

Apr. 1 1982

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1982 PSNA Annual Meeting - General Information

The Annual Meeting of the PSNA will be held August 2-6, 1982 on the campus of the University of Ottawa. The symposium is entitled "Mobilization of reserves in germination" and the list of invited speakers and their titles is appended. Contributed papers are invited either orally or as posters on any topic of phytochemical interest. Please use the abstract form provided. For oral presentations, 2" X 2" slides can be projected and chalkboards and overhead projectors will be available. Abstracts and registration should be received no later than May 15, 1982 for publication in the July, 1982 Newsletter.

The University of Ottawa is located in downtown Ottawa in Eastern Ontario. As the Capital of Canada, Ottawa is packed with things to see and do that are absolutely free: Museums, The Houses of Parliament, The National Art Gallery, hiking or biking on miles of nature trails. Ottawa and its environs are thus ideal for a family holiday. Numerous lakes and rivers enhance the attractions of the city and the surrounding area. Upper Canada Village, a glimpse of pioneer life, is situated 100 km to the south on the St. Lawrence Seaway, Gatineau National Park with free public beaches and hiking trails parallels the Gatineau River 25 km to the north in the adjoining province of Quebec, and the lakes of the Rideau Canal system are the focal point of numerous historic towns to the west. And of course, La Grande Ville de Montréal is only a two hour drive away to the east! Information on the city and its environs will be provided on request to the Canada's Capital Visitors and Convention Bureau, 7th Floor, 222 Queen St., Ottawa, Canada, K1P 5V9, Telephone 613-237-5150.

Ottawa can be reached by automobile from Highway 401 via Highways 16, 31, or 15; by train, or by bus. At the present time, only two airlines, Eastern and Pilgrim, fly directly into Ottawa from points outside Canada, but there are frequent connecting flights from Toronto and Montreal.

A selected list of hotels, motels, guest homes, and camp sites is appended. Accommodation will also be available in the University residences on campus at the following rates: single room, \$18.50, double room, \$12.50 per person. Meals may be purchased individually in the cafeteria on campus, or at any of the many nearby restaurants. Game rooms and olympic size swimming pool on campus are available to attendees for a small daily fee. For joggers, a run along the Rideau Canal which borders the campus costs nothing!

The symposium and contributed papers sessions will be held in Lamoureux Hall, Rm 122, an auditorium near the residences. Coffee breaks morning and afternoon will be held in the adjoining class rooms 121 and 124 which will also serve as the site of the poster display and meeting common room.

Program for the 1982 PSNA Meeting in Ottawa, August 2-6.

Monday evening - Registration and Reception

Tuesday a.m.++ - Registration, formal greetings, symposium papers 1, 2, 3
p.m. - Symposium paper, contributed paper session.
evening - PSNA Executive Committee meeting.

Wednesday a.m. - Symposium papers 4, 5, 6
p.m. - "Gatineau Hills Tour" or afternoon free for visits to local laboratories, etc.

Thursday a.m. - Symposium papers 7, 8, 9
 p.m. - Contributed paper session, annual business meeting, PSNA.
 evening - PSNA annual banquet and social hour.

Friday a.m. - Symposium papers 10, 11, 12
 p.m. - Free for early departure or visits to local laboratories.

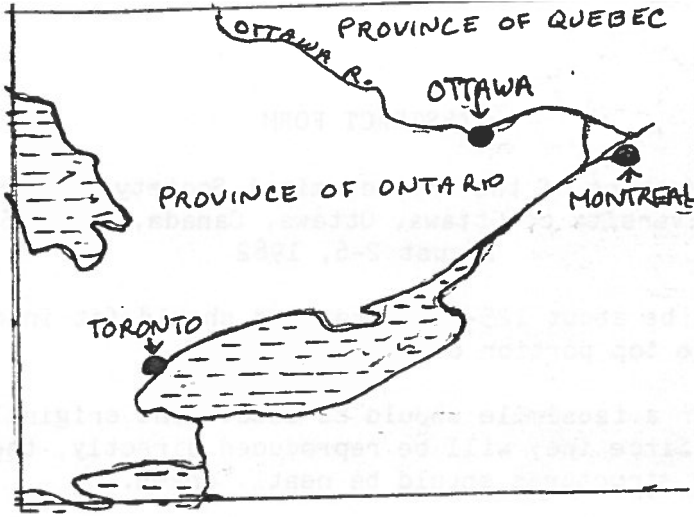
**Monday, August 2, 1982 is a civic holiday - banks, department stores, gov't offices, etc. will be closed

*The Organization Committee: Dr. C. Nozzolillo, Dr. T. Arnason, and Dr. A. Picman, all of the University of Ottawa, welcome suggestions and comments!

PSNA SYMPOSIUM 1982: Mobilization of reserves in germination.

University of Ottawa, Ottawa, Canada Aug. 2-6, 1982.

- Tues. a.m. 1. G. Fulcher, Ottawa Research Station, Agriculture Canada, Ottawa, Ont. K1A 0C6. Histochemical localization of seed reserves.
2. E.W. Simon, Department of Botany. The Queen's University, Belfast BT7 INN, Northern Ireland. Membranes of the seeds.
3. B. McKersie, Crop Science Department, University of Guelph, Ontario. Changes in membrane structure during germination.
- Wed. a.m. 4. P.J. Lea, Rothamstead Experimental Station, Harpenden, Herts AL 5 2JQ, England. Amino acid interconversions in germinating seeds.
5. A. Oaks, Dept. of Biology, McMaster University, Hamilton, Ontario L8S 8K1. The relationship between storage reserves and the biosynthesis of metabolites in the young seedling.
6. T. Galliard, The Lord Rank Research Centre, Lincoln Road; High Wycombe, Bucks. HP1 23QR, England. Starch-lipid complexes in cereals.
- Thurs. a.m. 7. G. MacLachlan, Dept. of Biology, McGill University, Montreal, P.Q., Canada H3A 1B1. Transport and metabolism of asymmetrically-labelled sucrose in germinating peas.
8. J.D. Bewley, Dept. of Biology, University of Calgary, Alberta, Canada. Interactions between the growing axis and storage tissue in the control of reserve hydrolysis.
9. F. Loewus, Institute of Biol. Chemistry, Washington State University. Pullman, WA 99164. Myoinositol and phytate.
- Banquet Speaker- G.A. Rosenthal, School of Biol. Sciences, University of Kentucky, Lexington, KY 40506. The role of allelochemicals in seedling protection.
- Fri. a.m. 10. R.S. Bandurski, Dept. of Botany and Plant Pathology, Mich. State U., East Lansing, Mich. 48824 USA. Indole acetic acid conjugates.
11. M. Black, Dept. of Biology, Queen Elizabeth College, University of London, London W87AH. The "off-on" control process for gibberellin regulation.
12. P.L. Finney, Western Wheat Quality Laboratory, USDA, Washington State University, Pullman, Washington - 99164 USA. Nutritional benefits of sprouted seeds.



Features Commodités	Accommodation Logement	Address Adresse	Code 613 Telephone Téléphone	Rooms Chambres	Rates — Prix		Special Weekend Bargains Tarifs spéciaux de fin de semaine
					1 Person 1 Personne	2 Persons 2 Personnes	
DOWNTOWN OTTAWA — CENTRE D'OTTAWA							
4	Albert House	478 Albert	236-4479	15	\$25.00 (including breakfast)	\$29.00	
1 6 10	Alton	1 Daly	232-4819	50	22.00	26.00	
2 6 8 11	Astocrat Apartment	131 Cooper	232-9471	214	30.00-38.00	34.00-42.00	Sept 1 to Dec 10/81 and Dec 11 to Feb 15/82
4 8	Australis Guest Home	70 Marlborough	235-8461	3	15.00 (including breakfast)	20.00	
1 6 8 9 10	Beacon Arms	88 Albert	235-1413	160	32.00	36.00	On request as of Sept
1 6 9 10	Brown	127 Metcalfe	237-5171	190	34.00	38.00	Available with advance reservations
1 6 7 9 10	Cateau Laurier	Major's Hill Park	232-6411	460	60.00-95.00	72.00-107.00	\$39.00-\$49.00 until Aug 31, single, double, 2 nights min (Fri to Sun)
1 6 7 9 10	Delta's Inn of the Provinces	361 Queen	238-6000	330	63.00-85.00	69.00-85.00	\$44.00 single, double, May 1 to Dec 31, 2 nights min (Fri and Sat)
1 6 7 9 10	Four Seasons	150 Albert	238-1500	236	77.00	87.00	\$80.00 single, double May to Sept, 2 nights min (Fri and Sat). Romantics weekend available.
4	Heritage Guest Home	121 Daly	236-4314	4	15.00 (available from May 1 to Aug 30 only)	20.00	
1 6 7 9 10	Holiday Inn Ottawa Centre	100 Kent	238-1122	504	58.50	64.50	25% off regular individual rates Oct 15 to May 15/82, 2 night min (Fri to Sun)
1 6 7 9 10	Holiday Inn Market Square	350 Dalhousie	236-0201	169	47.50	54.50	25% off regular individual rates Oct 15 to May 15/82, 2 nights min (Fri to Sun)
1 6 9 10	Lord Elgin	100 Elgin	235-3333	355	34.00-36.00	38.00-40.00	On request Nov 1 to Apr 30
4	Lyon, Mrs. G	479 Slater	236-3904	3	17.00 (including breakfast May to Oct 1)	25.00	
4	Mathilda's Turn of the Century	83 Stewart	234-6330	6	20.00 (including breakfast)	25.00	
10	Nicholas Street Jail Youth Hostel	75 Nicholas	235-2595	160	Members 3.75	Non-Members 5.25	
4	Ottawa Area Bed & Breakfast	P.O. Box 11263, Station H Ottawa K2H 7T9	820-0367 or 828-9502	40 Homes	15.00-20.00 (including breakfast)	25.00	
3 6 9 10	Parkway Motel Hotel	475 Rideau	232-3781	60	28.50	34.00	\$26.50 single, \$28.50 double, May 1 to Oct 15
3 6 7 10	Sheraton El Mirador	480 Metcalfe	237-5500	158	46.00	52.00	
1 6 7 9 15	Sylvine	101 Lyon	237-3600	434	57.00-61.00	67.00-71.00	\$39.00 double May 1 to Dec 31 (Fri to Sun)
3 6 9	Town House	319 Rideau	236-0151	64	25.00-30.00	28.00-33.00	

CAMPING & TRAILER PARKS CAMPING ET PARCS POUR ROULOTTES						
Name & Location Nom et Lieu	Features Commodités	Sites Sites	Minimum Fee Tarif minimum	Code Tel.-Tél.	Postal Address Adresse Postale	
Camp Le Breton Fleet St. at Booth/Rue Fleet à Booth. Opening: June 15/Date d'ouverture: 15 juin	3 4 5 Camp LeBreton provides inexpensive accommodation for cyclists and hikers in downtown Ottawa	200 tents	\$1.50 per person 3 nights max. \$1.50 par personne par jour, 3 nuits consécutives	613-235-2829 group reservations 20 or more. Réservation de groupe seulement (20 personnes et plus)	National Capital Commission & Public Activities, 161 Laurier Ave. W., Ottawa, Ont. Commission de la Capitale, Parcs et Activités publiques, 161 ave. Laurier O., Ottawa, Ont. Tel: 613-996-5784	
Ottawa-Nepean Municipal 411 Corkstown Rd. — Hwy. 417 W., Moodie Drive Exit Queensway Terrain municipal de camping d'Ottawa- Nepean, chemin Corkstown — Route 417 ouest sortie Moodie Drive Queensway	1 3 4 5 6 7 11	152	\$8.00	613-828-6632	3825 Richmond Rd./3825 chemin Richmond Nepean, Ont. K2H 5C2	

**RATES ARE SUBJECT TO CHANGE WITHOUT NOTICE
TARIFS PEUVANT CHANGER SANS AVIS**

- CODE**
1. Electrical Connections
 2. Sewage Facilities
 3. Flush Toilets
 4. Showers
 5. Fireplaces
 6. Stores
 7. Ice
 8. Fishing
 9. Swimming Beach

- CODE**
1. Prises électriques
 2. Égouts
 3. Toilettes avec chasse d'eau
 4. Douches
 5. Foyer
 6. Magasins
 7. Glace
 8. Pêche
 9. Plage

For other brochures and helpful information,
please write:
Canada's Capital Visitors and Convention Bureau
7th Floor
222 Queen Street
Ottawa, Ontario K1P 5V9
(613) 237-5150
Pour renseignements supplémentaires
veuillez écrire à:
L'Office du Tourisme et des congrès
de la Capitale du Canada
7^e étage
222 rue Queen
Ottawa, Ontario K1P 5V9
(613) 237-5150

ABSTRACT FORM

22nd Annual Meeting of the Phytochemical Society of North America
University of Ottawa, Ottawa, Canada, K1N 6N5
August 2-6, 1982

1. Abstracts should be about 125-200 words and should fit into the block space below. Leave the top portion of the box blank.
2. The form below or a facsimile should be used. One original and one copy are requested. Since they will be reproduced directly, they should be well prepared and any structures should be neatly drawn.
3.
 - a. The title should be capitalized.
 - b. Locations for authors should follow names if multiple authors are at different locations. Underscore the author who will present the paper.
 - c. For uniformity, elite type is preferred. Use single spacing and fill the block to its maximum.
 - d. Example Heading: STRUCTURE OF CAMPHORONE. George H. Doe and Peter B. Stone, Department of biology, Central State University, Central, State, 11111 and Donald E. Smith, Department of Chemistry, Middle State University, Middle, State, 33333.
4. Abstracts should be submitted by May 15, 1982.
5. Mail the original and one copy to: 1982 PSNA Meeting, c/o Dr. C. Nozzolillo, Department of Biology, University of Ottawa, Ottawa, Canada K1N 6N5.
6. Presentation format: Oral (15 min.) _____ Poster _____
 Projection requirements: 2" X 2" _____ Overhead _____ Chalkboard _____

ADVANCE REGISTRATION FORM

Return no later than May 15, 1982 to: 1982 PSNA Meeting
 Dr. C. Nozzolillo
 Department of Biology
 University of Ottawa
 Ottawa, Canada K1N 6N5

Name _____ Telephone _____
 (please print) (area code) (number)

Dept./Street _____

Institution/Company _____

City _____ State/Province _____ Zip _____
 (postal Code)

Number		Amount
_____	Meeting participant (member)	\$40.00 U.S. \$50.00 Can.
_____	Meeting participant (non-member)	\$50.00 U.S. \$62.50 Can.
_____	Graduate or undergraduate student	\$25.00 U.S.
_____	Student member presenting a paper or poster	No Cost
_____	PSNA membership	\$8.00 U.S.
	Student	\$4.00 U.S.
_____	Society banquet	\$25.00 Canada \$20.00 U.S.
_____	Wednesday afternoon "Gatomeai Hills Tour"	\$20.00 Canada \$16.00 U.S.

