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Editor / Rédaction:
J. F. (Joe) Gerrath
Guelph

PATRON
His Excellency the Right Honourable / Son Excellence le Très Honorable
Ramon John Hnatyshyn P.C., C.C., C.M.M., C.D., Q.C.
Governor General of Canada / Gouverneur Général du Canada

ON THE INSIDE
À L'INTÉRIEUR

EDITOR'S COMMENTS
COMMENTAIRE DE LA PART DU RÉDACTEUR

I'm late, I'm late, I know I am very late with this issue . . . but I finally managed to get it to the printer. A number of things have conspired to delay things - mainly the increased work load of trying to finish both this issue of the Bulletin and the (perhaps overly ambitious) supplement, which includes a lot of items that were rather fiddley [and time consuming] to assemble.

This issue has the result of the vote sent out with the last issue [a resounding approval of the new dues structure], several items from the last annual meeting [including pictures of award winners], and some of our usual departments. Also included is an extended review of a recent NATO-sponsored institute, which should be of interest to some of you. I might comment that if any of you would like to write a similar review on a meeting you attended [one that you think might be of interest to our membership], I will be happy to try to find room for it in the Bulletin. I am pleased that this issue received several unsolicited contributions which appear on various pages. Keep them coming so that the Bulletin can serve your needs!

Our new Treasurer, Christian Lacroix, will be sending out the 1994 membership renewal forms shortly. Please pay promptly so that the Treasurer can build up a sufficient cash supply to pay our bills.

A brief description of some of the goodies associated with the next annual meeting in Calgary is presented on page 58. This meeting is shaping up to be a good, old-fashioned, not-to-be-missed, western whoop-up. The registration package should be ready to be sent out with the January issue of the Bulletin, and full details about the meeting will be available then.

The next issue begins the last year of my three year term as editor of the Bulletin, and I must give serious thought to the question of accepting another three year term. This job has taken up a quite a bit of time that could have been more profitably used by me to keep up with the algal literature and to devote more time to research. However, I must say that producing the Bulletin has generally been a fun experience, although sometimes it is a chore to find enough material to fill up those empty pages that stare accusingly back at me. I am a bit of a sucker when it comes to responding to arm-twisting, and I'm certain that the current Board of Directors does not relish the prospect of finding someone else to take over in 1995. Goodness knows, it is hard enough to find people to serve as Officers and Directors. I'll mull it over for another six months before making a final decision.

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Finally I am sending out a collective request to all of those who have volunteered to help and have received books to review. Some of you have had your book a rather long time without sending me your review. Part of the deal in letting you keep the book is for you to produce a review for the Bulletin. Before I get nasty and send out individual letters, I will ask politely here that you complete your review and send it to me as soon as possible, please.

Here are a few more books for which I am attempting to find reviewers. Volunteers, please contact me by phone or FAX, or send an e-mail message to the Secretary/Associate Editor, Jean Gerrath.

Peter R. Bell - Green Plants. Their Origin and Diversity. Dioscorides Press. 1992.

J.A. Callow and J.R. Green - Perspectives in Plant Cell Recognition. Soc. Exp. Biol., Seminar Ser. 48. Cambridge University Press. 1992.

N.H. Battey, H.G. Dickinson and A.M. Hetherington -Post-translational Modifications in Plants. Soc. Exp. Biol., Seminar Ser. 53. Cambridge University Press. 1993.

Paul Adam - Saltmarsh Ecology. Cambridge University Press. 1990 [Paperback Edition 1993].

C.J. Pollock, J.F. Farrar and A.J. Gordon - Carbon Partitioning within and between Organisms. Bios Scientific Publishers. 1992.

Results of Vote on new Dues Structure
Résultat de vote sur la nouvelle cotisation

Number of ballots returned/ bulletins de vote retournés:	**104**
In favour/pour	**95**
Against/contre	**9**

The CBA dues for 1994 will be:
La cotisation de l'ABC pour l'année 1994 sera:

Membre regulier: Regular Member:	$45.00
Student Member Étudiant(e):	$25.00
Retired Member: Membre à la retraite:	$25.00

Returning Officer: Jean M. Gerrath
CBA/ABC Secretary

MINUTES OF THE ANNUAL GENERAL MEETING OF CBA/ABC, IOWA STATE UNIVERSITY, AMES, IOWA, AUGUST 4, 1993

1. The meeting was called to order at 4:08 p.m. A quorum of members was present.

2. **MOTION** (J.F. Gerrath, N. Dengler):
That the minutes be adopted as circulated. Carried.

3. Business arising from minutes. None.

4. **Reports of Officers:**

a) President (U. Posluszny) In addition to the circulated report, the possible site for the 1997 meetings may be Montréal, as a joint meeting with the Botanical Society of America, through AIBS. This has not yet been finalized.

b) Past President (P. Catling) Nominating Committee report [*was published in the previous issue of the Bulletin*].

c) President-Elect (K. Winterhalder). This year's Cinq-Mars competition had 16 entrants. There were judges from every section except Mycology.

d) Vice-Presidents (P. Catling) This meeting has been very exceptional. Tony Reznicek should be thanked for his work done at the planning stage.

MOTION (P. Catling, P. Cavers):
That a letter be written expressing our thanks and congratulations to the Local Organizing Committee and Louise Salmon for their excellent organization of these meetings under trying circumstances. Carried unanimously.

e) Secretary (Jean Gerrath) Nothing to add to circulated report.

f) Directors. Nothing to add to circulated report.

g) Editor (Joe Gerrath) *This report appeared in the previous issue of the Bulletin.*

h) Archivist (U. Posluszny) The Archivist, Erich Haber, was one of the people who lost their jobs at the Canadian Museum of Nature. He has, therefore, had to resign his position as Archivist. It will be extremely difficult to replace such a pivotal person. Volunteers for the position are being solicited. It was pointed out that, since we have to move the archives, the site of the Archives will probably determine the Archivist.

i) Treasurer (N. Dengler) *The Interim Financial Statement and Proposed Budget were published in the previous issue of the Bulletin.*

MOTION (N. Dengler, D. Garbary):
That the Interim Report and the Proposed Budget be approved. Carried unanimously.

The mail ballot to seek approval of members for a new fee structure was presented and received general approval by members at the meeting.

A number of suggestions for increasing the numbers of members were made. These included sending letters to lapsed members informing them of our financial situation, and offering free membership to the best recruiter of new members. The possibility of adding a category for members who are unemployed or underemployed was discussed [By-Laws would have to be changed if a new membership category were to be added].

5. **Conservation Committee** (D. Fahselt)

This report was printed in the last issue of the Bulletin, including a complete listing of the membership of the Committee and of the regional representatives.

MOTION (K. Winterhalder, I. Brodo):
That Dianne Fahselt be thanked on behalf of the Canadian Botanical Association/L'Association botanique du Canada for her brilliant work for all these years. Carried unanimously.

6. **Science Policy** (P. Catling, I. Brodo) *Information about the situation at the Canadian Museum of Nature was presented along with two Emergency Resolutions. These were published in full in the previous issue of the Bulletin.*

MOTION (P. Catling; Seconders: R. Bayer, J.F. Gerrath, D. Larson, K. Winterhalder):
That CBA/ABC accept both Emergency Resolutions. Carried unanimously.

MOTION (I. Taylor, L. Vasseur):
That the President of CBA/ABC direct the resolutions to the appropriate ministers, Prime Minister, appropriate opposition members, science policy officer of CFBS, Governor General, secretary general of the I.U.B.S., appropriate media and appropriate international associations. Carried unanimously.

7. **Membership Committee** (Jean Gerrath) *This report was printed in the previous issue of the Bulletin.*

8. **Development Committee** (Jean Gerrath) *This report was printed in the previous issue of the Bulletin.*

9. **Future Meetings**

a) 1994 Calgary (C.C. Chinnappa) Things are well under control. *A brief outline of Symposia, Workshops, Lectures and Field Trips is published elsewhere in this issue of the Bulletin.* The registration package should be ready to be sent out with the January 1994 mailing of the Bulletin.

b) 1995 Guelph - The meeting at Guelph is to be held jointly with CSPP/SCPV, and, at this early stage, things are progressing well.

c) 1996 Charlottetown - This will be the first time that the Association has met in P.E.I.

d) 1997 - The site for this meeting is not clear yet, but it may be in Montréal.

