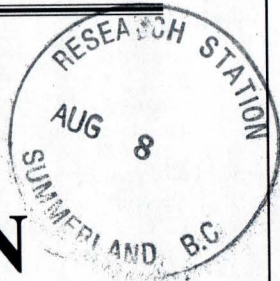
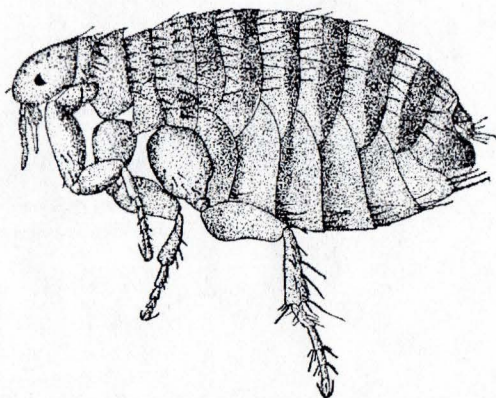

VOL 27 June - juin, 1995 No. 2



BULLETIN



ENTOMOLOGICAL SOCIETY OF CANADA
LA SOCIÉTÉ D'ENTOMOLOGIE DU CANADA

ENTOMOLOGICAL SOCIETY OF CANADA
LA SOCIÉTÉ D'ENTOMOLOGIE DU CANADA
BULLETIN
VOL 27(2) - June / juin, 1995

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

Entomological Society of Canada 393 Winston Ave. Ottawa, Ontario K2A 1Y8

LETTER TO THE EDITOR

Dear Editor,

As an *ex-Bulletin* editor from way back, I am pleased to note that the *Bulletin* has continued to serve admirably as a source of information and communication for ESC members. Under your editorship the *Bulletin* has continued to improve in content, accuracy, and design. The *Bulletin* was conceived in a Banff pub the night before the 1966 annual general meeting. The *Entomology Division Newsletter*, which generously published items of interest to entomologists regardless of their origins, had just died from an attack of austerity. As the mover of the resolution (seconded by Ed LeRoux) that established the *Bulletin*, it pleases me to thank you for your stewardship, which has followed so well the spirit of the resolution.

I must comment on two articles on the Model Forest program in the March issue (*Bulletin* 27:26-32). They read like public relations missives, with all the appropriate hype, jargon, and buzz words. They do not mention the rôle of entomology in the program, although there is one, as the next article (p.33) makes clear.

Awareness of the importance of insects in forests will certainly be enhanced by the program, but a grander goal is clearly beyond Model Forest means, even if support can be maintained in the face of severe austerity. In an article on "The importance of insect taxonomy and biosystematics to forestry", to be published in the *Forestry Chronicle*, I wrote:

The much-heralded, Green Plan-supported Model Forest program will be seriously handicapped by our inability to identify such a large proportion of the life forms. Model Forest goals include understanding biological diversity and richness, habitat structure, understanding ecosystem functions, and maintaining ecological integrity. With our present level of knowledge of the biological resources in the model forests, the results of the exercise will be superficial at best.

D. C. Eidt
RR #1 Mouth of Keswick
N.B. E0H 1N0

Please send all correspondence
concerning the *Bulletin* to:

Dr. Fiona F. Hunter
Bulletin Editor
Department of Biological Sciences
Brock University
St. Catharines, Ontario
L2S 3A1

Tel. (905) 688-5550 Ext. 3394
Fax. (905) 688-1855
Email: hunterf@spartan.ac.BrockU.ca

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

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

Tel. (306) 254-4380

SOCIETY BUSINESS / AFFAIRES DE LA SOCIÉTÉ

45th Annual General Meeting

The Annual General Meeting of the Entomological Society of Canada will be held at the Victoria Conference Centre in Victoria, British Columbia on October 17, 1995.

Governing Board Meeting

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

Matters for consideration at any of the above meetings should be sent to the Secretary, Dr. Peggy L. Dixon, at the address given below.

45e réunion annuelle générale

La réunion annuelle générale de la Société d'entomologie du Canada aura lieu au Victoria Conference Centre de Victoria, Colombie britannique, le 17 octobre 1995.

Réunion du Conseil d'administration

La réunion annuelle du conseil d'administration se tiendra au Harbour Towers de Victoria, Colombie britannique, le 14 octobre 1995. Au besoin, la réunion pourra se poursuivre le 15 octobre.