TOTAL AMOUNT ENCLOSED _____

Make checks payable to 1982 PSNA Meeting -- no refunds after June 30, 1982. A receipt and information packet will be sent to you to acknowledge your payment.

ROOM RESERVATION FORM

Name _____

Address _____

City _____ State/Province _____ Zip _____
Postal Code _____

Housing preferred ^{*}(university residences only - please make your own arrangements for off-campus accomodations _____)

Single room _____ or sharing double _____
\$18.50 Canada \$12.50 Canada
\$15.00 U.S. \$10.00 U.S.

Roommate _____

Arrival date and time _____

Departure date and time _____

Mode of travel (free parking for private automobiles will be provided on campus

Meal tickets desired:		M	T	W	T	F
Bkfst. \$2.80 Canada		_____	_____	_____	_____	_____
Lunch \$3.70 Canada		_____	_____	_____	_____	_____
Dinner \$4.50 Canada		_____	_____	_____	_____	_____

Return by May 15, 1982 to: PSNA 1982 Meeting
Dr. C., Nozzolillo
Dept. of Biology
University of Ottawa
Ottawa, Canada K1N 6N5

*Stanton Hall - 100 Haste Street
Where registration will take place
Monday, Aug. 2, open 24-hrs. per day.

PHYTOCHEMICAL SOCIETY OF NORTH AMERICA

Annual meeting and symposium
Aug. 2-6, 1982

Mobilisation of Reserves in Germination

Topics and speakers

Localization of reserves	G. Fulcher, Agriculture Canada
Membranes	E. Simon, Belfast, B. McKersie, U. of Guelph
Nitrogen	A. Oaks, McMaster, P. Lea, Rothamstead
Carbohydrates	G. Maclachlan, McGill D. Bewley, U. of Calgary
Lipids	T. Galliard, Lord Rank Inst.
Hormones	M. Black, U. of London R. Bandurski, M.S.U.
Phytate	F. Loewus, W.S.U.
Vitamins	P. Feeney, U.S.D.A.
After-dinner speaker:	G. Rosenthal, U. of Kentucky
Biochemical insights into plant allelochemical-insect interaction	

Further details:

C. Nozzolillo
Dept. Biology
U. of Ottawa
Telephone (613) 231-2332
231-2954

J. T. Amason
Dept. Biology
Telephone (613) 231-4234

UNIVERSITÉ D'OTTAWA



UNIVERSITY OF OTTAWA

Report of the Treasurer
January 1982

The Society continues to grow and to have both a strong membership and financial position. We now have 338 members (300 regular, 38 students), a net gain of 20 for the year. Of these, 265 are U.S. members, 34 are Canadian, 12 are West German and 27 are from various other foreign countries. Our net worth as an organization rose to \$21,665.58.

The increase in our assets over 1980 is \$799.37, a 3.8% increase. This year the major share of Society income came for the first time from interest on our savings. While the Society is a non-profit organization, we are allowed to benefit from increased interest rates. Most of our savings is now invested in high interest yielding money market certificates. Our royalty income from Recent Advances in Phytochemistry was lower than last year. The amounts received in 1981 are for royalties earned in 1980. The lesser amount this year is explained by the fact that Vol. 12 earned such an unusually large portion in 1979, and Vol. 14 published late earned no royalties in 1980. Our books continue to sell well, particularly Vols. 10 and 12, and provide us with significant income.

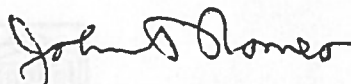
It was brought to the attention of the current Executive Committee that one of the agreements made between PSNA and the American Society of Pharmacognosy regarding the 1978 joint meeting was for the sharing of royalties on Vol. 13. While the policy of the current Executive Committee is to not share royalties in the case of joint meetings, this commitment made in the past must be honored. Accordingly, \$798.95 or one-half of the royalties earned in 1979 and 1980 on this volume has been paid to ASP.

The Annual Report shows an expenditure of only \$300 for the 1981 Cornell Meeting. The actual cost to the Society for this meeting is \$1310.75 (see accompanying report). Since the accounting was provided late by the meeting organizers, the balance due of \$1010.75 will be paid out of the 1982 budget. The modest loss on the meeting is consistent with those of recent years, and it indicates careful planning by the organizers. The outside support obtained by them helped prevent an excessive outlay by the treasury. The \$3000 advance for the 1982 meeting was provided so that invited foreign speakers could purchase travel tickets early at reduced rates.

By now all of you should have received the new Membership Directory. It reflects all address changes received by the Treasurer as of February 1, 1982. Those of you who filled out the questionnaire were included in the new Research Interest section. The Secretary will continue to publish the names, addresses, and research interests of new members in the Newsletter.

I have copies of all bank statements and the auditor's report on file. Your comments, suggestions, and criticisms are appreciated, and anyone desiring more information should contact me.

Respectfully submitted,



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

PHYTOCHEMICAL SOCIETY OF NORTH AMERICA
FINANCIAL STATEMENT
1 January 1981 - 31 December 1981

<u>Receipts</u>		<u>Disbursements</u>	
Membership		American Soc. of Plant Physiologist	
Regular	80 \$ 16.00	(Balance due - 1980 meeting)	\$ 150.00
	81 2053.50		
	82 124.00	Secretary expense -	
Student	109.00	Newsletter & postage	1800.00
Total	\$2302.50	Treasurer expenses -	
<u>Royalties</u>		Postage & printing	175.96
Vol. 9	59.99	Editor-in-Chief-	
Vol. 10	418.70	Travel - Vol. 16	300.00
Vol. 11	311.08	American Soc. of Pharmacognosy	
Vol. 12	975.39	(1/2 royalties on Vol. 13 for	
Vol. 13	211.48	1979, 1980)	798.95
Total	\$1976.64	Auditor	40.00
Mailing List	60.00	Foreign Exchange Debit	8.28
<u>Interest</u>		Annual Meeting - 1981	300.00
Money Market	\$3020.74	Annual Meeting-1982 (Advance)	3000.00
Savings	12.68		
Total	\$3033.42		
TOTAL	\$7372.56		
		TOTAL DISBURSEMENTS	\$6573.19
		<u>Summary 1981</u>	
		Total receipts	\$7372.56
		Total disbursements	\$6573.19
		Net Gain	\$ 799.37
Assets 1 January 1981		Assets 31 December 1981	
Checking	\$ 4,312.66	Checking	\$ 578.61
Savings	16,553.55	Money Market	16,969.74
Total	\$20,866.21	Savings	4,117.23
			\$21,665.58

PHYTOCHEMICAL SOCIETY OF NORTH AMERICA
Annual Meeting, 1981

Total Income

Registration	\$1,095.66
Banquet and Excursion	1,180.00
New York State College of Agriculture	2,000.00
State University of New York	1,000.00
PSNA	1,310.75
TOTAL	\$6,586.41

Total Expenses

Meeting - Rooms, secretarial, Publicity, etc.	\$1,818.40
Banquet	664.00
Excursion	434.00
Speakers expenses - room, meals, travel, etc.	2,670.01
Honoraria	1,000.00
TOTAL	\$6,586.41

PSNA WELCOMES THE FOLLOWING NEW MEMBERS:

Lynn L. McRoy, 3911 Wakefield Lane, Bowie, MD. 20715, Interests in: Amino acids, alkaloids, terpenes, steroids, carotenoids, plant genetics, plant-pathogene interactions.

Dr. Stephen G. Saupe, Dept. Biology, St. John's Univ., Collegeville, MN 56321, Interests in: Cyanogenesis in microorganisms.

Dr. Clark A. Porter, Monsanto Ag. Products, 800 N. Lindberg Blvd., St. Louis, MO 63167, Interests in: Aromatic biosynthesis, Herbicide Physiology, Plant growth regulation.

Dr. Stephen C. Fry, Dept. Biochemistry, Univ. of Cambridge, Tennis Court Rd., Cambridge CB2 1QW, ENGLAND, Interests in: Structure-metabolism of phenols and polysaccharids in primary cell wall. Hormonal regulation of cell expansion.

Dr. Paul-Gerhard Gulz, Botanisches Institut, Universitat Koln, Gyrhofstr. 15, D-5000 Koln 41, WEST GERMANY, Interests in: Lipids, subcuticular waxes, desert plants, teroencids, rubber.

Ms. Cecilia A. McIntosh, 4227 E. Yukon St., Temple Terrace, FL. 33617, Interests in: Enzyrology, physiology.

Ms. Lettie Classen, 475 Castlegrove Blvd. London, Ontario, CANADA, N6G 3R9, Interest in: Mycology, Plant Pathology.

Dr. Richard D. Sjolund, Dept. of Botany, Univ. of Iowa, Iowa City, IA 52242, Interests in: Structure & physiology of phloem, membrane transport, tissue culture.

Dr. Z. L. Bajaj, Dept. Biological Sciences, Concordia Univ., Sir George Williams, 1455 Maissonenve Blvd., Montreal Quebec H 36 IM8, CANADA, Interest in: Phenolics - biosynthesis and metabolism.

Dr. Cho Kwang Yi, SEA/CSRS, Box 730, Langston Unviersity, Langston, Oklahoma, 73050, Interest in: Plant proteins and plant enzymes.

Dr. Peter John Lea, Dept. Biochemistry, Rothamsted Exptl. Stn. Harpenden Herts, AL5 2JQ, ENGLAND, Interests in: Nitrogen metabolism, ammonia assimulation; amino acids.

Dr. David L. Erbes, DuPont Exptl. Sta., Biochemicals Dept. (335), Wilmington, DE 19893, Interests in: Agrichemicals.

Mr. W. Hsiao-tsu Loh, Dept. Microbiology, 484 W. 12th Ave., Ohio State Univ., Columbus, OH 43201, Interests in: Plant tissue culture, nitrogen fixation, biotransformation.

Mr. Scott C. Hartsel, Ohio State University, 484 W. 12th Ave., Columbus, OH 43210, Interest in: Biotransformation, tissue culture - Cannabis sativa, natural products.

Dr. Rainer Suetfeld, Botanisches Institut der WWU, Schlossgarten 3, D-4400 Muenster, WEST GERMANY, Interests in: Physiology & biochemistry of secondary natural products.

Dr. G. Earayuga Merrill, USDA WRRRC ARS, 800 Buchanan St., Albany, CA 94710-1198, Interests in: Agricultural natural product chemistry, weed science, sesquiterpene lactones, alkaloids, Centaurea.

Dr. Robert J. Ireland, Biology Dept, Calleton Univ., Ottawa, Ontario K15 5B6, CANADA, Interests in: Nitrogen (amide) metabolism, enzymology.

UPCOMING MEETINGS OF INTERESTS TO PHYTOCHEMISTS:

Phytochemical Society of North America:

- 1982 Annual Meeting Aug. 2 - 6, 1981, University of Ottawa, Canada, Symposium topic: Mobilization of Reserves in Germination.
- 1983 Annual Meeting July 5 - 8, 1982, University of Arizona, Tucson, AZ Symposium Topic: Phytochemical Adaptation to Stress. For additional information or suggestions for Symposium speakers contact: Dr. C. Steelink, Dept. of Chemistry, University of AZ, Tucson, AZ 85721 (602) 626-2780.
- 1984 Annual Meeting Boston University, Boston, Mass., Symposium Topic: Biochemical Interactions between plants and other organisms. For additional information or suggestions for symposium speakers contact: Dr. Tony Swain or Dr. Gillian Cooper-Driver, Boston Univ., Dept. Biol-Science, 2 Cummington St., Boston, MA, 02215, (617) 353-2454.
- 1985 Annual Meeting Asilomar Conference Grounds, Monterey, CA, Symposium topic: Secondary Plant Products, Chemistry and Function. For additional information or suggestions for symposium speakers contact: Dr. Bock Chan, Plant Protection Unit, USDA, 800 Buchanan St., Berkley, CA 94710 (415) 486-3991.

American Society of Plant Physiologists

- 1982 June 14-17, University of Illinois, Champaign - Urbana, Ill.
For information: Dr. Bill Rinne (217) 333-1117
The College of Agricultural and Environmental Sciences, University of California, Davis, is sponsoring a symposium on Genetic Engineering of Plants, Davis CA. August 15-19, 1982.

Individual sessions and topics will cover:

Plant Improvement - OVERVIEWS: Plant breeding, molecular biology; Gene Vectors and Delivery systems: DNA-viruses, Agrobacterium plasmids, DNA transformation via liposome delivery, chromosome transfer. Somatic Cell Genetics: Mutant selection in cell cultures, somatic hybridization, somaclonal variation, anther and pollen culture. Crop Productivity and Quality: Biological stress, environmental stress, yield, nitrogen compounds. Genes: RuBP carboxylase, stress tolerance, differentially regulated genes, cytoplasmic male sterility, seed storage proteins. Challenges to Crop Improvement: Co-evolution of plant and pests, disease mimics, cells vs. whole plants. The 26 speakers on the program are all internationally recognized authorities.

A poster session will be open to all conference participants. Conference coordinators are: Dr. Carole P. Meredith, Department of Viticulture and Enology and Dr. Tsune Kosuge, Department of Plant Pathology.

Information concerning the program and local arrangements is available from Office of the Dean, College of Agricultural and Environmental Sciences, University of California, Davis, CA. 95616; Attn: Carroll Miller. (916) 752-6435.

POSITIONS OPEN: A position at the Oxford Tobacco Research Laboratory is open for a Plant Physiologist to conduct basic and applied research related to metabolic processes in the tobacco plant. The position offers an unusual opportunity for an individual to develop a program of basic and applied research in plant physiology on tobacco. Tobacco is an ideal plant for basic plant physiology research. It has been the subject of much experimentation in all aspects of plant science. The plant is easily and quickly manipulated and responds readily to research manipulations. This position is with ARS-USDA and in close cooperation with N.C. State University and the incumbent will have faculty status and can participate in activities of the university such as advising graduate students. If interested please contact: Dr. J. F. Chaplin, Director, Tobacco Research Laboratory, USDA-ARS-Southern Region, Route 2, Box 16 G, Oxford, North Carolina 27565.

