

PHYTOCHEMICAL SOCIETY OF NORTH AMERICA

Newsletter

January 1986

**Volume 25
Number 4**

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The Phytochemical Society of North America is a non-profit scientific organization whose membership (currently about 400) is open to anyone with an interest in phytochemistry, the role of plant substances, and in related fields. Annual membership dues are \$8.00 for regular members and \$4.00 for student members. Annual meetings featuring symposium topics of current interest and contributed papers by conference participants are held throughout the United States, Canada and Mexico. A newsletter is circulated to members several times a year to keep them informed of upcoming meetings and developments within the Society.

If you would like additional information about the PSNA or if you have material to be included in the newsletter, please contact the Society Secretary. Annual dues and changes in addresses should be sent to the Society Treasurer.

Nomination of Officers and Proposed Amendments to the Constitution and Bylaws

You will recall that new procedures for nomination and election of society officers and for proposal and enactment of Constitutional changes were approved at the June 1985 business meeting (see May and September 1985 Newsletters). Responsibility for nominating and electing officers is now shared by the Membership-at-Large and a Nominating Committee - appointed by the current President. Proposal and approval of constitutional amendments is now the responsibility of the Membership-at-Large.

The complete and revised Constitution and Bylaws will appear in the new directory to be completed in early 1986. Approved changes are found in the May 1985 Newsletter.

In accordance with these changes, proposed amendments to the Constitution and nominations of officers for election in 1986 are called for at this time. Send proposed amendments in writing to the Secretary, PSNA before March 20, 1986. Send one name in nomination for each of Vice President (President-Elect), Treasurer and Secretary to the Past-President, Dr. R. L. Mansell, before March 20, 1986 (use form on last page of this newsletter).

Recall that a new Vice President (President-Elect) is - according to the constitution - elected each year. The term of office for Treasurer and Secretary has historically run for 3 to 6 years - for the sake of continuity and efficient operation. Mechanics of budget administration and reporting, assets securement, mailing list preparation, newsletter preparation and mailing, etc., take some time to learn. The present Treasurer and Secretary were elected to office at the 1983 and 1984 meetings, respectively.

A form is provided as the last page of this newsletter for the purpose of making nominations for PSNA officers. Please make entries, cut along dotted line, fold, stamp, and mail before March 20, 1986.

To propose a constitutional amendment, state in writing which Article(s) and Section(s) of the Constitution or Bylaws are to be changed. Please describe changes completely. Send to G. Wagner, Secretary PSNA, N212F ASCN, University of Kentucky, Lexington, KY 40546-0091, before March 20, 1986.

Nominations or proposed amendments received after the March 20 deadline will not be considered. As prescribed by the approved changes to the Constitution, ballots for voting must be distributed to the membership at least 2 months prior to the annual meeting. Some time is required for preparation and distribution of ballots.

1986 Directory PSNA

The updated directory is in preparation. Only about 60 members responded to the call (September 1985 newsletter) for information to update the research interests list in the back of the directory. This is the final opportunity to send this information. A form is found in the back of this issue. Question: Is this portion of the directory useful to you??

Notes: June 1985 PSNA Meeting at Asilomar

The meeting was a huge success from all points of view. Bock Chan and others on the local committee are again congratulated. The society thanks the following corporations for their generous gifts which made possible a fitting meeting on the occasion of the Silver Anniversary of PSNA.

Monsanto Chemical Company
St. Louis, MO

FMC Corp.
Princeton, NJ

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Modesto, CA

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Wilmington, DE.

Cetus Madison Corporation
Middleton, Wisc.

Dow Chemical
Midland, Mich.

Eli Lilly and Company
Indianapolis, Ind.

Idetek Inc.
San Bruno, CA

The following students were winners in the Travel Grant (\$250.00 each) Competition at the Asilomar meeting. Our congratulations!

James Connelly, Dept. of Plant Pathology,
University of California, Davis, CA

Gary Kuroki, Dept. of Biochem. Biophys.
University of California, Davis, CA

Yoke Marchant, ARCO Plant Cell. Res. Inst.,
Dublin, CA

Cecilia McIntosh, Dept. of Biology,
South Florida, Tampa, FL

1986, 1987, 1988 PSNA Annual Meetings

1986 Meeting -- Arrangements for the 1986 meeting are changed in that the meeting will be held at the University of Maryland and not at USDA-Beltsville. The following details describe meeting arrangements.

The 26th Annual Meeting of the Phytochemical Society of North America will be held July 13-17, 1986 at the University of Maryland, College Park, MD. As usual the meeting will feature a coordinated Symposium entitled "Phytochemical Effects of Environmental Compounds". In addition, contributed papers on any topic of interest to phytochemists are encouraged as either oral or poster presentations. Abstracts of all presentations will be published in the PSNA Newsletter prior to the meeting and distributed to all meeting participants and PSNA members.

The PSNA meeting will be held on the Campus of the University of Maryland. Housing will be available in air conditioned dorm rooms on the University in La Plata Hall which is within easy walking distance of the meeting conference room. Housing will also be available at two local motels with reduced conference rates which are within 5 minutes driving time of the conference site. Multiple occupancy rooms are available at all locations and registrants are encouraged to list names of desired roommates if they are interested in multiple occupancy. There will be an active guest and social program at this meeting which will include visits to Washington, D.C., The White House, the Capitol, Great Falls on the Potomac, and the Inner Harbor Showplace in Baltimore. There will be two tours on Tuesday, July 15, 1986 during an open afternoon at the meeting. Tour A will visit the White House, the U.S. Capitol and scenic areas around Washington, D.C. Tour B, which will run concurrently, will visit Baltimore's Inner Harbor, Aquarium, and Power Plant Amusement Park. The cost of each tour (\$20.00) will include transportation and admission to the attractions. Both the Aquarium and the Power Plant will be of interest to visitors of all ages from very young

children through adults. Other features on the guest program will include visits to Washington's art museums, a horse drawn canal ride through 100 year old locks of the C&O Canal and a picnic at Great Falls, Virginia.

The PSNA banquet will be aboard the cruise ship the Dandy which will include a three hour cruise on the Potomac with entertainment and transportation to and from the housing.

Travel to the Washington/College Park area is serviced by three different airports. Baltimore-Washington International Airport (BWI) is located within 15 miles of the University and local service is available by limo and by taxi at a cost of \$12-14. Washington National Airport is about 20 miles away through congested city traffic for a cost of \$18-20. Dulles Airport in Virginia is about 30 miles away at a cost of \$20-24. Those driving should take the Washington Beltway (I-495) to exit 25B South, which is also Rt. 1, South. University of Maryland is located 2 miles south of the Beltway on Rt. 1. The registration desk will be located in the lobby of La Plata Hall on Sunday, July 13, from 1:00 p.m. to 7:30 p.m.

We hope you enjoy the facilities of the University of Maryland, the nearby U.S. Dept. of Agricultural Research Station in Beltsville, and the Washington area. We encourage you to bring your family to participate in the active guest program and social events.

The Phytochemical Society of North America will hold its 1986 Annual Meeting on July 13-17, 1986 at the University of Maryland's campus in College Park, Maryland. The meeting will feature contributed papers on any topic of interest to phytochemists as well as a coordinated symposium. The annual symposium for this meeting is entitled "Phytochemical Effects of Environmental Compounds". Symposium speakers and their presentation titles are:

CHARLES L. MULCHI
Dept. of Agronomy
University of Maryland
College Park, MD 20742

"Bioavailability of heavy metals
in sludge-amended soils ten years
after treatment"

DAVID H. O'KEEFFE
University of Michigan
Flint, MI 48502

"Uptake and metabolism of phenolic
compounds by the water hyacinth"

JAMES G. SANDERS
Academy of Natural Sciences
Benedict Estuarine Research Lab
Benedict, MD 20612

"Control of arsenic toxicity by
phytoplankton"

RUTH ALSCHER
Boyce Thompson Institute
for Plant Research
Cornell University
Ithaca, NY 14853

"Interaction of SO₂ with the
photosynthetic apparatus"

DANIEL P. O'KEEFE
E. I. DuPont de Nemours & Co.
Rm 2225, Bldg. 402
Wilmington, DE 19898

"Enzyme mediated degradation of
herbicides"

EDWARD H. BUCKLEY
Boyce Thompson Institute
for Plant Research
Cornell University
Ithaca, NY 14853

"Correlation of properties of
anthropogenic compounds in the
atmosphere with their accumulation
in foliage and crops"

GARY L. CUNNINGHAM
Dept. of Biology
NMSU, Box 3AF
University Park, NM 88003

"Salinity effects on photosynthesis
and primary productivity of C₄
grasses"

ROBERT L. HEATH
Dept. of Botany and Plant Science
University of California
Riverside, CA 92521

"The biochemistry of ozone attack
on the plasma membrane of plant
cells"

LANCE S. EVANS
Manhattan College
Plant Morphogenesis Lab
Riverdale, NY 10471

"Chemical nature of the interaction
of acidic precipitation and
vegetation"

JOE MILLER
Air Quality Program
USDA, ARS
1509 Varsity Dr.
N.C. State University
Raleigh, NC 27606

"Effects of ozone and sulfur dioxide
stress on carbon allocation in
plants"

The meeting will also feature an active guest program with tours of Washington, D.C., Great Falls on the Potomac River and a visit to Baltimore's Inner Harbor showplace. For additional information, contact:

Dr. James A. Saunders
PSNA 86
14590 Triadelphia Mill Road
Dayton, MD 21036
301 455-2565

Local Organizing Committee:

Dr. James A. Saunders (Chairperson)
Dr. Ben Matthews
Dr. Merle Millard
Dr. Samuel Asen

Dr. Lynn Kosak-Channing
Dr. Edward Lee
Dr. Joe Mack
Ms. June Gillespie

Invitation for Travel Awards: The Phytochemical Society of North America will award up to four competitive awards towards expenses of attending the 1986 annual meeting to be held in Beltsville, Maryland, July 13-17, 1986. Graduate students or recent recipients of Ph.D.'s (within the last 5 years) are eligible to apply. Each award will be for \$250.00. Interested persons should contact Dr. Dave Loomis, President, PSNA, Department of Biochemistry and Biophysics, Oregon State University, Corvallis, Oregon 97331, (503) 754-4220, by April 1, 1986. Applications are not restricted to members of the Phytochemical Society of North America.

1987 Meeting -- This meeting is planned for Tampa, Florida (probably late June) with a symposium theme of "Molecular Biology and Phytochemistry".

1988 Meeting -- Tentatively, the meeting is planned for a midwest location and the symposium theme which has been discussed is, "Nitrogen Metabolism: Primary and Secondary Aspects of". The executive Committee would like to ask for input from the membership concerning topics within this theme and potential speakers who might contribute.

New Members

The PSNA welcomes the following new members. We apologize for our failure to send these new members the September 1985 Newsletter. Copies are enclosed for you.

Dr. Norman G. Lewis
3420 University Street
Pulp & Paper Research
Institute of Canada
Montreal, Quebec, Canada H3A 2A7

Manuel Aregullin
Dept. Eco. & Evo. Bio.
University of California
Irvine, CA 92717

Dr. Noreen E. Mahoney
Plant Protection Phytochemistry
WRRRC, ARS, USDA
800 Buchanan Street
Albany, CA 94710

Ralph A. Dean
Dept. of Plant Pathology
University of Kentucky
Lexington, KY 40546-0091

Dr. Joe D. Olechno
Dept. of Botany
University of California
Davis, CA 95616

Kent F. McCue
Dept. Biochemistry & Biophysics
University of California
Davis, CA 95616

Dr. Daniel L. Siehl
Biochemistry and Biophysics
University of California
Davis, CA 95616

Marlene Sisemore
Dept. of Entomology
University of California
Berkeley, CA 94720

Dr. Bijay K. Singh
Dept. of Biochem. & Biophys.
University of California
Davis, CA 95616

Wendy Swenson
Dept. of Biochemistry & Biophysics
University of California
Davis, CA 95616

Dr. Mani V. Subramanian
Biotechnology Central Research
Bldg. 1701
Midland, MI 48640

Karen Waln
Botany Department
University of Iowa
Iowa City, IA 52242

Dr. Ingrid Tober
Dept. of Biochemistry & Biophysics
University of California
Davis, CA 95616

Dr. Jonathan H. Blanding
Department of Herbicides
Zoecon Corporation
975 California Avenue
Palo Alto, CA 94304

Dr. Etsuo Yamamoto
Botany Department
University of British Columbia
Vancouver, B.C.
Canada V6T 2B1

Dr. Paul A. Bartlett
Department of Chemistry
University of California
Berkeley, CA 94720

Dr. David L. Dreyer
Plant Protection Phytochemistry
WRRC, ARS, USDA
800 Buchanan Street
Albany, CA 94710

Dr. Heinz G. Floss
Dept. of Chemistry
Ohio State University
Columbus, OH 43210

Dr. Terry Graham
Monsanto Company
700 Chesterfield Village Parkway -
BB4P
St. Louis, MO 63198

Dr. E. Leistner
Inst. f. Pharm. Biol.
Rheinische Friedrich-Wilhelms
Universitat
5300 Bonn 1, W. Germany

Dr. Helen M. Habermann
Biological Sciences
Goucher College
Towson, MD 21204

Dr. Ruth Moore
c/o CARIRI
Tunapuna P.O.
Tunapuna, TRINIDAD

Ms. Nancy Lane Hatch
Dept. of Biology LIF 169
Univ. of South Florida
4202 E. Fowler Ave.
Tampa, FL 33620

Dr. Eric G. Cosio
Dept. of Botany
University of British Columbia
Vancouver, B.C. VGT 2B1
Canada

Dr. Thomas H. Cromartie
1200 S. 47th Street
Stauffer Chemical Company
Richmond, CA 94804

Idetek, Inc.
1057 Sneath Lane
San Bruno, CA 94066

Dr. Erich Fielder
Buteweg 17 d
Botanisches Institut der
Tierarztlichen Hochschule
3000 Hannover 71, West Germany

Dr. Robert Horowitz
Fruit & Vegetable Chemistry Lab
ARS, USDA
263 So. Chester
Pasadena, CA 91106

Dr. Harold W. Moore
Dept. of Chemistry
University of California
Irvine, CA 92717

Dr. Gregory A. Owens
Dept. of Botany & Micro.
Arizona State University
Tempe, AZ 85287

Miss Anita M. Brinker
Dept. of Plant Biology
289 Morrill Hall
505 S. Goodwin Ave.
Urbana, IL 61801

Dr. Nariyuki Ishikura
Dept. of Biology
Faculty of Science
Kumamoto University
39-1, Kurokami 2-chome
Kumamoto 860
JAPAN

Meetings of Interest

LIGHT-ACTIVATED PESTICIDES - Sponsored by: Agrochemical Division - American Chemical Society, September 7-12, 1986, Anaheim, CA. For further information contact: Dr. J.R. Heitz, Dept. Biochem., Mississippi State Univ., Mississippi State, MS 39762 or Dr. K.R. Downum, Dept. Botany, Florida International Univ., Miami, FL 33199.

XXII INTERNATIONAL HORTICULTURAL CONGRESS AND 83rd MEETING AMERICAN SOCIETY FOR HORTICULTURAL SCIENCE, August 10-18, 1986, Univ. of California, Davis, CA. Contact: Congress Secretariat, XXII International Horticultural Congress, Campus Events and Information Office, Univ. of California, Davis, CA 95616, (916) 752-2815.