10. **Call for Nominations** - *These are published elsewhere in this issue of the Bulletin.* Members were urged to make a strong effort to put forward names of candidates. Vipen Sawhney was named as a Director for 1993-94, to replace Christian Lacroix, who is now Treasurer.

11. **Auditors** (N. Dengler)

MOTION (N. Dengler, J. Hilliker):
That Joe Gerrath and Tim Dickinson be appointed auditors for 1993-1994. Carried.

12. **Canadian Journal of Botany** (I. Taylor) The report was circulated concerning the invitation to contribute a review article for George Lawson Medal winners, to be called the George Lawson Medal Review.

13. **Youth Science Fair** (N. Dengler) The 1994 Fair will be held in the Yukon.

14. **Structure and Development Award** (Jean Gerrath) The Structure and Development Section approved that a student award be set up, similar to that of the Weresub, Porsild and Ecology awards.

MOTION (Jean Gerrath, I. Taylor):
That an award in recognition of the best paper published in the area of plant structure and development by a graduate student be established according to the terms of reference established for other student prizes awarded by the CBA/ABC, to be called the Taylor Steeves Award. Carried.

15. **MOTION** (I. Taylor, I. Brodo):
That the thanks of the Association be extended to the retiring Directors. Carried.

16. **MOTION** (J. Hilliker, P. Catling):
That the meeting be adjourned. Carried.

Jean M. Gerrath, Secretary of CBA/ABC

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INSANITY IS HEREDITARY ... YOU GET IT FROM YOUR CHILDREN.

This was printed in the daily News Bulletin at the recent International Congress of Genetics in the U.K.

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PROPOSITION DE CANDIDATURES

BUREAU DE DIRECTION DE L'ABC

Les membres de l'ABC sont invités à proposer des candidatures pour les postes suivantes:

Président désigné [de 1994 à 1996]
Secrétaire [de 1994 à 1996]
3 Directeurs [de 1994 à 1996]

Un des Directeurs doit habiter à l'ouest de la frontière provinciale du Manitoba et de l'Ontario et les autres n'importent où.

Chaque nomination doit porter la signature d'au moins trois membres de l'association et doit être accompagnée du consentement de la personne nominée. Les nominations doivent être reçues avant le 31e janvier 1994, par la secrétaire de l'ABC.

Dr. Jean M. Gerrath
Department of Horticultural Science
University of Guelph
Guelph, ON N1G 2W1

CALL FOR NOMINATIONS

CBA BOARD OF DIRECTORS

Members of CBA are invited to submit nominations for the following positions on the Board of Directors of the Association.

President Elect [term -1994-1996]
Secretary [term - 1994-1996]
3 Directors [term - 1994-1996]

One of the Directors must reside west of the Manitoba-Ontario boundary.

Nominations must be signed by at least three members of the Association and must be accompanied by the consent of the nominee. All nominations must be received before January 31, 1994, by the secretary of the Association.

Dr. Jean M. Gerrath
Department of Horticultural Science
University of Guelph
Guelph, ON N1G 2W1

LA MÉDAILLE GEORGE LAWSON

Les membres de l'ABC sont invités a proposer des candidatures pour ce prix, qui sera presenté à la prochaine assemblée annuelle de l'association à Calgary, Alberta. Il y a deux catégories d'éligibilité.

Catégorie A: Pour reconnaître une contribution unique et exceptionelle à la botanique canadienne par un botaniste canadien. En pratique, ceci prendra la forme d'un livre, d'une monographie ou d'un article apportant une contribution significative ou exceptionelle à la botanique.

Catégorie B: Pour reconnaître l'ensemble des contributions distinguées d'un chercheur, professeur ou administrateur senior qui a fait carrière au Canada la plus grande partie de sa carrière, et qui a fait des contributions importantes à la développement de la botanique canadienne.

Toute nomination doit être accompagnée d'un *curriculum vitae*, d'un exposé concis faisant état de la contribution du candidat à la botanique canadienne, et d'autres documents comme des lettres d'appui d'autres personnes. Chaque nomination doit être reçue, au plus tard le 31e janvier 1994, par le président du comité de sélection.

Dr. Usher Posluszny, CBA/ABC President
Department of Botany
University of Guelph
Guelph, ON N1G 2W1

THE GEORGE LAWSON MEDAL

Members of CBA are invited to submit nominations for this award, which will be presented at the next annual meeting of the Association in Calgary, Alberta. The award may be made in two categories of eligibility:

Category A: Recognition of a single outstanding contribution to botanical knowledge by a Canadian botanist. Normally the award will be made for a book, monograph or published paper of exceptional significance to botany.

Category B: Recognition of the cumulative, distinguished contributions of a senior researcher, teacher or administrator who has worked in Canada for most of his/her career and who has contributed notably to the advancement of Canadian botany.

Nominations should be accompanied by a *curriculum vitae*, a concise statement of the nominee's contribution to Canadian botany, and as much additional documentation as possible (including letters by others supporting the nomination). Nominations should be sent, before January 31, 1994, to the chair of the Awards Committee:

Dr. Usher Posluszny, CBA/ABC President
Department of Botany
University of Guelph
Guelph, ON N1G 2W1

PROPOSITION DE CANDIDATURES

LE PRIX MARY E. ELLIOTT

Les membres de l'ABC sont invités à proposer des candidatures pour ce prix, qui est donné à une membre pour service de mérite exceptionelle à l'Association. La présentation de ce prix aura lieu à la prochaine assemblée annuelle de l'ABC à Calgary.

Chaque nomination doit incluire les details des contributions méritoires de la personne nommée à l'ABC. Veuillez envoyer toute nomination, au plus tard le 31e janvier, 1994, au président du comité de sélection:

Dr. Usher Posluszny, Président de l'ABC
Department of Botany
University of Guelph
Guelph, ON N1G 2W1

Chaque nomination, soit pour la médaille Lawson, soit pour le prix Elliott, restera éligible pendant trois années avec le comité de sélection. Le comité demandera aux proposeurs de fournir de nouveaux détails ou des modifications pour le deuxième et le troisième année d'éligibilité.

CALL FOR NOMINATIONS

MARY E. ELLIOTT SERVICE AWARD

Members of CBA are invited to submit nominations for this award, which recognizes meritorious service to the Association by a member. If a suitable candidate is proposed, this award will be made at the next annual meeting of the Association in Calgary.

Nominations should include a statement which details the service contributions of the nominee to the Association. Nominations should be sent, before January 31, 1994, to the chair of the Awards Committee:

Dr. Usher Posluszny, CBA President
Department of Botany
University of Guelph
Guelph, ON N1G 2W1

Note: Nominations for the Lawson Medal and for the Mary Elliott Service Award are kept on file, and remain eligible, for three years. Nominators will be requested by the Awards Committee to provide updates for the second and third years.

FUTURE MEETINGS - CALGARY 1994

The 1994 annual meeting of CBA/ABC will be held in Calgary, June 26 to 30th, at The University of Calgary. The organizing committee is looking forward to extending our western hospitality to the members of the organization and all other participants. A number of social and extracurricular events are planned with the workshops and presentations to make the meetings enjoyable and productive.

In addition to contributed papers and posters, there are five symposia and three workshops scheduled. The symposia are: **Biological Conservation and Ecosystem Management, Proximate and Ultimate Aspects of Plant Reproduction, Biosystematic and Molecular Techniques, Fungal-Plant Interactions**, and **Hormones, Plant Growth and Development**. The three workshops are: **Ecology and Systematics Software, GIS for Systematic and Phytogeographical Research** and **Writing and Editing Scientific Papers and Technical Reports**.

Dr. Maurice Moloney of the University of Calgary will be giving a special inaugural lecture on **Molecular Biology in Plant Research** and a noted mycologist, Dr. Robert Danielson, also of Calgary, will be presenting the annual Weresub lecture on **Fungal Symbiosis with Trees**.

A western style barbecue will be held on Tuesday evening, June 28th, at the Rafter Six Ranch in the Rocky Mountains, west of Calgary. The annual special banquet honouring Dr. Taylor A. Steeves, University of Saskatchewan, and with local entertainment, will be on Wednesday evening, June 29th.