ISBN	AUTHOR/EDITOR--TITLE	LIST PRICE	DISCOUNT PRICE
410230	Creasy/Hrazdina--CELLULAR AND SUBCELLULAR LOCALIZATION IN PLANT METABOLISM (Recent Advances in Phytochemistry, Volume 16)	\$37.50	\$22.50
407582	Loewus/Ryan--THE PHYTOCHEMISTRY OF CELL RECOGNITION AND CELL SURFACE INTERACTIONS (Recent Advances in Phytochemistry, Volume 15)	\$37.50	\$22.50
405725	Swain/Kleiman--THE RESOURCE POTENTIAL IN PHYTOCHEMISTRY (Recent Advances in Phytochemistry, Volume 14)	\$32.50	\$19.50
401886	Swain--TOPICS IN THE BIOCHEMISTRY OF NATURAL PRODUCTS (Recent Advances in Phytochemistry, Volume 13)	\$32.50	\$19.50
400286	Swain/Harborne/Van Sumere--BIOCHEMISTRY OF PLANT PHENOLICS (Recent Advances in Phytochemistry, Volume 12)	\$55.00	\$33.00
347113	Loewus/Runeckles--THE STRUCTURE, BIOSYNTHESIS, AND DEGRADATION OF WOOD (Recent Advances in Phytochemistry, Volume 11)	\$55.00	\$33.00
347105	Wallace/Mansell--BIOCHEMICAL INTERACTION BETWEEN PLANTS AND INSECTS (Recent Advances in Phytochemistry, Volume 10)	\$39.50	\$23.70
347091	Runeckles--PHYTOCHEMISTRY IN DISEASE AND MEDICINE (Recent Advances in Phytochemistry, Volume 9)	\$35.00	\$21.00
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July 1982

PHYTOCHEMICAL SOCIETY OF NORTH AMERICA

22nd Annual Meeting and Symposium

August 2 - 6, 1982

University of Ottawa

Symposium Topic:

MOBILISATION OF RESERVES IN GERMINATION

3 Contributed paper sessions

I Germination, Enzymology & Biotransformations

II Biosynthesis and Natural Products Chemistry

III Biochemical Ecology

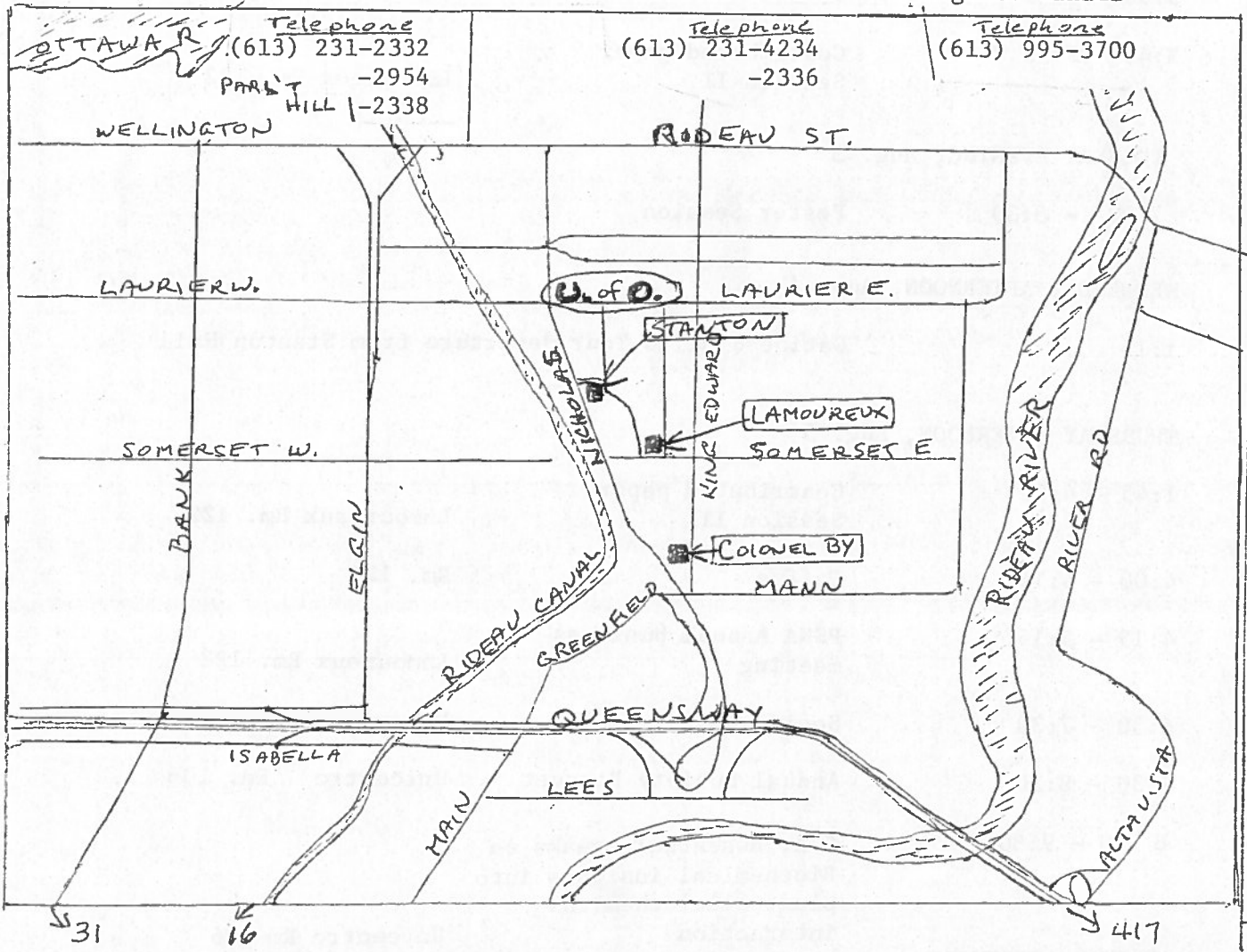
There's still time to (pre-)register! See page 15

Organizing
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J.T. Arnason
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A. Pieman
C.B.R.I.
Agric. Canada



22nd Annual Meeting, University of Ottawa

PROGRAM OUTLINE

MONDAY EVENING - August 2, 1982 7:30-10:30 Registration and reception
Colonel By Hall
Rm A708

TUESDAY-FRIDAY, Aug. 3-6, EVERY MORNING

8:30 - 11:30	Registration	Lamoureux Rm. 121
8:50 - 9:00	(Tuesday only)	Welcoming remarks Lamoureux Rm. 122
9:00 - 12:20	Symposium papers	Lamoureux Rm. 122
11:00 - 11:20	Coffee	Rm. 121
12:20	Lunch Hour	

TUESDAY AFTERNOON, Aug. 3

1:45 - 3:30	Contributed paper Session I	Lamoureux Rm. 122
3:30 - 3:45	Coffee	Rm. 121
3:45 - 5:30	Contributed paper Session II	Lamoureux Rm. 122

TUESDAY EVENING, Aug. 3

7:00 - 8:30	Poster Session	
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WEDNESDAY AFTERNOON, Aug. 4

1:15	Gatineau Hills Tour departure from Stanton Hall	
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THURSDAY AFTERNOON, Aug. 5

1:45 - 4:00	Contributed paper Session III	Lamoureux Rm. 122
4:00 - 4:15	Coffee	Rm. 121
4:15 - 5:15	PSNA Annual business meeting	Lamoureux Rm. 122
6:30 - 7:30	Social hour	Unicentre Rm. 106
7:30 - 8:30	Annual Society Banquet	Unicentre Rm. 106
8:30 - 9:30	G.A. Rosenthal speaks on Biochemical insights into plant allelochemical interaction	Unicentre Rm 106

FRIDAY AFTERNOON

12:20	Farewell, Au Revoir!	
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SYMPOSIUM: MOBILISATION of RESERVES IN GERMINATION

at the

22nd Annual Meeting of the Phytochemical Society of North America

University of Ottawa, Ottawa, Canada, August 2 - 6, 1982

SYMPOSIUM SESSIONS - RM. 122 LAMOUREUX HALL

- TUESDAY MORNING, August 3 *C. Grunwald* presiding.
- 9:00 - 10:00 S-1 R.G. Fulcher. Microscopic localization of seed reserves.
- 10:00 - 11:00 S-2 E.W. Simon and L.K. Mills. Imbibition, leakage and membranes.
- 11:00 - 11:20 Coffee
- 11:20 - 12:20 S-3 B.D. McKersie and T. Senaratna. Changes in membrane structure during seed germination.
- WEDNESDAY MORNING, August 4 *K. Joy* presiding
- 9:00 - 10:00 S-4 A. Oaks. Regulation of nitrogen metabolism during early seedling growth.
- 10:00 - 11:00 S-5 P.J. Lea and K. Joy. Amino acid interconversion in germinating seeds.
- 11:00 - 11:20 Coffee
- 11:20 - 12:30 S-6 T. Galliard. Complexes of starch with lipids and other minor components of starch granules in cereal grains.
- THURSDAY MORNING, August 5 *H. Habermann* presiding
- 9:00 - 10:00 S-7 J.D. Bewley, D.W.M. Leung and F.B. Ouellette. Interactions between the growing axis and storage tissues in the control of mobilization of cell wall reserve hemicelluloses in lettuce.
- 10:00 - 11:00 S-8 G. Maclachlan and R. Singh. Transport and metabolism of asymmetrically-labelled sucrose in pea epicotyls.
- 11:00 - 11:20 Coffee
- 11:20 - 12:20 S-9 F.A. Loewus. Phytate metabolism with special reference to its myo-inositol component.
- FRIDAY MORNING, August 6 *M. Jacobsohn* presiding
- 9:00 - 10:00 S-10 M. Black, J. Chapman and H. Norman. The control of mobilization by gibberellin: when and how does it happen?
- 10:00 - 11:00 S-11 R.S. Bandurski. Indole-3-acetic acid conjugates.
- 11:00 - 11:20 Coffee
- 11:20 - 12:20 S-12 P.L. Finney. Effects of germination on cereal and legume nutrient changes and food or feed value: a comprehensive review.

Contributed Papers Program Tuesday and Thursday afternoons

August 3 and August 5. Rm. 122 Lamoureux

SESSION I - Germination, Enzymology and Biotransformations.

S.A. Brown presiding

- | | | |
|-------------|--------|--|
| 1:45 - 2:00 | C-1 | E.L. Vigil, M.N. Christiansen, R.L. Steere and W.P. Wergin. Membrane organization in radicle cells of cotton seeds. |
| 2:00 - 2:15 | C-2 | S. Rood, M. Koshioka and R. Pharis. Reversible conjugation of gibberellins in developing and germinating maize seeds. |
| 2:15 - 2:30 | C-3 | A. Walther. The effect of abscisic acid on the greening of cotyledons of germinating <u>Glycyrrhiza lepidota</u> Pursh seed. |
| 2:30 - 2:45 | C-4 | C.K. Yi, L.C. Pollard, and W.M. Johnson. Changes in glycosidase activity during germination of cotton seed. |
| 2:45 - 3:00 | C-5 | B. Mohanty. Effects of ammonium and amides on the enzymes of ammonia assimilation in mung bean (<i>Phaseolus aureus</i>) roots. |
| 3:00 - 3:15 | C-6 | K.L. Bajaj, V. deLuca, and R. Ibrahim. Partial purification and properties of a flavonol ring-B glucosyltransferase from <u>Chrysosplenium americanum</u> . |
| 3:15 - 3:30 | C-7 | S.C. Hartsel, W.H.T. Loh, L.W. Robertson and B.J. Kolodziej. Biotransformation of cannabidiol to cannabielsoin by suspension cultures of <u>Cannabis sativa</u> L. |
| 3:30 - 3:45 | Coffee | |

SESSION II.

Biosynthesis and Natural Products

Chemistry

Presiding: *G. Jacobsohn*

- | | | |
|-------------|------|--|
| 3:45 - 4:00 | C-8 | E.F. Stinson and S.F. Osman. Biosynthesis of ¹⁴ C-labeled mycotoxins by <u>Alternaria alternata</u> . |
| 4:00 - 4:15 | C-9 | S.A. Brown and D.E.A. Rivett. Puberlin biosynthesis in <u>Agathosma puberula</u> . |
| 4:15 - 4:30 | C-10 | S.M. Lee and J.N. Seiber. In vitro biosynthesis of cardiac glycosides in <u>Asclepias curassavica</u> L. from 1- ¹⁴ C-acetic acid and 1- ¹³ C-acetic acid. |

- 4:30 - 4:45 C-11 F.A. Loewus and J.P. Helsper. Formation of l-threonic acid from l-ascorbic acid in oxalate-accumulating plants.
- 4:45 - 5:00 C-12 G.D. Manners. Characterization of cyclocordallinol and dehydroelaeagin.
- 5:00 - 5:15 C-13 N. Le-Van, D.R. Lundry, and T.L. Graham. Spectroscopic evidence for the cis-conformation at the B/C ring junction of the 6a-hydroxy-pterocarpan - new pterocarpan derivative from soybean seeds inoculated with Phytophthora megasperma Drechs. var. Sojae (PMS)

SESSION III

Biochemical Ecology

Presiding: *K. Downum*

- 1:45 - 2:00 C-14 M.K. Jacobsohn and G.M. Jacobsohn. Fungistatic activity accompanies germination of Digitalis purpurea.
- 2:00 - 2:15 C-15 G. Cooper-Driver. Abiotic and biotic factors effecting chemical variability in condensed tannins in three species of New England ferns.
- 2:15 - 2:30 C-16 D.L. Marks. Seasonal variations in tannins in leaves of Acer saccharum and Acer platanoides.
- 2:30 - 2:45 C-17 J. Wilson and R. Buchsbaum. Phenolic dynamics during decomposition of the saltmarsh cordgrass, Spartina alterniflora.
- 2:45 - 3:00 C-18 R. Buchsbaum. The role of secondary plant substances in determining food choices by geese.
- 3:00 - 3:15 C-19 J.D. Olechno, J.A. Saunders, P. Barbosa and J. Kemper. The effect of nicotine on the tobacco hornworm and its parasites.
- 3:15 - 3:30 C-20 G.H.N. Towers, A. Abramauski, and C.K. Wat. UV-mediated genotoxicity of naturally occurring alkaloids from plants.
- 3:30 - 3:45 C-21 S.L. Week, L. Irwin, and C. Steelink. The analysis of complex naturally-occurring phenols in drinking water.
- 3:45 - 4:00 Coffee
- 4:00 - 5:00 PSNA annual business meeting

Poster Presentations

Rm. 127 Lamoureux

Tuesday Evening - 7:00 - 8:30

- P - 1. M.A. Al-Yahya, T.I. Kalifa, and M. Tariq. Phytochemical and biological studies of Caralluna penicillata
- P - 2. K.L. Bajaj and J. Friend. Effect of biotic and abiotic elicitors on accumulation of the phytoalexin, kievitone, in cow pea.
- P - 3. D.J. Gifford, J.S. Greenwood and J.D. Bewley. The nature of reserve mobilization in the protein bodies of the castor bean endosperm.
- P - 4. K.R. Downum, W.S. Cohen, and G.A. Rosenthal. Subcellular localization and characterization of arginase from Canavalia ensiformis (L.) DC and Glycine max (L.) Merr.
- P - 5. C.W. Glennie and M.M. Kutumela. Enzyme inhibitory nature of melanins in sorghum glumes.
- P - 6. J.G. Clifton and E. Gonzalez. Storage protein synthesis in developing sunflower seeds.
- P - 7. E. Gonzales. Glycoproteins of glyoxysomes from castor bean endosperm.
- P - 8. N. Le-Van. Coumestrin, a new coumestan derivative from soybean roots (Glycine max.).
- P - 9. D. McLachlan, J. Arnason and J. Lam. Mechanism of photosensitization by naturally occurring polyacetylenes.
- P - 10. C. Grunwald. Sterol changes during seed germination.
- P - 11. W. Woodbury and T.J. Wiebe. Temperature and moisture: their interaction may control germination of seeds.
- P - 12. Maj-Lis Häggquist and Conny Liljenberg. Growth inhibitors in oat grains-leakage of inhibiting factors from oat grains and the effect of grain extracts on the growth of oat seedlings.
- P - 13. C. Nozzolillo and I. Thie. Mobilization of reserves in seed of Impatiens capensis and I. pallida (Balsaminaceae)
- P - 14. G. Hrazdina, G.A. Marx, and H.C. Hoch. Accumulation and synthesis of flavonoids in pea leaves.