ANNUAL MEETING AMERICAN SOCIETY OF PLANT PHYSIOLOGISTS, June 8-12, 1986, Louisiana State Univ., Baton Rouge, Louisiana.

GROUPE POLYPHENOLS - INTERNATIONAL MEETING, July 9-11, 1986, Montpellier, France. Contact: J.I.E.P. 86 - Professor J.J. Macheix, Laboratoire de Physiologie Vegetale Appliquee, Universite des Sciences et Techniques du Languedoc, F. 34060 Montpellier CEDEX, France.

INTERNATIONAL SOCIETY OF CHEMICAL ECOLOGY, Annual meeting, June 1986, University of California, Berkeley. Contact: Dr. E. Rodriguez, Department of Ecology and Evolutionary Biology, University of California, Irvine, CA 92717.

THE PHYTOCHEMICAL SOCIETY OF EUROPE and LINNEAN SOCIETY, "Chemistry, Taxonomy and Economic Botany of Euphorbiales", April 2-4, 1986, Royal Botanic Gardens, Kew U.K. and "Biologically Active Natural Products", September 3-5, 1986, University of Lausanne, Switzerland. Contact: Dr. P.J. Lea, Department of Biological Sci., University of Lancaster, Lancaster LA1 4YQ, Lancashire, U.K.

Meetings of Interest

LEAST-ACTIVATED PESTICIDES - Sponsored by the Agricultural Division - American Chemical Society, September 7-12, 1955, Anaheim, CA. For further information contact Dr. L.R. Hays, 9001 Wilshire Blvd., Los Angeles 44, California. Telephone BR 3-3333 or Dr. L.R. Hays, Florida International Univ., Miami, FL 33199.

1955 INTERNATIONAL NORTHERN CONGRESS AND 83rd MEETING
AMERICAN SOCIETY FOR POLYMER SCIENCE, August 30-16, 1955, San Francisco, California. Dr. L.R. Hays, 9001 Wilshire Blvd., Los Angeles 44, California. Contact: Dr. L.R. Hays, 9001 Wilshire Blvd., Los Angeles 44, California. Telephone BR 3-3333.

ANNUAL MEETING AMERICAN SOCIETY OF PLANT PHYSIOLOGISTS, June 1-12, 1955, Louisiana State Univ., Baton Rouge, Louisiana.

SYMPOSIUM - INTERNATIONAL MEETING, July 2-11, 1955, Montpellier, France. Contact: J.R.E. 85 - Professor J.L. Hays, Laboratoire de Physiologie Végétale, Université des Sciences et Techniques de Montpellier, 34000 Montpellier, France.

INTERNATIONAL SOCIETY OF CHEMICAL ENGINEERS, Annual Meeting, June 1955, University of California, Berkeley, California. Dr. L.R. Hays, Department of Biology and Evolutionary Biology, University of California, Irvine, CA 92717.

THE PHYTOCHEMICAL SOCIETY OF AMERICA AND LAMBERT SOCIETY, "Herbaceous, Woody and Fungal Botany of the Tropics", April 7-11, 1955, Royal Botanic Gardens, Kew, U.K. and "Biological Aspects of Plant Products", September 1-5, 1955, University of Lausanne, Switzerland. Contact: Dr. L.R. Hays, Department of Botanical Sci., University of Lausanne, Lausanne, SA 100, Switzerland, U.S.

ABSTRACT FORM

26th Annual Meeting of the Phytochemical Society of North America
University of Maryland, College Park, MD

Members and nonmembers are invited to present a paper(s) at this meeting in the contributed paper or Poster Session on any topic of phytochemical interest.

1. Abstracts should fit into the block space given below. leave the top portion of the box blank.

2. The form below or a facsimile should be used. Since abstracts will be reproduced directly, they should be well prepared and any structure should be neatly drawn.

3. a) The title should be CAPITALIZED.

b) Locations for authors should follow names if multiple authors are at different locations. Underscore the author who will present the paper.

c) For uniformity, elite type is preferred. Use single spacing and fill the block to its maximum.

4. Abstracts should be submitted by May 10, 1986, NOTE EARLY DUE DATE. Abstracts will be published in the PSNA Newsletter.

5. mail the original and one copy to: Dr. James A. Saunders
1986 PSNA Symposium
14590 Triadelphia Mill Rd.
Dayton, MD 21036

6. Presentation format: Oral (15 min.) _____ Poster _____
Projection _____ Requirements: 2" x 2" Overhead _____
Chalkboard _____.

Contributed papers may be presented either orally or as posters and can be on any topic of phytochemical interest, please check a category:

- ___ 1) Papers relating to the Symposium. (Phytochemical Effects of Environmental Compounds)
- ___ 2) Isolation and identification of compounds
- ___ 3) Chemotaxonomy
- ___ 4) Chemical ecology
- ___ 5) Enzymology
- ___ 6) Biosynthesis and metabolism
- ___ 7) Localization
- ___ 8) Molecular Biology
- ___ 9) Other _____

THE BOARD OF DIRECTORS OF THE UNIVERSITY OF CALIFORNIA
HAS APPROVED THE FOLLOWING RESOLUTION:

RESOLUTION NO. 1000
WHEREAS the Board of Directors of the University of California has been advised by the Faculty Senate that the Faculty Senate has approved the following resolution:

Resolved, That the Faculty Senate of the University of California do hereby recommend to the Board of Directors that the Board of Directors should approve the following resolution:

Resolved, That the Faculty Senate of the University of California do hereby recommend to the Board of Directors that the Board of Directors should approve the following resolution:



1986 MEMBERSHIP DIRECTORY

A new membership directory will be published in February 1986. We will continue to list the research area interests of our members as well as providing a geographical directory. If you wish to be included in such a listing (or if you wish to alter your current listing), please fill out the following page and return it to: J.E.Poulton, Department of Botany, University of Iowa, Iowa City, IA 52242. The deadline for inclusion in the 1986 Directory is November 30. Please also notify me if you have recently changed your address.

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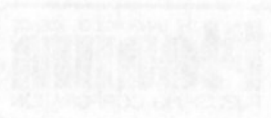
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ATTENTION

The following letter with proposed ammendment was received just prior to mailing of this newsletter. Opposing opinions are solicited. Please send these to the Secretary, PSNA before March 15, 1986 so that all opinions on the matter can be provided with the voting ballot to be provided by separate mailing soon after that date.

Proposed changes in the Constitution of PSNA

ARTICLE VI
Section 2.
(additions underlined)

Section 2. Upon election the term of office for such officers shall extend through the Business Session of the next Annual Meeting. The Vice President shall automatically ascend to the presidency at the end of his(her) scheduled term of office or at any prior time that the office of President may be vacated. However, he(she) will not be eligible for election to the office of President (or Vice-President) at a later date, and shall not succeed himself(herself) as President after serving the scheduled term of office. There shall be no restriction on the number of terms of office of the Secretary or of the Treasurer.

To the Executive Committee of the Phytochemical Society of North America:

The signers of this letter firmly believe that the future of the Phytochemical Society of North America is vested in the hands of its active members. We have served in the capacity of Presidents and intend to contribute further to the success of the Society. Those signing believe that the intent of the founders of the Society was that one should not serve in the office of President more than once. There are dynamic members in the Society who have not served in the past as presidents and are qualified for this office. Therefore we request an ammendment to the Constitution (attached) that would disqualify in the future those who have already served as presidents from being eligible for that office again.

Sincerely,

G. Hardine	L. L. L.
L. Crosby	Samuel Brown
St. Wender	C. Napples
J. Jwa	U. R. R.
Bruce A. Bohm	T. A. L. L.
Helen A. Stafford	Eric E. Conn
Kenneth R. Hanson	Heinz G. Fless
Amelias Sturk	Jarryn M. Miller
	George R. Waller

ARTICLE 1

The following sections with proposed amendments are hereby proposed for adoption at the annual meeting of the Board of Directors of the [Organization Name] to be held on the [Date] at the [Location]. It is the intent of the Board of Directors to provide a separate meeting room for the meeting.

Approved by the Board of Directors on the [Date] at the [Location].

Secretary
[Signature]

Section 2. The Board of Directors shall have the power to amend or repeal any provision of the Bylaws of the [Organization Name] and to fill any vacancy in the Board of Directors. The Board of Directors shall also have the power to suspend or expel any member of the [Organization Name] who is in violation of the Bylaws. The Board of Directors shall also have the power to suspend or expel any officer or director of the [Organization Name] who is in violation of the Bylaws. The Board of Directors shall also have the power to suspend or expel any member of the [Organization Name] who is in violation of the Bylaws.

The Board of Directors shall have the power to amend or repeal any provision of the Bylaws of the [Organization Name] and to fill any vacancy in the Board of Directors. The Board of Directors shall also have the power to suspend or expel any member of the [Organization Name] who is in violation of the Bylaws. The Board of Directors shall also have the power to suspend or expel any officer or director of the [Organization Name] who is in violation of the Bylaws. The Board of Directors shall also have the power to suspend or expel any member of the [Organization Name] who is in violation of the Bylaws.

[Handwritten signatures and notes]

Form for Nominating Officers

I nominate _____ for Vice-President, PSNA, 1986

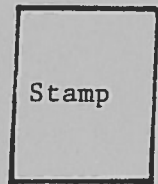
I nominate _____ for Treasurer, PSNA, 1986 -

I nominate _____ for Secretary, PSNA, 1986 -

Fold here - Address on back side

Cut Here

Send before March 20, 1986



Dr. R.L. Mansell
Past-President, PSNA
Department of Biology
University of South Florida
Tampa, FL 33620

PHYTOCHEMICAL SOCIETY OF NORTH AMERICA

DEPARTMENT OF BOTANY • UNIVERSITY OF IOWA • IOWA CITY, IOWA 52242 • 319-353-6834

Jonathan Poulton
Treasurer

Application for Membership

Date: _____

Name: (Dr., Mr., Mrs., Miss) _____

Mailing Address: _____ Telephone: _____
(with Zip Code)

Class of Membership Desired and Annual Dues (U.S. Funds): Regular (\$8.00) _____

Student (\$4.00) _____

Field of Interest: _____

Make check or money order payable to PHYTOCHEMICAL SOCIETY OF NORTH AMERICA and send with this application to the Treasurer at address above.

Phytochemical Society of North America
George J. Wagner, Secretary
Department of Agronomy
University of Kentucky
Lexington, KY 40546-0091

SEND TO:

John T. Romeo
of Biology
of South Florida
Tampa, FL 33620



PHYTOCHEMICAL SOCIETY OF NORTH AMERICA

Newsletter

June 1986

**Volume 26
Number 1**

Executive Committee PSNA 1985 - 1986

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The Phytochemical Society of North America is a non-profit scientific organization whose membership (currently about 400) is open to anyone with an interest in phytochemistry, the role of plant substances, and in related fields. Annual membership dues are \$15.00 for regular members and \$8.00 for student members. Annual meetings featuring symposium topics of current interest and contributed papers by conference participants are held throughout the United States, Canada and Mexico. A newsletter is circulated to members several times a year to keep them informed of upcoming meetings and developments within the Society.

If you would like additional information about the PSNA or if you have material to be included in the newsletter, please contact the Society Secretary. Annual dues and changes in addresses should be sent to the Society Treasurer.

26 th ANNUAL MEETING
PHYTOCHEMICAL SOCIETY OF NORTH AMERICA

The 26th Annual Meeting of the Phytochemical Society of North America will be held July 13-17, 1986 at the University of Maryland, College Park, MD. As usual the meeting will feature a coordinated Symposium entitled "Phytochemical Effects of Environmental Compounds". In addition, contributed papers on any topic of interest to phytochemists are encouraged as either oral or poster presentations. Abstracts of all presentations will be published in the PSNA Newsletter prior to the meeting and distributed to all meeting participants and PSNA members.

The PSNA meeting will be held on the Campus of the University of Maryland. Housing will be available in air conditioned dorm rooms on the University in La Plata Hall which is within easy walking distance of the meeting conference room. Housing will also be available at two local motels with reduced conference rates which are within 5 minutes driving time of the conference site. Multiple occupancy rooms are available at all locations and registrants are encouraged to list names of desired roommates if their are interested in multiple occupancy. There will be an active guest and social program at this meeting which will include visits to Washington, D.C., The White House, the Capitol, Great Falls on the Potomac, and the Inner Harbor Showplace in Baltimore. There will be two tours on Tuesday July 15, 1986 during an open afternoon at the meeting. Tour A will visit the White House, the U.S. Capitol and scenic areas around Washington, D.C. Tour B, which will run concurrently, will visit Baltimore's Inner Harbor, Aquarium, and Power Plant Amusement Park. The cost of each tour (\$20.00) will include transportation and admission to the attractions. Both the Aquarium and the Power Plant will be of interest to visitors of all ages from very young children through adults. Other features on the guest program will include visits to Washington's art museums, a horse drawn canal ride through 100 year old locks of the C&O Canal and a picnic at Great Falls, Virginia.

The PSNA banquet will be aboard the cruise ship the Dandy which will include a three hour cruise on the Potomac with entertainment and transportation to and from the housing.

Travel to the Washington/College Park area is serviced by three different airports. Baltimore-Washington International Airport (BWI) is located within 15 miles of the University and local service is available by limo and by taxi at a cost of \$12-14. Washington National Airport is about 20 miles away through congested city traffic for a cost of \$18-20. Dulles Airport in Virginia is about 30 miles away at a cost of \$20-24. Those driving should take the Washington Beltway (I-495) to exit 25B South, which is also Rt. 1, south. University of Maryland is located 2 miles south of the Beltway on Rt. 1. The registration desk will be located in the lobby of La Plata Hall on Sunday July 13, from 1:00 pm to 7:30 pm.

We hope you enjoy the facilities of the University of Maryland, the nearby U.S. Dept. of Agricultural Research Station in Beltsville, and the Washington area. We encourage you to bring your family to participate in the active guest program and social events.

Eastern Airlines is offering a special fair to participants at a discounted rate of 40% off. Call 1-800-468-7022 (In Fla call 800-282-0244) and mention the account number EZ7AP17.