We also have an exciting package of field trips planned. Preconference day trips include the Landscape Ecology of the Kananaskis Valley, and an excursion to the Royal Tyrrell Museum of Palaeontology and the Badlands in the vicinity of Drumheller, Alberta. Post Conference trips include a day tour of the Bow River corridor with a look at the geology and natural history of the area, a trip above timber line on Plateau Mountain in the front range of the Rockies, and a day and a half trip to the southern Alberta grasslands. There are half day trips planned to the Head Smashed-In Buffalo Jump and Museum in Southern Alberta and to Many Springs, near Calgary, to look at native orchids.

The registration package will be mailed early in the new year and the deadline for registration is May 15, 1994. For information on any aspect of the annual meeting, please contact CBA/ABC Vice-President:

Dr. C.C. Chinnappa
The University of Calgary
Biological Sciences
2500 University Drive N.W.
Calgary, AB T2N 1N4

Telephone: (403) 220-7465
FAX: (403) 289-9311
E-mail: ccchinna@acs.ucalgary.ca

CBA/ABC AWARDS - MEDAILLE GEORGE LAWSON MEDAL

R. LARRY PETERSON

University of Guelph

In a very informal presentation in Guelph after the Annual Meeting, Larry Peterson (centre) accepts his Lawson Medal from CBA/ABC President Usher Posluszny (left) and CBA/ABC Secretary Jean Gerrath (right), who accepted the medal at the banquet in Ames on behalf of Dr. Peterson.

Photo: J.F. Gerrath

This year the award for lifetime contribution to Canadian Botany is being presented to **Dr. R. Larry Peterson** of the Department of Botany, University of Guelph.

Larry Peterson is a most deserving recipient of this prestigious award. He can certainly be regarded as one of Canada's most distinguished and respected botanists. He is a Fellow of the Royal Society of Canada, and a recipient of many honours, including the Sigma Xi Career Award for Excellence in Research and Distinguished Research Fellow at the University of Adelaide, Australia. He has also been singled out for excellence in teaching, was a former President of CBA/ABC and is currently Chair of the Department of Botany, University of Guelph.

I would like to quote from some of the flood of letters that came in to support Larry Peterson's nomination for this award. One letter notes that, "Larry Peterson's qualifying contributions fall into several categories. He is the epitome of the enthusiastic, curious scientist. He is widely recognized as an outstanding teacher of both undergraduate and graduate students. He is an exceptionally perceptive Associate Editor of the Canadian Journal of Botany, as well as other research journals. These and other achievements have been attained by a combination of curiosity, organization and straightforward humanity". Another letter notes that, "At an early stage, Larry was keen to learn and perfect preparative, microscopical, and various different experimental techniques and his research is characterized by the apt and elegant application of these skills to particular problems. In my opinion it is possible to recognize instantly his authorship of, or participation in, a paper upon opening the pages of a journal. It will be clearly written, beautifully illustrated with every aspect labeled and pointed out, and the implications of the findings will be discussed and assigned their place in the development of the subject". And finally, a nominator notes, "Larry's laboratory has become renowned as a training ground for others who aspire to achieve excellence in research. The many students, postdoctoral fellows and visiting scientists who have worked in his laboratory have profited immensely from his guidance and have gone on to extend the tradition of his excellence, for indeed it has become a tradition. No one was surprised when he received an award for teaching excellence nor when his students were cited for the quality of their theses or their presentations at meetings. It is one thing to be an outstanding researcher but the ability to transmit that excellence to others does not always follow and should be recognized as a special achievement".

It is very rare indeed that the Lawson Medal for Lifetime Achievement in Botany is awarded to someone who is in mid-career and who still has so much more to contribute to botanical research and teaching.

It is a great honour to present the 1993 Lawson Medal for Lifetime Achievement in Botany to Dr. Larry Peterson. Unfortunately, Dr. Peterson cannot be here to accept his award due to his very busy schedule as organizer for the 9th North American Conference on Mycorrhizae which will be held at the University of Guelph next week. He has, therefore, asked Dr. Jean Gerrath to accept his award.

Usher Posluszny, CBA/ABC President
Ames, Iowa, August 4, 1993

CBA/ABC AWARDS - PRIX MARY E. ELLIOTT AWARD

DR. IRWIN M. BRODO

Canadian Museum of Nature

Dr. Brodo receives his award, which is suitably festooned with lichens, from Usher Posluszny, CBA/ABC President, at the banquet in Ames, Iowa.

Photo: J.F. Gerrath

The Mary E. Elliott Service Award, which is given to an individual for meritorious service to CBA/ABC, is presented this year to **Dr. Irwin M. Brodo** of the Canadian Museum of Nature.

Dr. Brodo joined CBA/ABC in 1965, one year after the Association began, and he has been an active participant ever since that time. In the early days he served as chairman of the lichen checklist committee of the Systematics and Phytogeography Section. This catalogue of the lichens of Canada, Alaska and Greenland was updated yearly until 1981 and was widely used. It provides a good example of the valuable sponsorship by CBA/ABC that would not have been possible without Dr. Brodo's help.

From 1984 until 1990 Dr. Brodo was the CBA/ABC representative on the Biological Council of Canada. The BCC formed a consortium which lobbied parliamentarians, directly influenced NSERC granting policies and presented governments and various agencies with points of view and briefs on various science policy issues, as well as actively supporting various initiatives such as the National Science Fairs.

Dr. Brodo also served CBA/ABC as field trip leader, auditor and Lionel Cinq-Mars Award judge on several occasions, but he had a particularly challenging term as President in 1989-90. He became President during the very big and successful joint meeting with AIBS in Toronto. This was also the period when CBA/ABC joined the Canadian Federation of Biological Sciences in an attempt to increase influence on science policy issues in Canada. Largely through Dr. Brodo's work on science policy issues as President and later as science policy officer, we were one of the most cooperative and supportive member societies of CFBS in terms of science policy work, including contributions to briefs, lobbying, and responding to questions.

Probably most important to CBA/ABC is the fact that Dr. Brodo, through his generous devotion of time and his articulate explanations of the need to address science policy issues, maintained the CBA/ABC membership through the potential crisis period of increased dues. Above all, Ernie Brodo has been an integral part of the Canadian Botanical Association for close to thirty years. In a small society such as ours, we depend on people like Ernie, people who are willing to work at whatever job needs to be done and especially people who just can't say no.

I'm delighted and honoured to present the 1993 Mary E. Elliott Service Award to Dr. Irwin M. Brodo.

Usher Posluszny, CBA/ABC President
Ames, Iowa, August 4, 1993

CBA/ABC AWARDS - STUDENT AWARDS AT AMES

PRIX LIONEL CINQ-MARS

Heather M. Stewart
University of Guelph

Heather Stewart, University of Guelph, accepts the 1993 Lionel Cinq-Mars Award from Keith Winterhalder, chair of the judging committee at the Ames meeting.

The winning presentation, co-authored by thesis advisor, Judy Canne-Hilliker, was entitled, "Evidence of selfing in *Agalinis neoscotica*."

BOURSES JOHN MACOUN BURSARIES

Suitably attired with the T-shirt of the other Association/Society, Gregory J. Anderson [left rear], President of the Botanical Society of America, and CBA/ABC President, Usher Posluszny, stand behind the 1993 winners of the John Macoun Bursary.

From left to right:
Christine M. Kampny,
University of Toronto
Connie L. Pottruff,
University of Guelph
Kathleen M. Pryer,
Duke University
Jeanette Whitton,
University of Connecticut

Photos: J.F. Gerrath

MEETING AND BOOK REVIEW

N.A.T.O. Advanced Study Institute, "*Advances in Morphometrics*", 18-30 July, 1993, and *Contributions to Morphometrics*, edited by L.F. Marcus, E. Bello and A. Garcia-Valdecasas, Monografias del Museo Nacional de Ciencias Naturales, Madrid, 1993.

