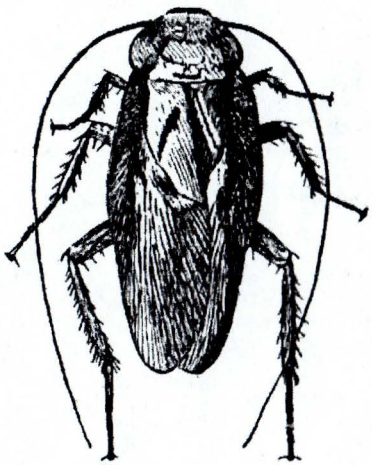
VOL 26 December - décembre, 1994 No. 4

BULLETIN



ENTOMOLOGICAL SOCIETY OF CANADA

LA SOCIÉTÉ D'ENTOMOLOGIE DU CANADA

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BULLETIN

VOL 26(4) - December/ décembre, 1994

Contributions and correspondence regarding the *Bulletin* should be sent to the *Bulletin* Editor. Inquiries about subscriptions and back issues should be sent to the E.S.C. at

Faites parvenir vos contributions au Bulletin ou votre correspondance à l'Editeur du *Bulletin*. Pour tout renseignement sur l'abonnement ou les numéros passés, prière de s'adresser à la S.E.C.:

SOCIETY BUSINESS / AFFAIRES DE LA SOCIÉTÉ

Correction

In the September issue (Vol **26** (3)) of the *Bulletin*, the author of the Book Review found on pages 123-127 was erroneously omitted. The author was Dr. Art Borkent, Research Associate of the Royal British Columbia Museum and American Museum of Natural History. I apologise for any inconvenience this may have caused.

Fiona F. Hunter
Bulletin Editor

Notice of Executive Council Meeting

The mid-term meeting of the Executive Council will be held at the Entomological Society of Canada Office in Ottawa in April 1995. Matters for consideration at this meeting should be sent to the Secretary at the following address:

Dr. Peggy L. Dixon
Agriculture and Agri-Food Canada
P.O. Box 37
Mount Pearl, Newfoundland A1N 2C1
Fax 709-772-6064; Tel. 709-772-4763
email address: dixon@nfrssj.agr.ca

Call for Nominations - Second Vice President & Director-at-Large

Nominations for Second Vice President and Director-at-Large must be signed by three members in good standing and received by **30 April 1995** by the Secretary, Dr. Peggy Dixon (at the address given above).

Nominations pour Deuxième Vice Président et Directeur doivent être signée par trois membres de la Société et envoyée avant le **30 avril 1995** au secrétaire, Dr. Peggy Dixon.

The deadline for submissions to be included in the next issue (Vol. **27(1)**) is **February 1, 1995**

La date limite pour recevoir vos contributions pour le prochain numéro (Vol. **27(1)**) est le **1 februar 1995**

Please send all correspondence concerning the *Bulletin* to:

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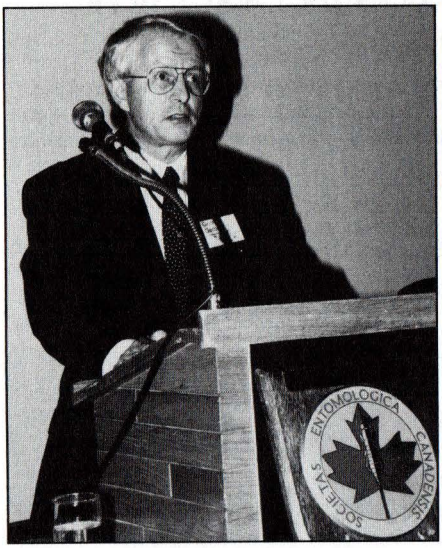
Please send all correspondence concerning Book Reviews for the *Bulletin* to:

Dr. Al Ewen
Book Review Editor
Box 509
Dalmeny, Saskatchewan
S0K 1E0

Tel. (306) 254-4380



President's Address

presented at the ESC Annual General Meeting,
Winnipeg, Manitoba
18 October 1994

At this point in the Annual General Meeting, the President normally reports on the activities of the Society during the past year and covers some of the problems that lie ahead for the Society. I will not cover all of the activities of the Committees and Trustees, as their reports will appear in the *Bulletin*. Instead, I will recognize the contributions of a few Members, present a few achievements, and then discuss a small number of potential problems for the Society.

Firstly, I will cover the contributions of Members and achievements.

Rick West has indicated that he wants to be replaced as Secretary of the Society at the end of 1994. Rick has been Secretary for 5 years. On behalf of all Members of the Society, I thank Rick for a job well done. The Secretary's job is one of the largest and toughest jobs in the Society, and Rick has handled it with great ease and efficiency during the past 5 years. I am pleased to announce that Peggy Dixon has agreed to serve as the next Secretary of the Society.

Al Ewen resigned as Scientific Editor, *The Canadian Entomologist*, at the end of March 1994. On behalf of all Members of the Society, I thank Al for the high quality of *The Canadian Entomologist* and the great service that he gave to the Society during the past 8.5 years. Peter Kevan replaced Al starting on January 1, 1994. I hope that all Members will give Peter their full cooperation as he works his way into the position of Scientific Editor, *The Canadian Entomologist*.

The English version of the book on *Diseases and Pests of Vegetable Crops in Canada* appeared in press in July 1994. The French version will be ready by the end of 1994. The book is very impressive and represents the cooperative effort of many people over 7 years. On behalf of all members of the Society, I thank 2 of the editors of the book, Allan Garland and Guy Boivin, for the many hours that they put into the book. To show our thanks and appreciation, the Society will be sending Allan and Guy free copies of the book. I urge all Members of the Society to purchase the book, as profits from this venture will help maintain membership dues at current levels and to finance future activities of the Society.

The list of "Common Names of Insects in Canada" is now available on computer diskette and can be obtained from the Society office. Elspeth Belton and Doug Eidt spent many years putting this list together and on behalf of all Members of the Society, I thank them for a job well done.

At the last Annual Meeting in Sault Ste. Marie, the Governing Board approved holding a joint meeting with the Entomological Society of America in the year 2000. The Entomological Society of America approved the holding of this joint meeting at their meeting in December. Four cities are being

considered as the location for the meeting: Toronto, Montreal, Detroit, and Chicago. The site for the meeting should be selected in 1995.

The Society's publications will take on a new appearance and will be published using more modern technology in 1995. The Governing Board has recognized that *The Canadian Entomologist*, the *Memoirs of the Entomological Society of Canada*, and the *Bulletin* required some redesign to improve their attractiveness and consistency. In 1995, the covers of these 3 publications will be similar in overall layout and appearance, but will be of different colours - pale yellow-green for *The Canadian Entomologist*, gray for the *Memoirs*, and pale blue for the *Bulletin*. The Governing Board also approved that manuscripts being submitted to *The Canadian Entomologist* be on electronic diskette. The Society has purchased a new computer system and this system should allow us to implement in-house copy editing of manuscripts. The adoption of this new technology is expected to save the Society about $15,000 per year in publication costs. The Publications Committee is looking into other ways to reduce further the publication costs of the Society. The savings in publication costs should go a long way to eliminating our deficit.

Now, I will review what I consider as the 2 most important problem areas for the Society in the next few years.

First, the finances of the Society will need the attention of all of us. From 1989 to 1993, the Society had deficits during 4 of the 5 years and the total accumulated deficit has been about $122,000. There will be another deficit during 1994, but the size of the deficit will not be known until the end of December 1994. If the revenue from the sales of the book *Diseases and Pests of Vegetable Crops in Canada* is low this year, the deficit in 1994 could be as high as the total accumulated deficit during the previous 5 years, that is $122,000. If this happens, our cash reserves will be reduced by about 70% of what they were in 1988. Furthermore, if the book doesn't sell quickly over the next few years, we could have additional deficits and the financial health of the Society could be in jeopardy. We need to sell about 4,500 copies of the book to recover the publication costs. Thus, I urge all of you again to buy a copy of the book to support the Society. The Finance Committee will be monitoring closely the finances of the Society in 1995 and will be making recommendations to the Governing Board as to what has to be done to protect the Society from financial ruin. This message isn't meant to be a gloom-and-doom message. However, I want to make it clear that it may be necessary in the future for all Members to work with the Executive Council, the Governing Board, and the Finance Committee to find new sources of revenues and to cut costs. It has to be recognized that with membership numbers being reduced by almost 50% from what they were in the 1970's, the Society cannot continue to do as many things as it has in the last 30 years.

At the end of 1994, the Society will terminate its membership in the Canadian Federation of Biological Societies. CFBS is an umbrella organization whose main purpose is to lobby governments and private organizations in order to advance and promote the biological and medical sciences in Canada. We withdrew from this organization, because we felt that it was doing very little for entomology. This may have been true. However, I am sure that if you ask Jeremy McNeil, Past President of CFBS, he will say that we got as much out of CFBS as we put into it. In other words, we didn't do a good job of letting this organization know how we wanted them to advance and promote entomology. Since the Society relied on the CFBS Science Policy Committee to lobby and speak on our behalf on science related issues during the last 4 years, we have done little to advance and promote entomology during this time. In my President's Message in the September *Bulletin*, I indicated that I was concerned about the apathy within

the Society at present when it comes to developing science policy and taking on science related activities and issues. In the 1970's and early 1980's, the Society was very interested in advancing and promoting entomology and had a very active Science Policy Committee. In many years, a large part of the Governing Board and Executive Council meetings was devoted to a discussion of the activities of the Science Policy Committee and to how the Society could advance and promote entomology in Canada. This hasn't been the case in the last few years. In the 1980's, when we were a member of the Biological Council of Canada, there were many Members of the Society who questioned our need to belong to this lobby group, because they felt that we were doing a relatively good job on our own in advancing and promoting entomology. With all the cutbacks in entomology programs, research budgets, and the number of entomology positions in universities, government agencies, and private industry, I think that there is an urgent need for the Society to take a leadership role to make ourselves known again and to communicate the goals and directions our science and profession will be taking into the next century and beyond. If we don't, I don't think that the future for our Society and profession looks very good. The Entomological Society of America is developing a strategic plan at present. Through this plan, they hope to get a clear picture of what that Society can do and should be doing into the year 2000 and beyond. Perhaps, this is what our Society should be doing in the near future.

Before closing, I would like to reflect for a few moments. This meeting marks the end of my 20 years of deep, active involvement in the Society. I have had the privilege to be a part of Governing Board Meetings for 13 of the 20 years. I was a Director for 7 years, Secretary for 3 years, and on the Executive Council for 3 years. In addition, I have served on numerous committees. Because of this involvement, I have witnessed first hand and have participated in many of the activities of the Society during the past 2 decades. Also, I have seen all of the recent ups and downs of the Society, and have met hundreds of great entomologists from all 10 provinces of Canada and a number of the states of the United States. I will cherish for the rest of my life the many happy moments and great experiences that this involvement has brought to me. In the fall of 1974, the Society asked me to become actively involved in its activities, because I was a relatively young professional entomologist and it needed the active participation of young entomologists to ensure its long-term health, vigor, and growth. Now, it is my turn to encourage all of the young entomologists in attendance at this meeting to pitch in and work for the Society and our profession. The rewards are many, the people that you meet are great, and most importantly, the Society needs you to promote and advance the science of entomology and to help it survive its present financial difficulties.

In closing, I thank the other members of the Executive Council, Trustees, Directors, Committee Members, Headquarters staff, and all Members of the Society for their support and many hours of work during my term as President. Finally, it has been a very rewarding year and I thank the Society for the honour and privilege of serving as its President.

G.H. Gerber
President, ESC

Message du Président

Présenté lors de la réunion annuelle, Winnipeg, Manitoba, 18 octobre 1994

Traditionnellement, à ce stade-ci de la réunion annuelle, le président fait état des activités réalisés par la Société au cours de l'année et aborde les problèmes auxquels la Société sera confrontée. Je ne résumerai pas les activités des comités et des administrateurs, puisque leurs rapports seront publiés dans

le *Bulletin*. Je vais plutôt souligner la contribution de quelques membres, présenter certaines réalisations, puis discuter quelques problèmes potentiels pour la Société.

D'abord, j'aborderai les contributions des membres et les réalisations.

Rick West a indiqué qu'il désirait être remplacé comme secrétaire de la Société à la fin de l'année 1994. Rick a été secrétaire durant 5 ans. Au nom des membres de la Société je remercie Rick pour la qualité de son travail. Le travail de secrétaire est l'une des tâches les plus exigeantes et difficiles au sein de la Société, et Rick l'a accomplie avec beaucoup d'aisance et d'efficacité lors des 5 dernières années. Je suis heureux d'annoncer que Peggy Dixon a accepté de servir comme prochaine secrétaire de la Société.

Al Ewen s'est retiré à la fin mars 1994 en tant qu'éditeur scientifique de *The Canadian Entomologist*. Au nom de tous les membres de la Société je remercie Al pour la très grande qualité de *The Canadian Entomologist* et pour les services exceptionnels qu'il a rendus à la Société au cours des 8.5 dernières années. Peter Kevan a succédé à Al le 1er janvier 1994. Je souhaite que tous les membres coopèrent pleinement avec Kevan au cours de son mandat comme éditeur scientifique.

La version anglaise du livre *Diseases and pests of vegetable crops in Canada* fut imprimée en juillet 1994. La version française sera disponible à la fin 1994. La qualité du livre est impressionnante et traduit les efforts conjoints de plusieurs personnes depuis 7 ans. Au nom de tous les membres de la Société je remercie Allan Garland et Guy Boivin pour les nombreuses heures investies dans ce livre, en tant qu'éditeurs. Afin d'exprimer nos remerciements et notre satisfaction, la Société fera parvenir à Allan et à Guy des copies gratuites du livre. J'incite tous les membres de la Société à acheter ce livre, les profits de ce projet permettront de maintenir les cotisations à leur niveau actuel et à financer de futures activités.

La liste "Common names of insects in Canada" est désormais disponible sur disquette auprès du secrétariat de la Société. Elspeth Belton et Doug Eidt ont mis plusieurs années à compléter cette liste et au nom de tous les membres de la Société je les remercie pour la qualité de leur travail.

Lors de la dernière réunion annuelle à Sault Ste Marie, le Bureau de direction a approuvé la tenue d'une réunion conjointe avec la Entomological Society of America en l'an 2000. Cette dernière a entériné ce projet en décembre dernier. Quatre villes sont en liste pour la tenue de la réunion: Montréal, Toronto, Détroit et Chicago. Le lieu sera choisi en 1995.

Les publications de la Société auront une nouvelle facture et seront publiées à l'aide d'une technologie plus moderne en 1995. Le Bureau de direction a établi que *The Canadian Entomologist*, les *Memoirs of the Entomological Society of Canada*, et le *Bulletin* nécessitaient une refonte afin d'améliorer leur attrait et leur cohérence. En 1995, la mise en page et l'apparence des pages couverture de ces trois publications seront semblables, mais de couleurs différentes: jaune-vert pâle pour *The Canadian Entomologist*, gris pour les *Memoirs* et bleu pâle pour le *Bulletin*. Le Bureau de direction a également approuvé la soumission sur disquette des manuscripts pour *The Canadian Entomologist*. La Société a acheté un nouveau système informatisé qui devrait améliorer l'édition maison des manuscripts. La mise en place de cette nouvelle technologie devrait permettre à la Société d'économiser annuellement près de $15,000 en frais de publication. Le Comité des publications poursuit sa recherche en vue de trouver de nouvelles façons de réduire encore plus les coûts de publication. Ces économies devraient contribuer à éliminer notre déficit.

Maintenant, je vais aborder ce que je considère comme étant les deux plus importants problèmes auxquels la Société aura à faire face dans un avenir rapproché.

D'abord, les finances de la Société attireront notre attention à tous. Entre 1989 et 1993, la Société a accusé des déficits pendant quatre des cinq années et le total cumulé s'élève à près de $122,000. L'année 1994 sera aussi déficitaire, mais l'ampleur du déficit ne sera connu qu'à la fin de décembre 1994. Si les revenus provenant de la vente du livre *Diseases and pests of vegetable crops in Canada* sont bas cette année, le déficit en 1994 pourrait s'avérer aussi élevé que le déficit total depuis les cinq dernières années, soit $122,000. Si cela se confirme, notre fonds de réserve sera réduit d'environ 70% par rapport à ce qu'il était en 1988. De plus, si le livre ne se vend pas rapidement au cours des prochaines années, nous pourrions accumuler de nouveaux déficits, lesquels mettraient en péril la santé financière de la Société. Le Comité des finances portera une attention particulière aux finances de la Société en 1995 et fera des recommandations au Bureau de direction sur les actions à prendre afin de préserver la Société d'une faillite. Ce message ne se veut pas alarmiste. Cependant, j'aimerais insister sur le fait qu'il sera probablement nécessaire à l'avenir que tous les membres collaborent avec le Conseil exécutif, le Bureau de direction et le Comité des finances pour trouver de nouvelles sources de revenus et diminuer les coûts. Nous devons reconnaître qu'avec des adhésions réduites de 50% par rapport à ce qu'elles étaient dans les années 1970 la Société ne peut entreprendre autant d'activités que lors des trente dernières années.

À la fin 1994, la Société mettra fin à son adhésion à la Fédération Canadienne des Sociétés de Biologie. La FCSB est un organisme parapluie dont le rôle est d'intervenir auprès des gouvernements et des organismes privés dans le but de promouvoir les sciences biologiques et médicales au Canada. Nous nous sommes retirés de cet organisme parce que nous jugions qu'il faisait peu pour l'entomologie. C'était peut-être vrai. Cependant, je demeure convaincu que si vous le demandez à Jeremy McNeil, Président sortant de la FCSB, il vous répondra que nous avons retiré autant de la FCSB que ce que nous y avons investi. En d'autres termes, nous n'avons pas informé suffisamment cette organisme sur la manière dont nous désirions qu'il fasse la promotion de l'entomologie. Puisqu'au cours des quatre dernières années la Société s'en ait remis au Comité des politiques scientifiques du FCSB pour nous représenter au sein des débats sur la science, nous avons peu fait durant cette période pour faire avancer et promouvoir l'entomologie. Lors de mon Message du président publié dans le *Bulletin* de septembre, j'ai fait part de mon inquiétude vis-à-vis l'apathie actuelle au sein de la Société lorsque vient le temps de développer une politique scientifique et de prendre en charge les activités et débats d'ordre scientifique. Au cours des années 1970 et début 1980, la Société fut très active dans l'avancement et la promotion de l'entomologie et avait un Comité des politiques scientifiques très dynamique. Durant plusieurs années une part appréciable des réunions du Bureau de direction et du Conseil exécutif était dévolue aux activités du Comité des politiques scientifiques et aux moyens de promouvoir l'entomologie au Canada. Ce qui ne fut pas le cas ces dernières années. Dans les années 1980, lorsque nous étions membre du Conseil Biologique du Canada, plusieurs membres de la Société questionnaient notre appartenance à ce groupe de pression puisqu'ils considéraient que nous faisions nous-mêmes un bon travail pour promouvoir l'entomologie. Considérant toutes les coupures au niveau des programmes d'entomologie, des budgets de recherche, et du nombre de postes en entomologie dans les universités, les agences gouvernementales et l'industrie, j'estime qu'il est urgent pour la Société d'assumer son leadership afin de redorer notre visibilité et de communiquer les objectifs et la voie que notre science et profession poursuivra au cours du prochain siècle et au-delà. Si nous nous abstenons, je ne crois pas que le futur de notre Société et de notre profession sera très prometteur. La Entomological Society of America élabore actuellement un plan stratégique. Elle espère ainsi avoir une idée précise de ce qu'elle

pourrait et devrait faire en l'an 2000 et plusa. Voilà, peut-être, ce que notre Société devrait envisager dans un avenir prochain.

Avant de terminer j'aimerais faire le point quelques instants. Cette réunion marque la fin de mes 20 années d'engagement intense et active dans la Société. J'ai eu le prévilège de participer à 13 des réunions du Bureau de direction durant ces 20 ans. Je fus directeur pendant sept ans, secrétaire pendant trois ans, et membre du Conseil exécutif pendant trois ans. De plus, j'ai oeuvré au sein de nombreux comités. De par cet engagement, j'ai été témoin et ai participé à plusieurs activités de la Société au cours des deux dernières décennies. Aussi, j'ai assisté à tous les hauts et les bas de la Société, et rencontré des centaines d'entomologistes de qualité des dix provinces du Canada et aux États-Unis. Je vais chérir jusqu'à la fin de mes jours les heureux moments et les expériences magnifiques que cet engagement m'a apporté. À l'automne 1974, alors que j'étais un jeune entomologiste professionnel et qu'elle requérait la participation énergique de jeunes entomologistes pour assurer sa croissance, son dynamisme et sa survie à long terme, la Société m'a demandé de m'impliquer activement dans ses activités. Maintenant, c'est à mon tour d'encourager tous les jeunes entomologistes présents à cette réunion d'embarquer et de s'impliquer pour la Société et notre profession. Les récompenses sont nombreuses, les gens que vous rencontrez sont merveilleux, et plus important encore, la Société a besoin de vous pour faire avancer et promouvoir la science de l'entomologie et pour l'aider à surmonter les difficultés financières actuelles.

En terminant, je remercie les autres membres du Conseil exécutif, administrateurs, directeurs, membres des comités, personnels du siège social, et tous les membres de la Société pour leur support et les nombreuses heures de travail durant mon terme de Président. Enfin, ce fut une année extrêmement gratifiante et je remercie la Société de l'honneur et du privilège que j'ai eu à la servir en tant que président.

George Gerber
Président SEC

Joint Meeting of the Entomological Society of British Columbia and the Entomological Society of Canada

15-18 October 1995 in Victoria, British Columbia
at the Victoria Conference Centre

For more information please contact:

Dr. Terry Shore (General Chair)
Canadian Forest Service, Pacific Forestry Centre, 506 West Burnside Rd., Victoria, B.C. V8Z 1M5. Tel. (604) 363-0600; Fax. (604) 363-0775; Email tshore@a1.pfc.forestry.ca

Dr. Bernard Roitberg (Chair, Program Committee)
Department of Biological Sciences, Simon Fraser University, Burnaby, B.C. V5A 1S6. Tel. (604) 291-3585; Fax. (604) 291-3496; email roitberg@sfu.ca

Dr. Lee Humble (Chair, Local Arrangements Committee)
Canadian Forest Service, Pacific Forestry Centre, 506 West Burnside Rd., Victoria, B.C. V8Z 1M5. Tel. (604) 363-0600; Fax. (604) 363-0775; email lhumble@a1.pfc.forestry.ca

TRUSTEES / FIDUCIAIRES FOR 1994-95

Secretary/Secrétaire R. J. West, St. John's, until December 31, 1994.
P.L. Dixon, St. John's, effective January 1, 1995.
Treasurer/Trésorier R.G. Foottit, Ottawa
Scientific Editor/Editeur Scientifique
The Canadian Entomologist
P. Kevan, Guelph
Memoirs V. Behan-Pelletier, Ottawa
Bulletin Editor F.F. Hunter, St.Catharines
Assistant Scientific Editors/Assist de l'éditeur
Vacant

COMMITTEES AND REPRESENTATIVES FOR 1994-95

A. Permanent Committees / Comités permanents

Nominations/Nominations
G.H. Gerber, Chair, Winnipeg
N.J. Holliday, Winnipeg
R.G. Foottit, Ottawa
Elections/Élections T.D. Galloway, Winnipeg
L.Safranyik, *ex officio*, Victoria
Fellowships/Compagnons
J.A. Shemanchuk, Chair,1995, Lethbridge
P. Harris, 1996, Lethbridge
G. Scudder, 1996, Vancouver
W.J. Turnock, 1997, Winnipeg
G.B. Wiggins, 1997, Toronto
L. Safranyik, *ex officio*, Winnipeg

B. Continuing Committees / Comités en cour

Achievement Awards/Prix d'excellence
S.A. Marshall, Chair, Guelph
L. Safranyik, *ex officio*, Victoria
G. Boivin, *ex officio*, St. Jean-sur-Richelieu
Annual Meeting/Réunion annuelle
1995, Victoria, T. Shore, Chair
1996, Maritimes, J. Sweeney
1997, Alberta, B.K. Mitchell
L. Safranyik, *ex officio*, Victoria
Bilingualism/Bilinguisme
J. Delisle, Chair, Quebec City
M. Cusson, Quebec City
J. Brodeur, Quebec City
L. Safranyik, *ex officio*, Victoria
Bylaws, Rules & Regulations/Règlements
W. Turnock, Chair, Winnipeg
P. Pachagounder, Winnipeg

L. Royer, St. Jean-sur- Richelieu
L. Safranyik, *ex officio*, Victoria

Endangered Species/Espèces menacées
S.A. Marshall, Chair, Guelph
R. S. Anderson, Ottawa
D. Lafontaine, Ottawa
L. Masner, Ottawa
G.G.E. Scudder, Vancouver
J. R. Vockeroth, Ottawa
S.G. Cannings, ESBC, Vancouver
A.T. Finnamore, ESA, Edmonton
M. Erlandson, ESS, Saskatoon
R. D. Galloway, ESM, Winnipeg
H. Chiasson, SEQ, St. Charles-sur-Richelieu
L. Hollett, AES, Corner Brook
L. Safranyik, *ex officio*, Victoria

Finance/Finance
G. Gibson, Chair, Ottawa
E. Becker, Ottawa
R.S. Anderson, Ottawa
D.C. Darling, Toronto
S.A. Marshall, Guelph
R.G. Foottit, *ex officio*, Ottawa
L. Safranyik, *ex officio*, Victoria

Heritage/Héritage
R. DeBoo, Chair, Victoria
P.W. Riegert, Regina
L. Safranyik, *ex officio*, Victoria

Insect Common Names/Noms Communs d'Insectes at d'Élevages
R. Roughley, Chair, ESM, Winnipeg
E. Belton, ESBC, Vancouver
Representative, ESA
C. Ellis, ESO, Guelph
K. Moore, ESS, Saskatoon
H. Chiasson, SEQ, St. Augustin
L. Crozier, AES, Bible Hill
L. Safranyik, *ex officio*, Victoria

Membership/Adhésion
H. Danks, Chair, Ottawa
T. Shore, ESBC, Victoria
Representative, ESA
Representative, ESS
Representative, ESM
Representative, ESO
Representative, SEQ
J. Sweeney, AES, Fredericton
L. Safranyik, *ex officio*, Victoria

Public Education/Éducation publique
P. Pachagounder, Chair, Winnipeg

L. Dosdall, Vegreville
R. Lamb, Winnipeg
T. Shore, ESBC, Victoria
B.K. Mitchell, ESA, Edmonton
J. Soroka, ESS, Saskatoon
P.G. Fields, ESM, Winnipeg
R.S. MacDonald, ESO, Guelph
D. Coderre, SEQ, Montreal
J. Sweeney, AES, Fredericton
L. Safranyik, *ex officio*, Victoria

Publications/Publications

A. Ewen, Chair, 1997, Dalmeny
P. Mason, 1995, Saskatoon
A. Keddie, 1995, Edmonton
J. Houseman, 1996, Ottawa
S. Fitzpatrick, 1996, Vancouver
C. Cloutier, 1997, Quebec City
P. Kevan, *ex officio*, Guelph
V. Behan-Pelletier, *ex officio*, Ottawa
F. Hunter, *ex officio*, St. Catharines
B. Patterson, *ex officio*, Ottawa
L. Safranyik, *ex officio*, Victoria

Scholarships/Bourses d'étude

J. Soroka, Chair, Saskatoon
R. Alfaro, ESBC, Victoria
Representative, ESA
J. Soroka, ESS
Representative, ESM
Representative, ESO
Representative, SEQ
Representative, AES
L. Safranyik, *ex officio*, Victoria

Keith Kevan Scholarship Subcommittee

J. Soroka, Chair, Saskatoon
R. Roughley, Winnipeg
G. Gibson, Ottawa
G.G.E. Scudder, Vancouver

Research-Travel Grants/Octrois pour la Recherche et les Déplacements

L. Hollett, Chair, Corner Brook
I. Otvos, Victoria
D. Coderre, Montreal
W. Bowers, St. John's
D. Langor, Edmonton
L. Safranyik, *ex officio*, Victoria

Science Policy/Politique scientifique

G. Boivin, Chair, St. Jean-sur-Richelieu

S.A. Marshall, Vice Chair, Guelph
P.L. Dixon, St. John's
P.P. Harper, Montreal
M. Goettel, Lethbridge
L. Safranyik, *ex officio* , Victoria

Student Affairs/Affaires étudiantes
E. Tomlin, Chair, Burnaby
B. Mitchell, Edmonton
T. Danyk, Burnaby
D. Mulyk, Vancouver
L. Fidgen, Fredericton
L. Safranyik, *ex officio*, Victoria

C. Ad-Hoc Committees/Comités Ad Hoc

Headquarters/Siege social
J. Cumming, Chair, Ottawa
G. Gibson, Ottawa
R. Foottit, Ottawa
J. O'Hara, Ottawa
L. Safranyik, *ex officio*, Victoria

Status of Pollinators in Canada
P. Kevan, Chair, Guelph
K. Mackenzie, Kentville
K.W. Richards, Lethbridge
L. Safranyik, *ex officio*, Victoria

Marketing/Comité du marketing
K. Floate, Chair, Lethbridge
J.D. Shorthouse, Sudbury
R. Westwood, Winnipeg
L. Safranyik, *ex officio*, Victoria

New Treasurer in 1996

The Executive Council is soliciting the names of persons willing to serve as Treasurer of the Entomological Society of Canada, **beginning January 1, 1996**. The Treasurer keeps custody of the Society's funds, prepares and submits an annual budget to the Governing Board, submits a financial statement to the Annual Meeting and the *Bulletin*, pays the costs of publishing the Society's journals and the costs associated with the conduct of other Society business. Persons interested in this position should send a statement of their qualifications by **June 1, 1995** to:

Dr. Les Safranyik
c/o Canadian Forest Service
506 West Burnside Road
Victoria, B.C. V8Z 1M5

Nouveau Trésorier pour 1996

Le Consiel Exécutif réclame les noms de personnes intéressées au poste de Trésorier de la Société d'entomologie du Canada, **débutant le 1er janvier 1996**. Le trésorier est celui qui assure la garde des fonds de la Société, prépare et soumet un budget annual au Bureau de Direction, présente un état financier à la réinion annuelle ainsi que dans le *Bulletin*, paye les frais de publication des revues de la société ainsi que ceux découlant des autres activité de la Société. Les personnes intéressées à ce poste peuvent faire parvenir un énoncé de leurs qualifications d'ici le **1er juin 1995** au:

Dr. Les Safranyik
c/o Canadian Forest Service
506 West Burnside Road
Victoria, B. C.
V8Z 1M5

New *Bulletin* Editor in 1996

The Executive Council is soliciting the names of persons willing to serve as *Bulletin* Editor of the Entomological Society of Canada, **beginning January 1, 1996**. The *Bulletin* Editor is responsible for the publication of this medium and the receiving, editing, and distribution of material consistent with the object of the Society. The position requires access (and employer's permission) to use photocopying, phone, fax, computer and mail services; proficiency in word processing; working knowledge of desktop publishing and printing; and experience in editing. A working knowledge of both official languages is a desirable attribute. The new *Bulletin* Editor would likely travel to St. Catharines in November 1995 to work on the December 1995 issue of the *Bulletin* with F. Hunter. Persons willing to submit their names for consideration for this position should send a statement of their qualifications by **June 1, 1995**, to Dr. Les Safranyik (for address, see above).

