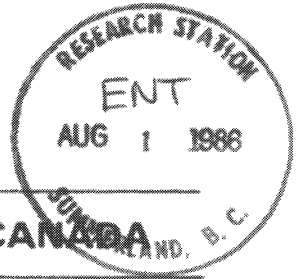


AUG 25 1986



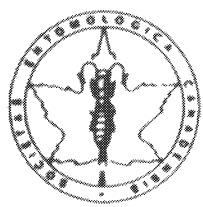
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ENTOMOLOGICAL SOCIETY OF CANADA

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# Bulletin

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SOCIÉTÉ ENTOMOLOGIQUE DU CANADA

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Vol. 18

June-juin 1986

No. 2



**Entomological Society of Canada**  
**Société Entomologique du Canada**

*Bulletin*

Vol. 18 June-juin 1986 No. 2

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R. B. Aiken: Bulletin Editor

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## **CALL FOR NOMINATIONS**

### **Achievement Awards Committee: Gold Medal for Outstanding Achievement in Canadian Entomology and The C. Gordon Hewitt Award**

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

Achievement Awards Committee  
Entomological Society of Canada  
1320 Carling Avenue  
Ottawa, Ontario K1Z 7K9

and should comprise: (1) the name and address of the nominee(s); (2) a statement of relevant achievements; and (3) the name of the nominator and at least one seconder. To be considered by the Achievement Awards Committee nominations must bear a postmark no later than November 30, of the current year.

The following conditions govern these awards:

1. Outstanding contributions should be judged on the basis of
  - (a) superior research accomplishment either as a single contribution or as a series of associated endeavours and which may be either in entomology or a related field where the results obtained are of great consequence;
  - or
  - (b) dedicated and fruitful service in the fields of Society affairs, research administration, or education.
2. No more than one of each award shall be granted per year but, where circumstances warrant, more than one individual may be mentioned in a single award.
3. Recipients need not be members of the Society providing their contribution is judged to have a major impact on entomology in Canada.
4. The award may be granted on different occasions to the same recipient but for different contributions to entomology in Canada.
5. Nominees for the C. Gordon Hewitt Award must be less than 40 years of age throughout the calendar year in which the award is both announced and awarded.

## **Entomology '86**

1986 JOINT ANNUAL MEETING  
ENTOMOLOGICAL SOCIETY OF CANADA: ENTOMOLOGICAL SOCIETY OF MANITOBA

6-8 OCTOBER — HOLIDAY INN SOUTH WINNIPEG

### **Final Announcement Annual Meeting**

This is the final announcement for the 1986 Annual Meeting. By now, all members should have received an information package. Please check this package for further details and also note the announcements in the December and March Bulletins. For your convenience, a pre-registration form and a hotel reservation form are included herein. Addresses for forms:

- (1) Pre-registration  
Dr. T. Galloway  
Department of Entomology  
University of Manitoba  
Winnipeg, Manitoba R3T 2N2
- (2) Hotel  
Holiday Inn Winnipeg - South  
1330 Pembina Highway  
Winnipeg, Manitoba R3T 2B4



## EMPLOYMENT BOOTH

The Employment Committee will organize an employment booth again this year at the ESC Annual Meeting. The booth will probably be located in the exhibition hall, but its exact location will be posted at the registration desk. We ask that anyone with an opening for a job or a graduate student bring a job description to the annual meetings. This description will be placed in a folder. People seeking employment should bring several copies of their resume, and place one in the folder advertising the job for which they wish to be considered.

This system works extremely well at the ESA annual meetings. We hope that it will work well here, and will bring together prospective employers and employees.

Heather McAuslane, Amy Luciani  
ESC Employment Committee Co-Chairmen

## NEWS OF ORGANIZATIONS

### Two New Newsletters

Two new newsletters reached my desk on the same day and some readers may be interested to know of their existence.

The *Pollination Research Newsletter* can be obtained by writing to Dr. Margaret Adey, Director, International Bee Research Association, Hill House, Gerrards Cross, Bucks, SL9 0NR, U.K. or to Dr. Charles Stirton, The Herbarium, Royal Botanic Gardens Kew, Richmond, Surrey, TW9 3AE, U.K. The editors, Drs. Adey and Stirton, plan to produce two newsletters per year. A quotation from the Editorial of issue No. 1, serves to illustrate the intent and scope of the publication.

"The last couple of years have seen an upsurge of interest in all facets of pollination biology. This has resulted in a flood of papers covering a wide range of specialized topics, often dealing with the same subject but interpreted differently by the different disciplines. Pollination biology is thereby in danger of becoming a field of increasing specialization and decreasing synthesis.

The purpose of this newsletter is to draw all contributing disciplines together and to provide a forum for the exchange of information about current developments in pollination biology and breeding systems in the broadest sense. It is our hope that the contacts and information gained through this newsletter will foster a better liaison between those in pure and applied research. To this end, we hope to establish gradually an international directory and database of researchers and their current projects."

*Melissa, the Melittologists' Newsletter* is available from the editors, Dr. Ronald J. McGinley, Department of Entomology, Smithsonian Institute, NHB-105, Washington, D.C. 20560, U.S.A. or Dr. Charles D. Michener, Entomological Museum, Snow Hall, University of Kansas, Lawrence, Kansas 66045, U.S.A. Again, a quotation from the Editorial of issue No. 1 serves to illustrate the intent and scope of the publication.

"The success of Arnold Menke's *Sphecos* (A Forum for Aculeate Wasp Researchers) has made it obvious that biologists working with bees need a similar outlet for informal research communication. We hope that *Melissa* will help fill this gap. Like other similar newsletters it will include general news items, individual news reports, collection and collecting reports and recent literature listings. Because *Apicultural Abstracts* does an excellent job of reviewing recently published bee articles, the literature listings in *Melissa* will emphasize information on manuscripts in press or review. *Melissa* will be distributed once or twice a year depending on the amount of support we receive from our colleagues around the world. An International Directory of Bee Biologists will be distributed in March, 1986 with updates and additions provided in future newsletters. The directory will include complete addresses, telephone numbers, summary of individual research interests and listing of research keywords that can be computer searched. Also included will be a listing of those systematists who are willing to identify specified bee taxa."

Most of the first issue of the *Pollination Research Newsletter* is taken up by a listing of the pollination literature included in *Apicultural Abstracts* 35(1-3) 1985. Although this is useful, it seems redundant in view of the availability of the information in *Apicultural Abstracts*. *Apicultural Abstracts* is a publication which all biologists interested in pollination should consult regularly, but I suspect do not. Perhaps, by drawing attention to the scope of the information included in *Apicultural Abstracts*, the Newsletter will have drawn attention to the value of the abstracts.

Of particular interest is the call for short notes on the establishment of standards for pollination research (e.g. on standardizing times with respect to dawn and the sun in the first issue) or on useful techniques in pollination research.

*Melissa* arrived as two items, an alphabetical directory of scientists and a listing of bee families together with the names of people who are interested in receiving specimens and making identifications. The newsletter itself (49 pages) is comprised of news items from individual scientists, a compendium of recent literature, and some general news items, collection and field reports.

Although some overlap between the two newsletters is to be expected, I am sure that both will be complementary and a very useful contribution to the exchange of information in pollination, from both botanical and zoological perspectives, and in bee biology.

Peter G. Kevan  
Department of Environmental Biology  
University of Guelph

## **International Symposium on Maize Arthropods (ISMA)**

Although maize is one of the most important grain crops in the world and extensive entomological research has been carried out in this field, until now the corn borer research group (IWGO) were the only meetings where an overview of research progress was possible.

We feel time is now ripe to organize an international symposium where past, present and future entomological research on maize could be presented, reviewed and discussed.

The Department of Zoology of the Plant Protection Institute, Budapest, Hungary, started a complex agroentomology project in maize 10 years ago. On the occasion of this jubilee we would like to organize an International Symposium on Maize Arthropods and we call entomologists and zoologists active or interested in this field to participate.

The symposium will be held in Hungary, between 24-29 August, 1987. Communications should be presented in English. We plan to publish an Abstracts and a Proceedings volume. All costs (registration, accommodation, meals, etc.) are to be kept low.

Suggested sessions are population biology and ecology (phytophages, predators, parasitoids, detritivores; population dynamics, population movements, etc.), community ecology (arthropod faunas, assemblages, guilds), IPM in maize fields (including forecasting, modelling) and effects of crop production technologies on maize arthropods (maize strains, field size, weeds, tillage, intercropping, polycultures, etc.).

Colleagues interested should contact Dr. F. Szentkirályi, Department of Zoology, Plant Protection Institute, P.O. Box 102, H-1525 Budapest, Hungary.

## **International Advisory Council For Biosystematic Services in Entomology**

The International Advisory Council for Biosystematic Services in Entomology (IACBSE) was formally established on August 23, 1984, at the XVIIth International Congress of Entomology, in Hamburg, Federal Republic of Germany, by Resolution No. 1 upon the recommendation of the Permanent Council of the International Congress of Entomology. The Resolution emphasized that (a) the number of available insect taxonomists is not sufficient to meet demands for their expertise, (b) training and employment of biosystematists necessary for the supply of biosystematic services need to be promoted, (c) all potential users communicate in the planning stages of their projects with potential providers of biosystematic services, and (d) national and international organizations make specific budgetary allocations for the support of the biosystematic component in their projects.

The Organizing Committee (K. M. Harris, K. C. Kim (Chairman), L. Knutson, J. M. Smith) was formed to organize the first International Advisory Committee for Biosystematic Services in Entomology. The mandate of the Organizing Committee was to develop initial guidelines for the structure and operation of the Committee, to establish a well balanced membership for the inaugural Committee, and to propose a number of projects to be pursued by IACBSE during its initial term leading up to the XVIII International Congress of Entomology, in Vancouver, British Columbia, in 1988. The Organizing Committee developed the guidelines and identified prospective members for IACBSE on 29 March 1985, at the National Museum of Natural History, Smithsonian Institution, Washington, D.C., U.S.A. Hence, the Organizing Committee became the

Executive Committee of the inaugural Council and elected K. C. Kim as the first Chair.

#### A. GOALS

The goals of the International Advisory Council for Biosystematic Services in Entomology (IACBSE) are to:

- a) foster development of capabilities in biosystematic services in entomology throughout the world as required by and provided for diverse human endeavors;
- b) enhance advancement of biosystematics research in entomology worldwide;
- c) assist in coordination of biosystematic activities in entomology, including research, service, training, and education, throughout the world;
- d) help coordinate international programs requiring taxonomic services, research, and training components in agriculture, conservation, environmental protection, public health, and other societal needs; and
- e) help improve biosystematic resources and capabilities in entomology in those countries where these need to be developed.

#### B. ORGANIZATION

1. The IACBSE consists of the Membership-at-Large, the Executive Committee, and Working Groups.
2. The Executive Committee consists of four members (Chair, Vice-Chair, Secretary-Treasurer, and Publication Coordinator) who will be elected by the IACBSE membership at large. The Chair is elected by the EC membership, and other officers are appointed by the EC Chair.
3. Working Groups (WG) are project-oriented groups each with a specific mission. Each WG is organized as a new project is developed and approved by the EC. The Chair and membership of each WG is appointed by the EC Chair with the concurrence of the Executive Committee.

#### C. MEMBERSHIP AND INAUGURAL MEMBERS

The IACBSE consists of 20 members; the Chair as Representative-at-Large, and 19 Representatives from 11 regions (six biogeographic zones).

##### 1. Palearctic Zone

Region 1, *Eastern Europe and USSR* (2 members)

Eastern Europe: L. Papp (Hungarian Natural History Museum, Budapest, Hungary)

USSR: V. F. Zaitsev (Zoological Institute, Academy of Sciences, Leningrad, USSR)

Region 2, *Western Europe* (2 members)

England: K. M. Harris (Commonwealth Institute of Entomology, British Museum (Natural History), London, United Kingdom)

Continental Europe: R. zur Strassen (Forschungsinstitut Senckenberg, Frankfurt am Main, Federal Republic of Germany)

Region 3, *Far East* (2 members)

Japan: K. Hirashima (Faculty of Agriculture, Kyushu University, Hakozaki, Japan)

Peoples Republic of China: Wu Yan-ru (Institute of Zoology, Academia Sinica, Beijing, China)

##### 2. Africa/Near East Zone

Region 4, *Near East* (2 members)

Israel: D. Rosen (Department of Entomology, Hebrew University of Jerusalem, Rehovot, Israel)

Egypt: M. A. Zaher (Acarology Division, Agricultural Zoology Department, Faculty of Agriculture, Cairo University, Giza, Egypt)

Region 5, *Eastern Africa* (1 member)

Kenya: J. M. Ritchie (Entomology Section, National Museums of Kenya, Nairobi, Kenya)

Region 6, *Western Africa* (1 member)

Nigeria: A. Akingbohungebe (Department of Plant Science, University of Ife, Ife-Ife, Nigeria)

##### 3. Oriental Zone

Region 7, *Southeast Asia* (2 members)

India: T. N. Anathakrishna (Entomology Research Institute, Loyola College, Madras, India)

Philippines: Lenoira C. Raros (Visayas State College of Agriculture, Leyte, Philippines)

4. Australian-Oceania Zone

Region 8, *Australia, New Zealand, and Oceania* (1 member)

New Zealand: J. C. Watt (Entomology Division, DSIR, Private Bag, Auckland, New Zealand)

5. Nearctic Zone

Region 9, *North America* (3 members)

Canada: I. M. Smith (Biosystematics Research Institute, Research Branch, Agriculture Canada, Ottawa, Ontario, Canada)

Mexico: P. Reyes-Castillo (Institute de Ecologia, A.C., Mexico, D.F.)

