PHYTOCHEMICAL SOCIETY OF NORTH AMERICA

Newsletter

March 1985

Volume 25
Number 1

Executive Committee PSNA 1984 - 1985

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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.

THE SILVER ANNIVERSARY MEETING OF THE PSNA

June 12th - 16th, 1985

Asilomar Conference Center
Pacific Grove, CA

Bock Chan and the other members of the 1985 meeting organizing committee have preparations for the meeting well in hand and have obtained substantial support from industry to offset meeting (primarily symposium) costs. Meeting registration, conference accommodations registration, and abstract forms are enclosed for your use.

The deadline for meeting registration, accommodations registration and abstracts is April 15, 1985. As noted in the December (sic) newsletter, there is limited space at the conference center for lodging accommodations, so members are encouraged to register early. Asilomar Conference Center requires a firm commitment on meals and lodging registration by May 1. That is why it is necessary to have the early (April 15) deadline.

The Asilomar Conference Center is priced for conferees to take advantage of this California state subsidized seashore retreat. While the package price is very reasonable, some participants may choose to use motels and hotels in the area. Information for some of these is enclosed.

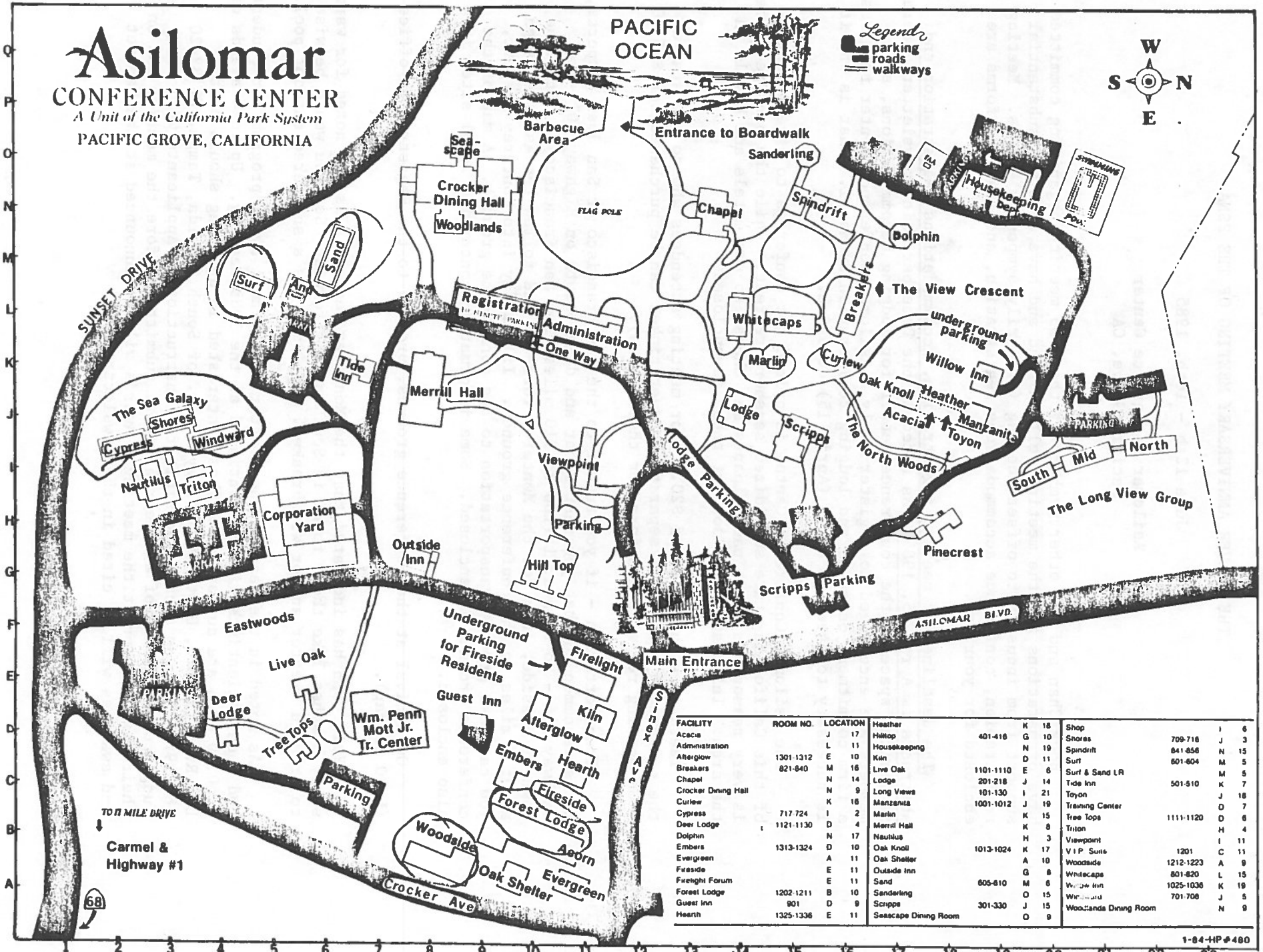
There is a surcharge of $20.00 for meeting attendees who do not stay at the conference center. A separate banquet ticket can be purchased for $25.00 (see meeting registration form for these items).

Transportation - if you travel to the San Francisco or San Jose Airports, it is recommended that you rent a car and drive south on Highway 101 - to Highway 156 - to Highway 1 (100 to 110 miles from San Francisco). After the town of Seaside, look for the Monterey turn-off and follow the Asilomar sign about 3 miles to the conference grounds. If you fly into Monterey Airport, you can take ground transportation to the conference grounds. A map of the conference grounds is enclosed. Some information concerning local sites is also enclosed.

On arrival at the conference grounds, proceed to the Registration office (L-10 on map).

Eric Conn has indicated that the Monterey Peninsula is not noted for warm, sunny beaches like those found in Southern California. So, you would be wise to bring a sweater and/or windbreaker. Asilomar has a sheltered outdoor pool.

As noted in the December newsletter, the travel award program for students and young scientists will be continued at the 1985 meeting. Up to 4 awards of $250.00 each are authorized. Those interested in applying should contact Dr. R.L. Mansell, Dept. of Biology, Univ. of South Florida, Tampa, Fl 33620 (813)974-2327, as soon as possible for instructions. Applicants will be judged on the basis of a research report submitted before the meeting and on their presentation at the meeting. Awards will be announced at the banquet and awardees will be cited in the newsletter.



FACILITY	ROOM NO.	LOCATION		
Acacia		J	17
Administration		L	11
Afterglow	1301-1312	E	10
Breakers	821-840	M	16
Chapel		N	14
Crocker Dining Hall		N	9
Curlew		K	16
Cypress	717-724	I	2
Deer Lodge	1121-1130	D	4
Dolphin		N	17
Embers	1313-1324	D	10
Evergreen		A	11
Fireside		E	11
Firenght Forum		E	11
Forest Lodge	1202-1211	B	10
Guest Inn	901	D	9
Hearth	1325-1336	E	11
Heather		K	18
Hilltop	401-416	G	10
Housekeeping		N	19
Kiln		D	11
Live Oak	1101-1110	E	6
Lodge	201-218	J	14
Long Views	101-130	I	21
Manzanita	1001-1012	J	19
Marlin		K	15
Merrill Hall		K	8
Nautilus		H	3
Oak Knoll	1013-1024	K	17
Oak Shelter		A	10
Outside Inn		G	8
Sand	605-610	M	6
Sanderling		O	15
Scripps	301-330	J	15
Seascape Dining Room		O	9
Shop		I	6
Shores	709-716	J	3
Spindrift	841-856	N	15
Surf	601-604	M	5
Surf & Sand LR		M	5
Tide Inn	501-510	K	7
Toyon		J	18
Training Center		D	7
Tree Tops	1111-1120	D	6
Triton		H	4
Viewpoint		I	11
V I P Suite	1201	C	11
Woodside	1212-1223	A	9
Whitecaps	801-820	L	15
Willow Inn	1025-1036	K	19
Windward	701-708	J	5
Woodlands Dining Room		N	9

1-84-HP-480

REPORT OF THE TREASURER
JANUARY 1985

The attached annual Financial Statement clearly demonstrates that the Society has maintained its strong financial position in 1984. Royalties from sales of Recent Advances in Phytochemistry have again constituted our major source of income ($3,709.24). Volume 12, edited by Nozzolillo, Lea and Loewus, sold well in the first year following its publication and has contributed $2,074.92 of the above sum to the Treasury. Membership dues (which have remained at their remarkably low rates) netted almost $2,500. To counteract inflation, I have invested $23,750 of our assets in six-month high interest money market certificates (10.9% interest), while placing the remainder in a charge-free checking account paying 9.4% interest. The interest from these two accounts yielded $3,068.65 this year. On the expenditure side, our major encumbrances included the expenses for the Boston and Asilomar meetings and the printing and mailing of the 1984 Directories. In conclusion, while our total assets showed a small decrease of $759.77 during 1984, they still exceeded $30,000 at year's end. It seems therefore unlikely that the Executive Committee has any grounds for raising the membership dues in the near future!

The PSNA has 361 active members, of which 31 are students. Of the total membership, 272 are from the United States, 46 from Canada, while 30 are from overseas. Analysis of the PSNA enrollment figures from 1979-1984 (see October 1984 Newsletter) reveals that the total membership essentially reached a plateau in 1981 and has increased only 5% since then. Indeed, our enrollment figures in 1984 would have shown a significant decrease if 25 new members had not been attracted to the Society through the Boston meeting. In an effort to increase our enrollment, the Executive Committee proposes to write an open letter to our sister societies (i.e. PSE, ASPP, Groupe Polyphenol) inviting the members to also become affiliated with us. Additionally, I would like to suggest that each PSNA member should encourage at least one colleague or student in their department/laboratory to join our Society. Among the many advantages of PSNA membership which might be pointed out are: (i) registration at annual meetings at reduced rates, (ii) significant discounts (25 - 40%) on volumes of Recent Advances in Phytochemistry, (iii) availability of Travel Awards to the annual meeting for students and young scientists, and (iv) receipt without charge of the quarterly Newsletter and biennial Directory of members.

I would like to remind those that have not already done so to remit their 1985 dues as soon as possible. Any members who are about to enter retirement are entitled to emeritus status which exempts them from dues.

The 1984 PSNA Directories were mailed to the membership in the Spring. This document reflects the addresses and research interests of the members as known by the Treasurer as of January 1, 1984. If you did not receive your copy, 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.

Copies of all bank statements and the auditor's report are on file. If you have any comments, suggestions or criticisms concerning the Treasury or 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, Iowa 52242

PHYTOCHEMICAL SOCIETY OF NORTH AMERICA

Financial Statement
1 January 1984-31 December 1984

Receipts

Membership Dues	$2479.90
Royalties	3709.24
Interest(Savings)	2373.81
Interest(Checking)	694.84
Mailing Lists	165.00
TOTAL	$9,422.79

Expenditures

PSNA Boston Meeting	$5748.91
PSNA Asilomar Meeting	1250.00
1984 Directories	853.11
Secretary Expenses	1057.67
Treasurer Expenses	685.10
Boston Meeting(EC Travel)	582.00
Foreign Exchange Debit	5.77
TOTAL	$10,182.56

Summary

Receipts	$ 9,422.79
Expenditures	10,182.56
Net Loss	$ 759.77

Assets- 1 January 1984

Checking	$ 7,073.41
Savings	23,750.00
TOTAL	$30,823.41

Assets- 31 December 1984

Checking	$ 6,313.64
Savings	23,750.00
TOTAL	$30,063.64

Annual Meeting, Boston, 1984

Total Income

Registration	$ 3,710.00
Accomodation	6,477.89
New Memberships	160.00
Grant - Pergamon Press	150.00
PSNA	4,998.91
PSNA - Student Travel Awards	750.00
Banquet	1,525.00
Excursions	1,060.00
TOTAL	$18,831.80

Total Expenses

Accomodation	$ 6,720.00
B.U. Conference Charges	2,261.24
General Expenses (Xeroxing, publicity, stationary, typing)	862.28
Poster boards	505.00
Speakers' Expenses	3,930.45
Reimbursements	957.00
Banquet	2,120.78
Excursions	686.44
Student Travel Awards	750.00
Miscellaneous banking expenses (eg. Foreign exchange debits)	38.61
TOTAL	$18,831.80

NEW MEMBERS - Welcome to the PSNA

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Tunapuna Post Office
Trinidad and Tobago
West Indies

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Cellular and Developmental Biol.
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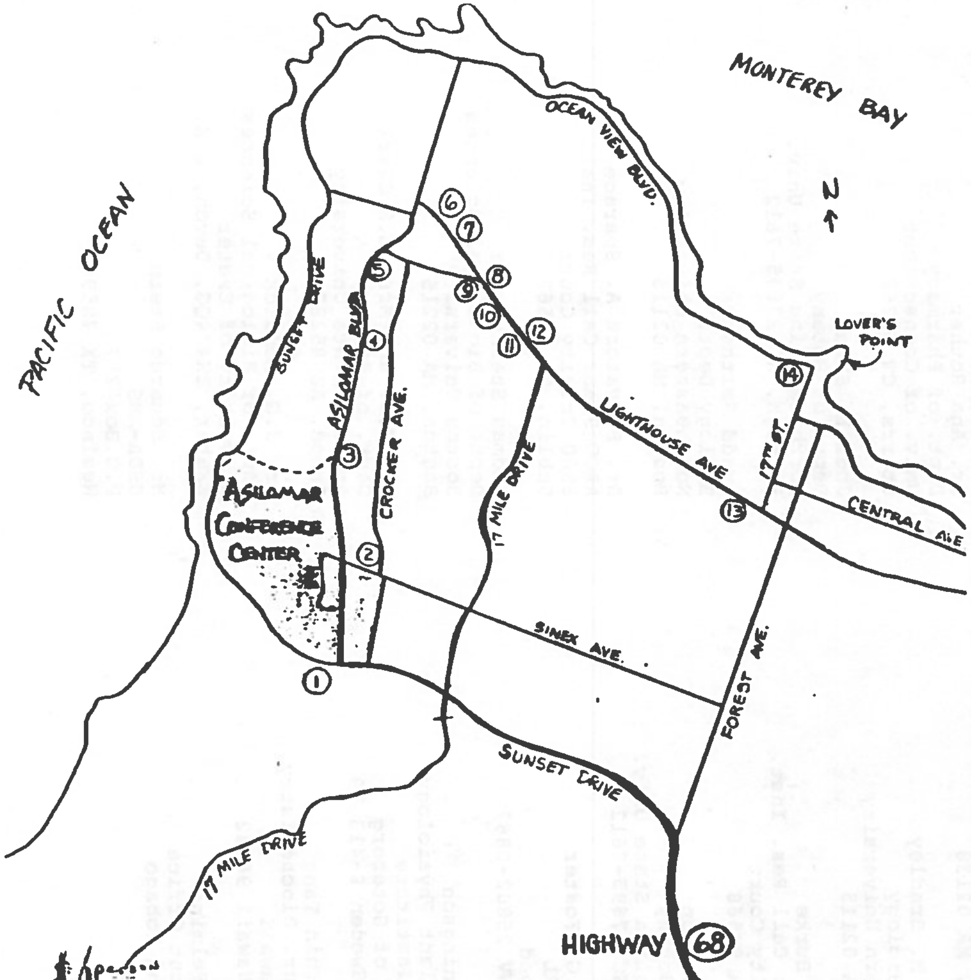
Weslaco, TX 78596



\# / person

1. (373-4769) Beachcomber Inn / 1996 Sunset Dr.
40.00 2. (373-1114) Larchwood Inn / 740 Crocker Ave.
3. (375-0994) Andril's Cottages / 569 Asilomar Blvd.
4. (372-2330) Bide-A-Wee Motel / 221 Asilomar Blvd.
5. (375-7336) Sunset Motel / 133 Asilomar Blvd.
52.00 6. (372-0503) Butterfly Trees Lodge / 1150 Lighthouse Ave.
52.00 7. (373-2777) Olympia Motor Lodge / 1140 Lighthouse Ave.
8. (372-7775) Sea Breeze Motel / 1100 Lighthouse Ave.
9. (372-3216) Pacific Grove Motel / Lighthouse Ave. & Grove Acre Ave.
10. (373-4382) Terrace Oaks Motel / 1095 Lighthouse Ave.
22.00 11. (373-4921) Milar's Butterfly Grove Motel / 1073 Lighthouse Ave.
40.00 12. (372-5960) The Wilkies Motel / 1038 Lighthouse Ave.
13. (375-1287) The Gosby House Inn / 643 Lighthouse Ave.
44.00 14. (375-2406) Borg's Motel / 635 Ocean View Blvd.

See Science 85, March 1985, pg 76 for review

CARMEL (G-2) pop 4,700, alt. 20'

The compact business center of Carmel contains many unusual shops and galleries which display the work of local artists. The white sand beach is bordered by rare Monterey cypress trees. North of the village is an entrance to the Seventeen-Mile Drive (see *Monterey*).

◆*MISSION SAN CARLOS BORROMEO DEL RIO CARMELO* called Carmel Mission, is at 3080 Rio Rd. Established by Father Serra at Monterey in 1770 and moved to its present site the following year, the mission was Serra's residence and headquarters until his death in 1784. He is buried beneath the church floor in front of the altar. Relics of the mission's early days and some of Serra's books and documents are on display. The annual fiesta is usually held the last Sun in Sept. Mon-Sat 9:30-4:30, Sun and holidays 10:30-4:30, closed Easter, Thanksgiving and Dec. 25. Free. Phone (408) 624-3600.

◆*POINT LOBOS STATE RESERVE*, 4 mi. s., is a rugged seacoast area of 1,276 acres, where Monterey cypress, wildflowers and sea lions abound. A naturalist program is available. Admission is $2 per car. Daily 9-dusk. *See Recreation Chart.*

MONTEREY (G-2) pop. 27,600, alt. 25'

On the Monterey Peninsula, Monterey's altitude ranges from sea level to 360 feet. The city was the capital of Alta California under the Spanish, Mexican and American flags. The peninsula is a popular all-year playground, with several golf courses. South of Monterey, SR 1 winds through redwood forests and along clifftops to San Luis Obispo.

On Cannery Row, the colorful locale of John Steinbeck's novel, galleries and restaurants have replaced all but one of the fish canneries. Along Fisherman's Wharf, an art gallery, handicraft shops and the Wharf Theater have replaced the commercial fishing activities of a half-century ago.

The Monterey Bay Aquarium, 886 Cannery Row, is scheduled to open Nov. 1984. Projected to be one of the largest seawater aquariums in the world, it will feature exhibits on the kelp forest, the bay, the tidal basin, marine mammals, various habitats and the shoreline. All living exhibits will come from local waters. Admission will cost $5-$6. Phone (408) 649-6466 for schedule.

ALLEN KNIGHT MARITIME MUSEUM, 550 Calle Principal, portrays the fishing and whaling era in Monterey and local naval history through a comprehensive collection of maritime artifacts, pictures and models. The 1880 Fresnel Light from Point Sur Lighthouse is on display. Tues.-Fri. 10-4, June 15-Sept. 15; Tues.-Fri. 1-4, Sat.-Sun. 2-4 rest of year; closed holidays. Free. Phone (408) 375-2553.

