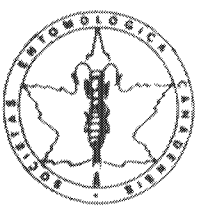
ENTOMOLOGICAL SOCIETY OF CANADA

Bulletin



SOCIÉTÉ ENTOMOLOGIQUE DU CANADA

VOL. 16 June - juin 1984 No. 2

Entomological Society of Canada
Société Entomologique du Canada

Bulletin

Vol. 16 June - juin 1984 No. 2

H. J. Liu: Bulletin Editor

Cover Design: M. A. Sydor

Published by:
The Entomological Society of Canada,
1320 Carling Avenue, Ottawa, Ontario K1Z 7K9

GUEST EDITORIAL

Biting Flies and a National Centre

by
M. M. Galloway*

The late Brian Hocking of the University of Alberta recorded collecting quarts of black flies in less than 10 minutes. He estimated that in some areas, biting flies are so abundant they could drain an unprotected man of half his blood within 105 minutes. Biting flies are an integral feature of the Canadian environment. Topography, extensive water resources, and climate are responsible for thousands of miles of poorly-drained land where breeding sites are so prevalent they produce some of the highest densities of biting flies ever recorded. With few exceptions, Canada's biting fly problems are due to intensity of attacks rather than to disease transmission. Most control effort is initiated to solve 'nuisance' problems, though these may be of severe economic impact.

The Canada Biting Fly Centre is a resource for information and coordination of activities on mosquitoes, black flies and other biting flies in Canada. It is a unique facility. It is concerned with biting fly problems of national and regional significance confronting human health, livestock production, national defence, northern development, environmental quality, industry, wildlife and other aspects affecting the quality of life in Canada. The nature of the problems posed by biting flies fall under the mandate of more than a half dozen Federal Departments. However, no department gives biting flies problems highest priority, although the nature and methods for resolving the problems they cause are common to all. Only Agriculture Canada employs entomologists with expertise in biology and control of biting flies.

The Canada Biting Fly Centre forms a focal information resource which, either directly or indirectly through cooperating organizations and agencies, can meet the needs of the several different mandates which encompass the severe problems caused by biting flies.

The Canada Biting Fly Centre was established through the efforts of Agriculture Canada and the Department of National Defence. These two federal departments have played a major role in biting fly research and control in Canada since the turn of the century. They continue to fund much of the biting fly research in Canada, with the Natural Sciences and Engineering Research Council supporting a significant university-based component.

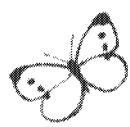
The Centre was established following a feasibility study completed in 1982. The study demonstrated that facilities for providing information related to biting fly control in Canada are inadequate, and identified services for which there is a demand. The Centre has a three component role: information coordination on biting flies and associated problems, and development and maintenance of research and service facilities; a research program funded through contracts and grants by which governments and other agencies can meet their needs for research and service work; and manpower development through postgraduate programs; and training of personnel in abatement and other biting fly technologies. It provides services on organization and execution of abatement programs for the control of biting flies, training personnel concerned with abatement programs, assessment of environmental impact of abatement programs, surveillance of vectors of arboviruses and other pest species of biting flies, coordination of effort directed to alleviating problems caused by biting flies, and integrated pest management of biting flies.

The Centre has been providing services for over three years. As an information resource, the Centre receives requests from an expanding body of government, university, industry and other organizations and individuals. Most concern, predictably, the control of biting flies. Control programs in Canada continue to rely heavily on the application of insecticides and consequently involve environmental impacts of possibly far-reaching significance. The Centre's research and service program, funded by contracts and grants, is directed primarily towards evaluation of existing and potential control strategies: evaluation of efficacy and environmental acceptability of *Bt* H14, a bacterial control agent for mosquitoes and black flies; resource management of stable flies in a national park; environmental implication of municipal mosquito control programs; protocols for implementing new, and assessing ongoing programs. Since its beginning, the Centre has also been concerned with arbovirus surveillance programs, primarily that for Western Equine Encephalitis, the most serious of the

*Director, Canada Biting Fly Centre, Department of Entomology, University of Manitoba, Winnipeg, Manitoba.

arboviral diseases in Canada. The Manitoba surveillance program is one of the most comprehensive in North America. These and other projects are carried out on behalf of Agriculture Canada, the Department of National Defence, Environment Canada; provincial departments of Agriculture, Environment, and Health; and of Industry. The scope of the Centre's activities continues to expand and with it, its annual revenues and its personnel. The growth has been steady.

One eminent visitor to the Centre commented on the paradox of a Centre which, by its conception, works to its own demise. However, like taxes, biting flies will always be with us. Brian Hocking's successors will still be able to catch quarts of black flies, and unprotected men will still suffer. Eliminating biting flies would be no achievement, reducing their impact would be a success, and managing them—a triumph.



Vignettes of Entomology

by

Paul W. Riegert

Reginald Glendenning (1888–1977)

(Photo Credit: Mrs. Nancie Smith)

The small-fruit industry of the Lower Fraser Valley had long been plagued by a host of troublesome insects. Reginald Glendenning, appointed as Officer-in-Charge of the Dominion Entomological Laboratory, Aggassiz, B.C., in 1921, was assigned the task of devising methods to control the depredations of these pests. With diligence, patience, and exactitude he was able to advise the growers how to control the strawberry root weevil, the raspberry cane borer, the raspberry cane girdler, and other noxious insects. In addition to the various Arthropod species that threatened the economic production of small fruits, growers also had to contend with moles.

Particularly annoying was the coast mole, *Scapanus orarius orarius*. It was present in a 100-mile long area of the Fraser Valley extending westward from Hope to Vancouver. Not only were the raspberry plantations being ruined, the sub-surface tunnelling was destroying a variety of roots, bulbs, and corms. The growers requested assistance from various governmental agencies to control the moles. No one was ready to undertake the task, partly because not much was known about moles, and no mammalogist was at hand to do the work. Finally Glendenning accepted the challenge.

He was, perhaps, the best man to do the work because he was the only one at hand who could differentiate between mole and insect damage. Arthur Gibson, the Dominion Entomologist, sanctioned the work; a ten-year research program begun in 1935.

The initial few years were spent in studying the life history and behaviour of moles. Intensive trapping yielded data on population density. Then he tried to control them. He tried poisons, caustic irritants, flooding, and chemical and mechanical barriers. He even resorted to explosives placed in tunnels, and poison war-gases piped into the runways; neither had any effect on the moles but did cause concern and alarm to people in the area. The simplest and most effective method was to trap them using English-made scissor traps. Once reduced in number the moles were slow to re-populate an area. By 1945 Glendenning had learned more about moles than did any other individual in Canada. His diligent work made him the authority on moles, much to the chagrin of some mammalogists who thought that entomologists had no business being knowledgeable about vertebrates.

Glendenning will be remembered as *the* economic entomologist who established methods of control for the coast, and Townsend moles, in Canada. This is just one of the many strange tasks performed by the men who have dedicated their lives to the science of insects.

34th ANNUAL GENERAL MEETING

Notice

The Annual General Meeting of the Entomological Society of Canada will be held Tuesday, October 2, 1984 at 3:30 P.M. at the Algonquin Hotel, St. Andrews, New Brunswick.

Matters for the consideration of this meeting or of the Governing Board meeting, to be held on September 29-30, 1984 at St. Andrews, should be sent to the Secretary, Dr. H. G. Wylie, Research Station, Agriculture Canada, 195 Dafoe Road, Winnipeg, Manitoba R3T 2M9.

La Réunion Annuelle d'Affaires de la Societé Entomologique du Canada aura lieu le mardi, 2 Octôbre 1984, dans l'Hôtel Algonquin, St. Andrews, New Brunswick. Ceux qui desirent soumêttre des propositions pour cette Réunion ou au Conseil de Direction, voudront bien les envoyer à l'addresse donnée plus haut.

ENTOMOLOGICAL SOCIETY OF CANADA
FINANCIAL STATEMENTS
DECEMBER 31, 1983

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, 1983 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, 1983 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.

Ottawa, Ontario,
March 15, 1984.

McCAY, DUFF & COMPANY
Chartered Accountants

Balance Sheet

AS AT DECEMBER 31, 1983

ASSETS	1983	1982
GENERAL FUND		
CURRENT		
Cash	$ 10,334	$ 44,396
Deposit certificates	70,000	40,968
Accounts receivable	39,354	36,052
Accrued interest	12,150	11,352
Prepaid expenses	792	5,191
	132,630	137,959
INVESTMENTS (note 2)	239,644	239,506
	372,274	377,465
ENDOWMENT FUND		
Cash	695	—
Investments (note 2)	23,840	—
	24,535	—
	$396,809	$377,465
LIABILITIES		
GENERAL FUND		
CURRENT		
Accounts payable	$ 13,293	$ 8,486
Due to Scholarships Fund	709	814
Deferred income	55,599	55,161
	69,601	64,461
EQUITY		
GENERAL FUND		
BALANCE — BEGINNING OF YEAR	313,004	303,988
Net revenue (expenditure) for the year	(10,331)	9,016
BALANCE — END OF YEAR	302,673	313,004
	372,274	377,465
ENDOWMENT FUND (note 3)		
BALANCE — BEGINNING OF YEAR	—	—
Bequest received	24,297	—
Interest income	238	—
BALANCE — END OF YEAR	24,535	—
	$396,809	$377,465

Approved on behalf of the Board:

Governor

Governor

Statement of Revenue and Expenditure

FOR THE YEAR ENDED DECEMBER 31, 1983

	1983				
	Canadian Ento-mologist	*Memoirs and Other Publica-tions*	*Society*	*Total*	*1982 Total*
REVENUE					
Regular memberships	$ 14,053	$ —	$14,052	$ 28,105	$ 26,923
Student memberships	1,005	—	1,005	2,010	1,876
Sustaining memberships	—	—	700	700	100
Subscriptions	43,977	28,254	—	72,231	73,410
Reprints	25,141	—	—	25,141	14,507
Page charges	62,666	30,780	—	93,446	70,087
Back issues	3,273	—	—	3,273	7,424
Sales of Memoirs	—	2,753	—	2,753	5,579
Sales of Arctic Arthropods	—	1,231	—	1,231	3,348
Gain on currency exchange	—	—	6,588	6,588	6,565
Government grant	35,000	—	—	35,000	27,000
Miscellaneous income	—	—	258	258	5,581
	185,115	63,018	22,603	270,736	242,400
EXPENDITURE					
Publishing and mailing costs	126,189	43,764	—	169,953	139,959
Reprint costs	14,390	—	—	14,390	9,214
Bulletin publishing and mailing	—	—	14,616	14,616	12,654
Salaries and benefits	43,994	5,660	10,737	60,391	56,184
Office	6,822	105	6,821	13,748	15,901
Professional fees	1,188	—	1,187	2,375	3,200
Prizes, awards, brochure, etc.	—	—	1,255	1,255	1,205
Honoraria	—	—	2,900	2,900	2,900
Committees:					
Education	—	—	400	400	471
Science Policy	—	—	3,510	3,510	1,846
Common Names	—	—	—	—	224
Employment	—	—	772	772	633
Membership	—	—	—	—	676
Finance	—	—	100	100	63
Support of other organizations	—	—	3,991	3,991	3,410
Annual Meeting:					
Grant	—	—	2,500	2,500	350
Honorees	—	—	—	—	1,917
Governing Board:					
Interim meeting	—	—	2,075	2,075	2,539
Annual meeting	—	—	15,994	15,994	11,629
Other meetings	—	—	3,281	3,281	2,361
President's discretionary expenses	—	—	1,629	1,629	235
General	815	—	1,266	2,081	605
	193,398	49,529	73,034	315,961	268,176
NET REVENUE (EXPENDITURE) FOR THE YEAR FROM OPERATIONS	(8,283)	13,489	(50,431)	(45,225)	(25,776)
Interest on investments	—	—	34,894	34,894	34,792
NET INCOME (EXPENDITURE) FOR THE YEAR	($ 8,283)	$13,489	($15,537)	($ 10,331)	$ 9,016

Notes to Financial Statements

DECEMBER 31, 1983

1. SIGNIFICANT ACCOUNTING POLICIES

(a) The Society uses the accrual method of accounting.
(b) Furniture and equipment purchases have been 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

	1983	1982
GENERAL FUND		
Bonds (at cost — market value 1983 — $194,163, 1982 — $193,163)	$199,644	$199,506
Guaranteed investment certificate — 16.5%, 1984	40,000	40,000
	$239,644	$239,506
ENDOWMENT FUND		
Bonds (at cost — market value $23,860)	$ 23,840	$ —

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.

4. COMPARATIVE FIGURES

Certain comparative figures have been reclassified to conform with current presentation.

COMMITTEES

Science Policy Committee: Ideas?

The Science Policy Committee, under the direction of the Governing Board, maintains a Dossier of important entomological subjects in need of study. This enables the Society to develop a strong factual base about problems of high entomological priority in Canada. In addition to the Dossier, the SPC also maintains a listing of neglected areas of research. Items on this second list are available for transfer to the Dossier as circumstances permit. Recommendations to the Governing Board for preparation of a brief will depend on the priority attached to the proposal and on the level of these activities that the Society can sustain.