Nouvel éditeur pour le *Bulletin* en 1996

Le Conseil Exécutif sollicite des candidatures pour le poste d'éditeur du *Bulletin* de la Société d'Entomologie du Canada. Ce poste sera disponible **à partir du 1er janvier 1996**. Cette personne sera responsable de la publication du *Bulletin* ainsi que de la réception, de l'édition et de la distribution des textes et documents pertinents aux activités de la société. Les exigences pour ce poste sont l'accès (avec permission de l'employeur) aux services de photocopie, téléphone, télécopieur, ordinateur et poste; une bonne connaissance d'un logiciel de traitement de texte; de l'expérience dans l'édition de texte et la préparation de documents par édition électronique. Une connaissance des deux langues officielles est désirable. Le nouvel éditeur du *Bulletin* devra probablement se rendre à St-Catharines en novembre 1995 pour collaborer à la préparation du numéro de décembre 1995 du *Bulletin* en compagnie de l'éditrice actuelle, F. Hunter. Les personnes intéressées à soumettre leur candidature à ce poste doivent faire parvenir une lettre d'intention et un resumé de leurs qualifications avant le **1er juin 1995** à Dr. Les Safranyik.

Motion Sickness and Other Items (Message from a retiring Secretary)

"Free at last, Free at last, Free at last!" Although there were times during my tenure when such sentiments were envisaged, I have greatly enjoyed serving the Society as Secretary since 1990. Despite encounters with various machines with a bad attitude, encounters of a human variety were invariably pleasant and often stimulating, sometimes very stimulating. Like the time when John Laing was

inadvertently playing footsie with an AC adapter and managed to disconnect my borrowed laptop midway through a Saturday Board Meeting. Several hours later the computer suddenly went dead after having faithfully recorded minutes on extended battery power, then the room started to spin. Motion sickness was originally diagnosed (for the machine, me or both - take your pick) but eventually the reconnection was made and the right buttons were pushed to retrieve most of what was said. Fortunately the need to revisit the twelve previous agenda items was no longer required and plans to include the Secretary as part of the "wild game" menu the next evening were postponed.

So I survived. Peggy Dixon takes over as Secretary on January 1, 1995. As a native Newfoundlander she possesses special genes that will enable her to see clearly through the fog that develops in meeting rooms (usually later in the day when all oxygen is used up) and stand her in good stead when answering the social obligations expected of ESC trustees. She will serve the Society well.

I'd like to express my gratitude to George Gerber, John Laing and Joe Shemanchuk for advice on what the Secretary ought to do; everyone that got reports in on time; Sandy Devine for promptly handling a variety of administrative requests; local organizing committees for the provision of computers, printers and last-minute photocopying; and to the Executive Councils, Governing Boards, Trustees and Society Members for their support and friendship. The Canadian Forest Service (Newfoundland and Labrador Region) also deserves special thanks for allowing me to travel freely to meetings and for absorbing many of the costs of this office.

Doug Eidt once said that the Secretary is the glue that holds the Society together. I found it to be crazy glue, the kind that you can't get unstuck from. It's been a treat.

Rick West

Mal de mer et autres items (Message du secrétaire sortant)

"Enfin libre, enfin libre, enfin libre!" Bien qu'à quelques reprises, au cours de mon mandat, l'anticipation de tels sentiments m'ait habité, je dois avouer avoir beaucoup aimé servir la Société à titre de secrétaire depuis 1990. Malgré certaines rencontres avec des "machines" au mauvais tempérament, mes interactions humaines ont toujours été plaisantes et souvent stimulantes, parfois même très stimulantes. Tel fut le cas lorsque John Laing débrancha par inadvertance mon ordinateur portatif au beau milieu d'une réunion du Conseil tenu un samedi. Quelques heures plus tard, l'ordinateur s'interrompa soudainement, ses batteries étant épuisées. Tout cela arriva après que j'ai fidèlement dactylographié toute les notes pour le procès-verbal. La pièce se mit alors à tourner. Le mal de mer (ou son équivalent terrestre) fut le premier diagnostic (pour l'ordinateur, moi ou les deux- à vous de choisir), mais l'ordinateur fut éventuellement remis en marche, et, après avoir appuyé sur les touches appropriées, je pu récupérer la majeure partie de ce qui avait été dit et enregistré. Heureusement, il ne fut pas nécessaire de reprendre les douze items déjà discutés et l'idée de compter le Secrétaire parmi les gibiers figurant au menu du banquet du lendemain a été écartée.

J'ai donc survécu et Peggy Dixon prendra la relève comme secrétaire à partir du 1er janvier 1995. Étant native de Terre-Neuve, elle possède ces gènes spéciaux qui lui permettront de voir clairement à travers le brouillard qui se forme souvent dans les salles de réunion (habituellement tard dans la journée, après que tout l'oxygène a été utilisé) et la rendront très utile lorsqu'elle devra répondre aux obligations sociales attendues des administrateurs de la SEC. Elle servira bien la Société.

J'aimerais exprimer ma gratitutde à George Gerber, John Laing et Joe Shemanchuk pour leurs judicieux conseils sur ce que le secrétaire est sensé faire; à tous ceux qui ont remis leurs rapports à temps; à Sandy Devine pour s'être occupé promptement de plusierus tâches administratives; aux comités organisateurs locaux pour avoir fourni des ordinateurs, des imprimantes et des services de photocopie de dernière minute; et aux Conseil Exécutifs, au Bureau de Direction, les administrateurs et les membres de la Société pour leur appui et leur amitié. Le Service canadien des forêts (Région de Terre-Neuve et du Labrador) mérite aussi un merci tout spécial pour m'avoir permis de voyager pour assister aux réunions et pour avoir absorbé plusieurs des frais liés à mes fonctions de secrétaire.

Doug Eidt a déjà dit que le secrétaire est la colle qui maintient la Société unie. Cette colle, je me suis aperçu, c'est de la "Crazy Glue", celle dont on ne peut jamais se détacher. Ce fut un plaisir.

Rick West

Call for Nominations - Fellows

Nominations are invited for Fellows in the Entomological Society of Canada. Fellows may be active or special members or entomologists who have made outstanding contributions to the advancement of entomology.

Nominations must be signed by four active members of the Society and are then reviewed by the Fellowship Selection committee. Names are submitted to the Executive Council for approval. A brief biography of the candidate and a statement of her/his contribution to entomology should be included in the nomination. Nominations should be received by the Committee by **31 January 1995.** They should be sent in an envelope marked "Confidential" to:

J.A. Shemanchuk, Agriculture and Agri-Food Canada, Research Centre, P.O. Box 3000 Main, Lethbridge, Alberta. T1J 4B1.

Call for Nominations - Honorary Membership

Nominations are invited for two Honorary Memberships in the Entomological Society of Canada. Honorary Members may be active members or former active members of the Society who have made outstanding contributions to the advancement of entomology.

Nominations must be signed by at least five active members of the Society and are then reviewed by the Membership Committee, who will select two names to be placed on the ballot. Nominations should include a brief biography of the candidate and a statement of her/his contributions to the advancement of entomology.

Nominations should be received by the Chair of the Membership Committee by **January 31 1995.** They should be sent in an envelope marked "Confidential" to the following address:

Dr. H.V. Danks,
ESC Membership Committee,
Biological Survey of Canada (Terrestrial Arthropods),
P.O. Box 3443, Station D,
Ottawa, Ontario, K1P 6P4
(Fax. 613-954-6439)

Update From Student Affairs Committee

At the Board Meeting of the AGM in Winnipeg we brought up the issue of student representation on the Govorning Board. Currently the Chair of the Student Affairs Committee is invited to the two Board meeting at the annual meetings as an observer. This means that while the student rep has some input by asking questions, expressing student concerns, and making suggestions, they are not allowed to vote. Permanent status would involve being elected as a director at large and would mean a significant time commitment - at LEAST two years. Currently, a strategic review committee is being put together to review whether the current scale and services of the society are appropriate given shrinking membership. At this point I would like to ask the student members what their thoughts are on seeking permanent status for a student member on the board (ie. giving the students a vote on Society issues). Please forward your comments to me, Elizabeth Tomlin at the following address: Department of Biological Sciences, Simon Fraser University, Burnaby, B.C. V5A 1S6 e-mail tomlina@sfu.ca. I will forward all comments to the Governing Board and strategic review committee.

On a lighter note, the Student Affairs Committee is planning to run an event similar to the ESA's Linnaean Games at the ESC meeting next year in Victoria. For those of you who don't know, this is like entomological Jeopardy and is a lot of fun. We have not decided on a name for our 'games' yet, and if anyone has any ideas we would sure like to hear them! Also the summary of this year's workshop on employment opportunites in entomology is included in this issue of the *Bulletin* for those who could not attend. Please feel free to contact me if there are any other issues that you feel need to be addressed by the SAC or any ideas about our upcoming 'games'.

Elizabeth Tomlin
Chair, Student Affairs Committee

Final Report of the Bylaws, Rules and Regulations Committee - 1994

All changes to the standing rules and committee guidelines requested at the governing board and annual general meetings in Sault Ste. Marie have been carried out. Changes are referred to or described below.

1. Sections 2 & 3 (Duties of the Awards Committee) of the Committee Guidelines now reads

   2. Publishes a notice in the *Bulletin* issues for June and September, with the address of the incoming Chairman, if it is known, and a summary of the "Terms of the Awards and Nominations Procedures" (example: *Bulletin* **7**(2): 35, June 1975), calling for nominations for the Achievement Awards that must be received by Dec. 31.

   3. Upon appointment, the Chair writes the Secretaries of the Affiliates, to invite the Affiliates to submit nominations for each Award.

   Rule c.2 has been changed to

   The Awards Committee shall make no nominations of its own, and with the agreement of the nominator shall consider nominees for 3 consecutive years.

2. We have made the rule changes clarifying membership entitlements that are described on page 164 of the *Bulletin* (Vol. **25**, No. 4).
3. Changes to Committee Guidelines and Standing Rules for the Keith Kevan Award, outlined in our annual report for 1993, have been carried out.
4. We have made the english language version of the Bylaws, Standing Rules and Committee Guidelines gender-neutral.
5. Changes to Standing Rule XII, outlined on page 171 (Vol. **25**, No. 4) of the *Bulletin* have also been carried out.

D. Quiring, L. Royer & P. Palaniswamy

Call for Nominations
Achievement Awards Committee

Gold Medal for Outstanding Achievement in Canadian Entomology
and
The C. Gordon Hewitt Award

Members of the Society are invited to nominate individuals whom they regard as eligible for these awards (for the year **1995**). Nominations should be sent in an envelope marked "Confidential" to the following address:

Achievement Awards Committee
Entomological Society of Canada
393 Winston Avenue
Ottawa, Ontario
K2A 1Y8

and should comprise: (1) the name and address of the nominee(s); (2) a statement of relevant achievements; and (3) the name of the nominator and at least one seconder. To be considered by the Achievement Awards Committee, nominations must bear a postmark no later than **December 31 1994.**

The following conditions govern these awards:

1. Outstanding contributions should be judged on the basis of

(a) superior research accomplishment either as a single contribution or as a series of associated endeavours and which may be either in entomology or a related field where the results obtained are of great consequence;

or

(b) dedicated and fruitful service in the fields of Society affairs, research administration or education.

2. No more than one of each award shall be granted per year but, where circumstances warrant, more than one individual may be mentioned in a single award.

3. Recipients need not be members of the Society providing their contribution is judged to have a major impact on entomology in Canada.

4. The award may be granted on different occasions to the same recipient but for different contributions to entomology in Canada.

5. Nominees for the C. Gordon Hewitt Award must be less than 40 years of age throughout the calendar year in which the award is both announced and awarded.

Comité des décorations

Médaille d'Or pour Contributions Exceptionnelle à l'Entomologie Canadienne et Prix C. Gordon Hewitt

La Société invite les membres à lui faire parvenir les noms des personnes qu'ils considèrent éligibles à ces deux prix. Veuillez envoyer vos nominations (pour l'année **1995**) au:

Comité des décorations
La Société d'entomologie du Canada
393 Winston Avenue
Ottawa, Ontario
K2A 1Y8

dans une enveloppe portant la mention "Confidentiel". La nomination doit contenir: (1) le nom ainsi que l'adresse du (ou des) candidat(s) désigné(s); (2) un compte rendu des réalisations pertinentes; et (3) le nom du parrain et celui d'au moins une deuxième personne appuyant la mise en nomination. Pour être acceptées par le Comité les nominations devront porter un sceau postal d'au plus tard le **31 décembre 1994**.

Les conditions suivantes régissent le choix des récipiendaires de ces prix:

1. Les contributions exceptionelles devraient être jugées dans le contexte

(a) d'un accomplissement hors par en recherche, soit comme résultat d'une seule contribution ou d'une série d'efforts reliés, réalisés dans le secteur entomologique ou tout autre domaine connexe et ayant abouti à des résultats de grande valeur

ou

(b) de service dévoué et fructueux au profit de la Société, de l'administration de recherche, ou de l'éducation.

2. Chaque prix ne sera décerné qu'une seule fois annuellement, quoique, les circonstances le justifiant, plus d'une personne pourront collectivement devenir récipiendaires d'un prix.

3. Les récipiendaires ne doivent pas nécessairement être membres de la Société en autant que l'on juge que leur contribution a excercé un impact majeur sur l'entomologie au Canada.

4. Chaque prix peut être décerné à différentes occasions au même récipiendaire mais pour différentes contributions à l'entomologie au Canada.

5. Le candidat désigné pour le prix C. Gordon Hewitt doit être âge de moin de 40 ans pour toute la durée de l'année au cours de laquelle le prix est annoncé et décerné.

Treasurer's Report

The Auditor's Report for 1993 was published in the June edition of the *Bulletin*. Once again, the Society finished the year with a financial deficit, due in large part to the increased costs of publishing. It is likely that there will be an operating deficit for this year, but I am optimistic for the future, as the Executive is taking steps to bring expenditures in line with available resources. The joint book project with the Canadian Phytopathological Society (Diseases and Pests of Vegetable Crops in Canada) continues to cause financial uncertainties. Financing of the printing of the book has resulted in withdrawals of approximately one half of the Society's investment account. This will result in at least a temporary drain on the annual investment income from this account. Earlier in the year we purchased a new computer system, printer and E-mail capability. I hope that soon the office and editorial operations will become increasingly efficient with increased computer capability. The Scholarship and Endowment Funds continue to grow. The Headquarters operations have been relatively stable this year; rent dollars are coming in and thankfully, there have been few extraordinary expenses with respect to the building. I would like to express my sincere thanks to Sandy Devine and to Gary Gibson (Chair, Finance) for their hard work, advice and support.

Bob Foottit
Ottawa

Finance Committee Annual Report, 1994

After examining the proposed 1995 budget and meeting with the Treasurer, the Finance Committee recommended approval of the budget with the following observations and recommendations. The budget submitted by the Treasurer proposed an operating deficit for the fifth straight year. However, the proposed deficit of $8,595 is modest compared with those incurred since 1991 and the deficit results partly because of substantially reduced investment income. It is estimated that investment income for 1995 could by halved because approximately $110,000 of capital will be used to publish *Diseases and Insect Pests of Vegetable Crops*. Financial health of the Society is influenced directly by how quickly investment capital can be recouped through sales of DIPVC. The Finance Committee, therefore, endorsed the recommendation of the Marketing Committee that marketing activities be intensified during 1995 to sell the books now printed.

The 1995 budget projected a profit for both *The Canadian Entomologist* ($3,433) and *Memoirs* ($17,196) even though page charges do not cover production and distribution costs (e.g., charges are $45.00/page but minimal cost of production is $65.00/page for the *Memoirs*). Substantial reduction of publication costs is expected and must be obtained by the managing editor as a result of recent computerization of operations. However, to ensure continued profitability it is also essential that current journal subscriptions (estimated 1995 income $150,000) be maintained and, preferably, increased.

Recent efforts of the Publications Committee to redesign and harmonize the three publication formats should be commended and used as an opportunity for a new advertizing and marketing campaign to expand institutional and member awareness and support. Recent reduction of manuscript submissions for the *Memoirs* also necessitates marketing of this journal to authors in order to ensure continued levels of subscriptions. Coherent marketing requires that these initiatives be coordinated by the Marketing Committee, but a subgroup or subgroups separate from DIPVC marketing is advisable to promote maximum effort. The 1995 budget projected a Societal deficit of $41,224. The committee notes that

Societal costs (excluding CFBS and DIPVC resourcing) have not increased substantially in recent years, but the Membership Committee has documented a decline in membership for every year since the early 1980's. This decline has resulted in a substantial increase in the cost per member ratio of operating the Society.

Because of the projected deficit for 1995 and because of increased costs/member, the Finance Committee endorsed the recommendation of the Membership Committee that the Governing Board set up an ad hoc committee to review the scale of operations relative to recent membership levels. The Finance Committee also urged the Board to maintain strict financial control and not approve any new initiatives or changes without predetermining accurately costs and benefits.

Gary Gibson
Chair, Finance Committee
Ottawa

Report of the CFBS Representative, 1994

In February, 1994, the CFBS Representative participated in a letter writing campaign organized by CFBS in support of research and post secondary education in the life sciences. A letter was sent to the Minister of Finance. His response, received in August, gives a useful outline of the government's stand on science. The government appears to be interested in input by individuals and organizations into the shaping of federal investment in science and technology. Both letters will be published in the next issue of the *Bulletin*.

At the mid-term meeting of the CFBS Board in Ottawa, February 27th, attended by the CFBS Representative, the main topics were the future of the Federation, science support in the new Federal Budget, and science policy activities during the past year. With the withdrawal of five societies, CFBS was struggling with finances and the executive was working hard on restructuring to reduce expenditure and increase effectiveness in matters relating to the science policy interests of member societies. Of particular interest to ESC membership were plans underway to form a Canadian Society of Life Sciences which would allow individual membership. In general, CFBS has done a good job in lobbying the various government agencies in support of science and post secondary education, and in organizing various activities that increased public awareness of science and its contribution to society.

Les Safranyik
ESC Representative to CFBS

Report of the Science Committee, 1994

During the period of affiliation with CFBS, matters relating to science policy, science support, and support of post-secondary education were assumed to be tasks for CFBS. Now that the Society is discontinuing affiliation with CFBS, the Science Committee needs to become more active in pursuing the science interests and needs of entomology. With this in mind the Chair of the Science Policy Committee canvassed the Committee, and a number of other entomologists, over the past year for priority science issues the ESC Science Policy Committee might/should address during the next few years. The following is a summary of the number of ideas received:

-Proposed legislation a) regulating the collection, possession and movement of animal and plant material in Canada(Bill C-303 "the Wenman Bill"), and b) Bill C-42 (Wild Animal and Plant Protection Act). Dr. S. Marshall sent the Committee a draft of a letter he and Dr. R.S. Anderson prepared, addressed to the Minister of the Environment, expressing concerns regarding the severe impacts these Bills would have on the biological sciences.

-Proposed opening up of the border for honey bee imports from U.S.A.

-Insect rights.

-Insect biodiversity: current research needs and future directions

-A survey of support for entomology in government, educational institutions and in industry.

-Status of biological control (or insect management) in Canada

-A compendium of outstanding achievements in entomological research and development.

The Chair of the Science Policy Committee discussed these topics with the ESC Executive Council during its 23 April Meeting. The Executive strongly endorsed the involvement of the Science Policy Committee in the issues regarding Bills C-303 and C-42. The Science Committee Chair sent a letter to Dr. S. Marshall offering the Committee's support of his proposed letter to the Minister of the Environment. Based on discussions with Committee Members and others, the Chair recommends that, in addition to the issues relating to the two proposed Bills, the topics of biodiversity, status of biocontrol in Canada, and a compendium of outstanding achievements by Canadian entomologists are issues that should be addressed by the Science Policy Committee during the next few years.

Les Safranyik
Chair, Science Policy Committee

Report of the Organizing Committee for the 1995 Joint AGM of the ESC and ESBC

Organization of the 1995 joint meeting of the ESC and ESBC is well underway. The organizing committee is currently as follows:

General Chair: Terry Shore

Local Arrangements: Lee Humble and Terry Shore

Program: Bernie Roitberg, Rob Cannings, Hannah Nadel, Bob Vernon, Imre Otvos, Dan Miller, Ian Robertson, Robb Bennett, Ken Naumann

Alternate Program: Sheila Fitzpatrick, Barb Peterson

Audio Visuals: J.P. Michaud, Andrew Chow, Riella Zilahi

Banquet-receptions: Bev McEntire, Hannah Nadel

Finance Solicitation: Robb Bennett

Photographs: Dean Morewood, David Young

Printing: Peter Belton, Elspeth Belton

Publicity: Elizabeth Tomlin, Maya Evenden

Registration: John Harris, Therese Poland, Amanda Chau, Michelle Hall

Tours: Michelle Gorman

The meeting will be in Victoria from October 14-18, 1995. The main meetings will take place in the Victoria Conference Centre with accommodation being in two very nice hotels, The Chateau

Victoria and the Harbour Towers. The negotiated room rates are very good for Victoria at that time of year and will be in the neighbourhood of $75 per night for a single room. I would remind attendees that it is financially helpful to the organization if they would stay at the recommended hotels and when making reservations be sure to say that you are with the ESC/ESBC meeting. These are government rates and you won't do better than this for this kind of accommodation. The reception (wine and cheese) will in all likelihood be held in the B.C. Museum and the Banquet will be held at the Harbour Towers, as will a few weekend executive meetings and workshops. Bernie Roitberg is currently putting together the program with the help of his committee. The fundraising campaign has started, so if anyone wishes to contribute or to suggest a corporate donor, or better still persuade a corporate donor, please contact Robb Bennett (604 387-3931) or myself (604 363-0666).

Terry Shore
Chair, Organizing Committee

Report of the Scientific Editor 1994

Since I assumed the scientific editorship in January, operations have been running fairly smoothly. I acknowledge the highly organized state in which the files were handed to me by the previous scientific editor, Al Ewen. I wish to acknowledge his help in making the transition easy and smooth.

So far, I have processed over 110 manuscripts since last January. The team of Associate Editors has done legion work in trying, and mostly succeeding in quick turn-around of manuscripts, review, and so on. Nevertheless, there have been some hiccups.

Two manuscripts disappeared in the mail en route to one reviewer. They have been re-sent. One failed to reach the appropriate Associate Editor. Several manuscripts have fallen to the depredations of non-cooperative "reviewers" and had to be sent out to others. I note that it is some of the more difficult submissions that suffer this fate. I must take personal responsibility for long delays in the case on one manuscript, which I misplaced for several weeks. Apologies were conveyed to the author(s).

My policy on dating manuscripts is as follows: Date of Receipt (obvious). Date of Acceptance is given for papers which require no change or minor revisions at the time I return the material to the author(s). For submissions requiring major revisions, Date of Acceptance is given at the time that the comments of reviewers have all been answered. Sometimes, I return such revised manuscripts to the Associate Editors for their call as to whether or not re-review is needed. Needless to say, submissions falling into the final category take a long time to move through the system.

To date	
Acceptance with minor revision:	23
Major Revisions needed:	21
Rejected:	7

To date 23 manuscripts have been sent on for Technical Editing and typesetting.

Nearly all the Associate Editors are on E-mail and networking with them is facilitating the exchange of information, opinion, and news. This is working very well.

One Associate Editor has stepped down, Jeremy McNeil. This is indeed a loss, given his eclectic interests. The heavy burden of papers in agriculture and ecology requires that another Associate Editor be found. Suggestions would be welcome. I would like to ask that the President write a letter of thanks to Jeremy for his valuable services.

I have changed the format of the reviewers' forms. That was because the old forms had general review and confidential comments on the same sheets. The cutting and pasting needed to prepare material to return to the author(s) was somewhat time-consuming and messy. A set of sheets is attached, and some small changes, suggested by Associate Editors and Reviewers are now being incorporated. Once these are made, a stock of forms will be made for use in the future.

A rough calculation of the cost of handling a manuscript from the Scientific Editor's office is $10.00 - $15.00 per manuscript. I can not keep track of the actual costs because of the amount of time and bookkeeping that would entail. I suggest that the Scientific Editor's office receive $15.00 per manuscript received to cover all expenses related directly to handling of manuscripts. I also suggest that an additional amount of 15% be appropriated to cover the costs of general items, such as computer disks, computer upkeep, and the like.

Peter Kevan
Scientific Editor,
The Canadian Entomologist

Report of the Scientific Editor - *Memoirs*

From August 1993 to September 1994 only one manuscript has been submitted to the *Memoirs* for publication. This manuscript is in review at present. I expect that another manuscript will be submitted before the end of 1994. In 1994, as in 1993, there is no obvious reason for the decline in overall submissions to the *Memoirs*. Perhaps the decline reflects general cutbacks in entomological research and pressures for short rather than monograph length publications?

Only one *Memoir* will appear in 1993 (no. 169), the proceedings of the Peatland Symposium, from the ESC Annual Meeting held in Montreal in 1991.

My thanks to the anonymous reviewers who have given their time and expertise, and especially to Barbara Patterson and Sandy Devine for their continuing help, patience and cheerfulness.

Thank you for the privilege of serving the Society as Scientific Editor, *Memoirs*, and I am happy to continue in this role if that is your wish.

Valerie Behan-Pelletier
Scientific Editor, *Memoirs*

Bulletin Editor - Annual Report, 1994

The most significant development this year was the change of printers for the *ESC Bulletin* from Hignell Publishing (Winnipeg) to the Lowe-Martin Group (Ottawa). Lowe-Martin (formerly Runge Press) also prints *The Canadian Entomologist* and the *Memoirs* for us. So far, I have been very pleased with Lowe-Martin; they are very efficient. Turn-around time (i.e., from the date that I submit the camera-ready copy for printing to the date that the *Bulletin* appears on my desk via Canada Post) has been significantly reduced. Instead of the 5-6 week turn-around time that I was complaining about at Hignell (often due to problems with the mailing company they used, or to lost mailing labels at their plant), Lowe-Martin is able to deliver the final product to members in 3-4 weeks.

The March issue (Vol **26** No. 1) was 40 pages long with a 33 page green insert. (I thank Hugh Danks for sending this as camera-ready copy.) There was also a blue flyer included in the mailing about the *Diseases and Pest of Vegetable Crops in Canada* book. The June issue (Vol **26** No. 2) was 56 pages long. I included the Auditor's Report (pp. 67- 77) as it was sent to me. (Thus, the different type face.) The September issue (Vol **26** No. 3) was 40 pages long and included a glossy insert about "the book".

I would like to extend a special thanks to Sandy Devine of the ESC Office in Ottawa who finds my mistakes before the camera-ready copy goes to Lowe-Martin (phew!) and who checks the blueproofs for me when I'm away. Thanks also to those of you who have sent submissions on diskette, or via email. This makes my job easier.

Fiona F. Hunter
Bulletin Editor

Student Affairs Committee - Annual Report 1994

The Student Affairs Committee is holding a workshop at the 1994 Annual Meeting entitled "Employment Opportunities in Entomology - What You Should Know Before You Graduate". With the help of Rob Anderson and Paul Fields, we have arranged for six speakers representing North-South Consultants, Prairie Pest Management, The City of Winnipeg, PheroTech, Hoechst Canada and Agriculture and Agri-Food Canada.

A summary of last year's grant-writing workshop was published in the June 1994 *Bulletin*, and we plan to summarize this year's employment opportunities workshop for the *Bulletin* also. We have been given a time slot to run a workshop at the 1995 Annual Meeting in Victoria. The idea of running a student competition similar to the ESA's Linnaean Games has been suggested to us, and we think that this would be an informative and enjoyable competition. The program committee also likes this idea. We will begin planning this workshop ASAP.

We were pleased that the information leaflet prepared by Hugh Danks has been mailed to life sciences departments across Canada. This should satisfy our goal of raising student awareness of the ESC. Troy Danyk has been collecting job notices from various sources and submitting them to Fiona Hunter to publish in the Bulletin. We feel that this should be a permanent function of the Student Affairs Committee. It was suggested to me that there should be a permanent position on the Board for a student representative (the Chair of the Student Affairs Committee). We are not sure how permanent status would differ from the way things are now, and would like some more information on the subject. Some students have expressed concern about the rules of the Student Paper Competition. In particular, several students felt that their supervisor should be allowed as a co-author on their paper. After discussing this

with Paul Fields and other members of the Student Affairs Committee, we feel that there is no reason to change the rules.

Recommendations to the Board:

We would like more information on what permanent status on the board entails. i.e., what are the advantages and disadvantages, and what actions does the committee have to take to achieve this if we decide it is necessary.

Elizabeth Tomlin, Chair

Marketing and Fund-Raising Committee (Ad Hoc Committee) Mid-term Report, September 19, 1994

Activities of the Marketing Committee since the April 4, 1994 report were to monitor final production of DPVCC, prepare the final colour brochure for marketing the book and plan marketing strategy. I have been in weekly contact with Marilyn Dykstra who is our counterpart with the Canadian Phytopathological Society and we have met twice since my April 4 report. As everyone is aware, printing of the book was subject to delay after delay and the final advertising fliers could not be printed until the weights of the books (hard and soft cover editions) were obtained and corresponding costs of packaging and shipping could be confirmed. The English edition appeared in late July and copies were distributed to the editors and members of the marketing committees to aid them in their marketing activities. There were some early delays in shipping book orders as it was realized that padded envelopes would not sufficiently protect the books and alternative packaging had to be found. The French edition of the book is at the gallery stage and will be printed in late October.

Colour fliers were printed in mid-September and will be distributed to all on an extensive mailing list, members of both marketing committees and editors of the project through Marilyn Dykstra's office. The flier will also be included in the next issue of the *Bulletin* and Vol. **16**(1) of the *Canadian Phytopathological Society News*. The brochure inserted into the *Bulletin* this past summer was also printed on the last page of the September issue of the *Canadian Journal of Plant Pathology*. MOM was contracted to produce advertisements for the various magazines and journals on our marketing strategy list. They are able to make the same advertisement for journals of various page sizes. The advertisement has been placed in the October issue of *Greenhouse Canada*, which has a distribution of 4500. The advertisement will be placed in other journals throughout the autumn. The display board has been exhibited at various conferences throughout the summer and will appear at others this fall. It will appear at our October meeting in Winnipeg and will be manned by Richard Westwood. Arrangements have been made for 100 books to be available at the Winnipeg meeting and it is hoped that with an intensive sales pitch, all will be sold. The book was also included in the Publishers Book Display at the August meeting of the American Phytopathological Society.

