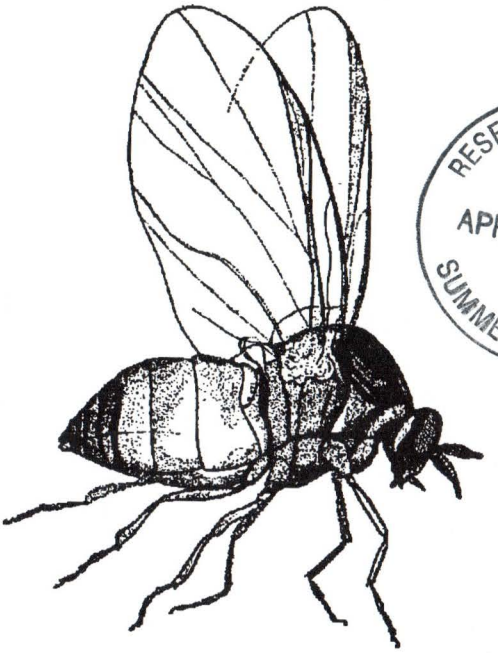
VOL. 23 March - mars, 1991 No. 1

BULLETIN



ENTOMOLOGICAL SOCIETY OF CANADA
LA SOCIÉTÉ D'ENTOMOLOGIE DU CANADA

ENTOMOLOGICAL SOCIETY OF CANADA
LA SOCIÉTÉ D'ENTOMOLOGIE DU CANADA

BULLETIN

VOL 23 (1) - March/mars, 1991

Bulletin Editor: F.F. Hunter
Editorial Assistant: C.-J. Green
Cover Design: R. Thiebaux
Published by: The Entomological Society of Canada
La Société d'entomologie du Canada

Contributions and correspondence regarding the *Bulletin* should be sent to the Bulletin Editor.
Faites parvenir vos contributions au *Bulletin* ou votre correspondance à l'Editeur du Bulletin.
Inquiries about subscriptions and back issues should be sent to the E.S.C. at:
Pour renseignement sur l'abonnement ou les numéros passés, prière de s'adresser à la S.E.C.:
E.S.C./ S.E.C., 393 Winston Ave., Ottawa, Ontario, K2A 1Y8

EDITORIAL

As new Editor of the Entomological Society of Canada *Bulletin*, I would like to take this opportunity to introduce myself. I look nothing like Ron Aiken and I try my best not to act like him. I am relatively young and definitely female. Perhaps I should clarify the purpose of this last statement. When I was a student member of the Entomological Society of Canada, I had the impression that the Society was merely an Old Boys' Club. At the Annual Meeting in Penticton, I was asked by Dr. X., one of the established (older, male) members of the Society, whether or not I was flirting with him! I admit that I was very animated, but this, I assure you, was caused by my excitement over the meetings and over a recent entomological discovery that I had made and **not** about the prospect of a night-cap in Dr. X.'s hotel room. I was very disappointed when I realized that he had not been paying attention to what I was saying. Later, Dr. X. told a (male) friend of mine that he has a policy not to accept female graduate students, because "they inevitably get married, get pregnant, and drop out of entomology ... and then you've wasted all your money on them". Well, Dr. X., here I am. Female? Yes. Married? Sometimes. Pregnant? One never knows. Active in entomology? You bet!

At first, I was hesitant to accept the Editorship of the *Bulletin* because I anticipated difficulties with some of the honest-to-goodness Old Boys. I am pleased to say, however, that our current group of Boys-at-the-Top is certainly **not** what I expected. They have been very supportive of my new appointment as Editor and I look forward to working with them. I believe a confession is in order: I took the job to find out what actually goes on in the Society, to keep tabs on the activities of the Old Boys, to force myself to stop complaining about not having a voice, and, yes, to get even with Dr. X.! I am especially sensitive to student issues and encourage submissions for the *Bulletin* from **all** members. Committee Reports, Book Reviews and Obituaries may be interesting, but let's hear what our members are doing. I would thus like to expand the MEMBERS IN THE NEWS section of the *Bulletin* to include information on less well-known entomologists, students, and the like. Well, that's enough for now. I'm off to Texas to collect some black flies.

Fiona F. Hunter
Brandon, Manitoba

P. S. **Please note that the deadline for the next issue is May 1st, 1991.** Late submissions will not be accepted because they will interfere will my black fly field season. Please see page 51 for further information on submissions.

A SPECIAL THANKS

We wish to express our thanks to the Entomological Society of Canada for bestowing upon us the Norman Criddle Award for the year 1990. We were surprised but very proud to receive this honour.

Entomology has been fun for both of us, as collectors and as very bad taxonomists. We have had the pleasure of meeting many interesting people through this activity, and have had fun with them, as well as profiting from their knowledge and experience. Occasional students who have visited us have shared and strengthened our enthusiasm.

If these happy events have in any way contributed to Entomology in Canada we feel gratified, and, find great satisfaction in making some contribution while enjoying ourselves.

Sincerely,
Mr. and Mrs. Carr
Calgary, Alberta

SOCIETY BUSINESS

Meeting Notices

41st Annual General Meeting

The Annual General Meeting of the Entomological Society of Canada will be held at the Ramada Renaissance du Parc, in Montréal, Québec on October 22, 1991.

Matters for consideration for this meeting or for the Governing Board Meeting to be held on October 19 and 20, 1991 should be sent to the Secretary, Dr. Rick West.

41 Réunion Générale Annuelle

La Réunion Générale Annuelle de la Société d'Entomologie du Canada aura lieu 22 octobre 1991 á le Ramada Renaissance du Parc, à Montréal, Québec.

La conseil de direction sa réunira le 19 et 20 octobre, 1991. Tous sujets pour être considérés devont être soumis au secretaire, Dr. Rick West.

Executive Council Meeting

The mid-term meeting of the Executive Council will be held on April 16-17, 1991 at the Talisman Motor Inn, 1376 Carling Avenue, Ottawa. Matters for consideration at the meeting should be sent to the Secretary, Dr. Rick West.

Réunion de l'Exécutif-Conseil

La réunion mi-semestre de l'Exécutif-Conseil aura lieu le 16 et 17 avril, 1991, à l'Hotel Talisman Motor Inn, 1376 Carling Avenue, Ottawa. Tous sujets pour être considérés devont être soumis au secréraire, Dr. Rick West.

Rick West, Secretary
Forestry Canada
Newfoundland and Labrador Region
P.O. Box 6028
St. John's, Newfoundland
A1C 5X8

Fax. 709-772-2576.

President's Message

I would like to take this opportunity to bring you up-to-date on the Society's affairs. Although we are only approaching the mid-term Executive committee meeting in April, the business of the Society is moving along with the help of many individuals and their committees.

Jim Kelleher has sent me a draft copy of Cultures of Insects and Other Arthropods available in Canada. If you have insect cultures in your laboratory and have not sent your list to Jim within the last year or so, please contact him now (see details on obtaining a copy of the list elsewhere in the *Bulletin*). We would like to update this list frequently now that it is on computer disk.

Elspeth Belton and Doug Eidt are going through the rather time-consuming job of rationalizing entries on the List of common Names of Insects in Canada. I am sure that they will make good progress and a "Canadian" list will appear shortly.

Charles Vincent, the chair of the Organizing committee for the Annual Meetings in Montréal, has assured me that plans for this joint venture (E.S.Q., E.S.O. and E.S.C.) are progressing smoothly. The nebulous factor in planning the meetings is the attendance. I hope you (and where applicable, your students) are planning to attend. While on the subject of annual meetings, in 1993 the Entomological Society of Ontario will host the E.S.C. meeting in Sault Ste. Marie. Jean Turgeon, who is chairing the Organizing Committee, has a large, enthusiastic group of entomologists to help him plan what promises to be an interesting meeting.

I talked recently with Vince Nealis and Jean Turgeon about Public Education and they would like to remind interested groups or individuals to submit their proposals for funding projects on public awareness to either of them in Sault Ste. Marie.

Jim Corrigan and his Committee for Student Affairs are compiling the data from the survey of student members that was completed last fall. The survey produced some interesting results and these should be published in one of the next two issues of the *Bulletin*.

Elsewhere in this *Bulletin*, you will find a request for suggestions on Science Policy. Please give this some thought, then write to Richard Ring. In these times of restricted research dollars, recessions, tight budgets and all too ignorant politicians, we need to continue to focus on the needs of our discipline.

In recent conversation with John Garland, he informed me that the book *Diseases and Pests of Vegetable Crops in Canada* is progressing towards a late fall or early winter publication date. John hopes to have a "preview" copy available for the meeting in Montréal.

Jeremy McNeil will periodically inform our members about the workings of the Canadian Federation of Biological Societies starting with this issue of the *Bulletin*. Please watch for his articles as it is important for us to know exactly what this umbrella organization is doing for the Entomological Society of Canada.

The building housing our headquarters in Ottawa is functioning more-or-less smoothly according to Gary Gibson and Bob Foottit. The second floor of the building has been rented to an architectand the basement is to be used for storage.

I have highlighted a few of the activities of the society that are underway, however many others are working on projects that will be updated in subsequent issues of the *Bulletin*. If you have any comments, suggestions or criticisms on the way the Society is functioning on your behalf, please let me know.

J.E. Laing
President

Committees and Representatives Update

Standing Committees/Comités permanents

Nominations
J.N. McNeil, Québec (418-656-2999)
G.B. Wiggins
G.G.E. Scudder, Vancouver

Elections
A.B. Ewen, Chair, Saskatoon (306-975-7080)
R.H. Elliot, Saskatoon
C.H. Craig, Saskatoon
President, *ex officio*

Fellowships/Compagnons
B.J.R. Philogène (1991), Chair, Ottawa (613-564-2490)
R.D. McMullen (1991), Summerland
A.R. Forbes (1992), Vancouver
V.R. Vickery (1992), Ste-Anne-de-Bellevue
E.E. Lindquist (1993), Ottawa
L. Safranyik (1993), Victoria
President, *ex officio*

Continuing Committees/Comités permanents

Achievement Awards/Pris d'excellence
P.W. Riegert, Chair, Regina (306-585-4224)
Two members selected by the Chair
President, *ex officio*

Annual Meeting/Réunion annuelle
C. Vincent, Chair, St-Jean-sur-Richelieu (514-346-4494)
D. Coderre, Regional Director, SEQ, Montréal (514-987-3367)
J. Doane, Regional Director, ESS, Saskatoon (306-343-8214)

Bilingualism/Bilinguisme
C. Vincent, Chair, St-Jean-sur-Richelieu (514-346-4494)
J. Delisle, Ste-Foy
K. Pivnick, Saskatoon

By-Laws/Règlements
D.T. Quiring, Chair, Fredericton (506-453-4501)
G. Boivin, St.-Jean-sur-Richelieu
President, *ex officio*

Endangered Species/Espèces menacées
R. Canning, Chair, Victoria (604-387-2419)
S. Canning, Vancouver
B. Landry, Ottawa
S. Canningss, ESBC representative
T. Pike, Calgary, ESA representative
M. Erlandson, Saskatoon, ESS representative
W.B. Preston, Winnipeg, ESM representative
H. Goulet, Ottawa, ESO representative
SEQ representative
A.W. Thomas, Fredericton, AES representative

Finance
I.M. Smith, Chair, Ottawa (613-996-1665)
S.A. Marshall, Guelph
G. Gibson, Ottawa
E. Becker, Ottawa
President, *ex officio*
Treasurer, *ex officio*
+ one other

Heritage/Héritage
P.W. Riegert, Regina (306-584-4224)
President, *ex officio*

Insect Common Names and Cultures/Noms communs d'Insectes et Élevages
E. Belton, Co-Chair, Burnaby (604-420-3181)
D. Eidt, Co-Chair, Fredericton (506-452-3551)
J.S. Kelleher, Cultures list, Ottawa (613-996-1665)
E. Belton, ESBC representative
A.S. McClay, Vegreville, ESA representative
K. Moore, Saskatoon, ESS representative
R.E. Roughley, Winnipeg, ESM representative
P. Syme, Sault Ste-Marie, (Insect Common Names), ESO representative
J. Kelleher, Ottawa, (Insect Cultures), ESO representative
SEQ representative
D. Finnamore, Fredericton, AES representative
President, *ex officio*

Membership/Adhésion
B. Roitberg, Chair, Burnaby (604-291-3585)
President, *ex officio*
D. Raworth, ESBC representative
A.S. McClay, Vegreville, ESA representative
P.W. Riegert, Regina, ESS representative
R. Westwood, Winnipeg, ESM representative
J. Turgeon, Sault Ste-Marie, ESO representative
SEQ representative
Y. Pelletier, Fredericton, AES representative

Public Education/Éducation publique
V. Nealis, Co-Chair, Sault Ste-Marie (705-949-9461)
J. Turgeon, Co-Chair, Sault Ste-Marie
Regional Directors, *ex officio*
President, *ex officio*

Publications
H.V. Danks (1991), Chair, Ottawa (613-954-2648)
L. Lesage (1991), Ottawa
T. Arnason (1992), Ottawa
T.S. Sahota (1992), Victoria
R.S. Anderson (1993), Ottawa
L. Dosdall (1993), Vegreville
President, *ex officio*
Scientific Editors, *ex officio*
Bulletin Editor, *ex officio*
Managing Editor, *ex officio*

Scholarships/Bourses d'étude
J.S. Cunningham, Chair, Sault Ste-Marie (705-949-9461)
L. Safranyk, ESBC representative
A.S. McClay, Vegreville, ESA representative
B. Chapco, Regina, ESS representative
J. Conroy, Winnipeg, ESM representative
J. Cunningham, Sault Ste-Marie, ESO representative
SEQ representative
W.D. Seabrook, Fredericton, AES representative

Research-Travel Grants/Octrois pour la Recherche-Déplacements
N. Holliday, Chair, Winnipeg (204-474-8365)
Members selected by the Chair

Science Policy/Politique scientifique
R.Ring, Chair, Victoria (604-721-7104)
B. Frazer, Vancouver
S. Tobe, Toronto
N. Angerilli, Jakarta, Indonesia
J.M. Campbell, Ottawa (AASC and COPSE)
S.B. Hill, Ste-Anne-de-Bellevue (AASC and COPSE)
P. Riegert, Second Vice President, *ex officio*
President, *ex officio*
Student Affairs/Les affaires d'étudiants
J.E. Corrigan, Chair, Guelph (519-824-4120)
Y. Carrière, Burnaby
R. Aucoin, Ottawa
K. Mackenzie, Ithaca, N.Y.
M. Winston, Burnaby
President, *ex officio*

Ad Hoc Committees/Comités Ad Hoc
Pest Management Policy/Politique sur la Lutte integrée
N. Angerilli, Chair, Jakarta, Indonesia
S. Hill, Ste-Anne-de-Bellevue
G. Konishita, Markham
L.A. Gilkeson, Sidney
R. Westwood, Winnipeg
Diseases and Insects of Vegetables/Maladies et Insectes des Légumes
J.A. Garland, Chair for entomology content, Ottawa (613-995-7900)
G. Boivin, St.-Jean-sur-Richelieu
R.P. Jaques, Harrow
L.S. Thompson, Charlottetown
W.S. Turnock, Winnipeg
R.S. Vernon, Vancouver
Insect Transmission of Plant Diseases/Transmission des Maladies des Plantes par les Insectes
G. Boiteau, Chair, Fredericton (506-452-3260)
L. Chiykowski, Ottawa
C. Cloutier, Québec
M.K. Sears, Guelph
Headquarters
G. Gibson, Chair, Ottawa (613-996-1665)
D.E. Bright, Ottawa
R. Foottit, Ottawa
I.M. Smith, Ottawa

Representatives/Représentants
AASC and COPSE
S.B. Hill, Ste-Anne-de-Bellevue
J.M. Campbell, Ottawa
CFBS

Archives Committee	P.W. Riegert
Board of Governors	J.N. McNeil
Scientific Policy	J.E. Laing
Program Committee	R.J. West

Nominating Committee

The following list of nominees for the offices in the Entomological Society of Canada has been received from the Nominating Committee.