Dr. James Saunders

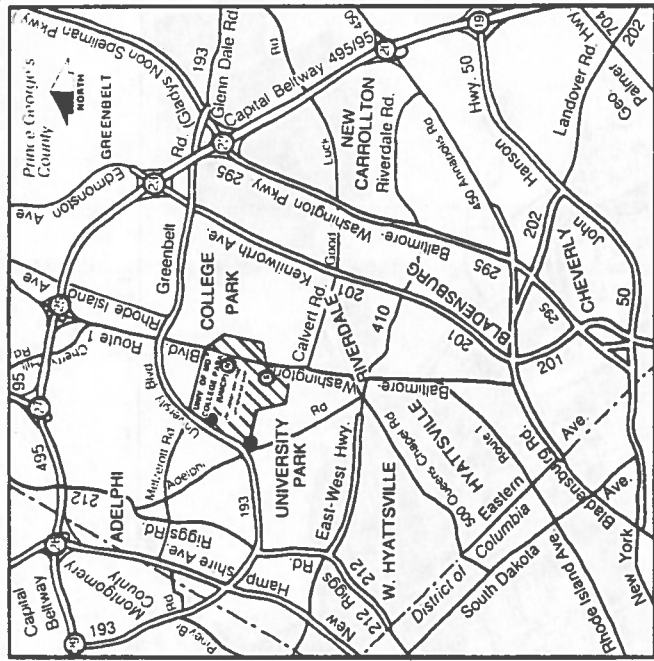
PSNA 86 MEETING - SCHEDULE OF EVENTS

Sun. July 13	1:00pm-7:30pm	Registration in Lobby of LaPlata Hall University of Maryland (301)454-4349
	7:30pm-9:30pm	Reception, Cash Bar in University Stamp Union, Complimentary Hors d'oeuvres
Mon. July 14 ART/SOC Bldg.	8:30am-8:50am	Welcoming Remarks by Dr. Kirwan, Univ. of MD Vice Chancellor, Academic Affairs
	8:50am-9:40am	Symposia presentation, Alscher
	9:40am-10:30am	Symposia presentation, Heath
	10:30am-10:50am	Break
	10:50am-11:40am	Symposia presentation, Miller
	11:40am-1:30am	Lunch
	1:30pm-3:10pm	Contributed Papers, Travel grant candidates
	3:10pm-3:30pm	Break
	3:30pm-5:00pm	Contributed Papers Session I
	8:00am-4:30pm	Registration and Lounge ART/SOC Bldg. 1309 (301) 454-2764
6:30pm- ?	Dinner/get-together for Non-tenured People. Meet at Registration Desk.	
Tue. July 15 ART/SOC Bldg.	8:45am-9:35am	Symposia Presentation, O'Keefe, Wiese
	9:35am-10:25am	Symposia Presentation, Sanders
	10:25am-10:45am	Break
	10:45am-Noon	Poster Presentation
	1:30pm-7:30pm	Tours: A-Washington, B-Baltimore
	9:15am-12:30pm	Guest Program White House Tour
Wed. July 16	8:45am-9:35am	Symposia Presentation, O'Keefe, et al.
	9:35am-10:25am	Symposia Presentation, Buckley
	10:25am-10:45am	Break
	10:45am-Noon	PSNA Business Meeting
	Noon-1:30pm	Lunch
	1:30pm-3:00pm	Contributed Paper Session II
	3:00pm-3:15pm	Break
	3:15pm-4:30pm	Contributed Paper Session II, contd.
	6:00pm-10:00pm	Banquet aboard the Dandy
	9:00am-2:00pm	Canal Boat Ride & Picnic at Great Falls Guest Program meet at Registration Desk
Thu. July 17	8:45am-9:35am	Symposia Presentation, Evans
	9:35am-10:25am	Symposia Presentation, Cunningham
	10:25am-10:40am	Break
	10:40am-11:30am	Symposia Presentation, Mulchi et al.

Symposia sponsored in part by E.I. du Pont deNemours & Company

Call Tim 11:30-11:30

Area Map and Directions to University of Maryland College Park (UMCP)



N = UMCP North Gate
S = UMCP South Gate
W = West Entrances to UMCP

From Washington:
 Rhode Island Ave (U.S. 1 North) to College Park. Enter UMCP by turning left off U.S. 1 at UMCP South Gate.

New Hampshire Ave (29) or Riggs Rd (212) to East West Hwy (410), right on 410 to Queen's Chapel Rd. (500), left on 500 to U.S. 1. Left on U.S. 1 to UMCP South Gate. Left into campus.

N.Y. Ave (50) to B.W. Pkwy (295), exit at Rhode Island West (410), proceed to U.S. 1 and turn right. Continue to College Park. Enter campus by turning left off U.S. 1 at UMCP South Gate.

The University's Central Administration is located in the Elkins Building, 3300 Metzerot Road, Adelphi, Md. To reach the Elkins Building from the UMCP campus: Take U.S. 1 North to University Blvd (193 West), proceed west on 193 to Metzerot Rd., turn right on Metzerot, right turn off Metzerot into parking lot.

From Baltimore:
 I-95 South to Capital Beltway (495), follow signs to College Park, U.S. 1 South (Interchange 25). Proceed approx. 2 mi. south on U.S. 1 to UMCP's North Gate. Right turn into campus.

B.W. Parkway (295) south to Greenbelt Rd (193), west on Greenbelt Rd. to U.S. 1. Take U.S. 1 South to UMCP's North Gate. Right turn into campus.

From Bowie/Annapolis Areas and Points East:
 Rt. 50 to Capital Beltway (495), north on 495 to College Park, exit Beltway at Interchange 25 (U.S. 1 South), proceed approx. 2 mi. on U.S. 1. Right turn into campus.

From Montgomery County and Points West:
 Capital Beltway (495) to U.S. 1 South (Interchange 25), proceed approx. 2 mi. on U.S. 1. Right turn into UMCP North Gate.

Building Directory

(see College Park Campus Map on reverse side)

Bldg. No.	Location	Bldg. No.	Location	Bldg. No.	Location
102	Agriculture Shed	089	Engineering Laboratory Bldg	006	Plant Operations and Maintenance
024	Allegany Hall (Dorm)	018	Environmental Safety Office Bldg	101	Shops
104	Animal Science Annex	007	Fire and Rescue Inst., Md (MFR)	328	Plant Operations and Maintenance
102	Animal Science Bldg	158	Football Bldg	003	Police Storage Bldg
100	Animal Science Hall	136	Francis Scott Key Hall	113	Police Substation
008	Annin's Hall Service Bldg	138-139	Francis Scott Key Hall	228	Post Office and Custodial Bldg
060	Anne Arundel Hall (Dorm)	138-139	Francis Scott Key Hall	07	Poultry Laboratory East
145	Architecture Bldg	028	Franklin Hall (Dorm)	181	Poultry Laboratory West
146	Art-Sociology Bldg	031	Garrett Hall (Dorm)	054	Prison
102	Art-Sociology Bldg	299	Gale House	061	Prince George's Hall (Dorm)
095	Asphalt Institute Garage	030	Gayle Bldg	078	Princess Anne's Hall (Dorm)
095	Asphalt Institute Garage	186	Gayle Bldg	079	Princess Anne's Hall (Dorm)
099	Bel Air Hall (Dorm)	002	Greenhouses	334	Princess Anne's Hall (Dorm)
143	Benjamin Shop	058	Hagerston Hall (Dorm)	339-341	Princess Anne's Hall (Dorm)
149	Bicentennial Shop	064	Harford Hall (Dorm)	000	Rastborough Im
178	Byrd Stadium North Bldg	002	Harrison Laboratory	109	Service Bldg
161	Byrd Stadium Center Bldg	074	Health Center	039	Shipyards
300-303	Byrd Stadium Press Box	074	Health Center	075	Shuttle Bus Facility
302	Byrd Stadium Press Box	027	Home Management House	013	Sunnier Bldg
180	Byrd Stadium Concession Bldg	147	Hornbake Library	044	Sunnier Bldg
096	Cambridge Hall (Dorm)	108	Horse Barn	083	Sunnier Bldg
096	Cambridge Hall (Dorm)	112	Hospital Barn	135-137	Sunnier Bldg
070	Carroll Hall (Dorm)	104	Howard Hall (Dorm)	170-171	Sunnier Bldg
110	Cattle Barn	085	Institutional Television Facility	062	St. Mary's Hall (Dorm)
017	Credit Hall (Dorm)	045	Institutional Television Facility	163	St. Mary's Hall (Dorm)
017	Credit Hall (Dorm)	004	Jennex Hall	005	St. Mary's Hall (Dorm)
087	Central Animal Resources Facility	229	Journalism Bldg	024	St. Mary's Hall (Dorm)
001	Central Heating Plant	022	Kent Hall (Dorm)	118	St. Mary's Hall (Dorm)
098	Central Receiving Warehouse	250	LeFrak Hall	076	Symons Hall
025	Charles Hall (Dorm)	038	LeFrak Hall	043	Talalero Hall
090	Chemical and Nuclear Engineering	234-246	Leonardtown Community Center	051	Talalero Hall
091	Chemistry Bldg	201	Leonardtown Apartments	058	Talalero Hall
121	Chesetown Hall (Dorm)	086	Leonardtown Apartments	058	Talalero Hall
162	Cole Student Activities Bldg	086	Leonardtown Apartments	058	Talalero Hall
224	Computer and Space Sciences	086	Leonardtown Apartments	058	Talalero Hall
122	Cumberland Hall (Dorm)	086	Leonardtown Apartments	058	Talalero Hall
107	Dairy Science Annex	086	Leonardtown Apartments	058	Talalero Hall
105	Dairy Science Office	086	Leonardtown Apartments	058	Talalero Hall
232	Denton Hall (Dorm)	086	Leonardtown Apartments	058	Talalero Hall
251	Dining Hall (Dorm)	086	Leonardtown Apartments	058	Talalero Hall
026	Dining Hall (South Campus)	086	Leonardtown Apartments	058	Talalero Hall
064	Dorchester Hall (Dorm)	086	Leonardtown Apartments	058	Talalero Hall
253	Easton Hall (Dorm)	086	Leonardtown Apartments	058	Talalero Hall
254	Elkins Hall (Dorm)	086	Leonardtown Apartments	058	Talalero Hall
254	Elkins Hall (Dorm)	086	Leonardtown Apartments	058	Talalero Hall
223	Energy Research Facility	086	Leonardtown Apartments	058	Talalero Hall
088	Engineering Classroom Bldg	086	Leonardtown Apartments	058	Talalero Hall

MONDAY July 14 - 8:50 - 9:40am

EFFECTS OF SULFUR DIOXIDE ON THE PHOTOSYNTHETIC APPARATUS

Ruth Alscher, Boyce Thompson Institute, Cornell University, Ithaca, NY 14853

Studies of the effects of sulfur dioxide on the photosynthetic apparatus have taken two forms. One approach has been to follow the consequences of exposure to the pollutant for particular chloroplast functions such as electron transport, the carboxylation process, transport phenomena or the activities of -SH containing, light-modulated enzymes "in vitro".

In cases where this approach was taken, isolated proto-plasts, chloroplasts, thylakoids, or stromal enzymes have been employed as the material of study. Alternatively, the whole-plant approach has been adopted whereby effects of exposure to SO₂ on CO₂ uptake, stomatal behaviour and, in some instances, the response of antioxidants have been followed. Results obtained in vivo must be integrated with the in vitro results if the nature of the interaction of sulfur dioxide with the photosynthetic apparatus is to be understood.

MONDAY July 14 9:40am - 10:30 am

Robert L. Heath, Dept. of Botany and Plant Science, U. of California, Riverside, CA 92521

THE BIOCHEMISTRY OF OZONE ATTACK ON THE PLASMA MEMBRANE OF PLANT CELLS

MONDAY July 14 10:50am - 11:40 am

EFFECTS OF OZONE AND SULFUR DIOXIDE STRESS ON GROWTH AND CARBON ALLOCATION IN PLANTS.

Joseph E. Miller, USDA/ARS-NCSU Air Quality Research Program, Raleigh, NC 27606

Ozone (O₃) and sulfur dioxide (SO₂) are two of the most prevalent gaseous air pollutants in the U.S. and many other parts of the world. Both are known to cause growth suppression of vegetation, although O₃ is considered to be the more serious problem in the U.S. It is felt that the primary site of action of O₃ is the plasma membrane where lipid or protein components may be oxidized leading to disruption of biochemical and physiological processes. While SO₂ may also affect membranes, the dissolved ionic forms (HSO₃⁻ and SO₃⁼) interfere with a number of enzymatic reactions in the cell, as well. Both pollutants have been shown to affect CO₂ assimilation (photosynthesis), respiration, other pathways of assimilate metabolism and assimilate partitioning within the plant. This paper is a brief review of selected research concerning O₃ and SO₂ effects on plant productivity. The physiological consequences of O₃ and SO₂ stress, especially those dealing with carbon allocation, will be emphasized.

SYMPOSIA PRESENTATIONS

TUESDAY July 15 8:45am - 9:35am

UPTAKE AND METABOLISM OF PHENOLIC COMPOUNDS BY THE WATER HYACINTH. David H. O'Keefe and Thomas E. Wiese, The University of Michigan-Flint, Flint, MI 48502. Shauna R. Brummet and Todd W. Miller, The University of Akron, Akron, OH 45325.

The water hyacinth (*Eichhornia crassipes*) is developing as a biological pollution control device. Its ability to take up and, in part, to metabolize a variety of environmentally important organic compounds is fascinating. HPLC has been used to monitor how it removes phenol, the di- and trihydroxybenzenes, and some mono-substituted phenols (25-50 mg/L) from aqueous solutions. Acute toxicity, uptake rate, tolerance development and metabolism data have been collected. Uptake of phenol is complete within 48 hours. Catechol and hydroquinone are also taken up. Phenol is acutely toxic at ~200 mg/L. Hydroquinone is less toxic and taken up more slowly; catechol is more toxic and taken up faster. Resorcinol is not taken up and not toxic. The plant develops a tolerance to phenol and catechol at levels up to ~400 mg/L. Phenol is metabolized initially to catechol. Phloroglucinol is not taken up and is not toxic; pyrogallol and hydroxyquinol are taken up and toxic. Several o-, m- and p-substituted phenols (chloro, nitro, methyl) are taken up. Their uptake rate decreases in the order para > ortho > meta as does their toxicity. Metabolism of these phenolic compounds is being investigated.

TUESDAY JULY 15 9:35 - 10:25am

CONTROL OF TRACE ELEMENT TOXICITY BY PHYTOPLANKTON. James G. Sanders, The Academy of Natural Sciences, Benedict Estuarine Research Laboratory, Benedict, MD 20612

Algal cells are able to transport and incorporate elements necessary for cell growth. However, often chemically similar ions may be taken up indiscriminately. If the competing ion is toxic, cellular incorporation will be detrimental, and the cell must find some way to sequester the ion or overcome the stress. Marine phytoplankton have adapted through time to toxic trace element stress by developing transformation mechanisms to detoxify the element, or they may inadvertently alter the chemical form of elements as a side reaction to other essential life processes. This uptake and transformation changes the rates and routes by which toxic substances are cycled through the marine ecosystem; in addition, these unusual chemical forms can be more (or less) toxic to surrounding biota. Therefore, these transformations have important biological and geochemical implications to aquatic systems.

Wednesday July 16 8:45am - 9:35am

ENZYME MEDIATED DEGRADATION OF HERBICIDES

Daniel P. O'Keefe, Kenneth J. Leto, James A. Romesser, Central Research Dept., E.I. du Pont de Nemours & Co., Experimental Station, Wilmington, DE 19898.

The metabolism of herbicides by plants as a basis for crop selectivity, and the role of bacteria in the soil degradation of herbicides are well established. In both cases, the participation of cytochrome P-450 dependent monooxygenases has been implicated, but not previously characterized biochemically. *Streptomyces griseolus*, a soil bacterium which carries out several reactions on a variety of sulfonylurea herbicides, provides a model for monooxygenase based detoxification of herbicides. Bacteria grown in the presence of sulfonylureas can contain at least two distinct forms of water soluble cytochrome P-450, in addition to a constitutive form found also in untreated cells. The major induced form has been purified to homogeneity and is capable of a variety of monooxygenase reactions. Reconstitution of enzymatic activity requires a reductase and a low molecular weight iron sulfur protein. Substrate specificity resides on the cytochrome P-450 however, and the specific induction of one of the cytochromes is all that is necessary for cells of *S. griseolus* to become competent in sulfonylurea monooxygenase reactions.