COLTON HALL (1848), on Pacific St. facing Friendly Plaza and Colton Hall Park, is where the first Constitution of California was written in 1849. Tues.-Sun. 10-noon and 1-5, closed holidays. Free. Adjoining Colton Hall is the old jail, built in 1854. Tues.-Sun. 10-5. Phone (408) 646-3851.

DENNIS THE MENACE PLAYGROUND is in the park on El Estero. Hank Ketcham, creator of "Dennis the Menace," aided in its development. It features free-form dimensional equipment, a railroad switch engine and a lion drinking fountain. Daily 10-dusk. Free. Phone (408) 646-3866.

THE HISTORICAL WAX MUSEUM OF OLD MONTEREY, 700 Cannery Row in the lower level of the Monterey Cannery Building, contains wax figures of area historical persons set in authentic scenes. A slide show of old Monterey is also featured. Sun.-Thurs. 10:30-6, Fri.-Sat. 10:30-10:30. Adults $2.50, military personnel $2, ages 6-13, $1.50. Phone (408) 375-3770.

MONTEREY PENINSULA MUSEUM OF ART, 559 Pacific St., features permanent and changing displays of regional and oriental art, photography and folk art. Tues.-Fri. 10-4, Sat.-Sun. 1-4, closed holidays. Free. Phone (408) 372-7591.

MONTEREY PRESIDIO, 1 blk. from the theater on Pacific St., was founded in 1770 by Capt. Gaspar de Portola, assisted by Padres Junipero Serra and Juan Crespi. It is now the U.S. Army Language School.

MONTEREY STATE HISTORIC PARK, 210 Olivier St., is a 7-acre site which preserves the history and architectural heritage of old Monterey in addition to the buildings listed below. It contains the Cooper-Molera Adobe, closed for restoration. Nearby is the original landing site of Sebastián Vizcaíno (1602-03) and, more than 150 years later, Father Serra. Park open daily 10-5, closed Jan. 1, Thanksgiving and Dec. 25. Buildings listed below are open during park hours except where indicated. Park admission includes all buildings: adults 50c, ages 6-17 and over 61, 25c. Phone (408) 649-2836.

Casa del Oro, Scott and Olivier Sts., has been a store, saloon, private residence and reputedly, a gold depository. It is restored and exhibits trade items of early Monterey.

Casa Soberanes, 336 Pacific, built in 1830, was occupied by members of the Soberanes family until 1922. It contains antiques and a museum on Monterey's history. Tours on the hour Mon.-Wed. and Sat.-Sun. 9-4.

Custom House, on Custom House Plaza at Fisherman's Wharf, is the oldest government building in California. Its north section was built about 1827. When Commodore John Drake Sloat raised the American flag over it in 1846, about 600,000 square miles became part of the United States. A museum is in the house.

First Theater (1846), Pacific and Scott Sts., once a lodging house for sailors, was the first building in California to charge admission for a theatrical performance. The building contains relics of early California. Wed.-Sun. 9-5. Special evening performances held Tues.-Sun.; check at the theater for schedules and fees. Phone (408) 375-4916 for reservations only.

Larkin House (1835), Calle Principal and Jefferson St., is restored. Its combination of Spanish colonial and New England architectural features has made it a prototype of other Monterey structures. The house served as the American consulate from 1843 to 1846. A 45-minute guided tour begins hourly Wed.-Mon. 9-11 and 1-4, closed holidays. Visitors should register for tours at the house.

Pacific House (1847), Calle Principal and Scott St., has served a variety of purposes. It is now a museum of California history and Indian artifacts. The garden here enhances the property.

Stevenson House, 530 Houston St., is the old "French Hotel" where Robert Louis Stevenson spent the fall months of 1879. Here he wrote *Vendetta of the West* and an essay on Thoreau and blocked out the *Amateur Emigrant* and *Prince Otto*. The house, restored and furnished in period, may be seen only by 45-minute guided tour offered on the hour, Thurs.-Tues. 9-11 and 1-4. Visitors must register for tours at the house.

SAN CARLOS CATHEDRAL, also known as the Royal Presidio Chapel, is on Church St. Founded in 1770 to be the mission church of the port, it became the church for the Spanish colonists and soldiers, as the mission was moved to Carmel in 1771. The present church has been in continuous use since 1795. Daily 8-6. Phone (408) 373-2628.

SEVENTEEN-MILE DRIVE is a scenic drive from Pacific Grove to Carmel and a highlight of any visit to this coastal region. Points of interest along the way include Seal Rock and Cypress Point. Also on the route are the Pebble Beach, Cypress Point, Spy Glass Hill and Monterey Peninsula Golf Courses, scene of the Crosby Pro-Am Tournament each spring.

The toll for cars is $4; no motorcycles or motorbikes are permitted on the drive. Bicycles are permitted Mon.-Fri. when no major sporting event is scheduled; Sat.-Sun. until 11 a.m. Cyclists must enter through the Lighthouse Gate in Pacific Grove on weekends, holidays and when special events are scheduled. Bicyclists must sign a release before using the drive. Phone (408) 372-5813.

PACIFIC GROVE (G-2) pop. 15,800, alt. 100'

Adjoining Monterey, Pacific Grove is the starting point for the popular Seventeen-Mile Drive (*see Monterey*). At the end of Lighthouse Ave. is the lighthouse Point Pinos. From this spot, visitors have a good view of the Monterey Peninsula coast. A small maritime museum in the lighthouse is open Sat.-Sun. 1-4, Jan. 2 to the day before Thanksgiving; free. Pets are not permitted at the lighthouse. Phone (408) 372-4212.

◆*BUTTERFLY TREES*, on Ridge Rd. off Lighthouse Ave., are pine trees which, from late Oct. to Mar., are covered with Monarch butterflies, an orange and black species ranging from Canada to South America.

MUSEUM OF NATURAL HISTORY, 165 Forest Ave., emphasizes the natural history of Monterey County with an extensive collection of shore and aquatic birds, a marine life diorama and an exhibit on Monarch butterflies. Tues.-Sun. and holidays 10-5, closed Jan. 1, Thanksgiving and Dec. 24-25. Free. (408) 372-4212.

AAA TourBook.

CALIFORNIA NEVADA

published by the
AMERICAN AUTOMOBILE ASSOCIATION
8111 Gatehouse Road
Falls Church, VA 22047

CONTENTS

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:
(with Zip Code) _____ Telephone: _____

_____

_____

_____

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

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

PHYTOCHEMICAL SOCIETY OF NORTH AMERICA

Newsletter

May 1985

Volume 25
Number 2

Executive Committee PSNA 1984 - 1985

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A FEW FINAL NOTES ABOUT OUR UPCOMING MEETING:

The Asilomar meeting has been organized with the intention of fostering dialog between chemists, biologists, ecologists, etc. having a common interest in Plant Phytochemistry. As you all know, our society is by nature and charter-definition a group having this common interest. The symposium topic this year is perhaps chemistry-biochemistry oriented. However, as reflected in the abstracts, the meeting content consists of a mixture of approaches and topics in phytochemistry. This is usually the case for our annual meetings. We look forward to getting together at Asilomar in the spirit of our common interests to learn from one another and, as a celebration of our anniversary, to reminisce about the past 25 years of interactions.

In this same spirit, we should prepare for the somewhat unique opportunity to participate in the dialog intended for the workshop on biotechnology and phytochemistry. This workshop will be moderated by Terry Graham of Monsanto. We hope that in preparation for the workshop meeting participants will give some forethought to how the systems and/or phytochemicals they are studying might be exploited -- or better exploited -- using the biotechnology approach and its new tools. For example, which key secondary product pathway enzymes or regulatory steps are ready for such experimentation, which are not, and how might the latter be made ready? What are the scientific, biological-ecological implications of biotechnological manipulation of phytochemicals? What are possible pitfalls and which are illogical approaches? If everyone comes to the session with an open mind and a bag of ideas we will undoubtedly have a useful discussion.

George Wagner and Bock Chan

CONSTITUTION-BYLAWS CHANGES:

We will vote on several important proposed changes (see below) to the society's constitution at the Asilomar meeting. The issues to be decided are very important to our society. All meeting participants are encouraged to come to the business meeting to discuss and vote on these proposed changes. If you cannot come to Asilomar and have an opinion about the proposed changes, ask someone who will be in attendance to voice your concerns. The following description is excerpted from a letter dated March 18, 1985 from the President, Dr. Mansell to the Executive Committee.

CHANGE IN ELECTION PROCEDURE:

RATIONALE - The heterogeneity of our society and the variable attendance at Annual meetings make the present system no longer appropriate for several reasons. One, is that many members cannot attend meetings every year, but do frequently enough to be active members who should have voting privileges. Two, past history indicates that the Nominating Committee does not always reflect the desires of the majority of members attending any one meeting. Three, it would be much better for members to know who the nominees are for a long enough period to permit a thoughtful choice.

The proposed changes are as follows with deleted material in ( ) and new material underlined.

SECTION 1. (DELETE ENTIRE SECTION) Election of officers shall be by a simple majority of returned election ballots distributed to the membership by the Secretary at least two months prior to the Annual Meeting of the Society. Nominations by the membership for Vice-President, Secretary and Treasurer will be sent to the immediate Past-President; for this purpose, a deadline and nomination ballot form shall be published in the Newsletter at least four months prior to the annual Meeting.

A nominating committee consisting of the immediate Past President as Chairperson and two members appointed by the President shall prepare a slate that will consist of the two names most nominated by the membership-at-large, willing to run, plus one name selected by the nominating committee if they desire; a minimum of two names for Vice-President shall be presented for voting. The number of nominations for Secretary and Treasurer may be limited to a single name at the discretion of the Nominating Committee.

The election ballot will be sent by the Secretary to the membership by a special mailing at least two months prior to the Annual Meeting. Ballots will be received by the Chairperson of the nominating committee and will be counted by persons selected by the presiding President. The results will be announced at the Annual Business meeting of the Society.

ARTICLE XIII, Section 1. Upon recommendation of the Executive Committee this Constitution may be changed or amended by a simple majority of votes collected for this purpose. (vote of the membership at the Business Session of the Annual Meeting.)

Section 2. Proposed amendments shall be made in writing to the Secretary (28 days) four months prior to the annual Meeting and voting materials shall be distributed to the membership at least two months prior to the Annual Meeting together with the ballot for election of officers.

BY-LAWS, ARTICLE II, Section 3.....and shall be responsible for distribution of special notices and election ballots and constitutional change ballots to the membership.

BY-LAWS, ARTICLE VI, Section 1. A meeting of the Society for transacting business (electing officers) presenting communications and related activities.

This now leaves us with one major change and that is to make Article XII of the Constitution consistent with the above changes. I fear that this is also necessary and propose the following:

Section 2. The establishment of amendment of such Bylaws shall require a simple majority vote of the membership (at the Business Session of the Annual Meeting).

Section 3. Proposed Bylaws and amendments shall be made in writing to the Secretary (28 days) four months prior to the Annual Meeting and voting materials shall be distributed to the membership at least two months prior to the Annual meeting together with the ballot for election of officers.

There is an additional proposed change which concerns REQUIREMENTS FOR TAX EXEMPT STATUS. According to the IRS, the society does not have tax exempt status. To be considered for such status (the alternative is to be considered a taxable entity) we must modify our constitution as follows (no deletions).

ARTICLE XV, Section 2. All assets remaining shall be transferred to one or more societies or organizations which are exempt under Section 501(c)(3) of the Internal Revenue Code and are engaged in activities...

These are important matters. Please plan to attend the business meeting.

FOUR ADDITIONAL MATTERS:

1) A reminder that we will celebrate our 25th anniversary at Asilomar. Bring your memorabilia.

2) Remember the workshop entitled "A Dialog Between the Academic and Biotechnological Scientists" to be moderated by Terry Graham of Monsanto

Chemical Co. Bring your ideas. Interesting articles on biotechnology of plant products were published in Trends in Biotechnology Vol 2 #6, 1984. Included are discussions on the biotechnology of secondary metabolites from plant tissue culture, European initiatives in plant and microorganism genetic manipulation, amino acid biosynthetic enzymes as targets in genetic engineering, and the biotechnology of ergot alkaloids.

If you know of other interesting reviews on this subject, please bring them to the workshop so those who are interested may trade references.

3) Finally, there will be an extra meeting room for our use at Asilomar. If someone wishes to organize an ad hoc session this will be possible. Contact Bock Chan for information.

4) Bock Chan has learned that the recently opened Monterey Bay aquarium on Cannery Row has become a very popular tourist attraction which is often sold out, particularly on weekends. Those who want to be assured of seeing this attraction should consider making reservations by calling one of the following: Ticketron (415)393-6914; Bass Tickets (415)835-4100

MEETINGS AND PROGRAMS OF INTEREST:

WILDLAND SHRUB SYMPOSIUM: "Plant/herbivore Interactions" - Sponsored by: The Shrub Research Consortium, August 7-9, 1985, Snowbird, Utah. For further information contact: **R. G. Kelsey, Dept. of Chemistry, University of Montana, Missoula, MO 59812 (406)243-4022.**

JOINT ANNUAL MEETING: American Society of Plant Physiologists and Canadian Society of Plant Physiologists, June 23 - 28, 1985, Brown University, Providence, RI 02912. For further information contact: **Dr. S. Beale, Div. Biol. and Medicine, Brown University, Providence, RI 02912 (401/863-3129).**

PLANT CELL AND TISSUE CULTURE COURSE: A course consisting of lecture-discussions and laboratory exercises in most aspects of plant cell and tissue culture will be held at the University of Tennessee, Knoxville, August 12-23, 1985. This course is designed for persons with a degree in science or experience in plant tissue culture who need a thorough knowledge of and training in plant cell and tissue culture. The course has been evaluated and certified by the Tissue Culture Association, Inc. The fees for the course will be $1,100. For further information contact: **Dr. Donald K. Dougall, Botany Dept., The University of Tennessee, Knoxville, TN 37996-1100 (615/974-2256).**

BIOCHEMICAL ENGINEERING COURSE: "Separations, Fermentation and Genetics" - July 29 - August 2, 1985. This intensive one week short course will focus on separation processes, analysis of fermentation systems, and applied genetics. The latest developments in membrane separation (ultrafiltration and microfiltration) absorption processes (adsorption and chromatography), and extraction and leaching will be presented in depth. The dynamics of biochemical processes including separation techniques will be analyzed using modern interactive computer graphics. How to exploit genetic techniques for industrial applications will also be features. Novel bioreactors especially for the production of monoclonal antibodies, and new ideas in continuous fermentation will also be reviewed. For further information contact: **Office of Continuing Studies, Rensselaer Polytechnic Institute, Troy, NY 12180-3590 (518/266-6442).**

NEW GRADUATE PROGRAMS IN PLANT PHYSIOLOGY: Washington State University, Pullman, WA. Interdisciplinary program offered by faculty of Agronomy and Soils, Botany, Horticulture and Landscape Architecture, Plant Pathology Program in Biochemistry and Biophysics and the Institute of Biological Chemistry. For further information contact: **Program Chairman, Dr. F. Loewus, Graduate Program in Plant Physiology, Washington State Univ., Pullman, WA 99164-6340 (509/335-2333).**

PROFESSIONAL POSITIONS:

PLANT MOLECULAR BIOLOGY: The University of Alberta invites applications for an immediate position at the Assistant Professor level (appointment salary range $29,720 - $33,020, under review) in the area of plant Molecular Biology. Preference will be given to applicants with experience in recombinant DNA methodologies or immunology. Candidates must have a Ph.D. degree and preferably two years of post-doctoral experience. A curriculum vitae, plus copies of three publications which best exemplify their work, and the names of three referees should be sent by candidates to: **Dr. Keith Denford, Chairman, Dept. of Botany, University of Alberta, Edmonton, Alberta, Canada T6G 2E9.** The University of Alberta is an Equal Opportunity/Affirmative Action Employer, but in accordance with Canadian Immigration, priority will be given to Canadian citizens and permanent residence of Canada.

NATURAL PRODUCT CHEMISTRY: Postdoctoral. Full-time research position available immediately for the isolation and identification of plant secondary chemicals responsible for plant resistance to insects, plant pathogens, and nematodes. Education in organic chemistry with experience in chromatographic techniques and chemical and spectroscopic methods of structure elucidation required. Send resume and names of three references to: **Prof. William S. Bowers, The University of Arizona, Dept. of Entomology, Tucson, AZ 85721.** The University of Arizona is an Affirmative Action/Equal Opportunity Employer.

PLANT MOLECULAR BIOLOGY: U.S. Department of Agriculture (USDA)-ARS has a research affiliate position available at the Plant Science Research Unit, Gainesville, FL, in the area of cytoplasmic male sterility of maize and sorghum. applicants should forward curriculum vitae and three letters of recommendation to: **Dr. D. R. Pring, Plant Science Research Unit, C/O Plant Pathology Dept., University of Florida, Gainesville, FL 32611.** Applications should be received by 25 May 1985. U.S. Citizenship required. Equal Opportunity Employer. Salary:GS-7, $17,824 per annum.

POSTDOCTORAL POSITION: The Depts. of Plant Pathology and Agronomy (Plant Physiology), University of Kentucky, have a postdoctoral position available. The position provides an opportunity to study the harmful and beneficial effects of pasture and turf grasses infected with endophytic fungi. Research will be focused on the role of endophytic fungi in the induced synthesis of pyrrolizidine alkaloids in Festuca spp. and identification of chemicals responsible for enhanced plant growth, resistance to insect attack and plant diseases in infected pasture and turf grasses. Candidate should have a Ph.D. in Plant Physiology, Phytochemistry, Plant Pathology or related field. Salary is $19,500/yr and position is for 2 years. Interested persons should submit a letter of application, resume, curriculum vita and three letters of recommendation to: **Dr. Lowell P. Bush, Agronomy Dept., University of Kentucky, Lexington, KY 40546 (606/257-3309).** Closing date is August 15 or whenever suitable applicant is located. The University of Kentucky is an Affirmative Action/Equal Opportunity Employer.

SOIL SCIENCE/PLANT NUTRITION: The Dept. of Land, Air and Water Resources invites applications for a faculty position in soil science/plant nutrition, with specialization in rhizosphere processes. This is an 11-month (plus one month paid vacation) Assistant Professor ladder position in the College of Agricultural and Environmental Sciences (30% teaching, 70% research in the Agricultural Experiment Station). Qualifications include a Ph.D. degree in soil or plant science, with strength in mathematics, physics, and chemistry. Strong assets will include interest and experience in mineral nutrition, quantitative modeling, and advanced experimental techniques. Applications and inquiries should be directed to **Dr. D. N. Munns, Chair, Plant Nutritionist Search Committee, Department of Land, Air and Water Resources, Hoagland Hall, University of California, Davis, CA 95616 (916)752-823/1406.**

WELCOME TO ASILOMAR AND THE PHYTOCHEMICAL SOCIETY OF NORTH AMERICA'S
25TH ANNUAL MEETING HONORING FOUNDERS TED GEISSMAN AND GESTUR JOHNSON

June 12-16, 1985

June 12

Wednesday afternoon

2:30 - 5:00 p.m.	Registration at Administration Bldg. and pickup of registration folders.
	Check-in time 3:00 p.m., June 12
	Check-out time 12 noon, June 16

Wednesday evening

6:00 - 7:00 p.m.	Dinner at Crocker Hall
7:30 -11:00 p.m.	Reception at Oak Shelter, hosted by PSNA

All meetings are held at Kiln.
Poster Sessions and refreshments at Oak Shelter.
Literature about surrounding vicinity will be available for perusal at reception desk.
For impromptu meeting arrangements contact Bock G. Chan.