T.A. Dickinson, Associate Curator-in-Charge, Department of Botany, Royal Ontario Museum, 100 Queen's Park, Toronto, ON M5S 2C6

The NATO ASI, "**Advances in Morphometrics**", held this summer at Il Ciocco (Lucca), Italy, was an opportunity for participants from a wide range of disciplines (physical anthropology, botany, cardiology, computer science, coral population ecology, entomology, herpetology, ichthyology, mammalogy, neuroanatomy, ornithology, paleontology, primatology) to come to grips with some of the latest approaches to, in the words of the ASI diploma, the analysis of "size and shape of organisms using Geometric Morphometrics". **Contributions to Morphometrics** ("the black book") was one of two books distributed to the participants (the other was "the blue book", Proceedings of the Michigan Morphometrics Workshop, Rohlf and Bookstein 1990) together with reprints of Rohlf and Marcus (1993; "A revolution in morphometrics") and Bookstein (1989; " 'Size and shape': a comment on semantics"), and two diskettes of compressed software for a wide range of morphometric and related techniques. I was one of the participants in the NATO ASI, and what follows is a review of both that workshop and **Contributions to Morphometrics**.

The synthesis of biological morphology with geometry, mathematics and statistics, that has emerged during the past 15 years as "Geometric Morphometrics" is due particularly to Fred Bookstein and his students and collaborators at the University of Michigan and elsewhere. Bookstein's orange book (1991) provides a summation of this synthesis that is not for the faint-hearted. The blue and black books referred to above, together with an earlier red one (Bookstein, Chernoff *et al.* 1985) represent stages in the progressive refinement of this synthesis and especially its exposition to the biological community by Bookstein and other practitioners. Of the last three books, I suspect that ordinarily the black one, **Contributions to Morphometrics**, is least likely to be seen by North American workers, despite being written entirely in English. This is unfortunate, since it represents an interesting stage in the exposition of the synthesis, and it contains valuable presentations ranging from the historical and theoretical to the extremely practical.

Geometric morphometrics distinguishes and analyzes differences in size and shap based on the Cartesian coordinates of discrete landmarks , the location of which can be unambiguously determined in all of the objects under study. The first section of the book, "History, concepts, discussion and criticism", contains an essay by Bookstein in which geometric morphometrics is firmly placed at the intersection of two morphometric traditions: a graphical one emphasizing visual comparisons of shape and connecting Albrecht Dürer with Francis Galton and D'Arcy Thompson, and another, based on measurements of unitary forms and their analysis (independent of their geometric relationships) and employing multivariate statistical methods. The essay goes on to describe the frustrations stemming from the failure to understand "what constituted the *data*" of morphometric analyses, and the breakthroughs made by C.R. Goodall, D.G. Kendall, K.V. Mardia and Bookstein in defining not only those data, and the methods for summarizing them, but also the relevant statistical theory. In view of the critical importance of landmarks, the other chapter in this section, by V. Louise Roth, is appropriately a discussion of how landmarks are to be identified on three-dimensional objects. This essay focuses less on issues like homology than it does on the hidden assumptions potentially associated with the use of two-dimensional projections of three-dimensional objects, choices of landmarks and selection of variables.

The second section, "Data acquisition" contains a single chapter by José M. Becerra, Bello and García-Valdecasas, "Building your own machine image system for morphometric analysis: a user point of view". The juxtaposition with Roth's chapter is significant. Until very recently, automated acquisition of morphometric data has been based almost exclusively on interactions with two-dimensional images, regardless of the dimensionality of the objects under study. The authors discuss critical issues involved in assembling a microcomputer-based system for video image capture and analysis: hardware and software selection, image storage, resolution, precision and accuracy.

Three chapters present "Methodology and software" ranging from multivariate statistics (Marcus) to thin plate splines (F.J. Rohlf) and fractal analysis (D. Slice). The first of these is a useful introduction to methods for summarizing multivariate data both graphically and numerically. Principal components analysis is emphasized, especially the use of singular value decomposition to obtain the results, and Gabriel's biplot to display them. A more comprehensive introduction is provided in the author's contribution to the blue book (Marcus 1990). The chapter by Rohlf is extremely important, as it provides the most accessible presentation available of the methods based on the thin plate spline metaphor for quantifying and visualizing shape change that Bookstein has been developing (Bookstein 1990; 1991). The matrix algebra underlying this metaphor and its extension to "relative warps" is presented clearly, making reference to parallel analytical approaches in conventional multivariate analysis. "Partial warps" are, in effect, quantitative descriptions of the deformation of the landmark plane required to transform a reference configuration of landmarks into the configuration seen in a sample object. Partial warps provide, in a manner analogous to Fourier analysis, a decomposition of this deformation into trends in shape variation at different scales. Relative warps are principal components of the partial warps. In a series of programs for MS-DOS computers described in this chapter and elsewhere, Rohlf has programmed not only

the underlying computations but also a range of sophisticated graphic displays of the results that clearly relate them to the original landmark data. This software gives users the opportunity to visualize their data in the tradition of Dürer and D'Arcy Thompson, while at the same time extracting numerical parameters for shape contrasts that can be used in multivariate analyses. As pointed out repeatedly by Rohlf and Bookstein, however, the parameters obtained for each sample object's configuration of landmarks relate only to the pairwise comparison between it and the single reference configuration used in the analysis. Slice's contribution supplies the only botanical application in the book: an analysis of variation in fractal dimension between samples of leaves from five ***Acer*** species. Unfortunately, while this example illustrates fractal analysis, it fails to demonstrate that fractal analysis yields unique insights into shape variation unobtainable by other less complex means.

The concluding two chapters ("Applications") demonstrate the utility of landmark data (even those extracted exclusively from two-dimensional images) not only for summarizing the size and shape variation of mature structures (skulls of moles) but also in analyzing allometric changes in body form during the ontogeny of unitary organisms (threespine sticklebacks).

Finally, an appendix by Becerra introduces the reader to BITNET and INTERNET, and the use of FTP. A second appendix, by Marcus, describes the software provided on the diskette that accompanies the book. Programs provided by Rohlf for resistant fit and thin plate spline methods have since been superceded by versions made available al Il Ciocco and now by FTP to SBBIOVM.SUNY.EDU (in the directory BIOSTAT.192). For readers having access to the program MATLAB (Mathworks, Inc.) Marcus provides a set of command scripts to implement both the graphical analyses in his chapter and the thin plate spline methods described by Rohlf. For some readers, however, the most useful item may be a utility program provided by Becerra for converting MorphoSys image files to TIFF ones and *vice versa*. This greatly increases the capability of simple image analysis systems based on the PCVision Plus frame grabber (Imaging Technologies, Inc.) and the inexpensive MorphoSys program (Meacham and Duncan 1991).

The books described above, together with Bookstein (1992), set the stage for the NATO ASI in Italy this summer. It was held at Il Ciocco, a convention centre and resort hotel in Tuscany, in the hills outside Lucca. The organizers were able to provide not only an extremely comfortable setting but also a very business-like one. In addition to a lecture hall, two large rooms were filled with microcomputers, mostly MS-DOS machines, but also some Macs and an IBM RISC 6000 workstation. The workshop consisted of lectures in the morning, increasingly interspersed with accounts of applications of the methods described, and related topics. afternoons were mostly dedicated to allowing participants an opportunity to try out the methods in the computer lab, using a wide range of programs and data-capture hardware.

Lectures covered a sequence of topics similar to that in Bookstein (1991). Bookstein usually started, providing the theoretical framework for a particular approach. The same and additional topics were then developed further by Rohlf and others, sometimes in the context of particular software implementations of the methods being discussed. The data for morphometric analyses are the coordinates of landmarks. Size variation is then describable as "centroid size", the magnitude of the root-mean-square of the centroid-landmark distances. Size-independent variation in shape is then analyzed using the "shape coordinates" for each object (cf. Appendix 4 in Bookstein *et al.* 1985, and Sanfilippo and Riedel 1990). These are obtained by rescaling the raw landmark coordinates so that the endpoints of a particular baseline have the coordinates (0,0) and (0,1). This is a departure from the emphasis, in the past (Bookstein *et al.* 1985), on analysis of interlandmark distances. ASI participants who had originally obtained (x,y) coordinates of two-dimensional specimens (such as leaves, or projections of three-dimensional specimens) mostly were able to go back to those data. Others who had calipered hundreds or thousands of specimens to obtain such distances understandably felt annoyed at the shift and consequent need to recover coordinate data using trigonometric methods. Rotational-fit methods with which to obtain consensus configurations of landmarks were compared using Slice's program GRF (Rohlf and Slice 1990). These average shapes provide the reference configuration needed for some of the thin plate spline methods. Like Rohlf's programs for splines and warps described above, GRF displays its results graphically, as well as providing numerical output.