Le Comité des nominations a soumis la liste des candidats suivants pour des postes de la Société d'entomologie du Canada.

Second Vice President/Deuxieme Vice Président
George Gerber
Cedric Gillott

Director-at-Large/Directeur
Murray Isman
Steve Marshall
Jean Turgeon

Additional nominations must be signed by three members in good standing and received by 30 April 1991 by the Secretary:

S'il y a d'autres mise en candidature pour ces memes postes, celles-ci doivent être signée par trois membres de la Société et envoyée avant le 30 avril 1991 au secrétaire:

Dr. Rick West
Newfoundland Forest Centre
P.O. Box 6028
St. John's, Newfoundland
A1C 5X8
Fax: 709-772-2576

Insect Common Names and Cultures Committee

Please note that *Contarinia shulzi* Gagne (proposed common name - sunflower midge) in the December Bulletin 22(4): 177 should read *C. schulzi* Gagne.

E.M. Belton
Burnaby, B.C.

Public Awareness Committee Report

Business

The committee dispursed $300.00 to two projects in 1990.

1. $200.00 to the Public Education Committee of the Entomological Society of British Columbia (ESBC). These funds were matched by the ESBC and used to support an Entomology Club at Tyee Elementary School in Vancouver under the guidance of Debbie Henderson.

2. $100.00 to Richard Gagne of the University of Guelph for assistance in publishing "Ontario Amateur Entomologists Newsletter".

On behalf of the ESBC, John McLean has requested that the ESC raise the $200.00 annual grant to member societies to support public awareness. According to the guidelines of the committee, "applications in excess of $200.00 shall be considered". Given the dearth of requests for financial support, this is reasonable. We should support those few groups which are active.

To apply for a grant, provide a proposal to the current Public Awareness Committee Chair. In the past there has been some confusion over this and proposals have gone to the Treasurer resulting in some delay. It would be appreciated if groups receiving funds submitted a brief report of description of their program to the ESC Public Awareness Committee. The committee would then be able to compile an inventory of ideas for public awareness programs which might be useful to other members.

Our new affiliation with the Canadian Federation of Biological Societies (CFBS) provides the opportunity for ESC members to become involved in the nomination, selection and receipt of the Gordin Kaplan Award for outstanding contributions to the public awareness of science. The criteria and details of the selection process can be obtained from Dr. M. B. Fenton, Faculty of Science, York University, 4700 Keele Street, North York, Ontario, M3J 1P3. Societies are invited to nominate a member to the advisory board. By default, this assignment falls to the ESC Public Awareness Committee Chair but there is no reason why separate nominations could not be received.

Public Awareness and the CFBS

Over the past few years, researchers in all branches of science have come to realize that they, and science, are slipping from public awareness. Evidence of this comes from several studies which reveal the disturbing level of scientific ignorance among educators, the general public and, more worrying, among the policy makers in our society. There is declining enrolment in science education everywhere. Entomology, in particular, seems to be in a decline in North America (Holden 1989, *Science* 246:754-756). As the influence of science wanes, public appreciation of the worth of science diminishes and so does public support for research funding.

The Royal Society of Canada has held two conferences on public awareness of science. The most recent was held in Ottawa in May, 1990 and addressed the theme of "Communicating Science: Why and How". A report on the meeting can be found in the *Bulletin of the Canadian Society of Zoologists* (Fenwick 1990, vol 21:30-31).

Now that the ESC is a member of the much larger CFBS, there is an opportunity to support a more concerted effort in the general problem of public awareness and education in science. In 1990, the ESC public awareness committee received a proposal from M. B. Fenton of the Canadian Society of Zoologists (CSZ). The idea was to initiate a project to use scientists as sources of information to introduce non-scientists to current issues in science. The target audiences would be students as well as the general public. The mechanism would be a grassroots approach to public education. Regional societies would contribute by identifying members willing to serve as contacts for educators etc. in the development of information packages. The objectives of these information packages would be general or specific. At the school level, the packages would serve to assist teachers with background information or activities, much as ESBC members are now doing in Vancouver. The packages would also identify scientists prepared to discuss science issues, careers etc. with schools, media or public interest groups. In entomology, topics could range from public interest such as "What Bug Is This" to public information on larger environmental issues such as the use of pesticides, habitat conservation and biodiversity.

Dr. Fenton proposed that affiliate societies support a position for a co-ordinator. To fund this initiative, Dr. Fenton proposed working through the CFBS Task Force on Public Awareness of Science and solicit contributions form member societies. The Canadian Society of Zoologists, for example, was prepared to commit $3000.00 through the Zoological Education Trust, for this purpose. Once some commitment from the affiliated societies was established, a formal proposal for matching funds would be made to Science Culture Canada.

Unfortunately, the response to Fenton's proposal from constituent societies was deafening silence and in July the initiative was abandoned. This may have been due, in part, to the time-frame; Fenton needed some commitment before the autumn deadline. But apathy and unwillingness to regard public awareness as a priority in the professional societies' agenda were likely factors. This Public Awareness Committee made a recommendation at the annual meeting in October that the ESC support the CSZ initiative. Although neither of us were able to attend that meeting and have not received the formal decision of the board, J.McNeil tabled the recommendation and informed us that the idea was not supported by the executive, even after there was no danger of having to actually put the money up. Consequently, we cannot even encourage Dr. Fenton to renew his effort.

As can be seen from this and previous annual reports, very little use is now made of this committee by members. The projects mentioned above are exceptional in more ways than one. The ESC should continue to support and encourage these and similar projects. But we suspect that most members would be more likely to become involved if there was a vehicle or mechanism with which to identify. As a relatively small and highly dispersed society, the opportunity to combine with other biologists and with the scientific community in general is what many members need. A concerted shout rather than a few isolated whimpers for science is certainly what the public needs.

In the absence of a coordinated effort for enhanced public awareness, ESC members who are concerned about the problem are left with two alternatives. The first is the *status quo*. Work through local societies and apply for grants to promote public awareness under the existing mandate of the Public Awareness Committee. That is, use the ESC's resources while available. The second alternative is available to members who are also members of the Entomological Society of America. The ESA has recently rejuvenated its ENTNET program to enlist willing participants as media and educational contacts in promoting public awareness of entomology. An application form can be found in the *ESA Newsletter*, November 1990 (Vol. 13, No. 11). For a background, see Vol. 13, No. 9.

Although we encourage involvement in the ESA ENTNET program, we do not feel that it can adequately address the need for a Canadian program. Many public issues are local and support for both science education and research reflect our government's policy at some level. Because of this, we feel that the ESC will serve its own interests best and most appropiately by supporting larger, Canadian initiatives. Even if this means broadening our professional identification to become Biologists instead of Entomologists. We would like to hear how you feel about the issue.

Vince Nealis, Forestry Canada-Ontario Region
Jean Turgeon, Forest Pest Management Institute
P.O. Box 490
Sault Ste. Marie, Ontario, P6A 5M7

Science Policy Committee

From time to time the Science Policy Committee solicits suggestions from the membership concerning neglected areas of entomological research in Canada. Over the last 10 years the Committee has developed a considerable dossier of important entomological subjects in need of study and has acted on some of these items by producing published briefs and recommendations which have been brought to the attention of appropriate agencies, such as federal and provincial departments of agriculture and forestry, universities and the National Museum. Four items are nearing completion:
(1) a Pest Management Policy report
(2) an M.Sc. thesis on the economic benefits of entomological research
(3) publication of a brief on Insect Transmission of Plant and Animal Diseases.

Another dossier item proposed by the Biological Survey of Canada relating to the Royal Society's Canadian Global Change Program is presently under consideration by the Committee.

I am taking this opportunity to ask you for further items for our consideration. The intent is that the Society fulfills its roles as the constructive voice of professional entomology in Canada and as an active, contributing member of the Canadian Federation of Biological Societies (CFBS).

Please send your proposals as well as any supporting documentation to:

Dr. Richard A. Ring, Chair
Science Policy Committee of ESC
Department of Biology
University of Victoria
Victoria, BC
V8W 2Y2

Tel. 604 721-7102

R.A. Ring

News from CFBS

In December of 1990 the Standing Committee in Industry, Science and Technology, Regional and Northern Development presented its second report entitled "Canada Must Compete" to the House. The CFBS has been active in many areas that are directly addressed by the recommendations of this report. One is that the country's Gross Expenditure on Research and Development (GERD) be increased to 1.9% of the Gross Domestic Product (GDP) by the year 2000, and to 2.5% by 2005. At present it is less than 1.4%. These figures were first suggested by the National Consortium from Scientific and Educational Societies (CFBS chaired the Consortium from 1985-1990) during their annual 1989 annual lobby of federal parliamentarians and government administrators, and have since been supported by the 1989 (Halifax Declaration) and 1990 (Edmonton Declaration) National Forum of Science and Technology Advisory Councils. Furthermore, when representatives of the CFBS appeared before Standing Committee in the summer of 1990, they reiterated the need to meet the 2.5% goal within the

next decade. The report also recommended that "big science" in Canada should not be carried out at the expense of adequate support for the basic national science infrastructure. When Dr. Clement Gauthier, the CFBS Science Policy Officer, heard that the Prime Minister was under considerable political pressure to provide financing of the Triumph-Kaon Factory and that there was a real possibility that such funds, if forthcoming, would be diverted from the NSERC budget he contacted CFBS President K. Keough, as well as the Presidents of the National Consortium and the Chemical Institute of Canada. All three immediately wrote to the Prime Minister objecting to such action. Furthermore, CFBS requested that all members participate in a letter writing campaign to express our disagreement with such government action. The Standing Committee also recommended that the Federal Government maintain an active role in basic research and that it establish a secretariat to coordinate federal science policy. These changes were advocated by the CFBS when their representatives appeared before the Committee on June 5, 1990 and were recommended in the brief "The Status and Management of Federal Research Scientists: The Scientists Perspective" which was sent to the Prime Minister on July 18,1990. Many of the points raised by the CFBS have been addressed in the recent report from the Federal Science and Technology Expenditures Committee of the NABST.

In discussing the outcome of the consultation process for the government's Green Plan, Dr. Alex Chisholm, Environment Canada's scientific advisor stated that "A lot of organisations that might have been consulted in the final session were not. But is there's something missing, it is just as much the fault of the representative organisations as it was of Environment Canada". The Federation, while representing more than 5000 Canadian scientists, was only allowed one representative in one of the 22 workshops in the wrap up session! Under such conditions it is difficult to have a major input. Ian Smith, an ESC member, and Clement Gauthier met with Dr. Chisholm on December 14, 1990 to discuss the first draft of a proposed Canadian long-term ecosystem research programme that is being considered by the Science Policy Committee of the Federation. The elaboration of this project will be a major undertaking of the CFBS in the months to come and will require the input of Societies such as ours.

The CFBS has also agreed to prepare a brief on Sustainable Agriculture for the Science Council of Canada. Furthermore, the Federation will play an active role in the organisation of a workshop on this topic to be held in the summer of 1991. Again, this is an area of particular importance to members of our Society.

Any member wishing to contribute in the CFBS activities relating to the Green Plan or Sustainable Agriculture should contact me. Also, if you have ideas, suggestions or recommendations that you would like the Federation to act upon, please let me know.

Jeremy N. McNeil
ESC representative to the CFBS

Nouvelle de la FCSB

En décembre 1990, le comité permanent de l'Industrie, de la Science et de la Technologie, du Développement régional et du Nord présenta son deuxième rapport intitulé "Le Canada doit être competitif" à la Chambre des commune. La Fédération Canadienne des Sociétés de Biologie a été directement impliquée dans plusiers activités touchées par les recommendations de ce rapport. L'une des recommendations de ce Comité à été d'augmenter le montant alloué aux dépenses brutes en

recherche et en développement à 1.9% du Produit National Brut d'ici l'an 2000 et à 2.5% d'ici 2005. Présentement le taux est inférieur à 1.4%. Ces augmentations ont été proposées en 1989 par le Consortium National des Sociétés des Sciences at de l'Education (la FCSB a présidé ce Consortium entre 1985-1990) lors de leur rencontre annuelle avec des parlementaires fédéraux at des administrateurs gouvernementaux. Ces augmentations ont été subséquemment appuyées par les Conseillers de la Science at de La Technologie lors du forum national à Halifax (1989) et Edmonton (1990). De plus, lorsque les représentants de la Fédération se sont présentés devant le Comité Permanent à l'été 1990, ils ont réitéré le besoin d'obtenir les 2.5% proposés. Le rapport du Comité Permanent a aussi recommandé que les 'méga-projet scientifiques' au Canada ne devraient pas être financés au détriment de l'infrastructure scientifique nationale de base. Lorsque le Dr. Clément Gauthier, responsable des politique scientifiques de la FSCB, a été informé que le Premier Ministre, suite à des pressions politiques, supporterait financièrement le "Triumph-Kaon Factory", à partir des fonds du budget CRSNG, il a contacté le Président de FCSB, ainsi que les présidents du Consortium National et l'Institut Chimique du Canada. Ces trois individus ont immédiatement écrit au Premier Ministre pour contester cette possibilité. De plus, la FCSB a entrepris, avec succès, une compagne écrite pour permettre aux membres d'exprimer leur désaccord au gouvernement fédéral continue du jouer un rôle dans les domaines de recherche fondamentale et qu'il crée un secrétariat pour coordonner la politique scientifique au niveau fédéral. Ces changements ont été suggérés par la FCSB lorsque leurs représentants si sont présentés devant le Comité le 5 juin, 1990 et ont été inclus dans le rapport "The Status and Management of Federal Research Scientists: The Scientists Perspective" que la Fédération a envoyé au Premier Ministre le 18 juillet 1990. Plusiers points soulevés par la FCSB ont été inclus dans le récent rapport du Comité fédéral sur des dépenses pour la Science et la Technologie de NABST.

En commentant les résultats des séances de consultation sur le Plan Vert, le Dr. A. Chisholm, conseiller scientifique d'Environement Canada, a admis que plusiers des organisations qui auraient de être consultées ne l'avaient pas été. Cependant, il a indiqué que s'il y avait des lacunes, ce serait aussi bien la faute des organisations concernées que celle d'Environement Canada. La FCSB, qui représente plus que 5000 scientifiques, a eu droit à un seul représentant alors qu'an moment des sessions finales, il y avait 22 ateliers siégeant simultanément! Dans de telles circonstances, il devient très difficile de faire des contributions majeures. Cependant, la FCSB a déjà préparé la première version d'un programme de recherche à long-term sur les écosystèmes canadiens qui est présentement sous étude par le comité des politiques scientifiques de la Fédération. De plus, Ian Smith, membre de la Société d'entomologie du Canada, et C. Gauthier ont rencontré le Dr. Chisholm le 14 décembre, 1990 pour discuter de ce projet. La mise sur pied de ce projet sera une des responsabilité importante de le Fédération et celle-ce aura bien sûr besoin de la participation des Sociétés comme la nôtre.

La FCSB a aussi donné son accord pour préparer un rapport sur l'agriculture soutenue pour le Conseil des Sciences du Canada. De plus, la Fédération participera à l'été 1991, à l'organisation d'un atelier sur ce sujet. Une fois de plus, ce champ d'activité est d'une grande importance pour les membres de notre Société.

Toutes personnes désirant participer aux activités de la FCSB concernant le Plan Vert ou de l'Agriculture Soutenue peuvent me contacter. De plus, si vous avez des idées, suggestions ou recommendations que vous aimeriez présenter à la Fédération, veuillez me le faire savoir.

