOFF, Department of Biology, St. Ambrose College, Davenport, IA 52803.

Room 204, Wallace Science Hall (20)
Daryl Smith, presiding

10. Glyphosate for citrus and avocado weed control. J. L. JORDAN* and L. S. JORDAN, Department of Plant Pathology, Seed and Weed Sciences, Iowa State University, Ames, IA 50011.

11. Results from three years of double cropping in south central Iowa. J. P. MURPHY*, L. D. ROBERTSON, and K. J. FREY, Department of Agronomy, Iowa State University, Ames, IA 50011.

12. Inheritance of oil quality in oat caryopes. A. M. THRO* and K. J. FREY, Department of Agronomy, Iowa State University, Ames, IA 50011.

13. Cytoplasmic effects for quantitative traits in interspecific Avena crosses. L. D. ROBERTSON* and K. J. FREY, Department of Agronomy, Iowa State University, Ames, IA 50011.


The natural forest communities of Iowa; a resource in trouble. G. L. HIGHTSHOE*, Department of Landscape Architecture, Iowa State University, Ames, IA 50011.

10:30  17. Taxonomic considerations of the genus Radiomyces. D. J. KITZ*, R. W. EMBREE and J. CAZIN, JR., Departments of Botany and Microbiology, University of Iowa, Iowa City, IA 52242.

10:45  (Please go to Room 201)

COMBINED SESSION
10:45 - 11:00 a.m. and 1:30 - 3:15 p.m.

Room 201, Wallace Science Hall

10:45  Election of Botany Section Vice-Chair

1:30  18. Bryophytes from north of the Arctic Circle in Northwest Territories. R. W. COLEMAN* and D. K. SMITH, Department of Biology, Upper Iowa University, Fayette, IA 52141.

1:45  19. Iowa prairie bryophytes. J. A. O'KEEFEE*, Department of Botany, Iowa State University, Ames, IA 50011.

2:00  20. Studies on the algal genus Synura Ehrenberg from Iowa using electron and light microscopy. J. L. WEE*, Department of Botany, Iowa State University, Ames, IA 50011.


2:30  22. An early postglacial diatom flora from northwestern Iowa. J. D. DODD, Department of Botany, Iowa State University, Ames, IA 50011.

2:45  23. The vascular flora of Starr's Cave State Preserve. T. G. LAMMERS*, Department of Biology, University of Northern Iowa, Cedar Falls, IA 50613.

3:00  24. Progress on the computerized vascular flora of Iowa (BIOBANK). L. J. EILERS*, Department of Biology, University of Northern Iowa, Cedar Falls, IA 50613.

CELL BIOLOGY
Chairman: Rajendra S. Rana
Room 203, Wallace Hall of Science

Saturday, April 19
9:00 - 11:15 a.m.

9:00  1. Functional postnatal development of rat hippocampus (HC). J. R. WEST* and A. C. BLACK, JR., Department of Anatomy, University of Iowa College of Medicine, Iowa City, IA 52242.

9:15  2. Histochemical evidence for an infrapyramidal mossy fiber projection to stratum oriens of rat hippocampus (HC). C. A. HODGES*, J. R. WEST, and A. C. BLACK, JR., Department of Anatomy, University of Iowa College of Medicine, Iowa City, IA 52242.

9:30  3. Evidence for an infrapyramidal mossy fiber projection to fields CA3a and CA3b of the rat hippocampus. D. BENJAMIN*, J. R. WEST, and A. C. BLACK, JR., Department of Anatomy, University of Iowa College of Medicine, Iowa City, IA 52242.

9:45  4. Long-lasting impairment of hippocampal neuronal function by acute exposure to ethanol, as measured by the cyclic GMP (cGMP) response to muscarinic cholinergic stimulation. M. HUNT, G. A. COHEN, A. C. BLACK, JR.*, D. SANDQUIST, J. R. WEST, and T. H. WILLIAMS, Department of Anatomy, University of Iowa College of Medicine, Iowa City, IA 52242.
5. Derangement of the cyclic GMP (cGMP) response of the rat hippocampus (HC) to muscarinic cholinergic stimulation by maternal exposure to ethanol during gestation. G. A. COHEN*, A.M.S. BRUNKO, R. D. DEMUTH, C. A. HODGES, D. SANDQUIST, A. C. BLACK, JR., J. R. WEST, and T. H. WILLIAMS, Department of Anatomy, University of Iowa College of Medicine, Iowa City, IA 52242.