In addition to the software by Rohlf and Slice (the latter's includes powerful utilities for digitizing and for converting between different data formats), a number of other programs were demonstrated and made available to participants. Two programs are available for calculating shape coordinates, centroid size, and other parameters. García-Valdecasas and J. Elvira provided a program with which to explore digital image formats and processing as an accompaniment to the former's lecture on image analysis. Possibly the most imaginative program made available is D'ARCYGRAPH by D. Rasskin-Gutman. It enables the user to create shapes as configurations of landmarks (or import them from files), rotate them, stretch them, and then save the new configurations as files of (x,y) coordinates that can be analyzed by other data analysis and graphics programs like MATLAB and IBM's Data Explorer (S-Plus, Rohlf's NTSYS-pc package was installed on the ASI computers and provided a common computational platform for ordinations and other multivariate methods (as well as another means of carrying out shape coordinate and thin plate spline calculations).

The ASI not only introduced participants to analytical tools and the software with which to employ them. The organizers also ensured that a sampling of state-of-the-art hardware for capturing coordinate data from specimens was on hand. Video systems demonstrated programs from Hungary and the United States for acquisition of two-dimensional data. For acquisition of three-dimensional data there was a British

Reflex microscope, an Italian laser-scanning device, and a U.S. Polhemus electromagnetic system. It was out of the question to bring in CATscan or MRI devices, but participants got a taste of the power of these technologies from lectures and poster presentations describing studies of fossil primates. For example, the inner ear from a Neaderthal skull has been digitally reconstructed from CAT data by C.P.E. Zollikofer and M. Ponce de Leon. As yet, however, none of these systems appears to have the resolution necessary for studies of small, three-dimensional subjects like flowers.

Throughout the ASI, but more especially toward the end, many of the participants were concerned to explore the wider significance of morphometric data, the acquisition and analysis of which we were being taught. Some were concerned to be able to refine taxonomic decisions in relation to conservation issues. Others wished to understand the relationship of geometric morphometrics to phylogenetic studies. Bookstein suggested that geometric morphometrics could only provide *a posteriori* explanations of extrinsically derived phylogenies. Nevertheless, some thin plate spline comparisons of ichthyosaur skulls presented in passing by R. Reyment were highly suggestive of a possible role in generating phylogenetic hypotheses (if not in the actual reconstruction of cladistic relationships). Obviously, geometrically sound and statistically valid morphometrics is essential for definition of meaningful character states in some situations, but this was expressed only as an article of faith by one of the lecturers, without any examples.

Any pedagogical undertaking, however successful overall, is bound to have its weak points, and the ASI was no exception. Lectures were at times used to convey information that would have been better committed to printed notes. Difficulties stemming from the great variance in accent and presentation style inevitable in an international effort were compounded by the lack of a device as simple as a common data set to be subjected to every analytical technique discussed. Instead, participants found their own solutions to the difficulty of the subject matter, each of us explaining something to someone else at one time or another. The anarchy of being able to see perhaps a few dozen different data sets being analyzed in one room was in itself exciting and instructive.

Finally, it remains to be seen whether the organizers will be able to capture in any official summary of the ASI the ferment resulting from presenting a body of new thinking to a group of more or less critically thinking colleagues. Some of this ferment doubtless came from the diversity of disciplines represented by the participants, and the feeling that geometric morphometrics as presented failed to address particular problems of concern to some. There may be real difficulties in acquiring data, such as when landmarks are lacking, or when their number and position are inconsistent, or biologically equivocal, due to ontogentic processes. More important, perhaps, is the possibility that geometric morphometrics, however complete and powerful, does not necessarily capture everything that humans usefully recognize as "shape" or "form" when trying to understand organic evolution. Highly characteristic leaf outlines may be the result of variation at more than one scale in ways that are not captured by geometric morphometrics. Similarly, variation in radially symmetric structures, or patterns of reticulation, may not be adequately represented. Despite these problems, however, the overwhelming lesson of the ASI was nevertheless that geometric morphometrics offers anthropologists, biologists, and others powerful tools with which to compare forms. Considerable opportunity remains for adepts to expand not only on applications of these tools, but also on the existing methods of analysis and visualization that are the tools themselves.

Bookstein, F.L. 1989. 'Size and Shape': A comment on semantics. **Systematic Zoology 38**; 173-180.

Bookstein, F.L. 1990. Chapter 11. Higher-order features of shape change for landmark data. Pp. 237-250 in **Proceedings of the Michigan Morphometric Workshop.** Special Publ. No. 2. Univ. Michigan Mus. Zool., Ann Arbor.

Bookstein, F.L. 1990. Part II. Analytic Methods. Introduction and overview: geometry and biology. Pp. 61-76 in **Proceedings of the Michigan Morphometric Workshop.** Special Publ. No. 2. Univ. Michigan Mus. Zool., Ann Arbor.

Bookstein, F.L. 1991 **Morphometric Tools for Landmark Data.** Cambridge Univ. Press, Cambridge.

Bookstein, F.L. *et al.* 1985. **Morphometrics in Evolutionary Biology**. Special Publ. No. 15. Acad. Nat. Sci. Philadelphia, Philadelphia.

Marcus, L.F. 1990. Chapter 4. Traditional morphometrics. Pp. 77-122 in **Proceedings of the Michigan Morphometric Workshop**. Special Publ. No. 2. Univ. Michigan Mus. Zool., Ann Arbor.

Meacham, C.A. and Duncan, T. 1991 **MorphoSys 1.29.** Regents of the University of California, Berkeley.

Rohlf, F.J. and Bookstein, F.L. 1990. **Proceedings of the Michigan Morphometric Workshop**. Special Publ. No. 2. Univ. Michigan Mus. Zool., Ann Arbor.

Rohlf, F.J. and Marcus, L.F. 1993. A revolution in morphometrics. **TREE 8**: 129-132.

Rohlf, F.J. and Slice, D. 1990. Extensions of the Procrustes method for the oprimal superimposition of landmarks. **Systematic Zoology 39**: 40-59.

Sanfilippo, A. and Riedel, W.R. 1990. Chapter 19. Morphometric analysis of evolving Eocene ***Podocyrtis*** (Radiolaria) morphotypes using shape coordinates. Pp. 345-362 in **Proceedings of the Michigan Morphometric Workshop**. Special Publ. No. 2. Univ. Michigan Mus. Zool., Ann Arbor.

RECENT GRADUATES
GRADUÉES RECEMMENT

University of Manitoba - Dept. of Plant Science

Hugh Beckie (Ph.D. 1992) - "Response of trifluralin-resistant green foxtail (***Setaria viridis*** (L.) Beauv.) to herbicides." Advisor: I.N. Morrison.

Robert Innes (Ph.D. 1992) - "Transfer of resistance to leaf rust and stem rust from ***Triticum tauschii*** to hexaploid wheat, cytogenetic mapping of the genes involved, and restriction mapping of ribosomal DNA in ***Triticum tauschii***." Advisor: E.R. Kerber.

Qi Liu (Ph.D. 1992) - "A methodology for genetic studies with ***Albugo candida***." Advisor: S.R. Rimmer.

Our thanks to Bill Remphrey for this list of graduates.

University of Guelph - Department of Botany

Trevor C. Lumley (M.Sc.) - "Variable colonization of ***Pseudotsuga menziesii*** and ***Pinus banksiana*** seedling roots by monokaryotic and dikaryotic isolates of ***Laccaria bicolor***." - Advisor: R. Larry Peterson.

George F. Schaffer (M.Sc.) - "Assessment of the over-winter survival of intra-radical VAM fungi in field grown ***Glycine max*** (soybean) root pieces." Advisors: R. Larry Peterson (Botany) and Murray Miller (Land Resource Science).

Department of Crop Science

Hussein M. Haji (M.Sc.) - "Validation of the widely used Sorghum model, Ceres-Sorghum, for potential application in plant breeding." - Advisor: L.A. Hunt.

Department of Environmental Biology

Susan Elizabeth Madzia (M.Sc.) - "Bacteria as a nutrient source for fungi." - Advisor: George L. Barron.