June 13

Thursday morning (at Kiln)

8:30 - 12:00 p.m.	Pick-up of registration folders
8:30 - 8:35 a.m	Welcome to Silver Anniversary of PSNA at Asilomar
8:35 - 8:45 a.m.	Opening remarks, Richard Mansell, President of PSNA
	Moderator - Ulrich Weiss
8:45 - 9:50 a.m.	Plenary Paper I - Heinz Floss
9:50 - 10:20 a.m.	Coffee Break
10:20 - 11:25 a.m.	Plenary Paper II - Roy Jensen
11:25 - 12:00 p.m.	Contributed Papers #1 and 2 (Papers 1-8 are in competition for a travel grant)
12:00 - 1:00 p.m.	Lunch at Crocker Hall

June 13 continued:

Thursday afternoon

	Moderator - Eric Conn
1:05 - 2:10 p.m.	Plenary Paper III - Nickolaus Amrhein
2:10 - 3:15 p.m.	Plenary Paper IV - Paul Bartlett
3:15 - 3:40 p.m.	Coffee Break
3:40 - 5:15 p.m.	Contributed papers #3-8

Thursday evening

6:00 - 7:00 p.m.	Dinner in a private room
7:35 - 11:00 p.m.	Poster session (in attendance by authors) with refreshments at Oak Shelter.

June 14

Friday morning

	Moderator - Leroy Creasy
8:20 - 9:25 a.m.	Plenary Paper V - Edwin Haslam
9:25 - 10:30 a.m.	Plenary Paper VI - Andrew Pelter
10:30 - 10:50 a.m.	Coffee Break
10:50 - 11:50 a.m.	Contributed papers #9-12
12:00 - 1:00 p.m.	Lunch at Crocker Hall

Friday afternoon

	Moderator - Geza Hrazdina
1:00 - 2:05 p.m.	Plenary Paper VII - T. Kosuge
2:05 - 3:20 p.m.	Contributed papers #14-17
3:20 - 3:25 p.m.	Coffee Break
3:25 p.m.	Business meeting

Friday evening

6:00 - 8:00 p.m.	Banquet in honor of the founders - Professor Gestur Johnson will speak and Robert Horowitz will pay tribute to Ted Geissman. Travel award winners presentation.
9:00 - 11:00 p.m.	Poster display continues with refreshments.

June 15

Saturday morning

Moderator - Leonard Jurd

8:30 - 9:35 a.m.	Plenary Paper VIII - E. Leisnter
9:35 - 10:40 a.m.	Plenary Paper IX - Harold Moore
10:40 - 11:00 a.m.	Coffee Break
11:00 - 12:00 p.m.	Contributed papers #18-21
12:00 - 1:00 p.m.	Lunch at Crocker Hall

Saturday afternoon

Moderator - Thomas Cromartie

1:05 - 2:10 p.m.	Plenary Paper X - Stewart Brown
2:10 - 3:15 p.m.	Plenary Paper XI - David Dreyer
3:15 - 3:30 p.m.	Coffee Break
3:30 - 5:00 p.m.	Contributed papers #22-27

Saturday evening

6:00 - 7:00 p.m.	Dinner in a private room
7:30 - ?	Evening forum: An open dialogue between academic and biotechnological scientists. Audience is fully encouraged to participate for a successful dialogue. Refreshments will be available. Moderator - Terry Graham.

June 16

Sunday morning

Moderator - Vernon Singleton

8:30 - 10:30 a.m.	Contributed papers #28-35
11:00 - 12:00 p.m.	Barbecue luncheon (if funds allow)

PEACE UNTIL WE MEET AGAIN!

From the organizational committee:
Bock G. Chan, Eric Conn, Juanita Ladyman,
and Vernon Singleton

ABSTRACTS

SI 8:45 - 9:50 A.M., 6/13

THE SHIKIMATE PATHWAY - AN OVERVIEW

Heinz G. Floss, Department of Chemistry, The Ohio State University, Columbus, Ohio 43210.

An overview will be given of the shikimate pathway of aromatic biosynthesis, with major emphasis on new results obtained during the last few years.

9:50-10:20 A.M., Coffee Break, 6/13

SII 10:20 - 11:25 A.M., 6/13

TYROSINE AND PHENYLALANINE BIOSYNTHESIS: RELATIONSHIP BETWEEN ALTERNATIVE PATHWAYS, REGULATION AND SUBCELLULAR LOCALIZATION

Roy A. Jensen, Center for Somatic-cell Genetics and Biochemistry, State University of New York, Binghamton, New York 13901

The aromatic amino acids, L-tyrosine and L-phenylalanine, are synthesized in nature by means of two different biochemical flow routes. One alternative is to use 4-hydroxyphenylpyruvate and phenylpyruvate, respectively, as key intermediates; the second alternative employs L-arogenate as a direct precursor of L-tyrosine and/or L-phenylalanine. Nicotiana silvestris possesses an NADP-linked arogenate dehydrogenase that is subject to feedback inhibition by L-tyrosine. Prephenate dehydrogenase has not been detected. Arogenate dehydratase has been successfully assayed in N. silvestris, this being the first report of any specific phenylalanine-branch enzyme. Prephenate dehydratase appears to be absent. Other branchpoint enzymes expected to be subject to allosteric control have been characterized, these being anthranilate synthase, chorismate mutase, and 3-deoxy-D-arabino-heptulosonate 7-phosphate synthase. Shikimate dehydrogenase, 5-enolpyruvylshikimate-3-phosphate synthase and prephenate aminotransferase have also been studied. Strong evidence exists to support the presence of an intact aromatic pathway that is tightly regulated by feedback inhibition within the plastidial compartment. Additional evidence favors the existence of much or all of the aromatic pathway in the cytosol. The cytosolic pathway may be unregulated, thereby supplying linked pathways of secondary metabolism with substrates by a simple overflow process. Compartmentation studies have employed techniques of differential centrifugation of protoplast-derived lysates, isolation of washed chloroplast preparations, and gel-electrophoretic discrimination of isozymes. Enzymological data have been obtained from both organismal tissues and cultured cell populations. Comparative information obtained from a variety of higher plant sources indicates a basic similarity of aromatic-pathway arrangement, regulation and compartmentation in higher plants.

P1 11:30 - 11:45 A.M., 6/13

AROGENATE DEHYDROGENASE FROM SORGHUM BICOLOR. James A. Connelly and Eric E. Conn. Department of Biochemistry & Biophysics, University of California, Davis, CA 95616

Dhurrin, a cyanogenic glucoside derived from tyrosine, accumulates to very high levels in young sorghum seedlings. Because of this phenomenon, sorghum seedlings are an ideal system for studying the enzymes of tyrosine biosynthesis.

The conversion of prephenic acid to tyrosine, in plants, was thought to occur by oxidative decarboxylation (prephenate dehydrogenase) followed by transamination (aromatic aminotransferase). An alternate pathway, described by Jensen and coworkers in 1975, involves transamination of prephenate to a nonaromatic amino acid, arogenic acid, (prephenate aminotransferase) followed by aromatization to tyrosine (arogenate dehydrogenase). High activity of arogenate dehydrogenase and an enzyme capable of transaminating prephenate were found in extracts of etiolated sorghum seedlings, while no evidence of prephenate dehydrogenase was observed. Arogenate dehydrogenase from sorghum eluted, with high recovery of activity (93%), as a single peak on DEAE-cellulose chromatography. The enzyme was strongly inhibited by tyrosine but was unaffected by phenylalanine, prephenate, or tryptophan. Kinetic analysis showed that tyrosine inhibition was competitive with arogenate and that the K_I for tyrosine (61 μM) was much smaller than the K_M for arogenate (350 μM).

The properties of arogenate dehydrogenase indicate that this enzyme is important in the regulation of tyrosine biosynthesis in sorghum.

P2 11:45 - 12:00 A.M., 6/13

PURIFICATION AND CHARACTERIZATION OF AMYGDALIN HYDROLASE ENZYMES FROM MATURE BLACK CHERRY (Prunus serotina) SEEDS.

Gary W. Kuroki and J.E. Poulton, Department of Botany, U. of Iowa, Iowa City, IA 52242.

Two isofunctional forms of amygdalin hydrolase have been isolated and purified over 200-fold from mature black cherry seeds. These two forms were resolved by chromatofocusing and possessed pI values of 6.44 and 6.37. Both enzymes shared similar Km values towards amygdalin, acidic pH optima and were competitively inhibited by the reaction product prunasin. Studies with a variety of potential glycosidic substrates suggested that both amygdalin hydrolase enzymes possess a very narrow specificity towards the endogenous cyanogen amygdalin. The ability of Con A-Sepharose to bind both enzymes and subsequent elution with α-methyl glucoside strongly suggests that they are glycoproteins. The nature of the carbohydrate moieties as well as their possible role in heterogeneity will be discussed.

12:00 - 1:00 P.M., Lunch at Crocker Hall, 6/13.

SIII 1:05 - 2:10 P.M., 6/13
SPECIFIC INHIBITORS AS PROBES INTO THE BIOSYNTHESIS AND METABOLISM OF AROMATIC AMINO ACIDS

Nikolaus Amrhein, Lehrstuhl für Pflanzenphysiologie, Ruhr-Universität, D 4630 Bochum, Fed.Rep.Germany

Specific metabolic inhibitors are of great value as tools in biochemical and physiological research. At the biochemical level, they allow the investigation of the structure and function of their target sites; at the physiological level, the consequences of the disruption of a pathway can be studied at the cellular and organismal level. Finally, they hold promise as drugs or pesticides. For the shikimate pathway and its major branch in higher plants, the phenylpropanoid pathway, two inhibitors with reasonable claim to specificity are known: N-[phosphonomethyl]-glycine (glyphosate) is a potent broad-spectrum herbicide which inhibits 5-enolpyruvylshikimic acid-3-phosphate (EPSP)synthase competitively with phosphoenolpyruvate. The enzyme has been purified from a number of organisms, and the physical and kinetic properties of these enzymes will be compared. Resistance to glyphosate in bacterial mutants can be related to the occurrence of glyphosate-insensitive EPSP synthases, while glyphosate tolerance in plant cell cultures is associated with an overproduction of the glyphosate-sensitive enzyme. As a consequence of EPSP synthase inhibition by glyphosate, bacteria excrete shikimic acid-3-phosphate, while higher plant cells accumulate mainly free shikimic acid. In seedlings and young leaves, EPSP synthase appears to be predominantly located in chloroplasts. Mesophyll chloroplasts of young leaves into which glyphosate had been imported via the phloem, show striking structural changes. A study of the intracellular distribution of shikimic acid and its phosphate ester in glyphosate treated leaves by non-aqueous compartmentation analysis indicates that shikimic acid-3-phosphate accumulates mainly in the chloroplast, while shikimic acid is found in the cytoplasm and the vacuole. L-a-Aminooxy-ß-phenylpropionic acid (AOPP) is a potent competitive inhibitor of phenylalanine ammonia-lyase (PAL). It effectively blocks the biosynthesis of phenylpropanoid compounds and causes the accumulation of phenylalanine in plant tissues. Examples of the application of the inhibitor in studies on the biosynthesis and degradation, as well as function of phenylpropanoid compounds will be discussed. Particular attention will be given to structural changes in the vascular tissue of seedlings in which lignin synthesis was suppressed by AOPP.

SIV 2:10 - 3:15 P.M., 6/13
SYNTHETIC ORGANIC CHEMISTRY AND THE SHIKIMATE PATHWAY: INHIBITORS AND INTERMEDIATES

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

Synthetic studies directed toward intermediates in the shikimate pathway will be discussed. These studies include: a chemical synthesis of stereoisotopically labeled phosphoenolpyruvate which affords either isomer from a common precursor; total syntheses of shikimic acid and shikimate-3-phosphate starting with 3-cyclohexenecarboxylic acid; and the chemical conversion of shikimic acid into 5-enolpyruvylshikimate-3-phosphate. Approaches to the chemical conversion of shikimic acid to chorismic acid will also be described.

Inhibition of the chorismate mutases by molecules which are designed to mimic the putative transition state has been an enticing goal for many years. However, previous efforts in this regard have met with limited success, in that no inhibitor has been reported which is bound significantly more tightly than the substrate itself. We will describe our research in this area, which has produced an inhibitor of the *E. coli* chorismate mutase/prephenate dehydrogenase with an I_{50} which is 100-fold less than K_m for chorismate.

3:15 - 3:40 P.M., Coffee Break, 6/13

P3 3:45 - 4:00 P.M., 6/13

FLAVONOID AGLYCONES FROM TWO SPECIES OF ISOCOMA (ASTERACEAE). Lisa E. Clark*, Eckhard Wollenweber+ and W.Dennis Clark*. *Department of Botany and Microbiology, Arizona State University, Tempe, AZ 85287 and +Institut fuer Botanik der TH, D-6100 Darmstadt, West Germany.

We have initiated a chemotaxonomic study of the genus Isocoma (Asteraceae; Astereae) using flavonoid aglycones obtained from external leaf washes. Two species, Isocoma veneta and I. tenuisecta, have thus far been examined. Their flavonoid profiles were determined by TLC co-chromatography with authentic samples. Fourteen compounds from I.veneta and twelve compounds from I. tenuisecta were identified. They are mostly methyl ethers based on apigenin, kaempferol, quercetin, scutellarein (I. veneta only) or 6-hydroxykaempferol (I. tenuisecta only). Eight of the total eighteen compounds are found in both species. The diversity of compounds found in Isocoma is comparable to that found other genera of the Astereae, but there are too few data to make meaningful generic comparisons at this time.

P4 4:00 - 4:15, 6/13

NOVEL FLAVONOL SULFATE DIESTERS FROM FLAVERIA CHLORAEFOLIA Denis Barron and Ragai Ibrahim (Chem. Grad. Fac. and Biol. Dept., Concordia University, Montreal, Canada H3G 1M8).

Leaves of F. Chloraefolia (Compositae) were extracted with aqueous 50% methanol and the extract was partitioned against solvents of increasing polarity. The ethyl acetate extract contained patuletin and its 3-glucoside whereas the butanol and the aqueous layers yielded two distinct flavonol sulfate diesters which were based on quercetin- and patuletin-sulfates. The characterization of these novel compounds was carried out using UV, ^{1}H NMR, ^{13}C NMR spectroscopy and hydrolysis with aryl sulfatase.

P5 4:15 - 4:30 p.m., 6/13

POLYACETYLENES IN HAWAIIAN BIDENS. Y.Y.Marchant, F.R.Ganders, C.K.Wat, G.H.N.Towers, Botany Dept., University of B.C., Vancouver, B.C., Canada, V6T 2B1.

Hawaiian Bidens is a morphologically and ecologically diverse group of 19 species and 8 subspecies. Leaves and roots from all but 2 subspecies were examined for polyacetylenes. The objectives of this study were to determine the extent of evolutionary differentiation of polyacetylenes in Hawaiian Bidens and to see whether they are useful taxonomic characters in the group. Eleven C_{13} hydrocarbons, aromatic and thiophenyl derivatives, one C_{14} tetrahydropyran and three C_{17} hydrocarbons were isolated and identified. All can be derived from a common precursor, oleic acid. The occurrence of 2-(2-phenyl-ethyne-1-yl)-5 acetoxymethyl thiophene in Bidens has not been previously reported. Its ubiquitous presence is consistent with other evidence that the Hawaiian species are all derived from a single ancestral immigrant to the islands. Most taxa could be distinguished by their complement of polyacetylenes in roots and leaves. No variation was found to occur within taxa except in B. torta, in which each population had a unique array of polyacetylenes. Above the species level there was no significant pattern to polyacetylene distribution in this group.

P6 4:30 - 4:45 P.M., 6/13

CHANGES IN THE LIMONIN AND NARINGIN CONTENT OF THREE VARIETIES OF GRAPEFRUIT DURING FRUIT DEVELOPMENT AND OVER THREE GROWING SEASONS. C.A. McIntosh and R.L. Mansell, Dept. Biology, U. of South Fla., Tampa, FL. 33620. In this study, the limonin and naringin content in 3 cultivars of grapefruit was studied as a function of development and seasonal maturity of the fruit. The average amount of limonin and naringin per fruit increased (e.g., 20-fold and 30-fold respectively in Duncan) as the fruit developed and reached approximately 30% of their mature weight. The average amount of limonin and naringin per fruit during maturation in Duncan and Thompson was relatively constant throughout the season for all 3 years. Marsh fruit followed the same trend in years 1 and 2 but in year 3 there was a 70% decrease in total limonin as the fruit matured.

In each variety, there was an initial increase in the limonin concentration (ppm) until the fruit reached about 2% of their mature weight. This was followed by a linear decrease in the limonin concentration as the fruit enlarged and matured. The naringin concentration increased until the fruit reached about 1% of their mature weight and the concentration decreased by 95% as the fruit matured. The actual monthly average concentration of limonin and naringin in maturing fruit varied from year to year.

P7 4:45 - 5:00 p.m., 6/13

IMMUNIZATION IN CUCUMBER: IS THE IMMUNIZED PLANT SENSITIZED TO LIGNIFY RAPIDLY AFTER WOUNDING? R. A. DEAN & J. KUC, UNIVERSITY OF KENTUCKY, LEXINGTON, KY 40546.

Localized infection of cucumber plants with fungi, bacteria and viruses induces non-specific systemic protection for the life of the plant against disease caused by pathogens from all 3 classes. Peroxidase activity increases 3 fold in unchallenged protected tissues and histochemical studies suggest rapid lignification in response to challenge. In these studies plants were systemically protected by infection of leaf 1 with Colletotrichum lagenarium. Seven days later leaf 2 was challenged and at time intervals leaf discs were punched and vacuum infiltrated with ^{14}C phenylalanine or ^{14}C t-cinnamate. After incubation, the discs were extracted, base hydrolysed, and subjected to nitrobenzene oxidation. ^{14}C p-Hydroxybenzaldehyde and ^{14}C vanillin were recovered by reverse phase H.P.L.C. Initially incorporation into 'lignin'-containing residue was greater in protected leaf discs, but became greater in unprotected discs as symptoms developed. Interestingly, incorporation was ca 50% greater in unchallenged protected discs. Autoradiograms and extraction of wounded regions indicated that at least part of the rapid lignification may be triggered by wounding.

P8 5:00 - 5:15 p.m., 6/13

HUMAN CHEMICAL ECOLOGY: INSIGHTS FROM POTATO DOMESTICATION. Timothy Johns, Division of Entomology and Parasitology, University of California, Berkeley, CA 94720

Plant defensive compounds must have posed constraints on food procurement by early human foragers. Selection for secondary constituents has been an essential aspect of the domestication of food plants. The domestication of the indigenous potato species, Solanum X ajanhuiri, from western Bolivia was studied from a chemical ecological perspective. The consumption of edible clays is an important technique for detoxification of potatoes high in glycoalkaloids, and therefore for making their genetic manipulation possible. Tests of perception and preference of glycoalkaloids by Aymara cultivators showed that potatoes are acceptable at a level below approximately 20mg/100g total glycoalkaloids (TGA) fresh weight. Chemotaxonomic studies supported the proposed phylogeny of the S. X ajanhuiri domestication complex. Identification of a novel "hybrid" glycoalkaloid, sisunine, confirmed the hybrid origin of the important clones, "sisu". Dramatic reduction in TGA levels in comparison to continuous variation in morphological and other chemotaxonomic characters supported the role of human selection for lower glycoalkaloid levels in the domestication process.