The Science Policy Committee wishes to advise members of ESC about these lists, and solicits additional subjects for inclusion. Please help us keep these lists up-to-date. The intention of SPC in making this request is to give members an opportunity to participate in improving the flow of information available to the Governing Board. The better informed the Board is, the more effective it is likely to be in acting on behalf of entomology and entomologists in Canada.

Subjects currently on the Dossier include:

1. Microbiological Insecticides: their registration and use in agriculture and forestry.
2. Biological control of insect pests and noxious weeds (by insects) in Canada: organization and implementation of research.
3. Pest Control Products Acts: revision in the light of current ideas about pest management.
4. Provincial regulations for the registration of pest control operators and dealers in agricultural chemicals: a comparative study.

Subjects on the list of neglected areas of research are:

1. Cold-hardiness of northern insect species.
2. Role of terrestrial arthropods in decomposition of plant litter.
3. Insect pathology.
4. Insect transmission of disease.
5. Insect resistance to insecticides.
6. Taxonomy of insect larvae.
7. Insect fauna of sphagnum bogs.

Each submitted proposal should contain a title, and a short statement outlining the importance of the topic. Please send your proposals to:

Susan McIver, Chairperson,
Science Policy Committee, ESC,
Department of Zoology,
University of Toronto,
Toronto, Ontario M5S 1A1

Achievement Awards Committee: Gold Medal for Outstanding Achievement in Canadian Entomology and The C. Gordon Hewitt Award, Call for Nominations

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.

Where are all the potential Hewitt Award winners?

This issue of the Bulletin carries the first announcement of the call for nominees for the Gold Medal and the C. Gordon Hewitt Awards. The Hewitt Award has not been awarded for 2 years and during those 2 years, only 3 nominations have been received. Where are the potential young scientists that should be nominated? Are we in an age group that no longer exists or is everyone below the age of 40 in a slump and not producing outstanding achievements? Obviously, this is not the case but why have so few nominations been received by the Achievement Awards Committee? Perhaps the effort of preparing the documentation to support the award has turned people off. We cannot simplify the documentation as this is the only way the Selection Committee can make a judgement. Certainly it takes a major effort to prepare a nomination for either the Gold Medal or the Hewitt Award, but someone has to do it. We have had excellent nominees for the Gold Medal Award over the years and deserving winners. We admit it is easier to prepare nomination documents for someone who is well established and at the crest of his career compared to a young scientist who is on his way up. But I urge all of you to look at your establishments and consider who will meet the qualifications for the C. Gordon Hewitt Award and then sit down and make a nomination. There have been many worthy recipients of this award in past years and I am sure there are equally deserving scientists out there somewhere.

Harold F. Madsen
2nd Vice-President, ESC

Membership Committee: Honorary Membership

The Honorary Members of the Society are R.E. Balch, J.S.L. Daviault, R. Glen, G.P. Holland, G.F. Manson, J.H.H. Philips, A.D. Pickett, M.D. Proverbs and A.G. Robinson.

The By-Laws permit the election of one more Honorary Member by the ballot in 1985. Any five active members may submit, for consideration by the Membership Committee, the name of a member who has made an outstanding contribution to the advancement of entomology. The Committee may nominate members for election to Honorary Membership.

Submissions, accompanied by supporting statements (biography and recent photograph), should be sent to the undersigned, for forwarding to the Committee. Previous submissions will not be considered by the Committee unless they are resubmitted. The committee determines by consensus the nominations to be placed on the ballot that is sent to all members.

Les Membres Honoraires de la Société sont R.E. Balch, J.S.L. Daviault, R. Glen, G.P. Holland, G.F. Manson, J.H.H. Philips, A.D. Pickett, M.D. Proverbs and A.G. Robinson.

Les status permettent l'élection d'un autre Membre Honoraire au prochain scrutin de 1984. Tout groupe de cinq membres actifs peut soumettre au comité des membres le nom d'un sociétaire qui à fait une contribution exceptionnelle à l'avancement de l'entomologie. Le Comité des Membres peut proposer des sociétaires pour élection comme Membre Honoraire.

Les nominations, accompagnés de documents pertinents (biographie et photos récente) doivent parvenir au sous-signé pour soumission eventuelle au Comité. Les nominations antérivres ne seront pas considérées par le Comité et doivent être soumises à nouveau. Le Comité décide par consensus des nominations présentés sur le bulletin de vote et envoyé à tous les membres.

J.M. Campbell
Biosystematics Research Institute
Agriculture Canada
Ottawa, Ontario K1A 0C6

Fellowship Selection Committee: New Fellows

The Fellowship Selection Committee has nominated, and the Governing Board has approved, the following candidates as Fellows of the Entomological Society of Canada:

D.G. Harcourt	— Ottawa, Ontario
P. Harris	— Regina, Saskatchewan
E.E. Lindquist	— Ottawa, Ontario
W.D. Seabrook	— Fredericton, New Brunswick
I.W. Varty	— Fredericton, New Brunswick

B.J.R. Philogène
Chairman
Fellowship Selection Committee

Scholarship Committee: The ESC Scholarship Fund

Eighty donations from 65 individual donors and one society were received during 1983; these totalled $4,211. The Scholarship Fund now totals $30,463. A $1,500 donation from the Entomological Society of Alberta is gratefully acknowledged. The donations from 65 individuals averaged over $42 with nine donations of $100 or more and 14 donations ranging from $50 to $99.

The 1983 donors are listed below:

Anonymous (1)
Arnason, Mrs. E., Ottawa, Ont.
Ball, G. E., Edmonton, Alta.
Barnes, Martin M., Riverside, CA
Bodnaryk, Robert P., Winnipeg, Man.
Boiteau, Gilles, Fredericton, N.B.
Borden, J., Burnaby, B.C.
Brust, Reinhart, Winnipeg, Man.
Byers, George W., Lawrence, KS
Carrow, J. R., Fredericton, N.B.
Chance, Mary, Winnipeg, Man.
Chenier, Robert, Ottawa, Ont.
Cloutier, Conrad, Quebec, Que.
Cram, W. T., Vancouver, B.C.
Davies, D. M., Hamilton, Ont.
Demars, C. J., Berkeley, CA
Doane, J. F., Saskatoon, Sask.
Downes, J. A., Ottawa, Ont.
Entomological Society of Alberta
Fedde, G. F., Athens, GA
Forbes, R. S., Fredericton, N.B.
Fredeen, F. J. H., Saskatoon, Sask.
Gooding, R., Edmonton, Alta.
Gyrisco, George G., Ithaca, NY
Handford, R. H., Victoria, B.C.
Hayes, L. B., Somalia
Heming, Bruce S., Edmonton, Alta.
Heming, W. E., Burlington, Ont.
Hidaka, T., Japan
Hobbs, Elizabeth M., Lethbridge, Alta.
Holliday, N. J., Winnipeg, Man.
Holmberg, Robert G., Edmonton, Alta.
Hudson, Anne, Ottawa, Ont.
Jacobson, L. A., Lethbridge, Alta.
Klimaszewski, Jan, Ottawa, Ont.
Lindgren, Staffan, Vancouver, B.C.
MacGillivray, M. E., Fredericton, N.B.
McLean, John A., Vancouver, B.C.
McFarlane, J. E., Ste. Anne de Bellevue, Que.
McIver, Susan, Toronto, Ont.
McNeil, Jeremy, Quebec, Que.
Morris, Ray F., St. John's, Nfld.
Pechuman, L. L., Ithaca, NY
Philip, H.G., Vegreville, Alta.
Read, Dean C., Charlottetown, P.E.I.
Riotte, J. C., Honolulu, HI
Rosenberg, David M., Winnipeg, Man.
Safranyik, L., Victoria, B.C.
Smith, D. L. T., Saskatoon, Sask.
Smith, L. B., Winnipeg, Man.
Stevenson, A. B., Vineland Station, Ont.
Storch, Richard H., Orono, ME
Sweeney, Jan, Vancouver, B.C.
Terata, Hohji, Japan
Tonks, N. V., Victoria, B.C.
Turgeon, Jean, Sault Ste. Marie, Ont.
Underwood, G. R., Fredericton, N.B.
Vinson, S. Brad, College Station, TX
Volney, W. Jan A., Berkeley, CA
Whitman, Richard, Kentville, N.S.
Wiggins, Glenn B., Toronto, Ont.
Wigmore, R. Hazen, Yarker, Ont.
Wilkinson, A. T., Vancouver, B.C.
Wise, Ian, Regina, Sask.
Wood, Peter W., Castlegar, B.C.
Wyatt, G. R., Kingston, Ont.

Scholarship Fund Balance Sheet

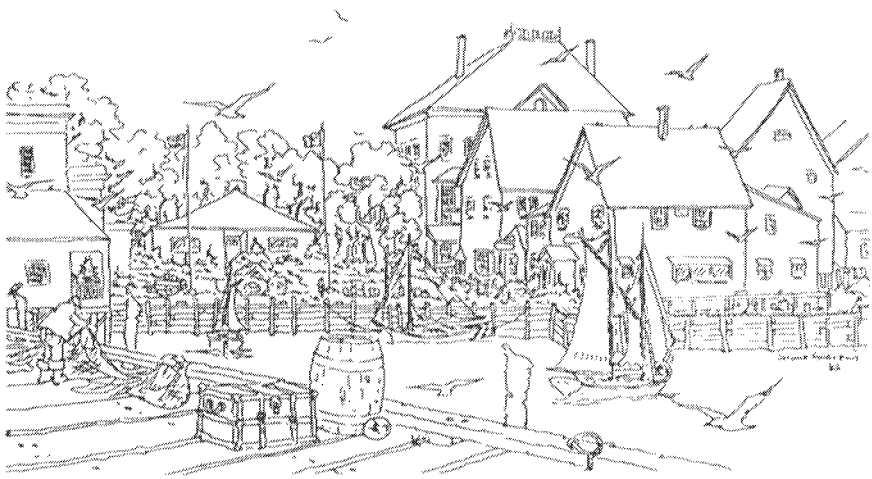
AS AT DECEMBER 31, 1983

ASSETS	1983	1982
INCOME FUND		
Cash	$ 6,109	$ 4,125
Due from General Fund	709	814
	6,818	4,939
CAPITAL FUND		
Cash	2,082	1,841
Investments — bonds — at cost (Quoted market value — $29,305, 1982 — $25,180)	28,465	24,495
	30,547	26,336
	$37,365	$31,275

EQUITY ACCOUNT		
INCOME FUND		
Balance — beginning of year	$ 4,939	$ 3,539
Interest income	3,879	3,400
	8,818	6,939
Scholarship awards	2,000	2,000
Balance — end of year	6,818	4,939
CAPITAL FUND		
Balance — beginning of year	26,336	24,946
Donations received	4,211	1,390
Balance — end of year	30,547	26,336
	$37,365	$31,275

St. Andrews By-The-Sea new brunswick canada

JOINT MEETING 1984
ENTOMOLOGICAL SOCIETY OF CANADA
ACADIAN ENTOMOLOGICAL SOCIETY



OUR 1984 MEETING PROGRAMME IS NOW SET. THIS WILL BE A BUSY EVENT WITH SIX SEPARATE SYMPOSIA, TWO SHORT COURSES AND TOURS DESIGNED WITH BOTH ACADEMIC AND TOURIST INTERESTS IN MIND.

HERE IS A SHORT OUTLINE OF THE PROGRAMME. NOTE THAT SOME SYMPOSIA RUN CONCURRENTLY, AS DO THE SHORT COURSES.