USA: L. Knutson (Barc-West, Agricultural Research Service, U.S. Department of Agriculture, Beltsville, MD 20705, USA)

6. Neotropical Zone

Region 10, *Central America* (1 member)

Costa Rica: L. Fernando Jiron (Universidad de Costa Rica, Ciudad Universitaria, Rodrigo Facio, San Jose, Costa Rica)

Region 11, *South America* (2 members)

Brazil: N. Papavero (Museu de Zoologia da Universidade de Sao Paulo, Sao Paulo, Brazil)

Southern S.A.: R. Gonzalez (Faculty of Agronomy, University of Chila, Santiago, Chile)

7. Representative-at-Large

IACBSE Chair: K. C. Kim (The Frost Entomological Museum, Department of Entomology, The Pennsylvania State University, University Park, PA 16802, USA)

D. INAUGURAL PROJECTS

The following projects are being organized as Working Groups:

- A. Faunal Assessment of Insects and Arachnids in the World: Current knowledge, research needs, etc. Convenor: I. M. Smith
- B. International Directory of Systematic Entomology: Services, specialists, research, facilities, etc. Convenor: L. Knutson
- C. Regional Biosystematic Service Centers: Service network, models, coordination, workshops, etc. Convenor: K. M. Harris
- D. IACBSE Newsletter. Convenor: I. M. Smith
- E. *Heliothis*. Convenor: L. Knutson
- F. *Tephritidae*. Convenor: K. C. Kim

Address inquiries concerning IACBSE to Prof. K. C. Kim, IACBSE, The Frost Entomological Museum, Department of Entomology, The Pennsylvania State University, University Park, PA 16802, U.S.A.

## **Canadian Phytopathological Society**

### **SYMPOSIUM**

## **Biotechnology for Plant Disease Control**

Annual Meeting of the  
Canadian Phytopathological Society  
University of Saskatchewan,  
July 28, 1986

### **Speakers**

Haber, S. Agriculture Canada, Winnipeg. Use of single-stranded DNA to diagnose plant virus diseases.

Webster, J. and J. Curran. Simon Fraser University. Identification of nematodes using DNA restriction fragment length differences and species-specific DNA probes.

Crosby, W. Plant Biotechnology Institute, Saskatoon. Genetic engineering of canola for resistance to insect pests.

- DeBoer, S. Agriculture Canada, Vancouver. Use of monoclonal antibodies to identify plant-pathogenic bacteria.
- Martin, R. Agriculture Canada, Vancouver. Use of monoclonal antibodies to identify plant-pathogenic viruses.
- Ouellette, G. B. and N. Benhamou. Canadian Forestry Service, Ste-Foy. Use of monoclonal antibodies to locate molecules of plant pathogens.
- Gantotti, B. Plant Biotechnology Institute, Saskatoon. Using plant tissue culture to screen for resistance to pathogen toxins.
- Comeau, A. Agriculture Canada, Ste-Foy. Cell, tissue culture and interspecific hybridization for barley yellow dwarf resistance in wheat.

## **The Orthopterists' Society**

*The Orthopterists' Society* (formerly *Pan American Acridological Society*) is an international scientific organization devoted to facilitating communication among those interested in Orthoptera and their allies. Research and publication is fostered in all aspects of the biology of these insects from ecology and taxonomy to physiology, endocrinology, cytogenetics, and control measures.

Symposia, round table discussions, and research papers presented at the society meetings are published in the *Proceedings of the Orthopterists' Society*, and a newsletter, *Metaleptea*, is issued semi-annually. Information regarding these publications can be obtained from the editor, Dr. D. A. Nickle, USDA, c/o National Museum of Natural History, Smithsonian Institution, Washington, DC, 20560, USA.

Membership is open to all persons, professional or amateur, with an interest in Orthoptera. Annual dues are US \$10 for Active Members and US \$5 for students. Members receive all publications of the Society.

Society business is handled by the Executive Secretary, Prof. S. K. Gangwere, Department of Biological Sciences, Wayne State University, Detroit, Michigan, 48202, USA.

## **Phylogeny and Evolution of Orthopteroidea**

This was the title of an international conference held at Siena, Italy, January 15-18, 1986. The last major conference on orthopteroid insects was held in London, England, in 1970 to commemorate the Silver Jubilee of the Anti-Locust Research Centre. The present conference was held in a remodeled monastery, now operated by the University of Siena under the name "Collegio Mario Bracci." Most participants were housed there in very comfortable surroundings, which included an attractive dining facility, a number of discussion rooms and a large conference room. The conference room, formerly the monastery chapel was better suited to its former function; some delegates found the great mural of the "Last Supper," complete with a dog and a cat under the table, a bit distracting. Our Italian hosts deserve much credit in providing so well for the physical needs of the invited delegates as well as financial assistance for many delegates.

The conference was held to honour Dr. Felice Capra, the distinguished Italian orthopterist, on the occasion of his 90th birthday. On his birthday, Dr. Capra appeared and presented a well prepared and delivered scientific paper, a remarkable achievement for one of such advanced age.

The 53 delegates who presented papers represented 22 countries: Italy had 12 delegates, Spain — 7, Canada — 5, the United States — 4, England — 3, Japan — 3, and 16 other countries, including China, with one or two delegates each. Several symposia were presented: "Applied Orthopterology" chaired by E. Morales Agacino; "New Approaches to Orthopteroid Taxonomy," chaired by D. K. McE. Kevan; "Critical Taxa and the Speciation Process," chaired in the morning by Barnabas Nagy and in the afternoon by N. D. Jago; "Orthopteroidea and Biogeography" chaired in the morning by S. Sakai and in the afternoon by D. C. F. Rentz; and "Evolution of the orthopteroid Orders" chaired by S. K. Gangwere. Nearly all of the papers were given in English, even one whose title was listed in Spanish. A very small number of papers were given in Italian.

There was a guided tour of the magnificent city of Siena, with formal receptions at the Palazzo del Comune, or city hall, and the Enoteca Italiana, or wine museum. The program included a formal luncheon in honour of Professor Capra.

The final session was devoted to the "Orthopterists' Society," an international organization which has succeeded the former Pan American Acridological Society. The scope of the organization has been greatly expanded, both in breadth of interest and geographically. There are now members from 29 countries. The session, which was chaired by V. R. Vickery, President, Orthopterists' Society, dealt with the future of the society and orthopterology in general. A paper "Orthopterology in Transition, or P.A.A.S. is Prologue" by S. K. Gangwere and V. R. Vickery was read by Gangwere, and was followed by a lengthy informal discussion.

This conference was a resounding success. The facilities and services were excellent due mainly to the efforts of Professor Baccio Baccetti, University of Siena. The attendance of so many internationally prominent orthopterists and the excellence of the scientific content of the presentations made the conference a "hard act to follow." Hopefully we will not have to wait another sixteen years for the next one.

V. R. Vickery, President  
S. K. Gangwere, Executive Secretary  
Orthopterists' Society

## International Commission on Zoological Nomenclature

ITZN 11/5 A.N.(S.) 137

14 April 1986

The Commission hereby gives six months notice of the possible use of its plenary powers in the following cases, published in the *Bulletin of Zoological Nomenclature*, volume 43, part 1 on 9 April, 1986, and would welcome comments and advice on them from interested zoologists.

Correspondence should be addressed to the Executive Secretary at the above address, if possible within six months of the date of publication of this notice.

### Case No

- 2485 *Cholus* Germar, 1824 (Insecta, Coleoptera): proposed conservation by the suppression of *Archarias* Dejean, 1821.
- 2486 *Dryophthorus* Germar, 1824 (Insecta, Coleoptera): proposed conservation by the suppression of *Bulbifer* Dejean, 1821.
- 2487 *Lachnopus* Schoenherr, 1840 (Insecta, Coleoptera): proposed conservation by the suppression of *Menoetius* Dejean, 1821 and *Ptilopus* Schoenherr, 1823.
- 2488 *Nemocestes* Van Dyke, 1936 (Insecta, Coleoptera): proposed conservation and designation of type species.
- 2489 *Zygops* Schoenherr, 1825 (Insecta, Coleoptera): proposed conservation by the suppression of *Eccoptus* Dejean, 1821.
- 2468 *Pyrallis nigricana* Fabricius, 1794 (Insecta, Lepidoptera): proposed conservation by the suppression of *Phalaena rusticella* Clerck, 1759.
- 2506 *Apanteles ornigis* Weed, 1887 (Insecta, Hymenoptera): proposed conservation by the suppression of *Microgaster robiniae* Fitch, 1859.
- 2492 *Strongylaspis* Spaeth, 1936 (Insecta, Coleoptera) *non Strongylaspis* Thomson, 1860: proposed designation of *Cassida atripes* LeConte, 1859 as type species.
- 2525 *Nomadacris* Uvarov, 1923 (Insecta, Orthoptera): proposed conservation by setting aside the first-reviser action of Jago.

ITZN 59

14 April 1986

The following Opinions have been published by the International Commission on Zoological Nomenclature in the *Bulletin of Zoological Nomenclature*, volume 43, part 1 on 9 April, 1986.

### Opinion No

- 1373 (p. 23) *Panesthia saussurii* Wood-Mason, 1876 designated as type species of *Caeparia* Stal, 1877 (Insecta, Dictyoptera).
- 1378 (p. 35) *Phalaena bellatrix* Stoll, 1780 designated as type species of *Crinodes* Herrich-Schäffer, 1855 (Insecta, Lepidoptera).
- 1379 (p. 37) *Gonodontis rectisectaria* Herrich-Schäffer, [1855] designated as type species of *Pero* Herrich-Schäffer, 1855 (Insecta, Lepidoptera).
- 1380 (p. 39) *Euphaedra* Hübner, [1819] (Insecta, Lepidoptera): conserved.
- 1381 (p. 42) *Ourocnemis* Baker, 1887 (Insecta, Lepidoptera): conserved.
- 1382 (p. 45) *Zeugophora* Kunze, 1818 (Insecta, Coleoptera): conserved.

The Commission regrets that it cannot supply separates of Opinions.

P. K. Tubbs  
Executive Secretary

# ENTOMOLOGICAL SOCIETY OF CANADA

## FINANCIAL STATEMENTS

### DECEMBER 31, 1985

### Auditors' Report

To the Members,  
Entomological Society of Canada.

We have examined the balance sheet of the Entomological Society of Canada as at December 31, 1985 and the statement of revenue and expenditure for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as we considered necessary in the circumstances.

In our opinion, these financial statements present fairly the financial position of the Society as at December 31, 1985 and the results of its operations for the year then ended in accordance with accounting principles as described in the notes to these financial statements, applied on a basis consistent with that of the preceding year.

McCAY, DUFF & COMPANY  
Chartered Accountants

Ottawa, Ontario,  
February 28, 1986.

### Notes to Financial Statements

DECEMBER 31, 1985

#### 1. SIGNIFICANT ACCOUNTING POLICIES

- (a) The Society uses the accrual method of accounting.
- (b) Furniture and equipment purchases are expensed in the year of acquisition.
- (c) Entomological Society of Canada is incorporated without share capital under Part II of the Canada Companies Act and is non taxable.

#### 2. INVESTMENTS

	1985	1984
<b>GENERAL FUND</b>		
Bonds, at cost (market value 1985 — \$334,102, 1984 — \$195,761)	\$319,901	\$199,897
Guaranteed investment certificate — 9.0%, 1986	10,000	—
	<u>\$329,901</u>	<u>\$199,897</u>
<b>ENDOWMENT FUND</b>		
Bonds, at cost (market value 1985 — \$25,760, 1984 — \$24,370)	<u>\$ 23,840</u>	<u>\$ 23,840</u>

#### 3. ENDOWMENT FUND

The direction of the bequest, by which this fund was founded, states that, without imposing any legal obligation, hope is expressed that the principal will not be invaded and that the income will be utilized to aid in the publication of the Canadian Entomologist.