Melody Sue Melzer (M.Sc.) - "Epidemiology and management of lettuce drop caused by ***Sclerotinia minor***." - Advisor: G.J. Boland.

Department of Horticultural Science

Bruce Gordon Johnson - The effects of carbon dioxide level on the growth of a modelled forage ecosystem." - Advisors: B.A. Hale and Douglas P. Ormrod.

Yuandan Lee - Temperature effects on photosynthesis and photoassimilate partitioning of isolated pea (***Pisum sativum*** L.) leaf mesophyll protoplasts." - Advisor: Bernie Grodzinski.

Kamal Malik (Ph.D.) - "Development of plant regeneration systems in large-seeded grain legumes." - Advisor: Praveen Saxena.

List compiled by J.F. Gerrath

Laurentian University - Department of Biology

M.Sc. 1988-1993

Mary Jane Kelleher (1988) - "Influence of parasitoids on a population of ***Diplolepis spinosa*** (Ashmead) (Hymenoptera: Cynipidae) found on ***Rosa rugosa*** Thunb. (Rosaceae) in Sudbury, Ontario." Supervisor: J.D. Shorthouse.

Roxana D. Roshon (1988) - "Genecological studies on two species of ***Betula pumila*** var. ***glandulifera***, with special reference to their ecology and metal tolerance." Supervisor: K. Winterhalder.

Daryll Skraba (1989) - "Effects of surface liming on streamflow chemistry in a denuded, acid, metal-contaminated watershed near Sudbury, Ontario." Supervisor: K. Winterhalder.

Raymond A. Guy (1990) - "The role of plant biomass and digestibility in summer home range utilization by female white-tailed deer (***Odocoileus virginianus***)." Supervisors: F.F. Mallory and J. Hamr.

Daniel J.-P. Archambault (1991) - "Metal tolerance studies on populations of ***Agrostis scabra*** Willd. (Tickle Grass) from the Sudbury area." Supervisor: K. Winterhalder.

Barbara Booth (1991) - "Pollination period and the effect of repeated pollinations on seed set of tamarack." Supervisor: K. Winterhalder.

Suzanne S. Lamothe (1991) - "Palatability of winter browse to the Snowshoe Hare (***Lepus americanus***). Animal:plant interactions." Supervisor: G.M. Courtin.

Dale A. Dempsey (1992) - "Integration of LANDSAT thematic mapper and ecological data as a potential for augmenting forest resource inventory maps." Supervisors: P.J. Beckett and G.M. Courtin.

John J. Negusanti (1993) - "The use of outer bark of several boreal forest species to monitor atmospheric particulate deposition in the vicinity of smelters in northeastern Ontario." Supervisor: K. Winterhalder.

Jack D. Cox (1993) - "Survival strategies of lichens and bryophytes in the mining region of Sudbury, Ontario." Supervisor: P.J. Beckett.

Our thanks to Keith Winterhalder for providing this list

Book Reviews / Évaluations

The Genetic Basis of Plant Physiological Processes. by John King. Oxford University Press, Oxford. 1991. CAN $69.95.

Mutants have proved exceptionally useful in the study of plant physiological processes, especially in the study of plant growth regulators. Despite this, very few comprehensive overviews, or reviews, of plant physiological mutants exist. Several good collections of papers exist, but these are eclectic by nature. Dr. King's book is by no means a solution to this problem, nor is it intended to be so. Rather, it is a general overview of the application of mutants to the study of plant physiology. The function of the book, as outlined in the preface, is to be "a companion to an elementary text in plant physiology" to demonstrate the useful contributions made by genetic studies which are not adequately covered in introductory text books; in general, to arouse interest in the use of genetic mutants.

This book circumscribes six broad areas of plant physiological research, and presents four to six case studies in each area. Each area is presented as a separate chapter with a brief overview and a list of references. The text is followed by both an author and subject index; the latter I found a bit user unfriendly.

There are several positive aspects to this book. It is logically laid out and presented in an easy-to-read style. The text is, thankfully, not overburdened with references, which facilitates reading and comprehension. Although far from comprehensive, the case studies are concise and to the point. The text is liberally sprinkled with figures, diagrams and tables reprinted from a variety of sources. The writing style and depth of discussion are appropriate for the target audience as laid out in the preface.

The biggest problem I had with this book was in finding a suitable niche for it. Who will buy this book, or find it useful? For the graduate student, or researcher, this book is not very appropriate, as it is not comprehensive, does not critically examine the works discussed, present details on techniques, or present an overall synthesis of topics discussed. As a companion to an introductory plant physiology text, I am not sure it succeeds. When faced with buying a plant physiology text for a course, an additional CAN $70 for a companion to part of one course seems a little luxurious. Personally I have a hard time imagining an introductory plant physiology course that would cover 400 pages of detail just on physiological mutants. As a companion book I would rather own the 150 page, abridged, $20 paperback version. Alternatively, it would be nice to see parts of the text integrated into my introductory plant physiology textbook.

The book really is well written and organized. It would succeed in showing introductory level students the usefulness of plant mutants. It is well designed for its target audience in all aspects but length and cost vs. benefit; but, will the target audience buy it?

Michael J. Brown, Dept. of Botany
University of Guelph

The Strawberry into the 21st Century. Edited by Adam Dale and James J. Luby. Timber Press, Portland, OR. 1991 288pp. $49.95

This book is a collection of 60 papers and abstracts given at a symposium at the Third North American Strawberry Conference in Houston, Texas, in February 1990. As such its coverage depends largely on the attendees who presented the papers. It does manage, however, to give a very broad overview of the present state of knowledge in various countries. Certainly, anyone currently working on strawberries will have this book already, but anyone not familiar with the plant or the industry would find that this book is an excellent introduction to the research currently being done. The book is nicely printed and the price is right.

The first part of the book deals with a discussion of cultivars used in Europe, North America and Japan, and of breeding programs currentlly in place. There is some discussion of strawberry genetics and various mutants, and of attempts to use transformation techniques in breeding. Those adept at tissue culture techniques have begun to use strawberries in some laboratories with the aim of developing *in vitro* propagation, and of studying plant regeneration, somatic embryogenesis and protoplast fusion technology.

In the middle part of the book there are papers on various aspects of the physiology of strawberry plants, of production techniques used to improve yield, and of post-harvest physiology of the fruit. In the last part of the book the papers deal mainly with various fungal diseases and insect pests, and of methods which are used for disease and pest control and management (including integrated management strategies). Several papers also deal with the economics of production systems, harvesting methods and marketing.

In terms of broadness of coverage on commercial strawberries, there is nothing to beat this book. The only frustrating thing is that many of the contributions are merely one- or two-page abstracts, and one is often left with a nagging hunger for more information. Happily, many of the contributors have provided a short list of relevant references at the end of their abstract. But you know what that means -- hours of tough slogging through the library stacks.

J.F. Gerrath, University of Guelph

The Plant Press / La Presse Botanique

These pages are intended as a chronicle of news items about plants (or about CBA/ABC members) appearing in newpapers or in the popular science magazines. Contributions from your local newspapers are invited. Send the editor a clipping, photocopy or simply a note about the item and don't forget to indicate the source and date.

Ces pages sont consacrées aux nouvelles concernant les plantes (ou certains membres de l'ABC/CBA) qui paraissent dans les journaux. Les contributions en français sont également encouragées. Faites parvenir vos soumissions au rédacteur en chef ou au rédacteur adjoint, section francophone, et n'oubliez pas d'indiquer la source de l'article et la date de publication.

Ancient Cloth

O.K., O.K. ... I admit that I stretched it a bit by including an item on ancient silk in the last issue. Some of you could not see the botanical connection, which, of course, is that silk is just remanufactured mulberry leaves. Too feeble, eh? ... Well, how about this item about a piece (8 x 4 cm) of ancient cloth found wrapped around a bone (deer antler) tool handle at a site called Cayonu in Turkey? This scrap of cloth, which researchers date at about 9000 years old, is believed to have been made from flax, or possibly of hemp or nettle fibers [they are from plants, right?]. Archaeologists say that the cloth was made on some sort of loom that permitted the vertical threads to be stretched so that the horizontal threads could be entwined with them.