Veuillez faire part au secrétaire de tout sujet pouvant faire l'objet de discussion de l'une ou l'autre de ses réunions en communiquant de l'adresse suivante:

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

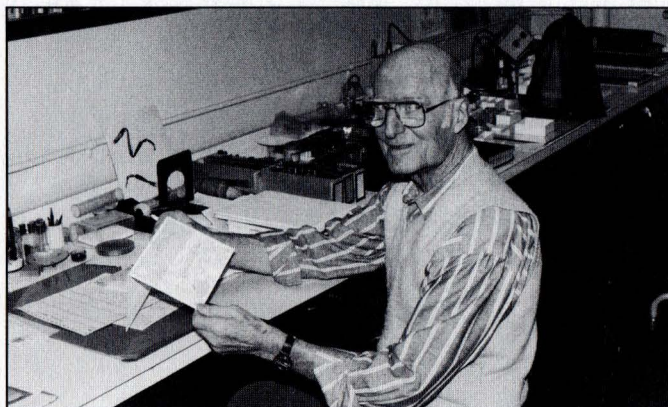
Research-Travel Grants Committee - Interim Report

The following students have been awarded Research-Travel Grants:

Name: Mr. Gabriel Guillet
University: University of Ottawa
Supervisor: Dr. J.T. Arnason
Thesis title: Evolutionary considerations involving insect-phytotoxic host plant relationships.
Travel sites: Université Pau et des pays de l'Adour, Avenue de l'Université, F-64000 Pau, France (Dr. Catherine Regnault-Roger).

Name: Ms. Kristine A. Justus
University: University of Alberta
Supervisor: Dr. B.K. Mitchell
Thesis title: Oviposition behaviour and sensory physiology of the diamondback moth, *Plutella xylostella* (L.) (Lepidoptera: Plutellidae)
Travel sites: Swiss federal research station, Wädenswil, Switzerland.

Guy Eaden Shewell
1995 Fellow of the Entomological Society of Canada



Mr. Guy Eaden Shewell was selected Fellow of the Entomological Society of Canada. He was born in England on July 13, 1916, and came to Canada in 1931. He graduated from MacDonald College, Ste. Anne de Bellevue, Quebec in 1935 and joined the present Biological Resources Division, Centre for Land and Biological Research, Agriculture and Agri-Food Canada as a Dipterist in 1937.

During his entire career, Guy collected extensively in many parts of Canada, England, New Zealand and Morocco. He played a major role in turning a minor Diptera Collection into one of the largest research collections in the world. Guy's published research has been mostly on the Canadian Simuliidae and on Lauxaniidae from North America and Eurasia. He contributed sections on Calliphoridae, Lauxaniidae and Sarcophagidae in the *Manual of Nearctic Diptera*.

Guy Shewell retired in 1979, but he still devotes much time to the much needed research on the classification on Calliphoridae, Sarcophagidae and Simuliidae. Guy Shewell was and still is an endless and very patient source of information and an inspiration to many entomologists. He is an Emeritus member of the Entomological Society of Canada.

His excellent record as a Taxonomist and his continued dedication to Entomology make Guy Eaden Shewell a worthy recipient of this award.

The deadline for submissions to be included in the next issue (Vol. 27(3)) is **August 1, 1995**

La date limite pour recevoir vos contributions pour le prochain numéro (Vol. 27(3)) est le **1 août 1995**

**Call for Nominations
Achievement Awards Committee**

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

Members of the Society are invited to nominate individuals whom they regard as eligible for these awards (for the year **1996**). Nominations should be sent in an envelope marked "Confidential" to the following address:

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

and should comprise: (1) the name and address of the nominee(s); (2) a statement of relevant achievements; and (3) the name of the nominator and at least one seconder. To be considered by the Achievement Awards Committee, nominations must bear a postmark no later than **December 31 1995**.

The following conditions govern these awards:

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

Comité des décorations

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

La Société invite les membres à lui faire parvenir les noms des personnes qu'ils considèrent éligibles à ces deux prix. Veuillez envoyer vos nominations (pour l'année **1996**) au:

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

dans une enveloppe portant la mention "Confidentiel". La nomination doit contenir: (1) le nom ainsi que l'adresse du (ou des) candidat(s) désigné(s); (2) un compte rendu des réalisations pertinentes; et (3) le nom du parrain et celui d'au moins une deuxième personne appuyant la mise en nomination. Pour être acceptées par le Comité, les nominations devront porter un sceau postal d'au plus tard le **31 décembre 1995**.