Jeremy N. McNeil
Représentant de la SEC à la FCSB

CONGRES CONJOINT DE LA SOCIÉTÉ CANADIENNE D'ENTOMOLOGIE, DE LA SOCIÉTÉ D'ENTOMOLOGIE DU QUÉBEC ET DE LA SOCIÉTÉ D'ENTOMOLOGIE DE L'ONTARIO

Montréal, 21-23 octobre 1991
Ramada Renaissance du Parc

Dimanche, 20 octobre 1991

17h00 à 21h00	Inscription
19h00 à 20h00	Rencontre des étudiants avec le conseil d'administration

Lundi, 21 octobre 1991

9h00 à 17h00	Inscription
9h00 à 9h30	Cérémonies d'ouverture
	Décorations de la SEC
	Allocution, Médaille d'Or
10h30 à 12h00	Symposium "Entomologie et Société"
	J.-P. Bourassa et C. Vincent
10h00 à 17h00	Exhibits
13h30 à 16h45	Symposium: "Apprentissage chez les insectes"
	C. Vincent et B. Roitberg
13h00 à 17h00	Session de posters
17h00 à 18h00	Assemblée générale annuelle de la S.E.Q.
	Assemblée générale annuelle de la E.S.O.
20h00 à 22h00	Cocktail à l'Insectarium de Montréal

Mardi, 22 octobre 1991

9h00 à 12h00	Symposium: "Insectes et résistance au froid"
	H. V. Danks et D. Coderre
9h00 à 12h00	Symposium: "Les arthropodes des tourbières"
	Steve Marshall
9h00 à 12h00	Communications scientifiques
10h00 à 17h00	Exhibits
13h30 à 16h30	Communications scientifiques
13h30 à 16h30	Symposium: "Les arthropodes des tourbières"
	Steve Marshall
13h30 à 16h30	Communications scientifiques
17h00 à 19h00	Assemblée générale annuelle de la S.E.C.
19h00	Banquet

Mercredi, 23 octobre 1991

9h00 à 12h00	Communications scientifiques
9h00 à 12h00	Communications scientifiques
12h00 à 14h00	Réunion d'affaires, Conseil d'administration de la S.E.C.

•••

Pour plus d'informations veuillez entrer en contact avec:

Charles Vincent (Président)
Station de recherches, Agriculture Canada
430 boul. Gouin, Saint-Jean-sur-Richelieu
Qué. J3B 3E6 Tél: (514) 346-4494/Fax: (514) 346-7740

Daniel Coderre (Programme)
Département de Sciences Biologiques
Université du Québec à Montréal
C. P. 8888, Succ. A.
Montréal, Qué. H3B 1B4 Tél: (514) 987-3367/Fax:(514) 987-4648

Yves Mauffette (Trésorerie-relations avec hôtel)
Département de Sciences Biologiques
Université du Québec à Montréal
C. P. 8888, Succ. A.
Montréal, Qué. H3B 1B4 Tél: (514) 987-7752/Fax:(514) 987-4648

Steve Marshall (Symp. "Les arthropodes des tourbières")
Department of Environmental Biology
University of Guelph
Guelph, Ont. G1G 2W1 Tél.: (519) 824-4747 ext 2720/Fax: (519) 824-4120

Hugh V. Danks (Symp. "Insectes et résistance au froid")
Biological Survey of Canada, Zoology Division
National Museum of Natural Science
Ottawa, Ont. K1P 6P4 Tél.: (613) 954-2648/Fax: (613) 954-6439

Bernard Roitberg (Symp. "Apprentissage chez les insectes")
Department of Biological Sciences
Simon Fraser University
Burnaby, B.C. V5A 1S6 Tél.: (604) 291-4581/ Fax: (604) 291-3496

Jean-Pierre Bourassa (Symp. "Entomologie et Société")
Département de Chimie-Biologie
Université du Québec à Trois-Rivières, C. P. 500
Trois-Rivières, Qué. G9A 5H7 Tél.: (819) 376-5053/Fax: (819) 376-5012

JOINT ANNUAL MEETING OF THE ENTOMOLOGICAL SOCIETY OF CANADA, THE ENTOMOLOGICAL SOCIETY OF QUEBEC AND THE ENTOMOLOGICAL SOCIETY OF ONTARIO

Montreal, 21-23 October 1991
Ramada Renaissance du Parc

Sunday, 20 October 1991

17:00-21:00	Registration
19:00-20:00	Students meet the Board

Monday, 21 October 1991

9:00-17:00	Registration
9:00-9:30	Opening ceremonies
	ESC Awards
	Gold Medal Address
10:30-12:00	Symposium "Entomology and Society"
	J.-P. Bourassa and C. Vincent
10:00-17:00	Exhibits
13:30-16:45	Symposium: "Learning in insects"
	C. Vincent and B. Roitberg
13:00-17:00	Poster Session
17:00-18:00	E.S.Q. Annual General Meeting
	E.S.O. Annual General Meeting
20:00-22:00	Cocktail at Montreal's Insectarium

Tuesday, 22 October 1991

9:00-12:00	Symposium: "Insect cold hardiness"
	H. V. Danks and D. Coderre
9:00-12:00	Symposium: "Peatland arthropods"
	Steve Marshall
9:00-12:00	Scientific communications
10:00-17:00	Exhibits
13:30-16:30	Scientific communications
13:30-16:30	Symposium: "Peatland arthropods"
	Steve Marshall
13:30-16:30	Scientific communications
17:00-19:00	E.S.C. Annual General Meeting
19:00	Banquet

Wednesday, 23 October 1991

9:00-12:00	Scientific communications
9:00-12:00	Scientific communications
12:00-14:00	E.S.C. Governing Board Meeting

•••

For further information please contact:

Charles Vincent (Chairman)
Station de recherches, Agriculture Canada
430 boul. Gouin, Saint-Jean-sur-Richelieu
Qué. J3B 3E6 Tél: (514) 346-4494/Fax: (514) 346-7740

Daniel Coderre (Program)
Département de Sciences Biologiques
Université du Québec à Montréal
C. P. 8888, Succ. A.
Montréal, Qué. H3B 1B4 Tél: (514) 987-3367/Fax:(514) 987-4648

Yves Mauffette (Finance-Hotel arrangements)
Département de Sciences Biologiques
Université du Québec à Montréal
C. P. 8888, Succ. A.
Montréal, Qué. H3B 1B4 Tél: (514) 987-7752/Fax:(514) 987-4648

Steve Marshall (Symp. "Peatland arthropods")
Department of Environmental Biology
University of Guelph
Guelph, Ont. G1G 2W1 Tél.: (519) 824-4747 ext 2720/Fax: (519) 824-4120

Hugh V. Danks (Symp. "Insect cold hardiness")
Biological Survey of Canada, Zoology Division
National Museum of Natural Science
Ottawa, Ont. K1P 6P4 Tél.: (613) 954-2648

Bernard Roitberg (Symp. "Learning in insects")
Department of Biological Sciences
Simon Fraser University
Burnaby, B.C. V5A 1S6 Tél.: (604) 291-4581/ Fax: (604) 291-3496

Jean-Pierre Bourassa (Symp. "Entomology and Society")
Département de Chimie-Biologie
Université du Québec à Trois-Rivières, C. P. 500
Trois-Rivières, Qué. G9A 5H7 Tél.: (819) 376-5053/Fax: (819) 376-5012

RÉUNION CONJOINTE DE LA SOCIÉTÉ D'ENTOMOLOGIE DU CANADA, DE LA SOCIÉTÉ D'ENTOMOLOGIE DU QUÉBEC ET DE LA SOCIÉTÉ D'ENTOMOLOGIE DE L'ONTARIO

Montréal, 21-23 octobre 1991

FORMULAIRE D'INSCRIPTION

Indiquez: Régulier ❑ ou Etudiant ❑

Nom_____Titre_____
nom de famille prénom initiales

Adresse:_____

_____

Ville:_____Province/Etat:_____

Code postal:_____Téléphone:_____(FAX):_____

Frais d'inscription-en $ Can.
(incluant les frais de banquet et la T.P.S.)
Inscription tardive (après le 15 septembre 1991) ajoutez $15.00

Frais d'inscription , régulier	$85	_____
Frais d'inscription, étudiant	$50	_____
Frais d'inscription, conjoint	$40	_____
_____ Nom du conjoint	TOTAL	_____

LOGEMENT: Un nombre limité de chambres ont été réservées à l'Hôtel Ramada Renaissance pour la réunion. Les taux pour ceux réservant avant le 13 septembre 1991 sont les suivants: occupation simple $110, double $125. Prière de faire vos réservations directement auprès de l'Hôtel Ramada Renaissance du Parc, 3625, Avenue du Parc, Montréal, Québec, Canada H2X 3P8.
Téléphone: (514) 288-6666. Réservations 1-(800)-268-8998 (sans frais).

Veuillez retourner ce formulaire ainsi que les frais d'inscription à:

Dr Charles Vincent
Réunion conjointe 1991, S.E.C.-S.E.Q.-S.E.O.
Station de Recherches, Agriculture Canada, 430 Boul. Gouin
Saint-Jean-sur-Richelieu, Qué., Canada J3B 3E6

JOINT ANNUAL MEETING OF THE ENTOMOLOGICAL SOCIETY OF CANADA, THE ENTOMOLOGICAL SOCIETY OF QUEBEC AND THE ENTOMOLOGICAL SOCIETY OF ONTARIO

Montreal, 21-23 October 1991

REGISTRATION FORM

Check one: Regular ☐ or Student ☐

Name_____Title_____
Last first initial

Address:_____

_____

City:_____Province/State:_____

Postal code:_____Telephone:_____(FAX):_____

Registration fees, figures are in $ Cdn
(including banquet ticket and G.S.T.)
Late registration (after 15 September 1991) add $15.00 to each fee

Registration, regular	$85	_____
Registration, student	$50	_____
Registration, accompanying	$40	_____
_____ Name of accompanying person	TOTAL	_____

ACCOMODATIONS: A limited number of rooms have been set aside at the Ramada Renaissance Hotel for the conference. Rates for those making reservations prior to 13 September 1991 are as follows: single occupation $110, double $125. Please make your own reservations through: Ramada Renaissance du Parc, 3625, Avenue du Parc, Montreal, Quebec, Canada H2X 3P8.
Telephone: (514) 288-6666. Reservations 1-800-268-8998 (toll free).

Please return this form and registration fees to:

Dr. Charles Vincent
Joint Meeting 1991, E.S.C.-E.S.Q.-E.S.O.
Agriculture Canada Research Station, 430 Boul. Gouin
Saint-Jean sur Richelieu, Qué. Canada, J3B 3E6

RÉUNION CONJOINTE DE LA SOCIÉTÉ D'ENTOMOLOGIE DU CANADA, DE LA SOCIÉTÉ D'ENTOMOLOGIE DU QUÉBEC ET DE LA SOCIÉTÉ D'ENTOMOLOGIE DE L'ONTARIO

Montréal, 21-23 octobre 1991

FORMULAIRE DE PARTICIPATION: COMMUNICATIONS ORALES ET POSTERS

Veuillez retourner à:: Dr. Charles Vincent
Réunion conjointe 1991, S.E.C.-S.E.Q.-S.E.O.
Station de Recherches, Agriculture Canada , 430 Boul. Gouin
Saint-Jean sur Richelieu, Qué. Canada, J3B 3E6

Date limite: au plus tard le 30 juin 1991

Titre (maximum de 15 mots):_____

_____

Auteur (s):_____

_____

Organisme et adresse:_____

_____

Présenté par:_____

Résumé (maximum de 50 mots):

Format de présentation (ne cocher qu'un choix):

Communication orale de 12 min. et de 3 min. de discussion ❑

Présentation d'un Poster ❑

Equipement audio-visuel: un projecteur Kodak pour diapositives de 35 mm et un rétroprojecteur seront disponibles à chaque session. Veuillez contacter le responsable du programme si vous avez besoin d'équipement additionnel.

JOINT ANNUAL MEETING OF THE ENTOMOLOGICAL SOCIETY OF CANADA, THE ENTOMOLOGICAL SOCIETY OF QUEBEC AND THE ENTOMOLOGICAL SOCIETY OF ONTARIO

Montreal, 21-23 October 1991

SUBMITTED PAPER AND POSTER PRESENTATION REPLY FORM

Please return to: Dr. Charles Vincent,
Joint Meeting 1991, E.S.C.-E.S.Q.-E.S.O.
Agriculture Canada Research Station, 430 Boul. Gouin
Saint-Jean sur Richelieu, Qué. Canada, J3B 3E6

Deadline: Postmarked on or before June 30, 1991

Title (not to exceed 15 words):_____

_____

Author's Name(s):_____

_____

Institution and Address:_____

_____

To be presented by:_____

Abstract (not to exceed 50 words):

Form of presentation desired (check one):

Oral presentation of 12 minutes plus 3 minutes discussion ❑

Poster presentation ❑

Projection Equipment: A Kodak Carousel projector and an overhead projector will be available for each session. Slides should be provided in a carousel. Please contact the program chairman if equipment is required.

ARTICLES

Additions to the EWEN-LEECH Laws of Publication

The Extra Data Purpose Law: States that this information was included for extra data purposes, as outlined in this edited quote from a student report:

These insects were chosen because they are common and easy to recognize. They were also easy to pick off the sticky traps without destroying the insect. These insects were also collected because Dr. X. indicated that it was best to have a back-up project in case the main project was disturbed in any way. These two insects were merely placed in the project for extra data purposes.

There it is; someone finally admitted it.

And from Arthur M. Shapiro (Dept. Zoology, University of California, Davis) the following gems were received:

Shapiro's Laws of Field Ecology Research:

Law 1: Always pick a field site which is scheduled for development in a few years. This greatly reduces the likelihood of someone repeating or following up on your study in the same place and provingyou wrong.
Law 2: Always use an organism or system so obscure that no one else in the world publishes on it, let alone understands it. Be very careful to reveal as little as possible about your techniques.
Law 3: Never repeat the same field experiment in different years, since it will never work the same way twice.
Corollary: If you do repeat it, generate another paper in which to contradict yourself.
Law 4: Never state explicitly the limits on generalizing from your results. The referees will take you at your word and recommend rejection.

Dr. Shapiro mentioned that a former student pointed out that his *Law 2* can be treated as a corollary of the *Law of Cybernetic Entomology*: ''There is always another bug''.

We are very happy to incorporate these into the Ewen-Leech Laws. Please note that we gave full credit to the author, even though they were well worth stealing. Maybe we are getting soft. ''There is always another bug'' - - lovely!

A.B. Ewen

MEMBERS IN THE NEWS

Dr. Lawrence Gringorten

B.Sc. (Carleton University), M.Sc. (Hebrew University, Jerusalem), Ph.D. (U. of Toronto) was appointed in January 1990 as a Research Scientist in the entomology project.

- from the FPMI Newsletter (published by Forestry Canada, Ontario Region Communications Services Unit)

D.K. McE. Kevan

The Organizing Committee of the International Symposium on Agroecology and Conservation Issues in Temperate and Tropical Regions has acknowledged the contributions of Professor D.K. McE. Kevan of McGill University, Montréal, Canada as:

"A pioneer of soil zoology; with his enthusiasm and dedication, he has inspired generations of young people to take up the study of soil biota.
He has contributed greatly to the development of Agroecology and Soil Ecology."

Dated, September 27, 1990
Padova, Italy
Signed by: D.A. Crossley, C.A. Edwards, D. Pimentel, G.G. Lorenzi, M.G. Paoletti & A. Hamorani

PERSONALIA

James B. Kring

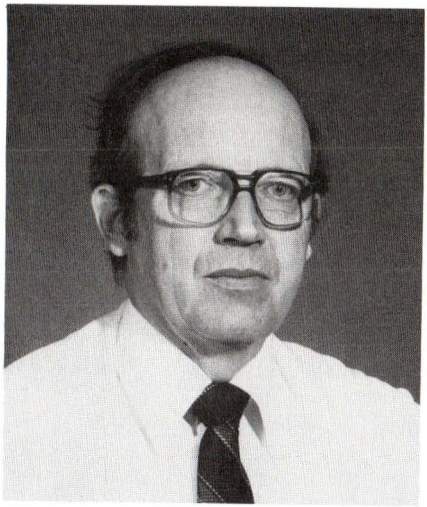
James B. Kring, born in Monett, MO, died October 19, 1990 in Anna Maria, FL at the age of 69.