6:00 - 7:00 P.M., Dinner, 6/13

POSTERS

Thursday 6/13 7:35 - 11:00 P.M. in Oak Shelter
Continued on Friday 6/14 9:00 - 11:00 P.M.

1P

INDUCED BIOSYNTHESIS OF HEMIGOSSYPOL AND HEMIGOSSYPTONE IN GOSSYPIUM: THEIR ISOLATION AND CHEMICAL STRUCTURE DETERMINATION.
B. G. Chan, N. E. Mahoney, M. Benson, R. Wong, and D. Kolibachuk.
WRRC, ARS, USDA, 800 Buchanan, Albany, CA 94710.
Biosynthesis of hemigossypol and hemigossyptone in Gossypium barbadense and Gossypium hirsutum was induced by ammonium sulfate. These compounds were found in the pith and stele. Their isolation and characterization by ^{1}H and ^{13}C NMR spectroscopy and single crystal X-ray analysis will be presented.

2P

METABOLISM OF CHLORSULFURON, AN INHIBITOR OF BRANCHED-CHAIN AMINO ACID BIOSYNTHESIS IN PLANTS

David L. Erbes, Agricultural Chemicals Department, E. I. du Pont de Nemours & Co., Inc., Experimental Station, Wilmington, DE 19898

Chlorsulfuron, the active ingredient in the herbicide Glean®, inhibits acetolactate synthase in the pathway for biosynthesis of valine and isoleucine. The acetolactate synthase from tolerant plants is readily inhibited by chlorsulfuron. However, these plants are able to metabolize chlorsulfuron to glucose conjugates with relatively little ability to inhibit acetolactate synthase. An oxygenase, a glucosyltransferase and a glucosidase participate in this metabolism.

3P

ORGANIC ACID CONTENT OF ANNUAL RYEGRASS EXPOSED TO FLOODING AND HIGH SOIL ALUMINUM.

J. G. Foster and R. J. Erickson. USDA-ARS Appalachian Soil and Water Conservation Research Laboratory, Beckley, WV 25802-0867 and T. H. Terrill and V. G. Allen, Department of Agronomy, Virginia Tech, Blacksburg, VA 24061.

Plants vary in Al tolerance, and Al chelation by organic acids is one mechanism by which plants can avoid Al toxicity. Research was undertaken to acquire information about changes in tissue levels of organic acids in response to changes in environmental conditions that favor enhanced Al uptake. Potted annual ryegrass plants were watered to 80% of field capacity or flooded and treated with Al at rates of 0 and 135 mg/kg soil. General linear models analyses of data obtained from high performance liquid chromatographs provide sufficient evidence for significant decreases in tissue content of succinate, citrate, malate, and fumarate with flooding while significant increases in succinate, malate, and fumarate, but not citrate, accompanied Al treatment. Significant interaction between soil moisture and Al regulated tissue levels of these organic acids. Experimental results showed that specific amino acids and phenolic acids in annual ryegrass are also regulated by the Al content of the soil and exposure of the plants to flooding.

4P

INVESTIGATION OF ANTHRAQUINONES OF RHUBARB AND CINCHONA

Henry E Khouri & Ragai K Ibrahim (Chem. Grad. Fac. & Biol. Dept. Concordia Univ., Montreal, Canada H3G 1M8)

Methods were developed for the extraction and purification of anthraquinones using preparative TLC, HPLC and Sephadex LH-20 as well as their characterization by spectroscopic methods. These methods were used for investigating the anthraquinone pattern of rhubarb rhizomes and comparing the productivity of callus tissue and cell suspension cultures of Cinchona succirubra. Chrysophanol (1,8-diOH-3-methyl-) and emodin (1,6,8-triOH-3-methyl anthraquinone) were among the common constituents found in the tissues studied.

5P

SOYBEANS REQUIRE SHIKIMATE PATHWAY FOR DISEASE RESISTANCE

Jack D. Paxton and Kevin D. Simcox, Dept. of Plant Pathology, University of Illinois, Urbana, 61801.

Glyphosate is a well known specific inhibitor of 5-enolpyruvylshikimate-3-phosphate synthase and is sytemic in plants. This information was used to study disease resistance in soybean plants. Glyceollin is a soybean phytoalexin that inhibits the growth of microorganisms and is synthesized via the shikimate pathway.

Soybean plants treated with 0.5 ug of glyphosate became susceptible to a wide range of microorganisms within 2 days of treatment. Untreated plants remained resistant to these same microorganisms. Concomitant with induced susceptibility was a reduction in glyceollin accumulation in these plants.

6P

PURIFICATION AND CHARACTERIZATION OF MANDELONITRILE LYASE FROM SEEDS OF PRUNUS SEROTINA.

R.S. Yemm and J.E. Poulton, Dept. of Botany, University of Iowa, Iowa City, IA 52242.

Five multiple forms (Forms 1-5) of mandelonitrile lyase (EC 4.1.2.10) have been purified to virtual homogeneity from mature seeds of black cherry by Con A-Sepharose 4B chromatography and chromatofocusing. These forms are monomers which vary only slightly with regard to molecular weight (57,000-59,000) and isoelectric point (4.58-4.63). Con A-Sepharose 4B chromatography and absorption spectral data strongly suggest that all forms are glycoproteins which contain FAD as a prosthetic group.

Detailed comparative studies of Forms 4 and 5 were conducted. The major kinetic characteristics of each form were shown to be extremely similar. The presence of various metal salts, sulfhydryl reagents, metabolites and other possible inhibitors of mandelonitrile lyase were shown to affect each form to equal extents with few exceptions.

7P

PARTIAL PURIFICATION AND CHARACTERIZATION OF A β-N-ACETYLHEXOSAMINIDASE FROM BLACK CHERRY (Prunus serotina) SEEDS

J.E. Poulton, M.A. Thomas, K.K. Ottwell and S.J. McCormick
Department of Botany, University of Iowa, Iowa City, Iowa 52242.

A β-N-acetylhexosaminidase was extensively purified by ion-exchange and affinity chromatography. The purified enzyme showed highest activity towards p-nitrophenyl-N-acetyl-β-D-glucosaminide(opt. pH 4.5;Km,0.49mM) and PNP-N-acetyl-β-D-galactosaminide(opt. pH 4.0;Km,0.63mM). Lesser activity was shown towards PNP- and ONP-β-D-glucosides, while PNP-N-acetyl-α-D-glucosaminide, PNP-N-acetyl-α-D-mannosaminide and PNP-α-D-glucoside were not hydrolyzed. The enzyme preparation lacked amygdalin hydrolase, prunasin hydrolase and PNP-α-D-mannosidase activities. Enzyme activity was not stimulated by any metal ions tested and was unaffected by DIECA, 2,2'-dipyridyl, 1,10-phenanthroline, iodoacetate and iodoacetamide, but BSA was required for retention of activity.

8P

Small Peptides in Legume Seeds. Robert Pacifici, Philip Dubois, and Trevor Robinson, Biochemistry Department, University of Massachusetts, Amherst, MA 01003.

Last year at this meeting our group reported on a procedure for isolating and characterizing the small peptides present in *Lupinus albus* and other *Lupinus spp.* We have now made some improvements in the procedure and extended our studies to peas and beans. The heart of the separation procedure is chromatography of copper complexes on DEAE celulose. The peptide fraction obtained in this way is subdivided further by size exclusion and reversed phase chromatography. The lupine seeds contain about fifteen oligopeptides, including both acidic and strongly basic ones. Both peas and beans are simpler in peptide composition than the lupines. The most striking qualitative difference among the three species is that the strongly basic arginine-containing peptides present in lupines and beans are missing from peas, although peas have a high content of free arginine.

9P

ELECTROFUSION OF CARROT AND TOBACCO PROTOPLASTS

Saunders, James A., LeeAnn Roskos, KinLin Chao, and Ben Matthews

Tobacco Laboratory and Tissue Culture and Molecular Biology Laboratory, Beltsville Agricultural Research Center, Beltsville, MD 20705

Leaf mesophyll protoplasts from several species of Nicotiana and suspension cells from several species of Daucus have been subjected to electrofusion treatments. The procedure involves the initial attraction of the cells to each other by an alternating sine wave current. The subsequent fusion of the protoplasts is achieved by a 30-50 usecond D.C. pulse. Tobacco protoplasts subjected to the electrofusion treatment have been regenerated back into plantlets in tissue culture; however, positive hybrid formation has not been clearly established. Biochemically selectable carrot cell lines have also been subjected to the electrofusion treatments and are currently being used to determine if the regenerated tissue is of hybrid origin.

10P

IMMUNOLOGICAL CHARACTERIZATION OF CHORISMATE MUTASES FROM SORGHUM BICOLOR

Bijay K. Singh and Eric E. Conn, Department of Biochemistry and Biophysics, University of California, Davis, CA 95616

Highly purified fractions of chorismate mutase I or II from etiolated seedlings of Sorghum bicolor were used to prepare antisera in mice. In double diffusion experiments, no immuno-precipitate was observed when chorismate mutase II was tested against chorismate mutase I antiserum and vice-versa. Increasing amounts of sera against chorismate mutase I failed to inhibit the activity of chorismate mutase II. Similarly, chorismate mutase II antisera were unable to inhibit the chorismate mutase I activity. Sera against chorismate mutase I or II were also tested by the enzyme-linked immunosorbent assay (ELISA) using highly purified chorismate mutases as the antigen. Once again, no cross-reaction was found between chorismate mutases I and II and their antisera. The data suggests that there is no immunological similarity between chorismate mutases I and II from Sorghum.

11P

FLAVAN-3-OL BIOSYNTHESIS: THE CONVERSION OF (+)-DIHYDROMYRICETIN TO ITS FLAVAN-3,4-DIOL (LEUCODELPHINIDIN) AND TO (+)-GALLOCATECHIN BY REDUCTASES EXTRACTED FROM TISSUE CULTURES OF GINKGO BILOBA AND PSEUDOTSUGA MENZIESII.

Helen A. Stafford & Hope H. Lester, Reed College, Biology Department, Portland, OR 97202

Extracts of callus or cell suspension cultures from petioles of Ginkgo biloba catalyzed the production of (+)-gallocatechin (2,3-trans-3,5,7,3',4',5'-hexahydroxy-flavan) from (+)-dihydromyricetin (5'-hydroxy-dihydroquercetin) along with the expected 3,4-cis-diol intermediate, leucodelphinidin, in a NADPH-dependent double step reductase reaction at pH 7.4. The latter diol, isolated from the above incubation mixture, produced (+)-gallocatechin in a NADPH-dependent reaction. Extracts from tissue cultures derived from Pseudotsuga menziesii (Douglas fir) produced significant amounts of the 3,4-diol from dihydromyricetin. (+)-Dihydromyricetin, purified via paper chromatography from leaves of Leptarrhena pyrolifolia, was reduced by $NaBH_4$ to the presumed 3,4-trans-diol and acid epimerized to the 3,4-cis-diol.

12P

BIOSYNTHESIS OF 2-(4'-HYDROXYPHENYL)-1-NITROETHANE BY A MICROSOMAL SYSTEM FROM CELL CULTURES OF ESCHSCHOLTZIA CALIFORNICA

K.F. McCue, I. Tober, W. Hösel, and E.E. Conn, Department of Biochemistry and Biophysics, University of California, Davis, CA 95616

When microsomal preparations from sorbitol stressed cell suspension cultures of Eschscholtzia californica (California poppy) were incubated with [^{14}C] tyrosine to study cyanogenic glycoside biosynthesis, the production of 2-(4'-hydroxyphenyl)-1-nitroethane (HPNE) was observed. The compound produced in vitro was shown to co-migrate with an authentic sample of chemically synthesized HPNE in TLC and HPLC systems. p-Hydroxyphenylacetaldoxime inhibited synthesis of HPNE and served as a precursor itself, indicating the first biosynthetic steps may correspond to those for the biosynthesis of other natural products derived from aldoximes, i.e. cyanogenic glucosides, glucosinolates, some amides and carboxylic acids. p-Hydroxyphenylacetonitrile acts as an inhibitor, but, can not serve as a precursor. The biosynthesis of HPNE is NADPH-dependent. Microsomes from cells grown on the regular Gamborg B5 medium (no sorbitol added), produced much lower amounts of HPNE. The production of this metabolite is enhanced by conditions of osmotic stress. Enzyme activities in these cultures have now been stable for the past year. Production of HPNE in other plants containing tyrosine-derived secondary metabolites is currently under investigation.

13P

A MEMBRANE-ASSOCIATED GLUCOSYLTRANSFERASE ACTIVITY IN CELL CULTURES OF ESCHSCHOLTZIA CALIFORNICA.

I. Tober, W. Hösel, T.N. Hanslik and E.E. Conn, Department of Biochemistry and Biophysics, University of California, Davis, CA 95616.

Enzyme preparations from California poppy (Eschscholtzia californica) cell suspension cultures grown under certain conditions of osmotic stress (6% sorbitol in Gamborg B5 medium) produce 2-(4'-hydroxyphenyl)-1-nitroethane (HPNE) from tyrosine. In the presence of UDP-glucose, however, only traces of HPNE can be detected, while HPNE-glucoside is formed as the main product. The findings suggested the presence of a glucosyltransferase activity which is associated with the microsomal membranes, since no such activity was found in the 100,000 g supernatants of the same preparations. Cells kept under normal growth conditions (Gamborg B5 medium) exhibit considerably lower glucosyltransferase activities. The substrate specificity has been tested with a series of compounds containing phenolic hydroxyl groups. By far the highest activity was found with HPNE. The specificity of the enzyme with respect to the sugar donor is being investigated. Most glucosyltransferases described in the literature are soluble enzymes; examples are the enzymes catalysing the final steps in the biosynthesis of cyanogenic glycosides and the glucosylation of phenolic hydroxyls of flavonoids.

14P

Mark Edwards
Idetek, Inc. 1057 Sneath Lane, San Bruno, CA 94066
Display of PHYTODETEK monoclonal antibodies and immunoassay test kits for plant growth regulators.

SV 8:20 - 9:25 A.M., 6/14
Hydroxybenzoic Acids and the Enigma of Gallic Acid

Both in the forms of its occurrence and in its relatively wide distribution in the plant kingdom gallic acid, particularly when it is compared to the other hydroxy-benzoic acids, presents something of an enigma. Aspects of the biosynthesis of gallic acid will be discussed as will recent developments in the determination of structure of some of the complex polyester metabolites encountered in these studies. Patterns of metabolism will be reviewed and some comments on the role of gallic acid metabolism will be made in the light of the way its derivatives associate with natural macromolecules such as proteins and polysaccharides.

SVI 9:25 - 10:30 A.M. Friday 6/14

THE PROPERTIES AND SYNTHESIS OF LIGNANS.

Andrew Pelter, Department of Chemistry, University College of Swansea, Singleton Park, Swansea. SA2 8PP.

Certain of the biological/physiological properties of lignans which make them interesting synthetic targets will be outlined.

General approaches to the synthesis of lignans will be proposed and illustrated by specific examples.

10:30 - 10:50 A.M., Coffee Break, 6/14

P9 10:50 - 11:05 A.M., 6/14

VARIATION OF NDGA, A PHOTOTOXIC LIGNAN, IN THE CREOSOTE BUSH (LARREA TRIDENTATA). K.R. Downum, Dept. of Biol., FL Internat. Univ., Miami, FL 33199 and E. Rodriguez, Eco. Evo. Bio., Univ. of CA, Irvine, CA 92717

The creosote bush, Larrea tridentata (Seese & Moc. ex DC.) Coville (Zygophyllaceae), is a dominant perennial shrub throughout the deserts of N. America. Recently, we reported that the leaf resin from this plant elicited both antiobiotic and phototoxic responses in standard microbial bioassays. We now report that the phytochemical responsible for both types of biological activity is nordihydroguaiaretic acid (NDGA). The quantitative significance of NDGA in desert ecosystems was determined by HPLC of the leaf resin from bushes in the S.W. United States and Mexico. These studies revealed substantial geographic variation in NDGA levels. The highest concentrations occurred in bushes at the northern most collection sites. Intrapopulational studies of creosote leaf resin also showed substantial variation of this chemical.

P10 11:05 - 11:20 A.M., 6/14

LOCALIZATION, PURIFICATION AND CHARACTERIZATION OF SHIKIMATE OXIDOREDUCTASE / DEHYDROQUINATE HYDROLYASE (SOR/DHQ) FROM STROMA OF SPINACH CHLOROPLASTS.

Erich Fiedler & Gernot Schultz, Bot. Inst. Tierärztl. Hochsch. 3000 Hannover F.R.G.
The stroma of chloroplasts is the sole site of the shikimate pathway enzymes SOR/DHQ in spinach leaves: (i) The chromatographic behaviour of the bifunctional protein SOR/DHQ on several separation materials with extracts from stroma compared with leaf extracts showed only one peak of enzymatic activity originating from the stroma. (ii) PAGE of these extracts followed by specific staining resulted in the same pattern without a band of extraplastidic enzyme. (iii) In protoplast fractionation experiments it was shown that SOR/DHQ was only present in the soluble chloroplast protein fraction. An improved purification procedure for SOR/DHQ from stroma of chloroplasts, yield 40%, 1600 times as pure, gave essentially one protein band on SDS-PAGE. Our results demonstrate that both enzyme functions are carried out by a single polypeptide. Non-denaturing PAGE exhibited a pattern of four bands with SOR/DHQ showing that they differ in charge but not in their mol wt. Mol wt was determined to be 67 kD (gel filtration) and 59 kD (PAGE) for all four forms which show very similar kinetic properties.

P11 11:20 - 11:35 A.M., 6/14

5-O-(4-COUMAROYL)SHIKIMATE 3'-HYDROXYLASE, A NEW ENZYME IN CAFFEATE BIOSYNTHESIS

Werner Heller and Thomas Kühnl Dept. of Plant Biochemistry
University of Freiburg, FRG

Microsomal preparations from 7-day-old parsley cells challenged with a fungal elicitor converted trans-5-O-(4-coumaroyl)-[G-^{14}C]shikimate into a product which was chromatographically identified as trans-5-O-caffeoyl shikimate. This particular hydroxylase activity could not be observed in non-treated control cultures, and was maximally induced after about 10 hours of elicitor trentment. Cis-5-O-(4-coumaroyl)shikimate, as well as 5-O-(4-coumaroyl)quinate and 4-coumaric acid, were not hydroxylated under these conditions. This enzyme activity was strictly dependent on molecular oxygen and NADPH, and was markedly stimul-ted by addition of NADH. The reaction was inhibited by carbon monoxide and cytochrome c, as is characteristic for cytochrome P_{450} - dependent enzymes.