6. Aldehyde fixation and the Timm's sulfide silver m method for demonstrating heavy metals in the central nervous system. K. C. KOSEL*, C. L. BARNES, G. W. VAN HOESEN, Department of Anatomy, University of Iowa, Iowa City, IA 52242.

7. Vitamin-E and BHT produce giant ciliates. E. C. BOVEE and DAVID C. LENNARTZ, Department of Physiology and Cell Biology, University of Kansas, Lawrence, KS 66045.

8. Observations on the immobilization antigen in Paramecium. R. R. DUTE* and A. ADOUTTE, Department of Biology, St. Ambrose College, Davenport, IA 52803.

CHEMISTRY: Inorganic, Analytical, Physical
Chairman: J. D. Woods, presiding
Room 13, Carver Science Hall (17)

Saturday, April 19
8:00 - 9:45 a.m.

8:00 1. The kinetics of acceleratory decomposition. S. R. PORTER* and J. D. DANFORTH, Grinnell College, Grinnell, IA 50112.

8:15 2. The kinetics of the thermal dehydrochlorination of poly(vinylchloride) PVC. J. D. DANFORTH*, J. SPIEGEL and J. BLOOM, Grinnell College, Grinnell, IA 50112.

8:30 3. Products of aquation of trans-bromobis (ethylendiamine) - nitricromium (III) cation. J. E. GUERRERO and J. C. CHANG*, University of Northern Iowa, Cedar Falls, IA 50613.

Continued on page 24.

5. A mass spectrometer which generates and analyzes neutral fragments. G. D. FLESCH* and H. J. SVEC, Iowa State University, Ames, IA 50011.


9:30 Election of Vice-chairman

9:45 Joint meeting with Organic and Biological Chemistry Section, Room 12 (See Inorganic Chemistry Section Program for details.)

(See also the program of the Chemical Education Section.)

CHEMISTRY: Organic and Biological
Chairman: J. Macmillan
Room 12, Carver Science Hall

Saturday, April 19
8:15 - 11:15 a.m.

8:15
1. NMR Spectra of 1-methyl-1-acetyl-3-phenylperhydrodiazocine. S. WAWZONEK* and J. M. SHRADEL, Iowa City, IA 52242

8:30
2. Dual mechanisms for photosubstitutions by Chloride Ion on Bromonitrobenzenes. GENE G. WUBBELS* and BONNIE L. KENNEY, Department of Chemistry, Grinnell College, Grinnell, IA 50112.

8:45
3. The utility of purinyl radicals in the synthesis of base-modified nucleosides. VASU NAIR and STEPHEN G. RICHARDSON*, Iowa City, IA 52242.

9:00

9:15 BREAK

SYNTHESIS OF ANTIBIOTIC AND ANTITUMOR AGENTS

9:45 Synthetic approaches to anthracycline anti-cancer agents. GEORGE KRAUSE, Department of Chemistry, Iowa State University, Ames, IA 50011.

10:20 Questions

10:40 Microbial transformation studies with anti-tumor antibiotics. JOHN P. ROSAZZA, Division of Medicinal Chemistry and Natural Products, College of Pharmacy, The University of Iowa, Iowa City, IA 52242.

11:15 Questions
CONSERVATION
Chairmen: David Roslien
Richard Lampe
Room 11, Carver Science Hall

Friday, April 18
2:00 - 4:15 p.m.

SYMPOSIUM

"Perspectives on Iowa's Declining Flora and Fauna"
(Sponsored jointly by the Botany and Conservation Sections and by the Con-
servation and Preserves Committee, I.A.S. Arranged by Donald R. Farrar,
Iowa State University, Dean M. Roosa, Iowa Conservation Commission, and
David J. Roslien, Luther College.)

Donald R. Farrar, presiding

2:00  1. Prairies. DARYL SMITH*, University of Northern
   Iowa, Cedar Falls, IA 50613.

2:15  2. Forests. GEORGE THOMSON*, Iowa State Univer-
   sity, Ames, IA 50011.

2:30  3. Mammals. JOHN BOWLES*, Central College, Pella, IA
   50219.