Response to the book has been excellent and all who have examined it feel that it is a major contribution to the disciplines of entomology and phytopathology. As of September 16, 1994, 236 books had been sold (98 soft cover English, 90 hard cover English, 34 soft cover French and 14 hard cover French) and orders are arriving daily. We suggest that the slow sales are a result of uncertainty caused by lengthy delays in printing and that the situation will change shortly now that the book is available. Obviously our marketing activities must be intensified as we strive to sell all books now printed.

J.D. Shorthouse
Sudbury, Ontario

Report on the *DPVCC* Book

Editing and related matters were expected to end later this winter. Therefore, a final report is planned for next April when the ESC Executive meets in Ottawa.

The present report summarizes the status of the English and French editions.

English Edition: The English edition was available for display and sale at the CPS Annual Meeting in Edmonton in August. By mid-September, all back-orders had been filled and sales were strong for both the hard- and soft-cover versions.

French Edition: The French edition was at the galley-proof stage by mid-September, with good prospect of being completed this winter.

J.A. Garland
Chair, ESC Steering Committee

Membership Committee Report

Members of the Membership Committee (MC) are: P.J. Albert (SEQ), H.V. Danks, P.L. Dixon (AES), R.M. Gadowski (ESM), P.M. Kusters (ESS), Y. Prévost (ESO), and T.L. Shore (ESBC). During 1993–94, the MC dealt with the following items:

1. Two candidates for honorary membership, proposed by members, were approved by the MC and the required nomination notices were sent to the Secretary for use on the ballot.

2. An information leaflet on the Entomological Society of Canada that includes a membership application form and information about student encouragement was prepared in English and in French. Copies were distributed: 1) for use at regional society meetings, to recruit regional society members who do not belong to the national society; 2) to graduate students in entomology through appropriate university departments, to encourage students to join; and 3) to the ESC office, for general use.

3. The MC suggested that a list of members be published in 1994; subsequently the Committee provided comments on the Executive Council's decision to make a list available instead on diskette for a modest fee beginning in 1995.

4. The Chair undertook a long-term review of membership trends. The results of this review were published in the *Bulletin* (26(3): 101-113, September 1994). The results suggest some possible courses of action by the Society, and establishment of an ad hoc committee to review the scale of Society operations in light of reduced membership was recommended.

H.V. Danks
Chair, Membership Committee

Publications Committee Report

Members of the Publications Committee (PC) are H.V. Danks, S.M. Fitzpatrick, J.G. Houseman, A. Keddie, P.G. Mason, and S.M. Smith. V.M. Behan-Pelletier (Scientific Editor, *Memoirs*), G.H. Gerber (President), F. Hunter (Editor, *Bulletin*), P.G. Kevan (Scientific Editor, *Canadian Entomologist*), B. Patterson (Managing Editor) are *ex officio* members.

During 1993-94, the PC dealt with the following items:

1. An article explaining the change of scientific editor, *The Canadian Entomologist*, was prepared and published in the *Bulletin* (25 (4): 150–151, December 1993).

2. After discussions with the ESC's printer and others, detailed recommendations for acquisition of a computer system that would allow electronic copy-editing of manuscripts accepted after review were made to the Executive Council.

3. Revised instructions for authors were prepared in consultation with the Scientific Editor and Managing Editor, including a section on submission of final manuscripts on diskette.

4. Possible ways to save on mailing costs were identified and suggestions made to the ESC office.

5. The PC, with expert advice from Mr. P.M. Brunelle, developed ideas for redesigning the covers of the ESC journals. After comments from the Executive Council, the PC prepared final designs for approval by the Governing Board. A request for suitable cover illustrations was prepared for the *Bulletin* (26(3): 99, September 1994).

6. Nineteen books were received for review. Reviews were solicited, and submitted for publication in the *Bulletin*. Several book notices were prepared.

7. An advertisement for a list of common names, available on diskette, was prepared for the *Bulletin* (26(2): 95, June 1994).

8. The PC considered the increasing secondary use of the contents of the Society's journals by services offering photocopied or scanned articles, a trend that will reduce the market for copies of the journals. The PC recommended that these developments be monitored continuously by the Committee, and that a copyright notice appear on all ESC publications.

9. The PC responded to queries from ESC officers and other members, concerning symposium volumes, memoir publications policy, scientific notes, and other matters.

H.V. Danks
Chair, Publications Committee

Bilingualism Committee Report

The Biligualism Committee has received very little demand for translation during 1993-1994. We have been asked by the ESC office and the Nominations committee to translate the biographies of the candidates for second vice-president and director-at-large, as well as those of the different appointments/honours given by the Society. The Membership Committee also sent the most recent information leaflet, which describes the activities of the Society and includes a membership form, for translation. The Society spent $315.00 on translation of these different texts. Most recently, the Achievement Awards Committee sent the biographies of the 1994 recipients of the Gold Medal (Dr. T. Toyama) and C. Gordon Hewitt Award (Dr. D. Quiring) to be translated. I did this myself so obviously there were no charges for the Society.

At the request of Dr. L. Safranyik, I agreed to act as Chairperson of the bilingualism committee for 1994-1995. Drs. J. Brodeur (Laval University) and M. Cusson (Forestry Canada, Quebec Region)

have accepting to serve as the other two members. The bilingualism committe has not yet received any specific mandate for the coming year but if the quantity of material to be translated is of the same order of magnitude as 1993-1994 then it will not be necessary to increase our budget. Usually, the three Committee members will translate short texts themselves at no charge, assuming that a sufficient lead time is provided.

If we really are to be a truly bilingual Society then the Bilinguism Committee should translate the President's Message, and other such 'official' communications, that appear in the Bulletin. Such material will obviously have to be in the hands of the Committee early enough to meet Editor's deadlines. I would like also take this opportunity to invite members of the different committees to use our services. While a laudable effort was made in the ESC Bulletin to provide information of the Winnipeg in French, a more appropriate translation of several symposia titles could have been provided by the Committee.

Johanne Delisle
Chair of the Bilingualism Committee.

Comité du bilinguisme

Le Comité du bilinguisme a reçu très peu de demandes de traduction au cours de l'année 1993-1994. A la demande du comité des Nominations, nous avons traduit les biographies des candidats au poste de second-vice-président, de directeurs nationaux ainsi que des personnes ayant reçu des nominations ou des distinctions au sein de la Société. Egalement à la demande du comité des Membres, nous avons traduit le feuillet d'information décrivant les activités de la Société ainsi que le formulaire d'adhésion de la Société d'entomologie du Canada. Nous avons payé la somme de $315.00 pour traduire ces différents textes. Plus récemment, le comité des Prix d'Excellence m'a fait parvenir la biographie des récipiendaires 1994 de la Médaille d'Or (Dr. Tom Royama) et du Gordon C. Hewitt (Dr. D. Quiring). J'ai moi-même traduit ces deux textes et la Société n'a évidemment déboursé aucun frais pour ce travail.

A la demande du Dr. L. Safranyik j'ai accepté de présider à nouveau le comité du bilinguisme pour 1994-1995. Les Drs. J. Brodeur (Université Laval) et M. Cusson (Forêts Canada, Région Québec) ont également accepté de servir sur ce comité pour une autre année. Nous n'avons pas encore reçu de demandes spécifiques pour la prochaine année, cependant si celles-ci ne sont pas plus importantes que celles de 1993-1994, il ne sera pas alors nécessaire d'augmenter le budget du comité. Dans la mesure du possible, le comité se chargera de traduire les textes courts, sans exiger de frais, en autant que ceux-ci leur parviennent à temps.

Si nous nous définissons comme étant une Société vraiment bilingue, le comité du bilinguisme devrait alors traduire les "Messages du Président" ainsi que toute autres informations "officielles" publiés dans le *Bulletin*. Ces textes devraient nous être envoyés assez tôt pour que nous puissions les transmettre à temps à l'éditeur. Je voudrais également profiter de cette occasion pour inviter les membres des différents comités à faire appel à nos services. Bien que des efforts fort louables ont été faits dans le *Bulletin* pour informer les membres de la rencontre de Winnipeg en français, une traduction plus juste des titres des symposia aurait pu être fournie par le Comité.

Johanne Delisle
Présidente du comité du bilinguisme.

Rapport du Comité des décorations

La Médaille d'or 1994 de la Société d'entomologie du Canada a été décernée au Dr. Tomo Royama du Service canadien des forêts - Région des Maritimes (Frédéricton, Nouveau -Brunswick) en reconnaissance de sa contribution exceptionnelle à l'étude de la dynamique des populations d'insectes. Le récipiendaire du prix C. Gordon Hewitt est le Dr. Daniel T. Quiring de la Faculté de Forestrie de l'Université du Nouveau-Brunswick.

Le choix des candidats a été fait par le Comité des décorations et a été approuvé par le Conseil d'administration de la Société d'entomologie du Canada.

Guy Boivin
Président, Comité des décorations

Report of the Scholarship Committee

The letters announcing the Postgraduate Awards went out to universities across Canada, as well as the Internet entomological bulletin board Entomo-L. The Keith Kevan Scholarship was not offered this year, but will be offered in 1995.

There were 6 candidates this year. Ms Julie Anne McCarthy (University of Guelph) and Ms Duyen Nguyen (McGill University, MacDonald College) are this year's winners of the 1994 ESC Postgraduate Award.

I will be stepping down as chair as of March 1995. I would like to thank the committee members: Les Safranyik, Bev Mitchell, Larry Burgess, John Conroy, Gord Surgeoner, Daniel Coderre and Dan Quiring.

Paul Fields
Scholarship Chair

Report of the ESC 1994 Annual Meeting Committee

There were over 200 participants, over 100 submitted papers, 14 invited symposium papers in 3 symposium and 5 workshops. We have more student papers (38) than in previous years. This bodes well for the future of the ESC! Presently we project a surplus of about $2,000.

I have sent the minutes of 1994 ESC/ESM Meeting Committee to the organizers of the 1995 and the 1996 meetings. I have also asked the people organizing this year's meeting to write a few paragraphs on what worked and what did not work, and I will pass this on to the people responsible for the next two meetings.

Paul Fields
ESC Annual Meeting Chair

Annual Report of the Entomological Society of British Columbia

The Entomological Society of B.C. has met twice since the last Entomological Society of Canada annual general meeting due to having an earlier than normal meeting this year.

Last October 24th the annual general meeting was in Victoria and attended by over 60 members. We had a full day of scientific paper presentations followed by a business meeting. Dr. Sheila Fitzpatrick

became the new president succeeding Dr. Terry Shore, and Dr. Linda Gilkeson became the president-elect. Dr. Shiyou Li was elected as the new treasurer of the society. Awards for the best student papers went to Elizabeth Tomlin (Ph.D.) and, in a tie to Maya Evenden and Ian Wilson (Masters).

Our society publications, the Journal of the Entomological Society of British Columbia, and our newsletter Boreus, both came under new editorship this past year. Dr. Peter Belton has taken over as editor of the journal from Dr. Richard Ring. Dr. Elspeth Belton is the new editor of Boreus.

This year's annual meeting was held at the Agriculture Canada station in the Okanagan town of Summerland on September 22, 1994. A number of interesting papers were presented and student paper awards went to Ward Strong (Ph.D.) and Kornelia Lewis (Masters).

Dr. Linda Gilkeson took over as president and Dr. Robb Bennett became the new secretary. Dr. Gail Anderson was voted in as president-elect. Dr. Bryan Beirne was elected as an honorary life member of the society.

The society has been and will continue to be very busy preparing for next years joint meeting with the ESC in Victoria.

Terry L. Shore

Annual Report of the Entomological Society of Alberta

The 41st Annual Meeting of the Society was held at the Agriculture Canada Research Station in Lethbridge on October 14-16 1993, with 58 members in attendance. The keynote speaker was Dr. Roger Moon who spoke on "Overwintering phenology of insects with facultative diapause". Other speakers at the symposium on "Overwintering Strategies in Insects" were S. Armstrong, R.A. Butts, T.J. Lysyk and A.S. McClay. The after dinner speaker was Renee Barendregt who entertained and informed his audience in a talk entitled "Mountain Gorillas of Rwanda".

Highlights of public education in entomology in Alberta over the past two or three years include the outstanding success of the "Bug Room" at the Provincial Museum of Alberta and the Butterfly House at the Devonian Botanic Garden. The Butterfly House is a cooperative effort of the University of Alberta and the Provincial Museum.

The 42nd Annual meeting will be held jointly with Entomological Society of Saskatchewan, October 27-29, 1994. Dr. Gordon Pritchard, Calgary, will be the host.

Bev Mitchell
Edmonton

Annual Report of the Entomological Society of Saskatchewan

The E.S.C. Public Awareness Grant funds have been utilized in the purchase of Riker mounts and display boxes of various sizes and types. Society members were encouraged to go through their collections for specimens to loan the Society for presentation at talks and displays.

With the balance of funds left from the 1992 ESC joint meeting, the Society has changed the A.R. Brooks Prize to a Scholarship. The scholarship, with a monetary value of $500.00, is to be offered annually to an outstanding student registered in the field of entomology in a Saskatchewan college of graduate studies.

A joint meeting with the Alberta Entomological Society will be held in Canmore, Alberta, on October 27 and 28. The morning symposium on October 27 will focus on arthropod diversity, especially as affected by arthropogenic activities. Dr. Henk Wolda, Smithsonian Tropical Research Institute, Barro Colorado, Panama, will be the keynote speaker.

This summer the ESS again hosted a segment of the Summer Ecology Camp, sponsored by the University of Saskatchewan for public school students. There were 7 week-long camps, with ESS members giving an hour-long presentation on entomology at each camp.

Similarily, ESS members gave presentations on entomology to several public and high school classes in and around Saskatoon in 1994.

The Society is currently establishing a profile on ESS members via a survey entitled ENT-QUERY. The survey is designed to develop a resource data base of people with expertise in various entomological fields who may be called upon to help promote public awareness and understanding of insects.

Juliana Soroka
Regional Director, ESS

Annual Report of the Entomological Society of Manitoba

The Entomological Society of Manitoba held its Annual Meeting in Winnipeg on 4 and 5 November 1993. There were 62 registrants. The theme of the meeting, "Biodiversity and Climate Change", was addressed in a symposium with four speakers and in a presentation, "Taking Measure of Earth's Megadiversity", by Dr Terry Erwin of the Smithsonian Institution. Dr Erwin's talk was open to the public and more than 100 people attended. In addition, there was a presented paper session, a "meet the speakers" mixer, and the Society's Annual Banquet. During the year there were two luncheon meetings and a new members social. Current membership of the Society is 128 of whom 12 are new members this year. The Youth Encouragement and Public Education Committee has given 20 talks on insects to groups of boy scouts, elementary school children, children in daycare centres and senior citizens. Accompanying each talk was a display of living and preserved insects. In addition, displays on insects have been set up at five schools or day care centres and an insect collection was provided to a school science programme. During the year, a video was purchased from the Entomological Society of America to augment the verbal and slide presentations made to school and other groups. The Society is involved in a number of fund-raising initiatives this year. In addition to seeking sponsorship of our meetings from industry, we have raised money by the sale of drawers for housing insect collections, and by selling T-shirts and novelty pens containing insects. Many members of the Entomological Society of Manitoba are working on aspects of the Joint Annual Meetings with the ESC, to be held in Winnipeg, 15-19 October 1994. A separate report will be provided on this activity.

N. J. Holliday
Regional Director

Annual Report of the Entomological Society of Ontario

Volume **124** (1993) of the *Proceedings of the Entomological Society of Ontario* was produced early in 1994. The papers submitted included:

SHPELEY, D. AND G.E. BALL - Classification, reconstructed phylogeny and geographical history of the New World species of *Coptodera* Dejean. pp. 1-182.
LI, S.Y. AND R. HARMSEN - Effect of pyrethroid applications on the sex ratio of the twospotted spider mite, *T. urticae* Koch. pp. 183-188.
CADOGAN, B.L. - Field weights of jack pine budworm larvae surviving aerial applications of BT and two chemical insecticides. pp. 189-196.
SKIDMORE, R.E. - A catalogue of types of miscellaneous terrestrial orders in the Canadian National Collection of Insects, including amber fossils. pp. 197-207.
DUFAULT, C.P. AND T.H. COAKER - A comparison of four methods of evaluating for damage to carrots by larval *Psila rosae*. pp 209-211.

The 1994 E.S.O. Travel award has been given to Mr. Dennis van Engelsdorp of the Department of Environmental Biology at the University of Guelph.

Dr. Barry Lyons (Forestry Canada, P.O. Box 490, Sault Ste. Marie ON P6A 5M7) has accepted the position as Secretary of the E.S.O. His predecessor, Dr. Sandy Smith (University of Toronto), was acknowledged for her many years of excellent service to the Society.

Dr. Peter Kevan (University of Guelph) and Mr. Scott MacDonald (Cyanamid Canada Inc.) indicated they would be relinquishing their duties as Editor and Treasurer in 1994 and 1995, respectively, due to other commitments. Officers are being sought to replace these individuals and any inquiries could be directed to the President of the Society or to the respective Officers.

The 131st Annual General Meeting of the E.S.O. was held at Brock University in St. Catharines Ontario on September 23-25, 1994.

A publication entitled *Entomology in Ontario* was produced during 1993 which lists all of the institutions which employ entomologists and their principal areas of expertise. A limited number of copies remain and are available on request (contact S. MacDonald).

An interim Board meeting of the Executive of the Society was held in Guelph on 9 May 1994.

S. MacDonald

Rapport Annuel de la Société d'Entomologie du Québec

L'année 1993 en fut une de renouveau pour la SEQ. Concernée par le grand nombre de members ayant délaissé la Société depuis les 5 dernières années, et par l'évolution des dossiers entomologiques qui préoccupent la collectivité, le Conseil D'Administration de la SEQ a entrepris plusiers actions pour revitaliser la Société.

Ainsi, l'année 1993 marque la disparition de la *Revue d'Entomologie du Québec*, victime de la désaffection des membres de la SEQ, et des scientifiques en général, envers les revues régionales. Le volume 37, qui regroupe entre autres les comptes-rendus du symposium "L'entomologie et l'information

au service de la faunistique" tenu lors de la réunion annuelle 1992, sonne donc le glas de la *Revue d'entomologie du Québec* après 38 années d'existence.

Parallèllement, le Bulletin de la SEQ a subi une importante refonte dans le but de l'actualiser aux besoins des membres. Le Bulletin se nommera désormais *Antennae* et son rédacteur en chef est le Dr. Christian Hébert. Les principaux rôles d'*Antennae* sont de favoriser une meilleure communication entre les membres de la Société et de traiter de sujets d'actualité ou d'information scientifique sur les dossiers importants en entomologie.

La réunion annuelle 1993 de la SEQ a été tenue les 13-14 octobre dernier à St.-Georges de Beauce conjointement avec la Société de Protection des Plantes du Québec (SPPQ). Cette réunion a été organisée par plusieurs délégués des deux sociétés et marquait le 120e anniversaire de la SEQ ainsi que de 85e anniverssaire de la SPPQ. Le symposium avait pour thème "Société et environnement: les enjeux de la protection des ressources." Une cinquantaine de communications scientifiques ont été présentées. M. S. Cayouette a obtenu le prix Melville Duporte pour la meilleure présention étudiante. Les décorations Léon Provancher catégories professionnel et amateur 1993 ont été décernées au Dr. Dan Quiring et à M. Pierre Bélanger. Le Dr. Jean-Guy Pilon a été reçu membre honoraire.

La réunion annuelle 1994 se tiendra à l'Université du Québec à Trois-Rivières les 2 et 3 novembre et aura pour thème "Insectes parasites et parasites d'insectes." Le Dr. Jean-Pierre Bourassa est responsable de cette réunion.

Jacques Brodeur
Représentant de la SEQ à la SEC

Annual Report of the Acadian Entomological Society

The 54th Annual Meeting of the Acadian Entomological Society was held 17-19 July 1994 at the Roosevelt Campobello Park on beautiful Campobello Island, N.B. The theme for the symposium was "Entomology Outreach" and included some entertaining presentations by Dr. Paul Johnson, Department of Entomology, University of New Hampshire, Dr. Frank Drummond, Department of Applied Ecology and Environmental Sciences, University of Maine, and Dr. Jim Dill of the Maine Cooperative Extension Service. An additional 21 submitted papers were presented on topics from aquatic entomology, forestry and agriculture. This was the first year that we held a student paper competition. Eight students competed and the winner of the $100 prize was Marcia Siebenmann of the Department of Applied Ecology and Environmental Sciences, University of Maine, with the paper: "Long-term changes in the aquatic taxa of a Maine salmon river".

The 1996 Joint Annual Meeting of the Entomological Society of Canada and the Acadian Entomological Society will be held in Fredericton, N.B. The Lord Beaverbrook Hotel, situated on the banks of the St. John river in the centre of downtown Fredericton, is tentatively booked for October 5-9, 1996. General Chair for the meeting is Jon Sweeney, Scientific Chair is Graham Thurston, Treasurer is Don Ostaff, and corporate fund raiser is Jeff Stewart. We look forward to seeing you in Fredericton in 1996.

Jon Sweeney
AES Regional Director to the ESC

Volume 26 (4), December - décembre, 1994

MINUTES

Governing Board Meeting
Delta Winnipeg
Winnipeg, Manitoba
October 15, 1994

The meeting was called to order at 0900 hours on October 15, 1994 by President G.H. Gerber. Those present were G.H. Gerber, President; L. Safranyik, First Vice-President; G. Boivin, Second Vice-President; P.W. Riegert, Past President; S.A. Marshall, J. Turgeon, S. Smith, H.V. Danks, C. Gillott and H. Thistlewood, Directors-at-Large; T. Shore (ESBC), B.K. Mitchell (ESA), J. Soroka (ESS), N. Holliday (ESM), R.S. MacDonald (ESO), J. Brodeur (SEQ), and J. Sweeney (AES), Directors from Affiliated Societies; R.G. Foottit, Treasurer; P.E. Kevan, Scientific Editor-Canadian Entomologist; F.F. Hunter, Bulletin Editor; R.J. West, Secretary; E. Tomlin, Student Affairs Committee; and A.B. Ewen, incoming Director-at-Large.

1. Notice of Meeting

Notice of this meeting was mailed on August 13, 1994. Notices were published in the March and June, 1994 issues of the Bulletin (Vol. 26).

2. Absences

V. Behan-Pelletier (Editor, Memoirs).

3. Additions to and approval of the Agenda

The agenda was accepted following a motion by P.G. Kevan and seconded by N. Holliday.

Carried No action required

4. Minutes - Governing Board Meeting, Sept 25/93

Minutes of the September 25/93 meeting of the Governing Board were circulated to the Board on October 12, 1993 and published in the December 1993 Bulletin.

P. Riegert moved and G. Boivin seconded that the minutes be accepted.

Carried No action required

5. Minutes - 43rd Annual General Meeting, Sept 28/93

Minutes of the 43rd Annual General Meeting on September 28/93 were circulated to the Board on October 12, 1993 and published in the December 1993 Bulletin. The minutes will be presented for approval at the Annual General Meeting.

Action: R.J. West

6. Minutes - Governing Board Meeting, Sept 29/93

Minutes of the Governing Board Meeting on September 29/93 were circulated to the Board on October 12, 1993 and published in the December 1993 Bulletin.

P.W. Riegert moved and H.V. Danks seconded that the minutes be accepted.

Carried No action required

7. Minutes - Executive Council Meeting, April 23, 1994

The minutes were circulated to the Board on May 4, 1994.

8. Business arising from the previous minutes

The following items arising from previous minutes were identified and moved for discussion under New Business.

8.1 Design and Printing of the Canadian Entomologist (Item 9.2.18, Executive Council Meeting, April 23, 1994; Item 9.2.18.2, Governing Board Meeting, September 25, 1993). Move to Item 9.2.18.1.

8.2 Joint Meeting with the Entomological Society of America (Item 9.2.10.6, Governing Board Meeting, September 25, 1993). Move to Item 9.2.10.6.

8.3 Joint Meeting with the Canadian Phytopathological Society (Item 9.2.10.5, Executive Council Meeting, April 23, 1994). Move to Item 9.2.10.5.

8.4 Societal Working Group to Promote Systematics (Item 9.2.21.1, Executive Council Meeting, April 23, 1994; Item 9.2.21.1, Governing Board Meeting, September 25, 1993). Move to Item 9.2.21.1.

8.5 Honoraria to Trustees (Item 9.2.3, Executive Council Meeting, April 23, 1994; Item 5.2, Governing Board Meeting, September 29, 1993). Move to Item 9.2.3.

8.6 Promotion of Memoirs (Item 9.2.4.2, Executive Council Meeting, April 23, 1994). Move to Item 9.2.4.2.

8.7 Publicity Leaflet, Membership List, Membership Trends (Item 9.2.16, Executive Council Meeting, April 23, 1994). Move to Item 9.2.16.

8.8 Response to Bill-C42 (Item 9.2.21, Executive Council Meeting, April 23, 1994). Move to Item 9.2.21.1

9. New Business

9.1 Correspondence

R. West introduced items of correspondence which required no formal action.

9.1.1 Deaths

Notice was given of the deaths of Jean Adams, Marguerite Keenan, Reg Balch, Ray de Ruette, Karun Nair, Margaret McDowall, Stirling McLeod, Wally Romanow, Walter Hopewell, Woody Stewart, Lionel Daviault, Ted Moilliet and Ted Heming.

9.2 Reports from Officers, Trustees, Committees and Representatives

N. Holliday moved and C. Gillott seconded that all reports be received.

Carried No action required

Officers and Trustees

9.2.1 Executive Council

The Executive Council's report will be presented at the Annual Meeting. Messages from the President were published in the December 1993 and March, June and September 1994 issues of the Bulletin.

9.2.2 Treasurer

An operating deficit is expected for 1994, due mainly to increased publishing costs. The publication of the book (Diseases and Pests of Vegetable Crops in Canada) has drained one half of the Society's investment account resulting in loss of income. The purchase of computer equipment for the ESC office should improve editorial operations (see report from Managing Editor). The Scholarship and Endowment Funds continue to grow. Costs of maintaining the ESC office building are partially offset by rental income. The Treasurer expressed thanks to Sandy Devine (ESC Clerk) and Gary Gibson (Chair, Finance Committee) for their hard work in 1994.

Costs of the book to date are $110 000. $40 000 is expected in book sales this year. Book sales should give the Society a return on investment by the end of 1995. The ESC is handling invoice orders. The CPS is handling the charge card orders. G. Gerber requested that any problems encountered by the CPS regarding book sales be brought to his attention.

The NSERC publication grant was submitted this year in support of the journal to offset operation costs ($15 000). Future submissions to support symposium issues are suggested.

The Congress of Dipterology was a success and the $1 000 given by the Society to S. Marshall to aid this Congress was returned.

9.2.2.1 Auditor's Report

The Auditor's Report for 1993, as published in the June 1994 Bulletin, will be presented at the Annual General Meeting for approval. G. Gerber indicated that the 1994 deficit could be $100,000 and that members will have to be informed that this will be recovered from book sales.

Action: Treasurer

9.2.2.2 ESC Headquarters Committee

R.G. Foottit presented the Committee's Report. Roof repairs were made over entrances to the basement and back door. Outdoor security lights and a dehumidifier for the basement will be installed. The sump pump pits will be dug out this fall. The budget requested for 1995 is $1,000.

9.2.3 Finance Committee

R.G. Foottit presented the Committee's Report. An operating deficit of $8,595 is expected for 1995, but this is modest compared to recent years. The 1995 budget projects a profit for both the Canadian Entomologist ($3,433) and Memoirs ($17,196). A more even flow of publication of Memoirs is needed (eg., 4 per year) to maintain the current attractiveness of the series to journal subscribers. Marketing of Memoirs is needed.

Action: Marketing Commitee, Dr. V. Behan-Pelletier

A Societal deficit of $41,224 is projected for 1995. The Finance Committee was requested to review Societal finances with the Membership Committee. Items for review should include the present scale of operations, ie. size of Board, travel costs of Board Members. Regional Directors were asked to request support from their societies to cover some travel costs.

Action: Regional Directors, see also Item 9.2.16

9.2.4 Scientific Editors

9.2.4.1 Editor - Canadian Entomologist

P.G. Kevan presented an account of office expenses and the number of manuscripts received, accepted, rejected and withdrawn. The cost of handling each manuscript is about $10 to $15. In order to ensure that all costs are covered, the Scientific Editor's Office is requesting $15 per manuscript with an extra 15% to be allocated to cover costs of general office expenses (disks, computer upkeep, etc). P.G. Kevan will work with the Treasurer to determine the budget needed for 1995.

Action: P.G.Kevan, R.G. Foottit

Revisions of the format of the reviewer's forms were circulated. P.G. Kevan does not presently require the services of Assistant Editors. J.N. McNeil has resigned as Associate Editor and the President will write him a letter acknowledging his excellent service.

Action: L. Safranyik

The Publications Committee will search for a replacement.

Action: A.B. Ewen

P.G. Kevan thanked A.B. Ewen for making the transition of Editors very smooth.

P.G. Kevan was concerned with the delay in the installation of the new computer system and in the lack of an electronic mail connection at the office of the Managing Editor. A report from the Managing Editor was circulated. Dealing with a new printing company, switching to a new computer system and accidental injuries to the Managing Editor have led to some delays in production. Production is expected to improve in 1995. The Executive Council will meet with P.G. Kevan, R.G. Foottit and H. Danks to discuss the above concerns.

9.2.4.2 Editor - Memoirs

Only one manuscript was submitted for review for the period August 1993 to September 1994, another is expected before the end of 1994. Only one Memoir, the proceedings from a peatland symposium in 1992, will appear in 1994. As little work was required of the Editor of the Memoirs, V. Behan-Pelletier requested in a letter to the Secretary that her honorarium for 1994 be withheld. This offer was gratefully accepted by the Board. R.J. West will write a letter of thanks to V. Behan-Pelletier.

Action: R.J. West

9.2.5 Editor - Bulletin

F.F. Hunter summarized the type and number of submissions to the Bulletin in 1994. Lowe-Martin is providing excellent service and turn-around time is much improved. F.F. Hunter will resign in January 1996. An ad seeking a replacement will appear in an upcoming Bulletin. H.V. Danks cautioned that the insertion of extra pages in the form of (eg.) flyers and briefs can significantly increase mailing costs.

Standing Committees

9.2.6 Nominating Committee

The Nominating Committee's report was published in the March 1994 Bulletin and circulated to the Board in May. No additional nominations to those printed in the March Bulletin were received by the Secretary by the April 30th deadline.