P12 11:35 - 11:50, 6/14

CHALCONE SYNTHASE AND THE EXPRESSION OF ANTHOCYANIN COLOR IN FLOWERS OF PISUM SATIVUM.[1] Geza Hrazdina[2], Eric Lifson[2] and Norman F. Weeden[3] (2) Department of Food Science and Technology and (3) Department of Horticultural Sciences, Cornell University, N.Y. State Agric. Exp. Station, Geneva, N.Y. 14456.
We have investigated the role of chalcone synthase in the expression of anthocyanin color in the flowers of pea (Pisum sativum) plants. Chalcone synthase was isolated from illuminated buckwheat (Fagopyrum esculentum) seedlings to electrophoretic homogeneity by $(NH_4)_2SO_4$ fractionation, gel-filtration on AcA 44 column, DEAE-Sephadex ion exchange chromatography and HPLC on hydroxylapatite. The enzyme resembles that from parsley tissue culture in its properties: pH-optimum at 8.0, M_r: 83 000 ± 1000, subunit size : 41 500 ± 500 by SDS-PAGE, I.E.P.: pH 5.2; K_M: $1x10^{-6}$M for malonyl-CoA and $0.6x10^{-6}$M for p-coumaryl -CoA. The enzyme utilizes p-coumaryl-CoA preferentially as substrate; caffeyl-CoA (20%) and feruloyl-CoA (80%) are also used to some extent in the total chalcone synthase reaction. Specific antibodies against chalcone synthase were developed in New Zealand white rabbits. The presence of chalcone synthase in the three Pisum mutants (A 835-136, A, white flowers; C 584-277, A, purple flowers; C 84-351, Aam, pink flowers) was established by enzyme activity measurement, ELISA and Western blotting using rabbit anti-chalcone synthase antibodies. These data suggest that anthocyanin expression in these pea flowers is controlled at a locus different than chalcone synthase.
(1): Supported by a Cornell University Biotechnology grant.

12:00 - 1:00 P.M., Lunch at Crocker Hall, 6/14

SVII 1:00 - 2:05 P.M., 6/14

INDOLEACETIC ACID, ITS SYNTHESIS AND REGULATION: A BASIS FOR TUMORGENICITY IN PLANT DISEASES. T. Kosuge, Department of Plant Pathology, University of California, Davis, CA 95616.

P13 2:05 - 2:20 P.M., 6/14

Z(CIS) AND E(TRANS) MONOLIGNOLS IN PLANTS

N.G. Lewis, E. Morelli (Pulp and Paper Research Institute of Canada, 3420 University St., Montreal, Que.), G. Just, R.N. Rej (Chemistry Dept., McGill University, Montreal Que.) and G.H.N. Towers (Dept. of Botany, University of British Columbia, Vancouver, B.C.).

Lignin is considered to arise via oxidative coupling of the E(trans) forms of the monolignols, p-hydroxycinnamyl, coniferyl and sinapyl alcohols. Monolignols were isolated from various plant materials, representing gramineae, gymnosperms and angiosperms respectively. It was established that certain species contained significant quantities of the Z(cis) forms of the monolignols. The role of these materials in the lignification process will be discussed.

P14 2:20 - 2:35 P.M., 6/14

EFFICIENT ISOLATION OF GALLIC ACID AND ITS DERIVATIVES FROM TWO MEDICINAL PLANT SOURCES USING DROPLET COUNTERCURRENT CHROMATOGRAPHY (DCCC). I. Kubo, M. Ochi, T. Matsumoto, M. Kim, & M. Siegmore. Division of Entomology and Parasitology, University of California, Berkeley, CA 94720.

Gallic acid and its derivatives have been isolated from two plant sources: the East African medicinal plant Bersama abyssinica (Melianthaceae), which exhibited antimicrobial activity, and the Chinese medicinal plant Rhus javanica Linnaeus (Anacardiaceae), which showed insect growth inhibition activity. The compounds having polar nature were first fractionated by droplet countercurrent chromatography (DCCC) and were then purified with Sephadex LH-20 column chromatography. The antimicrobial and insect growth inhibitory activities of the purified phenolic compounds will be described.

P15 2:35 - 2:50 P.M., 6/14

CAFFEOYL TARTARIC ACID (CAFTARIC ACID) IN VITACEAE, ENZYMIC OXIDATION TO THIO-ETHER ADDUCTS WITH GLUTATHIONE AND RELATED REACTIONS

V. L. Singleton, E. Trousdale, J. Zaya, Veronique Cheynier, and M. Salgues
Department of Viticulture and Enology, University of California, Davis, CA 95616

Chlorogenic acid is replaced in grapes by caftaric acid. Vitis vinifera varieties of commercial importance have been surveyed by a technique involving prevention or encouragement of enzymic oxidation followed by HPLC. Species of Vitis vary considerably in their content of this and related hydroxycinnamates in their fruit, ranging from near zero to more than a gram per kg fresh weight. The product of oxidation of either coutaric or caftaric acid is shown to be S-glutathionyl caftaric acid. Data from NMR and other studies proving its structure and properties will be presented. This reaction product is not a substrate for grape phenoloxidase and has significance in browning reactions during commercial processing. Thiocompounds apparently do not inhibit phenolase per se, but rather convert the first quinones to inert derivatives.

P16 2:50 - 3:05 P.M., 6/14

HYDROXYCINNAMIC ACIDS IN CELL WALLS OF GRASSES
E.Yamamoto[a], M.Turjman[a], N.G.Lewis[b] and G.H.N.Towers
a. Botany Department, University of British Columbia, Vancouver, B.C. Canada
b. Pulp and Paper Institute of Canada, 3420, McGill University, Montreal, Que., Canada

Monomeric hydroxycinnamic acids esterified to cell walls of several grass shoots were determined during growth in the light and in the dark. E-Ferulic acid and E-p-coumaric acid were major hydroxycinnamic acids released from cell walls by alkaline hydrolysis. The contents and proportion of these acids vary with age and in different tissues. The amount of two acids increases with age, and light causes earlier on-set of the accumulation. The highest amounts are in mesocotyls and coleoptiles, and the lowest in leaves. In corn, E-p-coumaric acid was found more in mesocotyls than in coleoptiles. The contents also differ with respect to distance from nodes. The Z-isomers of these acids were only found when the plants were grown in the light, suggesting that Z-isomers are the products of photoisomerization.

P17 3:05 - 3:20 P.M., 6/14

MICROSOMAL FLAVONOID 3'-MONOOXYGENASE FROM MAIZE SEEDLINGS. R.L. Larson and J.B. Bussard, U.S. Dept. of Agriculture, Depts. of Agron. and Biochem., Univ. of Missouri, Columbia, Mo. 65211.
The 3-O-glucosides of cyanidin and pelargonidin, the principal anthocyanins in maize (Zea mays L.), differ in the 3'-hydroxyl group on the B-ring, a variation exploited as a genetic marker for which the enzyme had not been identified. Recently we have partially characterized a microsomal enzyme (190,000 g) from newly germinated maize seedlings that hydroxylates kaempferol, apigenin or naringenin at the 3'-position. Conditions were 30 C and pH 8.5. The hydroxylase utilized NADPH as an electron donor and was inhibited by N-ethylmaleimide, $FeCl_3$, p-CMB, cytochrome C, CO and NADP. Successive treatment of the enzyme preparation with sodium dithionite, CO and oxygen gave successive spectra characteristic of a cytochrome p-450 type of enzyme. Isolation of the hydroxylase required 0.8 M sucrose and 5.0 mM DTT in the medium to obtain an enzyme that could be stored at -70 C and retain activity. The enzyme was also obtained from mature plants and the aleurone tissue of mature and immature maize seed.

3:20 - 3:25 P.M., Coffee Break, 6/14

3:25 P.M., Business Meeting, 6/14

6:00 - 8:00 P.M., Banquet, 6/14

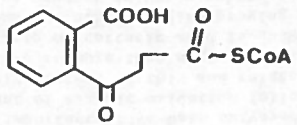
6:00 - 11:00 P.M., Poster Display continued, 6/14

SVIII 8:30 - 9:35 A.M., 6/15

BIOSYNTHESIS OF CHORISMATE-DERIVED QUINONES

E. Leistner
University of Bonn, F.R.G.

Acetate, phenylalanine, tyrosine and mevalonic acid may function as precursors of quinones in plants and microorganisms. In contrast, anthraquinones from Rubiaceae and bacterial Vitamin K_2 are so-called "chorismate-derived" quinones. Recent advances in the investigation of Vitamin K_2 biosynthesis provide insight into the reaction that links the shikimate pathway to Vitamin K_2 biosynthesis. The enzyme system involved in the synthesis of the first aromatic metabolite viz. o-succinylbenzoic acid is described. o-Succinylbenzoic acid undergoes ring closure to give 1,4-dihydroxy-2-naphthoic acid. This ring closure reaction is ATP and Coenzyme A dependent and proceeds via the mono-Coenzyme A-ester of o-succinylbenzoic acid:



This compound has been synthesized and characterized.
It is very likely that the chorismate-derived anthraquinones in Rubiaceae are formed by a pathway akin to the steps involved in Vitamin K_2 biosynthesis.

Literature:

L. Heide, S. Arendt, E. Leistner, J.Biol.Chem., 257, 7396 (1982).
R. Meganathan, R. Bentley, J.Bacteriol., 153, 739 (1983).
R. Kolkmann, E. Leistner, Tetrahedron L. in print.
A. Weische, E. Leistner, Tetrahedron L. in print.

SIX 9:35 - 10:40 A.M., 6/15

NATURALLY OCCURRING QUINONES AS POTENTIAL BIOREDUCTIVE ALKYLATING AGENTS.
Harold W. Moore

Bioreductive alkylating agents are those compounds which express a biological action, but do so only subsequent to an in vivo reduction. That is, they function as potent alkylating agents upon activation by a reductive transformation. A particularly important class of such compounds is quinones which are amenable to reductive elimination to quinonemethides. A large number of such quinones exist in nature and an overview of these will be presented. In addition selected synthetic routes to bioreductive alkylating agents will be discussed.

10:40 - 11:00 A.M., Coffee Break, 6/15

P18 11:00 - 11:15 A.M., 6/15

INHIBITION AND ACTIVATION OF THE POLYPHENOL OXIDASE OF BETA VULGARIS.--Susan S. Martin, USDA, ARS, Crops Research Laboratory, Colorado State University, Ft. Collins CO 80523.

Empirical tests previously identified 2-mercaptoacetic acid as an effective inhibitor of sugarbeet polyphenol oxidase (E.C. 1.10.3.1). With isolated PPO acting on tyrosine substrate, 0.017% v/v 2-MAA resulted in complete inhibition during a 60 min. reaction time. A lag phase for PPO-catalyzed tyrosine hydroxylation occurred when no exogenous reductant was supplied; the presence of H_2O_2 or DOPA eliminated the lag. In contrast to results for some plant PPOs, sodium dodecyl sulfate (at 0.1% v/v in a reaction mixture containing tyrosine, buffer, and PPO) revealed no latent forms of sugarbeet PPO; instead, this concentration was somewhat inhibitory. A crude sugarbeet PPO preparation increased the rate of oxidation (relative to auto-oxidation) of dopachrome to melanin pigments, suggesting the existence of regulatory control at this point.

P19 11:15 - 11:30 A.M., 6/15

INSECT ANTIHORMONES IN DESERT PLANTS

Manuel Aregullin and Eloy Rodriguez
Phytochemical Laboratory
Department of Developmental and Cell Biology
University of California, Irvine
Irvine, CA 92717

Benzofurans and benzopyrans (acetophenone-derivatives) have been isolated from the Chihuahuan, Sonora-Mojave and Great Basin Desert genera: Flourensia, Encelia, Geraea, Enceliopsis and Helianthella (Asteraceae). Many of these chemicals posses insecticidal properties on Oncopeltus fasciatus (Dallas), the milkweed bug. Residue contact experiments have shown that these natural products induce sterility and morphogenetic defects in low concentrations (1.4 µg/sq cm). In addition, this type of secondary metabolites posses antibiotic, phototoxic, hemolytic and photohemolytic properties. Dose-response and structure-activity relationships have been established for the hemolytic, photohemolytic and insecticidal activities and possible modes of action have been proposed for these biological properties.

P 20 11:30 - 11:45 P.M., 6/15

PRENYLATED PHENOLS TOXIC TO THE SKIN FROM PLANTS IN THE HYDROPHYLLACEAE.
Gary Reynolds and Eloy Rodriguez. Phytochemical Laboratory, Dept. of Ecology and Evolutionary Biology, Univ. of California, Irvine, CA 92717.

The exudate of the glandular trichomes of several species of Phacelia and Turricula cause severe cases of irritant and allergic contact dermatitis (ACD). The agents responsible comprise a series of prenylated hydroquinone derivatives uncommon among higher plants. Structure-activity correlations indicate that the mechanism of ACD from these compounds is similar to that from the alkylcatechols of poison ivy/oak, but they do not seem to cross-react in humans. Certain of these allergens cause developmental abnormalities in insects when applied to the cuticles.

P21 11:45 - 12:00 P.M., 6/15

QUANTITATIVE HPLC ANALYSIS OF TERPENE ALDEHYDES IN GOSSYPIUM SPECIES
N. Mahoney, B. G. Chan, USDA, WRRC, 800 Buchanan Ave., Albany, CA 94710
F. D. Wilson, USDA, WCRL, 4136 E. Broadway, Phoenix, AZ 85040
Terpene aldehydes, found in the lysigenous glands of Gossypium species, are defensive factors against insect pests and pathogens. These terpene aldehydes have also been implicated as causative agents of the industrial cotton dust disease byssinosis and they may have an effective use as a male contraceptive. A quantitative HPLC method was developed for the analysis of terpene aldehydes in cotton plant material. The distribution of these compounds in various cotton species and tissues will be reported.

12:00 - 1:00 P.M., Lunch at Crocker Hall, 6/15

SX 1:05 - 2:10 P.M., 6/15

BIOCHEMISTRY OF PLANT COUMARINS. Stewart A. Brown, Department of Chemistry, Trent University, Peterborough, Ont. K9J 7B8

The number of coumarins thus far identified, now approaching a thousand, makes this category one of the most numerous of the shikimate-derived compounds, and they are probably the most varied in structure. The basic reactions of their biosynthesis are now well recognized, but many details are still under investigation. In this paper are reviewed some of the more recent findings in this area of biosynthesis in higher plants, including the nature of compartmentation of enzymes, factors affecting the production of coumarins, the routes leading to different ring oxygenation patterns, enzymology of furanocoumarin formation, some alternative routes to these compounds, and the formation of furanocoumarins as phytoalexins. Selected recent developments in other areas of the biochemistry of plant coumarins are also reviewed. Newer findings in the very active field of the photobinding of furanocoumarins to DNA are discussed, as is the recognition of late that photobinding to protein can also occur, directly affecting the activity of enzymes. Certain coumarins have long been accepted as plant growth regulators, but the demonstration that a wider range of coumarins have such effects now suggests that the phenomenon is more general than has been realized in the past. Recent contributions to our understanding of the mode of action of coumarin and its simple derivatives in this role are discussed.

SXI 2:10 - 3:15 P.M., 6/15

SOME ASPECTS OF COUMARIN CHEMISTRY

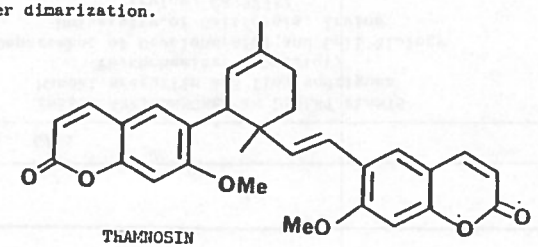
David L. Dreyer

U.S. Dept. of Agriculture

800 Buchanan St.

Albany, Calif. 94710

A modest number of dimeric coumarins occur in the family Rutaceae, for example, themnosin and phebalin. These substances all occur as racemates and can be viewed as formal Diels-Alder adducts of a isopentdienyl substituted coumarin. Based on the results of Schroeder, and Stermitz and reconsideration of the spectroscopic properties, one can arrive at the relative stereochemistry of these substances and account for ~~for~~ inconsistent synthetic results previously described in the literature. It is concluded that these coumarin dimers arise in the plant from a non-enzymatic Diels-Alder dimarization.



THAMNOSIN

The biosynthesis of furanocoumarins involves a sequence of intermediates of increasing oxidation levels. The absolute stereochemistry of these intermediates correlates with the expected mechanism of the various transformations. These relationships and a proposed model accounting for the occurrence of many coumarin racemates in plants of the Umbelliferae and Rutaceae will be discussed.

3:15 - 3:30 P.M., Coffee Break, 6/15

P 22 3:30 - 3:45 P.M., 6/15

ENZYMATIC SYNTHESIS OF PSORALEN

Ulrich Matern and Hilke Wendorff Dept. of Plant Biochemistry
University of Freiburg, FRG

Microsomes isolated from elicitor-induced parsley cells converted (2-^{14}C) (±)marmesin into a product which was chromatographically identified as psoralen. The enzyme activity, preliminary termed psoralen synthase, was absent in non-induced parsley cells, and was induced maximally after about 24 hours of elicitor treatment. Psoralen synthase activity was dependent on NADPH, and several synthetic inhibitors of cytochrome P_{450} - dependent enzymes inhibited the reaction considerably. Moreover, an intermediate of the reaction was detected under particular induction conditions. We propose that the enzymatic conversion of marmesin into psoralen is a two-step process, most likely initiated by a cytochrome P_{450} - dependent hydroxylation.

P23 3:45 - 4:00 P.M., 6/15

INDUCTION OF AYAPIN AND SCOPOLETIN BIOSYNTHESIS IN HELIANTHUS ANNUUS BY FUNGAL INOCULATION.

Beni Tal and David J. Robeson, ARCO Plant Cell Research Institute, 6560 Trinity Court, Dublin, CA 94568-2685

Two coumarin derivatives accumulated in tissues of H. annuus (sunflower) following inoculation with fungal species both pathogenic and non-pathogenic to sunflower. Of the two compounds the known sunflower metabolite scopoletin (6-hydroxy-7-methoxycoumarin) attained the highest concentration in inoculated stem tissues (> 0.5 mM). This represents ca. 50 fold increase above levels found in uninoculated control tissue. The second compound was identified as ayapin (6,7-methylenedioxycoumarin) by standard spectral techniques and the structure was confirmed by synthesis from esculetin. Ayapin was not detected in uninoculated sunflower stem or leaf tissue. Both compounds were inhibitory to the growth of various fungi and may be regarded as phytoalexins in H. annuus. Marked quantitative differences were apparent in the accumulation of the two compounds following inoculation by different fungi.

P24 4:00 - 4:15 p.m., 6/15

CYANOGENESIS IN THE FAMILY PROTEACEAE.

W.K. Swenson, J. Dunn, E.E. Conn. Department of Biochemistry and Biophysics, University of California, Davis, California 95616.

The most well-known cyanogenic member of the family Proteaceae is the species Macadamia ternifolia. Other proteaceous plants have been found to be cyanogenic but until recently no attempt has been made to characterize the cyanogenic compounds present. An extensive survey of cyanogenesis in the Proteaceae has been done and species of five other genera have been found to be cyanogenic. The genus Hakea has been examined and two cyanogenic glycosides, dhurrin and proteacin, have been observed in several species. Isolation and purification of the compounds was done using column chromatography and HPLC. 500MHz and 360MHz proton FTNMR was used to identify the cyanogenic compounds.