SYMPOSTA PRESENTATIONS

WEDNESDAY July 16 9:35 - 10:25am

PCBs IN THE ATMOSPHERE AND THEIR ACCUMULATION IN FOLIAGE AND CROPS

Edward H. Buckley, Boyce Thompson Institute at Cornell University, Ithaca, New York, 14853

PCBs (polychlorinated biphenyls) that are detected in the environment consist of 80 to 100 PCB congeners (structurally similar compounds) that have become components of our atmosphere world-wide. They are present in rain and snow, and on airborne particulates in urban regions. Over the oceans and rural areas, airborne PCBs are almost entirely in the vapor phase. Leaves of trees and crops (in all 30 species that we have studied) readily accumulate vapor-phase PCBs from the atmosphere. Only insignificant quantities of PCBs were incorporated into products used on farms, but crops and other plants continue to be contaminated by PCBs that have entered the environment from other sources. The large differences (10^2 - 10^4) in physical properties among the congeners affecting dispersion, partition, and sorption in the environment and the relative ease of analysis make PCBs appropriate for study as model compounds. Non-chlorinated anthropogenic compounds with properties similar to PCBs (e.g. some of the polycyclic aromatic hydrocarbons) will also be accumulated by foliage, but will be much more difficult to detect among the natural products of plants - a challenge for phytochemists.

Thursday July 17 8:45am - 9:35am

CHEMICAL NATURE OF THE INTERACTION OF ACIDIC PRECIPITATION AND VEGETATION

Lance S. Evans, Laboratory of Plant Morphogenesis, Manhattan College, Bronx, NY 10471

In experiments with acidic rainfalls that most simulate natural acidic deposition, statistically significant decreases in yields have been demonstrated with field-grown soybeans, the second most economically important crop in the United States. In addition to decreases in seed yields, significant decreases in protein contents of seeds, as much as 20%, have been demonstrated. These changes in soybean seed yields and seed quality occur without any visual foliar injury. These results suggest that simulated acidic rain can affect terrestrial vegetation without visual foliar injury. In other experiments, results suggest that mineral nutrients penetrate foliage at various rates, minerals are leached at various rates, and that the pH of rain drops can be altered as they dry on plant surfaces. Experimental results indicate that changes in nutrient metabolism may be responsible for plant productivity.

THURSDAY July 17 9:35am - 10:25am

Gary L. Cunningham, Dept. of Biology, NMSU, Box 3AF, University Park, NM 88003
SALINITY EFFECTS ON PHOTOSYNTHESIS AND PRIMARY PRODUCTIVITY OF C₄ GRASSES.

SYMPOSIA PRESENTATIONS

THURSDAY July 17 10:40am - 11:30am

BIOAVAILABILITY OF HEAVY METALS IN SLUDGE AMENDED SOILS TEN YEARS AFTER TREATMENT
Mulchi, Charles L. *, Paul F. Bell, Charles Adamu and Joseph R. Heckman, Agronomy Dept. ,
University of Maryland, College Park, MD, 20742.

Tobacco (*Nicotiana tabacum* L.) and soybeans (*Glycine max*, mer) were grown full-season in 1983-85 on soils amended in the early 1970's with municipal sludges representing a variety of wastewater treatment technologies and sources at rates equal to 0, 56, 112 and 224 Mg ha⁻¹. Leaf and shoot samples were collected, oven-dried, ground and analyzed for their Zn, Cu, Mn, Fe, Pb, Ni and Cd contents. Metal contents were found to be influenced by the source and rate of sludge application, soil pH and management, and the general environmental conditions under which the crops were grown. Iron and Pb contents were generally unaffected by sludge treatments. At soil pH \leq 5.4, Zn, Cu, Cd and Ni contents were increased by sludge rates; however, limed sludges generally reduced metal contents with increased sludge rates. Sludges from industrial cities, such as Baltimore and Chicago, produced the greatest Zn and Cd responses with tobacco being more sensitive than soybeans.

CONTRIBUTED PAPERS TRAVEL GRANT AWARDS

MONDAY July 14 1:30pm - 1:50pm

INHIBITION OF LIGNIN FORMATION BY 1-AMINO-2-PHENYLETHYL
PHOSPHORIC ACID (APEP)

T. L. Eberhardt, M. E. J. Inciong and N. G. Lewis
Department of Forest Products
Virginia Polytechnic Institute and State University
Blacksburg, Virginia 24061

Attempts to suppress lignin formation in juvenile loblolly pine seedlings were investigated. This was done by growing seedlings for 30 days in the presence of 0 - 1 mM concentrations of 1-amino-2-phenylethyl phosphoric acid (APEP). The plant material was then analyzed by both UV fluorescence microscopy and histological staining.

Findings will be discussed.

MONDAY July 14 1:50pm - 2:10pm

Biosynthesis of Cis-monolignols in *Fagus grandifolia* Ehrh, P. Dubelsten and N. G. Lewis,
Dept. of Forest Products, Virginia Polytechnic Institute and State University, Blacksburg,
Va., 24061.

Following isolation studies, we demonstrated that only the cis (Z), and not trans (E) isomers of coniferyl and sinapyl alcohol, were present in beech bark. This raised two interesting questions: a) at what point in their biosynthesis from chorismic acid does isomerization occur? and b) are the cis-monolignols involved in lignification?

By means of appropriate labelling studies, it was demonstrated that only (E) trans, and not cis (Z), (2-¹⁴C) ferulic acid was involved in the biosynthesis of the cis-monolignols. Therefore, isomerization occurs at a later stage.

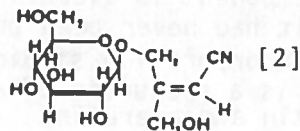
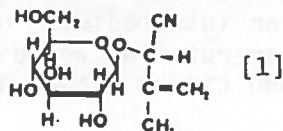
Results from the feeding experiments of (E) and (Z) (2-¹⁴C) coniferaldehyde will also be discussed.

CONTRIBUTED PAPERS TRAVEL GRANT AWARDS

MONDAY July 14, 2:10pm - 2:30pm

CYANOGENESIS IN *ACACIA SUTHERLANDII*. W. K. Swenson, Smith Kline & French Laboratories, 709 Swedeland Road, Swedeland, PA 19479 and J. E. Dunn and E. E. Conn, Department of Biochemistry & Biophysics, University of California, Davis, CA 95616.

Two cyano-glucosides have been isolated from the Australian plant *Acacia sutherlandii*. One is the previously described cyanogenic glycoside proacacipetalin [1]. The second compound is the novel, non-cyanogenic, glucoside 1-cyano-2-β-D-glucopyranosyloxymethyl-(Z)-prop-1-ene-3-ol which has been given the trivial name sutherlandin [2]. The structure of sutherlandin was determined using ¹H NMR, ¹³C NMR and high resolution DCI (desorption chemical ionization) mass spectrometry.



MONDAY July 14, 2:30pm - 2:50pm

SYNTHESIS AND METABOLISM OF IMINO ACIDS IN *CALLIANDRA FORMOSA*. Lee A. Swain and John T. Romeo, Dept. of Biology, Univ. of South Fla., Tampa, Fl. 33620. *Calliandra*, a New World tropical legume, contains some 200 spp.. A unique characteristic of the genus is the presence of both mono and di-hydroxylated derivatives of pipercolic acid. The compounds, which have demonstrated fungicidal and insecticidal activity, may be useful taxonomic markers, and a knowledge of their biosynthesis is desirable. Various schemes have been proposed. In this study, ¹⁴C-lysine was fed to mature leaves of *C. formosa* which were then incubated for up to 120 hours. Extracts were subjected to 2-dimensional separation on paper. Spots were eluted and assayed by liquid scintillation. Labeled pipercolic acid increased sharply to 48 hours then declined. Significant label accumulated in the mono-hydroxy derivatives, trans-4 and cis-5, as well as the dihydroxy compound trans-trans. In subsequent experiments ¹⁴C-labelled forms of pipercolic acid, trans-4, cis-5 and trans-trans were fed to 4-week old seedlings. After 72 hours, a relatively constant ratio of activity was seen among the various imino compounds regardless of the starting compound. In addition a large percentage of activity was detected in proline. A major finding is that in *Calliandra*, dihydroxylated pipercolic acids arise from monohydroxy precursors rather than stereoisomers of hydroxylysine, as has been previously proposed.

Monday July 14, 2:50pm - 3:10pm

ENVIRONMENTAL EFFECTS ON AMINO ACIDS IN TOBACCO VACUOLES, June M. Gillespie, James A. Saunders, USDA, ARS, BARC-East, Beltsville, MD 20705, and Samuel Morris, Beckman Instruments, Columbia, MD 21045.

Vacuoles of higher plants represent a repository of metabolic constituents including amino acids. Although significant amounts of metabolites accumulate in the vacuoles these compounds are not static reserves, as they are constantly shunted back into active metabolic pools. Replicate plants of *Nicotiana rustica* were grown under varied light and temperature regimes for 2 weeks prior to harvest and vacuoles were purified from mesophyll protoplast isolated from the 4th and 5th leaves of each plant. The light regimes varied from a 6hr light/ 18hr dark cycle to 24hr of continuous light and the temperature regimes were varied from 18-32 C. Analysis of the amino acids in whole leaf, protoplast, and vacuoles samples was accomplished by HPLC C18 reverse phase chromatography using precolumn derivatization with either OPA or PITC techniques. These stress treatments produced some individual amino acid changes, but the total amino acid changes were less dramatic. Although both OPA and PITC techniques had their limitations either method was acceptable for analysis of amino acid profiles from biological samples of this type.

MONDAY JULY 14 3:30pm - 3:45pm

ANTHRAQUINONES FROM ASPERGILLUS PARASITICUS

Susan P. McCormick, Deepak Bhatnagar and Louise S. Lee, USDA/ARS, SRRC, 1100 Robert E. Lee Blvd., New Orleans, LA 70179

Aspergillus parasiticus produces aflatoxins B₁, B₂, G₁ and G₂. Blocked mutants and metabolic inhibitors of A. parasiticus and radiolabeling experiments have been used to formulate the proposed pathway: norsolorinic acid --> averantin --> averufin --> versicolorin A --> sterigmatocystin --> O-methylsterigmatocystin --> aflatoxin B₁. Wild-type A. parasiticus (SU-1) when grown in static culture forms a deep yellow pigmentation on the undersurface of the mycelial mat. Fifteen anthraquinones were isolated from SU-1 as components of this yellow pigmentation, including the known precursors averantin, averufin and norsolorinic acid. One major component is averufanin. Although averufanin had been reported earlier from Aspergillus spp., it had never been proposed to be an intermediate in the aflatoxin pathway. Using radioactive incorporation studies with [¹⁴C] averufanin, we have demonstrated that this anthraquinone is a precursor of aflatoxin B₁ and can be placed in the biosynthetic pathway between averantin and averufin.

MONDAY JULY 14 3:45pm - 4:00pm

GROWTH REGULATOR LEVELS AND POLYACETYLENE ACCUMULATION IN CROWN GALL TUMOR LINES OF Chaenactis douglasii. E.G. Cosio, J. McPherson and G.H.N. Towers. Department of Botany University of British Columbia, Vancouver, B.C. Canada V6T 2B1

Endogenous levels of indoleacetic acid (IAA), trans-zeatin riboside (t-ZR) and isopentenyladenosine (iPA) were measured in three tumor lines of Chaenactis douglasii using enzyme- and radioimmunoassays. One of these lines was previously reported to accumulate polyacetylenes in amounts similar to those seen in plant roots (J. Plant Physiol. 124,157), the other two are inactive. The accumulation of polyacetylenes appeared to correlate well with xylogenesis in the tumor tissue. It was found that the line exhibiting the fastest growth rate, and no polyacetylenes, had levels of iPA 7-8 fold higher than the other two lines. The other inactive line had levels of ^{Fr}IAA similar to those of the polyacetylene-producing line but the amount of bound IAA was 5 fold higher, also, its levels of t-ZR were one-fifth of those of the other two lines. Differences between the lines were also found in protein patterns after SDS-PAGE. High iPA levels may be responsible for the absence of polyacetylenes and differentiation in one of the lines. The relationship between bound IAA and tumor morphology is unclear. The levels of T-DNA transcripts with growth-regulatory function are being studied.

MONDAY JULY 14 4:00pm - 4:15pm

PHYTOCHEMICAL AND BIOLOGICAL STUDIES OF VOLATILE OIL OF DUCROSIA ISMAELIS

I.A. Al-Meshal, College of Pharmacy, K.S.U., P.O. Box 2457, Riyadh-11451, Saudi Arabia.

Ducrosia ismaelis is a herb indigenous to Saudi Arabia. It is used for the treatment of certain skin infections by the traditional medicine practitioners and to repel the insects and reptiles. It has a strong characteristic odour due to the presence of volatile oil which may be responsible for its uses. The volatile oil from the aerial parts of the plant was isolated by steam distillation. The physical characters (Sp. gr., ref. index, optical rotation) and chemical standards were established. The constituents of the oil were determined using GLC/Mass spectrometry. The routine pharmacological investigations and screening for antimicrobial activity were carried out by established procedures. The data showed it to be an alcohol-and-ester-poor volatile oil. The major constituents were found to be free alcohols, alkenes and highly conjugated alkenes. The results showed a marked central depressant effect leading to complete loss of consciousness, flaccid muscle relaxation and hypothermia. It revealed significant neuromuscular blocking activity on the isolated frog's rectus abdominis and phrenic nerve diaphragm preparation of rat. The oil showed significant activity against S.aureus, B.subtilis and C.albicans.

CONTRIBUTED PAPERS ORAL PRESENTATIONS

MONDAY JULY 14 4:15pm - 4:30pm

MICROBIAL METABOLISM OF PLANT SECONDARY METABOLITES: POSSIBLE EXPLANATION OF RHESUS MONKEY GEOPHAGIA, Hong, H. K., Overstreet, F. C., Habermann H., and L. P. To, Goucher College, Towson, MD 21204

Geophagia, the deliberate consumption of soil, has been observed in rhesus monkeys, Maccaca mulata. Although this appears to be a widespread phenomenon among mammals, its significance remains unknown. Gut microbes of leaf-eating monkeys are known to detoxify the plant alkaloids in their diet. Soil contains microbes with diverse metabolic capabilities and may be eaten to obtain microbes that can detoxify plant toxins. Microbes in samples of soil known to be ingested by rhesus monkeys, from Cayo Santiago Island, Puerto Rico were identified. Streptomyces and Bacillus were most abundant. Bacillus megaterium, a facultative aerobe, was used for studies to determine whether chlorogenic acid can be used as a carbon source alone or after depletion of glucose. On media with chlorogenic acid as the sole carbon source, there was no significant growth. When added as a secondary carbon source, growth varied with concentration of chlorogenic acid in the medium. At low concentrations, Bacillus exhibited increased growth; at higher concentrations, growth declined. Uptake of chlorogenic acid (and possibly other phenolics) by soil microbes in the gut may reduce their concentration in the digestive tract.

MONDAY JULY 14 4:30pm - 4:45pm

QUANTITATIVE VARIATION OF GRINDELANE DITERPENE ACIDS IN 20 SPECIES OF NORTH AMERICAN GRINDELIA (ASTERACEAE).

Barbara N. Timmermann, Steven P. McLaughlin, and Joseph J. Hoffmann. University of Arizona, Tucson, Arizona 85721.

The distribution and quantitative significance of 14 resin acids from 20 species of Grindelia (Asteraceae) in 50 populations from the western U.S. have been determined. Variations in resin acid composition were found between species and between populations within species. Two distinct patterns of resins were obtained, one with grindelic acid as the main component and another with 17-acetoxygrindelic acid. Rocky Mountain populations showed greater variability in resin acid composition than those of the Pacific Coast states. Chemistry of diterpenoid resins as well as their systematic and biological significances will be discussed.