9.2.7 Elections Committee

The Elections Committee Report was published in the September 1994 Bulletin. The following were elected to office: Steve Marshall, Second Vice-President; Al Ewen and Elspeth Belton, Directors-at-Large; Bill Turnock and Glenn Wiggins, Fellowship Selection Committee; George Ball and Joe Shemanchuk, Honorary Members. Three Honorary Members can be elected in 1995 and President Gerber encouraged the Board to make nominations.

N. Holliday moved and J. Soroka seconded that the 1994 ballots be destroyed.

Carried Action: T. Galloway

9.2.8 Fellowships Committee

The Committee's recommendation to recognize Dr. John Robert Byers as the Fellow for 1994 was ratified by the Board in April.

9.2.9 Achievement Awards Committee

The Board extended congratulations to Dr. Dan Quiring, the 1994 recipient of the C. Gordon Hewitt Award, and to Dr. Tomo Royama, the recipient of the 1994 Gold Medal Award.

9.2.10 Annual Meeting Committee

9.2.10.1 Annual Meeting 1994 - Winnipeg

P. Fields estimated a surplus of $2,000 based on an attendance of 200 persons. Strong support was received from corporations. Over 100 contributions to symposia, oral presentations and posters were received. Thirty-eight student papers are scheduled, more than in recent years. The Board thanked Paul and his colleagues for their efforts in organizing the meeting.

9.2.10.2 Annual Meeting 1995 - Victoria

The 1995 Annual Meeting will be held October 14-18 at the Victoria Conference Centre with accommodation provided by the Chateau Victoria and the Harbour Towers at government rates (lowest available). Plans are to have the wine and cheese reception at the B.C. Museum and the Banquet at the Harbour Towers. Terry Shore is the General Chair and Bernie Roitberg is the Program Chair. Fund-raising has begun. Two hundred persons are anticipated. Board meetings will be held at the Harbour Towers. The Western Forum on Pest Management will be held in association with the ESC meeting. Other associations are welcome. The Board requested that a tentative agenda be prepared for presentation at the Executive Council Meeting in April.

Action: T. Shore

9.2.10.3 Annual Meeting 1996 - Maritimes

The 1996 Annual Meeting is tentatively scheduled for October 5-9 at the Lord Beaverbrook Hotel in downtown Fredericton. Negotiations with the Sheraton Hotel are also underway. General Chair is Jon Sweeney, Program Chair is Graham Thurston, Treasurer is Don Ostaff and Fund-raiser is Jeff Stewart.

9.2.10.4 Annual Meeting 1997 - Alberta

On behalf of the Entomological Society of Alberta, B.K. Mitchell extended an invitation to the Society to hold the 1997 Annual Meeting in Edmonton during October 4-8. The venue will be at the Holiday Inn Crowne Plaza Hotel.

P.W. Riegert moved and H.V. Danks seconded that the invitation to hold the 1996 Annual Meeting jointly with the Entomological Society of Alberta be accepted.

Carried Action: B.K. Mitchell

9.2.10.5 Annual Meeting 1998

President Gerber wrote to the CPS indicating possible times and locations for a joint meeting. A difficulty in scheduling means that a joint meeting with the CPS will not occur in 1998.

9.2.10.6 Joint Meeting with the Entomological Society of America in 2000

A committee including an ESC representative will be struck to travel to prospective sites and make a decision on the location for the meeting.

Action: L. Safranyik

9.2.11 Bilingualism Committee

Translation costs in 1994 were $315 and are not expected to rise in 1995 unless the demand increases. Additional translation of Societal communications is recommended if the ESC is to improve the ESC's status as a 'bilingual society', ie., the President's Message and other "official" communications that appear in the Bulletin. All Committees are invited to use the services of the Bilingualism Committee when translations need to be done. Sufficient lead time to translate documents is requested. Short documents can usually be done without charge by Committee members.

N. Holliday moved and H.V. Danks seconded that the President's message be translated in future editions of the Bulletin.

Action: President, Bilingualism Committee

9.2.12 Bylaws, Rules and Regulations Committee

Changes were made to the Standing Rules approved at the last Annual Meeting and to Committee Guidelines at the September 25/93 Board Meeting. Bill Turnock will be the new Chair, replacing Dan Quiring.

G. Boivin moved and S. Smith seconded that a Standing Rule be made to advertise vacant Trustee positions in at least one issue of the Bulletin.

Carried Action: W. Turnock

9.2.13 Endangered Species Committee

The Committee was very active in 1994 making technical presentations to the Canadian Nature Federation - Endangered Plants and Invertebrates of Canada Program, consulting the Minister of Environment with respect to Bill C-42 (an act passed in 1992 dealing with wild animal and plant protection and regulation of interprovincial and international trade), making contacts to facilitate action by governmental and other organizations to protect truly endangered insects and habitats, initiation of a 'rare insects' database with the Biological Survey of Canada and with support of the Canadian Nature Federation, lobbying for the protection of endangered species and habitats by providing entomological data to established initiatives such as COSEWIC and the CNF EPIC program, maintaining a regional source of entomologists who can provide environmental organizations with advice appropriate to the protection of invertebrates and habitats and advise against well-meaning but inappropriate protection measures. Regional members have also contributed to work by amateur organizations such as the Association des entomologistes amateurs du Québec in following population trends of endangered species.

Two main concerns arose. Enforcement of Bill C-42 needs to be sensitive to the needs of professional entomologists and efforts are mainly directed to allow continued study without excessive restriction. The rare species database is stalled due to the objections of some entomologists who feel that environmentalists would misuse the database with the result that entomological activity and collections would be restricted.

S.A. Marshall circulated drafts of two resolutions dealing with the collection, possession and movement of insect specimens and on endangered species legislation. These resolutions will be brought forward to the general membership at the Annual General Meeting.

Action: S.A. Marshall

9.2.14 Heritage Committee

Summary listings of the time and place of annual meetings, and officers and executive members, of the Society and Affiliated Societies continue. Some of this information can be stored (on disk) at ESC Headquarters. Archival material from 1975-1984 and 1989-1993, and other miscellaneous papers have been gathered for acceptance by the Public Archives of Canada. An informal liaison was established with archivist for the Entomological Society of America. P.W. Riegert resigned as Chair of the Heritage Committee and was thanked by the Board for his 14 years of service. Bob DeBoo will take over as Chair. One of his actions will include the compilation of a list of outstanding achievements of Canadian Entomologists.

Action: B. DeBoo

9.2.15 Insect Common Names Committee

The list of common names was transferred to disk and is being sold by the ESC office at a cost of $15.00 each plus shipping and handling. P.G. Kevan suggested that some advertizing to promote the disk is needed. F.F. Hunter will put additional notices in the Bulletin.

Action: F.F. Hunter

9.2.16 Membership Committee

Highlights in 1994 were the election of two honorary members; production of bilingual ESC leaflets for distribution by Regional Societies and the ESC Office, which were also sent to Biology departments at Canadian Universities; and publication of a summary of long-term membership trends in the September 1994 Bulletin. Implications of reduced membership suggest that the Board and the Society should consider whether the current scale of its publications and services is appropriate, consider streamlining operations (eg., number of Committees, size of Board), aim to keep membership fees as low and as stable as possible, and endeavour to recruit more members by approaches to colleagues and students. The establishment of an ad hoc group to review the scale of Societal operations in light of reduced membership was suggested. Diskettes of Members' addresses will be made available to Members in 1995 for a nominal fee. This will be cheaper for the Society than printing the address list. The ESC Clerk will be advised that lists of Members will only be distributed to non-members on a case by case basis and with the approval of the Executive Council.

Action: H.V. Danks

H.V. Danks moved and L. Safranyik seconded that an ad hoc committee be appointed by the Executive Council to review Societal activities and plan long-term strategies for the Society.

Carried Action : Executive Council, Strategic Review Committee

9.2.17 Public Education Committee

Public Encouragement Grants were given to the AES ($200), ESM ($200), ESS ($600) and SEQ ($400). The Committee recommended that a video describing entomological science be purchased or produced for distribution to public libraries and schools through regional societies. The Board indicated that the Committee might obtain visual aids with the assistance of the Regional Societies. S. MacDonald suggested that reference material, eg. slides could be shared between Societies. Purchase of videos is at the discretion of the Committee provided that it is budgeted for.

Action: Public Education Committee

9.2.18 Publications Committee

Book reviews and book notices were published in the Bulletin.

9.2.18.1 Design and Printing of ESC Publications

Revised designs for ESC publications and a summary of the revision process were presented by H.V. Danks. Getting illustrations for covers will entail permission from the authors.

H.V. Danks moved and L. Safranyik seconded that the designs for the outside covers of ESC publications as revised by the Publications Committee be approved.

An amendment to the above motion, moved by S. Smith and G. Boivin, that the back covers of the Canadian Entomologist and the Memoirs be bilingual following the model of the design for the Bulletin.

Carried

The amended motion was approved.

Carried Action: Publications Committee

9.2.18.2 Secondary Use of Journal and other ESC Publications

Realistic royalty fees in return for permission to allow 'clearing houses' to distribute copies of ESC articles to their clients were recommended for consideration.

H.V. Danks moved and P.W. Riegert seconded that a copyright notice appear on all ESC publications and that the Publications Committee monitor the development of secondary uses of journal contents.

Carried Action: Publications Committee

As an illustration of where secondary uses of ESC material can lead, R. West summarized a conversation that he had with Robin Williams, the Head of Scientific Services for the Commonwealth Agricultural Bureaux International, in September. R. Williams expressed great interest in the ESC/CPS Book because it would be a valuable source for the CABI Electronic Pest Compendium. Perhaps linkages, eg., between the ESC-CPS-Agriculture Canada and CABI could develop an electronic compendium for Canada with some financial return to the Society.

9.2.19 Scholarships Committee

The 1994 Scholarship Award Winners are Ms. Julie Anne McCarthy (University of Guelph) and Ms. Duyen Ngyen (McGill University - MacDonald College). The Keith Kevan Scholarship was not offered in 1994 but will be in 1995.

9.2.20 Research-Travel Grants

Travel Grants for 1994 were awarded to Mr. Daniel Doucet (Université Laval) and Mr. Xuekui Sun (University of Guelph) [see the June 1994 Bulletin]. The Committee recommended that the Committee Guidelines be amended as follows:

Duty 5. Notifies the recipients...travel grants; **informs recipients that substantial changes in the research project are not permitted without prior authorization from the Research Travel Grants Committee.**

C. Gillott moved and G. Boivin seconded that Duty 5 of the Guidelines for the Research Travel Grants Committee be amended as phrased in the above recommendation.

Carried Action: W. Turnock

P. Dixon is resigning as Chair of the Research Travel Grants Committee. Lloyd Hollett has volunteered to be the Chair in 1994-1995.

Action: L. Safranyik

9.2.21 Science Policy Committee

The Committee understands its increased role to promote science interests and needs of entomology now that the Society is withdrawing from the CFBS. Issues raised for the Committee to address over the next few years are:

a) Legislation affecting the collection, possession, and movement of plant and animal insect material; and protection of endangered insects. These items were addressed by the Endangered Species Committee.

b) Honey bee imports

c) Insect "rights" and biodiversity

d) Survey of support for entomology in government agencies, educational institutions and industry

e) Status of biological control (insect management) in Canada

f) Compendium of outstanding achievements in entomological research development.

The Committee felt that its role should be to take the findings and recommendations of ad hoc committees to the Board and the Society, then to the political level for action. L. Safranyik suggested that work proceed first with items a) and f). P.G. Kevan suggested that the same information coming from different societies and interest groups has enhanced political clout.

9.2.21.1 Systematics Enhancement Committee

An intersocietal working group was formed but communication difficulties have led to an ineffectual lobby. S.A. Marshall (Chair) recommended that the Systematics Enhancement Committee be disbanded and that the Science Policy Committee address systematics issues as they arise.

9.2.21.2 Status of Pollinators in Canada Committee

A final draft is in preparation. The final draft on the Status of Pollinators in Canada will be submitted to the President and with approval of the Executive Council be published as a green paper in the Bulletin or as a forum paper in the Canadian Entomologist.

9.2.22 Student Affairs Committee

The Committee organized an Employment Opportunities Workshop for the Winnipeg meeting and a student competition, similar to the Ent. Soc. America's Linnaean Games, is planned for the Victoria meeting in 1995. Last year's workshop on grant writing was summarized in the June Bulletin and the Committee intends to summarize the proceedings of this year's workshop for the Bulletin as well. Student awareness of the ESC will be facilited by the flyer produced by the Membership Committee. The Committee through Troy Danyk has been collecting job notices for publication in the Bulletin and feels that this function should be a permanent duty.

The question of permanent status for a student member on the Governing Board was reviewed. Currently the Student Representative is allowed to participate by asking questions, expressing Student concerns and making suggestions. The Student Representative also receives a copy of committee reports at the same time as Board Members and similar support to attend Board Meetings. The Board recommended that the Student Affairs Committee canvas the student members through the Bulletin on their opinion regarding permanent representation on the Board and that the "Strategic Review" Committee also provide a policy on this matter.

Action: Student Affairs Committee, Strategic Review Committee

Ad hoc Committees

9.2.23 Marketing Committee

All energies of the Marketing Committee were focused on marketing the DPVCC Book. Coloured flyers were circulated in September and ads will appear in "Greenhouse Canada" and other journals. The display board has been exhibited at various conferences. The English version of the book was printed in July and was on the book display at the annual meeting of the American Phytopathological Society. Sales as of October 15 were 450. J.D. Shorthouse will resign as Chair at the end of 1994. L. Safranyik will appoint a new Chair .

Action: L. Safranyik

9.2.24 Diseases and Pests of Vegetable Crops in Canada

Sales of the English copy are proceeding. The French version is expected to be completed by the end of December.

Action: J. Garland

Canadian Federation of Biological Societies

9.2.25 Report from the CFBS

The ESC ceased to be a member of CFBS in August. The CFBS is planning to form a Canadian Society of Biological Sciences and it will allow for individual membership. An announcement will appear in the Bulletin. As part of a letter-writing campaign in February, L. Safranyik wrote a letter to the Minister of Finance in support of research and post-secondary education in the life sciences. The response (made in August) was copied and circulated to Board Members. It solicited continued input from individuals and organizations into shaping future federal investment in science and technology within fiscal limitations. The Board felt that if the government was willing to listen, then written submissions on important issues facing Canadian Entomologists should be key activities of the Science Policy Committee and Members of the Society.

Action: Science Policy Committee

9.2.26 Affiliated Societies

9.2.26.1 Entomological Society of B.C.
9.2.26.2 Entomological Society of Alberta
9.2.26.3 Entomological Society of Saskatchewan
9.2.26.4 Entomological Society of Manitoba
9.2.26.5 Entomological Society of Ontario
9.2.26.6 Société d'Entomologie du Québec
9.2.26.7 Acadian Entomological Society

Reports from the Directors of all the Affiliated Societies were received and will be published in the December Bulletin. Presentations were made by:

T. Shore (ESBC), B.K. Mitchell (ESA), J. Soroka (ESS), N. Holliday (ESM), S. MacDonald (ESO), J. Brodeur (SEQ) and J. Sweeney (AES).

All of the Affiliated Societies held successful annual meetings and actively promoted entomology among professional and amateur entomologists, students and the general public. No items were brought forward for action by the Board.

9.3 Other Business

9.3.1 New Secretary

An advertisement for the position of new Secretary was placed in the June Bulletin. One application was received and the applicant , Dr. Peggy Dixon, was considered qualified. Her appointment as Secretary of the Society, effective January 1, 1995, will be declared following approval by the New Board at its meeting on October 19.

9.3.2 New Bulletin Editor

See item 9.2.5. An announcement advertising the vacancy (Jan. 1, 1996) will appear in the Bulletin.

9.3.3 Treasurer

R.G. Foottit will resign at the end of 1995. One candidate has indicated interest. An announcement advertising the vacancy will appear in the Bulletin.

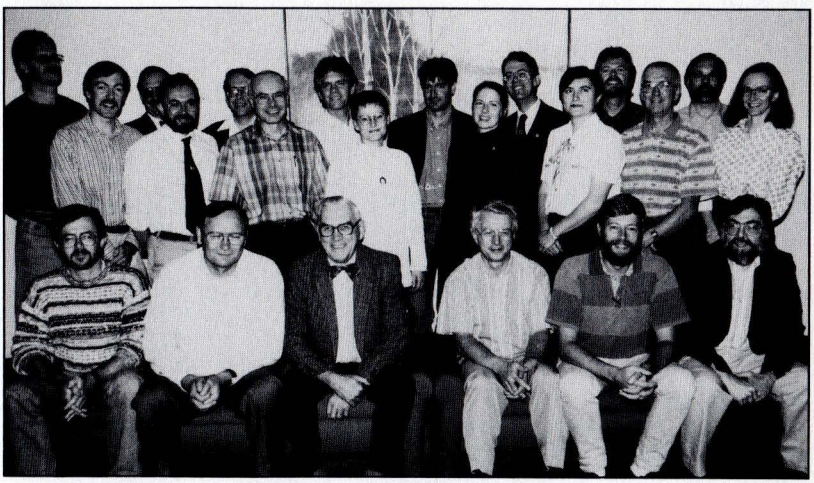
Action: L. Safranyik

10. Next Meeting

The next meeting of the Governing Board will be held at 1200 h at the Delta Winnipeg Hotel, Winnipeg, Manitoba on October 19, 1994.

11. Adjournment

President Gerber adjourned the meeting at 1712 hours.



Members of the Governing Board, October 15 1994 Meeting, Winnipeg, Manitoba

Governing Board Meeting
Delta Winnipeg
Winnipeg, Manitoba
October 19, 1994

The meeting was called to order at 1215 hours on October 19, 1994 by President L. Safranyik. Those present were L. Safranyik, President; G. Boivin, First Vice-President; S.A. Marshall, Second Vice-President; G.H. Gerber, Past-President; H.V. Danks, C. Gillott, H. Thistlewood, A.B. Ewen and E. Belton, Directors-at-Large; T. Shore (ESBC), N. Holliday (ESM), and J. Sweeney (AES), Directors from Affiliated Societies; R.G. Foottit, Treasurer; P.E. Kevan, Scientific Editor-Canadian Entomologist; F.F. Hunter, Bulletin Editor; R.J. West, Secretary; and E. Tomlin, Student Affairs Committee.

1. Notice of Meeting

Notice of this meeting was mailed on August 13, 1994 and at the Board Meeting of October 15, 1994. Notices were published in the March and June, 1994 issues of the Bulletin (Vol. 26).

2. Absences and Proxies

S. Smith, B.K. Mitchell, J. Soroka, S. MacDonald, J. Brodeur, P.G. Kevan, V. Behan-Pelletier.

3. Additions to and approval of the Agenda

The agenda was accepted following a motion by G. Boivin and seconded by C. Gillott.

Carried No action required

4. Minutes of Previous Governing Board Meeting

The Minutes of the Governing Board Meeting held on October 15, 1994 were circulated by the Secretary for review.

No action required

5. Business Arising from Previous Governing Board Meeting

5.1 Report of the Common Names Committee

E. Belton presented the Common Names Committee Report. Additional publicity for the disk of Insect Common Names will appear in the Bulletin in the form of an ad and in the Committee Report. There are two lists of names, one, a list that will be updated from year to year and second, an archival database. The Board recommended to the Committee that it submit any recommendations requiring action.

New Business

6.1 Appointments

6.1.1. Executive Council

G.H. Gerber moved and H.V. Danks seconded that the Executive Council for 1994-95 be: L. Safranyik, President; G. Boivin, First Vice-President; S.A. Marshall, Second Vice-President; G.H. Gerber, Past-President.

Carried No action required

6.1.2. Trustees

G. Boivin moved and T. Shore seconded that the Trustees for 1994-95 be: R.G. Foottit, Treasurer; P.G. Kevan, Scientific Editor (Canadian Entomologist); V. Behan-Pelletier, Scientific Editor (Memoirs); F. Hunter, Bulletin Editor; R.J. West, Secretary (until December 31, 1994) and P. Dixon (effective January 1, 1995).

Carried No action required

6.1.3. Committees and Representatives

T. Shore moved and G.H. Gerber seconded that the Governing Board approve the list of Committees and Representatives as prepared by the President and further that the Governing Board accept the President's appointees to remaining positions to be filled. A list of Committee members for 1994-1995 was circulated. The President asked the Regional Directors to ensure that their region was represented on the Membership Commitee. The Board urged that representatives appointed to committees concerned with grants or awards be representative of the wide range of entomological disciplines. The President will write to all Committee Chairs and Representatives confirming their appointment for 1994-1995.

Carried Action: L. Safranyik

The Secretary will send terms of reference to all new Committee Chairs.

Action: R.J. West

6.2 Budget

A.B. Ewen moved and G. Boivin seconded that the budget for 1995 as presented by the Treasurer be approved.

Carried Action: Treasurer

7. Other Business

8. Next Meeting

The next meeting of the Governing Board will be held on October 14, 1995 beginning at 0900 hours at the Harbour Towers in Victoria, B.C. If necessary the meeting will continue on October 15.

9. Adjournment

The meeting was adjourned by President L. Safranyik at 1315 hours following a motion by C. Gillott seconded by H.V. Danks..

Members of the Governing Board, October 19 1994 Meeting, Winnipeg, Manitoba

Volume 26 (4), December - décembre, 1994

44th Annual General Meeting
Delta Winnipeg Hotel
Winnipeg, Manitoba

October 18, 1994

President G.H. Gerber called the Meeting to order at 1650 hours. Sixty-one members were present.

1. Notice of Meeting

Notices of the meeting were published in the March and June 1994 issues of the Bulletin (Vol. 26).

2. Proxies

There were no proxies.

3. Additions to the Agenda and Approval of the Agenda

J.N. McNeil moved and N. Holliday seconded that the agenda be accepted.

Carried No action required

4. Deceased Members of the Entomological Community

A moment of silence was observed in memory of the following members of the Entomological Community who passed away since the last annual meeting: Jean Adams, Marguerite Keenan, Reg Balch, Ray de Ruette, Karun Nair, Stirling McLeod, Wally Romanow, Walter Hopewell, Woody Stewart, Lionel Daviault, Ted Heming and Ted Moilliet. R.J. West thanked Ed Becker for writing letters of condolence to the families of the deceased.

5. Minutes of the 43nd Annual General Meeting

Minutes of the 43rd Annual General Meeting were printed in the December 1993 issue of the Bulletin (Vol. 25).

W. Seabrook moved and T. Shore seconded that the minutes be accepted.

Carried No action required

6. Business Arising from the Minutes

There was no business arising from the previous minutes.

7. Report from Governing Board

President Gerber presented a report on behalf of the Governing Board. The report from the Governing Board and regular updates are published in the Bulletin.

P.W. Riegert moved and J.N. McNeil seconded that the President's Report be accepted.

Carried No action required

7.1 Changes to Standing Rules

R.J. West read out the following New Rule to advise Members of the Society of an upcoming vacancy created by the departure of a Trustee and to invite applications by Members interested in filling the vacant position.

Rule VI. 1 (c). When the office of a Trustee is vacant, an advertisement for a replacement shall be published in the Bulletin.

A.B. Ewen moved and N. Holliday seconded that Rule VI. 1 (c) be approved.

Carried Action: W. Turnock

8. Auditor's Report

R.G. Foottit presented the Auditor's Report for 1993 as published in the June 1994 issue of the Bulletin.

R. Storch moved and E. Becker seconded that the Auditor's report be accepted.

Carried No action required

9. Elections Committee Report

R.J. West read the Elections Committee report. Those elected were: Steve Marshall, Second Vice-President; Al Ewen and Elspeth Belton, Directors-at-Large; Bill Turnock and Glenn Wiggins, Fellowship Selection Committee; George Ball and Joe Shemanchuk, Honorary Members.

10. Installation of Officers

President Gerber turned the gavel over to L. Safranyik as incoming President of the Entomological Society of Canada. The new President accepted the gavel and thanked the Members for the honour of being elected President. The President called on G.H. Gerber to escort S.A. Marshall, Second Vice-President to the dias. President Safranyik then welcomed S.A. Marshall to the Executive Council. President Safranyik thanked outgoing Directors, S.A. Marshall and J. Turgeon, and the outgoing Past-President, P.W. Riegert, for their service to the Society.

11. Presentation of Service Awards

President Safranyik thanked G.H. Gerber, outgoing President for his service to the Society and presented him with a service award. Service awards were also presented to A.B. Ewen (Scientific Editor, Canadian Entomologist, 1983-1994) and to R.J. West (Secretary, 1990-1994). R.J. West expressed his thanks to past and present Board Members, Committee Chairs, Trustees, and the ESC Office staff for their help and cooperation. He also thanked the Canadian Forest Service, Newfoundland and Labrador Region, for photocopying, fax and computer services, and covering all mailing costs.

12. Appointment of Auditor

R.G. Foottit moved and E. Becker seconded that McCay, Duff, and Company be retained as Auditors for 1994.

Carried Action: Treasurer

13. Resolutions

At the request of President L. Safranyik, H.V. Danks and S.A. Marshall presented the following resolutions on behalf of the Entomological Society of Canada:

13.1 Thanks to Organizing Committee

"Whereas the Annual Meeting of the Entomological Society of Canada and the Entomological Society of Manitoba has been held at the Delta Winnipeg Hotel in Winnipeg, Manitoba, October 15-19, 1994; and

Whereas there has been a full and interesting meeting of lectures, symposia, and papers; and

Whereas the program has been planned with care and concern for those attending; and

Whereas there has been ample opportunity provided for social interaction, and visits to Winnipeg and vicinity;

Be it resolved that the Entomological Society of Canada express its sincere thanks to the Organizing Committee for their hard work and skill in arranging a most worthwhile and entertaining program; and

Be it further resolved that the Society thank the Organizing Committee and meeting contributors for their generous assistance; and

Be it further resolved that the Society express its thanks to the Management and Staff of the Delta Winnipeg Hotel for their courteous assistance during the Meeting."

H.V. Danks moved and P.W. Riegert seconded that the above resolutions be accepted.

Carried Action: Secretary

13.2 Legislation regulating the collection, possession and movement of insect collections

Whereas Canadian insect collections represent a unique database on past and present insect distributions, and the development of these insect collections remains a major route to understanding Canada's biodiversity, and

Whereas the majority of Canada's biodiversity is insect diversity, and that needed advances in our knowledge of this diversity demands collection of specimens and the exchange of specimens among specialists, and

Whereas the United States has implemented legislation which seriously impedes the science of entomology by blocking the movement of insect specimens across the border by mail, and impeding the importation or exportation of insect specimens by other means, and

Whereas Canada is currently finalizing legislation which emulates the American Lacey Act, which has caused difficulty for the entomological community, and

Whereas additional legislation is pending which will further restrict the collection, possession, and transport of insect specimens through the imposition of unnecessary regulations,

Be it resolved that the Entomological Society of Canada opposes any legislation which impedes the study of insect diversity through restrictions and permit requirements which do not serve a useful purpose. Such objectionable legislation includes general restrictions on the possession or non-commercial movement of dead insect specimens, but does not include the regulation of collecting or other activity in specific endangered habitats.

S.A. Marshall moved and G. Ball seconded that the above resolution be accepted.

Carried Action: S.A. Marshall, Members

13.3 Resolution on Endangered Species Legislation

Following discussion, S.A. Marshall moved and J.N. McNeil seconded that the following resolution be accepted:

Whereas the problem of extirpation or extinction of animal or plant species is one of the most serious issues facing humanity, and

Whereas the great majority of living things, and thus the majority of species threatened with extinction, are insects, and

Whereas there is great and justifiable public concern with the protection of such endangered species, and

Whereas governments at various levels are addressing the public concern about endangered species with laws purporting to protect endangered species, and

Whereas laws drafted primarily to address public concern with threats to large and well-known organisms are inappropriate if applied to the bulk of the Arthropoda, and

Whereas bulk insect sampling and general insect collecting are activities fundamental to biodiversity assessment, and it is impossible to predict in advance which species will be collected, and

Whereas legislation purporting to protect arthropod species by prohibiting the collection of individual specimens for scientific purposes serves no useful purpose, prevents growth of knowledge on biodiversity, and fails to address the continued diminishment of appropriate habitats which is the root cause of extirpation and extinction.

Be it resolved that the Entomological Society of Canada encourages the recognition and study of rare or endangered insects, and the characterisation and protection of their habitats. We urge further documentation of Canada's biodiversity which protects the habitats needed to support their biodiversity, and

Be it further resolved that the Entomological Society of Canada oppose additional restrictions on non-commercial insect collecting.

Carried Action: S.A. Marshall, Members

14. New Business

There was no new business.

15. Notice of 45th Annual General Meeting

The 45th Annual General Meeting will be held at the Victoria Conference Centre in Victoria, B.C. on October 17, 1995. Further notices for the meeting will be made in the March and June issues of the Bulletin (Vol. 27).

Action: Secretary

16. Adjournment

President L. Safranyik adjourned the 44rd Annual General Meeting at 1810 hours following a motion by A.B. Ewen seconded by J.N. McNeil.

end minutes

ARTICLES

Heritage Lecture

Manitoba Six-Legged Pests and Two-Legged Pioneers

Presented at the Joint Annual Meeting of the Entomological Society of Canada and the Entomological Society of Manitoba, Winnipeg, Manitoba October 15-19, 1994

by S.R. Loschiavo

PIONEERS

Our tour of entomology in Manitoba contains some wit, some wisdom, some history and some human interest. It begins with the remarkable Criddle family. Percy and Alice Criddle and their four children, Norman, Evelyn, Stuart and Beatrice emigrated from England in 1875 and settled in Aweme near Treesbank, Manitoba. They later had four more children Maida, Julia, Talbot and Alma. Although the parents were well-educated and intelligent, they had no experience or aptitude for farming, especially in the prairies in the 1870's. They suffered many hardships - cold, heat, drought, insects, scurvy and semi-starvation. One year they could afford only flour swept up from the floor of a mill. Sometimes while ploughing, the boys would catch and roast gophers because they had nothing else.

In better times they enjoyed many outdoor activities, cricket, soccer, hockey and golf all played with home-made equipment. Once, while playing golf, Stuart hit a ball into the pig pen where an old sow picked up the ball. The ball had to be played where it landed. Stuart climbed over the fence into ankle-deep muck and chased the sow around the pen whacking it with his club to persuade it to drop the ball. Meanwhile, the other players sat on the fence enjoying the spectacle and calling a stroke every time Stuart whacked the sow.

One of the first but non-scientific references to Entomology in the Criddle diary was Percy's criterion for feminine beauty. He admired small feet. Ladies with what he considered to be large feet he referred to as "beetle squashers". Percy was an early environmentalist. Those who were careless and allowed fires to destroy trees, he would describe as "fools, beggars, infernal idiots and damned asses". Norman had similar concerns about tree-burning, over-cutting, and poaching. He did not appreciate insect collectors who visited at Aweme, and who were not careful about leaving the collecting area undisturbed. About 1897 he said of log-cutters all over the country, "They cut everything that comes in their way, like savages, destroying what they cannot take away". What would they say about environmental issues if they were living today?