# ENTOMOLOGICAL SOCIETY OF CANADA

## Balance Sheet

AS AT DECEMBER 31, 1985

ASSETS		1985	1984
GENERAL FUND			
CURRENT			
Cash		\$117,034	\$ 61,321
Deposit certificates		10,000	110,000
Accounts receivable		47,611	33,469
Due from Scholarship Fund		255	2,107
Accrued interest		5,149	11,995
Prepaid expenses		6,133	4,146
		<hr/> 186,182	<hr/> 223,038
INVESTMENTS (note 2)		319,901	199,897
		<hr/> 506,083	<hr/> 422,935
ENDOWMENT FUND			
Cash		6,651	3,557
Accrued interest		571	—
Investments (note 2)		23,840	23,840
		<hr/> 31,062	<hr/> 27,397
		<hr/> <u>\$537,145</u>	<hr/> <u>\$450,332</u>
LIABILITIES			
GENERAL FUND			
CURRENT			
Accounts payable		\$ 31,434	\$ 7,366
Deferred revenue		72,639	67,325
		<hr/> 104,073	<hr/> 74,691
EQUITY			
GENERAL FUND			
BALANCE — BEGINNING OF YEAR		348,244	302,673
Net revenue (expenditure) for the year		53,766	45,571
		<hr/> 402,010	<hr/> 348,244
		<hr/> 506,083	<hr/> 422,935
ENDOWMENT FUND (note 3)			
BALANCE — BEGINNING OF YEAR		27,397	24,535
Interest income for the year		3,665	2,862
		<hr/> 31,062	<hr/> 27,397
		<hr/> <u>\$537,145</u>	<hr/> <u>\$450,332</u>



# Statement of Revenue and Expenditure

FOR THE YEAR ENDED DECEMBER 31, 1985

	1985				1984
	Canadian Entomologist	Memoirs and Other Publications	Society	Total	Total
<b>REVENUE</b>					
Regular memberships	\$ 16,069	\$ —	\$16,068	\$ 32,137	\$ 34,260
Student memberships	1,655	—	1,655	3,310	3,710
Sustaining memberships	250	—	250	500	700
Subscriptions	79,055	4,563	—	83,618	90,537
Reprints	9,028	—	—	9,028	27,847
Page charges	102,677	36,095	—	138,772	115,495
Back issues	4,491	—	—	4,491	5,329
Sales of Memoirs	—	6,673	—	6,673	9,249
Sales of Arctic Arthropods and Bibliography	—	571	—	571	895
Gain on currency exchange	—	—	9,665	9,665	9,550
Government grant	32,000	—	—	32,000	32,000
Miscellaneous	—	—	598	598	6,845
	<u>245,225</u>	<u>47,902</u>	<u>28,236</u>	<u>321,363</u>	<u>336,417</u>
<b>EXPENDITURE</b>					
Publishing and mailing costs	105,686	53,297	—	158,983	172,852
Reprint costs	11,801	—	—	11,801	11,769
Bulletin publishing and mailing	—	—	13,354	13,354	14,619
Salaries and benefits	48,039	5,151	12,260	65,450	65,493
Office	4,131	400	3,731	8,262	9,222
Professional fees	1,750	—	1,750	3,500	2,350
Prizes, awards, brochure, etc.	—	—	1,182	1,182	862
Honoraria	1,005	—	1,575	2,580	2,900
Committees:					
Education	—	—	49	49	—
Science Policy	—	—	2,834	2,834	2,684
Common Names	—	—	576	576	—
Employment	—	—	125	125	569
Fellowship	—	—	—	—	—
Finance	—	—	—	—	—
Support of other organizations	—	—	5,406	5,406	4,548
Annual Meeting:					
Grant	—	—	2,500	2,500	2,500
Honorees	—	—	1,292	1,292	150
Governing Board:					
Interim meeting	—	—	2,322	2,322	2,136
Annual meeting	—	—	16,717	16,717	18,436
Other meetings	—	—	1,582	1,582	800
President's discretionary expenses	—	—	1,445	1,445	—
Computer equipment	—	—	—	—	10,632
General	3,909	—	1,584	5,493	5,199
	<u>176,321</u>	<u>58,848</u>	<u>70,284</u>	<u>305,453</u>	<u>327,721</u>
<b>NET REVENUE (EXPENDITURE) FOR THE YEAR FROM OPERATIONS</b>					
Interest on investments	68,904	(10,946)	(42,048)	15,910	8,696
	<u>—</u>	<u>—</u>	<u>37,856</u>	<u>37,856</u>	<u>36,875</u>
<b>NET REVENUE (EXPENDITURE) FOR THE YEAR</b>					
	<u>\$ 68,904</u>	<u>(\$10,946)</u>	<u>(\$ 4,192)</u>	<u>\$ 53,766</u>	<u>\$ 45,571</u>

# **ENTOMOLOGICAL SOCIETY OF CANADA — SCHOLARSHIP FUND**

## **Auditors' Report**

To the Members,  
Entomological Society of Canada.

We have examined the balance sheet of the Entomological Society of Canada — Scholarship Fund as at December 31, 1985. Except as explained in the following paragraph, our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as we considered necessary in the circumstances.

In common with many non-profit entities, the Fund derives a part of its income from donations which are not susceptible to complete audit verification. Accordingly, our verification of receipts from this source was limited to the amounts recorded in the records of the Fund.

In our opinion, except for the effect of adjustments, if any, had donation receipts been susceptible to complete audit verification, this financial statement presents fairly the financial position of the Fund as at December 31, 1985 and the results of its operations for the year then ended, on the cash basis applied consistently with that of the preceding year.

McCAY, DUFF & COMPANY  
Chartered Accountants

Ottawa, Ontario,  
February 28, 1986.

# SCHOLARSHIP FUND

## Balance Sheet

AS AT DECEMBER 31, 1985

### ASSETS

	1985	1984
INCOME FUND		
Cash	\$12,043	\$11,499
CAPITAL FUND		
Cash	4,710	1,062
Investments — bonds — at cost		
(Quoted market value — 1985 — \$36,235		
1984 — \$33,697)	33,895	32,461
	38,605	33,523
	<u>\$50,648</u>	<u>\$45,022</u>

### LIABILITIES

INCOME FUND		
Due to General Fund	\$ 255	\$ 2,107

### EQUITY ACCOUNT

INCOME FUND		
Balance — beginning of year	9,392	6,818
Interest income	4,642	4,544
Gain on sale of investments	—	30
	14,034	11,392
Scholarship awards	4,877	2,000
Balance — end of year	9,157	9,392
CAPITAL FUND		
Balance — beginning of year	33,523	30,547
Donations received	7,713	2,976
	41,236	33,523
	<u>\$50,648</u>	<u>\$45,022</u>

## VIGNETTES OF ENTOMOLOGY

### The Challenge Cup

by

P. W. Riegert

In 1918 the Entomological Society of British Columbia offered a prize for the best collections of beneficial or injurious insects of British Columbia exhibited at the Provincial Exhibition by school children. The Advisory Board of the Society in 1918 comprised E. H. Blackmore, R. C. Treherne, G. O. Day, A. W. Hanham, and L. A. Breun. They had endorsed the idea of prizes and were actively promoting the scheme. One hundred dollars was allocated to the prize fund. This was an initial attempt to publicize and encourage entomology but the information concerning the exhibits was slow in getting to the children. Consequently no entries of insects were received and no prizes were awarded.

The 1919 Advisory Board, comprising W. H. Lyne, R. C. Treherne, G. O. Day, John Davidson, and L. A. Breun, agreed to renew the offer for it was felt that eventually sufficient interest would be created to warrant the competition. The sum of \$100 was again set aside for prize money.

On the advice of J. W. Gibson, the Director of Agricultural Instruction, the Fairs at New Westminster, Vancouver, Kelowna, Armstrong, Trail, Kamloops, Nelson, Penticton, Chilliwack, North and South Saanich, Cowichan, Nanaimo, Surrey, and Langley were designated as the only ones at which the insect collections could be submitted for competition. Gibson also alerted all the teachers at these locations and asked them to encourage participation by the students. Once more such information was late in reaching the schools with the result that insect-collection competitions were held at only four points in the summer of 1919. These were at Nelson, Kelowna, Cowichan, and Langley. Only \$27.50 was distributed as prize money.

A start had been made and the members of the Society were encouraged that some interest had been generated. Also, the subject of natural history was receiving greater emphasis in the school curriculum, hence more participation in insect collecting was anticipated. Further encouragement was left to the new Advisory Board of J. Davidson, J. W. Gibson, L. E. Breun, E. W. White, and L. E. Marmont.

This Board met on 10 May 1920 to decide the future course of the Society's involvement in encouraging the study of entomology in public schools. The members decided that instead of just offering money as prizes for insect collections, they would also offer a "Challenge Cup" for competition at the Provincial Fair at New Westminster. A handsome silver cup, surmounted by a swallow-tailed butterfly (Fig. 1), was purchased for that purpose for a sum just exceeding \$50.00. The inscription on the cup read: "This Trophy is presented by the British Columbia Entomological Society to the School exhibiting the best Collection of Insects at the Provincial Exhibition." At the Fall Fair of 1920 the cup was won by the John Norquay School of South Vancouver. A suitably inscribed silver plaque was added to the trophy.

At the Langley Fall Fair, where only money prizes were offered, the Society paid \$5.00 for the best entry. However, credit for the prize was given to the Langley Agricultural Association. This was an error made by the Fair Board in its advertising lists, but the Society felt compelled to pay the money so as not to discourage the competitors. It was, nevertheless, one more obstacle placed in the path of good intentions of encouraging entomological activities by the Society.

The Challenge Cup was won once more by the John Norquay School at the Fall Provincial Fair of 1921. The rules governing the award stated that the cup would become the property of the school winning the competition for the third time. Therefore, in 1921 the Secretary of the Society, W. Downes, warned the members that they would be in a position to provide another cup if the John Norquay School won the competition in 1922. If such was the case then the members would probably face an increase in fees to offset the cost of a new cup.

True to that predicted possibility the cup was again won by the John Norquay School in the fall of 1922. The cup now passed into their possession. The members of the Society were not at all pleased with this turn of events, nor was their President, L. E. Marmont. He commented:

"Unfortunately, by omitting the condition that the collection shown must be bonafide the work of the scholars, this school was able to become the possessors of the cup by exhibiting a good collection donated to the school by a kind friend, and thus the object of the Society was defeated. Under the wording of the conditions as set forth in the Fair prize list, there was no alternative but to award the cup, as to do otherwise would be breaking faith with the exhibitors. If at any time the Society should offer another prize, they will doubtless benefit by this experience and make the conditions in keeping with the object aimed at." (Proc. Ent. Soc. B.C. 17 & 19:160. 1923.)



A prize, such as the Challenge Cup, was not offered again by the Society. Perhaps the original cup still remains in some hidden, dust-covered, stowaway corner of the Vancouver School System. Further inquiries may uncover a long-forgotten 65-year old memento of former entomological endeavours by the Entomological Society of British Columbia.

## ARTICLE

### Public Concerns About the Gypsy Moth (*Lymantria dispar*, Lepidoptera: Lymantriidae) in Ontario

by

D. B. Roden  
Canadian Forestry Service  
Great Lakes Forest Research Center  
Box 490  
Sault Ste. Marie, Ontario  
P6A 5M7

and

G. A. Surgeoner  
Department of Environmental Biology  
University of Guelph  
Guelph, Ontario  
N1G 2W1

#### Abstract

A mail survey was sent to 1,800 owners of cottages and 255 commercial resort owners in three regions of southern Ontario. The survey attempted to determine the public's opinion of potential Gypsy moth control strategies, the public's knowledge of this insect, and the perceived impact that this insect would have on recreational use. An overall response of 38.4% was obtained. The majority of respondents (>80%) had heard of the Gypsy moth but less than 10% believed they were well informed about the insect. Cottage owners perceived a cost of ca. \$90.00 per weekend in expendibles (i.e. food, gas) and the majority (ca. 53%) indicated that a large infestation of caterpillars (1 per sq. ft.) would reduce recreational usage. The public showed a slight preference for the use of chemical insecticides versus a more expensive *Bacillus thuringiensis* treatment; but ca. 20% could not determine what to use. Similarly, 40% of respondents trusted information provided by government scientists relative to pesticides, ca. 20% did not and 40% were not sure. A strong positive correlation existed between those against chemical insecticides and a lack of trust in government scientists. If co-ordinated Gypsy moth controls are to take place a public education campaign providing information which would allow rational, informed decisions is required.

#### Introduction

Knight and Heikkinen (1980) defined forest entomology as the science that "... deals with the effects of insects on forests and forest products and how to prevent adverse effects from reaching serious proportions economically while using methods that meet social constraints of citizens." In the past, public concern about the beneficial or detrimental effects of insect pest management programs have largely been disregarded or not solicited. Consequently, opinions or extremist views on either side of the issues have attracted media attention. Pest managers have failed to provide information as to whether these groups represent majority opinion or a vocal minority viewpoint. Politicians and resource managers, who ultimately determine research direction and funding for pest control programs often have little scientific background in entomology, yet must make decisions with little quantitative information on what the majority of people affected by control decisions desire. The failure of entomologists to provide information on "... social constraints of citizens" (Knight and Heikkinen 1980) has in some cases forced those responsible for pest management to restrict or cancel well designed control programs in the wake of public protest and has caused the public to become skeptical of the value of pest control.

The Gypsy moth, *Lymantria dispar* (L.), is one of the most serious pests in the hardwood forest of northeastern United States (McManus and McIntyre 1981). Resource planners consider-

ing the effects of this pest must consider the economic impact on the forest (timber production) as well as the effect on humans living in infested urban and recreational areas. Dense larval populations, defoliation, tree mortality, urticating hairs, and reduced recreational enjoyment, along with anxiety created by control measures are all factors which must be considered. In Ontario, the Gypsy moth problem is relatively new and management strategies are being formulated. The questions we wished to address were: does the public consider the Gypsy moth a significant problem and do current social attitudes of the public in urban and recreational areas, support or oppose potential control programs for the Gypsy moth?