Dr. Kring received his MS and PhD from Kansas State College, Manhattan, KS. He was an instructor at Kansas State College from 1946 to 1951. From that time until 1977, Dr.Kring was an entomologist at Connecticut Agricultural Experiment Station, New Haven, CT. From 1956 to 1980 Dr. Kring was a professor at the University of Connecticut at Storrs in the Biological Sciences Group. In 1977 he accepted the position of Head and then Professor of the Department of Entomology, University of Massachusetts.

In 1981 Dr. Kring moved to Florida where he assisted his son Stephen in his real estate business. Still eager to pursue his entomology interests, he returned to his research in 1982 as a Research Associate and Adjunct Professor, University of Florida, Gainesville. For the past 5 years Dr. Kring has actively worked as visiting professor and adjunct professor at the Gulf Coast Research and Education Center in Bradenton.

Dr. Kring was the recipient of many honors for his achievements in the field of entomology. He served as National President for the Entomological Society of America in 1979 after having been active in all areas of Society and its branches since 1951. Dr. Kring received The L. O. Howard Distinguished Achievement Award for Outstanding Entomologist of the Northeast in 1982 and the Florida Entomologist of the Year in 1989.

- from *The Island Sun*
(submitted by Mrs. Louise McNellis Kring)



Larry Burgess

B.Sc. (Alta.); M.Sc. (U.W.O.); Ph.D. (Sask.)
Born: 15 December 1929

Larry Burgess retired on March 29, 1989 after 37 years of service with Agriculture Canada. Larry grew up on a farm near Beaverlodge, Alberta where he developed an early interest in insects and wildlife in general. He enrolled at the University of Alberta where his interest in wildlife biology was channelled into entomology after he met and attended lectures by Dr. Strickland. As a summer student Larry worked on the biting fly project at Fort Churchill and, a year after receiving his B.Sc. degree in 1952, returned to Churchill as a full time employee in the Household and Medical Entomology Division. This later became known as the Veterinary and Medical Entomology Division. He continued with this Division until 1958 but took educational leave from 1954-1956 to complete an M.Sc. degree under Dr. Tony Brown at the University of Western Ontario. His project was on behavioural cues attracting mosquitoes to man and animals.

Larry returned to Ottawa after receiving his M.Sc. but soon transferred to Agriculture Canada Livestock Insect Laboratory at Guelph. He again took an educational leave from 1960-1962 to complete a Ph.D. degree at the University of Saskatchewan working with Dr. Jake Rempel on the nervous and neurosecretory systems of mosquitoes. In 1964 he was transferred to the Saskatoon Research Station after closure of the laboratory at Guelph. He continued to work on various mosquito projects until 1971 when he was asked to take up the study of flea beetles attacking rape and mustard crops. In 1972 he was appointed Associate Head of the Entomology Section at the Saskatoon Research Station and remained in that position until 1982.

Larry conducted extensive studies on the ecology and overwintering habits of flea beetles which culminated in a series of papers. More recently he conducted an extensive survey of insects in canola fields and on the relation of the false chinch bug to yeast infections of mustard.

Larry has always been involved in the affairs of the Entomological Society and served as Vice-President and President in 1965-66 and 1966-67, respectively, and on numerous committees. He served on the Program Committee for the BEP meeting (Botany - Entomology - Plant Pathology Joint Meeting) in 1975 and again on the Program Committee for the Entomological Society of Canada in 1985.

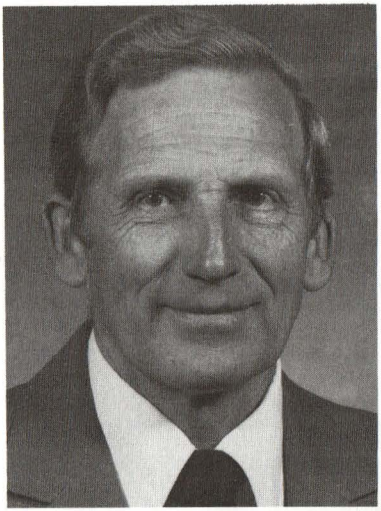
Larry retains his interest in entomology and the Society, so we will be seeing him often. We wish Elizabeth and Larry all the best for their retirement and future.

Peter Mason
Agriculture Canada, Saskatoon

Dr. George Harvey

B.Sc., M.Sc. (University of Western Ontario), Ph.D. (University of Wisconsin), Senior Scientist, Entomology, retired on 28 April 1989 after 36 years of service with Forestry Canada (Sault Ste. Marie). Much of Dr. Harvey's work was concerned with the genetics and population dynamics of spruce budworm.

- from the FPMI Newsletter



S. Cameron Jay

Cam Jay retired early in 1991, after 30 years of service at the University of Manitoba.

Cam was born at Lauder, Manitoba in 1929, and went to school in Hamilton, Ontario. In 1949, he graduated with the highest standing from a teacher training course at Hamilton Normal School. The next six years were spent teaching school in Hamilton. While teaching, Cam took evening courses at McMaster University, and received a B.A. in English Literature, and the Director's award for highest standing. Notwithstanding this, he had sufficient spare time to meet and marry Doreen, his wife and partner of over 39 years.

In 1955, Cam resigned his teaching position, and after a brief flirtation with Forest Entomology, began a bachelor's degree at the University of Manitoba. Those were heady days in the Department of Entomology, with such people as Reinhart Brust, Glen McLeod, Dieter Peshken, Ted Radcliffe, Dave Smith and Maurice Tauber among the student body. Cam graduated in 1958, this time with the University Gold Medal for highest standing among B.S.A. graduands.

One summer near the end of his degree programme he was assigned the penance of looking after the Department's apiary, a task which was particularly distasteful because Cam was frightened of bees! Mostly he watched through binoculars from a safe distance. However one day, he and Doreen set out to retrieve a swarm that had alighted on a tree branch; this bravery was founded on a text book's statement that bees in swarms do not sting. Cam climbed the tree and tied a rope to the branch. Doreen, who was 8 months pregnant, held the rope, so that when Cam sawed through the branch it could be gently lowered to the ground. All went well until the sawing was complete. Then the rope broke, the branch and swarm crashed to the ground, the swarm flew up and landed beside Cam, and Doreen abandoned Cam to his fate and took refuge in the truck. The seconds of juxtaposition of Cam and the swarm on the tree branch were momentous. Would Cam suffer first stings, and then broken bones as he fell from his perch? Or had the bees read the book? Cam was startled to find that the latter was the case, and at that moment his fascination with bees began.

Cam and Doreen moved to Guelph, which was then an outpost of the University of Toronto. There, under the supervision of Maurice Smith, Cam completed a M.Sc. degree on the life history of honey bees. In 1959, the Jays moved to Rothamsted, England, so that Cam could pursue Ph.D. studies on honey bee biology. This research was directed by Drs C. Butler and J.B. Free. In 1961, Cam and Doreen and their growing family returned to Manitoba, where Cam held a faculty position in the Department of Entomology until his retirement.

During his career in the Department, his first priority was teaching. For many years he has taught Introductory Entomology, and provided such an exciting introduction to the world of insects that this course was a major source of undergraduate and graduate students for the Department. In addition, Cam taught introductory and advanced courses in social insects. In 1980, as a result of nomination by his students, he was awarded the Olive Beatrice Stanton Award of the University of Manitoba for excellence in teaching.

Cam's achievements in research are also impressive, and range from work on fundamental aspects of bee biology through to studies directly applicable to beekeeping practice. He has published over 75 refereed publications, and recently contributed to the Annual Reviews of Entomology an item on one of his favourite research topics, the spatial management of honey bees on crops. In addition to

his own research, he has trained a total of 24 graduate students in research. Former students now occupy research positions with Universities or Agriculture Canada, and extension positions with several provincial governments.

Cam has had an enormous impact on Canadian beekeeping both directly through his teaching and research, and indirectly through the research and extension of those he trained. Cam made a point of sharing his knowledge directly with beekeepers. He offered numerous courses for commercial beekeepers, and for 29 years, a course for hobby beekeepers. In the summer he is constantly on the 'phone to individual beekeepers to try to solve their problems. For these contributions, he has been recognised by the beekeeping industry with local, national and international awards. Among these, are the J.I. Hambleton Award of the Eastern Apicultural Society of North America and the Freddie Rathje Memorial Award for outstanding contribution to the Canadian Bee Industry.

International work has also been one of Cam's interests. During sabbatical leaves, he worked on coconut pollination in Jamaica, kiwifruit pollination in New Zealand, and bee orientation in Australia and New Zealand. He also spent 15 months leading a C.I.D.A. apiculture development project in Kenya.

Cam has contributed to Canadian Entomology in many ways. While he has not been a high-profile member of the Entomological Society of Canada, he has served on its committees. He has been an active member of the Entomological Society of Manitoba, and served as its president in 1968-69. Similarly he has served the Canadian Association of Professional Apiculturists as both president and committee member. For his service to Canadian Entomology and Apiculture, he was elected a Fellow of the Entomological Society of Canada in 1985.

At least as important as the formal achievements are Cam's personality. As a Department Head and colleague he has been forever supportive and cognizant of the needs and aspirations of those around him, and takes endless pains to reach the best decision for all concerned. His steadying influence has brought consensus on many contentious issues, and so he has been much sought after as a chairperson of committees and conferences. The Jay home has been a centre of hospitality and camaraderie for staff and students for many years.

Cam has brought to the Department of Entomology, a sense of humour and an outlook on life which is a tonic to all around him. His classes, and colleagues, have been treated to a continuous barrage of his "jokes". Recently he has appeared in the classroom bedecked in yellow striped sweater, and appropriately appendaged - the only known specimen of *Apis mellifera jayensis*. He has also been known to dress in an old santa suit and tour the neighbourhood by horse and cutter, visiting the local children. Cam is the only person I know to rent a 3 x 10 m roadside billboard to wish his wife happy anniversary. For years he has ridden an ancient bicycle, on which he sits rigidly upright. At various times, persons unknown have "decorated" the bicycle, yet Cam has always managed to preserve an air of dignity as he rides his steed to and from work amid a cloud of ribbons and flags. Retribution usually followed these episodes, and Cam has had the last laugh; he has bronzed the bicycle and presented it to the Department for the use of students and staff.

Cam has numerous interests outside of the field of entomology. He is devoted to Doreen, to their three daughters and son, and to their growing families. Cam loves the outdoors, and has shared his canoeing, hiking, snowshoe or ski expeditions with his children and grandchildren, and with generations of boy scouts. Cam is an avid aviator; the plane he flies he rebuilt from a written-off wreck. The plane is housed on his hobby farm, a few kilometres outside Winnipeg. Cam and Doreen spend many of their summer weekends at the farm. There they have built a cottage, and grow trees for fun and profit.

Cam and Doreen have numerous plans for his retirement. They plan to spend more time on their farm and hope to see many friends visit them there. They plan to travel in North America and the south Pacific. Cam also plans to retain an office in the Department and maintain his connections with entomology. Oh yes, he also plans to learn to ride the unicycle.

All those who know Cam Jay will want to wish him and Doreen a happy retirement.

N. J. Holliday, Winnipeg

NEWS OF ORGANIZATIONS

Biological Survey of Canada (Terrestrial Arthropods) Survey Report

The Scientific Committee met in Ottawa on 18-19 October 1990. A fuller account of the meeting appears in the Spring 1991 issue of the Newsletter of the Biological Survey of Canada (Terrestrial Arthropods).

Notes on Selected Scientific Projects

1. *Arthropods of springs*

The proceedings of a symposium on "Arthropods of Springs, with particular reference to Canada" are in press in the *Memoirs* of the Entomological Society of Canada. The brief on spring habitats published in the *Bulletin* **22(1)** was well received.

2. *Arthropods of peatlands*

Participants in a symposium on "Arthropods of peatlands in Canada" at the 1991 ESC meeting in Montréal are now essentially finalized.

3. *Arthropods of the boreal zone*

Information on the boreal zone and on the Survey's boreal project were presented at two 1990 symposia, one in Sacramento, California, and one in Sault Ste. Marie, Ontario. Active studies continue on the sucking insects associated with certain pines.

4. *Arctic invertebrate biology*

International contacts continue, including projected field ventures. Two special interest group meetings were held in support of this project, including one at the 1990 ESC meeting in Banff. A newsletter, *Arctic Insect News*, has been started.

Other scientific priorities

1. *Climatic change*

A special interest group on climate change was held at the 1990 ESC meeting. Contacts with the Royal Society of Canada continue, but it has proved difficult to arrange for biological elements of the Canadian Global Change Program, because the program is orientated toward large scale models, not yet available for biology. However, the Scientific Committee recommended in this context that the ESC ask the Canadian Federation of Biological Societies to seek the biological community's endorsement for the establishment of a Canadian long-term ecological research network.

2. *Arthropod ectoparasites of vertebrates*

The second draft of a brief on arthropod ecotoparasites of vertebrates was discussed (now published, see Supplement to this issue of the *Bulletin*). Dr. T.D. Galloway has been invited to address "Transmission strategies of parasites in the boreal forest" in a symposium at the 1991 meeting of the Canadian Society of Zoologists at Thunder Bay, Ontario.

3. *Research collections of arthropods*

The Committee continued to develop a brief about the value of research collections of terrestrial arthropods.

Liaison and exchange of information with other organizations

1. *Canadian Museum of Nature*

Dr. S.C. Cumbaa, A/Assistant Director for Collections and Research, reported that the Museum is now an independent Crown Corporation. Changes associated with the new status continue to be implemented. Mr. François Génier has been appointed as entomology technician, to assist the curator, Dr. R.S. Anderson. Some eventual further growth in entomological staffing is expected in due course. The Museum continues to seek Government funds for additional modules of the Biological Survey.

2. *Biosystematics Research Centre*

Dr. I.M. Smith, on behalf of Dr. R. Trottier, Director, reported that the long-awaited review of the Biosystematics Research Centre still is not complete. However, he hoped that BRC will be prominently active in helping Agriculture Canada to address environmental issues.

3. *Entomological Society of Canada*

Dr. R.A. Ring, first vice-president of the ESC, reviewed some highlights of a recent meeting of the Society's Governing Board, including matters related to the new Society headquarters, relationships with the Canadian Federation of Biological Societies, and recent changes of Society officers.

4. *Canadian Society of Zoologists*

Dr. Barbara MacKinnon, Parasitology Section, CSZ, reported that the Parasitology Section has set up a steering working group for a potential Parasitology module of the Biological Survey. This group will endeavour to initiate work on a small scale similar to that of the Terrestrial Arthropods module, pending the availability of funds.

5. *Canadian Parks Service, Environment Canada*

Mr. D. McBurney, A/Head, Studies Section, Natural Resources Branch, described some changes in senior management within Environment Canada. He introduced a revised draft of a Memorandum of Understanding between the Survey and the Canadian Parks Service, concerning entomological research in Parks, based on a document prepared earlier by the Survey. This Memorandum is being pursued through a subcommittee of the Survey.

6. *Commercial Chemicals Branch, Conservation & Protection, Environment Canada*

Ms. S. Jones oulined the role of the Commercial Chemicals Branch in evaluating the environmental risk of chemicals. Much of the monitoring work is done by contractors under the direction of the Branch.

7. *Other Organizations*

The Survey remains in touch with various government agencies and other organizations.

Other items

1. *Input to the Canadian Environmental Agenda*

The Survey prepared comments on the Green Plan public documents, noting especially that considerations related to biodiversity should be added to the agenda. Through this material (submitted through the Canadian Federation of Biological Societies) some input to the Green Plan consultation process had been achieved, though its effects are still unknown.

2. *Canadian Biological Information System*

Mr. Larry Speers, invited as a guest of the Committee, explained a proposal for a Canadian Biological Information System, a computer-based program for data handling.

3. *Other matters*

The Committee noted the retirement of Margaret Ridewood, the Survey's secretary since its inception, with appreciation for her work. The Committee also discussed information from different parts of the country, membership of the Scientific Committee, the publications of the survey, and other topics.