The Criddle children were educated at home by their mother who had a profound influence on their lives. Alice taught all eight to observe closely and pay attention to details. She loved nature-flowers, birds and insects. Norman helped her rear caterpillars, and thereby learned their names, food plants, and adult stages of moths and butterflies that emerged. He learned the names of plants and how to recognize their seeds.

This early training proved invaluable to Norman in his later years of research in entomology, botany, ornithology and meteorology. In 1898 Norman sent water colours of wildflowers to Ottawa where Dr. Fletcher, the weed and bug man noticed them. The paintings were so accurate and detailed that Fletcher could name each species. He was so impressed that, in 1900 he sought out Norman and thus began a life long association and friendship.

On one of the Fletcher's visits, the Criddle children thought to play a trick on him. With straight faces they asked him to identify an insect they had put together with body parts from different species. Dr. Fletcher studied if for a while and then solemnly declared with an equally straight face, "It's a humbug".

In the early 1900's Norman joined the federal Department of Agriculture to work on the life histories, control and identifications of grasshoppers. He and a half brother Harry Vane developed the Criddle mixture of Paris green, salt and horse manure mixed with water and spread around the edge of the field. This mixture was so effective that it became the department's official method of control for grasshoppers. Norman and Fletcher published "Farm Weeds" featuring Norman's water colours. Norman became seed collector and field entomologist. A small laboratory was built for him on the farm in 1915. He maintained records of bird migration and weather started by his father and sister Maida and made collections of Lepidoptera. He wrote articles for the Canadian Field Naturalist, Canadian Entomologist, The Auk and The Nor' West Farmer. He wrote 69 articles in entomology, 31 in ornithology, 7 in botany, and 11 in mammalogy and general wild life. He also became a surrogate father to four orphaned crows.

Norman Criddle had a very human side. One day while he and a friend were assessing a wheat crop, a man came by and informed them that the insects flying overhead were wheat stem sawflies. Norman thanked him and after the man left, Norman's friend asked why he hadn't corrected him. Norman replied, "We know that, but the man was sincere and wanted to help. Why should we spoil his desire to do a good deed"? At monthly staff meetings at his laboratory, Norman had a rule that junior members speak first to give them confidence and encourage them to make suggestions before remarks by more experienced seniors might have made them hesitant to speak.

Norman was also modest. In his diary at age 22 his first reference to his already recognized paintings was simply, "I did some painting". He wrote that the paintings were to be exhibited at the Brandon fair, but didn't add later that they had won first prize. His creed was to love justice, freedom, honour, kindness, charity, tolerance, truth and hope. He once said "I don't know who my grandfather was. I am more concerned with who his grandson will be". He hoped that his life was worthwhile and that he would leave this world better than he found it. Norman Criddle died in 1933 having done just that.

Another early entomologist was John Brathwaite Wallis, one of the best taxonomists and amateur entomologists in Manitoba. He came from England in 1893. He taught school but his avocation was

collecting insects. He wrote a thorough monograph on the tiger beetles (Cicandelidae). Wallis was a friend of the Criddles and shared common interests with them including playing the violin accompanied by Percy on the organ. After Percy died, the Criddles has a problem with how to address Mr. Wallis. John Brathwaite sounded too intimidating and Mr. Wallis too formal. Maida Criddle hit upon J.B. and that name came to be used by everyone who knew him or about him. Once, when one of Norman's pet crows was looking for a place to hide the remains of a mouse, it chose the back of J.B.'s neck inside his shirt collar. History does not record J.B.'s comments. He died in 1962. He gave his insect collection to the Department of Entomology, University of Manitoba which honoured him by naming it the J.B. Wallis Museum of Entomology.

DEPARTMENT OF ENTOMOLOGY, UNIVERSITY OF MANITOBA

Entomology at the Manitoba Agricultural College began in 1918 with some lectures in the Department of Horticulture and Forestry. About 1921, Entomology became a separate Department with A.V. Mitchener as head. Between 1924 and 1955, Apiculture, Insect Morphology, Forest Entomology, General Entomology, Insect Physiology, Pesticides and Equipment, Insect Taxonomy, and Insect Ecology were added to the curriculum. Graduate programs were established in 1951.

A.J. Thorsteinson became head in 1954 serving until 1975. During his term the Department expanded, and in 1962 moved into the Animal Science Building. Thor earned international recognition for his work on host plant selection by phytophagous insects.

A.G. Robinson joined the staff in 1953, succeeded Thorsteinson in 1975, and continued as head until he retired in 1981. Grant continued his labour of love on aphid taxonomy until nearly the end of his life in 1992. S.C. Jay came to the Department in 1961, and served as head from 1981 to 1987. He retired in 1991. Cam is best known for his work on the biology of honey bees and pollination by leaf cutter bees and honey bees. R.R. Brust joined the staff in 1964. His work on biting flies is widely known and respected. In 1987 Reiny became head and served until this year. He was succeeded by N.J. Holliday.

The current academic staff do teaching and research in biting flies; livestock insects; crop protection entomology; ecology; polymorphism, host plant selection and population dynamics in aphids; taxonomy of larvae and adults of predacious water beetles; and insect pollinators. Up to 1993, the Department has granted 118 Masters degrees and 49 Doctorates. these graduates have fanned out all over Canada and the world and have enhanced the influence and reputation of the Department. Entomologists from many countries, as well as adjunct and honourary professors from various departments and agencies of government, for example, Agriculture Canada, Atomic Energy Canada, Freshwater Institute, and other departments of the University have worked in or with the Department.

The Canadian Biting Fly Centre under M. Galloway was quartered in the Department and operated from 1981 to 1989. Its principal role was the dissemination of information on biting flies.

ENTOMOLOGY, UNIVERSITY OF WINNIPEG

A course in Entomology is offered as part of the undergraduate program in Biology at the University of Winnipeg. The Department of Biology first offered a General Entomology course in 1978, and since then it has been available every second year. J.C. Conroy gives the course and sends students wishing to continue in Entomology at the graduate level to the University of Manitoba or other

universities in Canada. Conroy's research interest is on the taxonomy and ecology of water mites (Acari, Hydrachnellae) and on their host parasite associations with freshwater sponges, bivalves, chironomids and odonata.

ENTOMOLOGICAL SOCIETY OF MANITOBA

In 1943, entomologists in Manitoba recognized a need to bring together various entomological interests into a forum for the intercommunication of discoveries and ideas. At a charter meeting in March 1945, they decided to organize as the Entomological Society of Manitoba. Its objects were then, as they are today - to foster the exchange of information on Entomology and to further the dissemination of entomological knowledge. Membership was open to anyone interested in Entomology. The meetings were to be informal, informative and inexpensive. B.N. Smallman was elected as the first President, H.A. Richmond as Vice-President and W.S. McLeod as Secretary-Treasurer. The charter members were: W.R. Allen, Ruth Barker, B. Berck, R.D. Bird, W.A. Cumming, R.H. Handford, W.C. McGuffin, J. McLintock, D.J. Petty, L.G. Putman, C.A.S. Smith, D.S. Smith, J.B. Wallis, L.T. White, W.M. Whiteway, and T.H. Williams.

The 1945 minutes contained an item that the Society had arranged for a meeting and luncheon with the distinguished British insect physiologist V.B. Wiggleworth. The minutes also indicated that the fifty cents levied upon the membership for the luncheon had been rather irregular though justified under the circumstances. The first general meeting in September 1945 approved a motion that the Society prepare an annual report to be called the Proceedings of the Entomological Society of Manitoba. A special meeting was held in December to discuss a proposal from the Entomological Society of Ontario regarding the formation of a national society. The Manitoba Society supported the proposal but wanted to retain its entity within a national body rather than as part of a regional prairie branch. In its early years the Society held an informal spring meeting dealing with on-going work in the province, and a fall meeting consisting of invitational reviews of wider entomological interest. In 1946, there were 24 members and the annual dues, $1.00 . In 1947, the diversity of the program was reflected in such papers as the importance of insects in fish production, modern methods of storing and preserving insects, entomology as seen by a plant pathologist, insect diapause, and the species concept. Also in 1947, the Society informed the provincial Minister of Agriculture of a proposal to establish a national entomological society, and to solicit provincial support.

In 1948, the Society met jointly with the International Great Plains Conference of Entomologists (IGPCE) at Riding Mountain National Park. To help finance that joint meeting the Society received $409.00. The actual cost was $400.15. Our recent governments could learn something about budgeting from those old-timer entomologists.

In 1949, the Society approved affiliation with the Ontario Society, the objective being that a national group could be promoted better within a framework of a loose affiliation of existing organizations. That year, the Society hosted the Entomological Society of Ontario meeting with the object of promoting a truly national group in name and in scope. Finally a national body was organized and had its first annual meeting in November 1950 in Ottawa.

In 1953, the Society had $47.79 in the bank including 8 cents interest. If not rich in money it was rich in spirit and enthusiasm. It was supporting publication of the Canadian Entomologist and distributing its Proceedings to libraries and research laboratories in North America. The position of

provincial entomologist was finally created in 1957 thanks to a brief prepared by W.A. Reeks, president of the Society, and to lobbying efforts by others. Circa 1962 the Society considered an award for the best insect collection by a girl or boy in Manitoba. The purpose was to stimulate public awareness, knowledge, and appreciation of insects and their benefits, and not as creatures to be stomped on. In 1962, the Society hosted the national society which presented the first Gold Medal to R.J. Morris of Fredericton.

Starting in 1967, scientific papers were placed separately in the Manitoba Entomologist. A year later the Society moved to establish the Endowment Fund. The earned income was earmarked for defraying the costs of publishing the Manitoba Entomologist. This foresight bore fruit in 1973 when the Society had to pay for most of the cost of printing this journal.

When the Forest Insect Laboratory closed in 1970, the Society lost nine members, but in 1972 membership expanded with the transfer to Winnipeg from Belleville of several entomologists and technicians. In 1973 the Youth Encouragement Committee made up kits for junior insect collectors, and arranged for seminars at school science symposia. The first Newsletter appeared in 1974 providing news of members and their activities, items of current interest and announcements of meetings and events. The editors have been H.G. Wylie in 1974 followed by S.C. Jay, A. Kolack, L.B. Smith, G.L. Ayre, T.D. Galloway, R. Ellis, R.M. Gadawsky, M. Henderson-Smith, B. Golka, G. Fortney, V. Converse, and A. Robbie-Draward with L. Glowacki. Also in 1974, the Society was represented on a city Advisory Board on Insect Control, and on the Manitoba Environmental Council to address concerns about the impact of large-scale spraying on mammals and aquatic organisms. In the late 1970's and early 1980's, the members became concerned about inadequate funding for research and the decline of jobs in government, and stressed the need for public relations on the worth of entomology.

Two more firsts marked the joint meetings with the national society in 1986, namely, a scholarship of $1000 and a student paper award. In 1989 the Society provided a small grant toward the publication of the "Butterflies of Manitoba" by Klassen, McKillop, Preston and Westwood - all active members of the Society. Also published in 1989 was "Manitoba Entomologists", one of a series under the title of "Profiles of Entomologists" compiled by P.W. Riegert. A new committee, Endangered Species, formed in 1990 reflected the increasing awareness of the threat that a changing world poses to its flora and fauna.

Presidents of the Society have been: B.N. Smallman, 1945-46, R.R. Lejeune 1947-48, C.A.S. Smith 1949-50, W.R. Allen 1951-52, A.J. Thorsteinson 1953-54, F.L. Watters 1955-56, W.A. Reeks 1957, R.M. Prentice 1958, P.H. Westdal 1959, A.G. Robinson 1960, R.J. Heron 1961, L.B. Smith 1962, W.G. Ives 1963, D.R. Roberston 1964, R.D. Bird 1965, W. Hanec 1966, S.R. Loschiavo 1967, W. Romanow 1968, W.J. Turnock 1969, P.S. Barker 1970, S.C. Jay 1971, D.L. Smith 1972, V. Hildahl 1973, R.N. Sinha 1974, G.L. Ayre 1975, L.D. Nairn 1976, H.G. Wylie 1977, J.C. Conroy 1978, J.E Guthrie 1979, W.B. Preston 1980, A.G. Robinson 1981, W.B. McKillop 1982, G.R.B. Webster 1983, G.K. Bracken 1984, R.A. Ellis 1985 , M.M. Galloway 1986, P.A. MacKay 1987, N.J. Holliday 1988, D.P. Dixon 1989, R.J. Lamb 1990, A.R. Westwood 1991, N.D.G. White 1992, R.M. Gadawski 1993, R.E. Roughley 1994.

The Society started with 22 members in 1945, and reached a peak of 167 between 1983 and 1985. In 1994 it had 134 members. During the past 50 years the members have shown initiative, imagination and industry. With its current strength and enthusiasm there is every reason to expect continued progress during the next 50 years.

INTERNATIONAL GREAT PLAINS CONFERENCE OF ENTOMOLOGISTS

The IGPCE was founded in 1920 to provide a forum for entomologists in the four western provinces and north central states to report on insect conditions in their regions. In 1926, the meeting was in Lethbridge and in 1929 in Treesbank. Norman Criddle chaired both of them. In 1928, it was held in Fargo, North Dakota. Attendants at the meetings came from some of the eastern provinces principally Ontario and from as many as fifteen states. Many problems were of common interest because insects do not respect immigration laws and customs regulations. Everyone attending the meetings participated, and everything was published in the Proceedings ad verbatim. For example, at the 1966 meeting in Custer, South Dakota during a discussion of mites on beetles in the Black Hills someone remarked "I'll tell you, those beetles must wish they had more legs to scratch with". Declining interest in applied entomology, specialization, competition with other meetings, and shrinking finances led to the death of the IGPCE. The final decision about its fate was to be made at the 1967 meeting to be held in Saskatoon but this was just a formality. It appears that the IGPCE's last stand occurred in Custer in 1966.

Back Row: Martin, Putman, Hobbs, Stephan, Fraser, Hurtig
Sixth Row: Dickenson, Zinter, Hanna, Westdal, Kelleher, Richardson, Fuller, Smallman
Fifth Row: D.S. Smith, McLintock, Howitt, MacDonald, Criddle, Zacharuk, Devlin, Fox, Holmes, McLean, Parten
Fourth Row: Robinson, Cole, Pugh, Berck, Skaptason, Bird, McLeod, Lejeune, Peterson, Hitchon
Third Row: Muldrew, Watters, Barker, Northcott, Moore, S. Smith
Second Row: Mitchener, Wong, Fell, Ostapchuk, Painter, Black, Romanow
Front Row: Munro, Mickel, Brown, Farstad, Hitchcock, Wardle

Photograph of the 21st Annual Meeting of the IGPCE
Riding Mountain National Park, Manitoba, August 23-25, 1948

FOREST ENTOMOLOGY

Insects of forests in Manitoba were recorded as early as 1797 from the Franklin expedition. The spruce sawfly on Norway spruce was recorded in 1892, leaf beetles on poplars in 1904, and leaf caterpillars in 1900. In 1912, parasites of the larch sawfly were introduced in the Riding Mountain area under the direction of C.G. Hewitt and J.M. Swaine.

Outbreaks of spruce bark beetles, spruce budworm, jackpine budworm together with pressure from the lumber and pulp industries led to the establishment of the Forest Insects Investigation Unit in Winnipeg in 1937. It had jurisdiction from Sault Ste. Marie to the Saskatchewan-Alberta border. Heads of the Unit have been H.H. Richmond, R.R. Lejeune, W.A. Reeks, and F.E. Webb. Bill Turnock told

me a story about Ed Reeks' dog which had a run-in with a skunk. Ed spent an afternoon trying, to clean the dog with tomato juice. That night he and his wife went to a theatre and noticed that seats immediately around them remained vacant. The story is not ad verbatim, but the essence of it is still there.

The forest insect laboratory has helped to formulate forest management policies and practices in Manitoba, and has contributed significantly to basic research on forest insects. Its program included the Canadian Forest Insect Survey. A major staff increase occurred after World War II, and by 1956 there were 11 full time researchers. Larch sawfly outbreaks commanded attention in the 1930's and 1940's, the role of parasites and predators of the spruce budworm in the late 1940's, and research on *Hylobius* root weevils and white grubs in forestry plantings in the 1950's. Larch sawfly studies included: effects of starvation on survival and fecundity, effects of moisture on selection of cocoon sites, ecological and population studies, development of sampling techniques, the role of small mammals in the ecology of the larch sawfly, birds as predators, a life table approach to the study of population dynamics, and the effects of bioclimate. Also studied were taxonomy, and feeding responses by spruce and jackpine budworms to stimuli from host chemicals.

The laboratory was transferred from Agriculture to Forestry in 1960 and moved to the Canada Agriculture Research Station in 1962. Entomology, surveys, and other forestry research were consolidated and integrated. Programs were developed on a problem basis (team approach) rather than on a discipline basis (individual approach). Despite these changes, the Winnipeg laboratory could not survive cost-cutting measures and it was closed in 1970.

AGRICULTURE AND STORED PRODUCT ENTOMOLOGY

Amateur collectors like J.B. Wallis and Norman Criddle mark the beginning of agricultural entomology in Manitoba. R.D. Bird succeeded Criddle in 1933 and the laboratory was moved from Aweme to Brandon where it remained until 1957 when it was relocated in Winnipeg. Initially the staff concentrated on grasshoppers. After World War II, programs included biology and chemical control of the sugar beet root maggot, mosquitoes, currant fruit fly, raspberry mites, sweet clover weevil, Colorado potato beetle, and radish maggot. Other studies included life histories and biological control of sunflower insects, pollination by native insects, and transmission of aster yellows virus by the six-spotted leafhopper.

After transferring to Winnipeg in 1957, the Brandon staff joined the Stored Product Insect group at the Canada Agriculture Research Station. R.D. Bird was head until 1966 and was succeeded by A.J. McGinnis. In 1972 F.L. Watters became head, followed by S.R. Loschiavo in 1981 and J.T. Mills in 1983.

In 1942, B.N. Smallman was assigned by the Board of Grain Commissioners (now Canadian Grain Commission) to investigate insect problems in wartime grain storages in the bay port area. After World War II, Smallman continued in charge of stored product insects research including evaluation of contact insecticides and fumigants and radio frequency sterilization. In 1951 he was succeeded by F.L. Watters. In 1956, the Ottawa stored product laboratory closed down and merged with the laboratory in Winnipeg. Programs included biology and behaviour, life histories, chemical control, population dynamics, low temperature studies, ecology, surveys, problems with grain stored in farm bins and elevators, mills, warehouses and ships. The major insects are several species of flour beetles, grain beetles, spider beetles, moths, fungus beetles, and mites. The Canadian Grain Commission has had an

entomologist since about 1956. Its mandate is to monitor insect infestations in commercial grain handling systems. The area of jurisdiction ranges from primary elevators to ships. Those serving in this capacity have been H.E. Gray, E.A. Liscombe, J. van Loon, C. Demianyk, and currently C. van Natto.

In 1972, the people who came to Winnipeg from Belleville organized as an integrated pest management group with W.J. Turnock as head. The group concentrated on pests of canola, and included research on biology and control of cutworm species, Bertha armyworm, sunflower midge, red turnip beetle, flea beetles and pea aphid. Disciplines included biological control, pathology, ecology, biochemistry, population dynamics, sampling procedures, and damage assessment.

In 1989 the stored product and pest management groups were amalgamated into a Crop and Stored Product section with G. Gerber as head, and R.J. Lamb and J.T. Mills as project leaders. N.D.G. White became project leader in 1990 and section head in 1991. P. Pachagounder became project leader in 1992.

EXTENSION ENTOMOLOGY

The earliest available record of bee keeping in Manitoba was circa 1887. The first university course in beekeeping given in 1923, was of great benefit to Manitoba in terms of improved honey production and crop pollination. Federal research was also conducted in Brandon and Morden. Sweet clover honey from Manitoba has won national prizes since the 1930's. Today there are concerns as nesting sites become scarcer, and as beekeepers reduce operations because of high production costs and reduced revenues.

The first provincial apiarist was R.M. Muckle 1916 followed by L.T. Floyd. E.C. Martin, D.R. Roberston, D.L. Smith, D.G. McRory, R.G. Barker and, since 1978, D. Dixon. In 1981, B.G. Fingler was appointed as extension apiarist. They serve the beekeeping industry through studies on bee diseases and parasites, and alfalfa pollination by leaf cutter bees.

In 1911 the Manitoba Agricultural College created a Department of Extension to provide information for rural areas. However, by 1924 the province was doing most of the extension work. In 1957, D.G. Roberston was appointed as the first provincial entomologist. D.L. Smith followed in 1967 and A. Kolach in 1989.

The City of Winnipeg had programs for mosquito control as far back as the 1930's. J. McLintock was field manager from 1939 to 1941. His main interest was the role of mosquitoes as vectors of Western Equine Encephalitis. In 1943 L.T.S. Norris-Elye was field manager. A Winnipeg Anti-mosquito Campaign was in existence until 1953. After one or two name changes and changing responsibilities, there emerged the Greater Winnipeg Mosquito Abatement Program managed by a Mr. Stansfield until 1958, and then by P. Belski. In 1974 the city appointed Roy Ellis as the first city entomologist. He was responsible for mosquito and tree insects control programs and answering public telephone requests for information through a "Bugline" service. Ellis was succeeded in 1987 by R.M. Gadawsky who currently holds this position.

MUSEUM OF MAN AND NATURE

The museum's entomological collection dates back to about 1900. In the 1940's and 50's S. Brooks served as honourary curator and increased the collection to about 10000 specimens.

W.B. Preston was appointed curator of lower vertebrates and interim curator of invertebrates in 1970. He worked on the insect collection until 1976 when W.B. McKillop became curator. The two of them, together with the help of amateur and professional entomologists have increased the collection to about 35000 specimens.

AQUATIC ENTOMOLOGY

The Freshwater institute opened in Winnipeg in 1966. The principal entomologists there are J. Flannagan and D. Rosenberg. Rosenberg and A. Wiens participated in the MacKenzie Valley Pipeline Study from 1971 to 1975 collecting aquatic insects from the MacKenzie and Porcupine Rivers. A species list of aquatic plants and animals plus a key to chironomid larvae from those watersheds have provided valuable baseline data as a reference point for future assessment of environmental damage. Rosenberg and O. Saether organized the program for the first Canadian meeting of the North American Benthological Society in Winnipeg in 1978.

Flannagan collected aquatic insects in the Lake Winnipeg project also to provide baseline data prior to hydro and other projects which would have an environmental impact. Flannagan in 1979 convened the Third International Conference on Ephemeroptera.

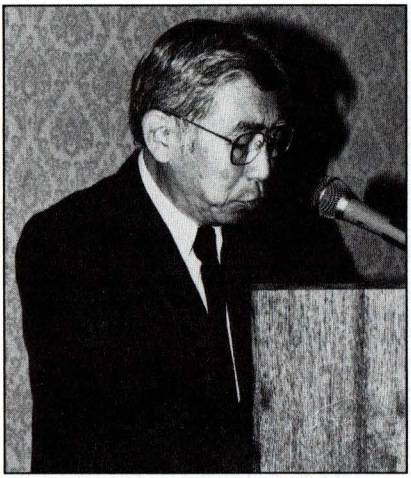
The Freshwater Institute program has included studies of the insect growth regulators diflubenzuron and methoprene, effects of forest spraying to control spruce budworm, and the impact of Winnipeg's mosquito control program.

ENTOMOLOGY AT ATOMIC ENERGY CANADA LTD.

In the late 1950's or early 1960's, J.E Guthrie joined the Whiteshell Nuclear Research establishment of Atomic Energy Canada at Pinawa, Manitoba, where he became head of environmental research. His interests included the uptake of radioactive elements by aquatic insects and the use of beta radiation to sterilize mosquitoes. Insects were used also as indicators in environmental toxicology. Guthrie retired in 1983.

In recent years, J. Borsa has headed a project on the effects of irradiation on food quality. Co-operative projects have included irradiation for disinfestation of grain and irradiation of alfalfa for resistance to the Hessian fly.

This condensed tour of entomology in Manitoba is much like a butterfly flitting over a flower garden. It touches here and there. Interested readers are urged to peruse the many fascinating stories in archives, books, and articles. Not everyone likes history. Some seem more concerned with the present than with the past. However, without a past there can be no future because we don't know where we're going if we don't know where we've been. Without past records, I could not have prepared this lecture and article.



Gold Medal Address

Observations, Interpretations and Syntheses: A personal endeavor in quest of scientific methods

presented by Tom Royama

at the ESC Annual General Meeting, Winnipeg

Years ago, as a graduate student in Tokyo, I was browsing through *The Canadian Entomologist* and *Canadian Journal of Zoology* and came across a series of papers on spruce budworm research in eastern Canada, called the Green River Project. It was interesting because the field study of an insect population based on life tables was a novelty then. So I wrote a review article of it just before I was leaving for Oxford for further study, not at all realizing, of course, that I was going to take over the budworm project in Fredericton later in my life.

I left Japan because my professor, a forest entomologist, was reluctant to read my doctoral dissertation: "The Breeding Biology of the Great Tit". So I sent it to Dr. David Lack of Oxford for his evaluation. He was interested in it and suggested that I continue my study under him. Four years later, I was finishing my work at Oxford and gave a seminar on predation. Amongst the audience, there happened to be a visitor from the Canadian Forestry Service, Chuck Buckner. After the seminar, he asked if I was interested in joining the CFS. And that is how I am here today.

I was initially assigned to the Quebec lab and spent my first couple of years there. One day, I got a phone call from Fredericton, suggesting that I participate in a workshop on a budworm-forest ecosystem modelling. In the Fall of that year I moved to Fredericton.

I learned that the model was based on the Green River study. The model assumed that a local budworm population is usually maintained at an endemic level by the action of natural enemies. However, a series of years with favorable weather promotes a rapid increase in the population, letting it escape the control of natural enemies. These forest stands, where budworm populations have reached an extreme level, become epicentres from which a large number of egg-carrying moths disperse, infesting the surrounding areas and, thus, large scale outbreaks occur. After years of severe defoliation and with the arrival of poor weather conditions, the outbreaks finally collapse. The populations now return to endemic levels and are maintained there by the action of natural enemies until the forest conditions recover and the favorable weather returns.

Somehow, I doubted the credibility of these hypotheses; I saw only a weak connection between the data and the theory. It reminded me of my previous experience with the study of the great tit foraging behaviour. When I was working on this bird as a graduate student, Lucas Tinbergen in Groningen published his "search image theory".

He observed that his great tits, when feeding their young in the nests, tended to ignore a prey when it was comparatively scarce in the habitat; when the prey increased in number, the birds took disproportionately more of it; but, for a further increase in number, the birds took it in a lesser proportion again. Tinbergen attributed this tendency to the following possibilities: the birds did not take much notice of the prey when it was scarce; when the prey became more abundant, the birds saw it more frequently and learned to look for it, i.e., a search image was formed; and for a further increase in the prey, the birds tended to avoid taking too much of the same kind in order to maintain variability in their diet. I noticed some problems in his reasoning, however.

He first assumed, as a null hypothesis, that prey were distributed randomly over the habitat and the birds searched them at random. If these assumptions were true, we would expect that the birds should have encountered, and have taken each type of prey, in proportion to its abundance in the habitat. But because the actual proportions of the prey in the habitat were not represented in the birds' diet according to the expectations, he concluded that the birds did not search at random but must have formed search images.

There is a logical jump in his reasoning. In fact, there were two subhypotheses in his null hypothesis: random distribution and random search, but he only rejected random search. The fact is, however, that the prey, mostly lepidoptera, were not distributed at random in the forest. Each prey species occupied a fairly distinct niche in the habitat. Thus, we should reject the random-distribution hypothesis rather than random search. Then, we would not necessarily expect the birds to capture a prey in proportion to its abundance even without search images. In other words, there is no logical necessity to assume the formation of search images.

I found that the birds were very selective when hunting. Many caterpillars taken to the nests were fully mature, ready for pupation; younger instars were ignored even though they occur at the same niches as older ones. The great tit tends to bring one item at a time to the nest, so that it cannot feed the young as efficiently with small items as with large ones. Also, when caterpillers move from a feeding site to a pupation site, they are more readily exposed to bird predation. Some tortrix larvae were very quick to drop when disturbed and were not easy prey for the great tit. However, the pupae were taken in large numbers, even though they pupated at the same site as they had been feeding.

Evidently, the birds selected prey according to how efficiently they could hunt. Thus, the predator's response to changes in the abundance of prey must have depended on how much profit the predator could get from each prey at a given energy expenditure. It follows that the birds would naturally ignore an unprofitable niche with a low concentration of prey but would search more intensely at a place that contains more. However, as well known, there should be an upper limit to the amount of food that a predator can collect per unit effort no matter how abundant the prey may become at a given niche. Thus, between those niches where resources are sufficiently abundant, there would be little difference in profitability from the hunter's point view even if there were substantial differences in absolute abundance. Then, there is little point for the predator to allocate hunting time in direct proportion to the abundance. Rather, it makes more sense if they allocate their hunting effort according to the profitability of the feeding niche measured by the rate at which the bird can forage. This explains consistently what Tinbergen observed.

Probably, Tinbergen had already conceived his search image theory intuitively and used his observation — the disproportionate representation of prey in diet — as supporting evidence, rather than

deducing it from observations. Thus, it was not so much the validity of the search image theory as a preconceived idea, but, rather, the way Tinbergen deduced his theory that bothered me.

I suppose a valid hypothesis could be conceived through a logical consideration alone. The idea thus conceived could be published as a viable hypothesis which could be left to someone else for testing. This seems to be a major pattern in ecological research in the past few decades. Nothing is wrong with this approach, of course; if the basic assumption is appropriate and the conclusion is properly deduced, it might be worth testing against observations and experiments designed for that specific purpose. Nonetheless, there is an inherent danger in this approach. The natural system might be viewed through a narrow window, and the gathering of information tends to be fragmented. But it might be tempting to follow this pattern in the era of publish or perish with the meager R&D and O&M money granted. The idea producer can live on a comparatively small grant and the tester can publish the result, whether supportive or negative, so that a publication is almost guaranteed.

I personally have resisted to follow this pattern; I tried to deduce a theory from data that contained comprehensive information. This is not a lucrative way of doing science nowadays because I could publish, if at all, only when I succeeded in arriving at a positive, coherent result. I could afford to do this because I worked in the Government. A university professor once enviously remarked that I was sitting in the ivory tower. Money used to be so plentiful that, while staying at the Green River summer camp, with free accommodation and free meals, I remember one student ate 6 pieces of T-bone steak.

So I took time to do my research — spending a lot of time fishing, too. But I always had data with me, even if they were not mine; I collected as much information on the same system from as many different sources as I could find. Many of them were at first sight contradictory with each other. However, the real advantage of this approach is that, once a coherent explanation was found, its credibility would be high. Furthermore, once conceived, the idea need not be tested, because it has already come out of a large collection of data; the idea only needs to be applied to a new system or situation for further generalization.