P25 4:15 - 4:30 P.M., 6/15

PRODUCTION OF ANTIBIOTIC THIARUBRINES BY A CROWN GALL TUMOR LINE OF Chaenactis douglasii. E.Cosio, A.Finlayson, E.Towers, G.H.N. Towers, Dept. of Botany, Univ. of British Columbia, Vancouver B.C., Canada V6T 2B1, R.Norton and E. Rodriguez, Dept. of Ecology & Evolutionary Biology, Univ. of California, Irvine CA 92717.
A line of cells that accumulate dithiacyclohexadiene polyacetylenes (thiarubrines) was obtained by selection of red-colored cells from a crown gall tumor line of C. douglasii. The tumor was induced by infection of stems with A. tunefaciens strain A277. The selected cells exhibit both hormone-independent growth and octopine production. The main acetylenic products are two thiarubrines, A and B, and their corresponding thiophenes. Average yields of total thiarubrines and thiophenes are 11 and 1 μg/g dry wt. respectively. The products accumulate in intercellular cavities bearing a crude resemblance to the resin canals of the roots of this plant. Previous attempts to obtain production of these highly unstable compounds by callus cultures have failed due to an apparent need for a certain degree of cell differentiation for their synthesis. Transformation appears to have partially bypassed this requirement resulting in callus-like growth with accumulation of product.

P26 4:30 - 4:45 P.M., 6/15

FLAVONOID DERIVATIVES FROM WYETHIA. S. P. McCormick, USDA, ARS, Southern Regional Research Center, P.O. Box 19687, New Orleans, LA 70179, K. A. Robson, Dept. of Botany, University of British Columbia, Vancouver, BC, Canada.

Wyethia and Balsamorhiza (Compositae) are two genera occurring in the Western U. S. and Canada. There is taxonomic interest in the relationship between the genera and ecological interest in some of the resinous species which are thought to be allelopathic. Species of Balsamorhiza produce an array of 8-10 different methylated flavonols and flavones. Members of Wyethia have a more complex chemistry with individual species producing methylated flavonols, flavones, flavanones, dihydroflavonols, isoflavones and prenylated derivatives. One of the species, W. angustifolia, in addition to these skeletal types, produces a new type of flavonoid derivative in which one of the γ-methyls cyclyzes with the 7-oxygen function. Compounds were characterized on the basis of UV, ^{1}H NMR and MS data.

P27 4:45 - 5:00 P.M., 6/15

RELATIONSHIP OF SEED COAT DISCOLORATION AND GERMINABILITY.
C. Nozzolillo, Dept. of Biology, Univ. of Ottawa, Canada, K1N 6N5

Many legume seeds undergo discoloration in storage, changing from the olive-green of the freshly harvested state to a brown color. Discoloration is usually uneven in a given lot of seeds with the result that a mixture of shades is present a few months after harvest. In the present study, seeds of mung bean, lentil, field pea, fababean, and alfalfa were sorted into green and browned lots. Seed coat content of condensed tannins, phenolics in, and conductivity of, the diffusate produced during imbibition, and percent germination were determined for each species. The results show that"1) condensed tannins were present in seed coats of all varieties susceptible to browning, 2) conductivity of browned seed diffusate was always higher than that of green seeds, 3) browned mung bean and alfalfa seeds germinated poorly whereas those of lentil, pea, fababean germinated well and 4) large amounts of phenolics diffused from browned seeds of mungbean and alfalfa but not from those of lentil, pea, fababean.

6:00 - 7:00 P.M., Dinner, 6/15

7:30 P.M. , 6/15 EVENING FORUM: Terry Graham, Moderator.
A DIALOGUE BETWEEN ACADEMIC AND BIOTECHNICAL SCIENTISTS.

This is an open forum; full participation is expected from the audience. Let's hear from all of you! Refreshments will be available during the evening.

P28 8:30 - 8:45 A.M., 6/16

PARTIAL PURIFICATION OF A MONOTERPENE CYCLASE FROM TANACETUM VULGARE. Jonathan Gershenzon and Rodney Croteau, Institute of Biological Chemistry, Washington State University, Pullman, WA 99164-6340
The carbon skeletons of most monoterpenes are derived from the coupled isomerization-cyclization of geranyl pyrophosphate (GPP), catalyzed by enzymes collectively known as monoterpene cyclases. The bornane-type monoterpenes arise by the conversion of GPP to bornyl pyrophosphate (BPP). In most plants, this pyrophosphorylated cyclic intermediate is hydrolyzed to borneol and subsequently oxidized to camphor. We have isolated a GPP:(-)-BPP cyclase from the leaf epidermis of Tanacetum vulgare (Asteraceae) and partially purified this enzyme by a combination of gel permeation, ion exchange and affinity chromatography. Several properties of this enzyme and some essential features of the cyclization mechanism will be discussed.

P29 8:45 - 9:00 A.M., 6/16

DEMONSTRATION OF DUVATRIENE DIOL BIOSYNTHESIS IN DETACHED GLANDULAR HEADS OF TOBACCO TRICHOMES. C.K. Keene and G.J. Wagner, Agonomy Dept., U. of Ky., Lexington KY 40546.
Biosynthesis of the diterpenes α and β 4,8,13-duvatriene-1,3-diol has been observed using detached, intact glandular heads prepared from N. tabacum, T.I. 1068 trichomes. This result shows directly - and we believe for the first time - that the glandular head portion of the trichome structure is capable of terpene biosynthesis. In additional experiments, all ^{14}C-duvatriene diol formed from [2-^{14}C] Na acetate by leaf midrib sections was recovered from trichome exudate and surface washes, while none was found in trichome stalk, epidermal and sub-epidermal extracts. Removal of glandular heads and exudate from midrib sections reduced or eliminated duvatriene diol biosynthetic capacity. Together these results strongly suggest that glandular heads are the primary - and perhaps only - site of duvatriene diol biosynthesis in this tobacco. Incubation of detached, intact trichome heads with [2-^{14}C] Na acetate in the dark or in the light in the presence of 5 to 10 μM DCMU reduced incorporation into duvatriene diols by 97%, suggesting a role for abundant chloroplasts in the biogenesis of these diterpenes The role of chloroplasts in biosynthesis of diterpenes and other exudate constituents, and aspects of diterpene accumulation and turnover are being studied further.

P30 9:00 - 9:15 A.M., 6/16

3-DIMENSIONAL DISTRIBUTION OF LIMONIN, LIMONOATE A-RING MONOLACTONE, AND NARINGIN IN FRUIT FROM 3 GRAPEFRUIT CULTIVARS. R.L. Mansell and C.A. McIntosh, U. of South Fla., Tampa, FL. 33620. Within a 1 cm cross-section slice, there were no significant differences in the limonin or naringin concentration in a given tissue taken from different segments of the fruit. In Duncan grapefruit, the concentration of limonin increased from the proximal to the distal end of the fruit by 9-fold in juice vesicles, 8-fold in flavedo, 7-fold in albedo, 27-fold in side segment membranes, and 49-fold in back segment membranes. The naringin concentration in the flavedo showed a slight decrease toward the distal end of the fruit. In the albedo, naringin increased only slightly but increased 2-fold in juice vesicles, 3-fold in side segment membranes, 9-fold in back segment membranes and 3-fold in pith. The percent total limonin present as limonoate A-ring monolactone was 50% in flavedo, albedo, back segment membranes and side segment membranes, 7% in juice vesicles, 62% in pith, and 84% in seeds. These values were nearly constant from segment-to-segment and from slice-to-slice. The tissues of the other 2 varieties studied (Marsh and Thompson) showed similar trends in some tissues and different ones in others.

P31 9:15 - 9:30 A.M., 6/16

ALTERNARIOL: BIOSYNTHESIS FROM NORLICHEXANTHONE INVESTIGATED BY 2-D ^{13}C NMR
E. E. Stinson, W. B. Wise, and P. E. Pfeffer. USDA/ARS, Eastern Regional Research Center, 600 E. Mermaid Lane, Philadelphia, PA 19118.

Alternaria molds are important in food spoilage and produce mycotoxins that have been found in food products. These mycotoxins include alternariol (AOH) and related polyketides. Our previous work showed that AOH is not formed directly in cell-free preparations from acetyl- and malonyl- co-enzyme A. The present study indicates that AOH is formed from norlichexanthone (NLX) which is incorporated 46.8% into AOH in vivo. ^{13}C Coupling studies by 2-D-INADEQUATE NMR indicated that NLX is probably formed via a benzophenone intermediate. Subsequent bond cleavage and rearrangement of NLX to form AOH is similar to aflatoxin B formation from sterigmatocystin. Complete assignment of the ^{13}C NMR spectra of AOH was made using AOH synthesized from (1- and 2-) ^{13}C acetate.

P32 9:30 - 9:45 A.M., 6/16

Mark E. Hediger and David S. Seigler, Department of Plant Biology, University of Illinois, Urbana, Illinois 61801

DIMBOA, AN INHIBITOR OF CYANIDE INSENSITIVE RESPIRATION IN ISOLATED POTATO MITOCHONDRIA. A naturally occurring cyclic hydroxamate, 2,4-dihydroxy-7-methoxy-2H-1,4-benzoxazin-3(4H)-one (DIMBOA), has been found to inhibit cyanide insensitive respiration. Mitochondria isolated from aged potato slices and showing cyanide insensitive respiration were strongly inhibited by salicylic hydroxamate (SHAM) and DIMBOA at similar concentrations. DIMBOA appears to be one of the few naturally occurring inhibitors of this process.

P33 9:45 - 10:00 A.M., 6/16

USE OF NONPROTEIN AMINO AND IMINO ACIDS AS CHEMOTAXONOMIC MARKERS IN CALLIANDRA.
John T. Romeo, Dept. of Biology, University of South Florida, Tampa, FL 33620

Nonprotein imino acids are major components of the free amino acid pools of Calliandra leaves and seeds. Eight hydroxylated derivatives of pipecolic acid show discontinuous distributions in this neotropical genus of some 200 species. Additionally five nonprotein sulfur containing amino acids now have been detected in the seeds and young seedlings of these plants. Previous cytological, palynological, and morphological evidence has established two well differentiated natural groups within Calliandra. The chemical evidence based on the distribution of sulfur compounds supports this division, with patterns falling clearly into one or the other group. The distribution of the imino compounds, on the other hand, is useful in suggesting the natural affinities within these two major groups. Data based on analyses of ca 100 species will be discussed.

P34 10:00 - 10:15 A.M., 6/16

IMMUNOLOGICAL LOCALIZATION OF POLYMETHYLATED FLAVONOL GLUCOSIDES IN CHRYSOSPLENIUM
S. Lamoureux, W. Vacha, P. Charest, L. Brisson, R. Ibrahim (Biol. Dept., Concordia Univ., Montreal, Canada H3G 1M8) and R.L. Mansell (Biol. Dept., Univ. S. Florida, Tampa, FL 33620)

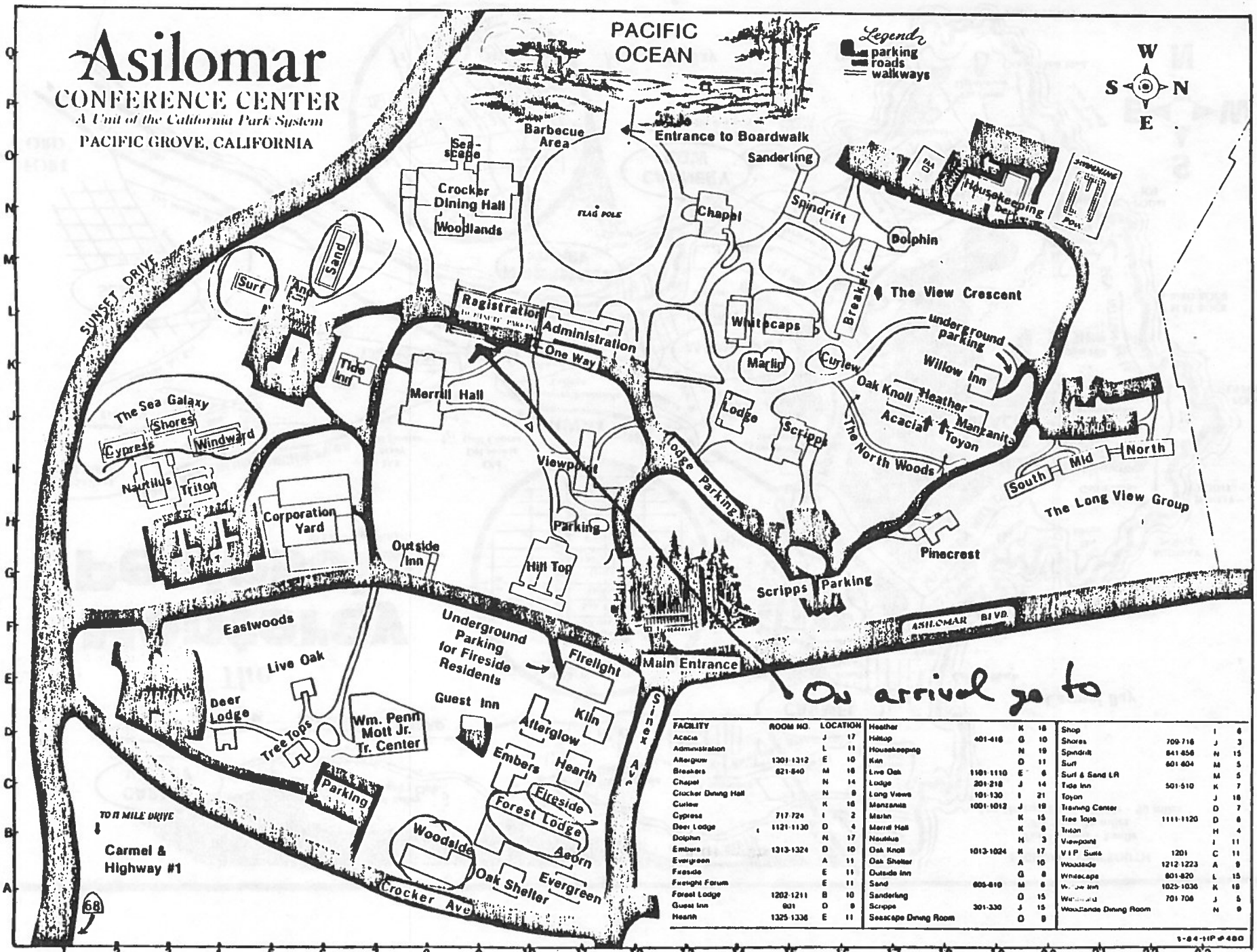
C. americanum accumulates several tri-, tetra- and pentamethylated flavonol glucosides (Z. Naturforsch. 36C: 730, 1981). Epifluorescence in UV light was observed in leaf epidermal and vascular tissues, though it was not known whether fluorescence was due to phenylpropanoid or flavonoid compounds.

Antisera, raised against derivatized 3,7,4′-trimethoxy-5,2′,5′-trihydroxy flavone-2′-O-glucoside-BSA complex, were used for the localization of the flavone glucoside by immunofluorescence and immuno-electron microscopy.

P35 10:15 - 10:30 A.M., 6/16

ISOLATION AND STRUCTURE ELUCIDATION OF AN INSECT GROWTH INHIBITOR FROM VISCUM TUBERCULATUM. Isao Kubo, Mijo Kim. Division of Entomology and Parasitology, University of California, Berkeley, CA 94720.

The tropical plant Viscum tuberculatum (Loranthaceae) is used as a folk medicine to combat liver trouble in East Africa. The methanol extract of the twigs showed strong insect growth inhibition against the pink bollworm (Pectinophora gossypiella). Three insect growth inhibitors were isolated by using a combination of droplet countercurrent chromatography (DCCC) and Sephadex LH-20 column chromatography. All of these compounds were determined to be O-glycosyl flavanoid derivatives having xylose as the sugar moiety. So far as we know these compounds are new. We will describe the structural elucidation of these compounds. The comparative bioassay data of these three O-glycosyl flavanoid derivatives will be discussed in terms of structure-activity relationships.



FACILITY	ROOM NO.	LOCATION
Acacia		J 17
Administration		L 11
Afterglow	1301-1312	E 10
Breakers	821-840	M 16
Chapel		N 14
Crocker Dining Hall		N 9
Curlew		K 16
Cypress	717-724	I 2
Deer Lodge	1121-1130	D 4
Dolphin		N 17
Embers	1313-1324	D 10
Evergreen		A 11
Fireside		E 11
Firelight Forum		E 11
Forest Lodge	1202-1211	B 10
Guest Inn	931	D 9
Hearth	1325-1336	E 11
Heather		K 18
Hilltop	401-416	G 10
Housekeeping		N 19
Kiln		D 11
Live Oak	1101-1110	E 6
Lodge	201-218	J 14
Long Views	101-130	I 21
Manzanita	1001-1012	J 19
Marlin		K 15
Merrill Hall		K 8
Nautilus		H 3
Oak Knoll	1013-1024	K 17
Oak Shelter		A 10
Outside Inn		G 8
Sand	805-810	M 8
Sanderling		O 15
Scripps	301-330	J 15
Seascape Dining Room		O 8
Shop		I 6
Shores	709-716	J 3
Spindrift	841-856	N 15
Surf	801-804	M 5
Surf & Sand LR		M 5
Tide Inn	501-510	K 7
Toyon		J 18
Training Center		D 7
Tree Tops	1111-1120	D 8
Triton		H 4
Viewpoint		I 11
VIP Suite	1201	C 11
Woodside	1212-1223	A 9
Whitecaps	801-820	L 15
Willow Inn	1025-1036	K 18
Windward	701-708	J 5
Woodlands Dining Room		N 9