Toronto Star, July 18, 1993

Scummy Tea Solved

This report begins, "Have you ever wondered why a dark brown film forms on the surface of your tea, and why it is absent when you add lemon?" [*I might interject that those of you in soft water regions don't have this problem with your tea*]. Well, a British tea company wanted to know the answer and financed a study which was recently published in Nature by two chemists from Imperial College in London. It turns out that the scum only forms on tea made with hard water which contains both calcium and bicarbonate ions (if one is lacking, little or no scum forms). Oxygen from the air oxidizes organic matter in the tea, contributing about 80% of the weight of the scum. Another 15% is calcium carbonate. The acids in lemon juice block scum formation by reacting with bicarbonate. Strong tea is more acidic and is usually less scummy.

New York Times, August 17, 1993

Trouble and (loose)strife

Two University of Guelph researchers have joined the grant gravy-train of scientists are trying to find ways to stop the uncontrolled spread of purple loosestrife in Canadian wetlands. Gerry Stephenson is testing the herbicide approach and John Laing is trying the biological control approach. Two herbicides and three imported insects are currently being tested. The insects include two leaf-eating beetles and a root-eating weevil. Almost nothing eats loosestrife in North America, but a Canadian native insect, a bruchid beetle, has been found to feed on the seed heads. Whether the results of this study will be successful or not must await evaluations after about three to five years of field testing.

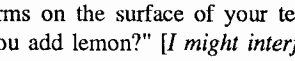
Kitchener-Waterloo Record, Sept. 2, 1993

Editor's note: I just received the lastest issue of BioScience, and, lo-and-behold ... those damn Yankees appear to have done this project already!

Mummies tell of hot times

Do you like your holidays to be in nice hot places with lush tropical forests? Why not try Axel Heiberg Island ... in the Canadian Arctic? The only problem is that you would have to have been there 40 million years ago, when the area was covered by forests of hardwood and cyprus, according to James Basinger of the University of Saskatchewan. Basinger is part of a team studying mummified tree stumps which are found in an area of the island larger than metropolitan Toronto. The perfectly preserved wood was probable covered quickly by mineral-free water and buried under sediments before it has a chance to be destroyed by rot fungi. Tree ring studies indicate that summers were warm and wet during the period when the forest was alive [at least 20 degrees warmer than today] and winters probably never cooled much below 5 degrees [Wow! ... Miami without the guns]. Coal seams at different levels on the hillsides indicate that a succession of forests existed on the island, and also suggest that, compared to earlier geological periods, the Earth's climate today is unusually cold.

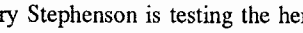
Wallace Immen, Globe and Mail, August 28, 1993



Henry III Flunked Forestry

According to this article, "Henry III was a failure at forest management". A detailed study of growth rings in timbers from old building in the vicinity of Sherwood Forest showed that there was very little forest regeneration between 1180 and 1290. This was partly due to mismanagement by the king's overseers and was partly due to the repeal of harsh laws against stealing wood from the forest [this repeal was forced on Henry by his rebellious barons]. Penalties such as castration, blinding and the cutting off of hands or feet were no longer applied. As a result the forest suffered greatly from theft and over-exploitation. The situation changed in 1300, when Edward III began selling off large tracts of forest land. Private ownership seems to have resulted in better conservation [or more diligent policing] of the forest, and higher levels of forest regeneration returned.

Teresa Waite, New York Times, September 7, 1993



Coffee perks up the news

The International Coffee Organization [a euphemism for a trade cartel that controls 85% of the world's coffee exports] is planning to withhold 20% of their export tonnage in a bid to increase coffee prices, and hence make more money for hard-pressed producers. The total world coffee production in 1991-92 was more than 100 million bags [each bag containing 60 kg], and almost 25% of that came from Brazil. Other important coffee producing countries include Colombia, Indonesia, Mexico, Côte d'Ivoire, Ethiopia, Guatemala, Uganda and Costa Rica. Colombia, Mexico and Costa Rica mainly produce the better quality ***Coffea arabica*** beans, whereas many other countries, such as Brazil and Indonesia, produce both ***arabica*** and ***robusta*** types of coffee. ***C. robusta*** is easier to grow but produces coffee of much lower quality (and price). It is often a major part of "rot-gut" coffee grades.

For athletes the Coke jingle, "can't beat the feeling", may become "can't beat the athlete with the feeling brought on by Coke", or at least by the caffeine that is in Coke. Studies at several labs, including the labs of Lawrence Spriet and Terry Graham at the University of Guelph, have shown that athletic performance can be improved by caffeine at levels much below that allowed by Olympic drug rules. Olympic rules permit ingestion of a bit more than 9 mg of caffeine per kilogram of body weight, which is roughly equivalent to drinking 3-6 cups of coffee. Researchers found that optimum effects on endurance resulted from only 2-4 cups of coffee before a race. An average increase in endurance of about 25% was found in recreational athletes, but serious runners ran 44% longer and cyclists lasted 51% longer in endurance trials with caffeine levels within the Olympic guidelines. This, of course, is bad news for the Olympics, because now everyone will be sure to take their fix of caffeine on race day. And just imagine the howls (and the withdrawals of funding) if the Olympic drug committee were to have the audacity to ban the drinking of coffee and (especially) Coke on race days. The author of the column predicts that we may soon see a two-tier competition, one for the absolutely, positively drug- or stimulant-free athletes and one for drug-aided athletes. Perhaps even Ben Johnson's records could be reinstated in the latter category.

Another study [in the Annals of Epidemiology] indicates that coffee acts as an antidepressant and could protect people against suicide and depression. A 10-year study of 128,000 patients found that the chance of suicide fell as people drank more coffee [tea had a similar, but weaker, effect]. Coffee drinkers were also less likely to die of cirrhosis of the liver. The down-side is that other studies have shown that heavy coffee drinkers have significantly increased risk of death from heart disease.

Financial Post, Sept. 23, 1993
Stephen Strauss, Globe & Mail, Sept. 11, 1993
Kitchener-Waterloo Record, October 30, 1993

An Apple a Day, or 4 Cups of Tea

The "apple-a-day" saying now has some scientific support. Apples and others foods and drinks which are rich in flavonoids (e.g. onions, red wine and tea) may help to reduce the risk of heart disease according to a recent Lancet report of a study of more than 800 Dutch men. Most of these men actually got their flavonoids by drinking tea. Those with high flavonoid consumption (4 cups of tea or a large apple each day) were found to have 50% fewer fatal heart attacks than those consuming low levels of flavonoids. The reasons are still to be studied but may involve an effect on cholesterol levels.

Teresa Waite, New York Times, October 26, 1993

Frances Perry 1907-1993

This well-known British writer and columnist on gardening and garden plants has died. She was the garden columnist for The Observer for 26 years, only retiring in May of this year. In 1968 she was the first woman elected to the Council of the Royal Horticultural Society and in 1971 she was awarded the Victoria Medal of Honour. She wrote more than a dozen books on gardening, including a classic entitled ***Water Gardening***. Several garden cultivars bear her name.

The Observer, October 17, 1993

Contre le Paludisme

En juillet dernier, un chercheur américain, Steven Meshnick, de l'université du Michigan, trouvait la raison pour laquelle la décoction d'armoise chinoise (***Artemisia annua***) est efficace contre le paludisme. En 24 heures, elle tue les parasites sans effet secondaire. Le principe actif en est l'artémisine, qui se lie à la molécule de fer de l'hémoglobine. Ainsi liée au fer, elle déclenche une serie de réactions qui produisent des radicaux libres qui tuent le plasmodium en une fraction de seconde. Cette armoise est utilisée depuis quinze siècles en Chine et, apparement, le plasmodium n'a pas développé de résistance contre elle. L'absinthe (***Artemisia absinthinum***) contient aussi de l'artémisine.

Science et Vie, septembre 1993 (Merci à Hugues Massicotte)

"Oncle Bolet et tante Amanite"

C'était le titre de cet article qui indiquait que les champignons sont beaucoup plus proches de nous qu'ils sont des végétaux. L'analyse comparative des mutations de l'ARN ribosomal de 22 espèces indique que les champignons et nous descendons des protistes flagellés qui s'étaient séparés du règne végétal il y a un milliard d'années. Il faudra peut-être réviser la taxonomie et considerer les champignons comme des animaux fixé en un lieu?