I doubted the credibility of the conventional view of budworm outbreak processes because I noticed that the major assumptions were not deduced from a thorough analysis of data. It was more likely that the data were used to justify the hypotheses that had already been intuitively formulated. I decided to reanalyse the Green River data.

My struggle began with going through boxes after boxes of raw data left in the storage. But, above all serious, my problem was inadequacy in methodology; I realized that I needed to learn stochastic processes and time series analysis. In 1974, I went to the Australian National University to see Professor Patric Moran for his instruction.

The analysis of time series was beginning to become an important branch of statistics in the 1920s coinciding with the early development of animal population dynamics. The recognition of the facultative and catastrophic factors by Howard and Fiske (now known as density-dependent and density-independent factors) and the mathematical treatise of competition and predator-prey interaction by Lotka and Volterra were contemporaneous with the development of two basic types of time-series models, the autoregressive and moving-average schemes of Yule and Slutzky. However, until the early 1950s when Professor Moran applied the Yule scheme in his analysis of the lynx 10-year cycle, this branch of statistics had not been utilized in population ecology. Even after Moran, it had been largely ignored in ecology.

Only in recent years, have we seen an increasing trend of applying the method, although, unfortunately, in a rather uncritical manner.

Time series analysis deals with the statistics of probabilistic events occurring in succession, such as the fluctuation in the stock market. The basic idea of predicting what happens next in a time series is to make use of the information carried by what happened in the recent past. The statistical procedure is to regress the value of the event realizing at a given time step on the values already realized at the preceding few time steps. Hence, the formula is called an **autoregressive** scheme. Like in the usual linear regression, we add a prediction error that is caused by an exogenous factor whose information is not carried by the past events. Since its invention by Yule in the 1920s, the autoregressive scheme has been used for predictions in econometrics and control engineering.

The time series models are largely descriptive; just like algebraic polynomials, they do not carry concrete meanings. Because of this, applying the models to a population time series is not very appealing, although some people try to use it in natural resources management. Unfortunately, there is a practical problem. To make a reasonable prediction, it requires a long series of observations to ensure adequate information. How long a series should be to be statistically useful depends on the pattern of fluctuation. Some animals, such as the lynx, exhibit cyclic fluctuations. The famous Hudson's Bay Co. fur trade statistics contain 10 or more such cycles which seem to be a reasonable length. In the spruce budworm, however, a cycle length is, on average, 35 years or longer. To make a statistical prediction, we should have the record of 10 cycles. Even if we settle with only 5 cycles (or 5 outbreaks) we would have to observe for 200 years. Considering that many population data are typically as short as 25-30 years, the application of time series analysis for prediction and control in natural resource management is practically hopeless.

However, I noticed an aspect of the autoregressive scheme that would be of fundamental importance in ecological application: it can represent the density-dependent/density-independent structure of a population process. As I have mentioned, the autoregressive scheme is of the form in which the future value of the event is a function of the past values plus an error term. If we consider population densities as such events, we can see that a set of past densities with suitable coefficients represents the effect of density-dependent factors and the error term, the effect of density-independent factors. If we interpret the autoregressive scheme this way, we suddenly see an ecologically meaningful structure in what was a purely descriptive, structureless device. It can serve as a useful tool for the analysis of population dynamics, if not practical in forecasting and control for which it was originally designed. The most useful application of the autoregressive scheme was that, after some modifications to suit the purpose, it enabled me to investigate the association of a certain pattern of population dynamics with the type of density-dependent/independent structure that generates the pattern. With this theoretical knowledge, I could guess what type of ecological factors were involved in the observed population process; or at least I could eliminate some unlikely mechanisms.

After all, I found that the Green River data did not support the climatic release theory of budworm outbreaks. The problem was that the investigators calculated the five-year moving-average series of weather parameters and compared it with the rise and fall of budworm populations over the province. The result appeared to show that some recent outbreaks were preceeded by a series of on-the-average dry, warm summers, and the collapse of these outbreaks coincided with a series of on-the-average wet, cool summers. However, there is a catch in the use of moving-average series of the weather parameters.

Consider a series of numbers, X_1, X_2, X_3, and so on. To make, say, a five-step moving-average series, take the average of the first five values, X_1 to X_5, and call it Y_1. Next, move one step forward and take the average of the second five values, X_2 to X_6, and make it Y_2; and so on. If the original {X} series has a trend, but the trend is buried under fuzzy fluctuations, the moving-average series {Y} could reduce the fuzziness to bring up the trend more conspicuously. The catch is, however, that this transformation creates a cyclic pattern that does not exist in the original series. This is because, even if the original Xs were completely uncorrelated random numbers, Y_1 and Y_2 are positively correlated with each other because they have four X values, X_2 to X_5, in common; altogether, five consecutive Ys are correlated with each other, though the correlation diminishes as they are further apart from each other. In other words, those Ys that occur closely in consecutive steps tend to be relatively close to each other, and this creates a cyclic pattern. In fact, the cyclic weather pattern that was compared with the occurrence of budworm outbreaks was this artifact of the moving-average transformation. To see if there indeed was weather influence, we should compare budworm survival directly with untransformed local weather conditions. When I looked at the data this way, I found no sign of it.

Likewise, I found the epicentre hypothesis unfounded. If you look at a series of budworm infestation maps, it looks as though several hot spots appear first and subsequently spread out to surrounding areas. But, as Stehr saw it, there is an alternative interpretation: an epicentre might be "merely the spot at which a general and already widespread population surfaces first." Indeed, the Province-wide egg-mass sample data, taken for the aerial spray program since 1952, support Stehr's interpretation.

The early theory further assumed that the destruction of the forest by budworm would bring its outbreak to an end. This assumption was also unfounded. Budworm populations in close localities tend to decrease more or less simultaneously regardless of the level of defoliation; populations often began to decrease even before the trees began to die. Apparently, the earlier theory was conceived intuitively rather than deduced from observations.

After the re-analysis, I was convinced that the rise and fall of a budworm population were dictated by changes in survival of feeding larvae and pupae. Thus, to understand the budworm outbreak processes properly, it is crucial to know precisely what causes their mortality. Towards the late 1970s, I proposed that we resurrect the budworm survivorship study. In particular, I proposed the daily observations of budworm mortality throughtout the summer season. In the Green River study, so many plots were sampled but only a few times in each plot. I proposed, instead, to sample only a few plots but as frequently as we could.

In the early 1980s, several young scientists joined the CFS: Jacques Regniere, Vince Nealis, Dave Perry at Sault Ste. Marie and Eldon Eveleigh at Fredericton. Together with the veteran Chris Sanders at the Soo, we launched the new project and parallel studies between Ontario and New Brunswick; later, with Regniere and Perry moved to Quebec where they established the Quebec study. Even later on, Johanne Delisle and Michel Cusson joined the Quebec force and Chris Lucarotti, the Fredericton lab.

The parallel studies confirmed that, in all regions, it was the combined action of natural enemies, including parasitoids, predators and pathogens, that brought the populations down from epidemic to endemic levels, the parasitoid complex being a major force. We found an amazing array of parasitoids: in New Brunswick alone, we have so far recorded 33 species of primary parasitoids of which 18 species were, themselves, attacked by 26 hyperparasitoids. Some of the primaries, particularly tachinids which

pupated on the ground, were heavily preyed upon by predators. Some parasitoids were univoltine and could complete their annual life cycles entirely with budworm, whereas others were bivoltine and required non-budworm, alternate hosts in which to overwinter. But what does this complex system mean in terms of budworm dynamics?

Theoretically, in the absence of the hypers, the complex of the univoltine, primary parasitoids should be able to control the budworm population. The system would oscillate frequently with a comparatively low amplitude as would be predictable with a simple host-parasitoid interaction model. Actually, however, the presence of hyperparasitoids and predators would reduce the efficacy of the primaries. Consequently, the budworm populations would oscillate with a prolonged cycle, its peak readily reaching an epidemic level.

The bivoltine primary parasitoids play a limited but potentially important role. Because of the necessity of having non-budworm alternate hosts in which to overwinter, their efficacy as budworm controlling agents depends on the abundance of the alternate hosts relative to budworm abundance. They could effectively contribute to the control of budworm only when their alternate hosts as a whole happened to become sufficiently abundant. Thus, the dynamics of budworm populations depends on the behaviour of the complex system which contains many unknowns and unpredictables; we know very little about what the alternate hosts are; we know little about the ecology of hyperparasitoids and that of pathogens, although we know what they are and how frequently they occur.

I was also convinced that the dispersal of egg-carrying moths played an important role in influencing the level of epidemics and, probably, in synchronizing the rise and fall of local populations, if not in causing the spread of outbreaks. An earlier work by radar produced some results in the geographical extension of the budworm movement, but little about the biology of dispersal behaviour.

The CFS Budworm Ecology Group is steadily filling in those information gaps for a more complete understanding of budworm outbreak processes. The work will provide information as a basis for integrated pest management and a decision support system. The work, I believe, is a model of population studies, characterized by intensive observations, thorough analyses and logical syntheses. If I have contributed to the philosophical and methodological aspects of the work, the group has made the ideas work in practical applications. I would like to share this honour with the members of the group, including those who have provided invaluable technical assistance. Thank you.

Employment Opportunities in Entomology

The following is a summary of a workshop held by the Student Affairs Committee at the ESC Annual General Meeting in Winnipeg, on October 16, 1994.

Report prepared by Elizabeth Tomlin, Chair, Student Affairs Committee.

Employment Opportunities in Entomology - What You Should Know Before You Graduate

Part of the mandate of the Student Affairs Committee is to provide student members of the ESC with information on employment opportunities in entomology. The general feeling among students in recent times seems to be that there are fewer jobs in entomology than there used to be for graduating students, especially in the light of government cutbacks. The objective of this workshop was to assemble

speakers from different backgrounds and occupations with the hope of providing a realistic impression of the potential job market for students. In addition, speakers were asked to make suggestions about how students could best prepare themselves for their future careers. The speakers were Randy Baker (North-South Consultants), Roy Ellis (Prairie Pest Management), Randy Gadawaski (Winnipeg City Entomologist), Dan Miller (PheroTech), Margaret Gadsby (AgrEvo), and Robert Trottier (Agriculture and Agri-Food Canada).

Randy Baker

North-South consultants are fisheries consultants who work for a wide variety of stakeholders. They employ 20-30 people, with numbers fluctuating seasonally, most of the field work being done in the summer. Employees are typically salaried, with 5-6 senior biologists and a number of senior and junior technicians. The company is privately funded and self-sufficient, competing for both large and small contracts. Some contracts may last several years. The type of work done involves such projects as environmental impact assessments of bridge-building activities, effects of ski-resort development on streams, impact of hydroelectric development, and mapping of benthic habitats in the arctic to provide information in the event of an oil spill.

In terms of where an entomologist could fit into this type of an organization there was both good news and bad news. The bad news was that North-South consultants is the largest consulting company from Calgary to Toronto, and has no entomologist on staff. The good news was that entomology is an increasingly important part of their work, as insects, in their capacity as fish food, are an integral part of the food web. It is important to realize, however, that the type of work done by this company requires an ecosystem approach, and that they cannot afford to keep a specialist on staff.

Even so, if this is the type of career you are interested in, there are a number of ways you can help yourself. Starting with the job interview, sell yourself as a generalist, such as an invertebrate biologist/ ecologist with a specialty in... Realize that a company such as this one has little use for academic problems. They are very practically oriented, and budgets are very important. North-South Consultants has only one Ph.D. on staff. People with Ph.D.s tend to be quite specialized. You should try to broaden your range of experiences if this is you, by expanding your life skills and experience. Travelling is a good way to do this. As part of your preparation, your academic background must include English (communication skills), biology, ecology, invertebrate zoology, limnology, botany, aquatic entomology, insect taxonomy, at least 2 statistics courses, quantitative an theoretical ecology, organic chemistry and impact assessment. In addition some useful courses would be toxicology, hydrology, surveying, computer science and math. Be adaptable, flexible, imaginative and innovative. Finally, make sure you are pursuing what you really want to do, as you need to be happy doing your job.

Questions

Q. Do you ever have any ethical problems with contracts?

A. We try to be unbiased and professional in order to keep working, but we don't want to be in "the pocket" of the client.

Q. What are your major sources of contracts?

A. Originally, most came from the government, although now less than 5% do. We work primarily with private engineering firms. Clients are now incorporating the costs of doing environmental work into their budgets.

Roy Ellis

Roy Ellis holds the untraditional title of freelance entomologist, working on a variety of projects for several clients. He works independently, and says that projects vary in length from minutes to years. The advantage of this type or profession is that you can work on projects that interest you once you get established. You need to work very hard if you want to be successful in this type of business, and you need to enjoy it. The first 2 years, says Dr. Ellis, were terrible because there were few jobs and no money. He persevered and wrote lots of letters and now does very well.

Dr. Ellis did his Masters in aquatic entomology at Simon Fraser University, and then toured universities across Canada before picking a Ph.D. program. He stresses the importance of having good mentors to help you.

After graduating, Dr. Ellis worked at BRI doing mosquito taxonomy. He points out that there were not very many jobs at the time, with a lot of competition for the few that were available. He then got a job as the Winnipeg City Entomologist where he reorganized the mosquito control program from being politically-driven to scientifically-driven. He had to learn how to balance a budget and managed 50 staff members.

During his term as the city entomologist, Dr. Ellis did a number of contracts on the side. He was able to meet people, make contacts, gain experience, and learn skills - in effect he made use of the city for courses, computer resources and learning employee relations.

As a freelance entomologist, Dr. Ellis works for a variety of clients. These include the City of Winnipeg (staff training, visual aids, literature reviews, assessing equipment control methods), the provinces (IPM manuals, guides to bring the work of researchers to the users), and the federal government (IPM for Department of National Defense). He points out the importance of being a generalist, as he had to learn about pigeon and snake control for the DND. Another advantage of being a freelance entomologist is that you can do short term work for companies that cannot hire a full-time entomologist.

In terms of preparing yourself for this type of career, there is no blueprint. You don't need a Ph.D. to do this job, but it puts you on an equal footing with other people with a Ph. D. An example is if you are called as an expert witness in a court case. You need management skills to work with clients and employees and to manage projects. Other potentially important skills to acquire range from accounting to small engine repair. It is also important to make contacts and you should start right now. These include professors, support staff, colleagues and other students. Establish a good reputation -don't be lazy, late or sloppy.

Randy Gadawaski

Randy Gadawaski is the current Winnipeg City Entomologist. 90% of the budget is for mosquito control, but they also deal with defoliators and the occasional new pest. The permanent staff consists of 13 people, 5 of which are entomologists. There are 50-70 seasonal employees including 10 technical assistants with a background in entomology. Surprisingly, they are unable to find enough qualified people for these positions! In order to get a full-time position, you need to enter from the ground floor, which is a seasonal job.

When Mr. Gadawaski completed his MSc. in 1981 there was no job waiting for him. He worked for his supervisor for 8 months for very little money, so that he could stay involved in entomology. He

lucked into a job at the University of Guelph, and ended up staying for 2 1/2 years. He points out the importance of being willing to move. The expectation of a good, high-paying job out of university is false. Be patient and persevere with part-time and contract work to stay in your field - your time will come.

You can do a lot to prepare yourself. Keep in mind that the purpose of university is to gain the skills you need to get a job. It is a life/learning experience and it is your responsibility to take advantage of it. The specialization of your thesis is irrelevant. It is the skills that you learn that are important, including communication, computer skills, supervision/management techniques and statistics. You should work hard, fast and smart. Try to distinguish yourself from the crowd by emphasizing, for example, your knowledge of a second language or artistic skills. Volunteer your time and deepen your experiences by getting actively involved in organizations such as regional entomological societies and the ESC. The attitude that the person with the most degrees wins is bad - don't assume that the only opportunities are education. A fundamental skill is the ability to write a good resume. It should be clean and neat, contain pertinent information, be truthful, no blanks in the chronology, and send out as many out as possible. Introduce yourself to employers, know as much about the company as possible and suggest what you can offer. In the job interview, don't try to snow anyone, but emphasize your skills and strengths.

The job market is different from what it used to be. Small businesses instead of the government and large industries may be the best place to look. If you can't find a job create your own - be aggressive and take risks. It may take a few years to get going, and it will involve 1% inspiration and 99% perspiration.

Questions
Q. What if you are overqualified for a job?
A. Your overqualifications may be accepted as extra skills. It is important, in the short term, to accept limited opportunities.

Dan Miller

Dan Miller is the Director of Research at PheroTech, a small company in Delta, B.C. He did his undergraduate in mammalogy and ornithology, later working in silviculture and spruce budworm research. He studied bark beetles during his MPM and Ph.D. at Simon Fraser University. He went from a post-doc with PheroTech to a full-time job with no lag-time.

PheroTech employs 25 people, and has a large commitment to research and development. There are 6 entomologists on staff - 2 with a Ph.D. and 3 with a BSc. The company sells pheromones, traps and pest control programs (eg. for ambrosia beetle), emphasizing an ecosystems approach. They also do consulting work in general forest management. An example is an economic assessment of the impact of mountain pine beetle on resource values. This project did not require an entomologist. The success of the company is based on the ability to solve problems. In addition it is a unique company in a small market.

You may get into a company with credentials, but you need quality in terms of both depth and breadth. For example, as research director, knowledge in such diverse subjects as neem, mammals and pollination is essential. PheroTech seeks out employees through contacts. As a graduate student you can make contacts with many people in private industry, the government and academia. Skills that will

help you in this type of company are organizational skills and economics.

Questions
Q. How was PheroTech formed?
A. Graduate students from Simon Fraser University in pest management and chemistry got together in 1981.
Q. Is the work seasonal?
A. No.
Q. Has PheroTech had conflicts between academia and industry?
A. PheroTech often acts as a mediator!
Q. What is the best way to set up personal contacts?
A. Collaboration - don't criticize, work with collaborators, seek knowledge from others
Q. What are the keys to PheroTech's success?
A. The shareholders (20 people) are not making much money and communication, both within PheroTech and with outside interests.

Margaret Gadsby

AgrEvo is a joint-venture company with the crop protection division of Hoechst and with Nor-Am in which Margaret Gadsby is the Manager of Scientific and Regulatory Affairs. The crop protection industry produces pesticides, materials for IPM, sometimes fertilizers, and affiliated businesses deal with domestic/industrial/sanitary uses of pesticides, veterinary products, pharmaceutical, etc. Insecticides represent only 15% of the pesticides produced, thus it is unlikely that a person would be hired for a uniquely entomological job.

Entomologist are not just hired in insecticide areas. They are disproportionately represented in Regulatory and Environmental departments. Entomologists tend to be far more flexible than scientists in other disciplines such as weed science, and have been moved successfully into other roles.

AgrEvo has projects involving 20 countries, so it is important to think globally. In addition there is a greater need for transparency with the public in the '90's, and this is reflected in the people that are hired. The customer is the main focus, even in research, and the ability to sell within and outside the company is important. You need to have a vision of where you are going and where the company is going.

In terms of hiring practices, AgrEvo has about 175 full-time employees in Canada, and many seasonal employees. Entomologists are hired in the sales and R&D departments, which comprise 50% of the total positions.

Sales and marketing jobs require a minimum of a BSc. or BSAg., and most people start fresh out of school. In sales positions, you work mostly by yourself in rural areas, 'push' selling to distributors and growers. You must be able to train people on new technology and communicate both one-on-one and in public. Activities include sales, forecasting, market intelligence, farmer meetings, conferences, distribution issues, farmer questions and product performance monitoring.

R&D positions require a BSc. or BsAg. for some positions, but an MSc. for most. Again, most are fresh out of school, and many worked as annual summer students. There is really very little use for people with PhD's, but if they are hired, they are considered as an MSc. with 2 years experience. Your degree would not matter again until you were promoted to a Director. An exception is PhD.'s in

biotechnology and synthetic chemistry. In addition to the above mentioned educational requirements, it is necessary to become a professional agrologist. If you worked in R&D you would be located in a major centre, doing research in the summer growing season, training of other personnel on technical issues, acting as liaison with provincial, federal and university workers and participating in decision making. Things to consider in this type of work are lots of travel, long summer hours, high pressure, loads of challenges, enough rope to hang yourself and lots of training and learning opportunities.

In hiring entomologists (or anyone) managers go by the philosophy of "HIRE FOR ATTITUDE, TRAIN FOR SKILL". A prospective employee should be a team player, be independent, have a facility to learn, be practical, flexible, publicly presentable and have organizational ability. Entomologists are desirable because they are familiar with an interdisciplinary approach, are used to dealing with logistic challenges (moving targets) and are experienced at explaining themselves to others (what is it again that you do?). On the negative side, entomologists are often not well connected to agriculture, forestry or business, salesmanship is considered a negative/moral issue, and they tend to focus on minutia.

However, there are some things you can do to help yourself. Before applying, learn about the company, participate in 'foot in the door' activities, know what you can bring to the job, resolve your moral concerns ahead of time, and SELL YOURSELF. Be prepared to work beyond the narrow scope of your training, consider what you can learn from short-term positions and determine what you are looking for in life.

Questions
Q. Have you had any experience with sexual discrimination?
A. I am the only woman in management in AgrEvo. Today would be better than when I started, although agriculture is still more backward than other industries. When I put my time in answering the 1-800 number, callers think that I am the receptionist and want to speak to someone else.

Robert Trottier

Robert Trottier is the Research Coordinator of pest management for Agriculture and Agri-Food Canada in Ottawa. The Research Branch of Agriculture and Agri-Food Canada is a very large organization. In terms of entomology, the aim is to determine how insects fit into bioresources, such as their role on crops and the role of biological control agents. Canada is divided into 3 main regions - the west, the east and the central experiment farm/headquarters in Ottawa. There are 23 centres in total, with entomologists working at 17 of them. There are about 80 professional staff (usually with a PhD.) and 80 technical staff (usually a BSc., although lately with an MSc.)

It is important to be informed about what is going on at research centres, and knock on doors. One of the best ways to make contact with researchers is through summer jobs. In the past, scientists were hired to work on one pest for their whole career. This is no longer the case as resources are very tight. Three key points are to have the right attitude, be a team player, and see Canada as your country. All of the research centres across Canada will continue to need trained professionals - be prepared to go where the opportunities are. Jobs will always be there if you knock on doors, be flexible and sell yourself.

In terms of current hiring practices, entomologists are typically getting working through partnerships, post doctoral fellowships and contracts. There is very little long-term hiring (only 1 in the last 3 years).

Questions

Q. Is Agriculture Canada really hiring entomologists or are you looking for molecular biologists?

A. In the past few years, entomologists have been hired on a contract basis. The last surge of hiring entomologists was with the advent of chemical insecticides. Presently we are working on the development of integrated pest management systems. We cannot predict the future in terms of resources.

Conclusions

We have heard about a variety of different opportunities that exist for entomologists, and as Randy Baker suggested in his opening remarks, we should be optimistic rather than pessimistic as opportunities may actually be increasing. Despite the different perspectives presented by the speakers, there were a number of recurring themes.

1. Be a GENERALIST - you will be of greater benefit, particularly to small companies.
2. Be FLEXIBLE - be prepared to move, be prepared to take a job you are not specifically trained for, work for experience.
3. Develop COMMUNICATION and MANAGEMENT skills and be a TEAM player.
4. SELL yourself - be neat and presentable, make contacts, get involved, do part-time/volunteer work, know your strengths.
5. Strive to do something you LIKE. Stick with your field of interest, be patient and wait for opportunities.

Acknowledgements

On behalf of myself and the Student Affairs Committee, I would like to sincerely thank all of the speakers for their excellent presentations and advice. In addition, I would like to thank Rob Anderson and Paul Fields for their help in organizing this workshop.

PERSONALIA

DR. TOM ROYAMA
Recipient of the
Entomological Society of Canada
GOLD MEDAL
for Outstanding Achievement in Canadian Entomology

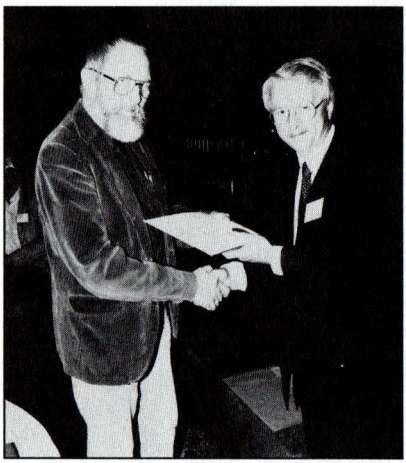
President George Gerber (right) presenting Dr. Royama (left) with the Gold Medal at the 44th Annual Meeting of the Entomological Society of Canada in Winnipeg, Manitoba.

DR. DAN QUIRING
Recipient of the
Entomological Society of Canada
C. GORDON HEWITT AWARD
for Outstanding Achievement in Canadian Entomology

President George Gerber (right) presenting Dr. Quiring (left) with the C. Gordon Hewitt Award Plaque at the 44th Annual Meeting of the Entomological Society of Canada in Winnipeg, Manitoba.

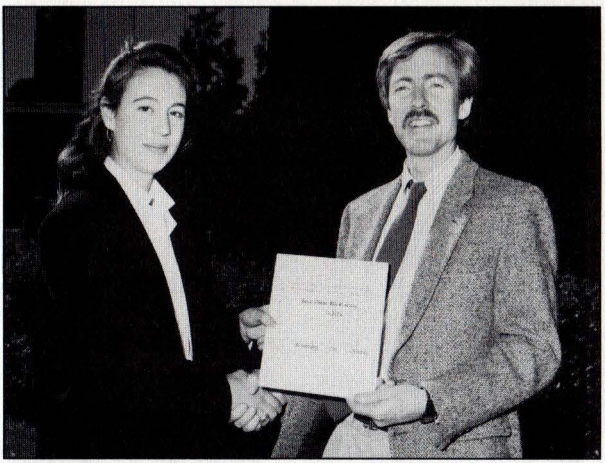
DR. WILLIAM B. PRESTON
Recipient of the
Entomological Society of Canada
NORMAN CRIDDLE AWARD

President George Gerber (right) presenting Dr. Preston (left) with the Norman Criddle Award at the 44th Annual Meeting of the Entomological Society of Canada in Winnipeg, Manitoba.



DUYEN NGUYEN
Recipient of the 1994
Entomological Society of Canada
SCHOLARSHIP AWARD

President George Gerber (right) presenting Duyen Nguyen (left) with the Scholarship Award at the 44th Annual Meeting of the Entomological Society of Canada in Winnipeg, Manitoba.



JULIE ANN McCARTHY
Recipient of the 1994 Entomological Society of Canada SCHOLARSHIP AWARD

Dr. Steve Marshall (right) presenting Julie Ann McCarthy (left) with the Scholarship Award in Guelph.

DANIEL DOUCET
Recipient of the 1994 Entomological Society of Canada GRADUATE RESEARCH TRAVEL GRANT

Supervisor Dr. Michel Cusson (right) presenting Daniel Doucet (left) with the cheque for the ESC Graduate Research Travel Grant.

Mr. Doucet was awarded a grant to visit the laboratory of Dr. D. Stoltz of Dalhousie University in Halifax. Mr. Doucet is a graduate student at the University of Laval and his project concerns "Effect of parasitism by *Enytus montanus* (Hymenoptera: Ichneumonidae) on the development and immunity of its host, *Choristoneura fumiferana* (Lepidoptera: Tortricidae)" He writes: "I would like to address my thanks to the Entomological Society of Canada for the financial support of the visit to the lab of Dr. Stoltz".

XUEKUI SUN
Recipient of the 1994 Entomological Society of Canada GRADUATE RESEARCH TRAVEL GRANT

Supervisor Dr. Steve Marshall (left) presenting Xuekui Sun (right) with the cheque for the ESC Graduate Research Travel Grant.

Mr. Xuekui Sun, a graduate student at the University of Guelph, plans to use his award to travel to the Natural History Museum in London, England, and the Musée national d'histoire naturelle in Paris. His studies concern the "Zoogeography and systematics of the Genus *Phasia* Latreille (Diptera" Tachinidae)".

Dr. Staffan Lindgren moves to UNBC

After 10 years as Research Director of Phero Tech Inc., Delta, B.C., Staffan Lindgren recently accepted a position as Associate Professor in the Forestry Programme, Faculty of Natural Resources and Environmental Studies, University of Northern British Columbia in Prince George. He will be the sole entomologist at the new University. Staffan will continue research on bark beetle pheromones, as well as participate in interdisciplinary projects within the Faculty.

His new address will be: Faculty of Natural Resources and Environmental Studies, University of Northern British Columbia, 3333 University Way, Prince George, B.C. V2N 4Y4

Charles Vincent receives Jean-Charles Magnan Award

During their last annual congress held at Dorval, the "Ordre des Agronomes du Québec" presented the Jean-Charles Magnan Award to Charles Vincent (Agriculture Canada, Saint-Jean-sur-Richelieu) as author of the best extension paper for 1994. The paper relates a decade of research on plum curculio done in collaboration with Dr. S. B. Hill (Macdonald College) and then students, G. Lafleur (Ph.D.), G. Racette (M.Sc.) and G. Chouinard (Ph.D.). Thanks to a series of experiments conducted with adult plum curculio in apple orchards, border row treatments are now successfully used in Eastern North America. That approach translates in up to 60% savings in insecticides normally recommended for the plum curculio.

NEWS OF ORGANIZATIONS

International Commission on Zoological Nomenclature

Applications published in the *Bulletin of Zoological Nomenclature*

The following applications were published on 30 September 1994 in Vol. 51, Part 3 of the *Bulletin of Zoological Nomenclature*. Comment or advice on these applications is invited for publication in the *Bulletin of Zoological Nomenclature* and should be sent to the Executive Secretary, I.C.Z.N., c/o The Natural History Museum, Cromwell Road, London SW7 5BD.

Case 2638. ***Apis terrestris* Linnaeus, 1758, *A. muscorum* Linnaeus, 1758 and *A. lucorum* Linnaeus, 1761 (currently *Bombus terrestris*, *B. muscorum* and *B. lucorum*) and *Bombus humilis* Illiger, 1806 (Insecta, Hymenoptera): proposed conservation of usage of the specific names**

Astrid Løken
Hovseterveien 96, N-0768 Oslo, Norway

Antti Pekkarinen
Department of Zoology, Division of Ecology, P.O. Box 17 (P. Rautatiekatu 13), FIN-00014 University of Helsinki, Finland

Pierre Rasmont
Laboratoire de Zoologie, Université de Mons-Hainaut, Avenue Maistrjau, B-7000 Mons, Belgium

Abstract. The purpose of this application is the conservation of the established usage of the specific names of four common species of European bumble bees, all now placed in the genus *Bombus* Latreille, 1802. This usage is in agreement with the original descriptions of the species, but lectotype designations for *B. terrestris* (the type species of *Bombus*) and *B. muscorum* have been made which, if followed, would have the following consequences: *B. terrestris* would be called *B. audax*, *B. lucorum* would become *B. terrestris*, *B. muscorum* would be called *B. laevis*, and *B. humilis* would become *B. muscorum*. These changes, especially the name transfers, would be very confusing and it is proposed that they be avoided by the designation of neotypes for *B. terrestris* and *B. muscorum*.