SUNDAY 30 SEPTEMBER — REGISTRATION

MONDAY 1 OCTOBER — REGISTRATION

PLENARY SYMPOSIUM:
ENTOMOLOGICAL PERSPECTIVE ON RESEARCH MANAGEMENT
- E. J. LEROUX

THEME PRESENTATION: RESOURCE HISTORY IN THE ATLANTIC PROVINCES - D. M. YOUNG

PRESIDENTIAL ADDRESS AND HERITAGE LECTURE: ENTOMOLOGICAL HISTORY IN THE ATLANTIC PROVINCES - R. F. MORRIS

FEDERAL POLICY OBJECTIVES - E. J. LEROUX

POTATO RESOURCE MANAGEMENT - R. H. STORCH

FRUIT CROP RESOURCE MANAGEMENT - W. ROBERTS

FOREST RESOURCE MANAGEMENT - F. E. WEBB

CONCERNS OF PRODUCER, ENVIRONMENTALIST AND THE PUBLIC - S. B. HILL

ALFALFA BLOTCH LEAFMINER - D. T. QUIRING

NATURAL ENEMIES OF PESTS IN AGROECOSYSTEMS - B. D. FRAZER

WILLOW GALL SAWFLIES - P. W. PRICE

SYMPOSIUM 6: AQUATIC INSECTS OF PEATLANDS AND MARSHES - D. M. ROSENBERG AND H. V. DANKS

PEATLAND AND MARSH REGIONS OF CANADA - S. C. ZOLTAI

VERTEBRATE FAUNA OF PEATLAND AND MARSHES - B. D. J. BATT

ODONATA - D. F. HILTON

HEMIPTERA - G. G. E. SCUDDER

EPHEMEROPTERA AND TRICHOPTERA - J. F. FLANNAGAN

BITING FLIES - D. J. LEWIS

CHIRONOMIDAE - D. A. WRUBLESKY

COLEOPTERA - R. ROUGHLEY & D. J. LARSEN

SYNTHESIS AND IDENTIFICATION OF RESEARCH NEEDS - D. M. ROSENBERG & H. V. DANKS

SUBMITTED PAPERS - SYMPOSIA 2, 3, 4

PHEROMONE RESEARCH INFORMATION MEETING

THURSDAY 4 OCTOBER

SUBMITTED PAPERS: SYMPOSIA 5 & 6, ALL OTHERS

POSTER SESSION

SHORT COURSE 1: MODELLING AND COMPUTERS - R. A. FISHER

SHORT COURSE 2: SPRAY TECHNOLOGY - I. W. VARTY

FIELD TRIPS

A FULL PROGRAMME IS BEING MAILED TO ALL SOCIETY MEMBERS. ALL MEMBERS AND NON-MEMBERS ARE INVITED TO THE MEETING. THE RELAXED ATMOSPHERE, PICTURESQUE SETTING AND RECREATIONAL OPPORTUNITIES OF ST. ANDREWS WILL ALSO MAKE FOR A SPLENDID HOLIDAY FOR YOUR SPOUSE, FAMILY OR GUESTS.

MONDAY	1 OCTOBER	ANNUAL GENERAL MEETING
		SYMPOSIUM 1: HUMAN RESOURCES IN ENTOMOLOGY IN CANADA - D. J. MADDER
TUESDAY	2 OCTOBER	SYMPOSIUM 2: RESOURCE MODELLING - W. CUFF (CONCURRENT WITH SYMPOSIUM 3)
		INTRODUCTION TO RESOURCE MODELLING FOR ENTOMOLOGISTS - T. B. A.
		USE OF MODELS IN RESOURCE MANAGEMENT - H. D. WALKER
		RESOURCE MODELS - EMPHASIS ON THE PEST - J. M. HARDMAN
		RESOURCE MODELS - BALANCED EMPHASIS ON PEST AND CROP - W. J. BLOOMBERG
		RESOURCE MODELS - EMPHASIS ON THE CROP - R. W. JONES
		TO MODEL OR NOT TO MODEL. ON SPRUCE RESOURCE MANAGEMENT AND MODELLING - A. FISCHLIN
		SUBMITTED PAPERS ON RESOURCE MODELLING
		SYMPOSIUM 3: ADVANCES IN BIOLOGICAL CONTROL - A REVIEW - W. D. SEABROOK (CONCURRENT WITH 2)
		BT - O. N. MORRIS
		VIRUSES - J. C. CUNNINGHAM
		PHEROMONES - J. BORDEN
		HORMONES - S. S. TOBE
		PARASITOIDS - J. E. LAING
		BANQUET
WEDNESDAY	3 OCTOBER	SYMPOSIUM 4: CHEMICAL CONTROL - STATE OF THE ART H. F. MADSEN (CONCURRENT WITH 5 & 6)
		REGISTRATION AND REGULATION - W. E. STEWART
		TECHNOLOGY APPLICATION - F. R. HALL
		TECHNIQUES FOR IMPROVED TIMING - M. E. WHALON
		PESTICIDE RESISTANCE - D. C. READ
		MICROBIAL INSECTICIDES - R. P. JAQUES
		PESTICIDES IN FORESTS - H. J. IRVING
		SYMPOSIUM 5: CURRENT ENDEAVOURS IN POPULATION DYNAMICS - J. N. MCNEIL
		SPRUCE BUDWORM - J. REGNIERE
		GYPSY MOTH - J. S. ELKINTON

ENTOMOLOGICAL SOCIETY OF CANADA / ACADIAN ENTOMOLOGICAL SOCIETY

PRE-REGISTRATION FOR 1984 ANNUAL MEETING

ST.ANDREWS-BY-THE-SEA, NEW BRUNSWICK, SEPTEMBER 30 - OCTOBER 4

*** SEPARATE RESERVATIONS SHOULD BE MADE WITH THE ALGONQUIN HOTEL IF ACCOMODATION IS DESIRED AT THE MEETING SITE - CARD ENCLOSED**********

NAME: _____ ADDRESS: _____

CITY/PROVINCE OR STATE _____ POSTAL CODE _____

NAME(S) OF SPOUSE/GUESTS: _____

Registration Fees (includes banquet, payable in Canadian funds at par to The Acadian Entomological Society

REGULAR ----------$50.00 ---- ☐ if mailed before 31 August

STUDENT ----------$25.00 ---- ☐

SPOUSE/GUEST ----------$25.00 ---- ☐

Total Enclosed ----------$ _____

REGISTRATION FEE will be $60.00 after 31 August.

PRE-REGISTRATION NOW ! ! ! If you cannot make the meeting and cancel your pre-registration by 31 August, your registration fees will be returned less a penalty of $10.00 per person.

****

QUESTIONNAIRE

TRAVEL* How do you expect to arrive? Air (Saint John) _____; Car _____; Other _____

When do you expect to arrive? date: _____ time: _____

When do you expect to depart? date: _____ time: _____

Ground transport can be arranged for popular incoming and departing flights.

Would you like ground transport incoming? _____ outgoing? _____

COOKOUT Would you be interested in a lobster cookout down by the sea ☐
Cost is estimated at $23.75.

BABYSITTING Would you be interested in babysitting services at some point during the meeting or banquet? _____ how many children? _____

FIELD TRIPS Are you interested in one of these field trips * scheduled for Thursday afternoon or Friday. All are tentative. None conflicts with scientific sessions.

WETLANDS _____ FUNDY MARINE LIFE _____

BLUEBERRY FARMING _____ PULP MILL AND FOREST _____

ATLANTIC BIOLOGICAL STATION AND HUNTSMAN MARINE LABORATORY _____

TOURS Are you or your family, or guests interested in one or more of these tours* to be scheduled during the meeting program time.

FUNDY MARINE LIFE _____ CAMPOBELLO BOAT CRUISE _____

SAINT JOHN HISTORIC & SHOPPING _____ ST. ANDREWS WALKING TOUR _____

ATLANTIC BIOLOGICAL STATION AND HUNTSMAN MARINE LABORATORY _____

* See brochure for further description

****

Please return to: Dr. A. W. Thomas
Maritimes Forest Research Centre
P.O. Box 4000, Fredericton, N.B.
Phone (506) 452-3523

Student Competition Information

STUDENT MEMBERS (and supervisors!) TAKE NOTE:

The Acadian Entomological Society is sponsoring a competition for the best paper presented by a student on any entomological subject at the joint meeting with the Entomological Society of Canada in St. Andrews this fall. The competition is open to any full-time student registered at the meetings who is a member of either the Entomological Society of Canada or of any of its affiliated societies.

Papers entered in the competition will be evaluated for both scientific content (50%) and for presentation (50%). Interested students should indicate that they wish to enter the competition when submitting an abstract.

A prize of two hundred dollars (Canadian) will be awarded to the winner.

Biological Survey of Canada
Conference on Aquatic Insects of Peatlands and Marshes: Announcements and Call for Papers

To be held on: Wednesday, October 3, 1984 (0800-1700 hrs.)
In conjunction with: The Acadian Entomological Society/Entomological Society of Canada Joint Meeting, September 30 - October 4, 1984, St. Andrews-By-The-Sea, New Brunswick

The objectives of the Conferences are to (1) summarize current knowledge on the aquatic insects of Canadian bogs, fens, and marshes; (2) identify research needs; and (3) initiate cooperative programs to fulfill these needs.

Invited papers (10)

The morning session will consist of invited speakers who will characterize peatlands and marshes in Canada, review the status of systematic and ecological studies on major groups of aquatic insects that occur in these habitats, and from this information identify future research needs and potential cooperative research.

Submitted papers (up to 10)

The afternoon session will comprise submitted papers: treatments of other aquatic insect and non-insect groups, techniques for studying aquatic invertebrates in wetlands, and general ecological studies are welcome.

The Conference organizers are soliciting the submission of papers for this session. The time allotted, including discussions, will be 15 minutes per paper. Abstracts not exceeding 250 words should be submitted to one of the undersigned *before July 1, 1984*, and will be evaluated by review for inclusion in the afternoon session.

Dr. David M. Rosenberg
Freshwater Institute
Fisheries and Oceans Canada
501 University Crescent
Winnipeg, Manitoba
R3T 2N6

Dr. Hugh V. Danks
Biological Survey Project
(Terrestrial Arthropods)
National Museum of Natural Sciences
Ottawa, Ontario
K1A 0M8

Wetlands field trip

The Conference will end with a one-day tour of wetland habitats near St. Andrews on Thursday, October 4. See ESC/AES Tours Notice for details, or write tour leader Wayne Fairchild, Maritimes Forest Research Centre, Box 4000, Fredericton, N.B. E3B 5P7.

HUMAN RESOURCES IN ENTOMOLOGY IN CANADA

Current Status (1983) and Future Projections

Prepared for the Entomological Society of Canada
by D.J. Madder, G.B. Kinoshita, R.S. MacDonald and S.M. Smith

ABSTRACT

A survey of entomological personnel in Canada was conducted by the Entomological Society of Canada in 1983. The objectives were to review predictions made in 1975; to examine any changes in supply and demand resulting from the implementation of recommendations put forth in 1975; and to project changes in the human resources in entomology in Canada for the next 5 years. Questionnaires were sent to entomologists, graduate students in entomology, and employers of entomologists in Canada.

Five hundred professional entomologists responded to the questionnaire. The number, geographical location, and educational level of entomologists were essentially unchanged since 1975. The average age of respondents had declined by one year to 42.7 years. As in 1975, the largest number of entomologists was employed by the federal government (43%), followed by educational institutions (36%), provincial governments (14%), and industry (6%). Increases were apparent in educational institutions and industry while a decline was evident in the federal government. Over half of the entomologists held doctoral degrees (61%) and there was little change in the proportion employed by each employer group at a given level of education. The primary functions of entomologists remained the same with most in research (63%), teaching (10%), administration (7%), and extension (6%). The number of entomologists in administration and teaching decreased while the number in research increased. Most entomologists worked in specializations of ecology (23%), forest entomology (15%), applied pest control — biological (13%), and chemical (13%), or systematics (9%). Entomologists had a higher number of support staff and higher salaries in 1983 than in 1975. Sixty percent of entomologists plan to retire at age 65. The proportion of female entomologists in the work force increased from 7.0% in 1975 to 11.1% in 1983. This trend will continue as almost one-third of all graduate students are female.

One hundred sixty-three graduate students responded to the questionnaire. Of these, 60% were in M.Sc. programs and 40% in Ph.D. programs. Entomology graduate students attended 24 different universities in 1983 compared with 15 in 1975. Over 75% of the graduate students were at 9 Canadian universities. The most popular sub-disciplines in decreasing order were: ecology, applied pest control — biological, systematics, and forest entomology. The preferred function of graduate students was research. On the basis of expected retirements, some specializations were undersupplied (i.e., applied pest control — chemical and toxicology), while others were oversupplied (i.e., applied pest control — biological, ecology and forest entomology).

From this study it was concluded: a) there were no major changes in the overall human resources situation for entomologists in Canada between 1975 and 1983 and no major changes are expected in the next 5 years; b) a shift in priorities has occurred at educational institutions from teaching to research; c) there remains an imbalance between the projected supply of graduate students and the demand for their services.

INTRODUCTION

In 1975, the Entomological Society of Canada conducted a survey of the entomological manpower in Canada. The results were summarized in the Bulletin of the Entomological Society of Canada, Vol. 8(3). Three major conclusions were reached:

1. "A grave imbalance was present between the predicted supply and demand for entomologists; the supply would outstrip the demand by three to one until the mid-1980's;

2. Supply and demand problems would be more severe in some sub-disciplines than in others;
3. Pessimism existed amongst entomologists as to the future of entomology in Canada due to a lack of long-term planning by the federal government."

It was obvious from these findings that substantial amounts of money were being spent to educate students, at a cost of ca. 100 thousand dollars per student, in fields where they were not needed. There was an immediate need to improve communication between producers and employers of entomologists so that the emphasis on entomological training might reflect society's need. In addition, it was apparent that there was a need for government to develop and clarify scientific policies, programs, and objectives enabling universities to train entomologists in areas where they could find jobs.

To review the accuracy of the 1975 predictions and project trends for the next 5 years, the Entomological Society of Canada conducted a survey of human resources in entomology in 1983. The primary objectives of this survey were to:

1. Determine if the 1975 survey accurately predicted the human resources situation in entomology in Canada since that time;
2. Determine if the problems of oversupply in certain sub-disciplines and undersupply in others have been corrected due to implementation of recommendations of the 1975 survey;
3. Assess the human resources situation in entomology in Canada for the next 5 years.