Science et Vie, juin 1993 (Merci à Hugues Massicotte)

La naissance de l'agriculture

Les archéologues avaient pensé que l'agriculture, en particulier la culture d'espèces végétales, avait commencé il y a quelque 12,000 ans, en Mésopotamie. Cependent, deux chercheurs ont trouvés sur des outils de pierre aux îles Salomon des traces de

grains d'amidon et de cristaux caractéristique des orties. Ces traces sont celles de deux variétés de taro (***Colocasia esculenta***), et les chercheurs ont établi qu'il s'agit bien de plantes cultivées et non de variétés sauvages. Ce résultat, qu'on cultivait le taro domestique il y a 28,000 ans aux îles Salomon, pourrait boulverser l'histoire "classique" de la naissance de l'agriculture.

Science et Vie, avril 1993 (Merci à Hugues Massicotte)

A Knife, a Bucket . . . and a Gun!

These items are now standard equipment for a mushroom picker in the Pacific Northwest states of the U.S.A. . . . especially the gun. Violent crime has entered this lucrative, and now dangerous, industry. During the past year, two Cambodian immigrants have been killed, and there have been robberies at gunpoint and routine brandishing of weapons over the high-priced quarry. According to one picker, collecting mushrooms used to be fun, but now it's a "war zone".

Vancouver Province, September 17, 1993
(Thanks to Hugues Massicotte for this item)

Cause of Coral Bleaching Solved

Over the past decade there has been considerable wringing of hands by marine biologists concerned by the widespread "bleaching" of corals, which leads to their death. This bleaching involves the loss of the photosynthetic endosymbiotic dinoflagellates (zooxanthellae) on which the corals depend for much of their nutrition and healthy growth. It was thought that warming of the surrounding water related to global warming was the main cause of this bleaching, but a recent study indicates that the culprit is increased ultraviolet light. Researchers noted a correlation between severe bleaching and the presence of very clear water. Bleaching seldom occurred in water containing a lot of small particles that absorbed the incoming UV light. Experiments using UV-absorbing shading cloth, and other experiments which involved transplanting corals to various depths, confirmed that levels of UV light are involved in the bleaching process. There appears to be no solution to the problem until the thinning of the earth's ozone layer can be reversed.

New York Times, November 2, 1993

B.C. Elms Saved Again

The Pacific coast is one of the few remaining sanctuaries for American elms which are free of Dutch elm disease. A concerted effort is being made to ensure that these elms remain disease-free. A recent court case convicted two men who illegally imported bonsai elms from China, where the elm disease is known to be common. These bonsais were destroyed but it is not known how many other illegal elms might have been be brought into the region. Vancouver has many large elms planted along its streets, especially in Kitsilano and Point Grey in the western part of the city.

Toronto Star, October 2, 1993

"Flower Power"

The scent of a floral bouquet may boost your learning curve. Volunteers subjected to the smell showed an average improvement of 31% in completing standardized connect-the-line tests. Similar tests with scents from lavender, peppermint, pink grapefruit and baked goods (scents often associated with increased alertness) did not produce any significant improvement.

Globe & Mail, September 18, 1993

Smelly Winnipeg Water

Winnipeg obtains its drinking water from several large reservoirs stocked with water from Shoal Lake, southeast of the city. This summer one of the reservoirs had a massive bloom of the cyanobacterium [blue-green alga], ***Anabaena***, which imparted an unpleasant smell to the water coming from the city's taps. Treatment with the old standard algicide, copper sulphate, was able to solve the problem. Some people joked that the taste of their office's coffee was actually improved by the smelly water.

Globe & Mail, August 28, 1993

Kudzu Beats the Booze

This is another example where western science has provided proof of the efficacy of a Chinese herbal medicine. Many of you have seen the rampant growth of the kudzu vine in the southeastern states, where it is considered a serious menace as an introduced weedy plant. However, for more than 1300 years a traditional Chinese herbal medicine derived from kudzu vine roots has been used to treat alcoholics and get them to swear off the bottle. Now western scientists have confirmed that there are two active ingredients [daidzein and daidzin] which are effective in decreasing alcohol consumption in laboratory hamsters (these little guys are apparently real sots when it comes to booze). Tests on humans show that, after 2-4 weeks of treatment, kudzu root extracts are effective in suppressing the desire for alcohol. The cause of the suppression is still to be studied, but is thought to be the result of an action of the active compounds on enzymes involved in alcohol metabolism.

William Dicke, New York Times, November 2, 1993

A Garlic a Day . . .

Good old garlic continues to provide newpaper copy for the Plant Press. According to a research report in the Annals of Internal Medicine, a study involving 1800 people in Germany, Thailand and the U.S. suggests that eating one-half to one clove of garlic each day will cut blood cholesterol levels by about 9%. So now we will have to say, "A garlic a day keeps the doctor away".

Globe & Mail, October 16, 1993

MEETINGS - CONGRÈS

Lotus Symposium

Our thanks to Bill Grant for sending us information concerning **The First International *Lotus* Symposium**, which will be held at the Missouri Botanical Garden, St. Louis, Missouri, **March 22-24, 1994.** For information contact: **Ms. Alice Schawo, University of Missouri Extension Conference Office, Columbia, MO. Telephone: (314) 882-4038.**

Freshwater Ecosystems

An **International Open Symposium on Freshwater Ecosystems** will be held in Belgium, **April 6-7, 1994.** Information: **Dr. Oscar Vanderborght, Royal Belgian Academies of Sciences, Palais des Académies, 1 rue Ducale, B-1000 Bruxelles, Belgium.**

ASLO / PSA Meeting

A joint meeting of the **American Society of Limnology and Oceanography [ASLO] and the Phycological Society of America [PSA]** will be held in Miami, Florida, **June 12-16, 1994.** A number of special sessions on aquatic ecology and algal biology are planned, as well as several field trips, and workshops on statistical analysis of environmental data and HPLC (latest techniques). For information, contact: **ASLO/PSA 1994, c/o Jenny Bernal, 15221 S.W. 80 Street, #301, Miami, FL 33193. Telephone or FAX: (305) 382-0993.**

Electron Microscopy Congress

The **13th International Congress on Electron Microscopy** will be in Paris, France, **July 17-22, 1994.** Information from: **Secrétariat, ICEM-13, 67 rue Maurice Günsbourg, 94205 Ivry sur Seine Cedex, France.**

Recombinant Proteins in Plants

An international meeting with the title, **The Production of Recombinant Proteins in Plants,** will be held in Leicester, U.K., **July 24-27, 1994.** Information may be obtained from: **Dr. Olwyn Byron, Department of Biochemistry, University of Leicester, University Road, Leicester, U.K. LE1 7RH.**

Taxonomy of Cultivated Plants

Thanks to Freek Vrugtman for this information about **The Second International Symposium on the Taxonomy of Cultivated Plants,** to be held at the University of Washington (Seattle), **August 13-17, 1994.** Topics to be emphasized include the description, recognition, documentation and registration of cultivars, as well as a discussion of information retrieval systems for cultivars. Information may be obtained from: **Prof. H.B. Tukey, Jr., Center for Urban Horticulture, University of Washington, GF-15, Seattle, WA 98195.**

Diatom Symposium

The **13th International Diatom Symposium** will take place at Acquafredda di Maratea, Potenza, Italy, **September 1-7, 1994.** Information from: **Jean Glider, Congressi snc., 13th International Diatom Symposium, via G. Quagliariello 35/E, I-80131 Napoli, Italy.**

Acid Rain Conference

The **5th International Conference on Acidic Deposition** is now being planned and will be held in Göteborg, Sweden, **June 26-30, 1995.** The contact person for the conference is: **Peringe Grennfelt, Swedish Environmental Research Institute, P.O. Box 47086, S-40258 Göteborg, Sweden.**

ICSEB - V

Planning is also progressing for the next **[Fifth] International Congress of Systematic and Evolutionary Biology,** to be held in Budapest, Hungary, **August 18-24, 1995.** Anyone wanting to obtain early information about the Congress, or to ask to be placed on the list of persons who will receive the prospectus, should contact: **G. Vida, Növényrendszertani és Ökologia Tanszék, Eötvös Loràand Tudomàanyegyetem, Kun Béla tér 2, 1083 Budapest, Hungary.**

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