H.V. Danks

Second International Congress of Dipterology, Bratislava (Czechoslovakia) August 27 - September 1, 1990

There were about 300 participants at this Congress, an attendance which augurs well for the continuance of these Congresses every 4 years. Plenary lectures were delivered by D. Monty Wood (''Tales told by tails: homology and phylogenetic implications of male genitalia of Diptera - an overview''), Nina P. Krivosheina (''Larval morphology and higher classification of Diptera'') and Michael Vogel (''The importance of Diptera in nature conservation''). These lectures, along with the keynote lectures for each Congress section, will be published in the Proceedings.

Arising from Dr. Vogel's lecture, a resolution was passed recommending the support of baseline studies of Diptera in various ecosystems and the consideration of Diptera in evaluating sites for conservation. This will be transmitted to various international agencies.

The Congress also passed a resolution establishing a Committee on Diptera Names (to be chaired by Neal Evenhuis of the Bishop Museum, Hawaii) ''for the purposes of preparing lists of Diptera names in use for approval by subsequent Congresses and providing advice and consent to the International Commission of Zoological Nomenclature''. The vigorous debate which this resolution engendered will doubtless be resumed when the Committee reports to the next Congress. By then we should know the results of similar debates in other fora, such as the International Botanical Congress in 1993.

The first three Honorary Members of the Congresses were elected, namely: Curtis W. Sabrosky (U.S.A.), Lars Brundin (Sweden) and Nina P. Krivosheina (Soviet Union). These appointments are made to honour dipterists who have made oustanding contributions to dipterological knowledge and important contributions to the Congresses. We hope to have the pleasure of their attendance at future Congresses and that they will continue to make their highly valued contributions to dipterological literature.

Guelph (Ontario) was chosen as the site for the next International Congress of Dipterology in 1994. Stephen Marshall will be chairman of the Organizing Committee. The officers of the Council for International Congresses of Dipterology were re-elected for the next 4 years, namely: myself as Chairman, Milan Chvála (Prague) as Vice-Chairman, and Chris Thompson (Washington) as Secretary-Treasurer.

Graham C. D. Griffiths,
Chairman of Council for International
Congresses of Dipterology,
University of Alberta,
Edmonton, Alberta

Eagle Hill Wildlife Research Station
Entomology Field Seminar on the Maine Coast, Summer 1991

Advanced field seminars in entomology are being offered for the fourth year at Eagle Hill Wildlife Research Station, located just "downeast" of Bar Harbor and Schoodic Point on the Maine coast. The seminars of interest to entomologists this year include:

Forest Entomology: The Northeastern Forests **June 2-8**

Emphasis: careful field evaluations of insects prevalent in northeastern forests of mostly spruce, fir, pine, maple and birch; identifications in lab will cover all life history stages
Richard Dearborn: Senior entomologist of the Maine Forest Service; exceptional field entomologist; specialist on life history stages of most species groups, especially beetles.

Spiders **July 7-13**

Emphasis: field observations and collection of spiders and subsequent laboratory identification; ecological methods for field sampling, preparation of specimens; discussions of web designs and web types
Dr. Daniel T. Jennings: many years with the USDA Forest Service as research entomologist; numerous publications on spider ecology, spider feeding behaviour; currently working on book on spiders of Maine

There are other field seminars in botany, marine biology, geology and one in natural history illustration. The seminars are given by some of the country's leading authorities on natural history. Scholarships for the station's very intensive one-week seminars are available.

For more information, please write to Eagle Hill Wildlife Research Station, Steuben, Maine 04680 or call 207-546-2821 or 718-622-0452.

Resolution Passed at the International Symposium on Agroecology and Conservation Issues in Temperate and Tropical Regions, Padova, Italy, 28 September, 1990

Whereas public awareness of the importance of flora and fauna in the maintenance of stability of the Earth's natural resources is increasing;

And whereas this diversity is continually decreasing at an alarming rate through the extinction of species, both locally and totally, as a result of ecological degradation;

And whereas it is thus imperative that full comprehension of the precise nature of the World's flora and fauna, upon which our survival depends, be obtained before it is too late;

Be it resolved that the participants in the International Symposium on Agroecology and Conservation Issues in Temperate and Tropical Regions urge that all governments and governmental and private agencies, including universities and colleges, in all countries and at all levels, assist in making available urgent, immediate and substantial financial provision for major increases in, and encouragement of, global, basic taxonomic research (including positions for trained taxonomists and the maintenance and expansion of research collections), both within and beyond their own political boundaries, in an attempt to reverse the currently deplorable and widespread attrition of these basic scientific resources that are essential to the understanding of the interrelationships among plant and animal communities.

HERITAGE LECTURE

F.S. Carr - Amateur Entomologist

The Heritage Lecture to the Entomological Society of Canada, Banff, October 9, 1990, by John L.Carr

It is my privilege to talk to you today about my Father, F.S. Carr, an avid amateur entomologist in Alberta in the first third of this century. He specialized in beetles, but collected occasionally in other orders.

Frederick Stephen Carr was born January 1, 1881, in Cobourg, Ontario, the second of three children of a farmer, and grew up on the family farm. He received his elementary and high schooling at Cobourg. Natural history fascinated him from childhood and he was able to indulge these interests in the rural surroundings of his youth. He resolved to become a medical doctor, and undertook a premedical course at the University of Toronto, earning a B.A. degree in Natural Sciences in 1904. Finances were strained, so he went west immediately, to the Land of Opportunity, and attended Teacher Training College at Regina. He then continued West to the brand-new Province

of Alberta with his brand-new Teacher's, certificate, and taught briefly at Lacombe and then at Innisfail. There he met and courted Laura Moyer, also a school teacher from Ontario, and they were married Christmas Day 1907. He was presently appointed Principal of queens Avenue Public School in Edmonton, and transferred to the new Victoria High School there as Principal in 1910.

In 1912, with some savings and three children, he returned to the University of Toronto to further his medical studies. In 1914, ill health forced him to withdraw. After recovery, he abandoned a medical career and returned with his family to Leduc, Alberta, where he farmed. This venture was not entirely successful; my Mother claimed he would sooner follow a nice beetle than a nice plow-horse. To his and his family's great relief, he was offered and accepted the position of head of the Science Department at Victoria High School, and returned to Edmonton in 1915.

In 1920, he was appointed School Inspector at Castor, in east-central Alberta, and in 1921 became Organizer of New School Districts in the newly-settled areas east of Edmonton. In 1922, he was appointed School Inspector in the Medicine Hat District, and remained there for the rest of his life. He became ill in June, 1933. His health gradually deteriorated, and a brain turmor was diagnosed early in 1934. Surgery was unsuccessful and he died May 16, 1934.

Although Entomology was Father's avocation, he was not wholly dedicated to insects. He was a family man. He and my Mother had five children, one of whom died in infancy. The family was close-knit, and both parents took parenthood seriously. He was an enthusiastic bridge player. Reading, particularly lurid mystery novels and scientific travel books, was a great pleasure to him. He was a strong supporter of his church, and for many years served as Chairman of the Finance Committee of Fifth Avenue United Church in Medicine Hat. His garden was important, both as a source of pleasure and as a source of food for a hungry family, and his flower beds were bright and somwhat innovative. He taught Natural Science at the Teachers' Summer School in Edmonton for many summers. In the early 1930's, he was co-organizer of the Medicine Hat Regional School Musical Festival. In between, he was a Coleopterist.

Father was always fascinated by the biological world around him. One of his happy memories was of a summer spent as Student Assistant on a small-mammal biological survey party in Ontario. Hidden in various corners of his beetle room at home were boxes of rodent skulls, mollusc shells, dry sea horses, and fossils; and alcoholic bottles full of Crustacea, centipedes, scorpions, spiders and even small fish. Live toads, snakes, salamanders and horned lizards dwelt from time to time with the household.

His major interest was in the insects, and particularly the Coleoptera. At one time, he collected Lepidoptera with enthusiasm, and several Ricker-type frames of butterflies and moths hid in the back corners with the mouse skulls. A few boxes of pinned specimens remained from a brief dalliance with the Hymenoptera. He contributed quite a few flies to the Canadian National Collection, and at least one species received his name. Beetles were his overwhelming enthusiasm, however, and became the primary focus of his entomological effort. His first collections were exchanged for tuition at the University of Toronto in 1912, and he started over upon his return to Alberta in 1914.

There was no automobile in the family until he became School Inspector in 1920, so until then most of his collecting was within walking distance or street car range of his home at 110 Avenue and 123 Street in Edmonton. Thus, most of his captures in those earlier days were made on the Hudson Bay

Reserve (much of which is now occupied by Edmonton Municipal Airport) or Jasper Place or along the North Saskatchewan River, all of which were then mostly bush. He had occasional summer use of a cottage at Wabamun Lake. After 1920, his official duties took him farther afield, and his transfer to Medicine Hat opened up a whole new world for him.

His inspectorate at Medicine Hat included at various times all the area from the Saskatchewan border west to Bow Island and Alderson, and from the north slope of the Cypress Hills north to the Red Deer River, about 4,800 square miles. All the rural schools in this area had to be inspected annually, so he had opportunities to collect at many localities while travelling from school to school, and at luch times. In those days, working hours were longer than now, but as a civil servant he had Saterday afternoons and Sundays free, and a two-week vacation in the summer. Most of his collecting was done Saturday and Sunday afternoons, within a short drive of his home, and much of that within walking distance. The valleys of the South Saskatchewan and Seven Persons Creek were favorite haunts, and since his residence was on the ourskirts of the city, the prairie at his front door was an excellent and readily-exploited source of beetles. Even with the roads and cars of the 1920's Cypress Hills were within fairly easy reach in dry weather, and he made a few day-trips there each summer.

Roads and cars were not as well-developed then as now. Even short forays were not undertaken lightly. A 200-mile drive took all day, even if it didn't rain. There were no highways, a trip to anywhere meant zig-zagging over farm grid roads. The main routes, as from Medicine Hat to Calgary, were marked by colour bands painted on fence posts or telephone poles. Gravel was an exceptional luxury. Later, of course, gravelled highways were developed on the main routes, and motoring ceased to be such an adventure. These road conditions effectively restrained even holiday travel, and kept Father's horizon somewhat limited.

Father usually used his summer vacation to travel west, out of the dry prairie to the lusher and faunally different Foothills and Rockies. There were several holidays spent at Banff where many treasures were caught. (National Parks tolerated collectors then.) He also made several trips to the Crowsnest Pass - Pincher Creek area, where he met the fauna that slips across the Continental Divide from British Columbia. In 1930 and again in 1931 he spent his vacation at Waterton Lakes, enjoying the pleasure and excitement of collecting the beach drift; he had a hand-written list of about 235 species of beetles collected from the wash-up. Occasionally he ventured farther afield, and even drove the goat track from Lake Louise to Golden. That road was wide enough for only one vehicle, with occasional turn-outs to meet oncoming traffic, and no impediments downwards between the edge of the road and the valley floor. About 1927, he made a collecting trip to Vancouver Island, and after he became ill in 1933 spent a long leave in Vancouver. The physical difficulties of travel in those days certainly limited his collecting opportunities, but at the same time forced him to concentrate his efforts in relatively small areas.

His collecting equipment was mostly home-made. Mother tailored the bags for his sweeping and aerial nets. His aquatic net was a large soup-strainer, sometimes modified to fit onto his sweeping net handle for increased reach. His collection was housed in a miscellany of boxes - - initially large wooden and home-made; later, commercial cardboard insect boxes; and finally when finances improved, in good commercial schmitt-type boxes, some of which he imported from England. Duplicates were kept in cotton in paper packets. He used hand lenses for most of his examinations. He had a compound microscope, from his medical student days, but this of course was very awkward, with no working space between stage and objective, and I do not think that he did any dissections at all.

Local naturalists were few, so he had little opportunity for direct contact with other entomologists. Lepidopterists Mackie and Bowman in Edmonton, and dragonfly specialist Whitehouse from Red Deer were friends, and almost certainly sometimes collecting companions. E.H. Strickland arrived in Edmonton at about the time Father left, so their contacts were mostly in the summer when Father was teaching at Summer School. In Medicine Hat, several other naturalists did visit, including P.J. Darlington Jr, Norman Criddle, William Rowan from the University of Alberta; James Pepper then collecting for the Canadian National Collection; and Owen Bryant then living in Banff.

He made up for lack of personal contact by writing letters. He corresponded vigorously with most of the leading North American Coleopterists of the day including Fall, Frost, Casey, Buchanan, Chittenden, Hatch, Ralph Hopping, Knull, Nicolay, Swaine, Brown, Brimley, Criddle, Green, Wallis and Leech. He was an enthusiastic trader, exchanging specimens with anyone who was interested. He concentrated almost exclusively on the fauna north of the Mexican border, but did have a few specimens from other parts of the world. He never sold a specimen, and only very rarely bought one. He made his material freely available to specialists, and sought out taxonomists willing to identify in exchange for duplicates. As a result, specimens from his collection are now to be found in most of the major beetle collections of North America. Many of the taxa collected by him have been described by others. Beetles bearing the "F.S. Carr" label are still frequently cited in today's revisional and faunal studies. This vigorous barter built up his own collection, which at the time of his death contained about 6,500 species, more than a quarter of the recognized North American fauna at the time. His collection was deposited with the Department of Entomology, University of Alberta, largely due to the efforts of Professor Strickland, and remains there as an important teaching and research resource.

He authored five taxonomic papers, including a revision of the genus *Brychius* in the Haliplidae. He described ten species and one subspecies of beetle as new; six of the species are considered valid. His material, however, was the basis for much taxonomic work by others. The Dytiscid genus *Carrhydrus* was erected by Fall to accommodate a single specimen which Father captured at Edmonton. Some 14 or 15 other species have been named in his honor. Many more have been described from his material.

In 1920, he published a list of 525 species of beetles from Central Alberta, mostly from Edmonton. In 1924, an addendum added a further 63 species. From 1920 to 1932 he contributed provincial records to *The Entomological Record*, mostly from Southern Alberta, adding a further 513 species to the provincial list, for a total of 1,101 species. Including species first recorded by others (often from his specimens) it is thought that his collection contained about 1,400 identified species of Beetle from Alberta.

In the Introduction to his 1920 List of the Coleoptera of Northern Alberta he wrote "...neither local lists nor provincial lists are available for any region west of Toronto". The only published records for Central Alberta at that time appear to have been 5 species of Scoletidae, recorded by Dr. Swaine. The Lepidoptera of the southern half of the province were fairly well-known through the efforts of Wolley-Dodd, Bowman and others. Whitehouse at Red Deer was studying the Odonata. The Coleoptera, however, seem to have been collected only sporadically, usually incidental to agriculture or forestry research, or by travelling naturalists passing through. The field was thus wide open for an industrious Coleopterist in the early 1920's. By the end of that decade, officers of the Dominion Department of Agriculture were contributing more, as staffs at experimental stations were enlarged.

Father was a contemporary of Wallis and Criddle in Manitoba. Amongst them, they put the

Western Interior of Canada on the entomological map. Their collections pointed to the major beetle distribution patterns of this part of the country. The importance of local collectors and collections was evident as large faunal lists were built up by these local enthusiasts. The impact of local collectors is well-shown by the number of species recorded from each of the Prairie Provinces in Bousquet's 1989 draft List of Beetles of Canada; some 31% of the beetle species known in Canada are recorded from Manitoba; 31% from Alberta, but only 21% are listed from Saskatchewan. That last province simply lacked enthusiastic local collectors until very recently.

There were four separate faunal areas in the southern half of Alberta demonstrated by my Father's work. Edmonton is largely in the Boreal Forest, with contributions from the north (*Carabus chamissonis* Fisch.) and form the west (*Scaphinotus marginatus* (Fisch.)). Records such as these occasioned some wonder even as late as the 1950's. Southeastern Alberta has a Great Plains fauna, with some elements derived from the Rocky Mountain states and the Great Basin. The northern extent of many of these forms was totally unexpected when they were first found. The Foothills and Rocky Mountains east of the Continental Divide have of course a Cordilleran fauna, with strong Boreal Forest affinities northwards. Many of the Northern forms are replaced by Pacific Slope species southwards, especially in the Crowsnest Pass area. Finally, the Cypress Hills have an isolated Cordilleran fauna. Father's collections clearly showed these patterns for the Coleoptera for the first time.