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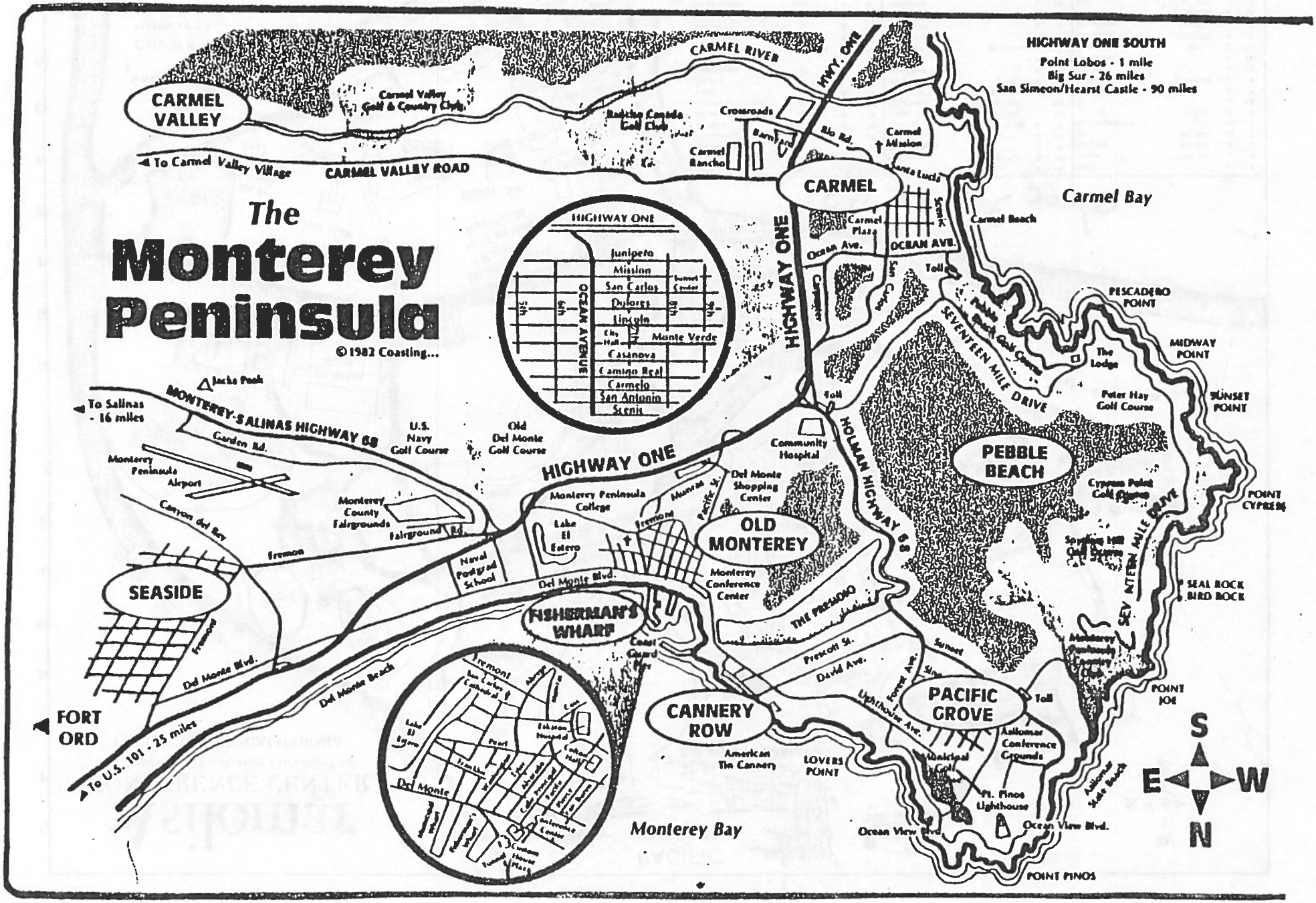
The
Monterey
Peninsula
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HIGHWAY ONE SOUTH
Point Lobos - 1 mile
Big Sur - 26 miles
San Simeon/Hearst Castle - 90 miles
CARMEL VALLEY
CARMEL RIVER
HWY. ONE
Carmel Valley Golf & Country Club
Rancho Canada Golf Club
Crossroads
Carmel Rancho
Rio Rd.
Carmel Mission
To Carmel Valley Village
CARMEL VALLEY ROAD
CARMEL
Carmel Bay
Carmel Plaza
Carmel Beach
Ocean Ave.
OCEAN AVE.
Scenic
Dolores
Toll
PESCADERO POINT
SEVENTEEN MILE DRIVE
Pebble Beach Golf Courses
The Lodge
MIDWAY POINT
Peter Hay Golf Course
SUNSET POINT
HIGHWAY ONE
Junipero
Mission
San Carlos
Dolores
Lincoln
Monte Verde
Casanova
Camino Real
Carmelo
San Antonio
Scenic
OCEAN AVENUE
Jacks Peak
To Salinas - 16 miles
MONTEREY-SALINAS HIGHWAY 68
U.S. Navy Golf Course
Old Del Monte Golf Course
Garden Rd.
Monterey Peninsula Airport
Community Hospital
HOLMAN HIGHWAY 68
PEBBLE BEACH
Del Monte Shopping Center
Monterey Peninsula College
Monterey County Fairgrounds
Fairground Rd.
Canyon del Rey
Fremont
Lake El Estero
OLD MONTEREY
Cypress Point Golf Course
POINT CYPRESS
SEVENTEEN MILE DRIVE
SEAL ROCK
BIRD ROCK
SEASIDE
Naval Postgrad School
Del Monte Blvd.
Monterey Conference Center
FISHERMAN'S WHARF
THE PRESIDIO
Coast Guard Pier
Prescott St.
David Ave.
Sunset
Monterey Peninsula Country Club
POINT JOE
PACIFIC GROVE
Toll
Lighthouse Ave.
Asilomar Conference Grounds
CANNERY ROW
American Tin Cannery
LOVERS POINT
Municipal Golf Course
Pt. Pinos Lighthouse
Asilomar State Beach
Ocean View Blvd.
POINT PINOS
FORT ORD
To U.S. 101 - 25 miles
Del Monte Beach
Monterey Bay
S
E
W
N

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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

Date: _____

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

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

_____

_____

_____

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

Student ($4.00) _____

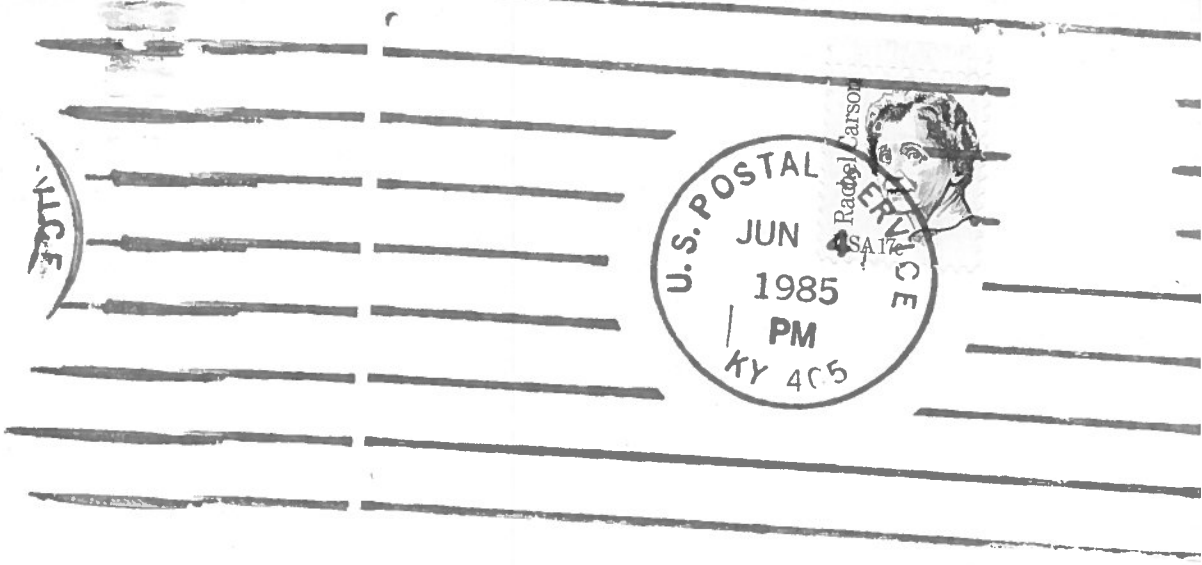
Field of Interest: _____

_____

_____

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:

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PHYTOCHEMICAL SOCIETY OF NORTH AMERICA

Newsletter

September 1985

Volume 25
Number 3

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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.

THE 1985 MEETING AT ASILOMAR:

I think it is quite safe to say that all who attended the 25th (Silver Anniversary) meeting of the PSNA at ASILOMAR this past June enjoyed a very comfortable and scientifically enriching experience on the very beautiful Monterey Peninsula. Clearly the hard work of Bock Chan and other members of the organizing committee paid off. The symposium talks were excellent and should produce a solid volume in the Recent Advances in Phytochemistry series.

Twenty-fifth anniversary celebrations included pre-banquet reminisences about the founding of the PSNA by Gestur Johnson and R. Horowitz. The texts of their presentations appear below. Connie Nozzolillo presented slides and photos to stimulate rememberances of past meetings. Thanks Connie! Several mixers added to a comfortable pace (for all except executive committee members) and the enjoyment for all.

REMEMBERANCES BY GESTUR JOHNSON

First of all, I want to thank the Phytochemical Society for the invitation to attend the Silver Anniversary Meeting and to give a short talk reminising on how the plant phenolics group was founded. However, I would first like to tell you how I became interested in plant phenolic substances. In the mid 40's when I was with the Western Regional Lab, USDA we were interested in enzymic browning of fruits and were measuring the total phenolics of fruit. It soon became apparent that very little was known about the nature of the phenolic substrates involved. Then, when I moved to CSU, my interst in plant phenolics continued and we did isolate phenolic substances from peaches (an important crop in Colorado). The isolation was carried out on Anion-exchange resin eluted with acidified alcohol. Paper chromotography was relatively new at this time. Separation by paper chromatography of the phenolic isolates showed for one thing, a blue florescent pigment. We became suspicious that this substance might be chlorogenic acid. About this time, Dr. Moore of General Foods had isolated many grams of chlorogenic acid from green coffee. He was kind enough to supply us with several grams of the acid. The florescent substance from peaches and chlorogenic acid had identical behaviour on paper chromatograms and their UV spectra was identical. This was the first time that chlorogenic acid had been isolated from peaches and this was my introduction to plant phenolics.

In the late 50's, CSU initiated what was referred to as special programs. The idea was to apply for outside funds to support various kinds of programs such as conferences, seminars, etc. Merle Payne of the Chemistry Department was appointed to be in charge of this program. She wondered if I had any suggestions for proposals. I indicated to her that there was interest in creating a plant phenolics group similar to the one in Great Britain, which had already been in existance for a few years. She suggested that we give it a try. To start the ball rolling, we made a conference call to Ted Geissman (UCLA) and Vic Runeckles (Imperial Tobacco Company of Canada). They responded favorably to the idea of submitting a proposal to sponsor a symposium on plant phenolics and that this would be an excellent way of bringing such an organization into being. In addition, such a symposium provided an opportunity for personal contact between many scientist's who had a common interest in plant phenolics. Ted Geissman agreed to act as Co-Director, which was of great help. A proposal to sponsor a 2-day symposium on the bio-chemistry of plant phenolic substances was prepared by August 31, 1961. One and one-half days would be devoted to symposium papers and the last-half day devoted to the organization of the Plant Phenolics Group of North America. The proposal was submitted to NSF. NSF responded very favorably and said that the proposal was worthy of support, but really didn't know which government agency should fund it. We had prepared a list of names of persons potentially interested in attending this meeting. The plan was to send letters to these people to inform them of this meeting as soon as we received a firm commitment of funds. Apparently there was some disagreement as to which agency should fund this project. Some time went by and it was getting close to the time the letters should be sent out. We were getting a little nervous to say the least, so we prepared the letters to go as soon as we got the OK. Finally we called NSF and learned that they had decided to fund the proposal and it was OK to send out the letters. That was quite a relief.

Sometimes things don't go as smoothly as you would like. Ted Geissman, Vic Runeckles and Neil Towers arrived a day early (August 29) in order to plan the organization procedure. They arrived approximately at the same time in the evening at Stapleton Airport. We met them there since at that time public transportation between the airport and Fort Collins was not good. We arrived at the dormatory which had been assigned to us for this meeting at about 9:30. Here we found that the dormatory was locked. This was somewhat embarrassing, but the problem was solved without too much delay. The next day this was followed by some more surprises when I learned that there was no hot water in the dorm. I don't know how fast this problem was corrected, but for those who had to take a cold shower, I am sure it made a lasting impression. They will probably never forget the organization meeting.

I don't remember the exact number of people attending this first meeting, but it must have been over 60 people and they represented many scientific disciplines. The Canadians were well represented, which we were happy about. Even the tobacco industry was well represented.

The banquet was held the evening of the first day. The program was given by Vic Runeckles. He had recently been to England where he received first-hand information about the Plant Phenolics Group of Great Britain. He presented what he learned about this organization.

At the organization meeting, officers elected for 1962 were President, S.H. Wender, Univ. of Oklahoma; Vice-President, L. Jurd, USDA, WRRL; and Sec-Treas., V.C. Runeckles, Imperial Tobacco Co. of Canada.

The following papers were presented at the 1966 meeting:

STUDIES ON THE STRUCTURE AND BITTERNESS OF THE FLAVONOID GLYCOSIDES OF CITRUS
Robert M. Horowitz
United States Department of Agriculture
Fruit and Vegetable Chemistry Laboratory
Pasadena, California

THE CHEMISTRY OF BISFLAVONES
Nabusuki Kawano
University of Nagasaki
Japan

THE ROLE OF PLANT PHENOLICS IN DISEASE RESISTANCE AND IMMUNITY
Ikuzo Uritani
Nagoya University
Japan

MELANIN AND ITS FORMATION
by G.A. Swan

BIOSYNTHESIS OF PLANT PHENOLS
Stewart A. Brown
Prairie Regional Laboratory
National Research Council
Saskatoon, Sask.

THE METABOLIC FATE OF PHENOLIC SUBSTANCES IN ANIMALS
Albert N. Booth
Western Regional Research Laboratory
USDA

ESTROGEN-LIKE SUBSTANCES IN PLANTS
E.M. Bickoff
Western Regional Research Laboratory
USDA

At the 1966 meeting, the Plant Phenolics Group became the Phytochemical Society of North America which has grown to a present membership of about 400. The PSNA is a leading group worldwide which is devoted to the study of plant chemistry.

Gestur Johnson
Life Member, PSNA
Department of Chemistry
Colorado State University
Fort Collins, CO 80521

REMEMBERANCES BY R. HOROWITZ

SOME RECOLLECTIONS OF TED GEISSMAN

I would like to talk this evening about the Ted Geissman I knew. I'll relate a few incidents that have stayed in my mind over the years and quote from some of his letters, all in the hope that these will throw a little light on Ted's accomplishments and views and character.

Ted joined the Chemistry Department at UCLA in the fall of 1939 after getting a Ph.D. at Minnesota and doing a postdoc at Illinois. I was just starting then as a freshman chemistry major. One of my most vivid memories of that period is of the long outdoor balcony adjacent to the freshman lab and running the full width of the chemistry building. The balcony was fitted with a large number of H_2S outlets and it was on this balcony that we freshmen were expected to carry out the innumerable sulfide precipitations demanded by A. A. Noyes in his scheme for the qualitative analysis of the elements. No sensible faculty member or teaching assistant ever ventured forth into this purgatory of sulfide gas--but there was an exception. The exception was a very intense, very quiet blond-haired man who would appear on the balcony from time to time carrying a half-filled Erlenmeyer and would proceed to saturate it with H_2S until no more black precipitate formed. At the time I was unaware that the very intense person was T. A. Geissman and it was only much, much later that I understood the purpose of his experiments which, clearly, had to do with cleaning up various plant extracts. Throughout his life Ted enjoyed doing lab work himself. His lab, as I remember it, was crowded but tidy, and he never tired of showing off his electrically heated Wood's metal bath which was kept on a small hydraulic jack and always in a molten state ready for immediate action.

Sometime in the early forties, Ted was asked by Roger Adams to write a chapter on the Cannizzaro reaction for inclusion in the new series called "Organic Reactions". After investigating the reaction he gave a faculty seminar about it (this would have been around 1942). What I remember now is how lucid and understandable the talk was, even for an undergraduate without much knowledge of organic chemistry. (Let me add, parenthetically, that Ted's lectures proceeded rapidly; as he went along, speaking quietly to the blackboard, he would draw perfect, draftsman-quality benzene rings with his right hand, and would erase what he drew with his left.) At a point in the seminar when he was about to discuss mechanism, he turned to the famous and very charming physical chemist, Charles Coryell, and said, "Let me assure all of you that this mechanism has received the seal of approval of our physical chemistry department, so it must be good stuff"--a comment which evoked much laughter. Approved or not, Ted's mechanism has not withstood the test of time, though certainly the rest of his chapter has. As recently as last month the Journal of the Chemical Society, Perkin II published yet another paper on the Cannizzaro mechanism; in that paper the main general reference to the subject is the Geissman chapter, still useful after 41 years. I mention all this about the Cannizzaro reaction in order to make the point that throughout his career Ted worked not only in natural products chemistry and medicinal chemistry but he had an equally strong interest in organic reactions and mechanisms and molecular rearrangements.

Ted left UCLA in 1943 to work on a war-related project in Philadelphia. It was during this period that he was almost fatally injured when a reactor gave way that contained a lethal compound, the cobalt complex of salcomine. After a long period of recovery he returned to UCLA in the fall of 1945, but the insidious effects of the cobalt poisoning were to remain for the rest of his life. I don't remember that he ever complained or even uttered a single word about this catastrophic event.

I returned to UCLA in 1946 as one of Ted's graduate students and worked on Grignard reactions with hindered ketones. Because of recurring illness Ted was sometimes forced to remain away from school for long periods. On these occasions he would call the lab and ask some of us to visit him at home or in the hospital where we would tell him of our progress, or lack thereof. From my point of view he was an ideal research director. He allowed students to work on their own, he gave good advice (but only when asked), he rarely criticized, he praised when praise was due, and he never believed that being a graduate student was an occupation destined to last a lifetime.

Ted was interested in his students' careers and he worked hard at finding them suitable jobs, writing letters of recommendation, and making sure that they got invitations to participate in meetings. Possibly because of his own broad interests, he encouraged his students to explore areas of science other than the one they had been trained in. A few years after I had left UCLA, he tried and, in fact, succeeded (though with difficulty) in convincing me to venture into the alien land of pharmacology. He wrote me three long, persuasive letters which I recently came across. In one of these he noted that "there is some corner of a foreign field that is forever Science." He ended another letter with these words: "I should add, as a closing touch, that I am a furniture arranger: I like to try the davenport in a different place every once in a while (but I never move it out of the living room entirely)."

Ted had the ability to write rapidly, and to write with style and clarity. This made it possible for him to turn out textbooks, reference books, and a staggering volume of research papers and correspondence. He took pride in the fact that journal editors often accepted his papers without revision. Apropos of one of our manuscripts that was sent to the Journal of the American Chemical Society he wrote, "You will note that the gong was rung on the first swing, a feat not often accomplished in these times of rough refereeing." That was in 1949; I suggest that things haven't changed much since then.

The Geissmans liked to travel and they spent time in Japan, Australia, India, Turkey, and Germany while on various sabbaticals. Ted decided to retire from UCLA in the spring of 1974, partly because he had been offered what appeared to be an interesting teaching position at the University of Ibadan in Nigeria. Sometime during the summer of that year he called and mentioned rather dejectedly that he had given up the idea of going to Nigeria because of the difficulty in obtaining visas. A few minutes after this conversation the phone rang again. It was Ted to say he had just heard from Washington that the visas were on their way. His mood had brightened perceptibly. I heard nothing more until November, when he wrote a detailed letter about life in Nigeria. There is time to quote only the first few lines: "Dear Bob--Two days after we arrived in Ibadan I remarked to one of the staff that it seemed as if we'd been here a month. He replied 'wait until you've been here a month!'" Ted and Loraine decided to return to California shortly thereafter and it was not long before his health began to fail.

Ted was a truly decent and honest individual. He was tough-minded, independent, and unimpressed by authority. He fought against bigotry when bigotry was more fashionable than it is now. He had an enormous range of interests, from science on the one hand to baseball, photography, water colors, music and the arias of Mozart on the other. He was determined that others should understand the truths he had learned from a lifetime of scholarship, and he worked diligently to make certain that they did. Surely that is the mark of a great teacher.