The study was supported by Agriculture Canada through Supply and Services Canada and was completed in January, 1984. This report summarizes the major findings of the study, but omits much of the information collected. Those interested in detailed information may obtain a copy of the full report from the Society.[1]

METHODOLOGY AND DATA SOURCES

The study was conducted by the Entomological Society of Canada by the four members of the 1983 Employment Committee: D. J. Madder, G. B. Kinoshita, S. M. Smith, and R. S. MacDonald. The work was guided by a Scientific Committee (F. L. McEwen, C. R. Harris, H. J. Herbert, and D. J. Madder) who assisted in designing the survey and reviewing the report of the Study Team. The primary data sources were comprised of two sets of questionnaires; one sent to professional entomologists, the other to entomology students. Mailing lists were compiled from membership lists of the Entomological Society of Canada, the seven regional societies in Canada, the Entomological Society of America, and the Biological Survey of Insects in Canada. Six hundred thirty-two professional entomologists (58%) responded. Of these, only 500 were pertinent as 132 were returned from amateurs, people who had changed professions, or retired entomologists, and 17 were returned after the analyses were completed. One hundred sixty-three graduate students responded with 138 pertinent to the study. All information from professionals and students was coded, entered into an Amdahl main-frame computer and the data processed using SPSS.[2] A third set of questionnaires was distributed to 146 managers (employers) of entomologists across Canada, however, returns from this group were not sufficient to provide valid data.

Two assumptions were made in analyzing the data: 1) the sampling methods used provided data that were representative of the entire professional and student entomological community (this may not be true as the sampling method was based, with no viable alternative, on membership in an entomological society), and 2) the data collected were comparable to that of the 1975 survey (this is believed to be true with one exception noted in the text).

PROFESSIONAL ENTOMOLOGISTS

(a) *Current Employment*

As in 1975, the largest number of entomologists work in Ontario, followed by Quebec, British Columbia, Alberta and Manitoba (Table 1). The largest number of entomologists was

employed by the federal government, followed by educational institutions, provincial governments and industry. The number of entomologists responding from the federal government declined in most provinces while increases were evident at educational institutions and industry. The number of entomologists working with provincial governments remained almost unchanged. Ontario had the largest number of entomologists working for the federal government, educational institutions and industry, whereas Quebec had the largest number working for a provincial government.

Table 1. Entomologists employed in each province by employer in 1983.

Province	*Federal Government*	*Provincial Government*	*Industry*	*Educational Institutions*	*Total*
BC	29 (- 3)*	10 (+2)	4 (+2)	18 (- 1)	61 (0)
Alberta	17 (- 5)	11 (-4)	2 (+2)	21 (+10)	51 (+ 3)
Saskatchewan	15 (- 6)	3 (-5)	3 (+3)	3 (- 4)	24 (-12)
Manitoba	24 (+ 1)	5 (+1)	5 (+4)	9 (0)	43 (+ 6)
Ontario	71 (-10)	10 (+7)	12 (+2)	62 (+10)	155 (+ 9)
Quebec	15 (0)	18 (+1)	1 (-1)	35 (+12)	69 (+12)
Prince Edward Island	1 (- 1)	0 (0)	0 (0)	1 (- 1)	2 (- 2)
New Brunswick	14 (+ 1)	3 (0)	0 (0)	7 (+ 3)	24 (+ 4)
Nova Scotia	6 (- 3)	4 (-3)	1 (0)	1 (- 5)	12 (-11)
Newfoundland	3 (- 3)	1 (-1)	0 (0)	7 (+ 4)	11 (0)
TOTAL	195 (-29)	65 (-2)	28 (+12)	164 (+28)	452 (+ 9)

*Net change in number of entomologists employed for each category between 1975 and 1983 in parentheses.

As in 1975, the majority of entomologists indicatd either research (63%) or teaching (10%) as their main function (Table 2). At educational institutions, however, there was a distinct shift in the primary function of entomologists from teaching in 1975 to research in 1983. The number of entomologists employed in an administrative function declined. Many entomologists, however, were still engaged in a number of functions apart from their primary responsibility, particularly those in educational institutions, provincial governments, and industry. There was a substantial increase in the number of entomologists who cited the function category "Other". Most of these entomologists did not work for the four major employers. They were self-employed (21), working at museums (4), or working overseas (13).

The number and proportion of entomologists in each specialization followed the same trends as in 1975 (Table 3). Most entomologists identified their specialization as insect ecology (103), followed by forest entomology (see note at bottom of Table 3), applied pest control — biological, applied pest control — chemical, systematics, and physiology. There was a significant decline in the number of entomologists employed as physiologists while increases were evident in applied pest control — biological, ecology, and morphology. The apparent decline in applied pest control — chemical, is primarily associated with the use of the new categories of forest entomology and plant protection.

Ecologists were employed, primarily, by the federal government and educational institutions. Forest entomologists and those in applied pest control — biological, were employed by both levels of government and educational institutions. Although all agencies employed entomologists working in applied pest control — chemical, fewer were found at educational institutions. Systematists were hired primarily by educational institutions and the federal government, whereas the educational institutions were the major employers of morphologist and physiologists.

(b) *Age*

The average age of all entomologists declined between 1975 and 1983 from 44.0 to 42.7 years. The average age of entomologists working for each employer in 1983 was: federal government 45.5, provincial government 31.6, industry 39.7, and educational institution 42.4.

(c) *Educational Background*

Most entomologists (61%) responding to the survey held a doctorate degree and the majority of these were employed by educational institutions or the federal government (Table

Table 2. Primary functions of entomologists by employer.

Function	Federal Government	Provincial Government	Industry	Educational Institutions	Total
Administration	9 (- 7)*	7 (-8)	5 (-2)	9 (- 1)	30 (-18)
Extension	5 (- 3)	18 (0)	2 (+2)	3 (+ 1)	28 (0)
Consulting	1 (- 7)	4 (+2)	1 (-1)	0 (0)	6 (- 6)
Survey	9 (+ 4)	3 (-1)	0 (-1)	0 (0)	12 (+ 2)
Pest Control Operators	4 (+ 1)	6 (+2)	1 (0)	0 (0)	11 (+ 3)
Regulatory	4 (+ 3)	5 (0)	2 (+2)	0 (0)	11 (+ 5)
Research	158 (-19)	15 (+6)	7 (+7)	103 (+64)	283 (+58)
Teaching	2 (+ 1)	1 (-3)	0 (0)	43 (-43)	46 (-45)
Technical Development	0 (- 1)	2 (+1)	8 (+1)	1 (- 1)	11 (0)
Sales	0 (0)	0 (0)	1 (+1)	0 (0)	1 (+ 1)
Other	2 (- 3)	4 (+1)	1 (+1)	4 (+ 4)	11 (+ 3)

*Net change in number of entomologists employed for each category between 1975 and 1983 in parentheses.

Table 3. Number of entomologists in each specialization with each employer in 1983.

Specialization	Federal Government	Provincial Government	Industry	Educational Institutions	Total
Apiculture	3 (- 2)*	6 (+ 1)	0 (0)	6 (+ 2)	15 (+ 1)
Applied Pest Control Biological	35 (+ 1)	7 (+ 3)	1 (0)	14 (+ 8)	57 (+12)
Applied Pest Control Chemical	17 (- 7)	16 (- 9)	17 (+2)	6 (+ 1)	56 (-13)
Ecology	49 (+ 1)	3 (- 2)	3 (+3)	48 (+ 9)	103 (+11)
General***	0 (-15)	0 (- 7)	0 (0)	6 (- 5)	6 (-27)
Morphology	3 (+ 1)	1 (+ 1)	0 (0)	10 (+ 5)	14 (+ 7)
Physiology	3 (- 6)	0 (0)	0 (0)	22 (- 5)	25 (-11)
Systematics	17 (-14)	2 (- 1)	0 (-1)	22 (+ 8)	41 (- 8)
Toxicology	7 (- 4)	2 (+ 1)	0 (0)	3 (0)	12 (- 3)
Forest Entomology**	39 (+39)	15 (+15)	1 (+1)	10 (+10)	65 (+65)
Plant Protection**	2 (+ 2)	8 (+ 8)	2 (+2)	1 (+ 1)	13 (+13)
Other**	18 (-18)	4 (-11)	1 (0)	14 (- 7)	37 (-36)

* Net change in number of entomologists employed for each category between 1975 and 1983 in parentheses.

** Categories of Forest Entomology and Plant Protection were not included in 1975. Gains in these areas probably reflect losses from the categories of applied pest control — chemical and "Other."

***Losses in this category may be due to more specific assignments in other categories.

Table 4. Percentage of entomologists at each educational level by employer in 1983.

	Percentage of Entomologists				
Degree	Federal Government	Provincial Government	Industry	Educational Institutions	Total
Diploma	4 (+1)*	9 (+4)	4 (- 8)	0 (-1)	3 (0)
B.Sc.	10 (0)	20 (-3)	30 (-11)	8 (+1)	13 (0)
M.Sc.	18 (-1)	48 (+6)	41 (+12)	12 (0)	23 (+1)
Ph.D.	69 (0)	23 (-7)	26 (+ 8)	80 (-1)	61 (-2)

*Net change in percentage of entomologists employed for each category between 1975 and 1983 in parentheses.

4). There was very little change in the proportion of entomologists employed by the federal government or educational institutions at a given level of education. The provincial government, however, showed an increase in the proportion of entomologists with master's degrees, while there was a general trend in industry to hire entomologists with higher degrees. Generally, plant protection, applied pest control — chemical, and apiculture had the lowest proportion of entomologists with doctorates, while physiology, ecology, toxicology, systematics, and morphology had the highest.

Each employer, with the exception of industry, showed increases in the number of entomologists who had obtained their Ph.D. from Canadian institutions (Table 5). The provincial government, in particular, had a high proportion of entomologists with Canadian doctorates. There has been a general decline in the employment of entomologists with doctorates from Britain or the United States while the number of entomologists with doctorates from the "Other" category increased. These changes may be due to the retirement of those entomologists hired during the late 1940's and early 1950's, many of whom received their doctorates in the United States or Britain.

(d) *Support*

There was a decline in the number of entomologists with 1 or less support staff while the number of entomologists supervising 2 or more support staff increased (Table 6). The lowest number of support staff were associated with physiologists and morphologists, while the highest with those in general entomology, forest entomology, plant protection, or ecology.

Entomologists with higher degrees received higher salaries (Table 7). The overall mode for entomologists with diplomas being $25,000 - $30,000; B.Sc. $25,000 - $30,000; M.Sc. $30,000 - $35,000; and Ph.D. > $40,000. Salaries within educational levels increased with the age of the entomologists. The highest paid functions were administration followed by research and teaching, while the lowest paid functions were sales, regulatory, or pest control.

Table 5. Origin of Ph.D. employed by each agency in 1983.

	Percentage of Entomologists				
Origin of Degree	*Federal Government (N = 136)*	*Provincial Government (N = 14)*	*Industry (N = 7)*	*Educational Institutions (N = 131)*	*Total (N = 288)*
Canada	49 (+12)*	71 (+21)	29 (+29)	48 (+10)	50 (+11)
United States	36 (-11)	29 (- 1)	57 (-10)	25 (- 2)	32 (- 5)
Britain	12 (- 3)	0 (-20)	14 (-19)	15 (-20)	13 (-10)
Other	3 (+ 2)	0 (0)	0 (0)	12 (+12)	6 (+ 5)

*Net change in percentage of entomologists employed for each category between 1975 and 1983 in parenthesis.

Table 6. Staff support for entomologists by employer in 1983.

Number of Staff	*Federal Government*	*Provincial Government*	*Industry*	*Educational Institutions*	*Total*
0	19 (- 5)*	7 (-10)	3 (+1)	21 (-18)	50 (-32)
1	89 (-57)	16 (-12)	8 (+1)	51 (-16)	164 (-89)
2	34 (+11)	7 (+ 3)	1 (-3)	23 (+ 4)	65 (+15)
+3	28 (- 3)	19 (+ 5)	8 (+3)	32 (+19)	187 (+24)

*Net change in number of entomologists employed for each category between 1975 and 1983 in parentheses.

Table 7. Salary of entomologists by degree of education in 1983.

	Salary Range ($1,000.)							
Degree of Education	15	15-20	20-25	25-30	30-35	35-40	40	Total
Diploma	1	1	3	6*	1	4	14	
B.Sc.	5	2	13	9*	9	9	6	53
M.Sc.	8	3	12	17	14*	12	30	96
Ph.D.	4	5	12	24	31	33	174*	283

*Represents mode of each group. The mode was used in analysis since a breakdown of salary in excess of $40,000. was not included and a significant proportion of entomologists were within this range.

Table 8. Number of entomologists planning to retire at indicated age by employer in 1983.