Case 2866. **MEGALODONTIDAE Morris & Lycett, 1853 (Mollusca, Bivalvia) and MEGALODONTIDAE Konow, 1897 (Insecta, Hymenoptera): proposed removal of homonymy**

Neil D. Springate
Muséum d'Histoire Naturelle, Case postale 6434, CH-1211 Genève 6, Switzerland

Abstract. The purpose of this application is to remove the homonymy between two family names of Hymenoptera and fossil Bivalvia. It is proposed that the complete name of the sawfly genus *Megalodontes* Latreille, 1802 be adopted as the stem of the corresponding family-group names, giving MEGALODONTESIDAE Konow, 1897. The mollusc name MEGALODONTIDAE Morris & Lycett, 1853 would remain unchanged.

Case 2936. **CAECILIIDAE Rafinesque-Schmaltz, 1814 (Amphibia, Gymnophiona) and CAECILIIDAE Kolbe, 1880 (Insecta, Psocoptera): proposed removal of the homonymy by the revocation of Opinion 1462 and the adoption of the spelling CAECILIUSIDAE for the psocopteran family name**

M. H. Wake
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A. Dubois
Muséum national d'Histoire naturelle, 25 rue Cuvier, 75005 Paris, France

D. R. Frost
American Museum of Natural History, 79th St. and Central Park West, New York, NY 10024, U.S.A.

T. E. Moore & R. A. Nussbaum
Museum of Zoology, University of Michigan, Ann Arbor, Michigan 48109-1079, U.S.A.

Abstract. The purpose of this application is the conservation of the very well known family name CAECILIIDAE Rafinesque-Schmaltz, 1814 for caecilian amphibians. This name is a senior homonym of the insect name CAECILIIDAE Kolbe, 1880. Because it had been suggested that the emendation CAECILIUSIDAE of the latter would be non-euphonious, the amphibian name was emended to CAECILIAIDAE in Opinion 1462 (December 1987). The reversal of this ruling is sought in pursuit of both stable usage and adherence to priority; furthermore CAECILIAIDAE is both non-euphonious and cumbersome.

The following **Opinions** were published on 30 September 1994 in Vol. 51, Part 3, of the *Bulletin of Zoological Nomenclature*:

Opinion 1781. *Termes lacteus* Froggatt, 1898 (currently *Coptotermes lacteus*; Insecta, Isoptera): specific name conserved.
Opinion 1782. *Corisa nigrolineata* Fieber, 1848 (currently *Sigara* (*Pseudovermicorixa*) *nigrolineata*; Insecta, Heteroptera): specific name conserved.
Opinion 1783. *Aradus caucasicus* Kolenati, 1857 (Insecta, Heteroptera): syntype replaced by a neotype, so conserving the usage of the specific name and that of *A. hieroglyphicus* Sahlberg, 1878.
Opinion 1784. *Buprestis* Linnaeus, 1758 and *Chrysobothris* Eschscholtz, 1829 (Insecta, Coleoptera): conserved by the designation of *Buprestis octoguttata* Linnaeus, 1758 as the type species of *Buprestis*, and *Chrysobothris* and *Dicerca* Eschscholtz, 1829: conserved as the correct original spellings.
Opinion 1785. *Dytiscus biguttatus* Olivier, 1795 (currently *Agabus biguttatus*; Insecta, Coleoptera): specific name conserved.

PUBLICATIONS
BOOK REVIEWS

R.E. Paull and J.W. Armstrong (eds), 1994. *Insect Pests and Fresh Horticultural Products: Treatment and Responses.* CAB International, Wallingford, 368 pp, ISBN 0 85198 872 5. Hardcover $(US) 85.00

In today's global village people, produce and manufactured goods are moved around the planet in quantities and at speeds as never before. The result is that we eat bananas grown in Panama while watching televisions made in Japan, in clothes made in Indonesia after spending the day shipping wheat to China.

Another result is that insects introduced from other regions cause billions of dollars in damage each year. The list of introduced insect pests is long and growing: codling moth, diamondback moth, Japanese beetle, cockroaches, grain storage insects, to name just a few. Countries around the world have introduced strict guide lines to stem the tide of introduced insects, weeds, and pathogens. Many

commodities will only be allowed to be imported after they have undergone control measures to ensure no pests are imported along with the produce. Simultaneously there is a greater demand for insecticides that do not leave residues or harm the environment. In 1992, the Montreal Protocol on Substances that Deplete the Ozone Layer identified methyl bromide, the fumigant of choice for most quarantine applications, as an ozone depleting substance. Quarantine uses of methyl bromide were exempted from the proposed reductions. However, the USA, which uses over 30% of the world's methyl bromide, is committed to eliminate all substances that are ozone depleting.

Against this backdrop, *Insect Pests and Fresh Horticultural Products: Treatment and Responses* is a much needed reference work for entomologists, plant physiologists and quarantine officers. Except for the section on specific commodities, the book is too general to be useful to importers and exporters. Although the focus is on fruits, vegetables, ornamentals and cut flowers, people involved in the quarantine issues for other commodities such as grain, forage and lumber will also find much of the work reviewed here useful.

The book has four sections: (1) Quarantine Criteria, (2) Physiological and Biochemical Responses of Insects to Possible Disinfestation Procedures, (3) Product Physiology and Biochemical Responses to Possible Disinfestation Procedures, (4) Individual Product Treatments. In all there are 17 chapters, written by 24 contributors, most who are from the USA with a few authors from Australia, New Zealand and Canada. Despite the geographical biases, quarantine control measures from around the world are examined. The same cannot be said for the section on Individual Product Treatment that treats separately, tropical fruits, temperate fruits, vegetables and ornamentals and has a mainly USA, Canadian or Australian viewpoint.

The section on Quarantine Criteria has chapters on host acceptability and the statistical basis for determining 99.9968% mortality required for quarantine standards. The next two sections are the two sides of the same coin. The first has chapters that deal with efficacy of chemical fumigants, irradiation, extreme temperature treatments and controlled atmospheres in managing insects. The second examines how the control treatments affect commodity quality. The final section, Individual Product Treatment is in large part a repeat of what was covered in the previous two sections. However, it is a useful repetition. If for example your interests lie exclusively in importation of tropical fruits, this section conveniently covers this in one chapter.

This review comes at a time when it is becoming more difficult to prevent the spread of insect pests due to increased global commerce and fewer insecticides to disinfest commodities. This book will aid scientists and quarantine officers in finding new solutions to an age-old problem.

Paul Fields
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Scott A. Elias. 1994. *Quaternary Insects and Their Environments*. Smithsonian Institution Press, Washington, D.C. 284 pp. Price $40.00

Quaternary paleoentomology is a new scientific branch. One early pioneer was a Dane, Kai L. Henriksen, who in 1933 published his comprehensive treatment of Quaternary insects from Denmark and southern Sweden. The real breakthrough took place in England in the 1960's, when G. Russell Coope started his impressive work. All real pioneers, also Coope, at first experience a hard time with resistance

and ignorance. However, little by little the message was disseminated and comprehended: fossil insect faunas constitute highly sensitive and reliable indicators of former climates and paleoenvironments. Students of these old insect fragments are few, and the time-consuming work with them is not an easy way of obtaining scientific merit. Nonetheless, our number is still growing, and the total number of publications now approaches 500. I think this is why Scott Elias decided to write his review volume: although expanding fairly rapidly, this field is still so limited that an overview with a presentation of the work of practically all people involved is feasible. However, Elias is standing on the strong shoulders of Coope, who has published excellent reviews and bibliographies on the matter. This grand old man has also written the foreword of the book.

It comprises twelve chapters. Chapters 1-7 treat the history of Quaternary insect studies, methods, identification, the value of insects in paleoecology, paleoclimatic studies using insects, insect Quaternary zoogeography, and the use of insect fossils in archaeology. Chapters 8-11 consider paleoentomolgical studies in different geographical areas (Europe, Siberia, Eastern Beringia, and other parts of America), and chapter 12 consists of conclusions and prospectus. There is also a systematic appendix listing taxa mentioned, an extensive list of references, an index and a glossary.

Elias presents the subject in a clear and easily comprehensible – sometimes amusing! – way. As a relative newcomer to the paleoentomological field, I find this book very useful. Much valuable information can be found in all chapters. Especially well written are the chapters on history, methods, identification, Quaternary zoogeography, and the value of insect fossils as paleoecological indicators; hopefully many entomologists working with modern insect taxonomy and zoogeography will read them. This is the principal aim of the book: "to highlight some of the important, if up to now dimly perceived, connections between Quaternary and modern entomology" (p. 2). Entomologists in general should be taught that "we have now data that enable us to begin to answer questions about species longevity, centers of origin, and the stability of insect communities, questions that had heretofore been considered only by theoreticians working back from modern data." (p. 1). It cannot be stated too strongly that biogeographical speculations are of little value without knowledge of the fossil record.

As a (former) insect ecologist, I also appreciate the many biological notes and comments in connection with the mention of morphological features, e.g. microstructure (p. 44) and elytra (p. 48).

One exceedingly valuable point is that Elias opens the door to the extensive literature written in Russian. More details are provided about Russian and Siberian studies than for most of the western literature, thus giving a comprehensive impression of how much is going on in that part of the world.

However, there are also some critical words to be said. In general I do not find the chapters on studies done in different geographical areas well structured. In most cases the individual workers and their publications are presented, one after another. This is plainly somewhat boring. Overviews of the "great lines" of the efforts in the different areas would be much more inspiring. Other passages, e.g., the very interesting one about the insects of ancient human feces ("coprolites", p. 127 ff.), suffer from the same structural weakness. A more formal criticism concerns the many tables, which, I think, are more space-consuming than justified by their importance. For instance, it is not necessary that Table 1.1 should cover two pages; also the lists of sites and the names (and years) of people who have been working there could have been included in the captions of the corresponding maps. A similar criticism is levelled at the appendix on taxa, which easily could have been incorporated in the index. The glossary is very useful; I miss only a few terms (e.g. "mesic", "stenotherm", "eurytherm").

A few minor errors and omissions have been noted (concerning topics for which I have special knowledge) which should be corrected in future editions of the book. For instance, Scandinavian paleoentomological work did not begin with Carl Lindroth, but with the aforementioned K.L. Henriksen; Amara alpina can hardly be adapted to high arctic conditions, as it is mainly found in the Low Arctic (p. 98); John Matthews' Diacheila from Meighen Island is not extant (p. 176). And why is the most important fossil insect site in Greenland, the Kap København Formation, not indicated in Figure 8.4?

The illustrations are of varying quality. They are very good in Chapter 3, but most photos from sites are too dark or grey and indistinct. It is a pity that the scanning photos generally are reproduced in such a small scale that details are invisible. The line drawings are in most cases fine, but sometimes (e.g. in maps) the letters of the legend are too small.

Since Quaternary entomology is a young science it may be exaggerated to say that Elias' book meets a long-felt need; however, it is most welcome as a "state of the art" and a standard reference for all interested in this field. Moreover, I think that the timing of its publication is perfect: we are in a phase when Quaternary entomology seems to be standing just before a great expansion and a universal recognition.

Jens. Böcher
Zoological Museum, University of Copenhagen

Charles L. Hogue. 1994. *Insects of the Los Angeles Basin*. University of Washington Press, P.O. Box 50096, Seattle, WA. 98145-5096. 448 pp., 423 photos, 376 in color. $(US) 45.00

This book is an extensive update of the first edition of *Insects of the Los Angeles Basin* first published in 1974. Substantial changes and additions have been made in this, the second edition, as the insect fauna of Los Angeles, and Los Angeles itself, has changed in the last 20 years. For the reader with little or no knowledge of insects, the first part of the book is a concise but adequate introduction with sections on body structure and anatomy, growth and development and classification. This introductory part also includes sections on the environment and ecology of the Los Angeles area as pertains to the distribution of insects, conservation issues and a brief history of colonization of the Los Angeles basin by insects. The second part of the book consists of treatments of each of the major groups of insects (including mites, spiders, scorpions, ticks, centipedes and millipedes) that occur in the Los Angeles area. Each section provides notes about the general natural history of members of the group and notes some of the more commonly encountered species of the group. Most of these commonly encountered species are illustrated with line drawings or color photograph (many taken by the author himself). A list of important references for each group is also provided. Appendices include sections on insects and their importance as pests, how to keep insects in captivity, how to make an insect collection, a glossary of technical terms and a general bibliography and resource list.

Coverage of each group appears adequate for the Los Angeles area. For obvious reasons, butterflies and moths, and beetles were afforded the most extensive treatment; however, I found even small, less attractive and less commonly seen taxa to be given fair consideration. All illustrations in the book are of excellent quality and appear intended as the sole means of identification, there being no keys, tables or other means of placing an insect to order. While this will not cause someone with a general knowledge of insects any problems, I suspect this will cause problems for the true novice. Another potential problem concerns the references as many of these are of a technical nature. While certainly reflecting the most recently available information, they will likely be difficult for the average naturalist,

to whom the book appears directed, to obtain.

In summary, this book is intended primarily as a reasonably well-informed naturalists handbook for the identification of insects and their relatives in the Los Angeles area; in this context it succeeds quite well.

Robert S. Anderson,
Canadian Museum of Nature,
Ottawa, ON. Canada

Goulet, H. and J.T. Huber. 1993. *Hymenoptera of the World: An Identification Guide to Families.* Research Branch of Agriculture Canada, Publication 1894/E. 668 pp. Soft cover; within Canada: $(CND) 48.75; outside of Canada: $(U.S.) 63.35.

As entomologists, we have all struggled with identification keys that are difficult to understand, poorly illustrated and generally frustrating. Our current identification aids have improved over the last century: previously keys were rare and descriptions of insects terse and uninformative. Lack of attention to the task and means of separating taxa has led to situations such as in the systematics of Chalcidoidea, in which 16,000 of the estimated 100,000 world species have been described, but fewer than 5% can be reliably identified (LaSalle and Gauld 1993 [Hymenoptera and Biodiversity, Commonwealth Agricultural Bureau International]). In 1980 Canadian and U.S. hymenopterists initiated a specialty course for the identification of Hymenoptera. A major result of the collaboration is this long-awaited publication of the keys that have been developed, modified, and honed for use in this and other courses over the last 14 years. Such a landmark achievement represents the first set of clearly phrased and well-illustrated keys to the families of the Hymenoptera of the world.

The book is a collaborative effort of 11 authors from Canada, South Africa and the United States and contains an extensive review of the 99 known families of Hymenoptera. Its authors are to be applauded for including rare and exceptional groups in the keys and for creating a new linkage of couplets and illustrations that should become a model for future identification keys. The first four chapters introduce the classification and morphology of the Hymenoptera, and the remaining 12 provide keys and reviews for the order's 20 superfamilies. Illustrations for each section are extensive and intentionally repetitive. Figures are imbedded within the identification keys and associated with the appropriate couplet, often at the expense of repeating the same figure on more than one page. For anyone who has ever wasted time flipping back and forth between keys and illustrations, this convenience will be appreciated.

The illustrated glossary in Chapter 3 will be a great help to inexperienced users of hymenopteran keys. Here again, figures are used effectively, with each definition accompanied by a clear illustration. The authors have established a uniform terminology with which I can find little fault. Established standards are followed by all of authors, but there are a few minor slips. The terms prolegs, mesolegs and metalegs are used throughout the text. Especially for a student text, I would have preferred foreleg, midleg and hind leg (as in forewing and hind wing, which are used by the authors), but this is semantics. Some terms are used in restricted senses, and reference to alternative usages are not provided. The definition of funicle is misleading because of the reference to the antenna of a scelionid: a funicle in Chalcidoidea is more restrictive and does not include the basal ring segments or anelli ("ring-like flagellomeres" in this book). Also, the term epistomal groove is used as a composite term for what

Snodgrass and Richards designated as the epistomal sulcus (dorsal) and the clypeogenal sulcus (lateral). In these few cases, it is unclear whether the authors mean to establish new usages or if they have mistakenly applied the old terms. However, the text contains considerable space for making notes and incorporating changes.

The copious drawings are a major feature of this book. Illustrations are associated not only with each term but also with each key couplet. Habitus drawings are provided for each family and for the subfamilies of Ichneumonoidea. The figure editors (L. Dumochel and G. Bisdee) and illustrators (especially S. Rigby) did an extraordinary job. Figure captions are given for all of the habitus drawings but not for all of the figures in the identification couplets. This rarely causes problems except when one would like to know the identity of the species illustrated. Figure 68a on page 99 is one of the most bizarre-looking tenthredinoids that I have seen, but one cannot key the organism [the pergid genus *Cladomacra*] from the illustration alone. The habitus drawings range in quality from superb to poor; a few are, unfortunately, mere caricatures. The illustrations occupy significant space in the book (thus dubbing it the "Hymenoptera Colouring Book"), but these will be invaluable to users of the keys, especially for uncommon taxa.

All of the superfamilies of the Hymenoptera are dealt with completely and thoroughly, although the sections on classification and justification for the present usage are most thorough for the Ichneumonoidea and Chalcidoidea. The discussions of higher classification are not always consistent, and in some cases, are rather short. For example, the Proctotrupoidea has undergone major taxonomic changes in recent years, mainly owing to the exclusion of Ceraphronoidea and Platygastroidea. Defining features of the remaining Prototrupoidea are given, but no mention is made of the alternative classification proposed by Rasnitsyn (1988, *Oriental Insects* **22**:115-145) that places the Cynipoidea within "Proctotrupoidea" as the sister group of the Diapriidae, which if accepted would render the Proctotrupoidea as a paraphyletic group. For many readers, the treatment of the Apoidea will be rather novel: the superfamily is divided into Apiformes and Spheciformes, with the Spheciformes (previously Sphecidae) broken up into eight families. The recognition of a single superfamily has been generally adopted, but the treatment of the Sphecidae is new and the reasons are not adequately discussed (see Menke and Pulawski 1994 [Sphecos 26] for a review of the treatment of the Aculeates). The book is concerned more with diagnosis than biology, which is apparent in the brief commentaries that accompany the discussions of each family and subfamily. However, the extensive literature citations at the end of each chapter will prove invaluable for steering interested users toward more detailed treatments of the biology, classification and keys for the lower taxa of each family.

This book will be an important reference for novices and experienced workers in biological control and systematics. It has already been used with great success for hymenopteran workshops in Canada and the United States. Its price is reasonable and affordable to all, something that publishers of recent texts rarely consider. It is unfortunate, however, that the publisher did not offer a hard-cover binding similar to the earlier series on the genera of Nearctic Diptera. At least for my own library, I fear that the soft cover of this book will not outlive its usefulness.

John M. Heraty
Systematic Entomology Laboratory
National Museum of Natural History
Washington, DC, USA

SCHOLARSHIPS AND GRANTS

Entomological Society of Canada Graduate Research-Travel Grants
Invitation for Applications

Preamble

To foster graduate education in entomology, the Entomological Society of Canada will offer two research-travel grants, awarded annually on a competitive basis. The intent of these grants is to help students increase the scope of the graduate training. These grants, up to a maximum of $2,000, will provide an opportunity for students to undertake a research project or to do course work pertinent to their thesis subject that could not be carried out at their own institution.

Eligibility

To be eligible, a student must:

1) be enrolled as a full-time graduate student
2) be an active member of the Entomological Society of Canada

Format of the Application Form

The application form will be in the format of a grant proposal, where the applicant will provide the following information: 1) the subject of the thesis; 2) a pertinent review of the literature in the field; 3) a concise presentation of the status of the ongoing thesis research; 4) a description of the research or course work to be undertaken, clearly indicating a) the relevance to the overall goal of the thesis, b) an explanation of why such work cannot be carried out at the student's own university and c) the justification of the site where the research/course work will be carried out; 5) a budget for the proposed project; 6) anticipated dates of travel and date on which grant money is needed.

The application form should also be accompanied by: 1) an up-to-date C.V.; 2) a supporting letter from the senior advisor; 3) When appropriate, a support letter from the scientist or Department Head at the institution where the applicant wishes to go.

Evaluation Procedure

The scientific merit of each application will be evaluated by a committee that has the option of sending specific projects out for external review by experts in the field. A constructive written report, underlining the positive and negative aspects of the proposal, will be returned to the applicant.

Timetable and Application Procedure

Application forms, which may be obtained from the Secretary of the Society, must be completed and returned to the Secretary of the Society by **15 January 1995**. The committee will evaluate all applications by 30 April 1995 and determine if, and to whom, grants will be awarded. The successful applicants will be informed immediately, thereby providing sufficient time for students wishing to start in the fall to make necessary arrangements. Grants must be used in the 12 months following the award.

Recipients must provide a short final report, as well as a detailed list of expenses, in the three months that follow the trip. Any money not spent must be returned to the Society.

La Société d'entomologie du Canada Allocations de Voyage pour Étudiants Gradués

Appels pour Allocations

Préambule

Afin the promouvoir les études graduées en entomologie, la Société d'Entomologie du Canada offrira deux bourses de voyage associées à la recherche. Celles-ci seront décernées annuellement sur une base compétitive. Le but de ces bourses est de permettre aux étudiants gradués d'élargir les horizons de leur formation. Les bourses, d'une valeur maximale de $2,000 permettront à des étudiants de réaliser un projet de recherche, ou de suivre des cours pertinents à leur sujet de thèse qui ne peuvent être entrepris dans leur propre institution.

Éligibilité

Afin d'être éligible, l'étudiant doit:

1) être inscrit à temps plein comme étudiant gradué
2) être un membre actif de la Société d'Entomologie du Canada

Format du Formulaire de Demande

Le formulaire de demande sera dans le style d'une demande d'octroi et l'étudiant devra fournir les renseignements suivants: 1) le sujet de la thèse; 2) une présentation de la littérature pertinente au domaine d'étude; 3) une présentation concise du statut du projet de recherche en cours; 4) une description de la recherche ou des cours qui seront entrepris, indiquant clairement a) la pertinence des objectifs généraux de la thèse, b) les raisons pour lesquelles ce travail ne peut être entrepris à l'université où l'étudiant est inscrit, et c) une justification concernant le choix de l'endroit où la recherche/les cours seront entrepris; 5) un budget pour le projet proposé; 6) dates prévues pour le voyage et date pour laquelle la bourse sera requise.

La demande devra aussi être accompagnée: 1) d'un C.V. complet mis-à-jour; 2) d'une lettre de recommendation du directeur de thèse; et 3) lorsque convenable, une lettre d'appui d'un administrateur de l'institution que le candidat désire fréquenter.

Évaluation

La valeur scientifique de chaque demande sera évaluée par un comité qui aura l'option d'envoyer des demandes spécifiques pour évaluation par un lecteur externe, expert dans le domaine. Un rapport écrit, contenant une critique constructive, faisant ressortir les aspects positifs et négatifs de la demande, sera retourné à chaque candidat.

Échéances et Procédures

Les formulaires de demande, qui peuvent être obtenus du Secrétaire de la Société, doivent être remplis et retournés pour **le 15 janvier 1995** au Secrétaire de la Société. Le comité évaluera toutes les demandes pour le 30 avril 1995 et déterminera si, et à qui, les bourses seront décernées. Les candidats choisis seront contactés immédiatement, cela afin d'allouer suffisamment de temps pour les préparatifs nécessaires à un départ possible à l'automne. La bourse doit être utilisée dans les 12 mois suivant l'octroi.

Les récipiendaires devront préparer un court rapport final, en plus d'une liste détaillée de leurs dépenses, dans les trois mois suivant le voyage. Tout argent non dépensé devra être remis à la Société.

Entomological Society of Canada Postgraduate Awards 1995 and Keith Kevan Scholarship

The Entomological Society of Canada will offer two postgraduate awards of $2,000 each to assist students beginning graduate study and research leading to an advanced degree in entomology. The postgraduate awards will be made on the basis of high scholastic achievement.

In memory of Dr. D. Keith McE. Kevan, the Entomological Society of Canada is also offering one postgraduate award of $1,000 to assist graduate students studying systematics in entomology. The award will be made on the basis of high scholastic achievement and excellence in insect systematics.

Invitation for Applications

Eligibility - **Postgraduate Award**: The successful applicants must be either Canadian citizens or landed immigrants with Bachelor's degrees from Canada universities. Applicants must begin their first year of postgraduate studies between 15 June 1993 and 31 December 1995. The studies and research must be carried out at a Canadian university. Each award is conditional upon certification by the Department Head that successful applicants have been accepted into the first year of a program of study and research for an advanced degree with full graduate status. A student who was unable to gain admission or enters graduate school as a qualifying candidate is not eligible to receive an award.

- **Keith Kevan Scholarship**: The successful applicant must be a graduate student at the time of application, studying at a Canadian university or be a Canadian citizen studying abroad.

Method of Application - Applicants must submit a properly completed form, with support documents. Applications must be received by the Secretary of the Society no later than **11 June 1995**. Please specify if you are applying for the Postgraduate Award or the Keith Kevan Scholarship.

Process of Selection and Award Presentation - Applications will be reviewed by a committee of the Society. An announcement of the two winners will be made at the annual meeting of the Society and each winner will receive a certificate. Payment of the award will be made in October 1995.

Regulations

Earnings from Other Sources - Award holders are permitted, under normal circumstances, to demonstrate, instruct or assist in non-degree related research for a maximum of 200 hours per annum, provided that the Head of their Department considers is desirable and that it does not hinder the progress of their studies. Apart from these assistantships, award holders will devote their full time to study and research and will not undertake any paid work during the school term. They may hold other awards and scholarships.

Transfers - Awards are made on the condition that the winners engage in a program of graduate studies and research for an advanced degree in entomology in Canada. Students, who after receiving the award, wish to change their graduate program or transfer to a foreign university may be asked to decline the award. Any change in the course of study, department or university in which an award winner is registered requires prior approval of the Scholarship Committee. A request for permissions to transfer must be supported by statements from Heads of Departments.

Additional Allowances - The award stipends are all-inclusive. There is no provision for additional grants by the Society for any purpose. Additional grants, for example, to attend meetings, pay course fees, meet publications costs, etc., will not, under any circumstances, be authorized.

All communications regarding these awards, including requests for applications, should be addressed to:

Dr. P. Dixon, ESC Secretary
Research Centre, Agriculture and Agri-Food Canada
Brookfield Rd.
St. John's, Nfld. A1E 3Y3
Telephone: 709-772-4763
Fax: 709-772-6064

La Société d'entomologie du Canada Bourse pour Étudiants Post-Gradués 1995 et Bourse Keith Kevan

La Société d'entomologie du Canada offrira deux bourses d'un montant de $2,000 chacun pour aider des étudiants qui entreprennent des études post-graduées et des recherches en vue de l'obtention d'un diplôme d'études supérieures en entomologie. Les bourses seront accordées aux étudiants ou étudiantes en raison des seuls critères de réussite académique.

Aussi, en mémoire de Dr. D. Keith Mc.E. Kevan, la Société d'entomologie du Canada offrira une bourse d'un montant de $1,000 pour aider les étudiants qui entreprennent des études en taxonomie des insectes. Cette bourse est accordée en raison des critères d'excellence académique et de la prééminence en taxonomie des insectes.

Avis

Éligibilité - **Bourse Post-graduée**: Les candidats doivent être Canadiens ou résidents reconnus du Canada et détenir un baccalauréat d'une université canadienne. Les candidats doivent obligatoirement avoir débuté leur première année d'études post-graduées entre le 15 juin 1993 et le 31 décembre 1995, et effectuer leur étude et recherche dans une université canadienne. Les bourses ne seront accordées que lorsque les directeurs de Département auront certifié que les candidats choisis sont inscrits en première année d'un programme d'études supérieures, et ce avec tous les privilèges attachés au statut d'étudiant gradué. Un étudiant qui n'a pu être admis à l'École des Gradués, ou qui s'incrit en vue de compléter l'obtention de crédits, n'est pas éligible à la bourse.

- **Bourse Keith Kevan**: Le(La) candidat(e) doit être étudiant(e) gradué(e), inscrit(e) **à une** université canadienne ou citoyen canadien étudiant à l'étranger.

Procédure - Les candidats devront soumettre leur candidature à l'aide du formulaire approprié et y joindre tous les documents requis. Les demandes devront être reçues par le Secrétaire de la Société au plus tard le **11 Juin 1995.** Préciser que vous voulez les formulaires pour la Bourse Post-graduée ou la Bourse Keith Kevan.

Sélection et remise des bourses - L'analyse des candidatures se fait par un comité de la Société, et l'annonce des récipiendaires se fera à la réunion annuelle de la Société où ils recevront un certificat. Le paiement de la bourse aura lieu en octobre 1995.

Règlement

Autres sources de revenus - Un boursier pourra normalement donner des séances de cours ou de démonstration et être auxiliaire de recherche jusqu'à un maximum de 200 heures par année, en autant que le Directeur de son département considère cela profitable et que ces tâches additionnelles ne nuisent pas au progrès de l'étudiant. Sauf pour ces assistances, un boursier devra consacrer tout son temps à ses études et recherches et n'accepter aucune autre rémunération. Il peut cependant jouir d'une autre bourse ou d'un prix.

Transferts - Les bourses sont accordées à condition que les boursiers entreprennent des études graduées en vue de l'obtention d'un diplôme en entomologie au Canada. Les boursiers qui décideront de changer de champ d'études, ou de transférer dans une université hors du Canada peuvent se voir retirer leur bourse. Après acceptation de la bourse, tout changement de programme d'études, de département ou d'université devra recevoir au préalable l'approbation du Comité de la Bourse de la SEC. Une telle demande doit être accompagnée de documents provenant des Directeurs des départements concernés.

Frais supplémentaires - La somme offerte est invariable. En aucun cas la Société n'accordera de montant supplémentaire. Des frais additionnelles, par exemple, pour assister aux réunions scientifiques, payer des frais de cours, défrayer des coûts de publications, etc., ne seront autorisés sous aucune considération. Toute correspondance relative aux bourses, incluant les demandes de formulaires doit être adressée à:

Dr. P. Dixon, Secrétaire SEC
Centre de Recherche, Agriculture et Agro-Alimentaire Canada
Brookfield Rd.
St. John's, Terre-Neuve A1E 3Y3
Téléphone: 709-772-4763
Télécopie: 709-772-6064

Smithsonian Research Fellowships in History, Art, and Science

The Smithsonian Institution announces its research fellowships for 1995 in the fields of History of Science and Technology, Social and Cultural History, History of Art, Anthropology, Biological Sciences, Earth Sciences, and Materials Analysis.