### Materials and Methods

To provide information, 1,800 cottage owners and 255 commercial property owners (i.e., resorts) were randomly sampled from the Ontario counties of Frontenac, Haliburton and Muskoka. Frontenac is in eastern Ontario, north of Kingston, Ontario (44° 20'N 76° 30'W) while Haliburton region is northeast of Toronto centered around Haliburton, Ontario (45° 05'N 78° 30'W). The Muskoka region is north of Toronto centered around Port Carling, Ontario (45° 10'N 79° 31'W). Mailing addresses were obtained from cottage associations registered with the Geography Department, University of Guelph. The fact that cottage owners were members of associations may have biased samples as such individuals may be more politically active and concerned about the environment. The number of questionnaires mailed to cottage owners (Table 1) was proportional to the cottage density for each county (and number of mailing addresses received from cottage associations). Commercial property owners were selected at random for each area from the 1983 Ontario Canada Accommodation booklet. Questionnaires were color-coded so replies could be identified. It was felt responses might differ depending upon; a) land use (commercial versus private), b) areas presently infested with Gypsy moth or, c) previous exposure to an insect infestation. Also, Bender (1957) showed that colored questionnaires yielded more responses as a group than white questionnaires. Property owners that were questioned were provided with a personally addressed introductory letter, a questionnaire of 20 questions and a postage-paid return envelope. For brevity, only questions we considered most significant have been considered for this paper. Complete questions and response summaries may be obtained by writing the authors.

Responses between groups were subjected to a  $\chi^2$ -square analysis and where no difference existed between groups the results were pooled. The data does not suit more sophisticated forms of statistical analysis. Results have been summarized using percentages. These provide a useful index to assess the current social constraints we attempted to measure.

### Results and Discussion

Responses to the questionnaire averaged 38.4% (Table 1). Response rates were similar for all regions except Frontenac which had a 49% return. The higher rate from this region was expected as this is the only area in which the Gypsy moth currently exists in Ontario. Many residents are confronted with an infestation that has grown rapidly; ca. 2000 ha in 1981 compared to 750,000 ha estimated for 1986. Also, a program to control the Gypsy moth in 1982 was reduced after views of opponents objecting to the program received widespread media coverage. This exposure could explain a significantly higher response by Frontenac cottage owners to another question which provided property owners with the opportunity to request a pamphlet on the biology of the Gypsy moth and for results of this survey. Since response rate from other regions were similar and the increased response from Frontenac can be explained there is no indication that different colored questionnaires affected return rate. The response rate of this questionnaire was similar to or slightly higher than most single mailing surveys (Wellman *et al.* 1980). A potential problem

**Table 1. Percentage of Gypsy moth questionnaires returned by group**

Surveyed Group	Questionnaires Mailed (n)	Questionnaires Returned (%)
Commercial	255	38
Frontenac	186	49
Haliburton	681	33
Muskoka	933	40
	2055	38.4%

associated with a mail survey of this type is that respondents may be biased when compared to the total sample group. What of the 61% of owners who did not respond? The most plausible bias would be an under-representation of the "no opinion" group. Those with definite opinions were believed more likely to reply. Wellman *et al.* 1980 and Hammitt and McDonald 1982 both indicate that intensive follow-up surveys, i.e. second and third mailings, to assess non-respondents do not affect or result in small changes in percentage responses for individual questions when an initial mailing obtains over a 30% response rate.

Our introductory question asked property owners if they had ever experienced a previous insect infestation that completely defoliated trees over an extensive area (more than 2.5 sq. km.). Significantly, more people ( $P < .05$ ) from the county of Muskoka indicated they had such an experience. A forest tent caterpillar, *Malacosoma disstria* Hubner, infestation persisted throughout this area during the mid 1970's (Sippell *et al.* 1976). For analysis, we believed this group provided a reliable standard for comparison of their responses to those who had not experienced an infestation and might reflect possible attitude changes from such an experience. Hence, answers to some of the other questions we asked were compared to those individuals who had experienced an infestation.

The next two questions determined whether respondents had heard of the Gypsy moth and how knowledgeable they perceived themselves about this pest. The county of Frontenac's responses to both of these questions were significantly different from the other groups. In Frontenac, 98% had heard of the Gypsy moth vs ca. 80% in other regions. Only 18% of the cottage owners in Frontenac felt they were uninformed about this insect vs 34-51% in other regions. Despite this, only 6% felt they were "well informed" in the Frontenac region. Exposure to the Gypsy moth problem in the Frontenac Region, either through direct contact or from the news media is believed responsible for this difference.

Marles and McCrea (1977) found 83% of individuals objecting to chemical control measures who had not previously experienced a Gypsy moth infestation, wanted some form of control after experiencing one. Unlike a forest tent caterpillar infestation, a Gypsy moth infestation may also produce physical discomfort from urticating larval hairs (Anderson and Furniss 1983). As a result, it seems reasonable to conclude people exposed to Gypsy moth consider it to be a significant problem. Therefore, authorities responsible for insect pest management programs should expect to be petitioned for some type of remedial action once an infestation becomes serious.

Responses measuring the degree to which people would be disturbed by a Gypsy moth infestation were grouped by whether or not they had experienced a defoliation (Table 2). Byrne *et al.* (1984) found most people (94%) were distressed by urban arthropods. People from Muskoka having experienced a defoliation were not significantly different from other groups. Most people, approximately 87%, regardless of experience, indicated they would be moderately to extremely disturbed should a Gypsy moth infestation occur which produced larval densities of one per 1000

**Table 2. Question 1. "Have you ever experienced an insect infestation that completely defoliated trees over an extensive area more than 2.5 sq. km.?" vs Question 2. "To what extent would caterpillars (1/1000 cm<sup>2</sup>) crawling on the ground and sides of buildings disturb you? Would you be . . ."**

	All Groups* (n = 741)
	%
Question 2 — Negative response to Question 1	61
1. Undisturbed	4
2. Slightly Disturbed	11
3. Moderately Disturbed	24
4. Very Disturbed	37
5. Extremely Disturbed	23
6. No Response	1
	84
Question 2 — Positive response to Question 1	39
1. Undisturbed	2
2. Slightly Disturbed	9
3. Moderately Disturbed	26
4. Very Disturbed	37
5. Extremely Disturbed	26
6. No Response	0
	89

\*No significant difference between groups ( $p < .05$ ).



# Holiday Inn

## WINNIPEG - SOUTH

Please check desired room type(s) and rate. Rooms are held until 6:00 p.m. — after 6:00 p.m. must be covered by credit card guarantee or advance deposit of one night's accommodation. (Add 6% Sales Tax to room rates)

ACCOMMODATIONS		ONE BED		TWO BED		KING LEISURE
ONE PERSON	<input type="checkbox"/>	\$53.00	<input type="checkbox"/>		<input type="checkbox"/>	
TWO PERSON	<input type="checkbox"/>	\$53.00	<input type="checkbox"/>	\$53.00	<input type="checkbox"/>	
THREE PERSON	<input type="checkbox"/>		<input type="checkbox"/>			
FOUR PERSON	<input type="checkbox"/>		<input type="checkbox"/>			

☐ Will arrive 6 p.m. or prior

☐ Guaranteed — will arrive after 6:00 p.m.

Credit Card ..... # .....  
(TYPE)

Advance Deposit Enclosed \$ .....

CHEQUE OR MONEY  
ORDER. DO NOT  
MAIL CASH.

Name: .....

Address: .....

City/Ville .....

Prov./State ..... Postal Code/Zip .....

Date of Arrival .....

Departure .....

Please reply on or before ..... for confirmation of room and  
convention rate

# Entomology '86

1986 JOINT ANNUAL MEETING  
ENTOMOLOGICAL SOCIETY OF CANADA: ENTOMOLOGICAL SOCIETY OF MANITOBA

6-8 OCTOBER — HOLIDAY INN SOUTH WINNIPEG

## REGISTRATION/INSCRIPTION

Name  
Nom \_\_\_\_\_

Address  
Adresse \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Spouse's Name  
Nom du Conjoint(e) \_\_\_\_\_

Date and Time of Arrival  
Date et Heure d'Arrivée \_\_\_\_\_

Arriving by      Plane      ☐      Train      ☐  
Arrivée en      Avion      Train      Auto      ☐

Registration Fees Coût d'Inscription	Amount enclosed Montant inclus
Pre-registration — Before 31 August Pré-inscription — Avant le 31 août	(\$50.00*) _____
Late registration Inscription tardive	(\$65.00*) _____
Student or spouse Etudiant(e) ou conjoint(e)	(\$30.00*) _____
Daily registration Inscription quotidienne	(\$15.00) _____

\*Includes banquet  
Banquet inclus

Total \_\_\_\_\_

Return to: T. D. Galloway, Department of Entomology,  
University of Manitoba, Winnipeg, Manitoba  
R3T 2N2

cm<sup>2</sup>. Imperial units were used in the questionnaire, i.e. 1 larva per sq. ft. since we felt respondents could better interpret this than metric equivalents.

To measure a preference for the control options available for Gypsy moth we presented property owners with a choice. They were asked to choose between a less expensive more effective chemical insecticide (Sevin® or Malathion®) to control the pest in their own area opposed to the more expensive, less effective B.t. (*Bacillus thuringiensis*). Answers were also grouped by previous exposure to a defoliation (Table 3). Individuals from Muskoka who had experienced a defoliation were evenly divided on the issue of chemical insecticides versus B.t.

**Table 3. Question 1. "Have you ever experienced an insect infestation that completely defoliated trees over an extensive area (more than 2.5 sq. km.)?" vs Question 6. "Chemical insecticides such as Sevin® or Malathion® have been shown to be less expensive (about 1/3 the cost) and more effective than biological insecticides (non-chemical) such as *Bacillus thuringiensis*. If a coordinated Gypsy moth aerial spray program was implemented in your area a chemical insecticide should be used."**

	Responses							
	Commercial n = 89		Frontenac n = 87		Haliburton n = 214		Muskoka n = 351	
	%		%		%		%	
Question 6 — Negative response to Question 1	72		83		75		44	
1. Strongly Agree	16	44	13	38	7	42	4	29
2. Agree	28		25		35		25	
3. Disagree	3	16*	21	40	16	31	17	35
4. Strongly Disagree	13		19		15		18	
5. Don't Know	25		19		19		25	
6. Neither Chemicals Or Biologicals	12		1		6		8	
7. No Response	3		—		2		3	
Question 6 — Positive response to Question 1	28		17		25		56	
1. Strongly Agree	12	44	20	40	7	38	8	38
2. Agree	32		20		31		30	
3. Disagree	20	36	7	40	22	39	17	36
4. Strongly Disagree	16		33		17		19	
5. Don't Know	16		7		15		14	
6. Neither Chemicals Or Biologicals	—		13		4		9	
7. No Response	4		—		—		3	

\*Significantly different to other groups.

(agree or strongly agree with the use of chemicals 38%; disagree or strongly disagree 36%). This trend prevailed for those having experienced defoliation from the other groups. Responses of those not having experienced a defoliation were similar but more variable. Only those not experiencing defoliation from the commercial group were significantly different. This group showed a strong preference for the most effective and economical form of control. Objections to the use of either chemical or biological insecticides averaged less than 10%. Results from a comparable question offering property owners a choice of chemical insecticides, other forms of biological control (bacteria, predators and parasites) or no control were similar; ca. 35% supported the use of chemicals and biologicals while 33% preferred only biological control methods. However, a high percentage of 'don't know' responses to both questions (approximately 20%) implies many people are confused or uninformed about benefits and risks of any control. This suggests an attempt should be made by government control agencies to communicate knowledge to the public about the risk and benefits associated with the use of insecticides and of suitable alternatives (if insecticides are not used). With such communication it is likely many people who question or 'don't know' the value of insect control programs could be educated to make informed decisions based on knowledge rather than perceptions created by the news media and often gathered from potential vocal minorities on either side of the issues.

Most property owners trust pesticide information provided by government scientists (44%, Table 4). There was no significant difference between the commercial and cottage owners from any region for answers to this question. However, the high percentage of 'don't know' (36%) suggests past controversy (i.e. D.D.T., dioxins, etc.) and media dramatization has produced a

**Table 4. Question 6. "Pesticide information provided by government scientists is trustworthy."**

	All Groups*	
	%	
1. Strongly Agree	6	44
2. Agree	38	
3. Disagree	13	20
4. Strongly Disagree	7	
5. Don't Know	36	

\*No significant difference between groups ( $p > .05$ ),  $N = 780$ .

skeptical public that views any action associated with insect control programs with caution. In a comparison with answers to Question 6 (Table 3), preference for chemical insecticides varied depending upon the degree of trust expressed by property owners. Those who strongly trusted government scientists showed a high preference for chemical insecticides (72% vs 15%) while those who distrusted government scientists had a high percentage who preferred B.t. (51% vs 13%). This would indicate that fears of an insecticide control program are related to a larger issue, i.e. trust of information on pesticides provided by government scientists. Those who replied 'don't know' to trust of government scientists were more evenly split on the issue (36% supported insecticides vs 29% who did not). This same pattern appeared when responses to the question on trust were compared to the question offering a choice between chemical insecticides and other forms of biological control (bacteria, predators and parasites).

Property owners were also asked to indicate their education level. We believed education might influence decisions to other questions. This did not occur. Responses between different educational levels within different regions were not significantly different. When responses from different regions were pooled we also found no significant difference by education level to Question 6 (chemical insecticides vs B.t.). Combined results indicated 37% agreed (agree and strongly agree) that a chemical insecticide should be used, 33% disagreed, 20% didn't know and 7% indicated neither a chemical nor biological insecticide should be used. Three per cent did not respond. The educational level also had no significant affect on responses to the questions, "Are government scientists trustworthy and a choice between chemicals, bacteria, predators or parasites?"