MONDAY JULY 14 4:45pm - 5:00pm

Chemotaxonomy of Magnoliaceae

S. Munavalli, F-L. Hsu and E. J. Poziomek

U.S. Army Chemical Research, Development and Engineering Center
Research Directorate

Aberdeen Proving Ground, Maryland 21010-5423

Chemotaxonomy, arrangement of plant species according to their chemical constituents, gives additional information on botanical taxonomy and serves as a bench-mark for the classification of plants. Particularly, when morphological and/or other characteristics used in botanical taxonomy become undistinguishable chemotaxonomy often provides definite answers. Details will be presented on the nature and structure of chemical constituents, pharmacological profile and the biosynthesis of the compounds isolated from the Magnoliaceae species. Correlation between chemical constituents and classification will be made.

NEGATIVE COOPERATIVITY IN PHENYLALANINE AMMONIA LYASE (PAL) IS NOT FUNCTIONAL. Joseph P. Mack* and James A. Saunders. †Tissue Culture & Mol. Biol. Lab, USDA, Beltsville, MD, 20705, Dept. Chem., UMBC, Catonsville, MD, 21228.

No reasonable role has been found for the v-[S] curve of cooperative PALs that cannot be filled by a one site (ie linear) enzyme at saturation. Comparison of PAL with a suitable linear enzyme to determine the evolutionary advantage conveyed by the negative cooperativity shows that for the known values interaction factors between subunits of PAL, the energetic difference between PAL and the linear enzyme are less than kT , ie are negligible.

It is postulated that the role of negative cooperativity is a secondary effect of some other process associated with assembly of the multimeric enzyme, such as the generation of a new enzyme function from existing proteins.

CHARACTERIZATION OF A CYANOGEN-SPECIFIC β -GLYCOSIDASE FROM Davallia trichomanoides.

P.A. Lizotte and J.E. Poulton, Dept. of Botany, University of Iowa, Iowa City, IA 52242

The young leaves of squirrel's foot fern (Davallia trichomanoides) accumulate the cyanogen (R)-vicianin. Upon tissue disruption, this cyanogen is rapidly degraded by a β -glycosidase, vicianin hydrolase, to produce HCN. This species provides an excellent system with which to study the substrate specificity of β -glycosidases active towards cyanogenic glycosides.

DEAE-cellulose and hydroxyapatite chromatography were used to partially purify vicianin hydrolase from Davallia trichomanoides. The molecular and kinetic properties of vicianin hydrolase will be presented.

PURIFICATION AND CHARACTERIZATION OF α -D-MANNOSIDASE FROM MATURE BLACK CHERRY (Prunus serotina Ehrh.) SEEDS

K.L. Waln and J.E. Poulton, Dept. of Botany, Univ. of Iowa, Iowa City, Iowa 52242

An α -D-mannosidase from mature black cherry seeds has been purified over 90-fold with 35% recovery of the initial activity using DEAE-cellulose chromatography and Sephacryl S-200 gel filtration. The enzyme showed highest activity towards the synthetic substrate p-nitrophenyl- α -D-mannopyranoside (K_m , 2.8 mM) at pH 4.0 and was not affected by Zn^{2+} ions. The enzyme had a molecular weight of 150,000 as determined by Sephacryl S-200 gel filtration and an isoelectric point of 4.8-5.2 (IEF-PAGE). The α -D-mannosidase bound tightly to Concanavalin A-Sepharose 4B but less than 25% of the applied activity was eluted by 0.5 M α -methyl-mannoside. The substrate specificity of the enzyme and inhibitors of enzyme activity will be described.

THE AFFECT OF FERULIC ACID ON THE MINERAL NUTRITION OF CUCUMBER.

Jodi R. Shann, Savannah River Ecology Lab (Univ. of GA), Aiken, SC 29801

It has been suggested that allelochemicals act as inhibitors of growth by interfering with the uptake of essential ions. In this study, hydroponic cultures of cucumber were given known dilutions of a complete nutrient solution containing various levels of ferulic acid—an often cited allelopathic agent. Cucumber had previously been shown to take up ferulic acid (in a concentration and pH dependent manner) over the range used as treatments. Solution samples were removed over a 5 hour or 24 hour period and analyzed by ion chromatography for anion (PO_4^{-3} , NO_3^{-1} , SO_4^{-2}) and cation (K^{+1} , Ca^{+2}) depletion. Seedlings and flowering (mature) plants were used to compare differences in developmental stages. Ferulic acid treatment did effect depletion of essential ions by cucumber. Changes in specific anion and cation uptake will be discussed.

SAFER TOBACCO THROUGH OZONOLYSIS. O. T. Chortyk, and W. S. Schlotzhauer, USDA-ARS, Athens, GA 30613, and J. J. Lam, Jr., USDA-ARS, Oxford, NC 27565.

Our recent efforts to develop a safer tobacco by treatment of harvested tobacco with ozone will be presented. High molecular weight tobacco leaf constituents with a significant number of unsaturated carbon atoms have been shown to produce carcinogenic polynuclear aromatic hydrocarbons in tobacco smoke. Similarly, pyrolytic cleavage of the exocyclic double-bond in chlorogenic acids, principal leaf polyphenols, leads to tumor-promoting smoke catechols. In this study, we have applied ozonolysis to freshly harvested bright tobacco leaf, both during simulated barn curing and prior to and subsequent to barn curing. Tobacco leaf samples were treated with ozone and then analyzed for sugars, chlorogenic acids, solanesol, nicotine, neophytadiene, and fatty acids. Varying levels of success were achieved in reducing undesirable leaf constituents and the results will be presented.

COPING WITH DEFOLIATION: EFFECTS OF HORNWORM INJURY ON THE GROWTH DYNAMICS AND PHYSIOLOGY OF TOBACCO

D. M. Kolodny-Hirsch, MD. Dept. Agric., Annapolis, MD., J. A. Saunders, USDA-ARS, Beltsville, MD.; & F. P. Harrison, Dept. Entomol., Univ. of Maryland, College Park MD.

Simulated tobacco hornworm defoliation was conducted by hand at four growth stages of tobacco in order to investigate potential compensatory mechanisms for buffering foliar losses. Plants employed several compensatory processes including (a) periods of increased efficiency in assimilating dry matter, occasionally correlated with increases in chlorophyll, soluble proteins, and ribulose 1,5-bisphosphate carboxylase oxygenase content (b) partitioning of assimilates to leaf tissue at the expense of support structures (c) increased leaf area per unit of total plant dry weight (d) delayed plant senescence. This study provides additional evidence that plants have evolved physiological mechanisms for minimizing the adverse effects of defoliation by leaf-chewing insects.

WEDNESDAY JULY 16 1:30pm - 1:45pm

SELECTIVE EXTRACTION OF ENZYMES FROM PLANT EPIDERMAL GLANDS. Jonathan Gershenzon, Margaret A. Duffy and Rodney Croteau, Institute of Biological Chemistry, Washington State University, Pullman, WA 99164-6340

A large variety of plant products, including phenolics, terpenoids and alkaloids, appear to be synthesized and accumulated in epidermal glands. For biosynthetic studies of such compounds, it is often useful to obtain a purified extract of gland material. We have developed several procedures for gently abrading the epidermis which permit the recovery of high yields of enzyme activity from epidermal appendages with minimal contamination from underlying tissues. These techniques can be modified for application to plant organs of varying size and fragility. The use of these methods in the isolation of some enzymes of monoterpene biosynthesis will be discussed.

WEDNESDAY JULY 16 1:45pm - 2:00pm

PROBING LIGNIN BONDING PATTERNS IN VIVO BY SOLID STATE NMR. E. Yamamoto¹, N. G. Lewis¹, G. H. N. Towers² and G. Just³, 1, Dept. of Forest Products, Virginia Polytechnic Institute & State University, Blacksburg, VA, 2, Dept. of Botany, UBC, Vancouver, 3, Dept. of Chemistry, McGill University, Montreal, Quebec.

Conventional studies directed towards elucidating lignin structure necessitate the removal of lignin from the other plant components. These manipulations undoubtedly result in irreversible changes to the lignin macromolecule.

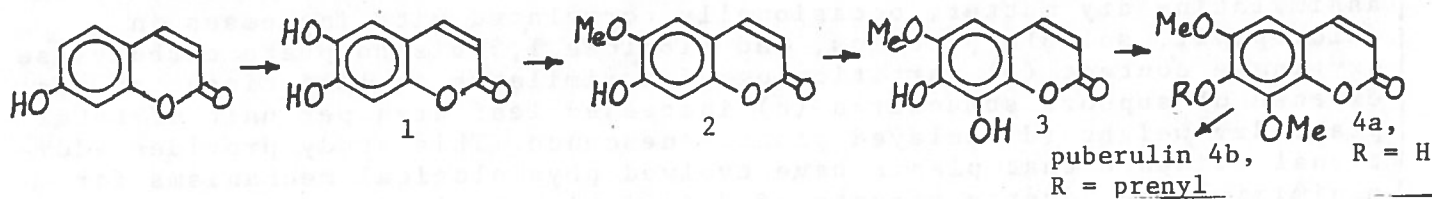
In this paper, the uptake of specifically labelled ¹³C enriched lignin precursors over extended durations of time was carried out and the resulting plant material then analyzed by solid state ¹³C nmr. Optimum feeding conditions were first determined by growing Ferland wheat (Triticum aestivum L.) in the presence of [2-¹⁴C] ferulic acid. After 24 days, 80% of the radioactivity in the plant material was located in the roots. Approx. 9% of the dry weight of the cell walls was derived from exogenous ferulic acid.

Specifically labelled (2-¹³C) forms of hydroxycinnamic acids, p-coumaric and ferulic, were then incubated with growing plant material. The specifically labelled plants were then removed, freeze-dried and analyzed by ¹³C-nmr. For the first time, the bonding patterns of cell-wall bound hydroxycinnamic acids and lignin were determined in vivo. These results will be discussed and compared to "synthetic" ¹³C-enriched DHP lignin preparations.

WEDNESDAY JULY 16 2:00pm - 2:15pm

STUDIES ON INTERMEDIATES OF PUBERULIN BIOSYNTHESIS IN AGATHOSMA PUBERULA. Stewart A. Brown, R.E. March and H. Joan Thompson, Dept. of Chemistry, Trent University, Peterborough, Ont. K9J 7B8, and D.E.A. Rivett, Dept. of Chemistry and Biochemistry, Rhodes University, Grahamstown 6140, South Africa.

Feedings of [¹⁴C]aesculetin (1) to A. puberula have supported the hypothesis that this compound is an intermediate in puberulin biosynthesis. Analysis of an acidic fraction from an extract of this plant by gas chromatography/mass spectrometry showed the presence of isofraxidin (4a), fraxetin (3), and probably capensin (6-methoxy-7-prenyloxy-8-hydroxycoumarin). [¹⁴C]Isofraxidin was used comparably to scopoletin (2) as a puberulin precursor, implicating fraxetin as an intermediate. The sequence below is proposed:



WEDNESDAY JULY 16 2:15pm - 2:30pm

THE USE OF HAIRY ROOT CULTURES FOR THE STUDY OF POLYACETYLENE BIOSYNTHESIS AND METABOLISM.

Y. Yoke Marchant, Melvin D. Epp and Geoffrey K. Cooper, ARCO Plant Cell Research Institute, 6560 Trinity Court, Dublin, CA 94568.

Tissue culture methods are useful for the study of the biosynthesis and metabolism of secondary compounds. Undifferentiated tissues often do not produce the compounds found in the intact plant, or synthesize them at low concentrations and for a limited period. We have found 'hairy root' cultures to be a promising in vitro technique for natural products.

Seven taxa of Coreopsis and three species of Bidens (Asteraceae) were infected with Agrobacterium rhizogenes strains A₄ and pARC8/A₄ and hairy root cultures were established. Transformed roots grow at rates of 5 to 9 mm/day, accumulate biomass of 0.5g FW/day/10ml medium, and produce the same polyacetylenes as roots from the intact plants. The roots are aseptic, easily propagated and maintained, and are amenable to experimental manipulation. We are using this technique for the study of selected aspects of polyacetylene metabolism.

WEDNESDAY JULY 16 2:30pm - 2:45pm

BIOSYNTHESIS OF LIMONOIDS IN CITRUS: PATHWAYS, SITES, TRANSLOCATION, AND BIOREGULATION.

S. Hasegawa, Z. Herman, E. D. Orme, and V. P. Maier. USDA, ARS, PBA, Fruit and Vegetable Chemistry Laboratory, 263 S. Chester Avenue, Pasadena, CA 91106.

Bitterness due to limonoids in a variety of citrus juices is a major problem of the worldwide citrus industry and has significant negative economic impact. One of our approaches to this bitterness problem is to develop a preharvest treatment method to reduce accumulation of bitter limonoids in the fruit. During the past few years, in our laboratory, substantial progress has been made in citrus limonoid biochemistry. Biosynthetic pathways of the major limonoids have been established and those of minor limonoids have been proposed. We found that the stem is the main site of limonoid biosynthesis and that the lemon tree is capable of translocating limonoids from the stem to other locations. We found also that auxins are potent inhibitors of limonoid biosynthesis. Radioactive tracer work demonstrated that naphthaleneacetic acid (NAA), a synthetic auxin, inhibits accumulation of limonoids in lemon stems and fruit. These results suggest that NAA may have potential as a bioregulator for reduction of limonoid levels in citrus fruits.

WEDNESDAY JULY 16 2:45pm - 3:00pm

PROBLEMS WITH THE USE OF PLANT CELL SUSPENSION CULTURES FOR BIOCHEMICAL/PHYSIOLOGICAL/PATHOLOGICAL STUDIES

Robert M. Zacharius, USDA ARS PPHI, Beltsville, Md.

Use of plant cell suspension cultures in the following problem areas will be briefly discussed: (a) Plant cell culture media often contains major amounts of supportive nutrients incompatible with metal ion stress, (b) production/accumulation of 2° compounds often do not occur commensurate with that found in the discrete plant organ, (c) much higher levels of same air pollutants are required to produce adverse responses by cell suspensions vs. the intact plant, (d) often cultures expected to be resistant or susceptible to pathogens cannot be distinguished as with the plant from which derived. In neither case does a hypersensitive response occur and either may produce similar levels of phytoalexin compounds.

WEDNESDAY JULY 16 3:15pm - 3:30pm

INFLUENCE OF TRIAZOLES IN AMELIORATING SO₂ INJURY IN COLEUS

Donald T. Krizek, Peter Semeniuk, Roman M. Mirecki, and George L. Steffens, Plant Stress Lab., Florist & Nursery Crops Lab., and Fruit Lab., ARS, U.S. Department of Agriculture, Beltsville, MD 20705

Experiments were conducted to determine the comparative effects of paclobutrazol (PP333), triadimefon, and S-3307 (XE-1019) in ameliorating SO₂ injury in coleus. The extent of chemical protection against SO₂ exposure afforded by these compounds was found to differ greatly depending upon the concentration, duration of pre-treatment, and physiological age of the plant. Those compounds found to cause the greatest reduction in SO₂ injury were those having the greatest anti-gibberellin like properties e.g., PP333 and S-3307. Conversely, triadimefon, which offered no protection against SO₂ exposure, had little growth inhibiting effect. Optimal protection against SO₂ exposure required relatively high levels of PP333 (5 to 10 mg l⁻¹ pot⁻¹) and long-periods of chemical pre-treatment (3-4 weeks). S-3307, which differs from PP333 in chemical structure by a double bond, was found to be much more effective than PP333 in retarding growth and ameliorating SO₂ injury in coleus.