F.S. Carr's productive collecting spanned only 18 years, from 1914 to 1932. He was severely limited for the first 6 years of this period by lack of transportation, and thereafter, though less seriously, by road and vehicle limitations of the time. Without a binocular microscope he was definitely handicapped as a taxonomist. His great advantage lay in simply being there, being the right person at the right time, in the right place; and that was almost accidental because of his professional postings. However, vigor and enthusiasm led him to take full advantage of these opportunities.

It has been a source of wonder to me that he was able to accomplish so much in so short a time, while pursuing a busy professional and community life. It demanded a great deal of energy and dedication, but also reflected his eagerness to freely share specimens and ideas with other workers. He was sitll a young man when illness terminated his activities.

I with to thank several people who aided in the preparation of this history. Dr. Gordon Pritchard provided the opportunity for this talk, and kindly read a draft of the paper. Dr. George Ball discussed the significance of Father's work to the science. Dr. Yves Bousquet permitted use of as yet unpublished material. My sister Mary, with a wonderful memory and an intense interest in family history, furnished most of the early information. My son Richard prepared the slide. Finally, my wife Bert patiently listened to several versions of this paper and cautiously and constructively offered helpful criticism.

Thank you all for this opportunity to pay my respects to my Father.

PUBLICATIONS
BOOK NOTICES

Research on the Soil Animals in Northeast China. **1990. J. of Northeast Normal University. No. 1. Northeast China University Publishing House. (Chinese with English Table of Contents). Available from Mr.Li Jingke, Coleoptera Research office of the Agricultural Research Institute, Yingkou County, Liaoning Province, Peoples' Republic of China. Price 5000 yen.**

The 28 papers listed in the Contents include 10 papers on faunal research of specific groups of animals (earthworms, mites, collembola, Mecoptera and particularly Coleoptera), 11 papers on the soil animals of particular areas, and 6 on the relationships among soil animals, soil types, and other soil factors.

I have seen only one of the papers in the volume: Li Jingke & Chen Peng. The faunal distribution of soil Staphylinidae in northeastern China: 13-20. This paper includes a table showing the numbers of genera and species by subfamily of Staphylinidae in the Northeast and in all of China and a second table recording the occurrence of each of 190 spp. of Staphylinidae in each of the three provinces of Northeastern China. Mr. Li sent me a copy of the English "Table of Contents" for this volume and I can provide it on request.

W.J. Turnock
Winnipeg, Manitoba

Whipps, J.M. and R.D. Lumsden (eds). 1989. *Biotechnology of fungi for improving plant growth.* (Symposium of the British Mycological Society, University of Sussex, 1988). Cambridge University Press, Cambridge, New York, Port Chester, Melbourne, Sydney. 303 pp. Hardcover. $(U.S.)89.50.

Two chapters of this book are of special interest to entomologists, "The use of fungi to control pests of agricultural and horticultural importance", by A.T. Gillespie and E. R. Moorhouse (29 pp; 115 refs, 3 figs, 2 tabs), and "Mechanisms of fungal pathogenesis in insects", by A.K. Charnley (31 pp; 139 refs, 8 figs, 1 tab). The eleven other chapters treat ectomycorrhizas, mycoherbicides, control of nematodes, plant disease fungi and their commercial production, mechanisms of biological disease control, molecular approaches, protoplast technology and strain selection, commercial approaches to use of biocontrol agents (including a brief treatment of microbial insecticides), and environmental factors and establishment of biocontrol agents.

PUBLICATIONS
BOOK REVIEWS

Soós, Á. and L. Papp (eds). 1989. *Catalogue of Palaearctic Diptera, Vol. 6 Therevidae - Empididae.* Elsevier Science Publ., Amsterdam and New York. 435 pp. Hard cover, Dfl. 395.00/ $(U.S.) 208.00.

When completed this 14 volume catalogue will treat all the Diptera of the Palaearctic Region and finally conclude a varied 25 year cataloguing effort of the world Diptera fauna. Volume six is the ninth to be issued in this important projected 14 volume series, and continues the coverage of the families of orthorrhaphous Brachycera that began with volume five (1988). Catalogues dealing with any portion of the historically important Palaearctic insect fauna are always needed, but a recent treatment of this group of flies is particularly useful, since the last compilations by Bezzi (1903) in Vol. 2, Katalog der Paläarktischen Diptera, and Kertesz (1908-1909) in Vols 3-6, Catalogus Dipterorum had become hopelessly out of date.

The treatments of the seven families dealt with in volume six are all written by recognized authorities in each group, Therevidae by L. Lyneborg, Scenopinidae by L. P. Kelsey and Á. Soós, Bombyliidae by V. F. Zaitsev, Atelestidae by M. Chvàa, Microphoridae by M. Chvála, Hybotidae by M. Chvála and V. G. Kovalev, and Empididae by M. Chvála and R. Wagner. These last four families (which make up over half of the catalogue) have traditionally been placed in the single family Empididae, which along with the Dolichopodidae (to be included as part of Volume 7) comprise the superfamily Empidoidea. Chvála (1983) has recently reclassified the Empidoidea into the five families mentioned, based on a phylogenetic analysis of the group presented in Fauna Entomologica Scandinavica, Vol. 12. It is unfortunate, in my opinion, that the catalogue editors chose to accept this classification, given the consistent treatment of the superfamily as just the Empididae and Dolichopodidae, in all existing modern Diptera catalogues covering other zoogeographic regions, including the recently published Catalog of Australasian and Oceanian Diptera (1989). Although eventual subdivision of the Empididae in the traditional sense is probably warranted given paraphyly of the group with respect to at least the speciose Dolichopodidae, Chvála's new family concepts are at present weakly supported, either in terms of their monophyly, or their rank based on tentative phylogenetic conclusions, as I have argued more fully elsewhere (see *Canadian Field-Naturalist* 103: 620, 1989).

Each family treatment begins with a short introduction summarizing adult and immature characteristics, biology, and taxonomy, as well as listing major literature citations. The arrangement of taxa appears to have been at the discretion of the authors and varies throughout the book. For example, all taxa are listed alphabetically for the Therevidae and Scenopinidae, as are the genera and species of the Bombyliidae (although included bombyliid subfamilies are presented phylogenetically), whereas the classification presented for the empidoid families is entirely phylogenetic (except for the alphabetical listing of species). Synonyms are listed chronologically for both genera and species, and include unjustified emendations, misidentifications and other errors. Under each species or subspecies name reference is provided to the original description, along with the type locality and geographic distribution. Distributional records are by country for Europe, Asia and North Africa, but are further subdivided by major physiographic region for the Soviet Union. Species that cannot be properly placed are listed as "doubtful species" or "*nomina dubia*" at the end of each genus or family, and in one instance the problematic empidoid genus *Nemedina* is not assigned to family. In order to save space, all family treatments refer to a single extensive 50 page bibliography, which is followed by a combined index to

scientific names.

My most serious criticism of this volume involves the premature cut-off date established by the editors for inclusion of new taxa and literature cited. December 31, 1982 is the date given by which the included manuscripts were to be completed, nearly seven years before the actual publication date, and only one year after the deadline used in the first published volume of this series (Volume 9) in 1984. Although in general no new taxa are reported to be included after 1982, some recent taxonomic decisions are cited as late as 1988, indicating that limited changes to at least a few submitted manuscripts were permitted. In addition, as indicated on page 5, the section on Therevidae was exempted from the 1982 deadline, because the author of this section (L. Lyneborg) had described a number of new Palaearctic taxa (including several new genera) between 1983 and 1986. However, since the 1982 deadline many new Palaearctic taxa have been erected in some of the other included families, most notably several new Palaearctic empidoid genera (i.e., *Chillcottomyia, Leptocyrtoma, Stylocydromia, Thalassophorus, Xanthodromia, Rhyacodromia,* and *Ephydrempis*) described in an important paper by Saigusa (1986, *Sieboldia* 5: 97-118). Exclusion of these taxa is unfortunate and appears to have been an avoidable consequence of a seemingly unnecessary editorial deadline decision.

Treatment of species names appears very complete, at least for those parts of the catalogue (the empidoid families) with which I am most familiar. However, a few omissions were discovered in a sporadic check of the sections on Empididae and Hybotidae, namely *Wiedemannia (Roederella) ouedorum* Vaillant (1951, Bulletin de la Société Zoolique de France **76**: 371-379), and *Stilpon demnatensis* Vaillant (1956, Mémoires du Muséum National d'Histoire Naturelle, Serie A, Zoologie **11**: 1-258) (a *nomen nudum*). In addition, as with previous volumes in this series, several apparent new synonymies and new combinations that occur throughout the catalogue are not clearly indicated.

In spite of some of these criticisms, the authors and editors should be congratulated on the production of another fine volume of a series that is indispensible for dipterists interested in the Palaearctic fauna. However, the high price of the entire series and of this volume in particular, will unfortunately make the catalogue accessible only to users of major institutional libraries.

J. M. Cumming
Biosystematics Research Centre, Ottawa

Evenhuis, N.L.(ed.). 1989. *Catalog of the Diptera of the Australasian and Oceanian Regions.* 1155p. Bishop Museum Press, Honolulu & E.J.Brill, Netherlands. ISBN 0-930897-37-4 (Bishop Museum Press); ISBN 90-04-08668-4 (Brill). Hardcover, $(U.S.)100.

This great catalog, which recognizes 15,764 species in 116 families, is the first comprehensive listing of the Diptera of Australasia and the islands of the Pacific Ocean. It is the work of 54 authors from around the world; special credit, however, is due to the Editor, Dr. Neal Evenhuis, who is the author of no less than 20 family sections, and a co-author of 10 others. In general it follows the pattern of the catalogs of the Diptera of America North of Mexico (1965), of the Oriental Region (1973-1977), and of the Afrotropical Region (1980); and thus, with the catalogs of the Palaearctic and Neotropical Regions both nearing completion, we are approaching a first coverage of the Diptera of the world - approximately 120,000 named species. The information is being maintained on a database and continually updated.

The classification adopted does not involve extensive new departures; the recognition of families

and their component groups was determined by the expert judgement of the author in question and might be called the "accepted modern standard"; in general it is closely related to that used in the *Manual of North American Diptera*, volume 1. The definition of the area covered is indicated by two useful maps; to the north-west it fits appropriately with that of the Oriental catalog, and in Oceania it extends from the Bonin Islands and Hawaii in the north across the whole width of the Pacific Ocean, with an appendix on the sub-antarctic islands as a whole and Antarctica (the latter with 2 species). The area covered (as distinct from the land surface involved) is thus larger than in any of the other catalogs. Furthermore, it is far from homogeneous. The earlier fauna of Australia has been widely exposed to inflows from the Oriental Region, at various times and probably by various routes, with smaller contributions from more distant tropical areas; to the south the cool temperate fauna of later Gondwanaland is well represented; Oceania consists mainly of oceanic islands with adventive and often rapidly evolving faunas, while other islands are isolated continental fragments which retain some ancient endemics. All this, with care and attention, can be perceived from the catalog.

The work is copiously indexed and referenced. The introductory section of 40 pages in all includes both the necessary taxonomic and nomenclatural information and some valuable pages of geographic information; the tabulation of geographic equivalents is especially useful given the many changes of political association and customary languages that have occurred. There are more than 4,000 references which, wherever possible, include the day and month of the publication in question and occasionally various other important notes; the Index appears to be both accurate and very extensive.

J.A. Downes
Ste-Anne-de-Bellevue, Québec

Crane, Eva. 1990. *Bees and Beekeeping: Science, Practice and World Resources.* Cornell University Press, Ithaca, N.Y. 614 pp. Hard cover, $(Can.)100.00. ISBN 0-8014-2429-1.

Dr. Crane's latest writing effort has provided professional apiculturists, research scientists, students and beekeepers worldwide with a fully comprehensive reference book on honey bees and beekeeping. This ambitious undertaking is well organized and written, and further enhanced with excellent historical drawings, distribution maps, and photographs.

Bees and Beekeeping contains 16 chapters which are divided into six major parts. All information within the book can easily be located, primarily because of the extensive table of contents and three indices (geographical name; subject; plant).

Part I describes the different bees used in beekeeping both as individuals and as members of a larger social unit. Part II provides information and practical instruction on modern beekeeping with moveable-frame hives in tropical, sub-tropical and temperate climates. In Part III, Dr. Crane covers beekeeping methods which utilize simpler and cheaper equipment that still maintains management efficiency. Part IV deals with honey bee health and discusses adult and brood diseases, parasites, predators, pesticide impact and natural environmental hazards. Part V delves into the honey bee's plant resources and nutritional requirements as well as covering all the products such as honey, beeswax, propolis, pollen, royal jelly, bee brood and venom. Valuable information can easily be extracted from the hive products sections because each is written in the same logical consistent format: composition,

properties, harvesting and handling the hive product, world production and trade, and finally the hive product uses. Part VI is devoted to a discussion on the rules and legalities involved in beekeeping throughout the world. Each section is followed by a list of helpful suggested readings and references. The extensive bibliography lists all publications referred to in the text of the book including those in the further readings and reference sections. In addition, information is provided on whether the references are in the library of the International Bee Research Association and if/where an English abstract can be located.

The two appendices included in this book are extensive and provide valuable information for those involved in apicultural research, teaching, extension and associated industries. Appendix 1 entitled "Important world honey sources and their geographical distribution" lists 464 honey plants and provides both scientific and common names, geographical distribution, and pollen production efficiency. Appendix 2 provides information on the beekeeping resource infrastructure in 182 countries throughout the world.

In short, *Bees and Beekeeping* is a superbly written and invaluable reference book. It provides a solid and up-to-date knowledge base for researchers and students, an extensive source of reference information for extension and regulatory personnel, and practical information for beekeepers.

Cynthia Scott-Dupree
Guelph, Ontario

Hodgson, E., and R.J. Kuhr (eds.). 1990. *Safer Insecticides Development and Use*. Marcel Dekker, Inc., New York. 593 pp. Hard Cover. $(U.S.)135.00.

A "safer" insecticide has different connotations to different people. To some this simply means that chemicals used as insecticides are highly toxic to insects and not to other animals. To others, this means additional selectivity to beneficial insects or to all non-target organisms. Still others will require that compounds be toxic to only a narrow range of pest insects. The editors of this volume have recognized these various different definitions and other requirements in an introductory chapter which also outlines some of the history of pesticide use and briefly describe some of the approaches and problems associated with the development of pesticides.

The following chapter by Dauterman and Hodgson reviews the various detoxifying systems as they relate to pesticide selectives. This is no mean feat considering the literature to be summarized. This is followed by a useful chapter on the Hansch quantitative structure activity relationship as it relates to the discovery of selectively toxic pesticides. The information in these first three chapters forms a background in which the specifics of the inhibition of various organ systems and pesticide sources described in later chapters should be considered.

Chapters 4 through 11 update progress in the development of potential pesticides from such diverse sources as insect neuropeptide analogs to viruses and spider toxins. Two chapters particularly impressed this reviewer. The chapter by Sparks goes well beyond a review of juvenoids and includes some excellent thoughts on the potential use of hormone antagonists/agonists as disrupters of insect development. The Eldefrawis review recent findings on nervous system transmitters and receptor sites

and discuss possible means of selectively blocking these. This chapter also contains a first rate and succinct discussion of the normal function of the various neurotransmission systems. Physiologists should find this whole section a useful source of biochemical probes.

Chapters 12 and 13 shift to the issue of the safe use of pesticides. Hall provides an extensive chapter on the multiple aspects of pesticide application and how these may be improved. This is followed by an interesting discussion of how IPM methodologies not only have made pesticide use safer but also how the systems are cost effective. The problems of safe industrial synthetic processes in both the developed and developing world are discussed by Kohn and Raab. The final chapter, also from an industry view, comments on the problems involved in making not only safer but more cost effective new pesticides. This is a reality not often considered.