2:45  4. Birds. JIM DINSMORE*, Iowa State University, Ames,
   IA 50011.

3:00  BREAK

3:15  5. Wetlands. RICHARD BISHOP*, Iowa Conservation
   Commission, Indianapolis, IA 50125.

3:30  6. Amphibians and Reptiles. JAMES CHRISTIANSEN*,
   Drake University, Des Moines, IA 50311.

3:45  7. Fish BRUCE MENZEL*, Iowa State University, Ames,
   IA 50011.

4:00  8. Habitat preservation. DEAN M. ROOSA*, Iowa Conser-
   vation Commission, Des Moines, IA 50300.

26

CONTRIBUTED PAPERS

Saturday, April 19
8:30 - 11:00 a.m.

8:30  9. Iowa forest restoration: land use planning challenge for
   the 1980's. G. L. HIGHTSHOE*, Iowa State University,
   Ames, IA 50011.

POSTER

10. An initial investigation of changes occurring in an inten-
    sively cultivated soil taken out of production for forty
    years. R. L. TABOR* and R. DAVIS, Central
    Missouri State University, Warrensburg, MO 64093.

8:50  11. Subnivean activity of small mammals in northwestern
   Iowa. M. C. LEWIS* and D. K. MILLER, Buena
   Vista College, Storm Lake, IA 50588.

9:10  12. Bats of Iowa. JOHN B. BOWLES*, Central College,
   Pella, IA 50219.

9:30  13. Home ranges of north american badger in northwestern
   Iowa. R. P. LAMPE*, Buena Vista College, Storm Lake,
   IA 50588.

POSTER

14. Game animals of Africa: a photographic safari. H. S.
    KUYPER*, D. M. HUFFMAN, and J. B. BOWLES,
    Central College, Pella, IA 50219.

9:50  BREAK

10:00 15. Inventory and relative abundance of catostomids in the
   Maquoketa River. VAUGHN L. PARAGAMIAN*, Iowa
   Conservation Commission, Manchester, IA 52057.

10:20 16. Aldrin and DDT residues in carp from impounded and
   W. A. HUBERT* Iowa State University, Ames, IA
   50011.

10:40 17. Comparison of two aging techniques for yellow perch.
   D. N. SCHMITT* and W. A. HUBERT, Iowa State
   University, Ames, IA 50011.

27
1:30 - 3:30 p.m.

1:30  18. The snails of Lake West Okoboji, twenty years later. R. V. BOVBJERG*, R. L. DUSIL, and R. L. BROER, University of Iowa, Iowa City, IA 52242.


2:10  20. Use of algal assays to evaluate algal biomass in regulated streams. J. M. CARR* and W. B. MERKLEY, Drake University, Des Moines, IA 50311.


3:30  Election of section vice-chair.

3:50  ADJOURN

---

ENGINEERING

Chairmen: J. L. Schnoor
           M. J. Murgula

Theater, Blank Performing Arts Center

Friday, April 18
2:00 - 4:20 p.m.

SYNTHETIC FUELS AND GASOHOL

INVITED SPEAKERS AND PANEL DISCUSSION

2:00  Coal gasification processes. A. PULSIVER*, Chemical Engineering, Iowa State University, Ames, IA 50011.


3:40  Methane generation from animal wastes and crop-residues. R. R. DAGUE*, Division of Energy Engineering, University of Iowa, Iowa City, IA 52242.

4:05  PANEL DISCUSSION

4:30  GENERAL SESSION (See Program Summary)

Saturday, April 19
8:30 - 11:20 a.m.

ENGINEERING AND ENERGY

8:30  1. The Hallmark solar heated home: design, performance, and economic benefits. R. JORDAN* and D. J. SPENCER, Division of Energy Engineering, University of Iowa, Iowa City, IA 52242.
2. Potential recovery of metals from coal fly ash by high-temperature chlorination. D. J. ADELMAN\(^*\), and G. BURNET, Ames Laboratory, USDOE and Chemical Engineering, Iowa State University, Ames, IA 50011.


4. Teaching dynamic programming using APL. D. L. BRICKER\(^*\) and M. R. GOMATAM, Systems Engineering Division, University of Iowa, Iowa City, IA 52242.