S-1 Tuesday, August 2 9h00

MICROSCOPIC LOCALIZATION OF SEED RESERVES. R.G. Fulcher, Ottawa Research Station, Agriculture Canada, Ottawa, Ontario K1A 0C6.

A cereal grain is a complex biological system comprised of several different tissues, each of which sequesters a unique combination of major and minor reserves in specific cellular structures. In addition to major components (protein and starch), the kernel accumulates significant quantities of other carbohydrates, phenolic compounds and lignin, vitamins, lipids, phytin, and aromatic amines. Each constituent is associated with identifiable morphological components.

In order to provide a basis for varietal comparisons, a number of fluorescent reagents have been adapted or devised for microscopic identification of grain components. The reagents are extremely sensitive and allow rapid identification of many important reserves in developing, mature, or germinating grains.

S-4 Wednesday, August 3 9h00

REGULATION OF NITROGEN METABOLISM DURING EARLY SEEDLING GROWTH. A. Oaks, Department of Biology, McMaster University, Hamilton, Ontario. L8S 8K1.

S-2 Tuesday, August 2 10h00

IMBIBITION, LEAKAGE AND MEMBRANES. Eric W. Simon and Lorna K. Mills, Department of Botany, Queen's University, Belfast, N. Ireland. As pea seeds or embryos imbibe water, solutes leak out of them. The variety and quantity of solutes leaking out indicate a cytoplasmic origin. Two hypotheses are considered. 1. The rapid inrush of water during imbibition may disrupt cell membranes irreversibly - but Evans blue tests show this only happens to outermost cells; and leakage is not dependent on rapid imbibition, for it continues even when imbibition is slowed down by placing seeds or embryos in a solution of low water potential. 2. We propose that membranes are disorganised in dry seeds, probably in a manner less neat and orderly than suggested by Luzzati's model, normal membrane architecture only being restored following a change of molecular orientation on imbibition. We envisage that leakage occurs during the period of membrane reorganization. The weak tetrazolium reaction in imbibed embryos is due to lack of substrate.

S-5 Wednesday, August 3 10h00

AMINO ACID INTERCONVERSION IN GERMINATING SEEDS
 Peter J. Lea, Department of Biochemistry, Rothamsted Experimental Station, Harpenden, Herts. AL5 2JQ, U.K. and Ken W. Joy, Department of Biology, Carleton University, Ottawa, Canada, K1S 5B6

During germination, seed protein amino acids are converted to nitrogen-rich storage and transport compounds, in particular, glutamine and asparagine. The enzymes glutamine synthetase, glutamate synthase and asparagine synthetase are the major enzymes involved. Other compounds such as arginine or N-rich non-protein amino acids may also be utilised in some plants.

After transport to the developing shoot, the metabolites are converted to the range of essential amino acids required for protein synthesis. Mechanisms of interconversion, including deamidation and transamination will be outlined. The regulation of lysine, threonine and methionine synthesis, with particular reference to mutants recently isolated at Rothamsted will be discussed.

S-3 Tuesday, August 2 11h20

CHANGES IN MEMBRANE STRUCTURE DURING SEED GERMINATION
 Bryan D. McKersie and Tissa Senaratna, Dept. of Crop Science, University of Guelph, Guelph, Ontario Canada.

Several changes in the structure, function and composition of membrane systems occur in germinating seeds. During imbibition, the biphasic efflux of cytoplasmic solutes has suggested membrane reorganization during hydration. Low angle x-ray diffraction analysis of liposomes prepared from isolated seed phospholipids was unable to support the hypothesis that this reorganization involved a hexagonal-lamellar phase transition. Instead, seed phospholipids remained in a lamellar phase at low water contents. In the germinating axes the transport properties of the plasma-membrane change and coincidentally its tolerance of dehydration is lost. Dehydration to moisture levels less than 20% water, after a critical stage in germination prevented subsequent germination and promoted increased rates of solute efflux. The membrane injury attributed to dehydration may involve an increase in the passive permeability of the lipid bilayer or a alteration of the transport proteins on the plasma-membrane. During the mobilization of stored reserves from the cotyledons, the fluidity of microsomal membranes decreased. Wide angle x-ray diffraction has indicated that a gel phase appeared in the lipid bilayer at physiological temperatures and intensified as the cotyledons senesced. This phenomenon may be related to tissue autolysis and may play a role in the mobilization of stored reserves.

S-6 Wednesday, August 3 11h20

COMPLEXES OF STARCH WITH LIPIDS AND OTHER MINOR COMPONENTS OF STARCH GRANULES IN CEREAL GRAINS. T. Galliard. The Lord Rank Research Centre, Lincoln Road, High Wycombe, Bucks. HP12 3QR United Kingdom.

Starch properties cannot be explained simply in terms of amylose and amylopectin content. The minor components (lipids, proteins etc.) on the surface and within the matrix of starch granules have major effects on the properties of starch. Starch granules from cereal grains are characterised by the monoacyl lipids which form complexes with amylose chains. In the triticeae (wheat, barley, etc.) monoacyl phospholipids are predominant starch lipids whereas maize starch contains free fatty acids. Mature starch granules from wheat appear to contain protein specifically associated with the surface and other, more firmly bound protein. These minor components may influence the interactions between starch granules and their environment (water, amylolytic enzymes, etc.). Their effects on physical properties of starches from different sources are readily demonstrated. Recent studies on the metabolism of starch-lipid complexes during germination will be reviewed.

S-7 Thursday, August 5 9h00

INTERACTIONS BETWEEN THE GROWING AXIS AND STORAGE TISSUES IN THE CONTROL OF MOBILIZATION OF CELL WALL RESERVE HEMICELLULOSES IN LETTUCE. J. Derek Bowley, David W.M. Leung and Francis B. Ouellette. Dept. of Biology, University of Calgary, Calgary, Alta. T2N 1N4.

The earliest stored reserve to be mobilized following germination of the lettuce seed is the cell wall of the endosperm, which is comprised largely of mannans - probably as galactomannans. Endo- β -mannanase, produced in the endosperm itself, but controlled by substances diffusing from the axis through the cotyledons, cleaves the mannans to smaller oligomers containing galactose and mannose. α -Galactosidase, produced in the cotyledons (and possibly the endosperm), and controlled by the axis, reduces the size of oligomers for absorption into the cotyledons. Within the cotyledons is found β -mannosidase, which further cleaves the small mannose oligomers produced by the cooperative action of the other enzymes. Thus both the endosperm and cotyledons produce enzymes to hydrolyse the endosperm cell walls, and control over these processes is exerted by the embryo during and following germination.

S-8 Thursday, August 5 10h00

TRANSPORT AND METABOLISM OF ASYMMETRICALLY-LABELLED SUCROSE IN PEA EPICOTYLS. Gordon MacLachlan, Department of Biology, McGill University, Montreal, Canada and Rangil Singh, Department of Biochemistry, Punjab Agricultural University, Ludhiana, India.

Sucrose, supplied to detached pea epicotyls through cut bases, supports better growth than glucose and/or fructose. This was not due to more rapid transport of sucrose than hexoses to the growing region. Nor it was due to preferential synthesis from sucrose of major products required for growth since supplied hexoses were better precursors than sucrose for polysaccharides, and all sugars gave rise to similar soluble metabolites throughout the epicotyl. Using asymmetrically [14 C]-labelled sucrose it was demonstrated that neither hexose moiety was used preferentially for synthesis of metabolites or polysaccharides. Supplied sucrose moved as such only up to the region of cell elongation where the two hexose moieties equilibrated before moving into more apical regions. Thus, stimulation by sucrose of growth does not result from effects on cell division or the action of sucrose synthetase in forming sugar nucleotides, but must be sought in other specific reactions of sucrose in the region of elongation.

S-9 Thursday, August 5 11h20

PHYTATE METABOLISM WITH SPECIAL REFERENCE TO ITS myo-INOSITOL COMPONENT. Frank A. Loewus, Institute of Biological Chemistry, Washington State University, Pullman, Washington 99164-6340.

Among seed reserves, phytate uniquely serves as the major source of P during germination. This hexakisphosphate of myo-inositol is commonly deposited during seed development in discrete regions of subcellular organelles as the salt of Mg, K and possibly other cations including proteins. A cascade of biochemical events following inhibition produces phytase, a phytate-specific phosphatase which hydrolyzes phytate in a stereospecific, step-wise process to myo-inositol mono-P and P_i. In germinating seed, further hydrolysis releases free myo-inositol which is translocated to the seedling and utilized as substrate for the myo-inositol oxidation pathway to produce cell wall polysaccharide. An experimental system in which wheat plants were labeled with myo-[2- 3 H]inositol during kernel formation, followed by utilization of the labeled kernels for germination studies will be described.

Related studies on the formation, stereochemistry and hydrolysis of myo-inositol mono-P in plants will also be reviewed.

Supported by a grant GM-22427 from the National Institutes of Health.

S-10 Friday, August 6 9h00

THE CONTROL OF MOBILISATION BY GIBBERELLIN: WHEN AND HOW DOES IT HAPPEN? Michael Black, John Chapman and Helen Norman, Department of Biology, Queen Elizabeth College, University of London, London W.8, U.K.

A major source of reserve-mobilizing enzymes (e.g. α -amylase) in germinated cereals is the aleurone layer, whose enzyme production is controlled by gibberellin. It is important for the developing seed that reserves are not attacked while they are being laid down. At least one safeguard against this is that although developing grains contain relatively high concentration of gibberellin the aleurone layer is completely insensitive to the hormone, so that negligible quantities of α -amylase are produced. The conversion of the aleurone layer into one which participates in reserve mobilisation results from the loss of water during maturation to below a critical moisture content of 25-30%. That cell membranes are implicated is supported by the effect of critical temperatures on whole aleurone cells and on aleurone protoplasts isolated from developing grains. Sensitisation of the cells to gibberellin by temperature and dehydration is accompanied by changes in membrane phospholipids, in the electrical charge of the cell surface and in plasma membrane proteins. The plasma membrane thus determines aleurone cell sensitivity to gibberellin, and the latter can interact only with a receptive membrane.

S-11 Friday, August 6 10h00

INDOLE-3-ACETIC ACID CONJUGATES. Robert S. Bandurski, Botany & Plant Pathology, Michigan State University, E Lansing, MI 48824.

Early studies, particularly those of Chlodny, Skoog, van Overbeek and Berger and Avery (cf. Cohen and Bandurski, Ann. Rev. Pl. Physiol., 1982) demonstrated the existence of a "seed auxin-precursor." Studies from this laboratory now establish myo-inositol esters of indole-3-acetic acid (IAA) as seed auxin-precursors based on the following data: 1) IAA-myo-inositol comprises about 10% of the IAA esters of kernels of corn (Zea mays); 2) IAA-myo-inositol occurs in vegetative tissues of corn; 3) 14 C- or 3 H-labeled IAA-myo-inositol applied to the endosperm of germinating seedlings appears as labeled IAA and labeled IAA-myo-inositol in the vegetative shoot of corn, and; 4) an enzyme capable of hydrolyzing IAA-myo-inositol to yield IAA occurs in vegetative tissues of corn. Attempts to determine how much of the IAA of the shoot results from *de novo* synthesis of IAA and how much from IAA-myo-inositol hydrolysis are currently in progress. (Report of research supported by the Metabolic Biology section of the National Science Foundation and by the NASA-Space Biology-Life Sciences Program).

S-12 Friday, August 6 11h20

EFFECTS OF GERMINATION ON CEREAL AND LEGUME NUTRIENT CHANGES AND FOOD OR FEED VALUE: A COMPREHENSIVE REVIEW. P.L. Finney, USDA, ARS, Western Wheat Quality Laboratory, Dept. of Food Science, Washington State University, Pullman, WA 99164.

The effects of controlled germination (sprouting) on seed nutrients, including vitamins, available minerals, amino acids, enzymes and other proteins, simple- and complex-carbohydrates, anti-nutritional factors, biological values, digestibilities, and protein efficiency ratios of cereals and legumes alone or in combination in animal and human feeding tests are thoroughly reviewed and systematically discussed. Over 300 articles from more than 75 scientific journals spanning the last century support the ancient customs of many cultures who have sprouted grains to improve food- and feed-value for hundreds or thousands of years. Seed germination conditions are reviewed and related to the production of the most nutritious and otherwise desirable sprouted grain foods and also compared to other theoretically more nutritious and/or less expensive foods. In addition some of those more highly nutritious foods made from germinated grains are treated as models and discussed in reference to some of today's food-problems and tomorrow's food-needs.

C-1 Tuesday, August 3 1h45 p.m.

MEMBRANE ORGANIZATION IN RADICLE CELLS OF COTTON SEEDS. E. L. Vigil, Dept. of Botany, Univ. of Md., College Pk., MD 20742; M. N. Christiansen, Plant Stress Lab.; R. L. Steere, Virology Lab.; and W. P. Wergin, Plant Stress Lab., ARS, USDA, Beltsville, MD 20705.