There was no significant difference in age class distribution between groups. Age did not affect responses to the question of chemicals versus B.t. or a choice of biological control methods. However, there was a significant difference by age classes to the question about trust. Responses between the first two groups (20-29 and 30-59) were similar but significantly different from people over 60 ( $p < .05$ ). In the younger groups, 51% trusted government scientists, 25% disagreed and 24% didn't know. Those over 60 years of age indicated that 46% trusted government scientists, 11% did not and 41% didn't know. The large percentage of 'don't know' by the older group may reflect hesitation based on experience. Inadequate pesticide testing in the past is largely to blame for much of the resistance to their use today. These people were exposed to the initial broad endorsement for D.D.T. and perhaps are more conscious of subsequent investigations which revealed the problems associated with it.

We also attempted to determine some of the potential economic losses that the Gypsy moth may have on tourism. Cottage owners were asked to indicate their living expenses for a weekend (food, gas, shelter, transportation, etc.). The mean response for each group was similar (Frontenac = \$84.33, Haliburton = \$84.66 and Muskoka = \$96.00). We believed the later stages of a serious Gypsy moth infestation (late June to mid July) could have a significant detrimental economic impact on the summer tourist trade. Property owners were asked to agree or disagree if the number of times they used their cottage would be reduced while an infestation persisted. Fifty-four per cent agreed, 35% disagreed and 11% didn't know. These percentages were similar to those individuals who had experienced a previous defoliation. A 50% reduction in tourist trade for two or three weeks would diminish the optimal tourist season (two months) by 12-20%. A damping effect of this size would impose serious hardships for many seasonally based businesses. This estimate does not include additional losses attributable to reduced aesthetic values.

## Summary

Campbell (1975) indicated an initial infestation of Gypsy moth (such as the one we are experiencing in Ontario) can be expected to last ten years. Recent research (Roden 1985) suggests that the Gypsy moth infestation in Ontario may not necessarily be identical to the current United States experience. It will be several years in Ontario before a balance can be established between Gypsy moth and its environment. During the intervening years the impact on urban and recreational land use in infested areas, many of which are classical Gypsy moth sites (i.e. Muskoka), can be expected to be profound. Consequently, if the Gypsy moth problem is to be wisely managed and confrontations between proponents for and against control programs avoided it will be necessary to develop control methodologies that are acceptable to the public. Our research indicates that people exposed to Gypsy moth consider it to be a serious problem and would request some type of remedial action for a serious infestation. The anxiety created by dense larval populations was no less for those people who had experienced a previous infestation than for those who had no experience. Support for or against the use of chemical insecticides versus biological insecticides is evenly divided and was not affected by age or education. However, a large percentage of the population is still undecided or unformed on the use of pesticides and questions the management strategies recommended by government scientists. Those who trusted government scientists supported the use of chemical insecticides while those who did not preferred the use of biologicals. A key component of a Gypsy moth management strategy should be to promote an atmosphere conducive to effective pest management through a public education platform about the pest, the problems associated with it and control methodologies available. Failure to do so will likely result in unprepared, inappropriate reactions to future Gypsy moth infestations and continued opposition to insect pest management programs.

## Acknowledgments

The authors would like to thank Dr. R. Kreutzweiser, Department of Geography, University of Guelph for the advice in planning and interpretation of the questionnaires. Funding to the senior author was provided by the Canadian Forestry Service.

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## POSITIONS AVAILABLE

### NSERC University Research Fellowship

The Department of Biology at Lakehead University invites applications from Canadian citizens and landed immigrants to be sponsored for an NSERC University Research Fellowship.

The biological specialization of the position is OPEN. The candidate is expected to develop a vigorous research program and to complement departmental teaching in his/her discipline. The candidate must fulfill the criteria of selection set by the NSERC URF program. The Department of Biology may be in a position to consider the candidate for a tenure-track position in the second five-year term of the URF program.

Send a curriculum vitae, a completed URF application form, two letters of reference and names of three impartial external reviewers, by August 1, 1986, to:

Dr. John P. Ryder, Chairman  
URF Search Committee  
Department of Biology  
Lakehead University  
955 Oliver Road  
Thunder Bay, Ontario  
Canada P7B 5E1

### Project Director — Urban Entomology

The Faculty of Forestry at the University of Toronto is initiating a five-year research project to develop an integrated program for control of the eastern subterranean termite in the urban environment. The project will focus on developing alternatives to conventional insecticides, and therefore represents an opportunity for innovative research on biological control and preventive techniques.

Applications are invited for the position of RESEARCH ASSOCIATE IN URBAN ENTOMOLOGY to direct this project. The appointment is contractually-limited to five years. Applicants should possess a Ph.D. and should have a strong research background in structural insect pests, with specialization in insect physiology/biochemistry, insect ecology or biological control. The project will be funded by several Ontario municipalities and government agencies. It is important therefore that the applicants have good communication skills and the ability to work cooperatively with various sponsors to test control techniques, and train staff.

The Faculty of Forestry, located on the Toronto campus, offers programs leading to the B.Sc.F., M.Sc.F. and Ph.D. degrees, as well as a Diploma in Resource Management. Undergraduate teaching and graduate research is focussed on forest management, forest biology and wood science and forest products. The Faculty has strong working relationships with several University departments, and this provides the opportunity for the Project Director to interact productively with other staff in related fields. This project provides an ideal professional development opportunity for a recently-graduated Ph.D.

Salary will be commensurate with the qualifications and experience of the successful candidate. The intention is to make this appointment August 1, 1986 or as soon thereafter as possible.

The University of Toronto encourages applications from both men and women. Interested and qualified individuals should submit their curriculum vitae and other relevant information, and three referees who are acquainted with the work of the applicant should be asked to forward letters of reference. The deadline for receipt of applications is July 15, 1986, and all documentation should be submitted to:

Dean J. R. Carrow  
Faculty of Forestry  
University of Toronto  
Toronto, Ontario  
Canada M5S 1A1

In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens & permanent residents.

## PERSONALIA

### I. W. Varty Retires at Fredericton

Isaac William Varty, Bill to most of us, retired from the Canadian Forestry Service — Maritimes on the 4th of April 1985. He was launched into the new career of country squire at a luncheon by his coworkers and retired colleagues R. E. Baich, R. M. Belyea, C. A. Miller, and M. M. Neilson, and guests. He was presented with a 35-year service medal, and by his coworkers, with a clock. (Timing is more critical on the farm where flex hours do not apply.)

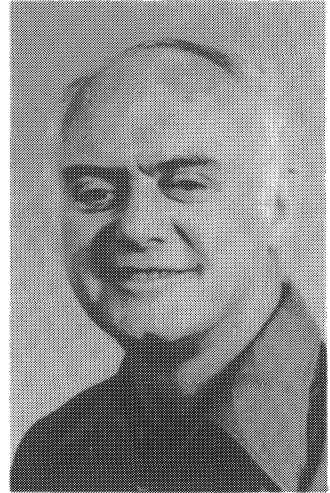
Bill joined the Forest Biology Laboratory at Fredericton in 1958 to study the entomological aspects of birch dieback. His interests shifted to the arthropod community on balsam fir, the environmental impact of pesticides on non-target organisms, exotic parasites for spruce budworm control, and most recently, how to increase the efficacy of forest sprays. He served as Project Leader for Environmental Impact of Forestry Practices (1970-74), Project Leader for Spruce Budworm (1981-84), and Acting Program Manager (Research) in 1985.

Because of his knowledge, fairness, and good judgement, Bill's advice has been widely sought both by people concerned about pesticides and by people concerned with forest protection, the two sides in the forest spray controversy. He was the founding chairman of the Pesticide Ecology Research Group, an organization of researchers on the fate and environmental effects of pesticides and other interested people, which he started in 1970. He continued to chair the group through its evolution into the Committee for Environmental Monitoring of Forest Insect Control Operations (EMOFICO) until 1980. He laid a strong foundation because EMOFICO still has a major influence on the direction of research and monitoring, and its advice is respected by governments and the forest industry. He served on many key committees through which he had a strong influence on forestry, forest science, and environmental integrity. A few were: N.R.C. Associate Committee on Agricultural and Forestry Aviation, Atlantic Region Toxic Chemicals Committee, New Brunswick Task Force on Forest Insecticide Drift, CANUSA Spruce Budworms Agreement. He has studied adelgids, leafhoppers, bumble bees, solitary bees, parasitoids, IGR's, and insecticide deposit, persistence, drift, and effects on target and nontarget arthropods, but the research he enjoyed most was his excellent work on the balsam twig aphid.

Born in England, Bill served with the British Army, 1943-45, in Britain and India and the Assam Regiment of the Indian army, 1945-47, in India and Burma, attaining the rank of Captain. He studied at Leeds, and at Aberdeen where he majored in forestry, earned the PhD in 1954, and married Dorothy in 1952 (Scotland was good to him). He was employed as a District Officer in Scotland by the British Forestry Commission, 1954-58. Except for secondments to the University of New Brunswick, to teach forest ecology in 1980-81, and Entomology in 1985, he has been with the Canadian Forestry Service ever since.

Bill has served the Entomological Society of Canada as Chairman of the Program Committee in 1964 and Co-chairman of the Program Committee in 1984. He was elected Director-at-Large 1966-67, and named Fellow in 1984. He served the Acadian Entomological Society as President in 1964 and 1965, Regional Director 1966 and 1967, and on various committees. He was an Associate Editor for entomology for the Canadian Institute of Forestry from 1968 to 1986.

Bill and Dorothy live about 35 km east of Fredericton at Maquapit Lake, where the squire and his lady practice the art of floriculture. They can be reached at RR #1, Ripples, New Brunswick, EOE 1M0.



Doug Eidt  
Canadian Forestry Service  
Fredericton, N.B.

### Dr. W. E. Ricker, Order of Canada

Dr. W. E. Ricker of the Nanaimo Fisheries Station has recently been installed as an Officer of the Order of Canada. While his research deals primarily with fish, Dr. Ricker has published on the Plecoptera and is a member of The Entomological Society of Canada. Our congratulations to Dr. Ricker on this richly deserved honour.

## BOOK REVIEWS

Highley, E., and R. W. Taylor (eds.). 1983. *Australian Systematic Entomology: A Bicentenary Perspective*. Commonwealth Scientific and Industrial Research Organization, Melbourne, Australia. vii + 147 pp. Soft cover. Price: U.S. \$5.00. (Distributed in North America by International Specialized Book Services, Inc., P.O. Box 1632, Beaverton, OR. 970075).

This book contains 7 papers presented at a symposium with the same title, held in Canberra in 1982, to mark the opening of the D.F. Waterhouse Laboratory of Insect Taxonomy.

The first 3 articles are of interest mainly to historians of Australian insect taxonomy. In the first article E. N. Marks reviews the development of taxonomic research, from Daniel Carl Solander (1733-82) and other early European collectors to the establishment of the Australian National Insect Collection (ANIC) in 1962. This is followed by 2 brief articles which chronicle taxonomic research on Australian Lepidoptera, by I. F. B. Common, and termites, by J. A. L. Watson and F. J. Gay.

The remaining 4 articles address issues of more general interest. T. R. New reflects on the interface between systematics and ecology, drawing his examples mainly from plant/insect associations and trophic guilds in Australia. R. H. Crozier outlines some of the uses of genetic techniques as an aid in distinguishing cryptic and sibling species and, more interestingly, in revealing phylogenies. This is followed by R. W. Taylor's assessment of the past, present and future of descriptive taxonomy, and by C. D. Michener's synopsis of systematics as an integrating discipline in biology. All articles are accompanied by well-selected and up-to-date reference lists, and Taylor's by extensive illustrations and graphic material.

I found Taylor's contribution of particular interest for several reasons. Having presented a fair and well-researched account of the many demands made of a practicing taxonomist, he suggests several "multipliers" to enhance taxonomic research. He recommends that the distribution of taxonomic collections be rationalised so that the primary holdings of collected specimens including type specimens are redeployed in single institutions rather than, as at present, dispersed over many; that greater use be made of short-term appointments of visiting specialists, associated with ANIC or CSIRO, in order to catalyze collecting and research efforts in specific groups; that provisional species codes be used to overcome problems in species definition; and, in general, that practicing taxonomists make greater use of modern technology including the use of scanning electron micrographs for more effective taxonomic descriptions and of automatic data processing procedures for cataloguing and descriptive purposes.

Although mainly concerned with Australian systematic entomology, many of the examples and recommendations address issues related to systematic biology in general. At U.S. \$5.00, the book is a bargain and can be recommended to amateur and professional insect taxonomists alike.

M. Mackauer  
Centre for Pest Management  
Department of Biological Sciences  
Simon Fraser University,  
Burnaby, B.C.

Poinar, George O. Jr. and Gerard M. Thomas 1984. *Laboratory Guide to Insect Pathogens and Parasites*. Plenum Press, New York and London. xvi + 392 pp. Hard cover. US \$49.50.

This book is a revised and expanded edition of Diagnostic Manual for the Identification of Insect Pathogens published in 1978. The revision, particularly the addition of chapters on entomogenous nematodes and immature stages of endoparasites of insects, has enhanced the value of the book as an aid in diagnosis of disease and identification and description of insect pathogens and parasites. The descriptions, illustrations and keys of viruses, bacteria, fungi, protozoa, nematodes and immature stages of arthropods found in insects should be especially helpful to the worker in biological control who is not a specialist in insect pathology and also to the insect pathologist confronted with pathogens outside of his speciality.