COFFEE BREAK

ENGINEERING AND THE ENVIRONMENT

5. Precision analysis of a distributed watershed model. P. M. WITINOK\(^*\), Iowa Geological Survey, Iowa City, IA 52242.


8. The dissociation kinetics and toxicology of various 0.01 M hexacyanoferrate (III) solutions maintained in a dark environment. K. L. CHERRYHOLMES\(^*\), D. B. McDONALD and R. C. SPLINTER, University Hygienic Laboratory, University of Iowa, Iowa City, IA 52242.

GEOLOGY
Chairman: R. G. Baker

Friday, April 18
CONTRIBUTED PAPERS

2:15 - 3:15 p.m.
COMBINED SESSION

Room 12, Carver Science Hall
R. G. Baker, presiding


POSTER PAPER


POSTER PAPER


3:05 Election of Section Vice-chair.
3:15 - 4:15 p.m.
CONCURRENT SESSIONS

Session A.
Room 12, Carver Science Hall
Jean Prior, presiding


4:00  10. Alteration of the gypsum-anhydrite precipitation kinetics by organic solutes. A. B. HULL*, and R. D. CODY, Department of Earth Sciences, Iowa State University, Ames, IA 50011.

Session B.
Room 13, Carver Science Hall
R. G. Baker, presiding


4:00  14. Pleistocene relict snails from the Driftless Area, northeastern Iowa. T. J. FREST* and L. P. FAY, Department of Geology, The University of Iowa, Iowa City, IA 52242.

Saturday, April 19
SYMPOSIUM
"STEWARDSHIP OF THE SOIL"
(Sponsored jointly by the Geology Section and the Social Implications Committee.)

The following six papers, arranged by R. G. Baker, The University of Iowa, present the research aspects of the soil erosion problem and constitute only one part of the symposium. See "PROGRAM SUMMARY" for details of the entire symposium program.

Smith Memorial Chapel
R. G. Baker, presiding

8:00  15. Recent changes in Iowa agriculture land use and implications for potential soil loss. G. A. MILLER*, Department of Agronomy, Iowa State University, Ames, IA 50011.


8:40  17. Field to stream processes in sediment transport. H. P. JOHNSON* and J. L. BAKER, Department of Agricultural Engineering, Davidson Hall, Iowa State University, Ames, IA 50011.

9:00  18. Use of soil survey and land use data for identifying and evaluating potential soil losses. T. E. FENTON*, Department of Agronomy, Iowa State University, Ames, IA 50011.

9:40 20. Wind and water soil erosion climatology. P. J. WAITE*, Iowa Department of Agriculture, Room 10, Municipal Airport Terminal, Des Moines, IA 50321.

Notice of Field Trip sponsored by the Geological Society of Iowa: April 20 (Sunday) to visit several Upper Pennsylvanian cyclothems near Winterset, Iowa. Details will be announced in the section and by posted notice in the message area near Registration.

HISTORY AND PHILOSOPHY OF SCIENCE
Chairman: William E. Carroll
Room 13, College Hall

Saturday, April 19
9:20 - 11:00 a.m.

9:20 1. Systems philosophy: useful and compatible to scientists. H. D. SWANSON*, Department of Biology, Drake University, Des Moines, IA 50311.


MATHEMATICS
(Iowa Section of the Mathematical Association of America)
Section Chairperson: Frank Kosier; Program Chairperson: Arnold Adelberg
(Joint meeting with American Statistical Society and Society for Industrial and Applied Mathematics; Stuart Klugman, chairperson ASA, Herb Hethcote, chairperson SIAM)
Smith Lounge, Brenton Student Center

Friday, April 18
1:30 - 5:00 p.m.

1:30 1. Survey Sampling. WAYNE FULLER*, Ames


2:45 3. NP-Completeness. DAVID L. REINER*, Grinnell

3:30 BREAK

3:45 Invited address: "Alternative rings - from the Cayley numbers to the present." ERWIN KLEINFELD, Iowa City.

4:45 Governor's Report. J. L. CORNETTE*, Ames

Saturday, April 19
8:30 a.m. - 4:30 p.m.