This book is a valuable compilation of a lot of the current thinking on potential sources and feasibility of producing new and safer insecticides. The book should be a valuable reference to toxicologists, physiologists and environmentalists interested in future developments in pest control agents and the avenues for making these safer and more selective. The text is largely free of serious typographical errors; the line drawings and photographs are largely clear and of adequate size. The price, while high, probably is similar to other books of similiar type.

D.J. Pree
Vineland Station, Ontario

Leech, Robin. 1990. *Report writing manual: Organization, format and style guide for the preparation, writing and presentation of reports.* 2nd edition, revised. Alberta Biological Company, Edmonton, Alberta. 152 pp. $Can 19.95 + $2.00 shipping in Canada.

On leafing through this work my first reaction was less than enthusiastic. Could any author do justice to the title and compress enough usable, detailed instruction and information to make a manual in the true sense, a handbook, in a paper-backed, plastic-bound format, even single-spaced on 8 1/2 x 11 paper, printed on both sides? It looked to be fragmented and over organized at the same time. The statistics were intimidating: 152 pp in all, 5 pp for the table of contents alone with 130 subheads in 12 chapters, an appendix of 9 pp, and 19 pp for an index of 677 items. The word overkill came to mind. However, my Calvinist conscience dictates that when I review a book, I must read it all. This one called for a feat of sustained attention and endurance, but I skimmed nothing, not even the appended sample report.

Obviously, the manual does not cover problems, materials and circumstances that are not already covered in scores of books and articles. Its claim to our attention and $21.95 is based on the arrangement of the material, on its accessibility, on what is included and on what is left out. Here is where the huge index pays off. One really can get answers in a hurry. The verdict is that it is indeed a usable manual. The occasional humour just misses the mark and it is overwritten in the early sections but the no-stone-unturned approach is on target, both for the beginner and the veteran in need of a quick reminder.

The author may be limiting his audience unnecessarily by stressing the production of reports for governments, utilities and commerce. With minimal changes, his manual could be useful also to graduate students and working researchers. Its value would be in its frequent use as a well-organized

familiar desk reference, a source of quick answers for busy prople. If I were still in the business of writing papers I should use it myself.

So, along with my congratulations to the author on an impressive publication, I herewith tender my apologies for the initial evil thoughts, and make him an offer: I'll trade him my copy, annotated and amended in red ink, with rude marginal comments included, for a clean one.

H.R. MacCarthy
Vancouver, B.C.

Spencer, K.A. 1990. *Host Specialization in the World Agromyzidae (Diptera).* Series Entomologica vol. 45. Kluwer Academic Publishers, Dordrecht, Boston & London. xii + 444 pp. Hard cover, Dfl. 350.00, U.S.$ 199.00, U.K. 129.00.

The study of insect/plant relationships is an expanding field to which this book makes an important contribution by providing an extremely comprehensive database and discussion respecting the Agromyzidae, one of the most diverse and abundant groups of phytophagous insects. There are about 2500 currently accepted species of agromyzid flies, of which the larval foodplants are known for about 1190 (47%). All have truly phytophagous larvae, feeding internally as miners or borers (less frequently seed-eaters) on a wide range of plants, including liverworts, horsetails and ferns, as well as flowering plants. The author has marshalled most of the reliable information available on the host association of all species which have been reared. He presents his discussion mainly within the framework of Cronquist's (1981) *An Integrated System of Classification of Flowering Plants* (Columbia University Press), but with departures in cases where recent major taxonomic revisions are available; for instance, the arrangement of the monocotyledons follows *The Families of the Monocotyledons* by Dahlgren *et al.* (1985, Springer Verlag). The resulting monograph will be a prerequisite for further investigation of the host associations and evolution of the Agromyzidae, containing much more information than previous summaries which all had geographic or taxonomic restrictions. The text contains a great deal of new information, as well as comprehensive summary of that in the extensive previous literature.

The author has been very cautious in relating his data to general theories of insect/plant relationships. He rejects coevolution in the sense of reciprocal evolutionary changes in both hosts and parasites caused by their influence on one another. A few possible cases of parallel speciation are suggested, but regarded as unconfirmed in the absence of reliable phylogenies of either hosts or parasites. He considers that in most cases the evolution of agromyzids has been "sequential" to that of their host-plants, with speciation following colonization of hosts closely related to those previously utilized. Occasional "random" colonization of unrelated hosts has also played as role in forming the present pattern of host specialization.

Some readers may be disappointed that Spencer does not address the theoretical literature on insect/plant relationships in a more detailed and quantitative way, but given the primitive state of our knowledge of phylogenetic relationships among both agromyzids and angiosperms I think that his caution is understandable. This book may not be a source of new theory, but it will provide a major information source against which theories can be tested and promising avenues for new research identified.

The taxonomic treatment of the Agromyzidae in this book is up-to-date, the only misplacement noted by me being on page 297 where *Phytomyza integerrimi* Griffiths is listed under the *albiceps* instead of the *robustella* group. There is a taxonomic appendix (pages 394-406) containing descriptions of 9 new species together with 23 new synonyms and 18 new combinations. In this connection the precise date of publication may be relevant for establishing nomenclatural priority. The publishers' notice with my review copy gives the publication date as "02/08/89", but the book was certainly not published in 1989. Probably the date given is a lapsus for 02/08/90. This seems about right, since a copy of the book was shown as a new publication at the Second International Congress of Dipterology (Bratislava) during the week of August 27-31, 1990.

There are 1439 line drawings, especially of the male genitalia, contained in this book. Most were prepared by the author's wife Ann and are of her usual high standard. Many of these figures were previously published, but some are new. The cover bears an excellent colour photograph of a Liriomyza female.

This book will have a much wider readership than specialists on Agromyzidae. Workers on insect/plant relationships will find it an invaluable database which will facilitate the inclusion of agromyzids in their analyses. Economic entomologists will find it useful for determining what species of agromyzids have been recorded from particular hosts throughout the world. Botanists will find interesting suggestions regarding possible plant relationships suggested by the host specializations of agromyzids. While expensive at U.S.$ 199, this book will prove sound investment both for libraries and interested individuals. It is the result of nearly 40 years work on the Agromyzidae by the author, whose experience and knowledge of the literature are unrivalled.

Graham C.D. Griffiths
Edmonton, Alberta

Morse, Roger A. and Richard Nowogrodzki (eds.). 1990. *Honey Bee Pests, Predators, and Diseases, 2nd Edition*. Cornell University Press, Ithaca, N.Y. 474 pp. Hardcover, $(U.S.) 41.50 ISBN 0-8014-2406-2.

In the 12 years since the first edition of this book was published (1978), there have been several disease and pest problems which have seriously impacted the North American beekeeping industry. Dr. Roger Morse and Richard Nowogrodzki have clearly addressed these issues and the result is a comprehensive information source on honey bee diseases and pests which should prove indispensable to researchers, extension personnel, students and beekeepers alike.

The second edition of *Honey Bee Pests, Predators, and Diseases* is a compilation of 21 chapters (up from 19 in 1978) by 22 subject authors on disease and pest topics ranging from viruses, bacteria, fungi, protozoa and nematodes, to insect pests, mites, amphibians, bird and mammal pests. In addition, there are informative chapters on noninfectious diseases, toxic plants, and antibiotic defense systems in hive products. The information in the book will be of great interest to the Canadian readership. However, in several cases it will not be immediately applicable. For example, the chapter on control methods and several of the appendices concentrate primarily on recommendations and regulations in the United States rather than Canada.

In general, the chapters are well organized and pertinent information can be easily extracted. The format of all the chapters dealing with bee diseases is similar: disease history, distribution, cause and origin, symptoms, and control. The material throughout the book ranges from readily understandable to that which requires considerable knowledge in the area for full understanding by the reader. The figures, tables and illustrations are informative, well organized and properly enhance the text.

Two of the appendices by Drs. R. Morse and H. Shimanuki, deal with an overview of *Apis* species and the synonymy in bee diseases, respectively. The information provided within these appendices is valuable to all apiculturists. The other appendices, however, provide resource information that is more applicable to the U.S. than to the Canadian situation. The book also provides researchers with an excellent reference source for scientific literature. The second edition of *Honey Bee Pests, Predators, and Diseases*, contains 1543 references compared to 1161 in the first edition (1978).

The chapters on mites have been expanded substantially which primarily reflects the impact that *Acarapis woodi* (i.e.,. honey bee tracheal mite) have had on the North American beekeeping industry and apicultural research perspectives. The chapters on mites are thorough, up-to-date and well illustrated providing information on everything from biology and diagnostic techniques to control measures.

In short, *Honey Bee Pests, Predators and Diseases* should be considered an indispensable reference book for beekeepers, researchers, students and extension personnel.

Cynthia Scott-Dupree
Guelph, Ontario

Ramsay, G.W. 1990. *Mantodea (Insecta) with a review of the aspects of functional morphology and biology*. Fauna of New Zealand, No. 19. Department of Scientific and Industrial Research [DSIR], Plant Protection, Mt. Albert Research Centre, Private Bag, Auckland, New Zealand: 96 pp., 2 maps, 80 line illustrations, 45 S.E.M. photomicrographs. Available from: The Bookshop, DSIR Publishing, P.O. Box 9741, Wellington, New Zealand. Mail order price: $24.95 (N.Z. funds for New Zealand and Australia; U.S. funds elsewhere).

The entire mantid fauna of New Zealand comprises but one native species, *Orthodera novaezelandiae* (Colenso, 1882), and one introduced, southern African species, *Miomantis caffra* Saussure,1871. It might therefore seem that this latest contribution to the excellent series, Fauna of New Zealand, would have little general appeal outside its country of origin. This would be far from the truth.

As the author points out, "mantids tend to attract more than their fair share of public interest and enthusiasm [which] has certainly been an impetus during the preparation of this study." Thus, apart from dealing in a very competent fashion with the general systematic status, taxonomy and life stages, morphology (including individual variation in wing venation and genitalic structures) and bionomics of the two species involved, many aspects of mantid biology in general are discussed.

There is a short, general account of mantids, a brief resumé of the history of mantid classification and discussions on the morphology of the "femoral brush," the wings (including the presence of a pterostigma, where it occurs), acoustic reception (including the "cyclopean ear"), defensive behaviour,

regeneration, natural enemies (predator, parasites, pathogens) and diet (including attacks on vertebrates). Excellent scanning-electron-micrographs are given of the femoral brushes, pterostigmata and acoustic receptors of the New Zealand species. The line illustrations also are good, clear and very satisfactory for their purpose.

If one were inclined to "nit-pick," one could criticise the beginning of the introduction (dealing with the "cultural" aspects of mantids) as being too brief and oddly selective to be useful, particularly as one of the statements (which is second-hand) is incorrect: so far as I am aware, there never was a Roman coin with a mantis design, though a number of such coins are known from the Greek colony of Metaponton (Metapontum) in southern Italy (ca. 420 B.C.E.). One could also take exception to the retention, in the "diet" section, of the word "locust" (from a translation), when a large, non-migratory, non-swarming, acridid grasshopper was, in fact, originally meant. Also, because of a deadline, the author was not able to check his "in press" references (one of those by the reviewer is given twice with different titles).

This publication brings together, or indicates sources for, a great deal of what is known about mantids, updating, in various ways, the previous major works of the late Max Beier, 1964 and 1968 (both cited). A number of the author's observations, it should be noted, are original. Over 300 references (most of which relate to mantids and some of which are quite obscure) are given in the bibliography. Perhaps the only somewhat comparable work is the 60-year-old, hard to get, *La Vie de la Mante religieuse* by L. Bizet, 1931 (also cited), which is now completely out-of-date, though still a classic in its field. This new publication should be on the shelves of all entomological libraries and in the possession of all who are interested in mantids, insect functional morphology and animal acoustics.

D. Keith McE. Kevan
Montréal, Québec

Roubik, D.W. 1989. *Ecology and Natural History of Tropical Bees*. Cambridge Tropical Biology Series. Cambridge University Press, Cambridge, New York, Port Chester, Melbourne, Sydney. vii + 514 pp. $(US) 69.50.

David Roubik deserves all the congratulations he has no doubt received for publishing this fascinating, thorough, scholarly, and encyclopaedic book.

I had the opportunity to read most of the book while in several parts of tropical Asia earlier this year. As I read, I found myself looking at the tropical bees I saw with greater insights and increasing curiosity. As I watched or remembered the activities of bees, I frequently consulted the comprehensive index to access the body of information on what others had already discovered about bees' activities. Almost always I found interesting discussion and review, with remarks on the huge amount of work which remains to be done not just on taxa, but on basic life history traits of tropical bees. Since returning to Ontario, I have used the book often and usefully because it draws heavily on knowledge of bees of the temperate zone to synthesize the points and ideas Roubik presents.

The book comprises four sections, Introduction, Foraging and Pollination, Nesting and Reproductive Biology, and Community Ecology. The Introduction is only 24 pages and deals with the evolutionary history, biogeography, and basic sociobiology of bees. The discussion of Foraging extends

from details on the nature of the diverse array of resources gathered by bees, through the ways in which the resources are gathered, and on to flight ranges, navigation, metabolism of locomotion, and foraging behaviour. A fascinating account of mimicry amongst bees is also included. The subsection on pollination is cursory and a weak part of the book. The section on nesting and reproductive biology is the longest at 145 pages. The discussion encompasses the nature of bees' nests, natural enemies and defence, diseases, kin recognition, mate selection, larval development and nutrition, reproductive behaviour, and genetics.

This section provides numerous fascinating descriptions of the diversity of life histories of tropical bees and serves as a reminder of the fascinating effervescence in tropical biology. Generalizations on tropical ecology and entomology are difficult, at best. Even so, I think the book would have been improved if more comparisons with the nesting biology of non-tropical solitary bees had been included. After all, it is the arid to semi-arid areas ouside the tropics that support the greatest taxonomic diversity of bees.

The section on Community Ecology, 76 pages, is particularly difficult. Quantitative analyses of community ecology are new and dynamic and it is to Roubik's credit that he has tackled this field. Nevertheless, the section tends to ramble within the subsections on the role of floral resources in bee population dynamics, assemblages of bees, and their richness in tropical ecological communities. The particular importance of eusocial Apinae and Meliponinae as generalist foragers at tropical flowers is well discussed and contrasted with the temporary specialist activities of individuals of the same colonies. This phenomenon may help explain the lower taxonomic diversity of tropical bees than might be expected given the general fauna and flora. The idea is exemplified by the effects of Africanized honeybees, which have depressed populations of other bees in tropical South and Central America. Certainly, as Roubik points out, the advantages of food storage and eusociality go hand in hand to offer some explanation as to why so many highly eusocial bees are tropical.

The book ends with Appendices. Appendix A is a taxonomic checklist to subgenera of Apoidea. Appendix B is 255 black and white photographs illustrating genera of tropical bees, and 6 of mimics, parasites, and insect predators of bees. The photographs are useful, but the bees are often not easily distinguishable. The comprehensive list of over 1500 references precedes excellent subject and taxonomic indices.

All in all, Roubik's contribution is an important scholarly work. It is difficult to read because of the dense style, and lengthy, detailed descriptions which often grade or jump to ecological and evolutionary theory. The body of literature from Asia has not been as thoroughly used as that from the Americas, reflecting, perhaps Roubik's primary area of study.

This book is a must for the specialist, not just in apiology, but also in entomology and for biologists concerned with tropical ecology generally.

Peter G. Kevan
Guelph, Ontario

Ramsay, G.W. 1990. *Mantodea (Insecta) with a review of aspects of functional morphology and biology*. Fauna of New Zealand No. 19, 96 pp. DSIR Publishing, P.O. Box 9741, Wellington, N.Z. (US) $24.95

New Zealand has only two species of mantids, *Orthodera novaezealandiae* (Colenso, 1882), and *Miomantis caffra* Saussure, 1871. Neither species is native to New Zealand. *O. novaezealandiae* apparently was introduced from Australia about 1870, or somewhat earlier, and became widespread in a relatively short time and now occurs on both islands. *M. caffra* is a much later introduction. It was found near Auckland in 1978 and is expanding its range.