Radicle tissue from seeds of cotton (*Gossypium hirsutum* L. var. M-3) with different moisture contents, i.e. 7%, 11% and fully imbibed, was prepared for electron microscopy using chemical fixation and freeze-fracture methods. Chemical fixation was either by vapor or tissue immersion. Tissue for freeze-fracture was frozen either fresh or following fixation and cryoprotection in 25% each glycerol and sucrose in phosphate buffer. Plasma membrane and protein body membranes were most readily identifiable and easiest to study. With several different chemical fixative combinations a unit membrane structure was observed consistently for both membrane systems. The unit membrane-type structure in thin sections was also observed in freeze-fracture and etched preparations. The close apposition of lipid bodies (oleosomes, spherosomes) to the plasma membrane and protein bodies may be important in maintaining these membrane structures by trapping water in the interface formed by the apposition.

C-4 Tuesday, August 3 2h30 p.m.

CHANGES IN GLYCOSIDASE ACTIVITY DURING GERMINATION OF COTTON SEED. Cho Kwang Yi, Lesley C. Pollard, and William M. Johnson, SEA/CSRS, Langston University, Langston, OK 73050

The examination of crude extracts revealed that β -galactosidase activity in emerging cotyledonary tissue increased during the first 4 days of germination and decreased afterwards, while β -N-acetylglucosaminidase and α -mannosidase activities constantly increased. Thus, cotyledons contained 0.05 unit of β -galactosidase in the 4th day, 0.04 unit in 9th day, and 0.03 unit/cotyledon in 15th day of germination. When crude extracts were subjected to CM-Sephadex chromatography, however, the elution with NaCl resulted in 0.08 unit/cotyledon for 4-day germination, 0.10 unit/cotyledon for 9-day and 0.17 unit/cotyledon for 15-day. Determination of reducing sugar content in cotyledons by Nelson test showed an increase during the first 2 days of germination and then a decrease during the next 2 days, followed by a sharp increase when the tissue started greening. Monosaccharides in crude extracts were analyzed on TLC. The nature of β -galactosidase inhibition during germination will be discussed.

C-2 Tuesday, August 3 2h00 p.m.

REVERSIBLE CONJUGATION OF GIBBERELLINS IN DEVELOPING AND GERMINATING MAIZE SEEDS.

Stewart Rood, Faculty of Forestry, University of Toronto, Ontario, Canada M5S 1A1, Masaji Koshioka and Richard Pharis, Department of Biology, University of Calgary, Alberta T2N 1N4.

High specific activity monohydroxylated gibberellins (GA₃) [³H]-GA₄ or [³H]-GA₂₀ were fed to maize cobs during rapid grain filling and mature seeds were subsequently harvested. 20-30% of the [³H] in the dry seeds was associated with acidic, ethyl acetate-soluble compounds which co-chromatographed on SiO₂ partition columns, reverse-phase C₁₈ HPLC-RC, and GLC-RC with the precursor GAs and [³H]-GA₁ and [³H]-GA₈. The other 70 to 80% of the dpm in the dry seeds was associated with compounds showing partition characteristics of, and co-chromatographing on HPLC-RC with, glucosyl conjugates of the precursor GAs. With imbibition, the [³H] associated with the conjugate fractions decreased and concomitantly, appreciable increases in the levels of [³H]-GA₄ or [³H]-GA₂₀ were detected. These results suggest that reversible conjugation of gibberellins takes place in developing and germinating maize seeds.

C-5 Tuesday, August 3 2h45 p.m.

EFFECTS OF AMMONIUM AND AMIDES ON THE ENZYMES OF AMMONIA ASSIMILATION IN MUNG BEAN (*Phaseolus aureus*) ROOTS. Bibekananda Mohanty, SEA/CSRS, Langston Univ., Langston OK 73050

The influence of ammonium and amides on the activities of glutamate dehydrogenase (GDH), glutamine synthetase (GS), and glutamate synthase (GOGAT) in mung bean roots was studied by germinating the seeds in the presence of NH₄⁺, Gln or Asn (conc. 10 mM). Control consisted of growth of the seedlings in 10 mM NO₃⁻. After 5 days of germination, the GS activity of the roots of the control seedlings was found to be 2.5 μ moles hydroxamate/min/mg protein. Treatment with either Gln or Asn reduced the GS activity by 20% and 35%, respectively. This reduction in GS was most apparent when the seedlings were grown in NH₄⁺.

By contrast, the GDH activity in the roots of NH₄⁺ grown seedlings was found to be twice as much as that of control. Both Gln and Asn treated seedlings showed increased GDH activity in roots as compared to control. During germination, GOGAT activity in roots was significantly low compared to either GDH or GS activities. No distinct variation in the GOGAT activity was observed with the roots grown in the tested nitrogen sources.

These data suggest that ammonium and amides suppress the development of GS with concomitant increase in GDH activities in mung bean roots, and the effect on GOGAT is not significant.

C-3 Tuesday, August 3 2h15 p.m.

THE EFFECT OF ABSICISIC ACID ON THE GREENING OF COTYLEDONS OF GERMINATING *Glycyrrhiza lepidota* PURSH SEED. A. Walther, Department of Biology, University of Regina, Regina, Saskatchewan S4S 0A2.

The germinability of the wild licorice seed is impeded by a testa impermeable to water. The bulk of the mature seeds consists of creamy to yellowish-green cotyledons. Manual scarification results in complete germination at 25^o in the dark. Radicle protrusion generally commences by 16h, and transfer to light thereafter leads to rapid greening of the light coloured cotyledons. Exogenously applied abscisic acid failed to inhibit germination though a slight delay in the postgermination seedling growth was noted. To facilitate the penetration of AbA, the constraining inner layer of the testa was removed from fully imbibed seeds at different periods. The cotyledons were incubated on wet filter paper at a constant illumination (20,000 \pm 500 lx) and temperature (25 \pm 1^o) for 24h. Chlorophyll formation, relative to the water control, was least depressed in cotyledons corresponding to the stages of radicle protrusion. The effect of AbA intensified during the period of radicle elongation, diminishing in the post-germination stages. Chlorophyll a and b were affected about equally.

C-6 Tuesday, August 3 3h00 p.m.

PARTIAL PURIFICATION AND PROPERTIES OF A FLAVONOL-RING-B GLUCOSYLTRANSFERASE FROM *CHRYSOSPLENIUM AMERICANUM**. K.L. Bajaj, Vincenzo De Luca and Ragai Ibrahim, Biol. Dept., Concordia University, Montreal Qu \acute{e} , Canada H3G 1M8.

The above enzyme catalysed the transfer of glucose from UDPG to the 2' or 5' hydroxyls of naturally occurring, partially methylated flavonols in this tissue. It was purified 120-fold by (NH₄)₂SO₄ fractionation and chromatography on Sephadex G-100 and hydroxyapatite. This novel, soluble enzyme had similar K_m values (8-9 μ M) and pH optima (7.5-8) for both positions; phenolic acids and non-methylated flavonoids were poor glucosyl acceptors. However, the enzyme activities for the 2' & 5' positions differed with respect to inhibition by UDP, effect of ionic buffers and their requirement for SH group protectors; thus suggesting two active sites for both reactions. The two glucosylating activities could not be resolved by chromatography on DEAE-cellulose, DEAE-Sephadex-A25 or polybuffer ion-exchanger.

*Supported by NSERC grant & University funds

C-7	Tuesday, August 3	3h15 p.m.
<p>BIOTRANSFORMATION OF CANNABIDIOL TO CANNABIELSOIN BY SUSPENSION CULTURES OF <i>CANNABIS SATIVA</i> L. S.C. Hartsef and W.H.T. Loh, Department of Microbiology, Ohio State University, Columbus, Ohio, 43210 and L.W. Robertson, College of Pharmacy and B.J. Kolodziej, Department of Microbiology.</p> <p>Mature suspension cultures of <i>Cannabis sativa</i> L. (OSU strain) were found to transform cannabidiol (CBD) to cannabielsoin (CBE) in the course of a 5-6 day incubation in total darkness. CBE was the major metabolite after this period. Suspension cultures of <i>Daucus carota</i> did not form this product nor did <i>Cannabis</i> cultures which were inactivated by mild auto-claving.</p> <p>CBE was identified by its distinctive mass spectrum which contained an M⁺ at 330 and the characteristic abundant mass fragments at m/e 205, 147 and 143. Chromatographic behavior and other physical data aided in this identification.</p> <p>The status of CBE as a natural product of <i>Cannabis</i> has been questioned because it is infrequently found and/or difficult to isolate from natural sources. This report indicates that <i>Cannabis</i> cells have the inherent capability to produce CBE from CBD and implies that CBE may be a naturally occurring product.</p>		

C-10	Tuesday, August 3	4h15 p.m.
<p>IN VITRO BIOSYNTHESIS OF CARDIAC GLYCOSIDES IN <i>ASCLEPIAS CURASSAVICA</i> L. FROM 1-¹⁴C-ACETIC ACID AND 1-¹³C-ACETIC ACID. S.M. Lee and J.N. Seiber, Department of Environmental Toxicology, University of California, Davis, CA 95616.</p> <p>¹⁴C-labeled calotropin and uscharidin were biosynthesized by incubation with <i>A. curassavica</i> stem discs in a medium containing 1-¹⁴C-acetic acid. [¹⁴C-Calotropin (11.2 μCi/μmole) and [¹⁴C-uscharidin (14.1 μCi/μmole) were isolated by chromatography and their radiochemical purities were established by dilution with carrier cardenolides and crystallization to constant specific activity. Isotopic enrichment sites were identified with carbon-13 FT-Nuclear Magnetic Resonance analysis of ¹³C enriched calotropin.</p>		

C-8	Tuesday, August 3	3h45 p.m.
<p>BIOSYNTHESIS OF ¹⁴C-LABELED MYCOTOXINS BY <i>Alternaria alternata</i>. E. E. Stinson and S. F. Osman, Eastern Regional Research Center U. S. Dept. of Agriculture, 600 E. Mermaid Lane, Phila., PA. 19118.</p> <p>The <i>Alternaria</i> molds cause spoilage of many important foods and are of concern because of many mycotoxins produced. With the aim of studying the mechanism of biosynthesis of these compounds, a biosynthetic method for production of ¹⁴C-labeled toxins was developed. Submerged cultures of <i>Alternaria alternata</i> were grown on a semi-synthetic media with efficient aeration. Best yields of labeled mycotoxins were obtained within 3-5 days, with production declining rapidly thereafter. These included a green fluorescent material reported to be mutagenic, m.w. 348 (Mutation Res. 78: 33-40 (1980)), alternariol monomethyl ether, alternariol, altertoxin I and altertoxin II. The rate of incorporation of labeled carbon into the green fluorescent material was extremely rapid. The concentration of this material subsequently declined, suggesting a possible role as a precursor. Mannitol was incorporated into toxin with the highest efficiency, followed by acetate and glucose. These findings may be used to deduce a possible mode of biosynthesis.</p>		

C-11	Tuesday, August 3	4h30 p.m.
<p>FORMATION OF L-THREONIC ACID FROM L-ASCORBIC ACID IN OXALATE-ACCUMULATING PLANTS. Frank A. Loewus and Johannes P. Helsper. Inst. of Biol. Chem., Washington State Univ., Pullman, WA 99164-6340</p> <p>L-Threonic acid is a natural constituent in leaves of <i>Pelargonium crispum</i> (L.) Héris (lemon geranium) and <i>Rumex acetosella</i> L. (sorrel). In both species, L-[¹⁴C]threonate is formed after feeding L-[U-¹⁴C]ascorbic acid to detached leaves. <i>R. acetosella</i> leaves labeled with L-[4-³H]- or L-[6-³H]-ascorbic acid produce L-[³H]threonate, in the first case internally labeled and in the second case confined to the hydroxymethyl group. These results are consistent with the formation of L-threonate from carbons three through six of L-ascorbic acid. Detached leaves of <i>P. crispum</i> oxidize L-[U-¹⁴C]threonate to L-[¹⁴C]tartrate whereas leaves of <i>R. acetosella</i> produce negligible tartrate and the bulk of the ¹⁴C appears in ¹⁴CO₂, [¹⁴C]sucrose, and other products of carbohydrate metabolism. <i>R. acetosella</i> leaves that are labeled with L-[U-¹⁴C]threonate release ¹⁴CO₂ at linear rate until a limiting value of 25% of the total [U-¹⁴C]threonate is metabolized. A small quantity of [¹⁴C]glycerate is also produced which suggests a process involving decarboxylation of L-[U-¹⁴C]threonate. Supported by NIH, GM-22427 and NSF, PCM-7813254.</p>		

C-9	Tuesday, August 3	4h00 p.m.
<p>PUBERULIN BIOSYNTHESIS IN <i>AGATHOSMA PUBERULA</i>. Stewart A. Brown, Chemistry Dept., Trent University, Peterborough, Ont. K9J 7B8 and D.E.A. Rivett, Chemistry Dept., Rhodes University, 6140 Grahamstown, South Africa.</p> <p>The polyoxygenated coumarin, isofraxidin (I, R = H) occurs in the aerial parts of the South African rutaceous plant, <i>A. puberula</i>, as the prenyl ether, puberulin (I, R = CH₂-CH=CMe₂). Comparison of a number of ¹⁴C-labelled possible precursors of this coumarin has provided no evidence for any major biosynthetic route via ferulic acid, sinapic acid, or 7-hydroxycoumarin. Other data suggest a pathway to puberulin from 4'-hydroxycinnamic acid (II, R³ = H, R⁴ = OH) via caffeic acid (II, R³ = R⁴ = OH) and 6-methoxy-7-hydroxycoumarin (scopoletin). Only the oxygenation at C₈ thus appears to occur after elaboration of the coumarin nucleus. Prenylation probably also takes place late in the biosynthetic sequence.</p>		

C-12	Tuesday, August 3	4h45 p.m.
<p>CHARACTERIZATION OF CYCLOCORDALLINOL AND DEHYDROELAEAGIN. Gary D. Manners, WRRS-ARS, Albany, California 94710</p> <p>Five new geranyl-hydroquinone derived compounds have been obtained from the ether extract of the heartwood of the Mexican tree <i>Cordia alliodora</i>. Two of the compounds, cyclocordallinol (I) and dehydroelaeagin (II), are apparent biogenetic derivatives of simpler geranyl-hydroquinones obtained from this wood. Characterization of the compounds on the basis of NMR spectral data established butadiene conformation in (I) and relative stereochemistry at C-6' in (II).</p>		

C-13 Tuesday, August 3 5h00 p.m.

SPECTROSCOPIC EVIDENCE FOR THE CIS-CONFORMATION AT THE B/C RING JUNCTION OF THE 6a-HYDROXY-PTEROCARPANS - NEW PTEROCARPAN DERIVATIVE FROM SOYBEAN SEEDS INOCULATED WITH PHYTOPHTHORA NEGASPERMA DRECHS. VAR. SQJAE (PMS)

Ngo Le-Van, Denise R. Lundry and Terrence L. Graham, Monsanto Agricultural Products Company, 800 N. Lindbergh Boulevard, St. Louis, MO 63167 USA.