Age of Retirement	Federal Government	Provincial Government	Industry	Educational Institutions	Total
65+	96 (+ 5)*	28 (-7)	16 (+9)	108 (+7)	248 (+14)
60	70 (-16)	20 (+3)	9 (+3)	25 (+6)	124 (- 4)
55	13 (-12)	9 (+4)	1 (-2)	8 (+2)	31 (- 8)
50	5 (- 5)	3 (-2)	0 (-2)	1 (-4)	9 (-13)

*Net change in number of entomologists employed for each category between 1975 and 1983 in parentheses.

Table 9. Number of entomologists planning to retire at each age by specialization in 1983.

	Age of Retirement				
Specialization	65	60	55	50	Total
Apiculture	7	2	2	0	11
Applied Pest Control — Biological	28	22	6	3	59
Applied Pest Control — Chemical	23	25	6	0	52
Ecology	65	30	3	1	99
General	2	2	1	0	5
Morphology	6	3	2	1	12
Physiology	17	5	0	0	22
Systematics	33	5	3	1	42
Toxicology	8	3	0	1	12
Forest Entomology	36	20	3	4	63
Plant Protection	10	2	1	1	14
Other	19	11	4	2	36

(e) *Retirement Plans*

More than half of all entomologists plan to retire at age 65 or later (Table 8). Only slight changes were evident since 1975 with a small increase in the proportion planning to remain at work until age 65. Entomologists employed by educational institutions had the highest proportion of those planning to remain to age 65, followed by industry, the federal government, and the provincial government. Based on geographical location, more than 60% of entomologists plan to remain until age 65 in P.E.I., Ontario, New Brunswick, and Quebec. The

highest proportion of those planning to retire before 65 were in Saskatchewan and Nova Scotia.

Entomologists employed as systematists, physiologists, and those in plant protection plan late retirement (Table 9), while those involved in general entomology and applied pest control — biological and chemical, plan relatively early retirements. Generally, entomologists with doctorate degrees plan a later retirement than those with other degrees. As in 1975, entomologists employed in administration, or extension plan to retire earlier than those in research or teaching.

(f) *Female Entomologists*

Of the 500 respondents in 1983, 55 (11%) were female, an increase of 4% since 1975. Ontario had the largest number of women entomologists followed by British Columbia and Manitoba. Substantial increases occurred in the number of women entomologists employed in Ontario, Manitoba, and British Columbia, while declines were evident in Nova Scotia and Quebec. Educational institutions employed the greatest proportion of women followed by the federal government. The federal government employed a lower proportion of women in relation to its total entomology work force, whereas most provincial governments employed a relatively high proportion of women.

Generally, female entomologists were younger than average ($\bar{x}$ = 35 years) and were not found in administrative positions. Women had less support staff than their male counterparts and received lower salaries. This may be a function of both education (relatively few held doctorates) and age (most were relatively young). The education level of women entomologists, in comparison to men, showed a relatively low proportion of Ph.D.'s and a high proportion of other degrees. Since 1975, the proportion of female entomologists with M.Sc. degrees has increased significantly while the proportion with Ph.D.'s has decreased.

A greater number of women entomologists were involved in applied pest control — biological, and physiology while comparatively few worked in the areas of applied pest control — chemical, and ecology. In addition, proportionally fewer female entomologists were engaged in teaching while the proportion engaged in extension was greater than average.

GRADUATE STUDENTS

In 1983, entomology graduate students attended 24 different universities in Canada, as well as several foreign universities, compared to 15 in 1975. This increase in diversity was primarily at the master's level. Simon Fraser University still has the largest number of graduate students (22) although substantial increases were evident at Laval University and the University of Guelph (Table 10).

Table 10. Universities with four or more Canadian graduate students in entomology in 1983.

	Number of Students in Each Program			
University	*B.Sc.**	*M.Sc.*	*Ph.D.*	*Total*
Simon Fraser University	1	15 (-5)**	6 (+1)	22 (- 3)
University of British Columbia	0	8 (-1)	6 (-1)	14 (- 2)
University of Alberta	0	4 (-1)	2 (-4)	6 (- 5)
University of Saskatchewan*	0	2	2	4 (+ 3)
University of Manitoba	0	5 (-1)	4 (-1)	9 (- 2)
University of Guelph	4	10 (+1)	5 (0)	19 (+ 5)
University of Toronto	0	1 (-2)	3 (-1)	4 (- 3)
McGill University	0	5 (-2)	4 (-3)	9 (- 6)
Laval University*	0	6	6	12 (+ 9)
Other	1	20	3	24 (+12)
U.S. and Foreign Universities	0	1	7	8 (+ 6)

* Individual breakdown by degree and university are not available from 1975 survey.

**Net change in total number of graduate students at each university between 1975 and 1983 in parentheses.

As in 1975, approximately 60% of the graduate students were enrolled in M.Sc. programs (50 male, 27 female) and 40% in Ph.D. programs (37 male, 11 female). The proportion of women pursuing graduate studies in entomology increased from 18% in 1975 to 31% in 1983 with more seeking master's degrees and fewer seeking doctorate degrees. As in 1975, the two most popular specializations selected by graduate students, both as the primary and secondary choice, were ecology and applied pest control — biological (Table 11). The proportion of students studying ecology increased, while that studying applied pest control — biological, decreased. Systematics and forest entomology were also popular specialities in 1983.

Research was by far the most preferred function of graduate students with a substantial increase in this function since 1975 and a corresponding decrease in the teaching function (Table 12). Students showed increased flexibility with 73% indicating that they would accept employment anywhere in Canada or throughout the world.

Table 11. Number of graduate students according to specialization in 1983.

	Primary Student Choice by Program			*Total*	
Specialization	*B.Sc.*	*M.Sc.*	*Ph.D.*	*1st Choice*	*2nd Choice*
Apiculture	1	3	2	6 (+ 2)*	3
Applied Pest Control — Biological	1	13	8	22 (- 9)	27
Applied Pest Control — Chemical	1	4	0	5 (- 4)	9
Ecology	2	26	21	49 (+23)	24
General	0	0	0	0 (- 9)	0
Morphology	0	1	0	1 (- 2)	1
Physiology	0	3	1	4 (- 4)	8
Systematics	1	9	6	16 (+ 5)	11
Toxicology	0	1	0	1 (- 3)	2
Forest Entomology**	0	11	4	15 (+15)	4
Plant Protection**	0	2	0	2 (+ 2)	0
Other**	0	4	5	9 (-10)	5
TOTAL	6	77	47	130	

* Net change in number of students between 1975 and 1983 in parentheses.

**Forest Entomology and Plant Protection were not included in the 1975 survey and their inclusion here may account for the reduction in the number listed as "Other."

Table 12. Function preferred by entomology students in 1983.

Number of Students										
Admin.	*Extn.*	*Consult.*	*Surv.*	*PCO*	*Regul.*	*Res.*	*Teach.*	*Tech. Dev.*	*Sales*	*Other*
0 (-1)*	12 (+1)	8 (+1)	4 (0)	8 (+1)	0 (0)	89 (+25)	6 (-18)	0 (-1)	0 (0)	0 (0)

*Net change in number of students selecting each function between 1975 and 1983 in parentheses.

THE DEMAND FOR AND SUPPLY OF ENTOMOLOGISTS

In the 1983 survey, 62 (42%) of 146 questionnaires sent to managers of entomologists were returned. As several large groups of entomologists were not represented in these returns, it was felt that detailed analyses of the returns would not produce valid data. Projections, based on retirement plans, however, proved reasonably accurate in 1975 and these data were available from the professional entomologists questionnaire. Therefore, in 1983, retirement data were used to estimate the number of entomologists required over the next 5 and 10 years (Table 13). Although these estimates assume that all positions will be filled by entomologists in a similar sub-discipline, they are probably conservative in that 100% response to the survey was not attained. In most specializations the proportion of entomologists retiring in the first 5 years was greater than that planning retirement within 5 to 10 years. The training of, and degrees expected by entomology students was shown in Table 11. All but 3 students will have completed their studies within the next 5 years while all doctoral candidates will have graduated within the next 4 years. In the next 5 years, there will be 121 graduating students. In almost all specializations there will be an oversupply of entomology students. The exceptions are in pest control — chemical, morphology, and toxicology.

Table 13. Number of entomologists in the present work force and employment opportunities based on retirements by specialization.

Specialization	*Total Number in Present Work Force*	*Number Retiring*	
		5 Years	*10 Years*
Apiculture	15	2	2
Applied Pest Control — Biological	62	11	16
Applied Pest Control — Chemical	59	11	17
Ecology	110	17	14
General	6	0	0
Morphology	14	2	2
Physiology	25	3	4
Systematics	46	8	13
Toxicology	12	1	4
Forest Entomology	67	5	9
Plant Protection	15	2	5
Other	37	7	11
TOTAL	468	69	107

1. *Apiculture*
   There is a significant oversupply of apiculturists in view of the very low demand. Only 2 apiculturists will be required in the next 10 years while 6 will have graduated by 1988.
2. *Applied Pest Control — Biological*
   Eleven positions will be open in this specialty in the next 5 years and 16 in the next 10 years. Twenty-two students are presently in training in this specialty with 20 graduating by 1988. There is an oversupply at both the doctorate and master's levels for the next 5 years. This oversupply is compounded by the large number of entomologists receiving secondary training in applied pest control — biological.
3. *Applied Pest Control — Chemical*
   Eleven positions will be open in this specialty in the next 5 years and 17 in the next 10 years. There is an under-supply at each educational level in this specialization.
3. *Ecology*
   There will be 17 openings for ecologists in the next 5 years and 24 in the next 10 years. Despite this very high demand, there is still an oversupply of students especially at the master's level.

5. *Generalists*
No generalists are retiring in the next 10 years and none are being produced. There are very few entomologists in this category.
6. *Morphologists*
Two morphologists will retire in the next 5 to 10 years while only 1 morphologist is receiving training at this time at the master's level. There is a very low demand in this area, and a low supply.
7. *Physiologists*
Three physiologist positions will be open in the next 5 years and 4 in the next 10 years. Four students are receiving training in physiology, 3 master's and 1 doctorate. This would indicate a slight undersupply at the doctorate level and oversupply at the master's level. An additional 8 students, however, are receiving secondary training in this field and as a result there may be a slight oversupply.
8. *Systematics*
Eight positions will open in systematics in the next 5 years and 13 in the next 10 years. Supply equals demand in the next 5 years at the doctorate level, but a substantial oversupply exists at the master's level.
9. *Toxicologists*
One position will open in this field in the next 5 years, and 4 in the next 10 years. This field is undersupplied as only 1 student is receiving primary training at the master's level.
10. *Forest-Entomology*
Five positions will open in forest entomology in the next 5 years and 9 in the next 10 years. This area is oversupplied at both education levels with 11 students graduating with master's degrees and 4 with doctorates in the next 5 years.
11. *Plant Protection*
This category must be considered in conjunction with applied pest control — biological, and chemical. Considered by itself, there is an undersupply. Two openings will occur within the next 5 years and 5 within the next 10 years. Only 2 entomologists are being trained in this area at the master's level. Those trained in applied pest control — biological, however, in which there is an oversupply, may qualify for plant protection openings.

The supply of, and demand for, entomologists as analysed by function indicates that most students prefer research as a primary function followed by extension, consulting, and applied pest control (Table 14). Teaching was a surprisingly low proportion of the first choice although it was the largest second choice. When first and second preferences are considered, there is little imbalance with the current situation.

Table 14. Percentage of students indicating their choices for work function and percentage of current work force in entomology employed in each function.

	Student Choice (%)			
Function	*1st*	*2nd*	*3rd*	*Entomologists Employed in Function (%)*
Administration	0	1	4	7
Extension	9	9	11	6
Consulting	6	11	17	2
Survey	3	10	17	3
Pest Control Operations	6	11	16	3
Regulatory	0	1	1	3
Research	69	17	8	60
Teaching	5	38	19	10
Technical Development	0	2	7	3
Sales	0	0	0	0
Other	2	0	0	4
Unknown	5	6	25	3

DISCUSSION

This report provides a brief overview of entomological personnel in Canada and has identified several areas requiring the attention of administrators, policy-makers, and entomologists. As noted in the 1975 report, there was and there remains, a significant imbalance in the predicted demand for, and supply of, entomologists in the next 5 years. In some specializations the supply will be 2 to 3 times the predicted demand, while in a few specializations supply will not meet demand. Some 121 students of entomology will be graduating in the next 5 years while only 69 openings are expected during that time. The fate of many of these students is probably to leave the country or leave the profession. This process is already occurring as evidenced by the number of questionnaires returned by students now in other professions. In 1975, it was recommended that efforts be made to improve communication between employers and producers of entomologists so as to reduce this substantial imbalance. Data in our report indicate that this situation still exists to the same extent as in 1975 and that these recommendations were not implemented, except in physiology.