8:30 4. The Khachian algorithm for solving linear programs. A. M. FINK*, Ames


10:20 BREAK

10:40 Panel Discussion: Current employment opportunities in the mathematical sciences. JIM HARDY, John Deere Technical Center; HAL SCHOEN, Iowa City; REG YODER, Bankers Life; HERB HETHCOTE, Iowa City, moderator.
11:45 Business Meetings

12:15 LUNCH


2:10 Invited address: "Some open questions in 3-dimensional geometric approximation. JIM HURT, John Deere Technical Center, Moline, IL.

2:50 BREAK

3:05 6. Finding the source of a signal. RUSSELL LENGTH*, Iowa City.


PHYSICS
(Joint meeting with Iowa A.A.P.T.)

Chairman: Donald S. Roiseland, presiding
Room 11, Carver Science Hall

Saturday, April 19
9:00 - 11:15 a.m.

9:00 Invited physics lecture demonstrations.

9:45 Informal discussion with participants; break.

10:00 1. Utilizing solar energy to convert biomass into energy products: alcohol from farm crops. ARTHUR C. MEYERS III*, Solar Energy Division, Navarro College, Corsicana, TX 75110.

10:15 2. Computer generated hologram production. L. J. VISser*, Department of Physics, University of Northern Iowa, Cedar Falls, IA 50613.

10:30 3. Computer generated holograms in a holography course. D. W. OLson*, Department of Physics, University of Northern Iowa, Cedar Falls, IA 50613.

10:45 4. A new cognitive paradigm for quantum mechanics. R. A. RABINOFF*, Department of Physics, Maharishi International University, Fairfield, IA 52556.

11:00 Announcement of new I.A.S. section chairperson and election of section vice chairperson. Airing of mutual concerns of I.A.S. and A.A.P.T.

12:30 p.m. Iowa A.A.P.T. will have its business meeting over lunch in a reserved area. See "Special Functions" section of program for location.

(See also program of the Engineering Section.)
PHYSIOLOGY
Chairman: T. E. Rogers
Room 201, Heckert Hall

Saturday, April 19
9:15 - 11:00 a.m.

T. E. Rogers, Presiding


10:15 5. Some effects of selenium, vanadium and zirconium on the swimming rate of Tetrahymena pyriformis. E. C. BOVEE* and T. L. O'BRIEN, Department of Physiology and Cell Biology, University of Kansas, Lawrence, KS 66045.

PSYCHOLOGY
Chairman: Jack Yates, presiding
Room 14, College Hall

Saturday, April 19
9:00 - 11:00 a.m.

9:00 1. Combat readiness as determinant of support for the draft. J. C. GREENWOOD* and M. E. P. DAVIS, Department of Psychology, St. Ambrose College, Davenport, IA 52803.


9:40 3. Effects of actor-relevant vs. other-relevant information on observers' causal attributions for a performance outcome. CHERRY CHRISTENSEN* and DANIEL ARKKELIN, Department of Psychology, Wartburg College, Waverly, IA 50677.

10:00 4. Effects of being a chairperson vs. being interviewed on subjective reactions to conditions of group density. DAN ARKKELIN* and CHERRY CHRISTENSEN, Department of Psychology, Wartburg College, Waverly, IA 50677.


SCIENCE TEACHING
Chairman: Ross L. Iverson
Room 2, Sigler Hall

Friday, April 18
2:15 - 4:00 p.m.

2:15  1. A long-range science plan for science education in Iowa. E. L. HATCHER*, Davenport Central High School, 1120 Main, Davenport, IA 52803.


2:45  3. Presenting two models of origins! H. B. WAGONER, JR.*, 3701 E. 38th Street Court, Des Moines, IA 50317.

3:00  4. A case history of a controversy. A. C. HAMAN*, Department of Biology, University of Northern Iowa, Cedar Falls, IA 50613.

3:15  5. Ethical decision making in the science classroom. G. L. MAGRANE, Area 15 Education Agency, Ottumwa, IA 52501.

3:30  6. Reading skills and freshman biology performance. K. E. TUINSTRA* and D. M. HUFFMAN, Department of Biology, Central College, Pella, IA 50219.

3:45  7. A program teaching about American scientists. SISTER MARY DENNIS LENTSCH, Newman High School, Mason City, IA 50401.

Saturday, April 19
8:30 - 11:15 a.m.

8:30  I.S.T.S. Business Meeting

10:00  8. Organic chemistry for non-majors. L. A. McGREW*, Department of Chemistry, University of Northern Iowa, Cedar Falls, IA 50613.