WEDNESDAY JULY 16 3:30pm - 3:45pm

INFLUENCE OF THE ENVIRONMENT ON ONTOGENESIS OF IDEOBLASTIC CELLS PRODUCING PHENOLICS IN SEVEN SPECIES OF SAMBUCUS. Alicja M. Zobel, Dept. of Biology, University of Warsaw, Poland.*

Seven species of Sambucus: camschatica, canadensis, ebulus, pubens, nigra and nigra var. laciniata, racemosa, and tigrani, with mother countries in different geographical locations, have been investigated for occurrence of long coenocytic cells secreting phenolics. These long cells grow simultaneously with the internode, reaching a length equal to its height, the longest isolated being 32.8 cm. They participate in a similar process of ontogenesis: differentiation from the mononucleate mother cell appearing in the promeristem, development into long macroscopically visible cells, and degeneration proceeding to the stage of dry phenolics. However, they show differences in amounts of phenolic compounds produced, and in location of the coenocytic cells in the plant. Some conclusions will be drawn about the influence both of the origin of these species and of their actual growth environment.

* present address: Dept. of Chemistry, Trent University, Peterborough, Ont. K9J 7B8

WEDNESDAY JULY 16 3:45pm - 4:00pm

CADMIUM ACCUMULATION IN PLANTS: BIOCHEMICAL AND PHYSIOLOGICAL ASPECTS.

George J. Wagner; N212F, ASCN, University of Kentucky, Lexington, KY 40546-0091

Approximately 70% of daily Cd intake in humans is derived from plant food sources. Many plants readily take up this potentially toxic metal from soil and certain plants accumulate it in tissues consumed by man. Cd accumulation has been characterized in two species of tobacco under experimental conditions. N. tabacum is a high leaf/high root Cd accumulator while N. rustica is a low leaf/very high root accumulator. These species have been useful for probing the mechanisms of Cd accumulation. They also express one strategy for restricting Cd accumulation in a non-consumed tissue. Tissue distribution and the biochemical nature of Cd in seedlings and mature plants of the above two species have been studied. Soluble Cd-binding proteins and also root-insoluble, Cd-binding constituents are prominent forms of accumulated Cd. The biochemical character of these will be discussed as will their apparent roles in leaf/root Cd distribution. Biochemical characteristics and modes of induction of plant Cd-binding proteins and animal Cd-Zn thionein will be compared.

WEDNESDAY JULY 16 4:00pm - 4:15pm

RHYTHMIC CHANGES IN ASCORBIC ACID PRODUCTION IN OZONE-SENSITIVE AND TOLERANT SOYBEAN LEAVES IN RESPONSE TO OZONE STRESS

Edward H. Lee, Plant Stress Laboratory, USDA, ARS, Beltsville Agricultural Research Center, Beltsville, MD 20705

Relationships between foliar ozone (O_3) tolerance and leaf ascorbic acid (AA) concentrations in O_3 -susceptible (O_3 -S) 'Hark' and O_3 -resistant (O_3 -R) 'Hood' soybean cultivars were examined by high-performance liquid chromatography. Plants were grown in charcoal filtered (CF) and non-filtered (NF) air and leaf samples were analyzed at 4 h intervals during a 24 h period. Ascorbic acid concentrations showed a significant 24 h rhythm; during the day time, the highest AA levels in leaves coincided with the highest concentrations of photochemical oxidants in the atmosphere at 2:00 p.m. In CF air both O_3 -S and O_3 -R cultivars showed AA production rhythms. In NF air the O_3 -R cultivars retained this rhythm, but the O_3 -S cultivar did not. Results indicated that superior O_3 tolerance in the 'Hood' cultivar (compared with 'Hark') was associated with much greater increased in endogenous levels of AA which may scavenge free radicals and thereby protect cells from injury by O_3 or other oxyradical products.

WEDNESDAY JULY 16 4:15pm - 4:30pm

PLANT PROTOPLAST SURFACE MEMBRANE PROTEINS

Merle M. Millard and Steven A. Altman, USDA ARS PPHI, Beltsville, MD 20705

Bonnie L. Mattingly

Surface exposed membrane proteins have been identified for a variety of plant cell protoplasts including those from cereals (rye and wheat) and suspension culture cells (soybean and potato). Surface exposed proteins and glycoproteins were identified by labelling protoplasts with diast-iodo (^{125}I) sulfanilic acid and galactose oxidase oxidation followed by $Na B^3H_4$ reduction. Each membrane appeared to have one or two major surface exposed proteins/glyco proteins in the outer membrane. The advantages and disadvantages of this approach for membrane composition studies will be discussed and the results compared to the composition of plant cell membrane vesicles prepared by two phase partition and free flow electrophoresis.

PHYTOCHEMICAL SOCIETY OF NORTH AMERICA

Report of the Treasurer March 1986

The Society has maintained strong membership and financial positions in 1985. We now have 373 members (342 regular and 31 students), 282 of which are U.S. members, 50 are Canadian, and 41 are from overseas. The Society concluded the year with assets totalling \$36,824.10, an increase of 22% over December 1984. The attached Financial Statement shows that our major sources of income were once again the royalties from sales of Recent Advances in Phytochemistry (\$3,324.79), interest from savings and checking accounts (\$2,775.11), and membership dues (\$2,533.28). The royalties from Vol. 18 (edited by Barbara Timmermann) alone netted \$2,332.30. The dramatic increase in our total assets this year stems primarily from two major factors. First, since the Membership Directory was not published this year, the Treasury did not have to defray its publishing and mailing costs. Secondly, the Society has in past years contributed \$1,000-5,000 towards the costs of the Annual Meeting. I am pleased to report that this year was an exception. While advance payments of \$6,600 were issued to promote the Silver Anniversary Meeting in Asilomar, Bock Chan and his co-organizers subsequently returned \$7,000 to the Treasury. On behalf of the Society, I would like to thank them for organizing an excellent meeting. Additionally, we extend our gratitude to several corporations, which are listed in the January 1986 Newsletter, for their financial support of this meeting.

During 1985, the Executive Committee considered the financial position of the Society in relation to: (i) dwindling interest rates (for example, our 6-month insured Money Market Certificate which paid 10.9% interest in September 1984 now pays only 7%), and (ii) to the increasing costs of annual meetings and of publishing and mailing Newsletters and Directories. Since these factors were felt to have the potential to significantly erode our current financial position, we decided to act against this erosion by raising PSNA dues to \$15.00 for full membership and \$8.00 for student membership. While these increases may seem large, may I remind you that PSNA, unlike most professional societies, inflation, and the U.S. Postal Service, has not increased its dues for over 10 years. Society members will continue to enjoy many benefits, including the quarterly Newsletter and biennial Directory, reduced meeting registration costs, and a 40% discount on all volumes of Recent Advances in Phytochemistry.

The 1986 PSNA Directory is currently at the publishers and will be dispatched to you soon. This volume will reflect the addresses and research interests of the members as known by the Treasurer as of March 1986. If you do not receive a copy by mid-summer, please let me know at your earliest convenience. Furthermore, if you are changing your address in the near future, please advise me promptly of your new location so that our correspondence to you will not suffer delays.

I would like to remind those who have not already done so to remit their 1986 dues as soon as possible. Any members who are about to enter retirement are entitled to emeritus status which exempts them from dues.

Copies of all bank statements and the auditor's report are on file. If you have any comments, suggestions concerning investments, or criticisms concerning the Treasury or if you simply require more information, please feel free to contact me.

Respectfully submitted,

Jonathan E. Poulton

Jonathan E. Poulton, Treasurer
Department of Botany
University of Iowa
Iowa City, IA 52242

Interim Financial Report
1 June 1985 - 31 December 1985

<u>Receipts</u>		<u>Expenditures</u>	
Membership dues	\$ 226.00	Secretary's Expenses	\$ 700.00
Interest(Savings)	1,168.27	Treasurer's Expenses	22.36
Interest(Checking)	306.07	Asilomar Student Awards	1,000.00
Asilomar Meeting Refund	7,000.00	EC Travel(Asilomar)	480.36
	-----	Asilomar Meeting Advance	600.00
TOTAL	\$ 8,700.34		-----
		TOTAL	\$ 2,802.72

<u>Summary</u>	
Receipts	\$ 8,700.34
Expenditures	2,802.72

NET GAIN	\$ 5,897.62

<u>Assets - 1 July 1985</u>		<u>Assets - 31 December 1985</u>	
Checking	\$ 7,176.48	Checking	\$ 13,074.10
Savings	23,750.00	Savings	23,750.00
	-----		-----
TOTAL	\$ 30,926.48	TOTAL	\$ 36,824.10

PHYTOCHEMICAL SOCIETY OF NORTH AMERICA

Financial Statement 1 January 1985 - 31 December 1985

<u>Receipts</u>		<u>Expenditures</u>	
Royalties	\$ 3,324.79	Secretarial Expenses	\$ 1,400.00
Membership dues	2,533.28	Asilomar Student Travel Awards	1,000.00
Interest (Savings)	2,180.84	Asilomar Meeting Advance	5,350.00
Interest (Checking)	594.27	EC Travel (Asilomar)	480.36
Asilomar Meeting Refund	7,000.00	Treasurer's Expenses	22.36
Mailing Lists	30.00	Auditor's Fee	50.00
	<hr/>		<hr/>
TOTAL	\$ 15,663.18	TOTAL	\$ 8,902.72

Summary

Receipts	\$ 15,663.18
Expenditures	8,902.72
	<hr/>
TOTAL	\$ 6,760.46

Assets-1 January 1985

Checking	\$ 6,313.64
Savings	\$ 23,750.00
	<hr/>
TOTAL	\$ 30,063.64

Assets-31 December 1985

Checking	\$ 13,074.10
Savings	\$ 23,750.00
	<hr/>
TOTAL	\$ 36,824.10

MEETINGS AND PROGRAMS OF INTEREST:

GRUPE POLYPHENOLS INTERNATIONAL MEETING: Universite des Sciences et Techniques du Languedoc, Montpellier, France. Program includes: fruit phenolics, glycosylation of phenolic compounds, peroxidases, quinones and new trends in analytical methods. July 9-11, 1986. For further information, contact: J.I.E.P. 86 - Professeur J.J. Macheix, Laboratoire de Physiologie Vegetale Appliquee, Universite des Sciences et Techniques du Languedoc, F. 34060 Montpellier Cedex, tel: (67) 54.48.46 et (67) 63.91.44 Poste 638., Telex Ustmont 490944 F.

FOURTH ANNUAL MEETING, INTERNATIONAL SOCIETY OF CHEMICAL ECOLOGY: University of Hull, England. July 14-17, 1987. For further information, contact: Professor David A. Jones, Dept. of Plant Biology and Genetics, University of Hull, Hull HU67RX, England.

PHYTOCHEMICAL SOCIETY OF EUROPE: University of Lausanne, Switzerland. Symposium topic: Biologically Active Natural Products. September 3-5, 1986. For further information, contact: Professor Peter J. Lea, Department of Biological Science, University of Lancaster, Lancaster LA1 4YQ, Lancashire, U.K.

AMERICAN SOCIETY FOR HORTICULTURE SCIENCE ANNUAL MEETING (our 83rd): University of California, Davis. The meeting will be an integral part of the XXII International Horticultural Congress. August 10-18, 1986. For further information, contact: Congress Secretariat, XXII International Horticultural Congress, Campus Events and Information Office, University of California, Davis, CA 95616; phone 916/752-2815. Attention: Ms. Carolyn Norlyn.

SYMPOSIUM - LIGHT ACTIVATED PESTICIDES: Sponsored by the Agrochemical Division - American Chemical Society. Anaheim, CA. September 7-12, 1986. For further information, contact: Dr. James R. Heitz, Department of Biochemistry, Mississippi State University, Mississippi State, MS 39762; or Dr. Kelsey R. Downum, Department of Biology, Florida International University, Miami, FL 33199.

ACS DIVISION OF CARBOHYDRATE CHEMISTRY 13TH INTERNATIONAL CARBOHYDRATE SYMPOSIUM. Ithaca, NY. Aug. 10-16, 1986. For further information, write: Conference Center, Box 3, Robert Purcell Union, Cornell University, Ithaca, NY 14853.

ANNUAL MEETING OF THE PACIFIC BRANCH OF THE ENTOMOLOGICAL SOCIETY OF AMERICA: Chemical Basis of Plant/Insect Interactions, San Diego, CA. June 24-26, 1986. For further information, contact: J. Daniel Hare, Department of Entomology, University of California, Riverside, CA 92521, (714) 787-3858.

15TH ANNUAL INTERNATIONAL SYMPOSIUM ON THE CHEMISTRY OF NATURAL PRODUCTS: Netherlands Congress Centre, The Hague, The Netherlands. August 17-22, 1986. For further information, contact: Scientific Secretariat: Laboratory of Organic Chemistry, University of Amsterdam, Nieuwe Achtergracht 129, 1018 WS Amsterdam, The Netherlands.

PROFESSIONAL POSITIONS:

NATURAL PRODUCTS CHEMIST - Molecular Genetics, Inc., a leading biotechnology company has an immediate opening in their expanding plant science group for a natural products chemist. Applicants should have a B.S. or M.S. in chemistry or related field plus at least 2 years relevant professional experience. Responsibilities will be to identify and characterize novel compounds from biological sources. Molecular Genetics, Inc. has a competitive salary and benefits package and the Minneapolis-St. Paul area has many cultural and recreational opportunities. Send applications to: **Mary Barton, Molecular Genetics, Inc., 10320 Bren Rd. East Minnetonka, Minnesota 55343.**

POST-DOCTORAL RESEARCH ASSOCIATE - Incumbent conducts biochemical research on the mechanism of calcium ion transport and the identification of the ion carrier in plant root plasma membranes. Studies effect of other divalent cations on the kinetics of Ca transport, the binding properties of Ca to the membrane components and the separation methods of isolating membrane carrier. Special emphasis is directed toward the bioenergetic requirements of the transport and the basic characterization of the carrier. Submit applications to: **Dr. Shu-I Tu, USDA, ARS, Plant and Soil Biophysics, Eastern Regional Research Center, 600 East Mermaid Lane, Philadelphia, PA 19118, (215)233-6466 or FTS 489-6466.**

PHYSIOLOGIST/BIOCHEMIST - The Florist and Nursery Crops Laboratory is seeking a physiologist/biochemist to join a project on increasing genetic diversity through the application of somatic cell genetics. Research in progress involves development of alternative methods of transferring genetic information through chromosome mediated transformation. The position will involve research on the physiology and biochemistry of regeneration from undifferentiated plant cells. new approaches and technologies are required to study the regulation and control of cell differentiation in growth and development. Interested persons who have completed their Ph.D. should send a curriculum vitae and three letters of reference to: **Dr. Roger H. Lawson, Research Leader, USDA, ARS, Florist and Nursery Crops Laboratory, Building 004, Room 101, BARC-West, Beltsville, Maryland 20705. Telephone (301)344-3570, ass soon as possible.**

POSTDOCTORAL POSITION - A postdoctoral position is available with the USDA/ARS at the National Seed Storage Laboratory. The participant will conduct basic research on membrane structure and function changes occurring during drying and preservation treatments with seeds and other materials. The research unit emphasizes studies on long-term preservation of plant germplasm (seeds, pollen, buds, cell cultures) and in mechanisms of seed and cell deterioration during culture and preservation. The laboratory is in Fort Collins, Colorado and has 12 scientists and staff. Starting date is as soon as a suitable candidate is identified. Salary is GS-11 (\$26,381). For further information, contact: **Dr. E.E. Roos, USDA/ARS National Seed Storage Laboratory, Colorado State University, Fort Collins, CO 80523. Telephone 303-484-0402.**