The phytoalexins 1 - 5, as well as other 6a-hydroxypterocarpan have been assumed to possess the same conformation at the B/C ring junction, the *cis*-conformation. Using the trihydroxypterocarpan 5 as model compound, it was possible to show that the acid instable 6a-OH group could be acetylated under mild and neutral work-up condition. Careful spectroscopic studies of 5 and the triacetate 7 led to the conclusion that 5, and so the biogenetically related phytoalexins 1 - 4, must possess the *cis* conformation at the B/C ring junction. Spectroscopic data are presented (¹H, ¹³C-NMR, MS, UV). In addition to 1, 2, 3, 5 and the known isoflavones genistein (8), daidzein (3), a new minor pterocarpanoid metabolite 10 has been isolated from the ethanol extract of the soybean seeds inoculated with PMS and structurally elucidated.

C-16 Thursday, August 5 2h15 p.m.

SEASONAL VARIATION IN TANNINS IN LEAVES OF ACER SACCHARUM AND ACER PLATANOIDES. David L. Marks, Biological Science Center, Boston University, Boston, Massachusetts, 02215

Leaves of the two *Acer* species were collected at least once a month from May to October and analyzed for astringency by binding tannins to blood protein as well as by separate assays for total proanthocyanidins, gallotannins and ellagitannins. In *Acer platanoides*, maximum astringency was reached in late May, while proanthocyanidins reached a peak in July and then generally declined. Gallotannins were at a maximum in May, declined, and then rose again in August. Ellagitannins were negligible in *A. platanoides*. In *Acer saccharum*, astringency had several peaks through the season. Ellagitannins were at a maximum in May when gallotannins and proanthocyanidins were low. All three kinds of tannins showed peaks later in the season. In both species, astringency appeared to be more correlated with hydrolyzable tannins (gallo- and ellagitannins), than with proanthocyanidins. This study illustrates the complexity of seasonal changes in tannins in maple leaves.

C-14 Thursday, August 5 1h45 p.m.

FUNGISTATIC ACTIVITY ACCOMPANIES GERMINATION OF DIGITALIS PURPUREA. Myra K. Jacobsohn, Department of Biology, Beaver College, Glenside, PA 19038, and Gert M. Jacobsohn, Department of Biological Chemistry, Hahnemann Medical College, Philadelphia, PA 19102.

The seed coats of *Digitalis purpurea* var. *gloxiniiflora* contain spores of *Alternaria alternata* when harvested from unopened capsules, whereas stored seeds harbor *Rhizopus arrhizus* and *A. alternata*, even after surface sterilization. The presence of fungistatic activity against both fungi was noted by bioassay of the culture media of seeds germinating in White's medium on sand. Maximum activity coincided with the peak of germination. Preliminary search for the identity of the substance(s) responsible for fungistatic activity led to a cardenolide or other steroid glycoside. Both free glucose and digitoxose could be isolated from the media of germinating seeds. *Alternaria* inoculated onto autoclaved seeds or on dehiscent seed coats grew well, but *Rhizopus* grew only on culture media from viable seeds. *A. alternata* may function as a degradation agent for the seed coat.

C-17 Thursday, August 5 2h30 p.m.

WILSON, JOHN and ROBERT BUCHSBAUM. Biological Science Center Boston University, Boston, Massachusetts 02215. - Phenolic dynamics during decomposition of the saltmarsh cordgrass, *Spartina alterniflora*.

The rate of decomposition of plant litter is determined by interactions between the chemical composition of the litter, environmental conditions, detritus-feeding animals and microorganisms. The importance of phenolic content of plants in controlling the rate of litter decomposition is becoming increasingly apparent. We followed the changes in concentration during decomposition of three major classes of phenolic compounds present in *S. alterniflora*; soluble phenolics, cell wall bound phenolics and lignins. We examined the effects of fertilization, litter type and inundation on the decomposition of these litter components. Soluble phenolics are subject to considerable losses due to leaching, decreasing in concentration to half their original values in the first two weeks. Bound phenolics increase initially and then decrease slowly with time. A considerable proportion still remains after 23 months. Lignins increase steadily in the litter constituting 30-50% of the litter after 23 months of decomposition. These results indicate that lignins, and possibly the bound phenolics, play a major role in slowing rates of litter decomposition with time.

C-15 Thursday, August 5 2h00 p.m.

COOPER-DRIVER, GILLIAN. Biological Science Center, Boston University, Boston, Massachusetts 02215. - Abiotic and biotic factors effecting chemical variability in condensed tannins: in three species of New England ferns.

Condensed tannins, both within and between populations of three species of New England ferns, show widely fluctuating seasonal levels as well as the expected over-all increase associated with age. Of abiotic factors studied, edaphic and climatic, changes in temperature most closely correlated with phenolic variation. No significant relationship was found between chemical variation and seasonal changes in insect species diversity and abundance except at the extreme end of the chemical spectrum when there was a negative correlation with phytophagous chewing insects. Feeding experiments showed hymenopteran fern specialists to be severely affected by increasing tannin concentrations by reduction in body weight and an increased time for larval development.

C-18 Thursday, August 5 2h45 p.m.

BUCHSBAUM, ROBERT. Boston University Marine Program, Wood's Hole, Massachusetts 02543. - The role of secondary plant substances in determining food choices by geese.

The role of secondary compounds from herbaceous salt marsh plants on food selection by Canada geese (*Branta canadensis*) has been investigated. Chemical analyses show no correlation between plant species eaten and their levels of various soluble nutrients. Non food plants are significantly higher in total phenolic content and include two species *Limonium carolinianum* and *Solidago sempervirens* that are astringent. *L. carolinianum* gives positive results in tests for condensed and gallotannins. Astringency in *S. sempervirens* may be the result of a combination of oxygenated monoterpenes, sesquiterpene lactones and phenolic acids. To rule out textural differences as the cause of food selection, we added extracts of both food and non food plants to a neutral diet and found that captive geese tend to avoid the diet containing non food extracts. Commercially obtained phenolic compounds added to a neutral diet at concentrations found in non food plants also inhibit feeding. These results suggest that phenolic secondary substances are of prime importance in food selection by geese.

C-19	Thursday, August 5	3h00 p.m.
<p>THE EFFECT OF NICOTINE ON THE TOBACCO HORNWORM AND ITS PARASITES</p> <p>Joseph D. Olechno^{1,2}, James A. Saunders¹, Pedro Barbosa², and John Kemper². ¹Tobacco Lab, USDA, Beltsville Agriculture Research Center, Beltsville, MD. 20705, and ²Dept. of Entomology, University of Maryland, College Park, MD, 20742</p> <p>We have examined the effect of nicotine concentrations on the feeding behavior of <i>Manduca sexta</i>, the tobacco hornworm, and on parasitism of the hornworm by <i>Apanteles congregatus</i> (Hymenoptera). The survival of the <i>Apanteles</i> was dramatically affected by the concentration of nicotine in the diet of the hornworm. The concentrations of nicotine in the body tissues of both the hornworm and the parasitic wasp have been determined and it has been shown that the nicotine is transferred from the diet through the hornworm to the parasitic wasp. Within the hornworm, nicotine has been shown to be present in the hemolymph, fatty tissue, integument, and muscle tissue. The <i>Apanteles</i> larvae which are bathed in the hornworm hemolymph have relatively high levels of nicotine. The wasp which emerges from an external cocoon as a free living adult has little nicotine within its tissues. The mechanism for the detoxification by the <i>Apanteles</i> will be discussed.</p> <p>Supported by USDA Cooperative Grant 500-2241-1-740-0.</p>		

P-1	<p>PHYTOCHEMICAL AND BIOLOGICAL STUDIES OF <i>CARALLUMA PENICILLATA</i>. M.A. AL-Yahya, T.I. Kalifa and M. Tariq, Department of Pharmacognosy and Medicinal Plant Research Unit, Research Center, College of Pharmacy, King Saud University, Riyadh, Saudi Arabia.</p> <p><i>Caralluma penicillata</i> of Asclepiadaceae family grows wildy in south Hijaz region of Saudi Arabia. Grazing on this plant caused death of 50 sheep. The plant was referred to this lab. for chemical and biological studies. Chloroformic extract of the plant was found to be highly toxic in rabbit, guinea pig, rat and mouse (LD₅₀ values 300-500 mg/kg). Qualitative analysis of the plant showed the presence of alkaloids, cardiac glycosides, triterpenes, saponins and volatile bases. Two biologically active fractions (F₁ and F₂) were obtained from the plant extract. Chemical studies of these fractions using chromatographic and spectroscopic methods showed that F₁ consists triterpenoid compounds and sterols, while F₂ consists of cardiac glycosides. Toxicity studies showed that none of these fractions is responsible for the toxicity of the plant. Fraction F₂, significantly increased the force of contraction and cardiac output of the normal and hypodynamic heart. It also increased blood pressure of rabbit which was not blocked by alpha blocker. Fraction F₁ blocked the effect of acetylcholine on smooth and skeletal muscles.</p>	
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C-20	Thursday, August 5	3h15 p.m.
<p>UV-MEDIATED GENOTOXICITY OF NATURALLY OCCURRING ALKALOIDS FROM PLANTS. G.H.N. TOWERS, A. Abramowski & Chi-Kit Wat. Botany Dept., University of British Columbia, Vancouver, B.C.</p> <p>In our continuing survey for naturally occurring chemicals of plant origin which are of potential therapeutic use or of other biological significance we have discovered that a number of alkaloids are photosensitizers. We have previously reported that certain furanocoumarins of the Rutaceae and the more widely distributed β-carbolines are photosensitizers. The former type, characterized by dictamine, forming monofunctional adducts with DNA <i>in vitro</i> and <i>in vivo</i> (Peyffer and Towers). We can now add to this list certain canthinones of the Simaroubaceae, and the N-methylpyrrolidine substituted harmaline alkaloid, brevicolin, of the genus <i>Carex</i>. All of these alkaloids display phototoxicity towards bacteria and fungi in near ultraviolet light. Moreover they are also toxic, in low doses, in near UV to chinese hamster cells, inhibiting mitosis and causing gross chromosomal changes. The cellular targets for their photoactivity thus seem to be the nucleus. These results will be discussed.</p>		

P-2	<p>EFFECT OF BIOTIC AND ABIOTIC ELICITORS ON ACCUMULATION OF THE PHYTOALEXIN, KIEVITONE, IN COW PEA*.</p> <p>K.L. Bajaj and J. Friend, Dept Plant Biology, Univ. of Hull, Hull, U.K. HU67 RX</p> <p>The biosynthesis and degradation of kievitone has been investigated by determining ¹⁴C-phenylalanine incorporation by pulse-chase in cow pea cotyledons, challenged with biotic elicitor (a glucan isolated from incompatible race of <i>Phytophthora vignae</i>) and abiotic elicitor (HgCl₂). Kievitone & other metabolites were isolated from alcoholic extracts of treated cotyledons by reverse phase HPLC. Our results show that the biotic elicitor stimulates phytoalexin biosynthesis to much higher extent than the abiotic one, but has no effect on degrading activity, whereas HgCl₂ strongly inhibits degradative activity. This has been further confirmed by the formation of 2,3-dehydro-kievitone in glucan-treated cotyledons, both <i>in vivo</i> and <i>in vitro</i>. This metabolite was not detected in HgCl₂-treated cotyledons.</p> <p>*Supported by A.C.U. Fellowship to K.L.B.: Biology Dept, Concordia Univ., Montreal, Qu\acute{e} H3G 1M8</p>	
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C-21	Thursday, August 5	3h30 p.m.
<p>THE ANALYSIS OF COMPLEX NATURALLY-OCCURRING PHENOLS IN DRINKING WATER.</p> <p>Suzanne L. Weck, Leslie Irwin, and Cornelius Stoelink, Dept. of Chemistry, The University of Arizona, Tucson, Arizona 85721</p>		

P-3	<p>THE NATURE OF RESERVE MOBILIZATION IN THE PROTEIN BODIES OF THE CASTOR BEAN ENDOSPERM. D.J. Gifford, J.S. Greenwood and J.D. Bewley. Dept. of Biology, University of Calgary, Calgary, Alberta T2N 1N4.</p> <p>Following imbibition, protein bodies fuse to form vacuoles as their storage reserves (proteins and phytin) are mobilized. Structural changes in protein bodies can be seen in 24 h-imbibed material using electron microscopy. However, quantitative data and SDS-polyacrylamide gel electrophoresis do not indicate significant mobilization of protein reserves until 24-48 h later. During this period, levels of the 11S crystallin and 2S albumins decrease rapidly on the gels. In contrast, mobilization of both 7S lectins, ricin D and RCA is much slower; rapid rates are not visualized until 76 h after imbibition. Several amino-peptidases are involved in the early mobilization of these proteins. The possibility that the embryonic axis may play a role in this mobilization is proposed since significantly decreased rates of protein mobilization are observed in the absence of the embryo.</p>	
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P-4

SUBCELLULAR LOCALIZATION AND CHARACTERIZATION OF ARGININASE FROM *CANAVALLIA ENSIFORMIS* (L.) DC. AND *GLYCINE MAX* (L.) MEER. R.R. Deinum, W.S. Cohen and G.A. Rosenthal, T.H. Morgan School of Biological Sciences, University of Kentucky, Lexington, KY U.S.A. 40506

The subcellular localization and substrate specificity of arginase (L-arginine amidinohydrolase; EC 3.5.3.1) was compared in two legumes: *Canavalia ensiformis*, a canavanine producing species, and *Glycine max*, a canavanine-free plant. Arginase, which normally catalyzes the hydrolysis of L-arginine to L-ornithine and urea, also hydrolyzes L-canavanine, a structural analog of L-arginine, to L-canaline and urea. The enzyme was localized in intact mitochondria of both organisms following isolation from cotyledons using Percoll gradients (Donce et al., Plant Physiol. 60, 625). Mitochondria obtained in this manner had respiratory control in the range of 3 to 6 using various substrates. Kinetic and catalytic parameters of the two mitochondrial arginases will be described with regard to both L-arginine and L-canavanine.

P-7

GLYCOPROTEINS OF GLYOXYSONES FROM CASTOR BEAN ENDOSPERM
Elma Gonzalez, Dept. of Biology, University of California, Los Angeles, CA 90024.