The authors are to be complimented on their excellent selection of illustrations of pathogens, endoparasites and infected or infested host insects. These good illustrations depicting significant characteristics of the principal types of entomopathogens and endoparasites along with the concise descriptions and easy-to-follow keys are real assets to the usefulness of this book in a biological control laboratory. The reader is cautioned, however, that the descriptions and keys are based on an overview of the groups and that identification, particularly of endoparasites, is



more complex than this presentation would suggest. The section on techniques could perhaps be thought by some workers in biological control to be rather elementary in that readily available information such as composition of well known culture media, stains and reagents is included but this reviewer would justify the presentation of such material here as a source of such information for those who are less familiar with the discipline.

Robert P. Jaques  
Agriculture Canada Research Station  
Harrow, Ontario

Price, P. W., C. N. Slobodchikoff, and W. S. Gaud (eds.). 1984. *A New Ecology: Novel Approaches to Interactive Systems*. J. Wiley and Sons, New York. 515 pp. Price: U.S. \$60.00.

The aims of 'A New Ecology: Novel Approaches to Interactive Systems' are stated explicitly by the editors in their preface: 'We designed this volume specifically for students of ecology who are beginning a research career . . . we anticipate that (it) will be used in undergraduate and graduate ecology seminars, and as a source of discussion topics in general ecology courses.' This review considers the book in that light, and arises out of its use in a graduate seminar course in population ecology at Simon Fraser University. Other more general reviews can be found elsewhere (Crawley 1984, Orians 1985, Southwood 1985).

The book is divided into five sections: Resources and Populations, Life History Strategies, Ecology of Social Behaviour, Organization of Communities, and Synthesis, the last appearing to be a catch-all for four diverse chapters that do nothing to synthesize the earlier material. The chapters themselves cover a variety of ecological and behavioural ecological topics which illustrate 'developments in ecology that have gained impetus within the last ten years,' the editors' criterion for 'new' ecology. A variety of approaches is taken by the authors of the individual chapters, but they are essentially of three types: experimental papers, theoretical papers, and review chapters. Five chapters deal explicitly with insects; eight more deal with general issues that should be of interest to entomologists.

For a graduate course, we hoped for a book that would encourage and stimulate discussion in a round table forum. Unfortunately, we found the book inadequate to this task, the main reason being the preponderance of review chapters (eight or nine of the sixteen chapters — the introduction excepted — fell into this category). Jones's chapter on microorganisms as mediators of plant resource exploitation by insect herbivores, and Wiens's on resource systems are examples: very little stimulating discussion is generated by thirty or forty pages of examples, references, and long classification schemes for the phenomena under scrutiny, and even the good reviews (Whitham, Williams and Robinson's on intra-individual variability in plant defences, for example) suffered somewhat in this respect. Somewhat more valuable were the reviews of concepts — Price's on alternative paradigms in community ecology, Strong's on density-vague ecology, and Istock's on boundaries to life-history variation and evolution, though both Price's and Strong's chapters were rather less than novel in their contents.

The experimental papers — Frankie and Morgan's on the population dynamics of gall-inducing insects, Wilbur's on complex life-histories and community organisation in amphibians, Lawton's on insect herbivore community organisation, and part of Slobodchikoff's on the evolution of social behaviour — were, with the exception of Wilbur's, uniformly disappointing. They seemed little more than opportunities to present partially completed research and were hardly exemplary to students beginning a research career. Frankie and Morgan's experiments were poorly designed and their conclusions suspect, while Lawton's work was in such an early stage of development that it was impossible to draw any strong conclusions at all. In contrast, Wilbur presented an excellent experimental design, and his results and conclusions were interesting and well formulated.

The theoretical papers — Michod's on constraints on adaptation, and Caraco and Pulliam's ESS analysis of sociality and survivorship — were both excellent, and genuine contributions to their fields. One might quibble with the extreme mathematical rigour of Caraco and Pulliam's chapter in a book such as this, but their conclusions were pleasingly intuitive, and the chapter could be read without too close an examination of the maths.

To general comments, we felt that the book could have been greatly improved by the presence of more papers of a theoretical nature. We would have liked to have seen each section introduced by an overview chapter as an aid to students new to the field, far fewer reviews of phenomena and more of concepts (of the nature of those, for example, in Krebs and Davies's Behavioural Ecology), and more good experimental papers. With its present form, however, we were disappointed. The title suggested a volume full of new and exciting ideas, and some of the chapters did indeed provide them. Others, however, seemed rather dated, and others still simply

made tedious reading. For these reasons, despite the presence of several excellent papers, we would not recommend this book as a text for a graduate course.

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Orians, G. H. 1985. *Ecology* 66: 639.  
Southwood, T. R. E. 1985. *Science* 228: 871.

Andrew Chow  
Karen Cooper  
Simon Emms  
Peter de Groot  
Rob McGregor  
Department of Biological Sciences,  
Simon Fraser University,  
Burnaby, B.C.

Seeley, Thomas D. 1985. *Honeybee Ecology: A Study of Adaptation in Social Life*. Princeton University Press, Princeton, N.J. 08540. X + 201 pages. U.S. \$39.50 (cloth), U.S. \$10.50 (paper).

This concise book on honeybee ecology is the third of a series entitled "Monographs in Behavior and Ecology," edited by John Krebs and Tim Clutton-Brock, and its subject is summarized in the opening line: "The honeybee is a wonderful example of adaptation." The author has approached the honeybee not from the perspective of a managed insect, as honeybees usually are treated, but rather as an organism which has evolved in the wild and possesses unique social adaptations for survival.

The book starts out with chapters introducing the evolutionary history of honeybees and their societal structure, quickly moving into more advanced topics such as kin structure and division of labor. The following chapters examine colony cycles, reproduction, nest building, food collection, thermoregulation, colony defence, and temperate/tropical differences, all from the perspective of contemporary behavioral ecology. Some background on the subject is required to fully understand all of the book's topics, although readers without background in behavioral ecology will enjoy much of the book nevertheless. This is not, however, a book for beekeepers or the general public.

Seeley is a fine writer, and thorough in his review of relevant literature. There is no question that his approach is an original contribution to our understanding of an organism which has only recently been examined from this perspective. The book's main strength, its emphasis on adaptation, is also one of its few weaknesses; I would have liked to see some of the subjects treated with some of the other approaches currently being used in social insect work. Also, some of the illustrations could be improved, particularly the use of photographs where line drawings might have been clearer. Some comparisons with the other highly eusocial bees, the stingless bees, also would have been worthwhile. These are minor faults, however, in an exceptionally well-written, informative, and original work.

Mark Winston  
Department of Biological Sciences  
Simon Fraser University  
Burnaby, B.C.

Soós, A. and L. Papp (eds.). 1984. *Catalogue of Palaearctic Diptera. Volume 9. Micropezidae — Agromyzidae. Volume 10. Clusiidae — Chloropidae*. Pp. 460, 402. Hungarian Academy of Sciences, Budapest. (Distributed in Canada and U.S.A. by Elsevier Science Publishing Co., Inc., P.O. Box 1663, Grand Central Station, New York, N.Y. 10163, U.S.A.). Price: U.S. \$10.75 each volume.

These are the first two volumes published of a projected 14-volume series, intended to replace the 4-volume "*Katalog der palaarktischen Dipteren*" published in Hungary in 1903-1907. The editors disclaim any standpoint concerning questions of suprafamiliar systematics, and say that they gave a free hand to authors with regard to the content of each family. The treatment of each family contains a brief introduction consisting of descriptive and biological information and some major references. The catalog of genera, subgenera and species then follows. The name of

each taxon is followed by the reference of the original description, the type locality and an indication of distribution. A full reference list and index are given at the end of each volume.

The two volumes now available contain contributions on 54 families written by 18 authors. I have examined in some detail the contribution on Agromyzidae (pp. 263-343 in Volume 9) prepared by the junior editor, L. Papp. I was concerned to determine the reliability of this work, since I have agreed to write the contribution on Agromyzidae for the projected World Catalog of Diptera.

Papp has considered literature up to 1980/81. Names proposed in my 1980 work in *Entomologica Scandinavica* (Supplement 13) are included, as also is the generic name *Galiomyza* proposed by Spencer in 1981 (University of California Division of Agricultural Sciences, Special Publication 3273). But new names proposed in 1981 by von Tschirnhaus (*Spixiana*, Supplement 6) and Sasakawa (*Applied Entomology and Zoology* 16) are not included.

In his introduction Papp admits that he is not a specialist on agromyzids, and that the work is a "mere compilation." In this circumstance, the work should not have been published without prior review by leading specialists. As a result of inadequate review, it does not meet the standards of accuracy and completeness to be expected in a catalog. Only the more serious defects can be mentioned here.

The following pre-1980 names have been omitted (valid names of Palaearctic species and Palaearctic synonyms only; extralimital synonyms are also mostly omitted):

*Agromyza astragali* Brishke (1880), *A. holosericea* Strobl (1893), *A. parvicella* Coquillett (1902), *A. perpusilla* var. *flaviventris* Strobl (1910), *Dizygomyza hendeli* de Meijere (1924), *Musca subcutanea* Bjerkander (1793), *Phytobia* (*Praspedomyza*) *elaeagni* Rohdendorf-Holmanová (1959), *Phytomyza affinis* var. *obscurifrons* Strobl (1910), *P. anemones buhri* Hering (1929), *P. biseriata* Hering (1937), *P. deirdrae* Griffiths (1972), *P. flaviceps* Macquart (1835), *P. flavipes* Macquart (1835), *P. maculipes* Zetterstedt (1848), *P. morio* Zetterstedt (1848), *P. nigricans* Macquart (1835), *P. ranunculi* Robineau-Desvoidy (1851), *P. ranunculi* Kaltenbach (1867) and *P. silai* Hering (1935).

Several double entries have been noted, namely: *Ophiomyia eucodonus* Hering (duplicated under the misspelling "oecodonus"), *Ophiomyia shibatsujii* (Kato) (duplicated under *Ophiomyia* and *Melanagromyza*, with inconsistent spelling), *Melanagromyza tripolii* Spencer (duplicated under *Liriomyza*), *Phytomyza philactaeae* Hering (as valid species and as synonym of *P. kaltenbachii* Hendel) and *Phytomyza tatriza* Beiger (as valid species and as synonym of *P. campanulivora* Spencer).

The six generic names proposed by Enderlein (1936, *Die Tierwelt Mitteleuropas* 6 (2)) listed as unavailable on page 340 became available when Enderlein published a correction note designating type species (1936, *Mitt. Dtsch. Entomol. Ges.* 7: 42).

*Agromyza euphorbiae* Kieffer (1909) should be transferred to the list of taxa removed from the Agromyzidae, since it has been synonymized with *Pegomya argyrocephala* (Meigen) (Anthomyiidae). In addition there are 23 omitted names proposed in *Agromyza* which should be added to the list of taxa removed from the Agromyzidae (M. Martinez, personal communication).

Despite Papp's statement that the work is merely a compilation, he has in many cases not followed the judgement of specialists regarding which names are valid and which synonyms. Two genera recognized as valid in recent works by specialists (*Hexomyza* and *Chromatomyia*) are listed as synonyms (of *Melanagromyza* and *Phytomyza* respectively). There are about 60 species names whose treatment is not in accordance with recent publications by specialists. Such changes carry no authority, since Papp has not studied specimens.

Despite these defects Papp's catalog will be useful for tracing the sources of names, but it should be used with caution. The opinion of specialists should be followed where this differs from that expressed in the catalog.

Some of the other family contributions in the two volumes have been written by specialists, so are probably more reliable. Nevertheless, the fact that the agromyzid contribution was published prematurely without adequate review shows that present procedures for processing manuscripts for publication in this series are inadequate. I strongly urge the editors to circulate future manuscripts much more widely for review by qualified specialists. If this is not done, the series may lose credibility. In principle, I welcome the production of this series, since the old Palaearctic catalog has long been out-of-date. However, much higher standards of reliability need to be set.

I am grateful to Kenneth A. Spencer and Michel Martinez for exchanging notes with me regarding the agromyzid contribution.

Graham C. D. Griffiths  
Department of Entomology  
University of Alberta  
Edmonton, Alberta

Williams, R. E., R. D. Hall, A. B. Broce, and P. J. Scholl (eds.). 1985. *Livestock Entomology*. John Wiley and Sons, New York. Toronto, x + 335 pp. U.S. \$41.95.

This straightforward textbook assembles under one cover a comprehensive account of economically important arthropod pests affecting domestic animals in North America. The book is organized in three sections, which are not separately identified as such.

The first deals with general background and principles in an Introduction and three chapters. The chapters on entomology and insect control are useful but the one on host-pest relationships is most distinctively suited to the subject matter.

The second consists of seven chapters dealing with taxonomically grouped pests in a format that covers classification, distribution, hosts, and biology. Most of the chapters describe the important species individually but the chapter on ticks gives additional background that differentiates them from insects and explains life cycles, which feature one-host to multi-host interactions. Accounts of parasites attacking wildlife go beyond the book's title but can be considered a bonus.

The third section of eight chapters, based on pests of commodity groups, is oriented to the practical aspects of damage and control. Some chapters include pertinent features of the husbandry that present a rational basis for effective control.