In terms of specialization, the present report suggests that there has been little change in the career preferences of students receiving advanced training. Ecology and applied pest control — biological, are still selected by students over applied pest control — chemical, and toxicology despite definite career opportunities in the latter and limited opportunities in the former. Changes have occurred, however, in the functions to which students aspire. Significantly more foresee their professional role as researchers rather than as teachers. This may reflect dissatisfaction with the educational system as a whole or, more likely, a general shift in emphasis within the educational institutions from teaching to research. Support for this theory comes from the educational institutions themselves where more professors see their primary function as research.

The number, geographical location, and educational level of entomologists in Canada has remained almost unchanged since 1975. Generally, the primary functions of entomologists also remained the same with research first (60%) and teaching second (10%). In addition, the proportion of entomologists within each primary specialization was the same as in 1975, with ecology, forest entomology, applied pest control — biological and chemical, being the most common. Very few entomologists classified themselves as generalists. As with other disciplines, there appears to be a shift in entomology towards specialization.

Of particular interest in the 1983 survey was the increase in the number of women involved in entomological work. The proportion of female entomologists in the labour force increased 4% between 1975 and 1983. This trend will definitely continue as almost one-third of all entomology graduate students are women. Female entomologists were younger than their male counterparts, were more involved in applied pest control — biological, and physiology, and were more likely to have completed a master's degree than a doctorate degree. They were more apt to work in extension services within the provincial governments than research positions within the federal government. Female entomologists had fewer support staff and lower salaries than male entomologists in similar positions although this may have been due to their overall lower degree of education and age.

Both in 1975 and 1983, industry employed fewer entomologists than the other sectors. It appears that the recommendation put forth by the Lamontagne report with respect to the transfer of research capabilities by the federal government to the industrial sector has not been implemented on a large scale.

At educational institutions, there has been a marked shift in emphasis from teaching to research. Most entomologists at educational institutions plan to remain until age 65 (76%). The general increase in staff support for entomologists was particularly apparent at educational institutions. This probably reflects an increase in the amount of contract funding available to these institutions.

In summary, there were no major changes in human resources in entomology in Canada between 1975 and 1983. The number of entomologists in the labour force remained fairly constant and the trend to a reduction in numbers seen up to 1975 was not continued. At educational institutions, a decided shift in priorities, from teaching to research, has occurred. Recommendations in 1975 emphasized the "immediate and continuing need for effective long-term science policy by employers and the transfer of this policy to the universities". Despite this, the major imbalance between the projected supply of graduate students and the demand for their services observed in 1975 is still apparent today. Entomologists have an important role to play in Canada's future and a considerable number of young Canadians wish to be educated in this field. Therefore it is important that those policies which will set priorities for future employment for entomologists should also be compatible with the direction of future entomological training.

FOOTNOTES

[1]A Manpower Study of Entomologists in Canada. Entomological Society of Canada. 1983.
[2]Statistical Package for the Social Sciences. 1975 Nie, N. H., C. H. Hull, J. G. Jenkins, K. Steinbrenner, and D. H. Brent. 2nd Edition. McGraw-Hill, Inc., Toronto. 675 pp.

ENTOMOLOGICAL SOCIETY OF CANADA/ACADIAN ENTOMOLOGICAL SOCIETY

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SUBMITTAL PAPERS AND POSTERS SOLICITATION: STUDENT COMPETITION: REPLY FORM

I wish to present a paper ☐ (15 min. max)

I wish to present a poster ☐

Author(s): _____

Institute and Address: _____

Paper or Poster Title: _____

(be brief)

Preferred disciplinary grouping for your paper:

Tues	Oct 2	Resource Modelling ☐		Biological control	☐
Wed	Oct 3	Chemical control ☐		Population dynamics	☐
Thur	Oct 4	Pheromones ☐		Other, specify	☐

(Wetlands Conf: Aquatic Insects - see separate announcement sheet)

Projection equipment: 35 mm slides_____; 2 x 2 slides_____; Overhead_____;
16 mm_____.

I wish this paper to be judged in the student competition ☐
(see information sheet)

Deadline: postmarked on or before July 15, 1984.

Abstract: please enclose a typed abstract of 200 words or less with this form. Prepare your title and summary carefully to incite interest and offer real information. More people will read your abstract than will hear your talk or study your poster.

Please return to: Dr. A. W. Thomas
Maritimes Forest Research Centre
P.O. Box 4000, Fredericton, N. B. E3B 5P7
Phone (506) 452-3523

*** N O N - C O M M I T T A L R E G I S T R A T I O N ***

****

Planning a large conference is a difficult and uncertain procedure, not knowing how many to expect. Would you help us out by sending in this notice if you have reasonable expectations of coming but you are not sending in your pre-registration form at this time?

I/We hope to attend the 1984 Joint Meeting in St. Andrews by the Sea, New Brunswick:

Name(s): _____

_____

Address: _____

_____

_____

_____

MEETING ANNOUNCEMENTS

Joint Meeting *Entomological Society of Canada and Acadian Entomological Society*, at the Algonquin Hotel, St. Andrews, New Brunswick, on 30 September - 4 October 1984.
CONTACT: Dr. G. Boiteau, Agriculture Canada Research Station, P.O. Box 20280, Fredericton, New Brunswick E3B 4Z7. Telephone (506) 452-3260. (Further information, pre-registration and submitted paper forms in this Bulletin issue).

Annual Meeting *Entomological Society of Ontario*, at the Petawawa National Forestry Institute, Chalk River, Ontario, on 13-15 September 1984.
CONTACT: Dr. W.H. Fogel, Petawawa National Forestry Institute, Canadian Forestry Service, Chalk River, Ontario K0J 1J0. Telephone (613) 589-2280.

Annual Meeting *Canadian Pest Management Society*, at the Winnipeg Convention Centre, Winnipeg, Manitoba, on 20 - 22 August 1984.
CONTACT: Dr. N.J. Holliday, Department of Entomology, University of Manitoba, Winnipeg, Manitoba R3T 2N2.

I Canadian Congress of Biology, organized by the Biological Council of Canada, at the University of Western Ontario, London, Ontario, on 23 - 28 June 1985.
CONTACT: Dr. Glenn Wiggins, Department of Entomology, Royal Ontario Museum, 100 Queen's Park, Toronto, Ontario M5S 2C6. (Further information will be published in subsequent issues of the Bulletin).

Annual Meeting *Florida Entomological Society*, at the Sheraton Hotel, Ocho Rios, Jamaica, on 5 - 8 August, 1985.
CONTACT: Dr. Carl S. Barfield, Department of Entomology and Nematology, 3103 McCarty Hall, University of Florida, Gainesville, FL 32611, U.S.A. Telephone (904) 392-7089.

International Meeting on Cladistics in Systematics, organized by the Willi Hennig Society, Systematics Association and Linnean Society, in London, England, in July, 1984.
CONTACT: Dr. C.J. Humphries, Department of Botany, British Museum (Natural History), Cromwell Road, London SW7 5BD, England.

Annual *Livestock Insect Workshop*, at the Sheraton Inn, West Lafayette, Indiana, U.S.A., on 9 - 12 July, 1984.
CONTACT: Ralph Williams, Department of Entomology, Purdue University, West Lafayette, IN 47907, U.S.A. Telephone (317) 494-4560.

VI International Symposium on Biological Control of Weeds, at the University of British Columbia, Vancouver, B.C., on 19 - 25 August, 1984.
CONTACT: Dr. Judith Myers, Institute of Animal Resource Ecology, 2204 Main Mall, University of British Columbia, Vancouver, B.C., V6T 1W5.

International Symposium on the Queen Charlotte Islands, at the University of British Columbia, Vancouver, B.C., on 21 - 24 August 1984. (field trip 24 August - 3 September 1984).
CONTACT: Dr. G.G.E. Scudder, Department of Zoology, 6270 University Blvd., University of British Columbia, Vancouver, B.C. V6T 2A9.

Spruce Budworms Research Symposium, at Bangor, Maine, on 16 - 20 September, 1984.
CONTACT: Dr. F.B. Knight, University of Maine, School of Forest Resources, Orono, ME 04469, U.S.A.

International Union of Forest Research Organizations, working parties on *Population Dynamics and Scolytid Bark Beetles*, at Göttingen, West Germany, on 13 - 18 August, 1984.
CONTACT: Prof. S. Bombosh, Institut für Forstzoologie, Universitat Gottingen, West Germany.

XVII International Congress of Entomology, in Hamburg, West Germany, on 20 - 26 August, 1984.
CONTACT: Dr. Thomas Tischler, Zoologisches Institut des Universitat, Abt. Angewandt Okologie Kustenforschung, Biologiezentru, Olshansenstr. 40/60, D-2300 Kiel 1, West Germany.

I International Congress of Comparative Physiology and Biochemistry, in Liège, Belgium, on 27 - 31 August, 1984.
CONTACT: Professor R. Gilles, CPB Congress of IUBS, ESCPB Executive Office, Laboratory of Animal Physiology, University of Liège, 22, quai Van Beneden, B-4020, Liège, Belgium.

XI International Congress for Tropical Medicine and Malaria, in Calgary, Alberta, on 16 - 22 September, 1984.
CONTACT: Secretariat XI ICTMM, University of Calgary, Calgary, Alberta T2N 1N4.

International Conference on the Movement and Dispersal of Biotic Agents, at Louisiana State University, Baton Rouge, Louisiana, U.S.A., on 17 - 19 October 1984.
CONTACT: Dr. D. R. MacKenzie, Conference Chairman, Department of Plant Pathology, and Crop Physiology, 302 Life Sciences Building, Louisiana State University, Baton Rouge, LA 70803, U.S.A.

II International Congress on Computers in Science, at the Washington Hilton, Washington, D.C., U.S.A., on 28 October - 1 November 1984.
CONTACT: Mr. E. Ruffing, Sherago Associates, 1515 Broadway, New York, N.Y. 10036, U.S.A. Telephone (212) 730-1050.

III International Congress of Systematic and Evolutionary Biology, at the University of Sussex, Brighton, England, on 4 - 10 July 1985.
CONTACT: Dr. B. Cox, ICSEB Congress Office, 130 Queen's Road, Brighton, Sussex BN1 3WE, U.K.

NEWS OF ORGANIZATIONS

Entomological Society of Washington: Centennial

In March of this year, the Entomological Society of Washington celebrated its 100th birthday, and marked the occasion with a banquet held at the University of Maryland.

President Ray F. Morris forwarded the following congratulatory letter to N. O. Morgan, President of the Entomological Society of Washington:

22 February, 1984

Dear Dr. Morgan:

On behalf of the Entomological Society of Canada I am particularly pleased to send warm greetings and congratulations to you and members of the Entomological Society of Washington on the occasion of your 100th Birthday. This is a very opportune time for all entomologists in Canada to recognize with appreciation the contribution that your Society has made to the science of entomology.

The ESC would like to underline the important contribution the Proceedings of the Entomological Society of Washington continues to make to the advancement of entomology throughout North America. I am sure that if the members who presided over the founding of the Entomological Society of Washington in 1884 were alive today they would no doubt be highly elated to witness the vitality of the Society and its greatly expanded membership.

We trust your Centennial Celebrations, to be held on 12 March 1984, will be a great success, and we wish you well as you embark upon your second century of service to the entomological profession.

Sincerely,
Ray F. Morris
President, ESC

Professional Pest Management Association of B.C.: Award of Excellence

The Professional Pest Management Association of British Columbia has given its 1984 Award of Excellence to *Simon Fraser University's Centre for Pest Management* "in recognition of its outstanding contribution in the training of professional pest managers. The Centre has made the largest single contribution to the profession in the province." Centre director Manfred Mackauer accepted the award on behalf of "former and current" members of the Centre at the Association's annual meeting.

The Young Entomologists Society, formerly The Teen International Entomology Group

As of about February 1, 1984 the Teen International Entomology Group (T.I.E.G.) ceased to exist and all assets, funds, materials, and responsibilities reverted to International Amateur Entomologists League (I.A.E.L.) and to the Young Entomologists Society (Y.E.S.). All former T.I.E.G. members are invited to participate in Y.E.S.

Y.E.S. serves as an organization through which members from a variety of geographical locations can exchange information about insects through correspondence and group publications. The organization's name reflects its youth orientation, but "young" members of any age are needed for its many activities and functions.

The Society's publication, Y.E.S. QUARTERLY, is full of "how to" articles, collecting tips, news, field notes, life history information, identification tips, and virtually every other entomological topic, including the non-insect arthropods. Nearly all of the articles are written by the members themselves. In addition, the members tell about themselves and their specific interests via a member directory and the "tradingpost".

Membership in Y.E.S. is open to all individuals, young or old, amateur or professional, with an interest in entomology. Therefore, there are four membership categories: youth members (up to age 18), collegiate members, adult members and sustaining members. Membership contributions are given on application.

Members may elect to place a listing in the Y.E.S. Directory, that is if they are interested and willing to correspond or exchange specimens with other members. These activities are, of course, optional because they require a high degree of commitment to fellow members.

Further information and application forms may be obtained from Y.E.S., c/o Department of Entomology, Michigan State University, East Lansing, Michigan 48824-1115 USA.