Previous studies have identified the presence of protein-conjugated sugars in preparations of membrane-free glyoxysome extracts. The present study confirms the presence of glycoproteins in the glyoxysome matrix and identifies the unique, glycosylated polypeptides in SDS-PAGEs. Not all glyoxysomal matrix proteins were found to be glycosylated, furthermore data obtained from, i) ^{14}C -sugar uptake into specific polypeptides, and ii) from [^{125}I] Con A stained "western" blots of SDS-PAGEs indicated that sugars were not uniformly distributed among all identified glycoproteins. The pattern of glyoxysomal-matrix glycoprotein distribution in SDS-PAGEs is compared to patterns of antibody- (anti-glyoxysomal matrix proteins) precipitated proteins from isolated endoplasmic reticulum and from the cellular cytosol. Results will be discussed in terms of a model of glyoxysome assembly. Supported by NSF/PCM 7904277.

P-5

ENZYME INHIBITORY NATURE OF MELANINS IN SORGHUM GLUMES.

C. William Glennie and Matthews M. Kutumela, Sorghum Beer Unit, Council for Scientific and Industrial Research, P.O. Box 395, Pretoria, 0001, South Africa.

Melanins have been isolated from black glumes of sorghum grain by two methods. (1) Ground glumes were degraded with HCl and the residue designated as melanin. (2) Ground glumes were extracted with 2 N NaOH and the melanin precipitated with acid. The alkali prepared melanin gave an infra-red spectrum similar to those reported in the literature while the spectrum of the HCl prepared material varied slightly. The NaOH prepared melanin contained 1% ash while the HCl prepared melanin contained 37% ash. Alkali fusion of sorghum melanins yielded p-hydroxybenzoic acid and no catechol could be detected.

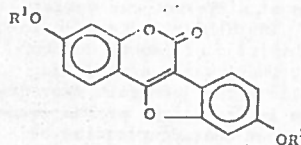
An important property of melanins is their enzyme inhibitory nature. This inhibition by melanins was determined on a diastase solution. Ground glumes showed 10% inhibition while HCl prepared melanin showed 39% and NaOH soluble melanin was 96% inhibitory. Thus the alkali preparation appears to yield purer melanin as it gave a ten fold increase in inhibition while the acid digestion melanin gave only a four-fold increase in inhibition.

P-8

COUMESTRIN, A NEW COUMESTAN DERIVATIVE FROM SOYBEAN ROOTS (GLYCINE MAX.)

Ngo Lo-Van, Monsanto Agricultural Products Company, 800 N. Lindbergh Boulevard, St. Louis, MO 63167, USA.

The biochemical investigation of the soybean roots (*Glycine max.*) afforded in addition to coumestrol, the known isoflavones genistein, daidzein and their respective glucosides genistin, daidzin, a new coumestan derivative, which is named coumestrin (3). Its structure was established by spectroscopic methods (UV, IR, $^1\text{H-NMR}$, EI, CI and FD-MS), by conversion to its respective tetra- and pentaacetate (4 and 5) and by correlation of their data with those of the related coumestrol di-acetate (2). Furthermore, the enzymatic hydrolysis of 2 with β -glucosidase yielded coumestrol and glucose and so confirmed the structure of coumestrin (3).



- 1 = R¹ = R² = H
- 2 = R¹ = R² = Ac
- 3 = R¹ = glu, R² = H
- 4 = R¹ = glu(OAc), R² = H
- 5 = R¹ = glu(OAc), R² = Ac

P-6

STORAGE PROTEIN SYNTHESIS IN DEVELOPING SUNFLOWER SEEDS
James C. Clifton and Elma Gonzalez, Dept. of Biology, University of California, Los Angeles, CA 90024.

Six polypeptides from isolated protein bodies have been identified as the major storage proteins of sunflower seeds. The polypeptides were characterized on SDS-PAGEs as having Mr of 46,000, 43,000, 40,000, 37,000, 27,000 and 17,000 daltons. All of these polypeptides sediment as an 11S complex in sucrose gradients. The lower molecular weight species also behaves as a slowly sedimenting "2S" form. The "2S" species may represent a solubilized component of the larger complex. Capacity for protein synthesis in developing seeds was examined in the progressively maturing seeds of the radial files of sunflowers at a particular age after anthesis. The synthesis of storage proteins is initiated at a very early stage during seed development. Three hour pulses with [^{35}S]-methionine revealed the rapid synthesis of, predominantly, three of the polypeptides (40,000, 27,000 and 17,000 daltons). Preliminary results indicate that the 4 polypeptides ranging from 37,000 to 46,000 daltons are glycoproteins. The data obtained thus far support a model of post-translational modification of a basic set of polypeptides. Supported by NSF/PCM 7904277.

P-9

MECHANISM OF PHOTOSENSITIZATION BY NATURALLY OCCURRING

POLYACETYLENES. *David Melachlan, *John Arnason, and J. Lam, *Dept. of Biology, University of Ottawa, 50 Somerset Str., Ottawa, Ontario, & Dept. of Organic Chemistry, University of Aarhus, Aarhus, Denmark.

The role of O₂ in the photosensitization of microorganisms by naturally occurring polyacetylenes of the Asteraceae has been investigated. *Escherichia coli* and *Saccharomyces cerevisiae* were used in a quantitative phototoxicity bioassay under aerobic and anaerobic conditions. Photosensitization of *S. cerevisiae* appears to be "photodynamic" (requiring O₂ for sensitization) with various polyacetylenes. Conversely, *E. coli* is photosensitized under both aerobic and anaerobic conditions with some polyacetylenes, while photodynamic with others. The reasons for these differences in photosensitization will be discussed.

P-10

STEROL CHANGES DURING SEED GERMINATION. Claus Greenwood, Illinois Natural History Survey and Department of Botany, University of Illinois, Urbana, Illinois 61801.

Germination involves the activation of enzymes that are present, sustenance of metabolic activity, and synthesis of enzymes. In the barley seed the embryo releases gibberellin-like hormones which induce the aleurone tissue, a layer of cells surrounding the endosperm, to synthesize and release hydrolytic enzymes. The enzyme induction process can be manipulated by removing the embryo and supplying plant growth regulators. During enzyme induction a number of events occur, including the formation of membranes. Sterols are important membrane components and changes in these lipids were followed during the induction period.

The dry embryo-less barley seed contained 0.027% sterol by weight, of which 57% was steryl ester (SE), 38% was free sterol (FS), and 5% was steryl glycoside (SG). During imbibition the total sterol content decreased to 0.020% and the make-up was 50% SE, 46% FS, and 4% SG. During enzyme induction with gibberellic acid the sterol content was 0.022% of dry weight with 55% FS, 44% SE, and 1% SG. All sterol classes showed some changes in individual sterol composition but the FS showed the largest, especially during enzyme induction. Campesterol and stigmasterol decreased by 5% while sitosterol increased by 35%.

P-11

TEMPERATURE AND MOISTURE: THEIR INTERACTION MAY CONTROL GERMINABILITY OF SEEDS. W. Woodbury and T.J. Wiebe, Department of Plant Science, University of Manitoba, Winnipeg, R1T 2N2, Canada.

Most germination assays are done on wet filter paper where water is freely available; also the literature provides little more than the cardinal temperatures.

Using moist sand, we investigated germination of wheat under conditions where temperature (T) and/or water uptake (WU) were limiting. Important findings are: 1- lower T and WU increased the lag period before germination or emergence began but have no effect upon the slope of the germination curve, so considerable physiological adaptation must occur during the lag period; 2- seed size influenced effects of T and WU on germination and seed moisture; 3- full expression of dormancy only occurred when water was freely available and at temperatures above 20 C.

Effects of T and WU on germination are usually interpreted in terms of membrane function. We suggest that physical-chemical interactions between water and polymer components of the seed may determine swelling pressures which in turn might regulate metabolism and further water uptake. Environmental conditions during development and maturation of the seed could determine the chemistry and conformation of polymeric structures leaving a structural "memory" which might regulate germinability of the seed.

P-12

GROWTH INHIBITORS IN OAT GRAINS. - LEAKAGE OF INHIBITING FACTORS FROM OAT GRAINS AND THE EFFECT OF GRAIN EXTRACTS ON THE GROWTH OF OAT SEEDLINGS. Maj-Lis Haggquist and Conny Liljenberg, Department of Plant Physiology, Botanical Institute, University of Göteborg, Carl Skottsbergs Gata, S-413 19 Göteborg, Sweden.

Imbibition of water is a prerequisite for germination. This imbibition is accompanied by a leakage of substances some of which are growth stimulating while others inhibit germination and growth.

In the present investigation grains of different oat varieties have been tested for leakage of growth inhibiting factors during the imbibition. In addition to the inhibition of growth due to the osmotic potential of the extracts, there was a pronounced effect on the root growth. The metabolic effect of grain extracts was analysed by measuring the decrease in dry weight of the seedlings during growth in darkness. A further characterization of the inhibiting factors will be presented. The results are discussed in relation to the control of growth mediated by hormones.

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Return as soon as possible to: PSNA 1982 Meeting
 Dr. C. Nozzolillo
 (Rooms in residence Dept. of Biology
 not guaranteed after Jul 15) University of Ottawa
 Ottawa, Canada KIN 6N5

ISEN	AUTHOR/EDITOR--TITLE	LIST PRICE	DISCOUNT PRICE
410230	Creasy/Hrazdina--CELLULAR AND SUBCELLULAR LOCALIZATION IN PLANT METABOLISM (Recent Advances in Phytochemistry, Volume 16)	\$37.50	\$22.50
407582	Loewus/Ryan--THE PHYTOCHEMISTRY OF CELL RECOGNITION AND CELL SURFACE INTERACTIONS (Recent Advances in Phytochemistry, Volume 15)	\$37.50	\$22.50
405725	Swain/Kleiman--THE RESOURCE POTENTIAL IN PHYTOCHEMISTRY (Recent Advances in Phytochemistry, Volume 14)	\$32.50	\$19.50
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400286	Swain/Harborne/Van Sumere--BIOCHEMISTRY OF PLANT PHENOLICS (Recent Advances in Phytochemistry, Volume 12)	\$55.00	\$33.00
347113	Loewus/Runeckles--THE STRUCTURE, BIOSYNTHESIS, AND DEGRADATION OF WOOD (Recent Advances in Phytochemistry, Volume 11)	\$55.00	\$33.00
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347191	Runeckles--PHYTOCHEMISTRY IN DISEASE AND MEDICINE (Recent Advances in Phytochemistry, Volume 9)	\$35.00	\$21.00
500442	Runeckles/Watkin--RECENT ADVANCES IN PHYTOCHEMISTRY, Volume 4	\$35.00	\$21.00
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PSNA WELCOMES THE FOLLOWING NEW MEMBERS:

Dr. Nestor Rosa, Box 186, Delhi, Ontario, N4B 2W9 CANADA - Interests in biochemistry and physiology of plant growth.

Dr. Robert Bandursk, Botany Dept., Michigan State University, East Lansing, MI 48824 - Interests in plant hormones, cyclitols, sulfur metabolism and enzymology.

Dr. Eugene L. Vigil, E.M. Lab., Bldg. 177B, BARC-East, Beltsville, MD 20705 - Interests in membrane structure and organelle biogenesis.

Ms. Brigitte Dahlbender, Bot. Inst. Univ. Koln. Gyrhofstr. 15, D-5000 KOLN 41, Fed. Rep. Germany - Interests in plant biochemistry, enzymology, tissue culture, metabolism and regulation.

Mr. D. Scott Lewis, Radian Corp., P.O. Box 9948, Austin, TX 78766.

D. Ngo Le-Van Monsanto Agri. Comp., 00 N. Lindberg, St. Louis, MO 63166 - Interests in Phytochemistry, isolation and structure of bioactive natural products.

Dr. John M. Miller, Dept. Biology, Box C-57, Sul Ross State Univ., Alpine, TX 79830 - Interests in Angiosperm chemotaxonomy and flavonoids.

Mr. Scott M. Newman, Botany Dept., AJ-10, Univ. of Washington, Seattle, WA 98195 - Interests in plant molecular biology and biochemical control of photorespiration.

Kathryn G. Zeiler, Biology Dept., Univ. South Florida, Tampa, FL 33620 - Interests in biosynthesis of secondary products, enzymology, plant molecular genetics.

Dr. Carl A. Elliger, USDA - WRRRC, 800 Buchanan St., Albany, CA 94710 - Interest in phenolics.

Dr. Bibekananda Mohanty, P.O. Box 730, CSRS Prog., Langston Univ. Langston, OK 73050 - Interests in nitrogen metabolism, seed protein mobilization during germination.

PROPOSED CONSTITUTIONAL AMENDMENT TO BYLAWS OF PSNA: The suggestion has been made that Article IV, Section 2 of the PSNA Bylaws should be amended in the following manner:

"The Society shall publish the Annual Symposium Proceedings. Royalties from the sale of the Symposium Proceedings shall go the Society. In case of joint meetings with other societies, special arrangements on royalty sharings can be made, provided that these special arrangements are ratified by the Executive Committee prior to the conclusion of the Annual Meeting. Publication of the Proceedings shall be the responsibility of the Editor-in-Chief. Distribution of the published Proceedings shall be at the discretion of the Executive Committee."

In accordance with established procedures this suggestion will be discussed and voted on at the Annual Business Meeting in Ottawa, August 5, 1982, at 4:15 p.m. All members are encouraged to attend this business meeting.

MEETINGS OF INTEREST TO PHYTOCHEMISTS:

NORTH AMERICAN SYMPOSIUM ON ALLELOPATHY, November 14-17, 1982. General Information - To Register: Early registration is recommended. Complete this form provided or phone Mae Maxwell or Joline Henss at (217) 333-2883. We would appreciate your advance registration by October 15. Please mail to Accounting Business Office, 247 Administration Building, University of Illinois at Urbana-Champaign, 506 S. Wright Street, Urbana IL 61801.

PSNA

- 1983 Annual Meeting July 5-8, 1982, University of Arizona, Tucson, AZ, Symposium Topic: Phytochemical Adaptation to Stress. For additional information or suggestions for Symposium speakers contact: Dr. C. Steelink, Dept. of Chemistry, University of AZ, Tucson, AZ 85721 (602) 626-2780.
- 1984 Annual Meeting Boston University, Boston, Mass., Symposium Topic: Biochemical Interactions between plants and other organisms. For additional information or suggestions for symposium speakers contact: Dr. Tony Swain or Dr. Gillian Cooper-Driver, Boston Univ., Dept. Biol-Science, 2 Cumington St., Boston, MA, 02215, (617) 353-2454.
- 1985 Annual Meeting Asilomar Conference Grounds, Monterey, CA, Symposium topic: Secondary Plant Products, Chemistry and Function. For additional information or suggestions for symposium speakers contact: Dr. Bock Chan, Plant Protection Unit, USDA, 800 Buchanan St., Berkley, CA 94710 (415) 486-3991.