The three sections complement each other to provide a workable reference text for its primary audience, undergraduates, and for practitioners, such as extension agents, pest control operators, and veterinarians.

The book's errors are minor and may be attributed to the condensed format. The illustrations range from line drawings to SEM photographs, most of them suitable for the content.

J. Weintraub  
Agriculture Canada Research Station  
Lethbridge, Alberta

## OBITUARIES

### George Pearson Holland 1911 - 1985



Dr. George P. Holland, a world authority on the Siphonaptera (fleas) and former Director of the Entomology Research Institute (now the Biosystematics Research Institute), Canada Department of Agriculture, died November 10, 1985, in the Civic Hospital, Ottawa, from exposure following an accident while hunting. Admired and honoured for his personal research and leadership, he will be equally remembered for his warmth and compassion, his ready wit, his many interests and well-developed hobbies, and his happy and harmonious personality.

George was born on August 27, 1911, in Vancouver, B.C., and educated in primary and secondary schools there. He entered the University of British Columbia in the autumn of 1928, thirsting for knowledge, but with no formed idea of what he wanted to be. Vertebrate zoology soon sparked his interest and he majored in that subject for both his B.A. (1933) and M.A. (1937) degrees. During his postgraduate years he came under the inspirational teaching of Professor George J. Spencer and found his love in entomology.

Making one's way through university in the days of the Great Depression was not easy: work was scarce and wages low. George spent his vacations moving goods in a warehouse; logging on Vancouver Island; an assistant with a field party of the National Museum; or playing the accordion in a concert party that travelled the West Coast by boat, all the way to Alaska, performing at canneries, camps or Indian villages *en route*. During his last two years at university he worked as a Demonstrator in the zoological laboratories.

In December 1936, he obtained a position as student assistant at the Dominion Livestock Insect Laboratory, Kamloops, B.C. There he met again his college friend Jack Gregson, and together they explored the scenery and natural history of the Western mountains; their friendship lasted a lifetime. Initially, George participated in already established projects on the biology and control of warble flies, mosquitoes and ticks. He much enjoyed the work, but when Allen Mail became the new Laboratory Head in 1937, George raised the question of having a project of his own 'to get his teeth into.' This launched him into his lifelong studies of fleas. Contributing to this choice was his interest in mammals and birds; and also the need to assess the danger of the spread of bubonic plague, endemic in wild rodents in British Columbia and Alberta, to the human

population. In the summer of 1938, George was seconded for a period of four months to the Province of Alberta, Department of Public Health, to serve as leader of their Field Survey Party on Insect- and Tick-borne Diseases. Information from this study contributed materially to two of his earlier publications.

Now he turned his attention steadily to a comprehensive study of Siphonaptera: taxonomy, zoogeography, host-association, etc. Local library facilities were extremely limited, communication with Ottawa by rail was frustratingly slow, and the Systematic Entomology Unit was reluctant to share named specimens or to recognize identifications made by such a novice! Holland was not repulsed. He struck out on his own with phenomenal success and a decade later published his first major work, *The Siphonaptera of Canada* (1949, 306 pp., 350 figs., 44 maps, covering 127 spp. and subspp.). This excellent monograph was the first systematic account of any one complete order of insects in the Canadian fauna; and as in all his later work also, the very fine illustrations were all by his own hand.

When nearing the completion of this impressive volume, George came under the perceptive eye of Dr. K. W. Neatby, Director of Science Service, who was aware of the need for a successor to Dr. J. H. McDonnough, recently retired as Head, Systematic Entomology Unit. He spotted Holland's bright mind and dedication to excellence and arranged his transfer to Ottawa.

There he was to remain, a practicing scientist and a leader and facilitator of insect systematics and entomology at large. His career in Ottawa is the story of the growth and achievements of an influential group of entomologists during the next two decades, until ill health forced his resignation in 1969.

The Systematic Entomology Unit of 1948 was quite small, with a Unit Head and six others only: Stuart Walley and Bill Brown; Ozzie Peck, Tom Freeman and Guy Shewell; and the more recent recruit Dave Hardwick. They had charge of the Canadian National Collection, already a uniquely valuable resource but unevenly developed and probably less than one-twentieth of its present size. Some foundations were laid, but the opportunities and responsibilities of the post-war years were very great.

In 1947, the Defence Research Board had asked the Department of Agriculture to organize an entomological exploration, extending over a period of years, in boreal and arctic Canada. In those early days of the 'Cold War' the fear was that northern Canada might become a battleground, a situation for which the country was quite unprepared because of lack of knowledge of the terrain. The Chief of the Division of Entomology and Dr. W. E. Van Steenburg, advised by Tom Freeman, accepted the offer, and the Northern Insect Survey was established; simultaneously a related program on the biology and human significance of northern biting flies was set up under Cecil Twinn. George, on his arrival from Kamloops a few months later, found himself in a position of leadership and readily took up the challenge. Financial and logistic support was available and new positions, regular and seasonal, could be set up. The program developed rapidly and, with Tom Freeman's assistance, was vigorously maintained for about ten years. Promising young entomologists were recruited and soon thereafter were offered the opportunity of educational leave to work for their doctorates at well-known centres of systematic entomology. The need for rapid expansion notwithstanding, George saw to it that these appointments were made with care and insight, and several of today's well-known systematists obtained their start in this way. The Northern Insect Survey mounted in all some 70 parties which explored the scarcely known insect fauna of the boreal, hudsonian and arctic life zones from coast to coast, or rather from Alaska to Greenland. Very large collections of all orders were accumulated — more in fact than could be studied — and are still yielding a great store of valuable information.

Stimulated, in part, by the northern program, the growth of the C.N.C. continued to depend very largely on the personal collecting of the staff: an important advantage of this is that the specialist can keep in touch with a field approach and has an opportunity of selective collecting for individual projects. George Holland, of course, encouraged this custom, and himself participated. Considerable accessions also came from the Forest Insect Survey and other Canadian workers, many by exchanges with foreign specialists, and in some special cases by purchase.

As Head of the Unit, George's touchstone was always the welfare and development of systematic entomology as such. He maintained, both for scientific reasons and as a necessary aspect of his leadership, a steady flow of papers on his own researches, amplifying the knowledge of the North American fauna of fleas. Already by 1950 he had visited the great Rothschild collection of fleas at Tring, and the scientific and personal friendships with Karl Jordan and Frans Smit were maintained throughout his career; and similarly with Robert Traub in Washington, D.C. He developed close relations with the groups of systematists in Washington and throughout the United States, in London, in Australia, the Soviet Union and elsewhere, and enabled many Canadian workers to visit overseas museums in the course of their studies. He clearly enjoyed the administrative and social and cultural background of his work and brought back many fascinating stories from his contacts and travels, but he fused such interests, synergistically, with the primary interest in entomology. Similarly, the systematists of the Unit were assessed basically by

the test of their contribution to entomology as such. An original or prolific worker, making a contribution according to his interests, was strongly supported, and rarely had occasion to feel hindered or diverted for external reasons.

George himself probably never considered any major change in his own position. However, he eagerly welcomed and took responsibility for a number of important events made possible by the favourable climate of the day; first and foremost of these was the Tenth International Congress of Entomology held in Montreal in 1956. As the organization developed, he released for service with the Congress almost all of the Ottawa systematists, and he himself became chairman of the important Program Committee. Entomology in Canada was reaching its early post-war maturity and had good things to show in systematics, physiology and toxicology, ecology, biological control, forest entomology, biting fly studies and other fields. The Congress, the second only to be held outside Europe, provided the first occasion since the war for Western entomologists to meet colleagues from the Soviet Union, and served generally to introduce Canadian entomology internationally. The contacts with Russian entomologists were consolidated when George and several of his colleagues visited there following the Eleventh Congress in Vienna in 1960.

In 1963, the Centennial of Entomology in Canada was celebrated in a special 4-day meeting at Carleton University. George, who had been influential in bringing this event into existence, presided over a gathering of quite exceptional interest. The meeting featured a series of twenty addresses by active researchers describing the achievements and growing points of entomology in Canada, together with over seventy 'exhibits' — what would now be called a poster session, but then something of a novelty — illustrating selected current projects by members of the Society. The University held a special convocation at which George and three distinguished members of an older generation, Prof. E. M. DuPorte, Dr. W. R. Thompson and Prof. E. M. Walker, became Doctors of Science, *honoris causa*.

Other influential appointments came his way. On Dr. W. R. Thompson's retirement, George was named to represent Canada on the Permanent Committee of the International Congresses of Entomology. The Defence Research Board maintained its entomological interests and established a continuing Advisory Committee, of which George was a member from the beginning and Chairman from 1963-1967. This steady support from another Department for work in medical entomology, the biting flies, and northern insects generally, enabled Ottawa systematists and ecologists to play a part with others across Canada in many interesting projects. Throughout his career George was an active member of the Entomological Society of Canada, and served as President in 1957-1958; he was also Chairman of the committee that launched the Fellowships of the Society, a new honorific class of membership, and was himself duly elected a Fellow in 1976. Equally he encouraged others to play their part, and the long-time Treasurer of the Society and no less than three of its Editors were also from among his Ottawa colleagues. Indeed, for many years not only the *Canadian Entomologist* but also the *Canadian Journal of Genetics and Cytology* were edited from offices hospitably made available in the Neatby Building.

Several challenging modifications in the general organization of entomology in government occurred during this period. In 1955, the Laboratory for Biological Control at Belleville was united with the Systematic Entomology Unit under George Holland's leadership. The two insect geneticists at Belleville were transferred directly to Ottawa and both contributed some very interesting and original studies; the union of the two laboratories under joint leadership was, however, not retained beyond 1967. An even greater change occurred in 1959, with the formation, in Agriculture, of the present Research Branch, which combined the Experimental Farms Service and the Science Service of the preceding period. Several Ottawa leaders of the former Units, based upon disciplines, were drawn into Research Branch management, leaving in each case a small group of active researchers unattached. The latter were mainly ecologists, physiologists and field experimentalists, together with a smaller but well-organized group of nematologists. All these were added to the responsibilities of George Holland, who became thereby the Director of the newly established Entomology Research Institute. Several later transferred, quite appropriately, to the Ottawa Research Station; but the nematologists settled well alongside the insect systematists and the majority of the newcomers were consolidated to form a group of ecologists and physiologists working in an Experimental Biology Section in areas that related to or extended the work of the systematists. Encouraged by George, and aided again by the Defence Research Board and the universities, the Experimental Biology Section mounted six expeditions in the high arctic (1961-1966). They yielded a long series of papers on the systematics, ecology and adaptations of arctic insects, and this wide arctic orientation has recently been revived yet again, both in the successor body, the Biosystematics Research Institute, and in the Biological Survey of Canada. By 1969 the achievement in the biology of arctic insects was also beginning to be applied to a program on the biology of overwintering, a basic though neglected aspect of the ecology of insects throughout Canada.

The work of the Institute as a whole also continued to flourish. Rapid growth in numbers



ended by about the time of the Centennial of Entomology, but some development was still possible. The first acarologist, or rather the first member of the now significant Arachnida section, was appointed in 1961. A need to strengthen the Hymenoptera section appeared, and a good appointment was made — the forerunner of other good appointments more recently. The Canadian Forestry Service transferred two systematists to work as members of the Institute. National Research Council post doctorate fellows came to the Institute, for one or two years, from North America and overseas. The Dipterists, with collaborators from Washington, D.C. and elsewhere, launched an ambitious project for a Manual of the Diptera of North America. Professor Willi Hennig accepted an invitation to visit the Institute for three months in 1967, an occasion that foreshadowed the vigorous interest in evolutionary systematics that now exists, especially among the more recent recruits.

Numerous field parties were organized year by year, and the Canadian National Collection continued to grow rapidly. The main emphasis was on the North American and especially the Canadian fauna, but George realized clearly that the systematic relationships, and even the ecological valency, of a group cannot be fully understood from a limited geographic sample but require a study of the group as a whole. Thus he encouraged his colleagues to develop the collection on as wide a basis as practicable, and it has in fact become one of the most representative of the larger collections of the world. In 1957 Eugene Munroe made an expedition to New Guinea to collect Pyralidae, and almost at the last minute George found it possible to accompany him as an assistant. Thus at the cost of pinning 40,000 moths, George was able to make a large and important collection of fleas, and another important addition to the literature: Contribution towards a Monograph of the Fleas of New Guinea (E.S.C. Memoir 61: 149 pp. 216 figs., 1969). Several collections were made in Europe and in South America; another party visited Nepal (1967) and yet another Peary Land (1966). An especially interesting expedition in 1964 worked in the higher elevations (Canadian zone) of the Sierra Madre Occidental in Mexico; the purpose was to explore a fauna somewhat different to our own where related species, already adapted to Canadian conditions, might be found, and perhaps used in projects for biological control.

During this period also, the Institute — in the first place, that is to say, George Holland — recognized more explicitly that as a unique and national organization it had an obligation to provide an effective national identification service over its field of competence. The systematic research work of the Institute is perhaps best summed up by noting that of the 64 *Memoirs of the Entomological Society of Canada* published from their beginning in 1955 to 1969, no fewer than 47 were written by members of the Institute. These *Memoirs* are mainly substantial revisions, on a North American or occasionally a world basis, of large generic or family groups of many orders. The organization itself increased from 7 to 27 scientists during the first phase of George's leadership, and after the formation of the Entomology Research Institute it increased further to a total of 45.