Dr. R. Horowitz
Fruit and Vegetable Chemistry Laboratory
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Pasadena, California 91106

MINUTES OF THE 25TH ANNUAL BUSINESS MEETING OF THE PSNA, ASILOMAR CONFERENCE CENTER, JUNE 12-16, 1985

The meeting was called to order by President Mansell at 3:25, June 14. Executive Committee officers and a quorum of members were present. D. Mansell recognized Bock Chan and other members of the organizing committee for the excellent meeting we were experiencing at Asilomar and Bock Chan for his very successful campaign to obtain outside support for the meeting. E. Conn noted that Bock was most responsible for local arrangements and fund raising. Secretary G. Wagner offered to read the minutes of the 1984 Business meeting or have them be accepted as published in the 1984 October Newsletter. H. Stafford moved that they be accepted as published, G. Hrazdina seconded and the motion was carried. G. Wagner explained the proposed ammendment to Article XV, Section 2 which contained a statement required by the IRS for tax exempt status. The IRS has no record of PSNA having tax exempt status. The possibility that such status may exist under the old name of the society (Plant Phenolics Group of North America) will be investigated - postscript: it was investigated and no record exists. In any case, the ammendment to Article XV is now required. H. Stafford motioned that the ammendment be accepted as published in the May 1985 Newsletter and G. Hrazdina seconded. The vote for approval was unanimous.

D. Mansell read and explained the proposed changes to the constitution (essentially as published in the May 1985 Newsletter) concerning procedures for elections and future constitutional changes. Discussion followed and several minor clarifications were made before D. Mansell called for a vote. H. Stafford moved for acceptance, H. Habermann seconded and the vote for acceptance was unanimous. E. Conn reported that all manuscripts from the 1985 meeting were in hand. While the volume from the Boston meeting was not yet available for viewing, members were encouraged to order it now (order form available in this Newsletter).

The treasurer's report followed (see interim financial report and summaries below). J. Poulton asked that members provide up-to-date information for the new directory to be prepared this year - forms for this purpose are included in this Newsletter. J. Poulton pointed out that growth in the membership has not been sustained in recent years and that student membership declined substantially. He voiced his personal opinion that members should make a special effort to encourage colleagues and students to join PSNA - registration forms in back inside cover of each Newsletter. S. Brown pointed out that Canadian membership had grown constantly over recent years.

The Nominating Committee consisting of R. Ibrahim, C. Nozzolillo, and E. Rodriguez presented the following slate: N. Towers for Vice President, J. Poulton for Treasurer and G. Wagner for Secretary. G. Hrazdina nominated J. Romeo from-the-floor for Vice President. A discussion followed. It was pointed out that while it is allowed by the constitution, the election of a past president (N. Towers in this case) would represent a precedent. D. Loomis moved that nominations from the floor be closed, H. Stafford seconded. The motion was carried by voice vote, and ballots were distributed, collected and counted. N. Towers was elected by majority vote.

J. Saunders reported on well advanced plans for the Beltsville meeting to be held July 13-17, 1986 - a detailed description of plans is contained in this Newsletter. D. Mansell reported on plans for the 1987 meeting (probably late

June) at Tampa, Fla. The symposium topic is still under consideration and advisement by the EC and Advisory Committees. J. Poulton reported that the 1988 meeting may occur somewhere in the midwest USA. He pointed out that the society had not had a meeting in this area for some time and only 4 of 25 PSNA meetings were in this part of North America. A topic was not considered.

D. Mansell reported that the Advisory Committee organized last year and consisting of E. Conn, H. Stafford, J. Romeo, H. Floss, and S. Brown were asked to provide advice to the EC on the following topics: 1) should the membership be increased?, 2) should dues be increased?, 3) should corporate and sustaining memberships be solicited?, 4) topics for future meetings. E. Conn commented that because the Advisory Committee's sole role was to advise, opinions from the membership concerning these topics should be forwarded to the Advisory Committee through the society president.

D. Mansell again congratulated B. Chan for an excellent meeting. As there was no new business, H. Stafford motioned for adjournment and G. Wagner seconded. The meeting was closed.

SUMMARIES BY J. POULTON, TREASURER, PSNA

Interim Financial Report

1 January 1985-31 May 1985

Receipts		Expenditures	
Membership dues	$ 2,307.28	1985 Annual Meeting	$ 4,750.00
Royalties	3,324.79	1986 Annual Meeting	600.00
Interest (Savings Acct.)	1,012.57	Secretary's Expenses	700.00
Interest (Checking Acct.)	288.20	Auditor,s fee	50.00
Mailing List Sales	30.00		
TOTAL	$ 6,962.84	TOTAL	$ 6,100.00

Summary	
Receipts	$ 6,962.84
Expenditures	6,100.00
NET GAIN	$ 862.84

Assets- 1 January 1985		Assets- 31 May 1985	
Checking	$ 6,313.64	Checking	$ 7,176.48
Savings	23,750.00	Savings	23,750.00
Total	$30,063.64	Total	$30,926.48

ROYALTIES- RECENT ADVANCES IN PHYTOCHEMISTRY

	Volume	1978	1979	1980	1981	1982	1983	1984	1985	Total
10	Wallace-Mansell	673.54	861.12	496.58	418.70	369.78	255.07	120.64	62.39	$3,257.82
11	Runeckles-Loewus	1971.48	887.00	774.00	311.08	284.30	72.67	84.50	19.00	$4,404.01
12	Swain-Harborne	-	-	3605.35	975.39	426.00	171.67	226.21	95.62	$5,500.24
13	Swain-Waller	-	-	1386.42	211.48	166.97	45.54	81.50	31.14	$1,923.05
14	Swain-Kleiman	-	-	-	-	1496.87	104.33	115.04	53.05	$1,769.29
15	Loewus-Ryan	-	-	-	-	2133.37	469.97	367.89	140.10	$3,111.33
16	Creasy-Hrazdina	-	-	-	-	-	1940.17	614.46	214.18	$2,768.81
17	Nozzolillo et al.	-	-	-	-	-	-	2074.92	377.01	$2,451.93
18	Timmermann	-	-	-	-	-	-	-	2332.30	$2,332.30

SUMMARY OF PSNA MEMBERSHIP 1979-1985

	USA	Canada	Foreign	Students	Total Membership
1979	241	34	32	17	290
1980	245	36	34	29	315
1981	270	37	37	41	344
1982	278	46	40	46	364
1983	264	49	45	data unavailable	358
1984	273	52	42	38	367
1985	282	50	41	31	373 (412)*

* The figure in parentheses includes members who have yet to pay their 1985 dues.

Summary of Financial Costs of Previous PSNA Meetings

	Disbursements	Receipts	Cost to Society
1974 Cullowhee	$ 6,996	$ 4,475	$1,421
1975 Tampa	4,827	1,514	3,313
1976 Vancouver	7,238	5,779	1,459
1977 Ghent	-	-	1,300
1978 Stillwater	21,311	16,431	5,380 (PSNA $2,700, ASP $2,680)
1979 DeKalb	4,495	3,272	1,223
1980 Pullman	47,074	45,924	1,150
1981 Ithaca	6,586.41	5,275.66	1,310.75
1982 Ottawa	9,433.29	4,669.69	4,763.60
1983 Tucson	12,140.55	11,182.18	958.37
1984 Boston	18,831.80	13,832.89	4,998.91
1985 Asilomar	?	?	6,000.00 requested

PREVIEW OF 1986 PSNA MEETING:

More details will follow in the winter newsletter. Put this meeting on your calendar now!

The Phytochemical Society of North America will hold its 1986 Annual Symposium on July 14-18, 1986 at the Beltsville Agricultural Research Center, Beltsville, Maryland. The Symposium is entitled "Phytochemical Effects of Environmental Compounds". Symposium speakers and their presentation titles are:

Charles L. Mulchi	"Bioavailability of heavy metals in sludge-amended agricultural soils ten years after treatment"
David H. O'Keeffe	"Uptake and metabolism of phenolic compounds by the water hyacinth"
James G. Sanders	"Control of arsenic toxicity by phytoplankton"
Ruth Alscher	"Interaction of SO_2 with the photosynthetic apparatus"
Charles J. Arntzen	"Identification of herbicide target sites in plants"
Edward H. Buckley	"Correlation of properties of anthropogenic compounds in the atmosphere with their accumulation in foliage and crops"
Gary L. Cunningham	"Salinity effects on photosynthesis and primary productivity of C_4 grasses"
Robert L. Heath	"The biochemistry of ozone attack on the plasma membrane of plant cells"
To be announced	"...Acid rain..."

The symposium promises to be interesting and informative. Hope you're planning on attending. For further information when available, contact: Lynn Kosak-Channing (301) 344-3872 or James Saunders (301) 344-3478.

Accomodations:

Motel/Hotel	$25.00 and $38.00/night single $35.00 and $45.00/night double, and $5.00/night/person for 4 dorm style

Social Functions: Washington tour - possibly White House tour
Baltimore Inner Harbour and possibly Baseball game
Reception

ELECTION OF OFFICERS FOR 1986 AND PROPOSED CONSTITUTIONAL AMMENDMENTS

As noted in the minutes of the 1985 business meeting, constitutional changes were enacted in June which make the entire PSNA membership largely responsible for nominating and electing PSNA officers and for proposing and enacting constitutional changes. The May 1985 PSNA Newsletter contains changes - esentially as enacted at the June 1985 meeting. In the next (winter) newsletter you will be provided with a nominations ballot. By this ballot you will also have the opportunity to submit proposed constitutional changes. The constitution now calls for the nomination and constitutional change processes to be initiated at least 4 months prior to the annual business meeting of that year.

1986 PSNA MEMBERSHIP DUES

The Executive Committee recently considered the financial position of the Society in relation to dwindling interest rates and to the increasing costs of orgainizing annual meetings and of publishing and mailing Newsletters and Directories. It was felt that these factors have the potential to significantly erode our current financial position. To prevent this erosion, we unfortunately feel it necessary to raise PSNA dues as of Jan. 1, 1986, to $15.00 for full membership and to $8.00 for student membership. While these increases may seem large, may I remind you that PSNA, unlike most other professional societies, inflation and the U.S. Mail Service, has not increased its dues for many 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. Additionally, the Executive Committee is planning to: (i) continue and improve the student travel grant program, thereby attracting new members at early stages of their phytochemical careers, and (ii) provide sufficient funding to symposium organizers to maintain the quality of our meetings.

NEW MEMBERS

The PSNA welcomes the following new members:

Mr. Douglas A. Gage Dept. of Botany Univ. of Texas at Austin Austin, TX 78713	Chemosystematics Terpenoid Chemistry
Dr. Robert A. Norton Dept. of Eco. & Evo. Biol. University of California-Irvine Irvine, CA 92717	Natural Product Synthesis in Plant Tissue Cultures
Dr. Saifunnissa B. Hassam Philip Morris USA P.O. Box 26583 Richmond, VA 23261	Natural Products

Dr. Robert M. Zacharius
USDA, ARC, BARC
Plant Stress Laboratory
BARC-WEST, Bldg. 001
Beltsville, MD 20705

Biological and environmental stress on plants; host-parasite interactions; phytoalexins; biotransformation of metabolites by plant cell cultures

PROFFESSIONAL POSITIONS:

ASSISTANT OR ASSOCIATE PROFESSOR OF HORTICULTURE. Baton Rouge, Louisiana. Appointee to this 12 month tenure track position in the Department of Horticulture, Louisiana State University will be expected to develop and conduct a vigorous research program which will ultimately contribute to improved florist crop production and use, particularly in Louisiana. The research program should encompass both fundamental and applied approaches. Teaching duties will include an undergraduate course in introductory Horticulture and a course in the appointee's area of expertise. Advising undergraduate and graduate students will be expected. Application deadline is September 30, 1985, or until suitable applicant is obtained. Salary commensurate with training and experience. Applicants should submit a letter outlining their background and experience and have official transcripts and three letters of recommendation forwarded to: Dr. Albert C. Purvis, Head, Department of Horticulture, 137 Julian C. Miller Hall, Louisiana State University, Baton Rouge, Louisiana 70803. Telephone: (504) 388-2158. (6/1/85)

RESEARCH POSITIONS. An expanding organized research center seeks talented and aggressive researchers at faculty, post-doctoral, graduate and technical levels. Long-term objectives are to exploit the unique properties of cultured plant cells in the context of developmental phenomena. The program is multi-disciplinary and is geared to the collaboration of cell biologists, chemists, biochemists and geneticists. Unparalleled opportunities for the first-rate candidates. Forward inquiries/application information to the confidential attention of: Roy A. Jensen, Director, Center for Somatic-cell Genetics and Biochemistry, State University of New York, Binghamton, New York 13901. Telephone: (607) 777-6531. (6/18/85)

ASSISTANT PROFESSOR. Tenure-track, Ph.D., research position in plant science. Emphasis on genetic, physiological mechanisms such as stress tolerance, pest-resistance, photosynthesis, and plant habits affecting productivity of major vegetables in South Florida. Candidate should also be familiar with molecular genetic techniques. Research involves field and laboratory studies in basic and applied genetics and interaction with other disciplines. Send resume, transcripts and 3 letters of reference before September 6, 1985, to Dr. H. H. Bryan, Search & Screen Committee, Tropical Research and Education Center, University of Florida, 18905 SW 280 Street, Homstead, FL 33031. (6/19/85)

POSTDOCTORAL RESEARCH ASSOCIATE. To study a glucosy/transferase which is induced in plant tissue in response to enogenous phenolic compounds. Position available in Fall 1985. Contact Dr. Nelson E. Balke, Department of Agronomy, University of Wisconsin-Madison, 1575 Linden Dr., Madison, Wisconsin 53706. (608) 262-1390.

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.

COMPOUNDS

Natural Products

- Alkaloids _____
- Non Protein Amino acids _____
- Cyanogenic Glycosides _____
- Glucosinolates _____
- Polyacetylenes _____
- Phenolics _____
- Flavonoids _____
- Coumarins _____
- Stilbenes _____
- Terpenes, Steroids & Carotenoids _____
- Sulphur Compounds _____
- Others (please specify) _____

Primary Metabolism

- Nucleic acids _____
- Polysaccharides _____
- Proteins _____
- Amino acids _____
- Sugars and derivatives _____
- Lipids _____
- Vitamins _____
- Photosynthetic Pigments _____
- Others (please specify) _____

NAME: _____

CURRENT ADDRESS: _____

_____

_____

RESEARCH AREA

- Allelopathy _____
- Biosynthesis and Metabolism _____
- Biotechnology _____
- Cell wall Chemistry _____
- Chemotaxonomy _____
- Chemical Ecology _____
- Chemical Reactions _____
- Enzymology _____
- Fungal Metabolism _____
- Growth Regulators _____
- Herbicide Biochem. & Physiol. _____
- Industrial Applications _____
- Isolation & Identification of Compounds _____
- Localization _____
- Marine Natural Products _____
- Medicinal/Toxic Plants _____
- Membrane Structure & Function _____
- Molecular Biology _____
- N_2 Fixation & Metabolism _____
- Pharmacology _____
- Photosynthesis _____
- Plant Genetics _____
- Plant-Animal Interactions _____
- Plant-Insect Interactions _____
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- Recognition-Cell Surface Interactions _____
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- Others (please specify) _____

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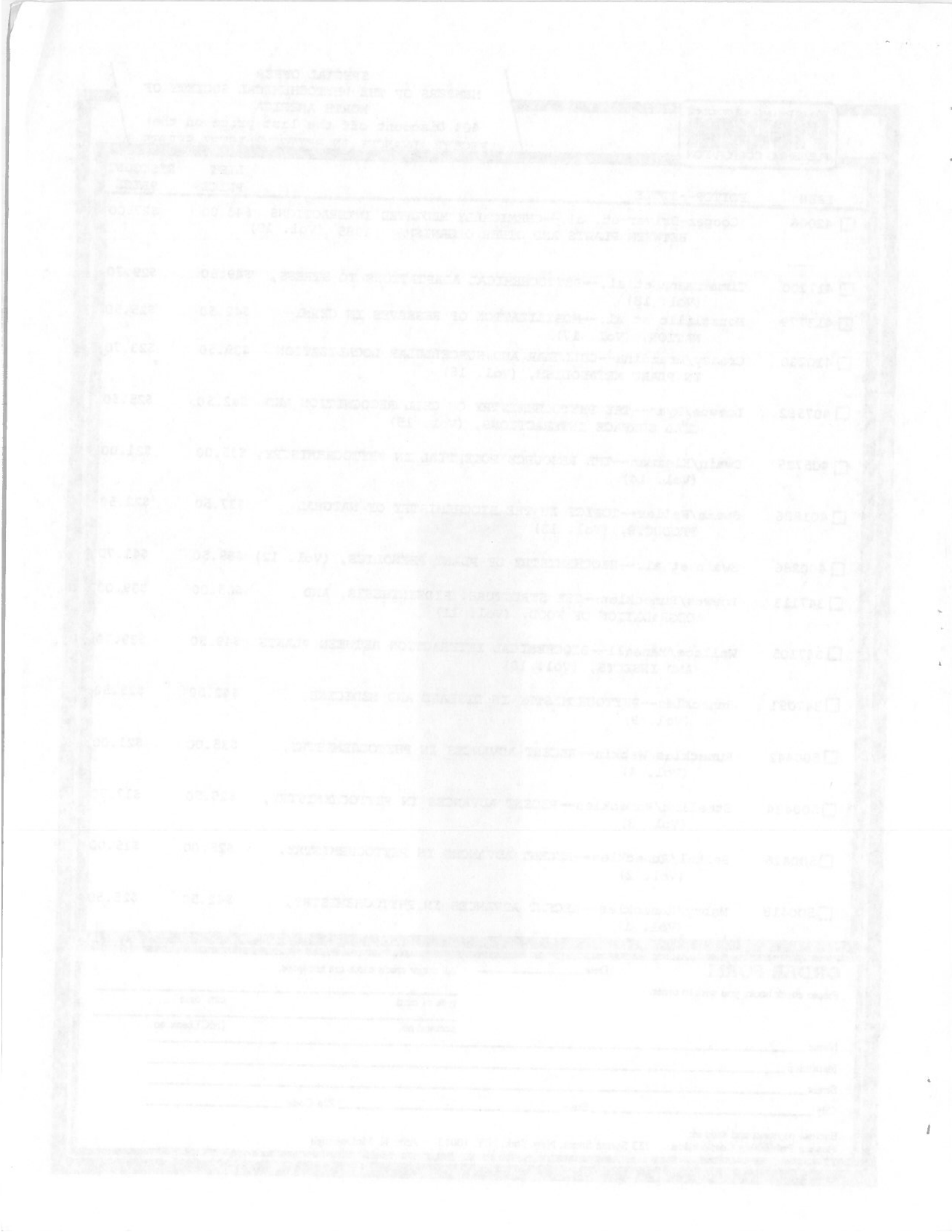

PHYTOCHEMICAL SOCIETY OF NORTH AMERICA

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

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

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Field of Interest: _____

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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
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University of Kentucky
Lexington, KY 40546-0091

SEND TO:

Dr. John T. Romeo
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Univ. of South Florida
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