October 1982

1

Minutes of the Annual Business Meeting
for PSNA 1982, Held in Ottawa, Canada

The annual business meeting of the Phytochemical Society of North America was convened by President C. Nozzolillo at 4:17 pm on the campus of Ottawa University. A quorum of members being present, J. Saunders was asked to read the minutes of the 1981 business meeting which were published in the Sept. 1981 PSNA newsletter Vol. 21 (3). Romeo motioned and Hrazdina seconded that the minutes be accepted without revision, and the motion was passed.

C. Nozzolillo gave a report on the 1982 meeting currently underway and indicated that 7 students have taken advantage of the free registration which accompanies the presentation of a paper or poster.

C. Steelink gave a preliminary report on the progress of the 1983 meeting which is scheduled to be held July 5-8, at the University of Arizona in Tucson. The Symposium topic is the Phytochemical Adaptation to Stress. He reported that 8 symposium speakers have accepted invitations to present an address at the symposium and that 2 more speakers may be invited. The list of speakers which have accepted the invitations include:

<u>Speaker</u>	<u>Affiliations</u>	<u>Subject</u>
Jonathan Gershenson	Univ. of Texas	"Changes in Secondary Metabolites Under Stress."
Terence A. Smith	Long Ashton	"Production of Polyamines in Relation to Inorganic Ions."
Mark Jaffe	Wake Forest Univ.	"Role of Ethylene in Mechanical Stress of Plants."
R. Wyn Jones	Univ. of Wales	"Adaptation of Plants to Salty Environments."
G. H. N. Towers	Univ. of British	"Phytochemical Adaptation to Stress in Tissue Cultures."
Henry Yokoyama	USDA	"Factors Affecting Polyisoprene Biosynthesis."
M. Christiansen	USDA	"Temperature Stress, Membrane Lipid Modification."
Alois Bell	College Station	"Chemical Genetics of Wild Cotton in Relation to Host-Plant Resistance."

Steelink also announced that the PSNA would offer 4 competitive travel fellowships of \$250.00 each to help defray the cost of travel to this meeting. Two of the fellowships will be awarded to graduate students and two fellowships will be offered to recent Ph. D's who have received their doctoral degree within 5 years of the competition. In order to qualify interested individuals must submit a draft of the paper which they will present at the annual meeting. The manuscripts will be judged by the Organizing Committee of the 1983 Annual Meeting in Tucson.

T. Swain gave a report on the 1984 Annual Meeting which is to be held at Boston University, in Boston, Mass. The tentative Symposium topic is the Biochemical Interactions between plants and other organisms. The symposium

organizers consisting of T. Swain and G. Cooper-Driver would welcome any suggestions for symposium speakers.

A short report was given on the 1985 PSNA annual meeting which is to be held in Asilomar Conference Grounds in California.

Romeo give the treasure's report which is attached and indicates that our total assets have accumulated to more than \$27,000.00. The members of the PSNA in attendance gave Dr. Romeo a round of applause for his excellent fiscal management of societal funds.

S. Brown made a motion seconded by T. Swain that the Executive Committee of the PSNA carefully examine the use of societal funds in the management of the annual meeting, particularly in regard to additional charges to meeting participants. After some disucssion this motion passed by vote.

Saunders gave a report of the FSAS (Federation of Scientific Agricultural Societies) activities during the last year. He reported that the FSAS will for the time being continue to accept the attendance of a PSNA representative at their annual meetings without requiring dues to be paid. The members of the PSNA had expressed their reluctance to pay dues to an organization which strictly represents the United States interests when our membership is international in scope. Saunders reported that he was able to have significant input at the FSAS meeting without being an official voting member. The FSAS has testified in the subcommittee on Department Operations Research, and Foreign Agriculture of the Committee on Agriculture of the House of Representatives on the advantages of greater support to graduate student programs.

Saunders also indicated that Plenum press had contributed several volumes of Recent Advances in Phytochemistry as a demonstration display for the current annual meeting. The symposium volumes would in turn be contributed to the University of Ottawa library in recognition of their support for the PSNA annual meeting.

G. Hrazdina made a motion to change the constitution (seconded by T. Swain) in the following manner: Article IV Section 2. The Society shall arrange for the publication of the Annual Symposium Proceedings. Royalties from the sale fo the Symposium Proceedings shall go to the Society. In case of joint meetings with other societies, special arrangements of royalty sharing can be made, provided that these special arrangements are ratified by the Executive Committee prior to the start of the joint meeting. Arrangements for the publication of the proceedings shall be the responsibility of the Editor-in-Chief. Distribution of the published proceedings shall be at the discretion of the Executive Committee.

After some discussion this motion was passed.

C. Nozzolillo gave a report on the activities on the Executive Committee including a decision to give Symposium speakers a choice between an honorium or free membership in PSNA for a period of 10 years. She also noted that if anyone has suggestions for symposium topics these should be sent to J. Saunders.

The Members of PSNA voted to express their thanks to the Organizing Committee and the University of Ottawa for hosting a fine meeting.

C. Steelink gave a report of the Nominating Committee which was composed of himself, S. Brown, and H. Morita.

Nominations from this committee and from the floor included:

- President-Elect R. Ibrahim
- D. Mansell
- Secretary J. Saunders
- Treasurer J. Romeo

Ibrahim, Saunders, and Romeo were elected to their respective offices. In addition G. Hrazdina will take over the duties of President and C. Nozzolillo will become Past-President.

The meeting was ajourned at 5:45 pm.

Recorded this day 8/5/82 by J. Saunders Secretary PSNA.

Interim Financial Report

1 January 1982 - 31 July 1982

Receipts

Membership dues	\$1,869.85
Royalties	4,430.91
Mailing List	30.00
Refund 1981 Meeting	196.60
Interest	1,267.77
	<u>\$7,795.13</u>

Expenditures

Directories	\$ 723.32
1981 Meeting	1,010.75
Treasurer expenses	157.21
Foreign Exchange debt	2.09
Auditor	40.00
	<u>\$1,933.37</u>

Summary

Receipts	\$7,795.13
Expenditure	1,933.37
Net Gain	<u>\$5,861.76</u>

Assets - 1 January 1982

Checking	\$ 578.61
Money Market	16,969.74
Savings	4,117.23
Total	<u>\$21,665.58</u>

Assets - 31 July 1982

Checking	\$ 3,672.60
Money Market	22,056.99
Savings	1,797.75
Total	<u>\$27,527.34</u>

Member

Total 364 (46 students)	USA	278
	Canada	46
	W. Germany	13
	Other Foreign	27

Respectively submitted:

JOHN ROMEO
Treasurer, PSNA
08/03/82

Items of interests to Phytochemists:

At the 3rd Latin-American Congress of Botany held July 1982 in Lima, Peru, a new association of botanists was formed. This group, the Asociacion Latinoamericana de Botanica (ALB) will have its permanent headquarters in Bogota, Columbia. Dr. Enrique Forero of the Universidad Nacional de Columbia was elected permanent secretary of the association. The Boletín Botanico Latinoamericano will be the official publication of the association. At present the association is supported by voluntary contributions. Some 503 members are listed in its directory.

Anyone wishing to become affiliated with this group should write to:

Dr. Enrique Forero
 Secretario Permanente
 Asociacion Latinoamericana de Botanica
 Apartado 54546
 Bogota 2. Colombia

The Executive Committee is compiling a list of symposium topics for future meetings. Anyone with suggestions for topics which would be timely, interesting, and popular for phytochemists should send their list of suggestions to PSNA Secretary Saunders. (Address on inside cover of newsletter.)

PSNA welcomes the following new members to the society:

Mr. James A. Connelly, Dept. of Biochem. & Biophys., Univ. of California, Davis, CA 95616. Interest in Enzymology; regulation of amino acid biosynthetic pathways; starch accumulation.

Mr. Wolfram Foerster, E. E. Biology, Univ. of California, Irvine, CA 92717. Interests in phytochemistry of medicinal plants, physiological effects of natural products.

Dr. Robert P. Upchurch, College of Agriculture, Univ. of Arizona, Tucson, AZ. 85721. Interests in new crop development. Member of organizing committee for 1983 PSNA annual meeting.

Mr. Robert Largis, 606B, Rue Ste-Angèle, Trois Rivières, Quebec, CANADA (819) 373-0087. Interests in Plant Insect Relationships.

Upcoming meetings of interest to phytochemists:

US-MEXICO SYMPOSIUM:
 RENEWABLE PHYTOCHEMICAL RESOURCES OF THE DESERT
 January 15 and 16, 1983
 UNIVERSITY OF CALIFORNIA
 IRVINE, CALIFORNIA

Speakers include:

Desert Plants as Phytochemical Resources - Aztec and Contemporary Uses.
 Dr. Bernardo Ortiz de Montellano (Wayne State U., Michigan)

Chemical Patterns in Desert Plants. Dr. Tom J. Mabry (University of Texas, Austin).

- Phytochemicals of Mexican Desert Shrubs and Succulents. Dr. Xorge Dominquez (Monterey, Mexico)
- Liquid Fuels and Chemicals from Desert Plants. Dr. Joseph J. Hoffman (Arizona Univ. Tucson)
- New Sesqui- and Diterpenoids from Parthenium and other Desert Plants. Dr. Alfredo Ortega (UNAM, Mexico)
- Insecticidal Constituents of Arid and Semi-Arid Plants. Dr. Isao Kubo (U.C. Berkeley)
- Structural Elucidation of Biologically Active Terpenoids from Mortonia. Dr. Lydia Rodriguez-Hahn (UNAM)
- Insecticidal Constituents from Seeds. Dr. Gerald Rosenthal (University of Kentucky)
- Synthesis of Insecticidal Natural Products. Dr. Salvador Fernandez (CIQA, Mexico)
- Selection Criteria for Arid and Semi-Arid Land Botanochemical Crops. Dr. Robert Adams (Utah)
- Keynote Lecture: The International Implications of Research of Desert Plants. Dr. E. Arthur Bell, Director. Kew Gardens, London
- Phototoxic Insecticides of Desert Compositae. Dr. G.H.N. Towers (Vancouver, Canada)
- Synthesis of Anti-Tumor Natural Products. Dr. Harold Moore (UCI)
- Terpenoids in Mexican Arid Land Plants. Dr. Alfonso Romo de Vivar (UNAM)
- Molecular Engineering of Plant Products. Dr. Khishna Tewari (UCI)
- Genetic Engineering of Desert Plants. Dr. Franz R. Hoffmann (UCI)
- Basic Research of Arid Land Plants. Dr. H. T. Hung (NSF)
- For information and registration contact:
- Dr. Elroy Rodriguez
 Phytochemical Laboratory
 School of Biological Sciences
 Department of Ecology and Evolutionary Biology
 University of California, Irvine
 Irvine, CA 92717 (714) 833-5484

Fifteenth Miami Winter Symposium, January 17-21, 1983 Konover Hotel, Miami Beach, Florida.

Advances in Gene Technology: Molecular genetics of plants and animals.

For information contact: Ms. Sandra Black, Miami Winter Symposium, P. O. Box 016129, Miami Beach, Florida, 33101.

Chemrawn II - International Conference on Chemistry and World Food Supplies:
The New Frontiers, Dec. 6-10, 1982, Philippine International Convention
Center, Manila, Philippines for information contact:

Chemrawn II Coordinating Office
The International Food Policy Research Institute
1776 Massachusetts Avenue, N.W.
Washington, D. C. 20036, USA

Cable: IFPORI, Washington
Telex: ITT 440054 IFPR
Telephone: (202) 862-5653

Positions Open:

All positions listed apply EEO guidelines

Postdoctoral Research Associate. Position available November 1, 1982 for two-year appointment at \$15,000. Plant physiologist, biochemist or chemist interested in studies on the enzymology of ascorbic acid biosynthesis and metabolism in plants and algae. For further information contact Frank A. Loewus, Institute of Biological Chemistry, Washington State University, Pullman, WA 99164-6340. Telephone (509)-335-3413.

Research Associate Plant Physiology. Two-year appointment. Conduct research on Biochemistry and physiology of tobacco with emphasis on smoking and health. For information contact: Dr. James F. Chaplin, Tobacco Research Lab., USDA, RT. 2, Box 16G, Oxford, N.C., 27565, (919) 693-5151.

Assistant professor in horticulture/plant physiology. Research emphasis on developmental aspects of muscadine grapes. 15% extension, 85% research. Supervision over vineyards. Salary range \$18,000-22,000 with 12 month appointment. For information contact: Dr. Charles C. Kidd, Dean Science & Technology, Fla. A & M University, Tallahassee, Fla. 32307 (904) 599-3550.

Assistant Professor Plant Physiology/biochemistry. Full time, 12 month tenure track appointment to operate a research program on the physiology and biochemistry of tobacco with emphasis on metabolism of natural products. Possible areas of research include the biosynthesis of organoleptic substances, leaf hydrocarbons, or flavor and aroma components in tobacco. Teaching responsibilities will be determined in conjunction with the needs in the Plant Physiology program and the expertise of the applicant. Graduate student advising and service on graduate committees is expected. Applicants should submit a curriculum vitae, transcripts and 3 letters of reference to:

Dr. A. J. Hiatt
Dept. of Agronomy
University of Kentucky
Lexington, KY 40546-0091

Applications received through Nov. 15, 1982 with salary commensurate with training and experience.

PLEASE POST

Invitation for Travel Awards: The Phytochemical Society of North America will award four competitive travel awards towards expenses of attending the 1983 annual meeting to be held in Tucson, AZ. July 5-8. Two awards will be presented to graduate students and two awards will be presented to recent recipients of Ph.D.'s (within the last 5 years). Each award will be for \$250.00. The selection criteria for the awards will be based on the scientific merit of papers submitted for competition by March 1, 1983. The subject of the manuscript may relate to any topic of phytochemistry of interest to the author. Applications are not restricted to members of the Phytochemical Society of North America. Winners of the travel awards will be expected to present their manuscripts at the Annual PSNA meeting in Tucson.

The manuscript together with a curriculum vitae and the application form listed should be submitted to:

Dr. Barbara Timmermann
Chairman, PSNA Travel Awards Committee
University of Arizona, School of Pharmacy
250 East Valencia Road
Tucson, AZ. 85721
(602) 626-4737

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Title of Manuscript: _____

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<input type="checkbox"/> 347113	Loewus/Runeckles--THE STRUCTURE, BIOSYNTHESIS, AND DEGRADATION OF WOOD, 1977 (Vol. 11)	\$55.00	\$33.00
<input type="checkbox"/> 347105	Wallace/Mansell--BIOCHEMICAL INTERACTION BETWEEN PLANTS AND INSECTS, 1976 (Vol. 10)	\$39.50	\$23.70
<input type="checkbox"/> 347091	Runeckles--PHYTOCHEMISTRY IN DISEASE AND MEDICINE, 1975 (Vol. 9)	\$35.00	\$21.00

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