This then is an outline of the Institute that George Holland presided over in 1969, and that had been built up for 21 years under his leadership from quite small beginnings. Perhaps no one has guided an entomological institution in Canada so successfully for a similar period. Unfortunately, several recent illnesses had left him less able to cope with the demands of a busy day, and he decided that the time had come for him to lay down his responsibility. He continued, of course, as a working scientist, a leading authority on the fleas. He retired formally in 1976, but became an Honorary Research Associate of the Institute and maintained his laboratory and office; and in spite of continuing poor health he was able to bring his great comprehensive work, *The Fleas of Canada, Alaska and Greenland* (E.S.C. Memoir, No. 130, 631 pp., 501 figs., 109 maps) to completion and to distribute copies of the published volume early in 1985. The tally of the fleas of northern North America had been increased during his Ottawa period from 127 to 183.

Following George's stepping down from the leadership, the Institute encountered a somewhat difficult period. Both the nematode group and the Experimental Biology Section were sharply reduced, and the latter later disappeared. The larger Insect Taxonomy Section had a strength and unity of outlook based on a long history, and is now again a flourishing organization, a major component of the Biosystematics Research Institute distinguished especially perhaps by the appointment in recent years of talented younger entomologists interested widely in evolutionary and faunistic systematics.

It is good to be able to record that George Holland's services to entomology, as a scientist and a leader of scientists, were widely recognized. His honorary degree at the Centennial of Entomology celebration has already been mentioned. Then, in 1967, he was elected a Fellow of the Royal Society of Canada; in 1973 he became an Honorary Member of the Entomological Society of Canada; and in 1979 he received the Gold Medal of the Society for outstanding achievement in entomology. It must also have been a special pleasure to him to be named the Chairman of the First International Conference on Fleas, at Lund in 1975.

A visit with George at his home in Ottawa brought out his numerous other interests and hobbies, all of them united, however, by his many sided but harmonious personality. There was



for example, a complete suit of armour, a Japanese stone lamp, and a fine assortment of antique firearms. There was the truly remarkable collection of artifacts, weapons and decorated objects that he had brought home from New Guinea. He carved and coloured elegant totem poles with the authentic style and symbolism of the West Coast Indians; and he patiently constructed a scale model of the famous sailing ship, "The Bounty," complete in every detail. There were innumerable slides, photographs and artifacts from his extensive travels; and, of course, the beloved old accordion which helped pay his way through university and since had often been used to cheer his hunting and fishing companions. A truly complete man; one who enjoyed a full life, including the love of family.

The day after George arrived in Kamloops, he joined the Outdoor Club and there met the girl he would later marry, Jennie Irene Harritt. George and Jennie have three children Geordie, Judy, and Penny. Jennie continues to live in their beautiful home in Nepean, Ontario, at 14 Kitimat Crescent (incidentally, one of the many streets in the district that was given a West Coast Indian name suggested by George).

George's funeral took place in Ottawa, at a moving and prayerful service of the Church of England. His friend, Grant Carman, gave the eulogy and recalled George Holland in a way that must have been a consolation and a delight to his family. To his devoted wife Jennie, and to his children and grandchildren, we offer our own condolences and many happy memories.

Antony Downes  
Robert Glen

### **Leslie A. Lyons 1928 - 1986**

Leslie A. Lyons, 58, died of heart failure at his home in Madison, Wisconsin on February 9, 1986.

After graduating from Macdonald College of McGill University in 1950, Les joined the staff of the Forest Insect Laboratory in Sault Ste. Marie and worked there through many federal departmental changes until 1977 when he retired early and moved to Madison. He was granted an M.A. by Toronto University in 1953 and a Ph.D. by the University of Minnesota in 1960. Les's early work was a masterful study of red pine cone insects, but an outbreak of Swaine's sawfly in northern Quebec in the late 1950's drew him to the *Neodiprion* sawflies which became his special preserve for the rest of his entomological career. From the first, his studies were rigorously directed at an understanding of sawfly population dynamics even though the concept was only coming into currency. Consequently, his data and penetrating analyses became invaluable when mathematical modelling and forest pest management came into vogue. Most of his papers may be found in the *Canadian Entomologist*, and he continued as a reviewer for the 'Can. Ent.' for some years after he retired.

Friends will remember the half-humorous motto that Les kept above his desk: "eschew obfuscation!" Its admonition appeared in the clarity of his writing and in his ability to cut through to the nub of an idea or a problem. Perhaps it also affected his decision to spend his later years on problems he perceived to be more important than his sawflies: nuclear disarmament, world peace and humane treatment of refugees.

Aside from his work, Les will be remembered for his helpfulness, his erudite conversation and his love of music. He is survived by his five children: Ann, Joan, Jill, Thomas and James, all living in Ontario.

Lorne Gardiner  
Sault Ste. Marie

## James Allen Beal 1898 - 1985

Dr. James Beal, 87, forest entomologist, scientist, educator and administrator, died September 9, 1985 of complications following an operation at Duke University Hospital in Durham, North Carolina.

Jim Beal was born May 30, 1898 on a farm in Clifty, Arkansas. He received his secondary education in Abington, Massachusetts, from where, after brief service in World War I, he entered the Massachusetts Agricultural College at Amherst in the fall of 1919. During his years at U. of Mass., he was involved in many extracurricular activities such as varsity football and basketball, membership on the Student Senate, and Class President during his Sophomore and Junior years. He was also an active member of Kappa Sigma fraternity.



One of six members of the undergraduate class of 1923 who majored in entomology, Jim, after graduation, served as an assistant entomologist with the Main State Forest Service in 1923-24. He then undertook graduate studies in forest entomology at New York State College of Forestry, from which he received his Masters Degree in 1925 and Doctors Degree in 1935.

From 1926 to 1939, he was employed as forest entomologist by the USDA Bureau of Entomology and Plant Quarantine in a variety of research positions and locations across the country as follows, including major research effort: Asheville, North Carolina, (1926 to 1929) — biology and ecology of southern pine beetle and turpentine borer; Portland, Oregon, (1929 to 1935) — bark beetles in logging slash, phloem moisture in relation to western pine beetle attack (California as well as Oregon), air and bark temperature effects on bark beetle broad survival, the effects of insects and decay on rate of deterioration of fire-killed timber, impact of hemlock looper; Fort Collins, Colorado (1935 to 1939) — insect pests of shelter belt plantings, biology and control of the Black Hills beetle, biology of the pandora moth in the Rocky Mountains. Being an avid outdoorsman he favored practical field research, and close association with practicing foresters. He published important research findings wherever he worked.

With the creation of a new forestry school at Duke University, Jim was recruited in 1939 to be its Professor of Forest Entomology. He served there until 1950 and attracted many graduate students who have become leaders in forest entomology and forestry across the United States and in Canada. In addition to heading an outstanding academic and graduate program at Duke, Beal maintained close contact with forest pest management problems in the field by spending his summers working with forest pest research and/or control units, from Maine to Colorado to Oregon.

In 1950 Beal returned to the USDA Bureau of Entomology and Plant Quarantine (BE&PQ) to become head of the Division of Forest Insect Investigations, in Washington, D.C., relacing retiring Dr. F. C. Craighead. In 1953, forest insect research in BE&PQ was transferred to the USDA Forest Service, where he became Director of Forest Insect Research, a position he held until his retirement in 1968.

During this long period of administrative responsibility, he directed his energies to developing and leading national efforts to adapting new developments in agricultural insect control to solving serious forest insect problems. In addition to his strong support for basic biological and ecological research, he moved forest insect research in new directions: Evaluation of the effectiveness of newly available insecticides in forested areas; integration of direct, cultural, and biological control methods and their environmental effects; the development of direct and remote sensing procedures for monitoring and survey of forest insect impacts, populations, and treatments; the potential of radiation and insect pathogens as control methods; and basic research on insect pheromones. These were accomplished by his assistance in obtaining new laboratories and equipment, increased support for existing programs, and grants to other agencies and universities.

He retired to Durham, North Carolina and frequently entertained his friends and ex-entomology students at his lovely lakefront home. He also continued a very active interest in hunting deer and wild turkey with gun and bow, up to the year of his death.

Jim was a creative thinker, a careful worker, a patient listener, a considerate associate, as well as a delightful and pleasant person to all he met and worked with. Thus, it is not surprising that he was highly effective and successful in his professional capacities as scientist, educator, administrator.

He was a member of a number of organizations related to his fields of interest, notably the Entomological Society of America, Society of American Foresters, American Forestry Associa-

tion, the National Wildlife Federation and the National Wild Turkey Association. Memorial contributions may be made to the National Wild Turkey Federation, 770 Augusta Rd., Edgefield, S.C. 29824.

His wife Cordelia V. Beal died in 1978. He is survived by his second wife, Irene; son, Raymond (also a USDA forest entomologist); two daughters, Helen and Barbara; eleven grandchildren; and seven great grandchildren.

R. H. Beal, A. T. Drooz,  
F. B. Knight, R. Lyon, R. H. Smith,  
W. Waters, K. H. Wright

### **Alfred Wilkes 1909 - 1985**

It was with a sense of great loss that Alf Wilkes' many friends learned of his sudden passing at home in Ottawa on November 21, 1985.

Alf was born in Birmingham, England on January 7, 1909, moved to Burks Falls, Ontario and subsequently became a technician in the Department of Zoology, University of Toronto. He graduated from the Department of Entomology and Zoology, Ontario Agricultural College in 1935, took advanced studies in genetics in the Department of Zoology, University of Toronto, and received a M.S. in Agr. in 1935 and doctorate in 1940.

After receiving his B.S.A., Alf began a long productive career in the control of forest insect pests at the Dominion Parasite Laboratory, Belleville, Ontario. In 1948 he became Director of the Laboratory following the transfer of the original Director, A. B. Baird, to Ottawa. In 1955, Alf transferred to the Entomology Research Institute, Ottawa, to pursue his studies of chromosomes in many species of insects.

Alf's list of publications attests to his many achievements in a distinguished career. His application of genetics to the breeding and adaptation of insect parasites was a significant advance in biological control. As Director, he developed a research program and recruited staff to implement it. He played a part in the creation of production techniques for insect vectors to be used in biological warfare. He was one of the founders of a new publication, the Canadian Journal of Genetics and Cytology became its first editor, and after retirement oversaw its printing between sessions of curling and golf. He was recipient of the Ramsay Wright award, U. of Toronto 1939-40 and was a member of many scientific societies.

Alf is survived by his wife Reba and daughter Willo. He will be missed by his many friends.

Tom Burnett,  
Ottawa

### **RECENT DEATHS**

Fox, Charlie J. S., Kentville, N.S. On 2 April 1986. Retired scientist on field crops insects, Agriculture Canada and later Nova Scotia Department of Agriculture. Emeritus member ESC.

## MEETINGS

### ANNOUNCEMENTS

*Deuxième Conférence Internationale des Entomologistes d'Expression Française*, organisée par la Société d'Entomologie du Québec, du 15 au 18 juillet 1986, à l'Université du Québec à Trois-Rivières. Conférences libres; symposiums: Ecologie et biologie des moustiques et mouches noires; évolution du développement chez les insectes sociaux; problèmes entomologiques en agriculture; problèmes entomologiques en foresterie.

CONTACT: Dr. Jean-Pierre Bourassa, Département Chimie-biologie, Université du Québec à Trois-Rivières, 3351, boul. des Forges, Trois-Rivières, Québec G9A 5H7.

*21st International Carrot Conference*, at the Longueuil Holiday Inn, Montreal, Quebec, on August 26-27, 1986. A section on carrot protection will present papers on insect pests of carrots.

CONTACT: Dr. Guy Boivin, Research Station, Agriculture Canada, P.O. Box 457, St-Jean-sur-Richelieu, Québec, Canada, J3B 6Z8.

*70th Annual Meeting of the Potato Association of America*, at Cornell University in Ithaca, New York, on July 27-31, 1986.

CONTACT: Joseph B. Sieczka, L.I. Horticultural Research Lab, 39 Sound Avenue, Riverhead, New York 11901, (516) 727-3595 or Donald E. Halseth, Dept. of Vegetable Crops, Cornell University, Ithaca, New York 14853, (607) 256-5460.

*Joint Annual Meeting of the Entomological Society of Canada and the Entomological Society of Manitoba*, 6-8 October 1986, Holiday Inn South Winnipeg, Winnipeg, Manitoba.

CONTACT: Dr. N. J. Holliday, General Chairman, Department of Entomology, University of Manitoba, Winnipeg, Manitoba, R3T 2N2, or Dr. G. H. Gerber, Chairman, Scientific Program Committee, Research Station, Agriculture Canada, 195 Dufour Road, Winnipeg, Manitoba, R3T 2M9.

*XVI Pacific Science Congress* at Seoul, Korea on 20-30 August, 1987.

CONTACT: Prof. Choon Ho Park, Secretary-General, Organizing Committee, XVI Pacific Science Congress, Seoul, 1987, K.P.O. Box 1008, Seoul 110, Korea.

*XVIII International Congress of Entomology*, at the University of British Columbia, Vancouver, B.C., on 3-9 July 1988.

CONTACT: Dr. G. G. E. Scudder, Secretary General, XVIII International Congress of Entomology, Department of Zoology, University of British Columbia, Vancouver, B.C. V6T 2A9. Telephone (604) 228-3168.

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