11:00  12. Using analogies for energy education. DORIS A. SIMONIS, Science Education, University of Iowa, Iowa City, IA 52242.

ZOOLOGY
Chairmen: R. S. Wacha
F. F. Jaszcz, Jr.
Room 100, Heckert Hall

Saturday, April 19
8:00 - 11:25 a.m.

R. S. Wacha, presiding

1. The role of the pelvic nerve in parturition. K. C. EVANS*, Department of Zoology, Iowa State University, Ames, IA 50011. (By title only.)

8:00  2. Is vitamin-E "stomatin" for Tetrahymena vorax? D. C. LENNARTZ and E. C. BOVVEE*, Department of Physiology & Cell Biology, University of Kansas, Lawrence, KS 66045.
3. "Walking" locomotion by the radiate form of the marine ameba, Vannella mira (Schaefeler, 1926). E. C. BOVEE* and E. A. BOVEE, Department of Physiology & Cell Biology, University of Kansas, Lawrence, KS 66045.

4. Feeding differences between naupliar and adult cyclopoid copepods. J. E. HAVEL, Biology Department, Drake University, Des Moines, IA 50311.

5. Distribution and ecology of the crayfishes Orconectes iowaensis Fitzpatrick and Orconectes rusticus (Girard) in Minnesota. G. S. PHILLIPS*, College of Natural Science, University of Northern Iowa, Cedar Falls, IA 50613.

6. Peoria Loess mollusc faunas of northwestern Illinois and northeastern Iowa. L. P. FAY* and T. J. FREST, Department of Geology, The University of Iowa, Iowa City, IA 52242.

F. F. Jaszcz, Jr., presiding

7. The status of the small-mouthed salamander (Ambystoma texanum) in Iowa. J. T. CRAWFORD, Department of Biology, Drake University, Des Moines, IA 50311.

8. Sternotherus odoratus; one of Iowa's rare, peripheral turtle species. J. L. CHRISTIANSEN, Department of Biology, Drake University, Des Moines, IA 50311.

9. The occurrence of the western mosquito fish (Gambusia affinis affinis) in Iowa. J. A. RUSSELL, Walford, IA 52351.


12. Cocciidan parasites from Iowa reptiles. VII. R. S. WACHA* and J. L. CHRISTIANSEN, Department of Biology, Drake University, Des Moines, IA 50311.

13. The relative abundances of winter birds in Iowa. BILL GILBERT*, Department of Biology, Simpson College, Indianola, IA 50125.


SPECIAL NOTE TO AUTHORS

All authors of papers presented during the 92nd Session are encouraged to submit manuscripts for consideration by the Editor of the PROCEEDINGS OF THE IOWA ACADEMY OF SCIENCE. Instructions for manuscript preparation can be found inside the front cover of any recent issue of the PROCEEDINGS.

Manuscripts in the physical sciences and engineering are especially encouraged.
OFFICERS AND DIRECTORS 1979-80

President                  Clifford G. McCollum, University of Northern Iowa
President-elect           Donald Huffman, Central College
Past President            Karl E. Goellner, Coe College
Treasurer                 Frank Starr, Waterloo Community Schools
Editor, PROCEEDINGS       Nels Lersten, Iowa State University
Executive Director        Robert W. Hanson, University of Northern Iowa

Directors:

(80) William L. Brown, Pioneer HiBred Intl., Inc.
(80) Stanley C. Grant, Iowa Geological Survey
(81) Sr. Marguerite Neumann, Clarke College
(81) Lois H. Tiffany, Iowa State University
(82) John C. Downey, University of Northern Iowa
(82) Joe D. Woods, Drake University

LOCAL ARRANGEMENTS COMMITTEE

Cliff Meints, Chemistry (Chairman)
Joe Moody, Biology
Margaret Watson, Biology
Bill Gilbert, Biology
Allen Brush, Physics
Jim VanDeventer, Mathematics

ANNUAL MEETING COMMITTEE

Robert W. Hanson, University of Northern Iowa (Chm.)
Marilyn Bachmann, Iowa State University
Clifford Meints, Simpson College
Harry T. Horner, Jr., Iowa State University
Edwin Vaughan, Bettendorf
Warren Glasson, Davenport
Floyd R. Sanford, Coe College