Smithsonian Fellowships are awarded to support independent research in residence at the Smithsonian in association with the research staff and using the Institution's resources. Under this program, senior fellowships of three to twelve months, predoctoral and postdoctoral fellowships of three to twelve months, and graduate student fellowships of ten weeks are awarded. Proposals for research in the following areas may be made:

History of Science and Technology: History of agriculture; air and space; computers, communication, and society; electrical technology; engineering; industrial archaeology; mathematics;

medicine and pharmacy; natural history; physical sciences; social dimensions of science and technology; and transportation.

Biological Sciences: Animal behavior and pathology; ecology; environmental studies; evolutionary biology; marine biology; natural history; paleobiology; systematics; and tropical biology.

Deadline: **January 15, 1995.**

Postdoctoral Fellowships are offered to scholars who have held the degree or equivalent for less than seven years. Senior Fellowships are offered to scholars who have held the degree or equivalent for seven years or more. The term is 3 to 12 months. Both fellowships offer a stipend of $25,000 per year plus allowances.

Predoctoral Fellowships are offered to doctoral candidates who have completed preliminary course work and examinations. The term is 3 to 12 months. The stipend is $14,000 per year plus allowances.

*Predoctoral, postdoctoral, and senior stipends are prorated for periods of less than twelve months.

Graduate Student Fellowships are offered to students to conduct research in association with research staff members of the Smithsonian. Students must be formally enrolled in a graduate program of study, have completed at least one semester, and not yet have been advanced to candidacy if in a Ph.D. Program. The term is 10 weeks; the stipend is $3,000.

Awards are based on merit. Smithsonian fellowships are open to all qualified individuals without reference to race, color, religion, sex, national origin, age, or condition of handicap of any applicant.

For more information and application forms, please write: Smithsonian Institution, Office of Fellowships and Grants, 955 L'Enfant Plaza, Suite 7000, Washington, D.C., 20560, or e-mail: siofg@sivm.si.edu. Please indicate the particular area in which you propose to conduct research and give the dates of degrees received or expected.

POSITIONS AVAILABLE

Graduate Research Opportunities in Invertebrate Ecology

I welcome applications from students interested in pursuing graduate studies in invertebrate ecology in the following areas, starting January to May 1995: - factors affecting the evolution of polymorphism in insect populations (Chaffey's Locks, Ont.). - importance of parasites in determining insect reproductive success: implications for biocontrol (Cypress Hills, Sask.) - factors important in determining patterns and processes in parasite communities (various locations). - reproductive ecology of an intertidal amphipod (Wolfville, N.S.). Funding for graduate student projects will be provided from several sources including N.S.E.R.C. research grant, internal funds from University of Regina, World Wildlife Fund as well as other sources. Funding will be provided at competitive rates. Interested applicants should write a brief covering letter highlighting their experience and research interests to Dr. Mark Forbes at the Department of Biology, University of Regina; e-mail forbesml@max.cc.uregina.ca; tel 306-585-4267. Transcripts and letters of recommendation will be requested at a later date. (Posted: May 13, 1994).

Terrestrial Ecologist

Pending approval of funding, the Illinois Natural History Survey will hire a two-year postdoctoral researcher to study the efficacy of different biological indicators to assess habitat quality and condition. Preference will be given to those trained in the ecology and systematics of plants or invertebrates. Contact Dr. Mark Schwartz, tel 217-333-5702; e-mail m-schwartz@uiuc.edu. (Posted: May 26, 1994).

Field Director and Faculty Positions

The School for Field Studies offers a unique educational opportunity for college students to live and study environmental issues in remote field settings. Faculty and students (32) work in semester and summer programs in an interdisciplinary teaching environment with case studies and directed research projects. The following are S.F.S. permanent centers operating fall and spring semesters and summer programs for undergraduates: Baja- Center for Marine Mammal Studies; Kenya- Center for Wildlife Management; Caribbean- Center for Marine Resource Studies; Costa Rica- Center for Sustainable Development; Australia- Center for Rainforest Studies; Palau- Center for Island Management; British Columbia-Center for Coastal Watershed Management. The S.F.S. hires Resource Managers, Conservation Biologists, Ecologists, Socio/Economic professionals and, Cultural Ecologists. All faculty must have the following qualifications: Ph.D. or equivalent (Masters with 4 years of applied experience), 2 years teaching at the undergraduate level, experience living/working in the region of the center, demonstrated conservation project management background, group leadership skills and experience, and an ability to live in a remote field setting for extended periods of time. All positions are residential. To apply, send c.v. and a detailed letter explaining experience with conservation projects to: The School for Field Studies, 16 Broadway, Box R, Beverly, MA 01915; fax 508-927-5127. (Posted: May 27, 1994).

Research Entomologists

Two Research Entomologist Positions, Working With Screwworm Research Entomologist, GS-0414-11 at the Screwworm Research Unit in Tuxtla Gutierrez, Mexico (starting salary $33,623 per annum) to conduct research in a multifaceted program whose mission is to directly support the screwworm eradication program being conducted in Central America. Specific objectives are: (1) cooperate in conducting research to develop improvements in screwworm diets; (2) develop improvements in rearing technology and methods; (3) discover means to prevent genetic adaptation of screwworm strains to mass rearing conditions in the production plant; and (4) cooperate in developing new screwworm strains for use in the production plant. Research Entomologist, GS-0414-11 at the Screwworm Research Unit in Panama City, Panama (starting salary $33,623 per annum) to conduct research in a multifaceted program which is primarily aimed at the analysis and characterization of the ecology of the primary screwworm in Central America. Specific objectives are: (1) cooperate in conducting research to document and analyze changes in natural screwworm populations before, during, and after implementation of the eradication program in Panama; (2) develop and evaluate new sterile male release strategies with particular attention to analysis of outbreak screwworm populations; (4) develop technologies and procedures for eradicating introduced screwworm outbreaks from screwworm-free areas; and (5) cooperate in developing new screwworm strains for use in the production plant. Note that the third objective appears to be missing. Send applications to: U.S.D.A., Agricultural Research Service, Delegated Examining Section, 6303 Ivy Lane, Room 106, Greenbelt, MD 20770-1433; tel 301-344-3960. (Posted: June 16, 1994).

Graduate Research Assistantship

A nearly half-time (49%) assistantship leading to an M.Sc. in entomology is available immediately at the Insect Museum, Department of Plant Science, South Dakota State University. Duties will include curatorial needs within the S.D.S.U. Insect Museum, fieldwork on the South Dakota Insect

Survey, and research on, insect or arachnid taxonomy or systematics (subject taxon open for consideration). The student will be expected to work under supervision and independently, and must be capable of active cooperation and interaction with coworkers and members of the public. Qualifications are a B.S. or B.A. degree in entomology, biology, or related fields, and effective communication skills. An interest in insect or arachnid taxonomy, ecology and evolution, and biodiversity, is desired. Admission to the S.D.S.U. Graduate School. The stipend is expected to be at least $9,200 in the first year. Graduate assistants on contract with the university pay only one-third of the standard resident graduate tuition per credit hour. Applicants should send the following: (1) current resume or curriculum vitae; (2) the names, addresses, and telephone numbers of 3 references; (3) official transcripts of all post-secondary education; (4) T.O.E.F.L. and G.R.E. scores; and, (4) a letter of application briefly describing interests and background relating to the position. Additional information will be requested by the Graduate School. Send materials to: Dr. Paul J. Johnson, S.D.S.U. Insect Museum, Box 2207A South Dakota State University, Brookings, SD 57007; tel 605-688-4438; fax 605-688-4602; e-mail px53@sdsumus.sdstate.edu. Proof of eligibility for employment is required by the Immigration Reform and Control Act of 1986. (Posted: June 24, 1994).

Systematic Zoologist

The Field Museum is seeking an outstanding systematic zoologist to fill a career-track appointment in the Department of Zoology at the level of Assistant Curator. Candidates pursuing innovative, specimen-based research in systematic biology will be considered. Among the areas of interest are the following: (1) molecular systematics, with a focus on integrating population genetics and/or molecular mechanisms with systematics; (2) developmental biology, including the use of tissue culture and histology as a means of addressing developmental and phylogenetic questions; (3) phylogenetic research that investigates questions in population or community ecology; or (4) systematics based on multiple data sets (molecular, morphological, behavioral) or making important contributions in a second field such as conservation, theoretical systematics, or biogeography. The successful candidate will have a Ph.D. and a proven record of scientific achievement. In addition to research, responsibilities include curation of collections and participation in public exhibit and education programs. The potential exists for participation in graduate and undergraduate training at local universities. The Zoology Department is part of the Museum's Center for Evolutionary and Environmental Biology which also includes the Departments of Botany and Geology. Consideration of applications will begin on September 15, 1994 and will continue until a suitable candidate is found. Please send the following materials: (1) a Curriculum Vitae; (2) a statement of research objectives; (3) names and addresses of 3 people from whom letters of recommendation may be sought; (4) copies of relevant publications to: Search Committee, Department of Zoology, Field Museum, Roosevelt Road at Lakeshore Drive, Chicago, IL 60605-2496; e-mail inquiries to westneat@fmnh.org. (Posted: June 28, 1994).

Graduate Research Assistantship in Grassland Arthropod Diversity

A standard nearly half-time (49%) research assistantship leading to an M.Sc. degree in entomology is available immediately at South Dakota State University. Research will be done on a continuing project that is examining the effects of different grazing treatments on grassland arthropod diversity. Opportunities exist for the student to develop interests involving arthropod taxonomy, ecological principals, sampling and analysis methods. The student will be expected to work under supervision and independently, must be willing to experience extended hours in the field under a continental climatic regime, and be capable of active cooperation and interaction with coworkers, the public, government agencies, and large mammalian livestock. A valid drivers license is necessary. This project is conducted in association with the South Dakota Cooperative U.S. Fish & Wildlife Research Unit. Qualifications are a B.Sc. or B.A. degree in entomology, biology or related fields, and effective

communication skills. An interest in arthropod taxonomy, ecology, and biodiversity desired, especially in relation to manipulated and other grasslands. Unconditional admission to the S.D.S.U. Graduate School is necessary to receive an assistantship. The stipend initiates at approximately $9,200/year. Graduate assistants pay only one-third of the graduate resident tuition per credit hour. Applications will be accepted until the position is filled. Applicants should send: (1) a letter of interest that describes background and interests, (2) a current resume or curriculum vitae, (3) T.O.E.F.L. and G.R.E. (desired) scores, and (4) transcripts of all post-secondary education. A formal Graduate School application and 3 letters-of-reference forms will also require completion. For applications and admissions, contact the Graduate School, Box 2201, South Dakota State University, Brookings, SD 57007; or Dr. Paul J. Johnson, Insect Museum, Box 2207A, Department of Plant Science, South Dakota State University, Brookings, SD 57007, tel 605-688-4438, fax 605-688-4602, e-mail px53@sdsumus.sdstate.edu. Proof of eligibility for employment is required by the Immigration Reform and Control Act of 1986. (Posted: July 5, 1994).

Postdoctoral Position in Host-Parasite Interactions

Funds are available for a post-doc to study modes of population regulation and the evolution of virulence in a Drosophila-parasitic nematode. A strong background in evolutionary ecology and/or parasitology is important. Some experience with molecular methods is desirable, but not essential. The position can start as early as July 15, 1994, and funding is available for up to three years. Send c.v., a statement of research interests, and the names of three references to: John Jaenike, Department of Biology, University of Rochester, Rochester, NY 14627. Initial inquiries can be directed to me at joja@db1.cc.rochester.edu; tel 716-275-7835; fax 716-275-2070. (Posted: July 11, 1994).

Faculty Position in Acarology

The Entomology Department at Ohio State University invites applications for a tenure-track (9 mo.) faculty position to manage the Acarology collection and to do revisionary research in acarine systematics. Application of systematics to ecology and evolutionary biology is desirable. As conceived, the position will be filled at the Assistant Professor level, but candidates at higher ranks will be considered. Teaching responsibilities include acarology, morphology, and general biology. Development of an extramurally-supported program will be required. Send a description of research interests, curriculum vitae and names/addresses of three references to: Glen Needham, The Ohio State University, 484 W. 12th Avenue, Columbus, OH 43210. Application review begins January 15. (Posted: October 5, 1994).

Sabbatical Ecologist Teaching Position Undergraduate Ecology (and optionally, Introductory Biology)

Needed: Someone with a Ph.D. and teaching experience (rave T.A. reviews acceptable) to teach introductory Ecology for the Spring 1995 semester at Fordham University, Bronx, NY. Course comes complete with lecture notes (handouts), Fordham lab manual (with instructors' supplement), and experienced T.A. Class meets twice per week with one or two labs, depending on enrolment. Includes offer of a fully equipped office in a restored mansion at the Louis Calder Center in Armonk, New York (computer, printer, scanner, photocopy machine, fax and slide maker). A great place to finish off some manuscripts. But wait, there's more: sublet available (at a great rate) of house on the grounds. The Calder Center is a thirty-five minute drive north of Fordham, includes 100 acres of forest and a lake, plus several great ecologist neighbors and colleagues. In addition, it would be possible to also teach Introductory Biology (with lab) at the same time. Double the money, double the improvement of your C.V. Contact: Truman P. Young, Calder Center, Box K, Armonk, NY, 10504; tel 914-273-3078; e-mail tyoung@murray.fordham.edu. (Posted: October 5, 1994).

Postdoctoral Research Associate in Insect Behavior and Chemical Ecology.

Three-year position to investigate how foraging decisions and host selection by an introduced hymenopterous parasitoid are mediated by variation in chemical cues, and how such chemical variation is related to variation in host quality. The experimental system includes several cultivars of citrus, the California red scale and related species, and Aphytis melinus, a parasitic wasp. First-year salary is approximately $27,000 plus benefits. The position is available immediately. Ph.D. in entomology or related discipline is required with experience quantitative insect behavior and chemical analysis. Additional experience in biological control is desirable. Apply by December 10, 1994 to Dr. J. Daniel Hare, Department of Entomology, University of California, Riverside, CA 92521; tel 909-787-3858; fax 909-787-3086; e-mail harejd@ucrac1.ucr.edu. (Posted: October 5, 1994).

Postdoctoral Research Associate in Plant-Insect Interactions.

Renewable position contingent upon satisfactory performance and continued funding to conduct basic and applied studies in plant-insect interactions. First-year salary is approximately $27,000 plus benefits. The position is available immediately. Chemical mediation and genetic variation in local plant-insect interactions will be emphasized in the basic studies, while applied studies will focus upon manipulating crop-pest associations for more economical and ecologically sound pest management. Ph.D. in ecology, entomology or related discipline is required with demonstrated experience in the study of plant-insect interactions. Additional experience in chemical ecology and/or quantitative genetics is preferred. Apply by December 10, 1994 to Dr. J. Daniel Hare, Department of Entomology, University of California, Riverside, CA 92521; tel 909-787-3858; fax 909-787-3086; e-mail harejd@ucrac1.ucr.edu. (Posted: October 5, 1994).

Comparative Insect Morphologist

The Department of Entomology, New York State College of Agriculture and Life Sciences at Cornell University, Ithaca, invites applications for a Comparative Insect Morphologist. This is a 12-month, tenure-track assistant professor position, with 50% research and 50% teaching responsibilities. Research responsibilities: establish leadership in comparative, phylogenetically-based studies on the evolution of insects and/or related terrestrial arthropods. Research should have a major morphological emphasis, and could address developmental, physiological, biomechanical, systematic, behavioral, or ecological topics. Teaching responsibilities: an intensive morphology course with laboratory for graduate students and upper-level undergraduates in biology and entomology; a general course in any aspect of entomology for undergraduates; a course or seminar in a specialty area; advising of undergraduates and training of graduates. Qualifications include: Ph.D. in entomology or related field; training in comparative morphological analysis of insects or related terrestrial arthropods; strong interests in insect biology, evolution, and phylogenetics; interest and experience in teaching. To apply, forward: (1) curriculum vitae and transcripts, (2) statement of current and future research interests, (3) statement of teaching interests and experience, (4) representative reprints (maximum of 5) and (5) names and addresses of 4 referees. Send credentials to: Prof. Roger A. Morse - Acting Chair, Department of Entomology, Cornell University, Comstock Hall, Ithaca, NY 14853-0901. Application deadline is January 1, 1995; position available July 1, 1995. For full advertisement, e-mail your address to Roger Morse at ram14@cornell.edu. (Posted: October 7, 1994).

Apiculture Services Manager

Our apiculture team in the South Island of New Zealand requires a highly motivated person to contribute to and provide leadership in the delivery of services for the beekeeping industry. This person will have advanced skills in apiculture: particularly disease and pest management and apiary manage-

ment. Skills in consultancy, project management and team leadership are also required. Experience in international consultancy is desirable. The position is based at Lincoln. Position description and person specification are available on request from Adele King, Administration Officer, M.A.F. Quality Management, P.O. Box 24, Lincoln, New Zealand; tel 64-3325-3900; fax 64-3325-3919; e-mail kinga@lincoln.mafqual.govt.nz. (Posted: October 9, 1994).

Graduate Fellowships in Environmental Biology

The University of Notre Dame has several 4-year graduate fellowships (Ph.D.) available in Fall 1995 as part of a new N.S.F.- sponsored program designed to link ecology and engineering in addressing environmental problems. The fellowship provides an annual stipend of $14,100, full tuition waiver, and research support. Areas of emphasis for program faculty include aquatic ecology, environmental engineering, biogeochemistry, microbial ecology, and ecological genetics. Successful candidates will have excellent baccalaureate credentials, G.R.E. scores, and research experience (during B.S. or M.S.). Research facilities on campus and at the Environmental Research Center in northern Michigan are outstanding. Screening of candidates will commence on 15 January 1995 but applications to the Graduate School should be sent well in advance of that date. Send letters of inquiry to either: Dr. Gary A. Lamberti (Department of Biological Sciences) or to Dr. Kimberly A. Gray (Department of Civil Engineering & Geological Sciences), University of Notre Dame, Notre Dame, IN 46556. (Posted: October 12, 1994).

Curator, Systematics of the Lepidoptera

Applications are invited for a tenure-track curatorial position in the Department of Entomology at the American Museum of Natural History. The primary requirement is original and productive research on morphologically-based systematics of the Lepidoptera. Compelling candidates will show evidence of contributions to fundamental issues in biodiversity and evolutionary biology. Rank and salary will be commensurate with experience. The new curator of Lepidoptera is also expected to: (1) manage a collection of approximately two million moths and butterflies, including building collections in the area of his/her expertise; (2) participation in the department's joint graduate student training programs with Cornell University and/or The City University of New York; (3) fostering inter-institutional databasing related to issues of surveys and biodiversity; and (4) maintain standard museum duties of serving on committees, exhibition programs, supervision of support staff, and future service on a rotating basis as departmental chairperson. The position will be available July 1, 1995. A Ph.D. (or equivalent) and demonstrated success in attracting external research funding are required. Applicants should forward, by January 15, 1995: (1) a statement of research interests and goals; (2) curriculum vitae with complete bibliography and reprints; and (3) names, addresses and telephone numbers of at least three evolutionary biologists familiar with the applicant's accomplishments. Submit applications to: Dr. David Grimaldi, Chairman, Department of Entomology, American Museum of Natural History, Central Park West at 79th Street, New York, NY 10024-5192. (Posted: October 18, 1994). l tyoung@murray.fordham.edu. (Posted: October 5, 1994).

Entomologist, Quarantine Specialist

The Charles Darwin Research Station (C.D.R.S.) seeks a Quarantine Specialist. Responsibilities are: (1) plan, execute, and evaluate activities in Entomology (i.e. research, conservation, and education). Focus on Quarantine Program for Galapagos Islands and Biodiversity and Effects of Introduced Animals; (2) supervise and train personnel and students in Entomology and biological research on introduced animals; (3) manage ongoing sampling program and supervise curation of invertebrate collections; (4) advise and coordinate work closely with Ecuadorian institutions, especially the Galapagos National Park Service (G.N.P.S.); (5) prepare technical reports, funding proposals, and

publish results in international, national, and institutional journals. Requirements are: (1) minimum, Ph.D. in Entomology, Ecology, or related field; experience with quarantine and control programs required; strong background in taxonomy of terrestrial invertebrates, experimental design, and statistics; (2) bilingual Spanish/English: excellent written and oral Spanish, good English; (3) two years work experience, preferably in Latin America; experience in supervision and administration of scientific projects and guidance of students; (4) adaptability to complex multicultural environment, good interpersonal skills, strong at teamwork; (5) dedication to the C.D.R.S. goals and programs for conservation in Galapagos; (6) available for one year minimum with immediate starting date. Applicants should send a Curriculum Vitae with three letters of reference and examples of previous work to: Director, Charles Darwin Research Station, Casilla 17-01-3891, Quito, Ecuador; fax 593-4-564636. E-mail inquiries to director@fcdarwin.org.ec are encouraged. (Posted: October 24, 1994).

UPCOMING MEETINGS / RÉUNIONS À VENIR

Entomology Collections Network - Annual Meeting
December 11-13, 1994, Dallas, Texas
CONTACT: Larry Speers, Tel. 613-957-4347 Ext. 7319

The A.J. Nicholson Centenary Meeting: On the Frontiers of Population Ecology
April 18-22, 1995, Canberra, Australia
CONTACT: Mrs. L. Lawrence, CSIRO Division of Entomology, GPO Box 1700, Canberra, ACT 2601, Australia

47th International Symposium on Crop Protection
May 9, 1995, University of Gent, Belgium
The following topics will be treated: Insecticides, Nematology, Applied Soil Zoology, Semio-chemicals; Fungicides, Phytopathology, Phytovirology, Phytobacteriology; Herbicides, Herbology, Plant Growth Regulators; Biological and Integrated Control; Residues, Toxicology, Formulations, Application techniques.
CONTACT: Dr. ir. L. Tirry, Faculty of Agricultural and Applied Biologial Sciences, Coupure links 653, B-9000 Gent (Belgium). Tel. 32 (0) 9 264.61.52; Fax. 32 (0) 9 264.62.39.

43rd Annual Meeting of the North American Benthological Society
May 30 - June 2, 1995, Keystone Resort, Colorado
The program features four days of invited, contributed and poster sessions and workshops on benthic communities and their role in aquatic ecosystems. The plenary session will focus on "Landscape Influences on Watersheds". There will be two workshops entitled "The Use of Benthic Ecology in Assessing Sediment Contamination" and "Bridging the Gap: Benthos in Instream Flow Assessment". Abstracts are due 1 December 1994.
CONTACT: Program Chair: Cathy M. Tate, I.S. Geological Survey, WRD, Box 25046, MS 415, Denver Federal Center, Denver, CO 80225 USA, Tel 303-236-4882, Ext. 287; Local Arrangements: Steve Canton, Chadwick and Associates, 5575 S. Sycamore St., Suite 101, Littleton, CO 80120, Tel 303-794-5530.

American Society of Zoologists
January 5-8, 1995, St. Louis, Missouri
There will be two important symposia being planned for the forthcoming annual meeting of the American Society of Zoologists: (1) Risk Sensitivity in Behavior; (2) The State of Experimental Ecology:

Questions, Levels, and Approaches
CONTACT: (1) Peter Smallwood Tel. (215) 526-5091; Fax. (215) 526-5086; E-mail psmallwo@cc.brynmawr.edu or Ralph Cartar Tel. (403) 220-7622; Fax. (403) 289-9311; E-mail rcartar@acs.ucalgary.ca; (2) Joe Bernardo Tel. (919) 684-2567; Fax. (919) 684-6168; E-mail jb@mendel.zoo.duke.edu or Bill Resetarits (Tel. (314) 553-6221; Fax. (314) 553-6223; E-mail swjrese@umslvma.umsl.edu.

International Plant Protection Congress
July 2-7, 1995, The Hague, The Netherlands
The theme of the congress will be *Sustainable crop protection for the benefit of all.*
CONTACT: XIII International Plant Protection Congress, c/o Holland Organizing Centre, Parkstraat 29, 2514 JD The Hague, The Netherlands. Tel. (+31-70) 365-78-50; Fax. (+31-70) 361-48-46.

7th International Symposium on Pollination
June 24-28, 1996, Lethbridge, Alberta, Canada
Pollination: from theory to practise. General topics will include: Implications of evolutionary theory to applied pollination ecology; Modelling pollination; Pollination techniques/methods/standardization; Pollinator foraging behaviour; Commercial bumble bee management for pollination; Native bee management for pollination; Role of pollinators in species preservation, conservation, ecosystem stability and genetic diversity
CONTACT: Dr. Ken Richards, Agriculture and Agri-Food Canada, Lethbridge Research Centre, Lethbridge, Alberta, Canada T1J 4B1. Tel. (403) 327-4561; Fax. (403) 382-3156; Email: Richards@abrsle.agr.ca.

XX International Congress of Entomology
August 25-31, 1996, Palazzo dei Congressi, Florence, Italy
CONTACT: Organizing Secretariat, OIC, Via A. La Marmora, 24, 50121 Florence, Italy
Fax. ++39-55-5001912

MISCELLANEOUS

The Kevan Collection at the Lyman Entomological Museum: A Canadian Heritage Collection

The Lyman Entomological Museum, named after the Canadian pioneering entomologist and Lepidopterist, H.H. Lyman (1850-1914), was first housed in the Redpath Museum on the downtown campus of McGill University. It was moved to the Macdonald Campus in Ste-Anne-de-Bellevue in 1961, where it could better serve McGill's active program in Entomology, by Vic Vickery, the first Curator in the new location. Keith Kevan, Professor and Chair of entomology became the first Director in 1971. At the time the collection was moved, it contained about 150,000 specimens, mostly Lepidoptera. In the new environment it grew rapidly and by 1993 had more than 2 million specimens gathered through collecting, exchanges, donations and purchases.

Both Kevan and Vickery were most active as orthopterists. Kevan accumulated, over his long and distinguished career, more than 21,000 specimens in his personal collection. This was housed at the Lyman Entomological museum and was freely available to systematists working there and elsewhere. Shortly after Kevan's death on July 9, 1991, the terms of his will started to be executed. There were

instructions to the effect that his insect collection and his associated library of books, reprints and microfilm, etc., should be donated to the Lyman Entomological Museum of McGill University.

The donation was eventually accepted by McGill University after various delays, and on October 29, 1993, McGill University finally assumed ownership of the collection, recognizing its worth and unique value to science. It has been designated a **Canadian Heritage Collection**. It contains about 500 Paratypes, 16 Holotypes, and 7 Allotypes of orthopteroid insects. The diversity in the collection is about 2,000 species.

In October, 1994, arrangements were finalized with McGill University for the library associated with the Kevan collection to be transferred to McGill University with the understanding that the specialized entomological items relevant to insect systematics be retained at the Lyman Entomological Museum so that researchers would have ready access to it.

We believe that this is the first private entomological collection that has been designated as a **Canadian Heritage Collection**. We are pleased to recognize the assistance of R.D. Snowdon, Notary and Solicitor, Beaconsfield, QC, and C.-C. (George) Hsiung, Curator of the Lyman Entomological Museum, for their assistance to the Kevan family and to McGill University in bringing this important event to fruition.

Peter G. Kevan, 352 River Road, Cambridge, Ontario, N3C 2B7 and
Vernon R. Vickery, Emeritus Curator, Lyman Entomological Museum,
Macdonald Campus, McGill University, 21 111 Lakeshore Road,
Ste-Anne-de-Bellevue, PQ, H9X 3V9.

Entomological Society of Saskatchewan - Slide Library

The Entomological Society of Saskatchewan administers a library containing about 500 photographic slides donated to the Society from private and public collections. The photographs are predominantly insect pests of the Canadian Prairies associated with field crop, trees, shrubs, and turf. In addition, there are several photographs of beneficial insects that have been used to control various weed species.

The slides are a valuable resource to anyone giving presentations or needing images for inclusion in text books, magazine articles or promotional literature. The library has been used by teachers, university professors, extension agrologists, and advertising agencies.

The cost associated with obtaining a slide from the collection depends on its intended use and whether the image originated from a private or a public collection. Where the slide is to be used for projection, slide copies are sold for $3.50 per slide. If the images are to be used in books or advertisements the cost associated with their use will depend whether the image originated from public or private sources. Profits from the sale of slides are retained by the Entomological Society of Saskatchewan to promote and encourage the science of entomology.

Retiring entomologists who wish to extend the usefulness of their slides are invited to contribute them to the ESS Slide Library.

Persons interested in obtaining a catalogue of the slide library inventory, purchasing copies of these slide or donating slides to this collection should contact: The Entomological Society of Saskatchewan, c/o Dr. Diether Peschken, 2900 Rae Street, Regina, SK, S4S 1R5, Tel. (306) 584-7765

The Keith Kevan Scholarship - New Contributions Welcome

Professor D. Keith McE. Kevan died suddenly on July 8, 1991. His family provided for a scholarship in systematics to be administered by the Entomological Society of Canada and presented a cheque to the Society at its meetings in Montreal in 1991. The first recipient of the Scholarship was Wanda Kuperus of the University of Regina, who in 1993 accepted the award at the Society's meetings in Sault Ste. Marie.

At the time of Keith Kevan's death and memorial service, numerous entomologists expressed their sympathy to the Kevan family and indicated that they wished to contribute to his memory by donation to a scholarship fund. Such kind offers were appreciated but acceptance deferred until such a fund was in place. After some deliberation, the Kevan family decided that a scholarship fund would be best administered on a national basis by the Society. Now that the program is soundly in place, and the next award is expected to be given in 1995 when the Society meets in Victoria, it would be a good time to supplement the original donation. Thus, any one who wishes is invited to make a donation to the Keith Kevan Scholarship Fund of the Entomological Society of Canada.

Please send your donation to the Entomological Society of Canada at **393 Winston Avenue, Ottawa, ON, K2A 1Y8**, noting that it is for the Keith Kevan Scholarship. Thank you very much.

Suggestion for the *Bulletin*

Dean Morewood, of the University of Victoria, wrote to ask: *Would it be possible to publish a summary of the scientific program from the annual meeting in a subsequent issue of the Bulletin? This would help those of us unable to attend the meetings to keep up with "who's doing what".*

I agree that this would be a valuable service to some of our members. If we were to implement such a policy: (1) Who would take responsibility for preparing the summary? and (2) How detailed would it have to be? (I am always trying to find ways of reducing the number of pages that go into each issue of the *Bulletin* because of the printing and mailing costs!) I would like to know what other members think of this suggestion.

F.F. Hunter, *Bulletin* Editor

List of Common Names Available

Common names of insects in Canada, by E.M. Belton and D.C. Eidt, is now available from the ESC. The list is available on computer diskette. It includes sets of names alphabetized by English, French and Scientific names, forms for proposed updates, and full information and instructions. The diskette is available from the Society at a cost of only $15 plus $3.50 for shipping and handling in Canada, and $15 plus $5 for shipping and handling elsewhere. Please specify whether a 3½" or a 5¼" diskette is required, and include payment to the Entomological Society of Canada in Canadian funds. 7% GST is payable by Canadian members. Send orders to: ESC, 393 Winston Avenue, Ottawa, Ontario K2A 1Y8

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