International Commission on Zoological Nomenclature

Reference: ITZN 59 30 March, 1984

The following Opinions and Directions have been published by the International Commission on Zoological Nomenclature in the *Bulletin of Zoological Nomenclature*, volume 41, part 1, on 29 March, 1984:

Opinion No.

1264 (p. 8) *Oscinis plumigera* Loew, 1860 (Insecta, Diptera): suppression by use of the plenary powers.

1270 (p. 22) *Chrysomela flavicornis* and *C. tibialis* Suffrian, 1851 (Insecta, Coleoptera): conserved.

1273 (p. 28) *Anaspis*, *Luperus*, *Lampyris* and *Clerus* (Insecta, Coleoptera): determination of authorship and fixation of type species.

1274 (p. 32) *Notonecta striata* Linnaeus, 1758 (Insecta, Hemiptera): neotype designated under the plenary powers.

1276 (p. 36) *Semblis marginata* Panzer, 1799 (Insecta, Plecoptera): conserved.

The Commission regrets that it cannot supply separates of Opinions.

Reference: ITZN 11/4 A.N.(S.) 129 30 March, 1984

The Commission hereby give six months notice of the possible use of its plenary powers in the following cases, published in the *Bulletin of Zoological Nomenclature*, volume 41, part 1, on 29 March, 1984 and would welcome comments and advice on them from interested zoologists.

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

Case No.

1759 *Heliconius erato* Aurivillius, 1882 (Insecta, Lepidoptera): proposed conservation under the plenary powers.

2266 *Curculio picirostris* Fabricius, 1787 and *Tychius stephensi* Schönherr, 1836 (Coleoptera, Curculionidae): proposed conservation under the plenary powers.

2312 *Dapsilarthra* Foerster, 1862 (Insecta, Hymenoptera): proposed conservation under the plenary powers.

R. V. Melville (Secretary)
c/o British Museum (Natural History)
Cromwell Road,
London, SW7 5BD
England

COURSES

International Training Course on Crop Loss Assessment at the University of Minnesota, St. Paul, Minnesota, U.S.A. on 9 - 20 July 1984.
CONTACT: Dr. Paul S. Teng, Department of Plant Pathology, University of Minnesota, St. Paul, MN 55108, U.S.A.

International Course on Plant Protection at the International Agricultural Centre, Wageningen, The Netherlands, on 23 July - 2 November 1984.
CONTACT: Director, International Agricultural Centre, Postbus 88, 6700 AB Wageningen, The Netherlands.

Scanning Electron Microscopy and X-Ray Microanalysis: Theory and Practice, at Lake Mohonk, New Paltz, New York, U.S.A. Materials Science on 15 - 19 October 1984; Biology and Medicine on 22 - 26 October 1984; Advanced SEM/X-Ray Microanalysis on 22 - 26 October 1984.
CONTACT: Dr. A. V. Patsis, Materials Research Laboratory, Coykendall Science Building, State University of New York, New Paltz, New York 12561, U.S.A.

PERSONALIA

President *Ray F. Morris* (left) presented *W. Don Duckworth*, President of the Entomological Society of America, with an autographed copy of his book, *"Butterflies and Moths of Newfoundland and Labrador"*. The presentation was made during the annual meeting of the Entomological Society of America, held at the Westin Hotel, Detroit, Michigan, 28 November - 2 December 1983.

B. K. Mitchell has been appointed Chairman of the Department of Entomology, University of Alberta. Bev is Assistant Editor of the Bulletin. In his new position he succeeds *George E. Ball*, Past President. We extend our congratulations.

B. Staffan Lindgren joined PMB/Stratford Projects Ltd., Vancouver, Canada, on 1 March, 1984, as research director. He will be responsible for research with the objective to test and develop semiochemical technology for operational use in pest management. Staffan received a Filosofie Kandidat degree from the University of Uppsala, Sweden, his Master of Pest Management degree and his doctorate from Simon Fraser University, Burnaby, B.C., Canada.

POSITION AVAILABLE

Assistant Professor, Chemicals/Pesticides—Tenure-track position. Duties cover major program responsibilities in cooperative extension (70 percent) and applied research (30 percent) related to the chemicals/pesticides program. Qualifications include a Ph.D. in agricultural toxicology, with strong training in plant/animal protection, for example, entomology, pesticide technology, pesticide regulation, integrated pest management. Send curriculum vitae, post-secondary transcripts, names of three or four referees to: *M.J. Tauber, Chair, Department of Entomology, Cornell University, Ithaca, N.Y. 14853.* Application deadline: 31 July 1984.

PUBLICATIONS:

The Canadian Entomologist: Manuscripts Received

Margaret McBride, Managing Editor, assembled this table of numbers of manuscripts received.

Manuscripts received January 1977 to December 1983

	1977	1978	1979	1980	1981	1982	Mean	S.D.	1984	
Jan.	12	23	21	19	13	19	21	18.29	3.88	21
Feb.	18	19	15	18	27	30	24	21.57	5.10	18
Mar.	21	28	25	24	22	20	26	23.71	2.66	27
Apr.	15	15	25	16	19	17	21	18.29	3.41	
May	16	23	15	11	16	27	19	18.14	4.97	
June	17	15	16	10	20	33	31	20.29	7.92	
July	4	15	15	24	4	17	13	13.14	6.62	
Aug.	21	15	23	12	13	14	30	18.29	6.13	
Sept.	17	18	13	16	26	16	14	17.14	3.94	
Oct.	18	13	20	17	10	17	10	15.00	3.70	
Nov.	19	20	16	15	18	23	14	17.85	2.90	
Dec.	17	10	10	14	16	15	16	14.00	2.67	
Totals	195	214	214	196	204	248	239			

Note: Mail strike 16 July through 12 August 1981.

D. C. Eidt
Former Scientific Editor

Book Review

Beaver, P. C., R. C. Jung and E. W. Cupp. 1984. *Clinical Parasitology*. Ninth Edition. Lea and Febiger. viii + 825 pp. Hard cover. $U.S. 51.50.

This book which has long been established as the most comprehensive reference and textbook of human parasitology has been revised to include recent information that has developed due to change in human life-style, new modes of diagnosis and new drugs used in the chemotherapy of parasitic infections. The essential knowledge of all major and minor parasites and parasitic diseases of man is recorded in this book. The book is designed for teachers and students of clinical parasitology. It is also a standard reference for physicians, clinical pathologists, parasitologists, medical entomologists, medical technologists and public health workers in tropical medicine.

The book is divded into five sections: General Information, Protozoa and Protozoan Infections, Helminths and Helminthic Infections, Arthropods and Human Disease, and a Technical Appendix covering examination of specimens for parasites, culture methods, immunological diagnosis and entomological methods. The life cycle and morphology of each parasite are discussed in detail as well as a review of the parasite's significance as a human pathogen and the epidemiology, pathology and treatment of the related disease. Three species of protozoa and 24 helminths that were not included in previous editions are discussed, and there is a new section on delusional parasitosis. The 9th Edition is so profusely illustrated (7 color plates and 421 figures) that it serves effectively as an atlas of human parasitology.

The arthropod section comprises 175 pages and is divided into eleven chapters followed by one on the control of arthropods, molluscs, and rodents as vectors and reservoirs. This section is an excellent compact treatment of the medical importance of insects and arachnids. Numerous up to date references are given at the end of each chapter. An excellent

synopsis in tabular form of the impact on human health of the various arthropod groups is provided. This is the best treatment of the arthropods I have seen in any text on medical or clinical parasitology.

The 9th Edition of this classic book is well worth the price.

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Book Notices

Ahmed, S., Editor. 1983. *Herbivourous Insects: Host-Seeking Behavior and Mechanisms.* Academic Press, New York. xvi + 257 pp. Hard Cover. $U.S. 34.50.

In his introduction to this multi-authored book, V. G. Dethier notes the "enormous difficulties attendant upon observing the behavior of individual flying insects in their natural environment." Nevertheless, we need to understand how insects locate their hosts in order to minimize damage to our crops and forests. Besides, insects appear to have evolved many complex and effective mechanisms for locating hosts, and these are intriguing in their own right. This book recognizes the need for such knowledge.

The book consists of eight chapters in four parts named: Neurophysiological Aspects (1 chapter), The Diversity of Behavioral Clues (3 chapters), Host Search in Relation to the Breadth of Diet (3 chapters), Evolutionary Aspects of Host Selection (1 chapter). Some of the authors provide excellent summaries and overviews of important work. I found the chapters on bark beetles, colorado potato beetle and gypsy moth stimulating. Two of the other chapters were speculative and even naive. I doubt there has been sufficient research to justify chapters entitled Spatial Patterns in the Plant Community and their Effects upon Insect Search, or Selective Factors in the Evolution of Host Choice by Phytophagous Insects.

The volume as a whole strikes me as incomplete. Nowhere is it clear why the particular contributors were selected. The most obvious explanation for the Editor's choice appears to be geographical; all the contributors are from the eastern seaboard of the U.S.A. The division of the contributions into parts appears arbitrary and artificial, as if the extra headings make up for a lack of coherent theme or well-established point of view. Perhaps because of the focus on local research talent, some important work on host-seeking is barely mentioned. For example, the very fine European studies on host-seeking by aphids is neglected.

Some individual contributions merit attention, but the book fails to provide a comprehensive overview or a group of new ideas which might stimulate future research on the host-seeking behavior of herbivourous insects. I found the introduction by Dethier to be the most readable and thought-provoking part of the book.

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Downer, R. G. H. and Laufer, H. Editors. 1983. *Invertebrate Endocrinology, Vol. 1; Endocrinology of Insects.* Alan R. Liss, Inc., New York. 724 pp. $U.S. 146.00.

According to its editors this volume arose out of discussions at a symposium in 1978 when it became apparent to workers in the field that the discipline needed detailed review, but that it was so broad a discipline that such a review could not be produced by a single author. The end result was this volume which is divided into 46 chapters, in 12 sections written by a total of 58 authors. The sections cover the structure of the neuroendocrine system, the chemistry of the hormones and neuro-hormones, regulation of metamorphosis, reproduction, and growth and development, metabolic homeostasis, myotropic factors and pigmentation, novel systems for studying insect hormones, pheromones, intracellular communication, occurrence of hormones in plants, and use of hormones in control. Coverage in most areas seems to be thorough and up to date. Emphasis in most cases is on quite recent work with

liberal references to recent reviews for coverage of older material. This has reduced the length of the papers and increased their usefulness and readability.

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Fisher, T. W. and R. E. Orth. 1983. *The Marsh Flies of California (Diptera: Sciomyzidae)*. Bulletin of the California Insect Survey, Volume 24. vii + 118 pp. $U.S. 20.00.

This is another fine example of the continuing series on the insects of California. Introductory sections give a good summary of the classification and biology of the family and especially of their highly evolved relationship with terrestrial and fresh water molluscs. Literature citations here essentially amount to a bibliography of North American biological and taxonomic work on the family. Keys to adults of all North American genera and 51 species in the 12 genera known to occur in California are provided. The keys are well constructed and yield positive results, especially when coupled with 218 simple, but accurate, line drawings, primarily of male terminalia. My only criticisms are the lack of brief diagnostic descriptions of species which can provide a little more confidence in correct identification, and the legends to illustrations which hide the Figure numbers and morphological abbreviations among unnecessary details of the collection data of the specimens being illustrated. Bold facing figure numbers and abbreviations would have made them more apparent.

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Hedin, P. A., Editor. 1983. *Plant Resistance to Insects*. American Chemical Society, Washington, D.C. viii + 375 pp. Hard Cover. $U.S. 44.95.

This book consists of 20 papers presented in 1982 at a symposium in Las Vegas, Nevada, and sponsored by the American Chemical Society. The title is misleadingly general. You will not find much in this book on the ecology of insect-plant relations. Nor will you find information on the technology of making crops or forests resistant to insect pests. What you will find is a great deal of information on plant chemistry, and the effects of plant chemicals on insects.

The book is divided into four sections each with five chapters: Ecological and Histochemical Aspects, Biochemical and Physiological Mechanisms, Insect Feeding Mechanisms, Roles of Plant Constituents. As is often the case in a symposium volume, the headings are somewhat arbitrary. As an ecologist, I did not find much in the ecological section that was of interest. Rhoades describes his fascinating discovery that trees give "alarm calls" when defoliated, but this chapter did not elaborate much on work he has published elsewhere. The mini-review by Kogan and Paxton gave a comprehensive and readable summary of the mechanisms of induced resistance. For me, the many chapters on plant chemicals and their effects on herbivores provided a good introduction and an excellent source of references to a field which will probably make important contributions to insect pest control.

To speed the publication of the symposium, the publisher uses a camera-ready format. As a result the book was available about one year after the symposium took place. However, the print type, lack of right hand justification and sometimes faded print were not appealing and often a strain to read. Nevertheless, I would recommend this book to entomologists interested in plant chemistry and the role of chemicals in plant resistance to insects.

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Hodges, Ronald W., *et al.* 1983. *Check List of the Lepidoptera of America North of Mexico.* E. W. Classey Limited and The Wedge Entomological Research Foundation. London, 284 pp., $U.S. 88.00.