ISBN	EDITOR--TITLE	LIST PRICE	DISCOUNT PRICE
[] 42283-2	Conn--THE SHIKIMIC ACID PATHWAY (Vol. 20)	\$55.00	\$33.00
<input type="checkbox"/> 42096	Cooper-Driver et. al.--CHEMICALLY MEDIATED INTERACTIONS BETWEEN PLANTS AND OTHER ORGANISMS 1985 (Vol. 19)	\$45.00	\$27.00
<input type="checkbox"/> 417200	Timmermann et al.--PHYTOCHEMICAL ADAPTATIONS TO STRESS, (Vol. 18)	\$49.50	\$29.70
<input type="checkbox"/> 413779	Nozzolillo et al.--MOBILIZATION OF RESERVES IN GERMI- NATION, (Vol. 17)	\$42.50	\$25.50
<input type="checkbox"/> 410230	Creasy/Hrazdina--CELLULAR AND SUBCELLULAR LOCALIZATION IN PLANT METABOLISM, (Vol. 16)	\$39.50	\$23.70
<input type="checkbox"/> 407582	Loewus/Ryan--THE PHYTOCHEMISTRY OF CELL RECOGNITION AND CELL SURFACE INTERACTIONS, (Vol. 15)	\$42.50	\$25.50
<input type="checkbox"/> 405725	Swain/Kleiman--THE RESOURCE POTENTIAL IN PHYTOCHEMISTRY, (Vol. 14)	\$35.00	\$21.00
<input type="checkbox"/> 401886	Swain/Waller--TOPICS IN THE BIOCHEMISTRY OF NATURAL PRODUCTS, (Vol. 13)	\$37.50	\$22.50
<input type="checkbox"/> 400286	Swain et al.--BIOCHEMISTRY OF PLANT PHENOLICS, (Vol. 12)	\$69.50	\$41.70
<input type="checkbox"/> 347113	Loewus/Runeckles--THE STRUCTURE, BIOSYNTHESIS, AND DEGRADATION OF WOOD, (Vol. 11)	\$65.00	\$39.00
<input type="checkbox"/> 347105	Wallace/Mansell--BIOCHEMICAL INTERACTION BETWEEN PLANTS AND INSECTS, (Vol. 10)	\$49.50	\$29.70
<input type="checkbox"/> 347091	Runeckles--PHYTOCHEMISTRY IN DISEASE AND MEDICINE, (Vol. 9)	\$42.50	\$25.50
<input type="checkbox"/> 500442	Runeckles/Watkin--RECENT ADVANCES IN PHYTOCHEMISTRY, (Vol. 4)	\$35.00	\$21.00
<input type="checkbox"/> 500434	Steelink/Runeckles--RECENT ADVANCES IN PHYTOCHEMISTRY, (Vol. 3)	\$29.50	\$17.70
<input type="checkbox"/> 500426	Seikel/Runeckles--RECENT ADVANCES IN PHYTOCHEMISTRY, (Vol. 2)	\$25.00	\$15.00
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PHYTOCHEMICAL SOCIETY OF NORTH AMERICA

DEPARTMENT OF BOTANY • UNIVERSITY OF IOWA • IOWA CITY, IOWA 52242 • 319-353-6834

Jonathan Poulton
Treasurer

Application for Membership

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Name: (Dr., Mr., Mrs., Miss) _____

Mailing Address: _____ Telephone: _____
(with Zip Code)

Class of Membership Desired and Annual Dues (U.S. Funds): Regular (\$15.00) _____

Student (\$8.00) _____

Field of Interest: _____

Make check or money order payable to PHYTOCHEMICAL SOCIETY OF NORTH AMERICA and send with this application to the Treasurer at address above.

Phytochemical Society of North America
George J. Wagner, Secretary
Department of Agronomy
University of Kentucky
Lexington, KY 40546-0091

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Dr. John T. Romeo
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Univ. of South Florida
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PHYTOCHEMICAL SOCIETY OF NORTH AMERICA

Newsletter

September 1986

Vol 26 #2

Executive Committee PSNA 1986 - 1987

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The Phytochemical Society of North America is a non-profit scientific organization whose membership (currently about 400) is open to anyone with an interest in phytochemistry, the role of plant substances, and in related fields. Annual membership dues are \$15.00 for regular members and \$8.00 for student members. Annual meetings featuring symposium topics of current interest and contributed papers by conference participants are held throughout the United States, Canada and Mexico. A newsletter is circulated to members several times a year to keep them informed of upcoming meetings and developments within the Society.

If you would like additional information about the PSNA or if you have material to be included in the newsletter, please contact the Society Secretary. Annual dues and changes in addresses should be sent to the Society Treasurer.

THE 1986 MEETING AT MARYLAND

The meeting was held at the University of Maryland in a comfortable campus setting. The symposium consisted of ten interesting papers on the subject of phytochemical effects of environmental compounds. As usual, contributed papers covered many subjects related to phytochemistry. A number of excellent papers were presented by candidates for the student travel grant competition. Two awards were made this year and biographical sketches of awardees are presented below.

The organizing and local committee, including: Jim Saunders, June Gillespie, Edward Lee, Joe Mack, Lynn Kosak-Channing, Ben Matthews and Merle Millard successfully orchestrated a fine social program including trips to sites in Washington, D.C. and the Baltimore inner-harbor area, and a most enjoyable banquet aboard a cruise ship which sailed the Potomac River while we enjoyed dinner.

MINUTES OF THE 26th ANNUAL BUSINESS MEETINGS

The meeting was called to order by President Loomis at 11:10 a.m. The Executive Committee (with the exception of D. Mansell) and most meeting participants were present. D. Loomis congratulated J. Saunders and L. Kosak-Channing for the fine meeting we were experiencing at the University of Maryland and for acting as hosts. Secretary, G. Wagner, offered to read the minutes of the 1985 business meeting or have them accepted as published in the September 1985 newsletter. H. Stafford moved they be accepted as published, E. Conn seconded, and the motion was carried.

G. Wagner reported that the society now has tax exempt status. He also called for help from the membership in advertising the 1987 meeting. Members will receive a flyer describing the meeting and symposium in the Fall and essential information will be contained in the Fall Newsletter. Members will be asked to work hard to disseminate the information.

J. Poulton first stated that the 1986 directory had been mailed with the May 1986 newsletter and that those who had not received their directory should contact the treasurer. He then presented the treasurer's report (see below). A profit of about \$2,000.00 was realized from the 1985 meeting at Asilomar. This was the first time in the history of the society that the annual meeting returned a monetary profit. This fact is a tribute to the fund raising efforts of Bock Chan. A detailed financial report (included in this newsletter) was distributed to meeting participants and described. The apparent trend toward a lower total membership was discussed. N. Towers suggested that each member attempt to recruit one new member and that this would perhaps bring 50 to 60 additional members. All interested persons were asked to join in a noon meeting to discuss mechanisms for recruiting new members. G. Wagner moved that the treasurer's report be accepted, E. Conn seconded and the motion was carried.

Dr. Loomis thanked the present advisory committee (H. Stafford - chair, H. Floss, E. Conn, J. Romeo and S. Brown) for their valuable advice on various matters during the past year. After consulting with the executive committee,

Dr. Loomis appointed G. Hrazdina to the advisory committee for a five year term (to replace H. Floss who retired from the committee this year). Dr. Loomis indicated that any suggestions concerning society affairs from the membership should be directed to any member of the advisory committee or to President N. Towers.

J. Romeo reported on plans for the 1987 meeting in Tampa (lead information and local arrangements follow this report). The local organizing committee will consist of D. Mansell and J. Romeo. E. Conn reported that organization of the scientific program for the 1987 meeting was proceeding, but selected speakers had not been invited at the time of the Maryland meeting.

Dr. Loomis announced that the executive committee had accepted an offer from the University of Iowa to hold the 1988 meeting in Iowa City, IA. J. Poulton indicated that the University had already committed a contribution of \$5,000.00 to the symposium program. The meeting is tentatively scheduled for the last week in June, 1988 and will be held in a centralized, newly renovated, air conditioned facility. J. Poulton and J. Romeo will organize a symposium on "Nitrogen Metabolism in Plants: Primary and Secondary Aspects." N. Towers offered to host a meeting in 1989 at the University of British Columbia in Vancouver, B.C. A tentative topic of "The Mevalonic Acid Pathway and its Products" has been discussed, but N. Towers commented that it was too early to fix details of the scientific program.

Dr. Loomis reported that the travel awards committee consisting of B. Timmerman, Chair, J. Gershenzon, L. Krizek and S. Brown had judged the 1986 awards candidates on the basis of quality of research, quality of presentation, quality of abstract, scientific method, and discussion of hypothesis and conclusion. The winners, W.K. Swensen and P. Dubelsten, were congratulated and presented a prize of \$250.00 each. All students who participated in the competition were congratulated for their efforts.

Dr. Loomis reported on the results of the officer elections process, 1986. The elections committee consisted of D. Mansell - chair, H. Stafford and S. Brown. The fact that 91 ballots had been returned by July 9 was applauded. These were brought to the meeting in a sealed box. The ballots were counted by Dr. Loomis and B. Timmerman. J. Romeo was elected Vice President by majority vote. J. Poulton and G. Wagner received votes of confidence to continue in their respective offices for an additional year. The ammendment which was voted upon this year - that once an individual has served as president, he/she is not eligible to serve again as vice-president or president - was passed by a 71-for to 16-against majority. This ammendment was circulated along with the elections ballot as a separate mailing in May 1986, as prescribed by the constitution.

The President called for any new business. J. Romeo reported that the committee asked to provide recommendations to the executive committee on the travel grant program, had recommended a 2-tier system. Stipends might be made to graduate students to partially offset the costs of traveling to a meeting. These would be made well before the time of the meeting. An award for best paper by a graduate student or recent Ph.D. would be presented separately. It was indicated that the EC would take these recommendations into consideration (detailed recommendations are presented below for comments from the membership).

J. Mack asked if there was a program to award the "best paper" by an individual beyond the recent Ph.D. career stage. T. Wais argued against such a program. A motion was made to consider such an award. As there was no second, the motion was not voted upon. E. Conn suggested that members having opinions on this issue or others might contact a member of the advisory committee.

S. Brown voiced concern about the quality (legibility) of the abstracts reproduced in the packet circulated at this meeting and in the past as well. He indicated that pages or abstracts should be numbered. It was suggested that a practical solution to this problem might be to have camera-ready copy forms for submitting abstracts and that members be asked to take more care in preparing abstracts. It was also pointed out that abstracts often have no real substance in that data are not summarized, but only general statements are made. Contributors will be asked to correct this problem for the 1987 meeting. B. Heath suggested that the society ask itself what purpose the abstracts serve.

N. Towers was introduced as new President. He first thanked Dr. Loomis for his service as President for the past year. He made a plea that members work hard to recruit new members.

J. Saunders acknowledged generous gifts from DuPont - \$1,000.00, USDA - \$1,000.00 and Waters Associates (coffee and pastries) for the MD meeting.

N. Towers made a motion for adjournment. It was seconded by S. Brown and the motion was carried. The meeting was adjourned.

TRAVEL GRANT COMPETITION

There were five contestants in the travel grant competition at the MD meeting. All are congratulated for their efforts and participation. The following are professional sketches of the winners:

Mr. Paul Dubelsten

Paul Dubelsten was born May 20, 1956 in Toronto, Ontario. He received his B.S. degree in Forestry from the University of Toronto in 1980. After working for 3 years in industry, Paul began studies towards a MS under Dr. N. Lewis in the Department of Forestry Products, Virginia Polytechnical Institute and State University. The subject of his thesis is Wood Chemistry-Lignin Biosynthesis. Paul is married and has two children. After graduation he hopes to do research in the field of his thesis work.

Dr. Wendy Swanson

Wendy Swanson was born and raised in Ames, Iowa. She received her B.A. in chemistry and history from Cornell University in 1980. While at Cornell, she worked with Dr. Jon Clardy in the chemistry department doing X-ray crystallography of natural products. She then moved to California to do graduate work in agricultural and environmental chemistry at the University of California, Davis. Her dissertation work on the isolation and identification of cyanogenic compounds was under the direction of Dr. Eric Conn. She received her Ph.D. from UCD in March, 1986. Currently, she is a post-doctoral scientist at Smith, Kline and French Laboratories in suburban Philadelphia where she is isolating pharmaceutically interesting compounds from marine organisms.

TREASURER'S REPORT:

Interim Financial Report
1 June 1985 - 31 December 1985

<u>Receipts</u>	<u>Expenditures</u>
Membership dues \$ 226.00	Secretary's Expenses \$ 700.00
Interest(Savings) 1,168.27	Treasurer's Expenses 22.36
Interest(Checking) 306.07	Asilomar Student Awards 1,000.00
Asilomar Meeting Refund -7,000.00	EC Travel(Asilomar) 480.36
	Asilomar Meeting Advance 600.00
TOTAL \$ 8,700.36	TOTAL \$ 2,802.72

Summary

Receipts	\$ 8,700.36
Expenditures	2,802.72
NET GAIN	\$ 5,897.62

<u>Assets - 1 Jun@ 1985</u>	<u>Assets - 31 December 1985</u>
Checking \$ 7,176.48	Checking \$ 13,074.10
Savings 23,750.00	Savings 23,750.00
TOTAL \$ 10,926.48	TOTAL \$ 36,824.10

Interim Financial Report
January 1 1986 - July 8 1986

<u>Receipts</u>	<u>Expenditures</u>
Membership Dues \$ 3,992.00	1986 Meeting Advance \$ 2,500.00
Royalties 3,232.38	1986 Directories 1,999.09
Refund from Asilomar Meeting 1,204.96	Secretary's Expenses 1,400.00
Interest (Savings) 854.02	President's Expenses 69.82
Interest (Checking) 498.87	Bank Charges 36.20
\$ 9,782.23	\$ 6,005.11

Summary

Receipts	\$ 9,782.23
Expenditures	6,005.11
Net Gain	\$ 3,777.12

<u>Assets - January 1 1986</u>	<u>Assets - July 8 1986</u>
Checking \$13,074.10	Checking \$16,851.22*
Savings 23,750.00	Savings 23,750.00
TOTAL \$36,824.10	TOTAL \$40,601.22

*\$12,000.00 of this amount has subsequently been transferred to a 6-month insured money market certificate paying 6.65% interest leaving \$4,851.22 in the Checking Account (at 6.0% interest).

Interim Financial Report
January 1 1986 - July 8 1986

<u>Receipts</u>	<u>Expenditures</u>
Membership Dues \$ 3,992.00	1986 Meeting Advance \$ 2,500.00
Royalties 3,232.38	1986 Directories 1,999.09
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Summary

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*\$12,000.00 of this amount has subsequently been transferred to a 6-month insured money market certificate paying 6.65% interest leaving \$4,851.22 in the Checking Account (at 6.0% interest).