Tenodera intermedia Saussure, 1870, was reported from Auckland before 1870 and was repeated in later literature. The record is now considered to have been based upon an adventive specimen and the species did not become established. *Tenodera australasiae* was recorded in New Zealand but the record is incorrect. This species has not been found in New Zealand.

Ramsay has provided very complete details on the two species and has included all of the known references to them in so far as New Zealand is concerned. *Orthodera novaezealandiae* is thought to have been introduced from Austalia, a species occurring there as part of what is presumably the *O. ministralis* species complex.

The book is much more comprehensive than one might expect when dealing with only two species. Two-thirds of the book is devoted to a review of aspects of functional morphology and biology. This is the most complete review of this kind that I have seen. It includes new data on a number of characters, some not found in such detail in previous literature, including: femoral brush, wing morphology, pterostigma, colouration, stridulation, acoustic sensitivity, defense behavior, regeneration, predation, parasitism, pathology and diet. The morphological data are supported by 80 excellent drawings and 45 scanning electron microscope photographs. The SEM photos of the femoral brush and brush setae, the pterostigma and cyclopean ear illustrate the fine detail of these structures. The text covers their function. The wide belief that *Orthodera novaezealandiae* has hearing organs on the inner face of each fore-femur is refuted.

Ramsay has produced an excellent publication, one that should be of interest to entomologists, especially to orthopterists, and this is a must for all who work with mantids.

V.R. Vickery
Emeritus Curator
Lyman Entomological Museum and Research Laboratory
MacDonald College, McGill University
Ste-Anne-de-Bellevue, Québec

BOOK REVIEW ADDENDUM

In the December issue of the *Bulletin* (*22*(**4**): 221), a review of **P.W. Oman, W.J. Knight & M.W. Nielson. 1990. *Leafhoppers (Cicadellidae): a bibliography, generic check-list and index to the world literature 1956-1985*** appeared.

Please note that paragraph 6 should read:

The one blatant error in the text is the claim that B.P. Beirne was one of "the principle taxonomic workers ... in the United States" **when in fact he was a Canadian worker. The principle North American Cicadellid taxonomists of the day were Beamer, DeLong, Metcalf, Oman and Young.**

K.G.A. Hamilton
Biosystematics Research Centre
Ottawa

UPCOMING MEETINGS / RÉUNIONS À VENIR

Individuals, Populations and Patterns

September 7-10, 1992
University of East Anglia, Norwich, England

The conference will address all areas of animal ecology, and will emphasise how individual studies from the variety of approaches used around the world can lead towards a general understanding of ecological processes.

CONTACT: Dr. S.R. Leather, Forestry Commission, Northern Research Station, Roslin, Midlothian, EH25 9SY, United Kingdom. (Tel: 44-31-445-2176; FAX: 44-31-445-5124)

39th Annual Meeting of the North American Benthological Society

May 21-24, 1991
College of Santa Fe, Santa Fe, New Mexico, USA

CONTACT: Dr. Gerald Z. Jacobi, School of Science and Technology, New Mexico Highlands University, Las Vegas, New Mexico, USA 87701 (Tel. 505-454-3412)

Australian Entomological Society, 22nd General Meeting and Scientific Conference

July 15-18, 1991
Melbourne, Australia

The conference will include symposia on the impact of exotic insects in Australia, insects in vulnerable environments in S.E. Australia, with particular reference to alpine and aquatic faunas, and genetic engineering and biotechnology. A taxonomic workshop to discuss taxonomic methodology is planned and contributed papers will be accepted on all aspects of Australian entomology.

CONTACT: Janet Horne (Convenor), Plant Research Institute, Swan St., Burnley, Victoria, Australia, 3121.

XII International Plant Protection Congress

August 11-16, 1991

Hotel Nacional, Rio de Janeiro, Brazil

The central theme of the Congress will be "Integrated Management for Crop Protection".

CONTACT (Secretatiat): Alcantara Machado Feiras E Promoções Ltda., R. Haman Eventos Especiais S/C Ltda., Rua Gabriel dos Santos, 88-01231-São Paulo - Brazil. Tel. (011) 826-9111 or 825-5936; Telex: 11 22398; AMCE BR/Fax: (011) 67-3626.

Canadian Phytopathological Society Annual Meeting

June 23-26, 1991

The Banff Centre, Banff, Alberta

In addition to the regular oral paper and poster sessions, there will be two symposia of special interest: Root Health Management and Environmental Concerns; and Biology and Control of *Leptosphaeria maculans.*

CONTACT: Dr. Denis Gaudet, Chair, CPS'91 Conference Planning Committee, Agriculture Canada Research Station, P.O. Box 3000, Main, Lethbridge, Alberta, T1J 4B1. Tel. (403) 327-4561; Fax: (403) 382-3156.

XIX International Congress of Entomology

June 28- July 4, 1992

Bejing, China

The Scientific Program will include plenary sessions, symposia, workshops, and special-interest group meetings, as well as contributed paper and poster sessions. **English** will be the official language of the Congress.

CONTACT: Prof. Z.L. Zhang, Secretary-General, XIX International Congress of Entomology, 19 Zhongguancun Lu, Bejing 100080, China. Tel. (861) 256-3011; Fax. (861) 256-5689; Telex 222337 ICCST CN

Trends in Color and Fashion, ISCC and CAUS

May 5-8, 1991

Doral Inn, New York City

The conference is cosponsored by the Inter-Society Color Council (ISCC) and The Color Association of the United States (CAUS). ISCC is an organization of Societies and Creative individuals who work to propagate the understanding of color as it relates to art, **science** and industry. CAUS is an organization that specializes in forecasting color trends for the fashion, textile and allied industries.

CONTACT: Jim DeGroff, ISCC Tel. (908) 236-2311, Fax. (908) 236-7865

The Fifth Australian Applied Entomological Research Conference - "Pest Control and Sustainable Agriculture"

April 27 - May 1, 1992
Canberra, Australia

The conference is approved by the Australian Standing Committee on Agriculture, and is being organised by the CSIRO Division of Entomology. Suggested sessions for the conference include:

Integrated Pest Management, Pest Damage Assessment, Inundative and Inoculative Biological Control, Chemical Control, Cultural Control, Host-plant Resistance, Pheromones, Biotechnology and Molecular Biology, Modelling and Forecasting Pest Populations, Pollination Biology.

CONTACT: Dr. Wendy Milne, CSIRO Division of Entomology, GPO Box 1700, Canberra, ACT 2601, Australia.

MISCELLANEOUS

Insect Drawers & Cabinets FOR SALE

We are moving the University of Guelph Insect Collection into a new, more compact, system making our existing wooden cabinets and drawers available for sale. Each cabinet includes 36 hardwood drawers. Some hard-bottomed unit trays can be included on request.

Cost for 36 drawers and cabinet is $450, proceeds to go to the Insect Collection Development Fund. For further information, contact:

Steve Marshall
Department of Environmental Biology
University of Guelph
Guelph, Ontario N1G 2W1
Tel. (519) 824-4120, ext. 2720

Laboratory Cultures of Insects and Other Arthropods in Canada

The 1989 revision of this list was prepared but not issued. It is now available and will be sent to anyone requesting it. At the same time a 1991 revision will be prepared for immediate publication. Those who have listed cultures in 1989 will be contacted directly but if there are any others who have cultures please inform:

J.S. Kelleher
Biosystematics Research Centre
B159, K.W. Neatby Building
Ottawa, Ontario, K1A 0C6
Tel. (613) 996-1665
Fax (613) 995-1823

Bookworm

Bibliographic Database Manager for *Windows* 3.0

Bookworm© is a software program for the IBM PC family of microcomputers which maintains databases of scientific references for rapid, efficient retrieval. Based on the *Microsoft Windows*© version 3.0 graphical user interface, *Bookworm* is simple to use yet provides sophisticated searching and reporting capabilities. Unlike most other bibliographic database programs, *Bookworm* is affordable because it is shareware; you are encouraged to copy and distribute it freely among colleagues as long as the program and its accompanying documentation are not modified in any way. Copies of the software are available on floppy disk (DOS format, 360K 5.25", 1.2M 5.25", 720K 3.5", or 1.44M 3.5") from the author for $10Can (to cover costs of the media, duplication and mailing). If you use *Bookworm*, a donation of $25Can per copy will help defray the costs of developing and upgrading the program.

Bookworm Features:

- simple, intuitive commands
- full editing tools for adding new acquisitions, updating and deleting existing entries in a database
- nested AND/OR, case-matching searches
- searches entire databases or selected ranges
- ability to interrupt and view partial searches, then continue
- annotate searches and save to disk for later viewing
- can perform two or more searches simultaneously on the same database
- databases up to 32,000 references per file; unlimited number of files using user-selectable filenames
- can import references into a database from ASCII or ANSI textfiles
- maintains folders of user-defined phrases (e.g., journal names) for rapid entry into a database
- custom formatting of output according to specific journal specifications
- supports the *Windows* clipboard; copy and paste a reference from a database into a manuscript
- quick "Goto" moves through a database
- produces output files readable directly by popular *Windows*-based word processors
- support for ANSI and ASCII character sets, including high-order characters (e.g., É, Ø, Û)
- on-disk documentation and context-sensitive help system
- run *Bookworm* simultaneously with other *Windows* programs (e.g., word processors, spreadsheets)
- full mouse support
- works with any printer supported by *Windows*, including HP and Postscript laser printers

Computer System Requirements:

- any IBM-compatible microcomputer capable of running *Microsoft Windows* 3.0
- hard drive
- mouse (optional)
- graphic adapter and monitor (HGC, EGA, VGA, SuperVGA, 1024x768 and higher)
- *Microsoft Windows* versions 3.0 or higher (older versions not supported)

Contact: Dr. Gordon Goldsborough
Department of Botany, Brandon University
Brandon, Manitoba, Canada R7A 6A9
(204) 727-9786
BitNet: BUGOLDS@UOFMCC

EDITOR'S NOTES

The submission deadline for the June issue is May 1st 1991. Please send all submissions to:

Dr. Fiona F. Hunter, *Bulletin* Editor
Zoology Department
Brandon University
Brandon, Manitoba
R7A 6A9
Tel. 204-727-9608
Fax. 204-726-4573
BITNET Address: BUFFH @ UOFMCC

If possible, please send single-spaced text on computer diskette. (Any IBM word-processing software is acceptable. I can read both 3.5" and 5.25" diskettes.)

You may have noticed that there are two reviews in this issue of Ramsay's book on Mantids. Apparently one was solicited by the publishing company and the other, by Hugh Danks. To avoid such repetition, please let us know ahead of time if you are intending to submit a Book Review.

Furthermore, please do not send anonymous submissions (such as the one on the bottom of page 48). I let it go this time, but in future ...

That's all for this issue!

Fiona F. Hunter

NOTES

ENTOMOLOGICAL SOCIETY OF CANADA
LA SOCIÉTÉ D'ENTOMOLOGIE DU CANADA

Executive Council - Conseil Exécutif

President/Président
J.E. Laing
Department of Environmental Biology
University of Guelph
Guelph, Ont. N1G 2W1
(519-824-4120)

First Vice President/Premier Vice-Président
R. Ring
Department of Biology
University of Victoria
Victoria, B.C. V8W 2Y2
(604-721-7104)

Second Vice President/Second Vice-Président
P. Riegert
Department of Biology
University of Regina
Regina, Sask.
(306-585-4145)

Past President/Président sortant
J.N. McNeil
Département de biologie
Université Laval
Québec, Qué. G1K 7P4
(418-656-2999)

Trustees - Fiduciaires

Treasurer/Trésorier
R. Foottit
393 Winston Ave.
Ottawa, Ont. K2A 1Y8
(613-725-2619 or 613-996-1665)

Secretary/Secrétaire
R. West
Newfoundland Forestry Centre
P.O. Box 6028
St. John's, Nfld., A1C 5X8
(709-772-2386)

Scientific Editor/Editeur Scientifique
The Canadian Entomologist
A.B. Ewen
107 Science Crescent
Agriculture Canada Research Station
Saskatoon, Sask., S7N 0X2
(306-975-7080)

Memoirs
V. Behan-Pelletier
Biosystematics Research Centre
Ottawa, Ont. K1A 0C6
(613-996-1665)

Bulletin
F.F. Hunter
Department of Zoology
Brandon University
Brandon, Man., R7A 6A9
(204-727-9608)

Assist. Scientific Editors/Assists. de l'editeur scientifique
C.H. Craig
R.H. Elliot

Directors - Administrateurs

Directors-at-Large: B. Roitberg (1991), J. Hollebone (1991), L. Gilkeson (1992), D. Quiring (1992)
Regional Directors/Directeurs régionaux: R. Vernon (ESBC), A.S. McClay (ESA), J. Doane (ESS), P.G. Fields (ESM), Regional Director (ESO), D. Coderre (SEQ), E.A. Osgood (AES).

OFFICERS OF AFFILIATED SOCIETIES

ENTOMOLOGICAL SOCIETY of BRITISH COLUMBIA

President	J. Cossentine
Past-President	D. Raworth
President-Elect	R. Vernon
Secretary	K. Millar R.R. 3, Duncan, B.C. V9L 2X1
Treasurer	K. Millar
Editor (Journal)	R. Ring
Regional Director to ESC	R. Vernon

ENTOMOLOGICAL SOCIETY of ALBERTA

President	D. Langor
Vice-President	J.R. Spence
Secretary	M. Goettel Agriculture Canada PO Box 3000 Lethbridge, Alberta T1J 4B1
Treasurer	D. Williams
Editor (Proceedings)	W.G. Evans
Regional Director to ESC	A.S. McClay
Directors-at-Large	R.A. Butts J.W. Jones R.G. Holmberg

ENTOMOLOGICAL SOCIETY of SASKATCHEWAN

President	J. Soroka
President-Elect	P. Harris
Secretary	O. Olfert Agriculture Canada 107 Science Crescent Saskatoon, Sask. S7N 0X2
Treasurer	D. Murrell
Editor (Proceedings)	K. Roney
Regional Director to ESC	J. Doane

THE ENTOMOLOGICAL SOCIETY of MANITOBA

President	A.R. Westwood
President-Elect	N.D.G. White
Past-President	R.J. Lamb
Secretary	C.J. Demianyk Agriculture Canada Research Station 195 Dafoe Road Winnipeg, Manitoba R3T 2M9
Treasurer	L. Grenkow
Editor (Proceedings)	A.P. Wiens
Regional Director to ESC	P.G. Fields
Member-at-Large	L. Manaigre

ENTOMOLOGICAL SOCIETY of ONTARIO

President	M.K. Sears
President-Elect	S. Marshall
Past-President	J. Cunningham
Secretary	S. Smith 33 Willcocks St. Faculty of Forestry University of Toronto Toronto, Ontario M5S 3B3
Treasurer	S. MacDonald
Editor (Proceedings)	P. Kevan
Regional Director to ESC	?
Librarian	D. Hull

SOCIÉTÉ D'ENTOMOLOGIE DU QUÉBEC

Président	D. de Oliviera
Vice-Président	M. Roy
Secrétaire	M. Mailloux 472, rue Maissoneuve St-Jean-sur-Richelieu Quebec, J3B 1G2
Trésorier	C. Bouchard
Président sortant	P. Therrien
Editeur (Rev. d'ent. du Qué.)	D.J. Lewis
Rédacteur (Bull. de la SEQ)	C. Hebert
Délègue à la S.E.C.	D. Coderre
Dirécteur(trice)s	A. Cloutier H. Chiasson C. Hebert M. O'c. Guibord

ACADIAN ENTOMOLOGICAL SOCIETY

President	G. Boiteau
Vice-President	C. Nigam
Secretary	S.B.N. Smith 1536 Lincoln Road Fredericton, N.B. E3B 4X2
Treasurer	S.B.N. Smith
Editor (Proceedings)	S.B.N. Smith
Regional Director to ESC	E.A. Osgood