The list includes 11,283 species of North American Lepidoptera with synonyms, homonyms, etc. The mammoth work offers a solid basis for future work in many areas, particularly taxonomy, systematics and zoogeography. The authors are to be congratulated for producing a work of such high quality.

The introduction honestly admits that the list, dating from the year 1978, is already out of date, as are all such lists. The realistic view of the editors makes the approach trustworthy and creates a good starting point for future development. An example of the need for future work is a recent revision of a small group of noctuids, the genus *Xestia* subgenus *Schoyenia* (Ent. Scand. 14: 337–369, 1983), published a few months after the MONA list. Six of the taxa treated in this revision are included in the MONA list in three different genera, none of them in *Xestia* or *Schoyenia*.

This example is not given as a criticism of the MONA list but illustrates the continuing need for further research. As the editors point out, such lists must be published at some cutoff point; otherwise, the list would never be published. It is to be hoped, and it seems probable, that the MONA list will result in a burst of revisions, both Nearctic and Holarctic since it will allow workers in the Palaearctic to become more familiar with the Nearctic fauna. The entomological traditions of the two continents have diverged for too long a time. I should point out that research in the Palaearctic is a long way from the production of a list comparable to the MONA list.

Unfortunately, the $88.00 price of the list will result in it not being available to many of the researchers who need it.

Kauri Mikkola
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Richmond, H. A. 1983. *Forever Green.* Oolichan Books, P.O. Box 10, Lantzville, British Columbia V0R 2H0. 203 pp.

H. A. (Hec) Richmond was one of Canada's first forest entomologists. His professional career began (at age 18) in 1920 and, continues to this day at 82. He is still an active forest consultant. In this delightful autobiography, he shares his professional and personal experiences. For those familiar with the times and conditions of his career, the book is disappointing. The early days of forestry and forest entomology, however, are vividly described in a natural, anecdotal style. Although lacking in substance as a historical work, the advantages and delights of working in the natural sciences—in forestry particularly—become obvious.

The author disclaims a particular message but, from the beginning, his review of the personal satisfaction in dedication to science and public service are obvious. I think that younger scientists would be interested if only for comparison to their perspective of science; contemporaries will enjoy it for the therapy of nostalgia.

R. W. Stark
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Update on Publications

La *Nouvelle Revue d'Entomologie* a été créée en 1971 par un groupe d'entomologistes professionnels et amateurs.

Depuis, sa parution régulière a permis la publication de plus de 4000 pages d'articles originaux.

Elle est maintenant éditée par l'Association pour le soutien à la Nouvelle Revue d'Entomologie. Sa diffusion est internationale. Elle accepte des articles rédigés en français, anglais, allemand, italien et espagnol.

Elle publie un volume par an contenant actuellement environ 300 pages de texte réparties en 4 fascicules paraissant en mars, juin, octobre et décembre. Le nombre de pages augmente en fonction du nombre des abonnements.

Elle renferme des articles de ses abonnés, traitant de systématique et de biogéographie des Insectes.

Les abonnés peuvent adresser leurs manuscrits pour la publication dans la revue, au rédacteur en chef: J. Mateau c/o Laboratoire d'évolution des êtres organisés, 105, bld Raspail ç 75006 Paris, France.

Les années antérieures et les suppléments sont disponibles. Renseignements sur demande.

The *Trichoderma Newsletter*, edited by Alan Gear, aims to "present the very latest findings in a form which, it is hoped, will be acceptable to the informed lay person". The first issue is 14 pages long, and may be obtained from the Henry Doubleday Research Association, Convent Lane, Braintree, Essex, CM7 6RW, England.

New Books and Publications

The Agricultural Field Experiment. A Statistical Examination of Theory and Practice. S. C. Pearce. Wiley-Interscience, New York, 1983. xvi + 335 pp. $U.S. 42.95.

Behavioural Ecology: An Evolutionary Approach, 2nd Edition. J. R. Krebs and N. B. Davies, Eds. Sinauer Associates, Inc., Sunderland, MA, 1984. 420 pp. Soft cover $U.S. 25.00, hard cover $U.S. 42.00.

Chemical and Biological Control in Forestry. American Chemical Society Symposium Series No. 238. W. Y. Garner and J. Harvey, Jr., Eds. American Chemical Society, 1984. 406 pp. $U.S. 69.95.

Chemical Ecology of Insects. W.J. Bell and R.T. Cardé, Eds. Sinauer Associates, Inc., Sunderland, MA, 1984. 519 pp. Soft cover $U.S. 28.50, hard cover $U.S. 45.00.

Comprehensive Insect Physiology, Biochemistry and Pharmacology. G. A. Kerkut and L. I. Gilbert, Eds. In 13 Volumes: Volume 1, Embryogenesis and Reproduction. Volume 2, Postembryonic Development. Volume 3, Integument, Respiration and Circulation. Volume 4, Regulation, Digestion, Nutrition, Excretion. Volume 5, Nervous System: Structure and Motor Function. Volume 6, Nervous System: Sensory. Volume 7, Endocrinology I. Volume 8, Endocrinology II. Volume 9, Behaviour. Volume 10, Biochemistry. Volume 11, Pharmacology. Volume 12, Insect Control. Volume 13, Cumulatives Indexes. Pergamon Press, Elmsford, New York. $U.S. $2750.00, for the 13 volumes.

Diary of William W. Judd, Byron Bog, London, Ontario 1967–1980. W.W. Judd. Phelps Publishing Co., 87 Bruce Street, London, Ontario N6C 1G7, 1984. $3.00.

The Ecology of Aquatic Insects. V. H. Resh and D. M. Rosenberg, Eds. Praeger Publishers, New York, 1984. 400 pp. $U.S. 47.50.

Handbook of Experimental Pollination Biology. C. E. Jones and R. J. Little, Eds. Scientific and Academic Editions (Van Nostrand and Reinhold), New York, 1983. xviii + 558 pp. $U.S. 46.50.

Insects on Grain Legumes in Northern Australia. M. Shepard, R. J. Lawn and M. A. Schneider. University of Queensland Press, St. Lucia, 1983. 90 pp. Price not available.

Les Punaises Terrestres (Hétéroptères; Géocorises) du Québec. A. Larochelle. Association des Entomologistes Amateurs du Québec (C.P. 52, Sillery, Quebec G1T 2P7), 1984. 513 pages. $20.00, membre de l'AEAQ. $15.00.

Malaria. R. S. Phillips. Edward Arnold (Publishers) Ltd., London, 1983. 60 pp. $U.S. 10.00.

Sequential Sampling Plans for Pest Control Programs. G. Boivin and C. Vincent. Agriculture Canada, Research Branch, Contribution 1983-14E, 1983. 29 pp.

A Synoptic Classification of Living Organisms. R. S. K. Barnes, Ed. Sinauer Associates, Inc., Sunderland, MA, 1984. 276 pp. $U.S. 11.50.

ANNUAL REVIEWS

The Entomological Society of Canada has entered into an agreement with the Annual Reviews Inc., wherein ESC members may order copies of the Reviews at a 20% discount.

The following Annual Reviews may be of interest to members, although any others may be ordered:

	Publication Date	*Member's price (incl. 20% discount)*
Annual Review of Entomology . .	29 January 1985	$31.00 (Canadian)*
Annual Review of Ecology and Systematics	15 November 1984	$31.00 (Canadian)*

Send your order and remittance to the Entomological Society of Canada, 1320 Carling Avenue, Ottawa, Ontario, Canada K1Z 7K9. In order to reduce the workload, we would appreciate having your orders 4–6 weeks before the publication date (see above). Individual copies of back issues may be ordered anytime. The book(s) will be sent postpaid from the California office of Annual Reviews.

If you are interested in purchasing the Annual Reviews, you can help your Society by ordering them through us.

Additional information is available on request.

*Price may fluctuate depending on exchange rate.

OBITUARY

William Martin Elliott 1942-1984

Bill Elliott died on March 4, 1984 in Windsor, Ontario. After brain surgery in July 1982, Bill recovered quite well physically but was never able to return to work. He took an early retirement in 1983 and was content to look after the extensive grounds around his country home near Harrow. Complications resulted in hospitalization in December 1983.

Bill was born in London, England. His father was an entomologist who specialized in the control of malarial mosquitoes. Bill had memories of Nigeria where he spent a year with his father and no doubt increased his desire to become an entomologist. His education was in London, England and he graduated from Imperial College with a B.Sc. in 1962. Studies on the effects of systemic insecticides on predaceous anthocorids led to a Ph. D. degree in 1966. The Diploma of Imperial College awarded at the same time testifies to the sound research that he was conducting for his thesis.

After graduation Bill accepted employment with Agriculture Canada at the Harrow Research Station. He retained his interest in British agriculture with membership in The Association of Applied Biologists, and also joined the Entomological Society of Ontario and the Entomological Society of Canada.

Bill began at Harrow with ecological studies of aphids, particularly the green peach aphid. He developed a method of forecasting the population trend by a simple count of unhatched embryos in apterous female aphids. This interest in population forecasting was extended to other aphids in vegetables, some cutworm species, and the European corn borer. A significant discovery with the borer was that it was possible to determine the age of female moths, if mating had occurred, and if eggs had been laid, by examining specimens from the light trap. Before his retirement Bill studied the seasonal distribution of leafhoppers which were responsible for spreading peach X disease.

The enthusiasm Bill had for his research was obviously transmitted to summer students working under his direction. Three of these students went on to graduate studies and obtained Ph.D. degrees as well as finding jobs in entomology, accomplishments justly satisfying for Bill.

Colleagues and friends of Bill will miss his general helpfulness, his thorough review of manuscripts, and many witty comments. Apart from entomology he had a wealthy knowledge of ornamental plants and trees. We'll remember his desk top with a dozen blooming African violets, even in midwinter.

Bill had some long-term objectives before he came to Harrow, and so it was in December 1966 that he briefly returned to London to be married. His wife Ann and son William are staying in the comfortable country home that Bill loved so well.

R. J. McClanahan
Agriculture Canada Research Station
Harrow, Ontario

Recent Deaths

Hille Ris Lambers, D. On 8 April 1984. Bennekom, The Netherlands. Former member ESC.
Nelson, Robert L. in August 1983. Sidney, B.C.

Editor's Remarks

Several Society initiatives are highlighted in this issue of the Bulletin:

The results of a survey of human resources in entomology, which was conducted in 1983 as a follow-up to the 1975 manpower study, have been summarized and are to be found in the green insert. The members of the study group, headed by D. Jim Madder, are to be commended for their work.

The Heritage Committee, under the chairmanship of Paul Riegert, has been active and has initiated a series entitled Vignettes of Entomology. The first Vignette honours Reginald Glendenning. The series will feature members of the ESC who have made significant contributions to entomology, but have not received "official" Society recognition. There must be many entomologists, some of whom may have many years of scientific experience while others may be embarking on careers, who deserve recognition for an intriguing piece of work that they have done. Members of the Society are encouraged to submit short articles about individuals and their contributions, and include a photograph of the individual(s) involved, to Dr. P.W. Riegert, Department of Biology, University of Regina, Regina, Saskatchewan, S4S 0A2.

Further initiatives are encouraged. For instance, members are asked to respond to a request for proposals on entomological subjects in need of study. This request comes from the Science Policy Committee and is contained in this issue.

These and similar undertakings help us remain a vibrant and progressive Society, and one which acts in the interests of entomologists and of their science.

Helen J. Liu
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Mot de l'éditeur

Ce numéro du bulletin met l'accent sur plusieurs initiatives de notre société.

Les résultats d'une enquête sur les ressources humaines en entomologie, faite en 1983 et venant compléter un travail similaire de 1975, apparaissent dans le feuillet vert. Les responsables, et en particulier D. Jim Madder, méritent toutes nos félicitations.

Le comité du patrimoine, sous la présidence de Paul Riegert, a mis sur pied une série de feuillets intitulée "Vignettes of Entomology". Le premier porte sur Reginald Glendenning. Il s'agit d'une série destinée à illustrer les carrières de membres de la SEC qui ont fait des contributions significatives à l'entomologie, mais qui n'ont pas reçu d'"hommage officiel" de notre société. Il existe, sans doute, de nombreux entomologistes, les uns chevronnés, les autres encore jeunes, dont la qualité et l'originalité des travaux méritent d'être signalées. Les membres de la société sont encouragés à préparer de courts manuscrits portant sur des entomologistes et leurs contributions, à y inclure une photographie de la (ou des) personne(s) en question et à soumettre le tout à Monsieur P.W. Riegert, Department of Biology, University of Regina, Regina, Saskatchewan, S4S 0A2.

D'autres initiatives sont aussi encouragées. Ainsi, le comité sur la politique scientifique invite les membres à lui signaler les domaines de l'entomologie où il existe un urgent besoin de recherche.

Ce sont de tels projets qui maintiendront notre société active et moderne, une société qui prend à coeur les intérêts de ses membres et ceux de l'entomologie.

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Bulletin Deadline

The deadline for the next issue, vol. 16, no. 3, for September 1984 is 1 August.