TREASURER'S REPORT:

Account of 1985 - Asilomar Annual Meeting

Total Income:

Registration and Accommodation	\$26,062.00
New Membership	144.00
PSNA Contribution	6,000.00
Private Industrial Contribution	8,850.00
	<hr/>
	\$41,056.00

Expenditures:

Accommodations by Asilomar	\$23,049.12
Expenses to invited speakers	6,338.48
Wine, liquor, junk food	1,750.23
Reimbursement of miscellaneous items	131.00
Travel award conciliation prizes	200.00
Silver anniversary commemorative items	902.21
Refunds to registrants	480.00
Return to PSNA treasury	8,204.96
	<hr/>

TOTAL: \$41,056.00

ROYALTIES - RECENT ADVANCES IN PHYTOCHEMISTRY

Volume	1979	1980	1981	1982	1983	1984	1985	Total To Date:	
								# Sold	Total Royalty
10 Wallace-Mansell	496.58	418.70	369.78	255.07	120.64	62.39	57.94	1869	3315.76
11 Runeckles-Loewus	774.08	311.08	284.30	72.67	84.50	19.00	29.85	1125	4433.86
12 Swain-Harborne	3605.35	975.39	426.00	171.67	226.21	95.62	64.30	1376	5564.54
13 Swain-Waller	1386.42	211.48	166.97	45.54	81.50	31.14	23.21	817	1946.26
14 Swain-Kleiman			1496.87	104.33	115.04	53.05	21.46	724	1790.75
15 Loewus-Ryan			2133.37	469.97	367.89	140.10	44.71	848	3156.04
16 Creasy-Hrazdina				1940.17	614.46	214.18	99.64	806	2868.45
17 Nozzolillo-Lea-Loewus					2074.92	377.01	235.19	662	2687.12
18 Timmermann						2332.30	546.31	610	2878.61
19 Swain et al.							2109.77	493	2109.77

STUDENT TRAVEL GRANT PROGRAM

There has been disagreement in years prior to 1986 concerning methods for judging contestants and about the structure of the program in general. Dr. Loomis appointed a committee consisting of B. Timmerman, L. Creasy, J. Gershenzon, and J. Romeo to make recommendations on this matter and these are now being considered by the executive committee. These recommendations are offered here to the membership for comment.

A two tier system is desirable consisting of a "Best Graduate Student Paper Award" and "Partial Travel Assistance Subsidies to Graduate Students".

THE "BEST" PAPER AWARD FOR EXCELLENCE:

Any graduate student or recent Ph.D. (within 6 months of having received the degree at the time of presentation) would be eligible to compete. Society membership would be required. The award would consist of a prize of \$100, an award certificate signed by the Executive Committee, a featured biography in the PSNA newsletter, and an invitation to be a guest of the Society at the banquet the following year.

The Executive Committee each year would appoint a committee which would judge the oral presentation of the candidates and select the one of highest quality. At least one member might continue on the committee for the following year. No written material would need to be submitted other than the routine abstract. When registering for the meeting, each student would indicate by checking the appropriate graduate student box that he/she is eligible for the award.

THE "PARTIAL TRAVEL ASSISTANCE SUBSIDY":

The purpose of these grants is to increase graduate student participation at meetings. Any graduate student member of the PSNA who applies could expect to receive some financial support. Support from the society could be given a maximum of two times per student. Each applicant would submit a Curriculum vitae, proposed travel budget, abstract of the proposed presentation, and letter of support from the supervising professor verifying need for assistance. The student would be required to make an oral presentation at the meeting.

Each year the Organizing Committee would request funds from the Executive Committee (after it has received the assistance requests) which it would dispense at the annual meeting. This committee should make some effort to provide those with greater travel expenses with more money. Up to one half of the round trip airfare should be made available. If, after notification of an offer of financial assistance, a student is unable to attend the meeting, his/her abstract could be published in the newsletter as "Abstract Only". No travel award would be made, however, in such a case. The Executive Committee should consider releasing up to a total of \$3,000.00 dollars each meeting for this purpose.

GENERAL SUGGESTIONS:

Separate student paper sessions should be eliminated, rather the papers should be grouped according to topic with other contributed papers. The Executive Committee should continue the policy of not requiring registration charges for graduate students presenting papers. Advertising of the award and travel subsidies should be extensive. Each PSNA newsletter should make the announcement, and it should also be in each meeting advertisement. For future continuity, the Executive Committee may wish to consider presenting to the membership a "Bylaw" of the Society for such an awards system.

GRADUATE STUDENT REPRESENTATION:

This committee also considered the problem of graduate student representation in the affairs of the society. We suggest that a student representative be elected each year at the annual business meeting to serve a one year term as the liaison to the Executive Committee. This representative could make use of the newsletter as a forum for communicating with other students.

B. Timmerman, J. Romeo, L. Creasy, and
J. Gershenzon

NEW MEMBERS

The following individuals have joined our membership. We welcome you to the society and invite your participation in society business and at our meetings.

Hee Kyung Hong
Biological Science
Goucher College
Towson, MD 21204
K9J7B8

Wendy Swenson
700 Swedeland Rd
Mail Code L950
Smith Kline & French
Swedeland, PA 19479

Alicia Zobel
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Beltsville, MD 20705

Troy Maddux
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SRSU
Alpine, Texas 79830

Brian E. Murray
Box 5385
SRSU
Alpine, Texas 79830

1987 MEETING AT TAMPA, FLORIDA - PUT IT ON YOUR CALENDAR AND IN YOUR BUDGET:

The meeting will be held in Tampa from June 22-26, 1987. Participants should plan to arrive sometime Sunday afternoon or evening and registration will be open during both Sunday and Monday. The meetings will begin on Monday morning and will conclude at noon on Friday. Each morning will be filled with symposia; there will be two on Monday, 3 on Tuesday, 2 on Wednesday, 3 on Thursday and 2 on Friday. On Monday afternoon will be contributed papers and there will be a field trip to a local river and cypress swamp area. On Tuesday afternoon will be contributed papers and an evening poster session. Wednesday the meetings will end before noon and we will have three options for the afternoon. 1) a trip to Disney World, 2) an afternoon at Busch Gardens or 3) a trip to the Salvador Dali Museum. Thursday afternoon will be contributed papers, a business meeting and the evening will be filled with the banquet. We are making arrangements for concurrent sessions if the number of contributed papers gets too large and since the symposium is so large we felt that a day of freedom would help prevent meeting "burnout". All the meetings will be held in the Business Building and that is about 7-10 minutes (walking) from the living area. There is a cafeteria about 4 minutes away and also a convenience store to buy snacks etc.

We are going to encourage participants to bring spouses and family since the area is very good for outdoor activities. The rooms will be in clustered, one-story bungalows which are equiped with kitchens. There is a swimming pool in the middle of the complex and tennis courts across the street. We are 100 yards from the golf course and Adventure Island (a water sport center for families) is two miles away.

R. L. Mansell

THE PRELIMINARY SYMPOSIUM PROGRAM FOR THE MEETING IS AS FOLLOWS:

Symposium title: "OPPORTUNITIES FOR PHYTOCHEMISTRY IN PLANT BIOTECHNOLOGY"

I. SCIENTIFIC STRATEGIES FOR PLANT BIOTECHNOLOGY

1. Gaining access to reactions and compounds through cultured plant cells - Philip Filner, ARCO Plant Cell Res Inst, 6560 Trinity Ct., Dublin, California 94566.
2. Somaclonal variation-its genetic basis and promise for biotechnology - David Evans, DNA Plant Technology, 2611 Branch Pike, Cinnaminson, New Jersey 08077.
3. Selection of plant mutants and their use in studying phytochemistry - Chris Somerville, MSU DOE Plant Res Lab, Michigan State Univ., East Lansing, MI.
4. Strategies for introducing foreign genes into plants-problems and progress - Charles Gasser, Monsanto Co., 700 Chesterfield Village, Chesterfield, MO 63198.
5. Resistance to plant virus infection as a result of a single gene transfer - Roger Beachy, Dept. of Biology, Washington University, St. Louis, MO 63130.
6. Molecular approaches to studying cellular recognition in plants - Adrienne Clarke, School of Botany, University of Melbourne, Parkville, Victoria, Australia.

II. PLANT AND MICROBIAL METABOLITES-ROLES IN THE BIOLOGY OF PLANTS

1. Secondary plant metabolites in the regulation of gene expression in plant-microbe interactions.
 - a. Symbiotic interactions-Rhizobium - Kent Peters, Dept. of Biological Sciences, Stanford University, Stanford, CA 94305.
 - b. Parasitic interactions-Agrobacterium tumefaciens - Eugene W. Nester, Dept. of Microbiology, University of Washington, Seattle, WA 98195.
2. Production of secondary metabolites-a plant response to stresses - David Kuhn, Dept. of Biochemistry, Purdue University, West Lafayette, IN 47907.
3. Pathogen Secondary metabolites-Phytotoxins in plant-pathogen interactions - Richard Durbin, Dept. of Plant Pathology, University of Wisconsin, Madison, WI 53706.
4. Biochemical basis of insect resistance in plants - C.A. Ryan, Dept. of Agric. Chem., Washington State Univ., Pullman, WA 99163.

III. PHYTOCHEMISTRY - ITS ROLE IN THE FUTURE OF PLANT BIOTECHNOLOGY
Leon Dure, Dept. of Biochemistry, University of Georgia, Athens, GA 30602.

For further information contact Dr. D. Mansell, Dept. of Biology,
University of South Florida, Tampa, Florida 33620, (813) 974-2327.

HELP TO ADVERTISE OUR MEETING

I think you will agree that the symposium topic and list of speakers outlined above suggests that the Florida meeting will be an exceptional one on a very timely subject. Please help to advertise this meeting. You will soon receive, by separate mailing, a flyer which we ask that you post in your department. In addition, we ask that you copy this flyer and post this in a department(s) other than your own so that interested persons may be aware of the meeting. Thank you in advance.

Executive Committee

TOPICS OF FUTURE MEETINGS

As noted in the minutes of the business meeting, plans are underway to hold the 1988 meeting in Iowa City and the 1989 meeting in Vancouver. The Executive Committee solicits your comments and suggestions concerning symposium subjects and speakers for these meetings and also any other comments and ideas you may have regarding society matters. Please direct comments and suggestions to any member of the advisory committee or to President Neil Towers.

ADVISORY COMMITTEE:

This committee, appointed by the PSNA President, has provided much valuable advice to the executive since its inception several years ago. The present committee consists of Helen Stafford - Chair, and Steward Brown (original members), Geza Hrazdina (appointed to a 5 year term in 1986), Lee Creasy and Barbara Timmerman (appointed to 3 and 1 year terms, respectively, in 1986).

OFFICER ELECTION PROCESS:

Amendments to the PSNA constitution and Bylaws approved in 1985 make it the responsibility of the entire membership to nominate and elect (by mail ballot) members to serve on the Executive Committee and also to advance and approve constitutional changes. Such a ballot system was employed for the first time in May, 1986. We are delighted to announce that 91 ballots were returned from about 350 mailed. As a result of this participation, a new president-elect (John Romeo) and a constitutional change were elected/approved by a clear majority of those participating. Because the constitutional change enacted does not appear in the recently distributed directory of the PSNA-1986, it is reproduced on the following page:

ARTICLE VI, Section 2. (additions underlined) Upon election, the term of office for such officers shall extend through the Business Session of the next Annual Meeting. The Vice President shall automatically ascend to the presidency at the end of his (her) scheduled term of office or at any prior time that the office of President may be vacated. However, he (she) will not be eligible for election to the office of President (or Vice-President) at a later date, and shall not succeed himself (herself) as President after serving the scheduled term of office. There shall be no restriction on the number of terms of office of the Secretary or of the Treasurer.

THANKS DICK!

On behalf of the Society, I have sent a letter to the departmental chairman and college dean at the University of South Florida expressing our gratitude for the service rendered by Dick Marsell as President-Elect, President, and Past-President of PSNA. We have recently initiated a policy of acknowledging in this way contributions by outgoing Executive Committee members. Recognizing that it is woefully inadequate to do so, we nevertheless acknowledge the contributions of all past Executive Committee members.

MEETINGS AND PROGRAMS OF INTEREST

GROUPE POLYPHENOLS INTERNATIONAL MEETING: Brock University, St. Catharines, Ontario, August 16-19, 1988. Symposium topics will include: An overview of plant phenolics, biodegradation and utilization of lignin, biological significance of flavonoids in foods, cereal polyphenols, phenolics in cultured tissue. For further information contact: Dr. T. Fulek, Horticultural Products Laboratory, Ontario Ministry of Agriculture and Food, Vineland Station, Ontario LOR 2E0, Canada.

AMERICAN SOCIETY OF PLANT PHYSIOLOGISTS: Chase Park Plaza Hotel, St. Louis, MO, July 19-23, 1987.

FIFTH WILDLAND SHRUB SYMPOSIUM: Utah State University, June 30 to July 2, 1987. For further information contact: Michael B. Price, Eccles Conference Center, Room 103F, Logan, Utah 84322, (801) 750-1696.

BIOMEDICAL AND AGRICULTURAL HIGH TECHNOLOGY 2nd INTERNATIONAL CONFERENCE: November 12-14, 1986, Hyatt Regency Hotel, Columbus, Ohio. For further information contact: Louise Larew, Dept. of Conferences and Institutes, Office of Continuing Education, Ohio State University, 225 Mount Hall, 1050 Camack Road, Columbus, Ohio 43210, (614) 422-8571.

PLANT SENESCENCE: ITS BIOCHEMISTRY AND PHYSIOLOGY: 10th Annual Symposium in Plant Physiology, University of California at Riverside, CA, January 8-10, 1987. For further information contact: Cindi McKerman, Dept. of Botany and Plant Sciences, University of California, Riverside, CA 92521.

FIRST INTERNATIONAL CONFERENCE ON THE CHEMISTRY AND BIOLOGY OF NATURALLY-OCCURRING ACETYLENES AND RELATED COMPOUNDS: University of Arhus, Denmark, July 19-22, 1987. For further information contact: Dr. H. Breteler, ITAL, P.O. Box 48, 6700 AA, Wageningen, The Netherlands.

CANADIAN INSTITUTE OF FOOD SCIENCE AND TECHNOLOGY ANNUAL CONFERENCE: Hamilton, Ontario, Canada, May 17-20, 1987. For further information contact: Dr. Vladimir F. Rasper, Dept. of Food Science, University of Guelph, Guelph, Ontario N1G 2W1, Canada.

UNDERGRADUATE SCIENCE FELLOWSHIP FOR HISPANICS, APPLICATION FOR COMPETITION 1986-87: The National Chicano Council for Higher Education Science Fellowship Program seeks to increase the number of scientists among Mexican Americans and other U.S. Hispanics. Toward this end, the Science Fellowship Program will support approximately 20 Hispanic undergraduate juniors who are interested in pursuing a doctorate and an academic career in any of the following fields: Engineering; Mathematics and Statistics; Physics and Astronomy; Chemistry; Earth, Environmental and Marine Sciences; Agricultural Sciences; Biological and Medical Sciences; Economics; Computer Sciences. Applicants must be Hispanic citizens of the United States currently matriculating in their junior year. Prospective fellows must intend to pursue the doctorate in the appropriate fields of study and are expected to devote their careers to research and teaching at the postsecondary level. **DEADLINES:** Completed applications and supporting materials (which may be mailed separately) must be received no later than November 15, 1986. Late applications will be considered only if they have been postmarked November, 1986. No exceptions or extensions will be made. **MAILING ADDRESS:** Mail all applications materials (transcripts of record, letters of recommendation) and address all inquiries to: Dr. Eloy Rodriguez, Director, NCCHE Science Fellowship Program, International Chicano Studies Program, School of Biological Sciences, TR.56 University of California-Irvine, Irvine, CA 92717.

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