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

1. Les contributions exceptionnelles devraient être jugées dans le contexte

(a) d'un accomplissement hors pair en recherche, soit comme résultat d'une seule contribution ou d'une série d'efforts reliés et ayant abouti à des résultats de grande valeur. Cette recherche aura été réalisée en entomologie ou tout autre domaine connexe.

ou

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

2. Chaque prix ne sera décerné qu'une seule fois par année. Cependant, lorsque les circonstances le justifient, plusieurs personnes peuvent collectivement devenir récipiendaires d'un prix.

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

4. Chaque prix peut être décerné plus d'une fois au même récipiendaire mais pour différentes contributions à l'entomologie au Canada.

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

Student Affairs Committee Update

Call for Volunteers

We are looking for student volunteers to serve on the Student Affairs Committee (SAC) beginning in October 1995. The primary duties of the SAC are to advise members of the ESC and the Board about activities and concerns of student members. The SAC also advises student members on issues involving the training of entomologists and about future job opportunities. In the past, the SAC has run workshops on writing grant proposals and on job opportunities in entomology, and conducted various surveys of student members.

Duties of committee members involve corresponding with the committee chair about student-related issues, providing input and advice when consulted, and participating in SAC events when possible. Attendance at the Annual Meeting is not essential. If you are interested in serving on this committee please let me know before the end of August.

We would like to remind everyone that we are running a Canadian version of the ESA's Linnaean Games (see the Annual Meeting notice in this issue of the *Bulletin*). We encourage any students who are attending the meeting in Victoria to participate in this event which should be a lot of fun. It's free to enter and there will be prizes for the winning team.

We would also like to remind students that job notices and graduate student opportunities are included in every issue of the *Bulletin*. In the December 1994 *Bulletin* (p. 151) we asked students what their opinion was on having a permanent student representative on the ESC Board. So far, there have been no comments on this issue. Please read over that paragraph again, and if you have any opinion, let me know by **October 15, 1995**.

Please send any comments, questions, opinions, or offers to be a volunteer to:

Elizabeth Tomlin
Department of Biological Sciences
Simon Fraser University
Burnaby, B.C.
V5A 1S6

Tel (604) 291-4163
Fax (604) 291-3496
e-mail tomlina@sfu.ca

McCAY, DUFF & COMPANY

CHARTERED ACCOUNTANTS

JOHN W. FRANKLIN, C.A.
THOMAS W. HOWARTH, C.A.
BRYAN E. SULLIVAN, C.A.
ALBERT G. MONSIEUR, B.A.D.M., C.A.
BLAIR E. DAVIDSON, B.COMM., C.A.
G. WARREN TRICKEY, B.COMM., C.A.
ROBERT D. SHANTZ, B.MATH., C.A.

CONSULTANT - ELDREN E. McCONNELL, C.A.

330 McLEOD ST.
OTTAWA, ONT.
K2P 2C5
(613) 236-2367
1 (800) 267-6551
Fax: (613) 236-5041

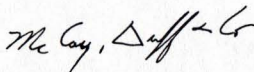
AUDITORS' REPORT

To the Members of
Entomological Society of Canada.

We have audited the balance sheet of the Entomological Society of Canada as at December 31, 1994 and the statements of revenue and expenditure, equity and changes in financial position for the year then ended. These financial statements are the responsibility of the Society's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with generally accepted auditing standards. Those standards require that we plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation.

In our opinion, these financial statements present fairly, in all material respects, the financial position of the Society as at December 31, 1994 and the results of its operations and the changes in its financial position for the year then ended in accordance with generally accepted accounting principles.



Chartered Accountants

Ottawa, Ontario,
March 3, 1995.

ENTOMOLOGICAL SOCIETY OF CANADA

BALANCE SHEET

AS AT DECEMBER 31, 1994

	ASSETS	1994	1993
GENERAL FUND			
CURRENT			
Cash		\$ 24,269	\$ 31,166
Accounts receivable		30,949	34,737
Accrued interest receivable		2,752	7,333
Prepaid expenses		11,889	4,573
Due from Endowment Fund		2,176	-
		<u>72,035</u>	<u>77,809</u>
INVESTMENTS (note 2)		124,550	225,300
ADVANCE TO BOOK PROJECT (note 3)		<u>110,859</u>	<u>36,870</u>
		307,444	339,979
ENDOWMENT FUND			
Cash		20,520	24,254
Accrued interest receivable		777	777
Due from General Fund		-	64
Investments (note 2)		<u>38,860</u>	<u>30,940</u>
		60,157	56,035
BUILDING FUND			
CAPITAL ASSET (note 4)		<u>242,800</u>	<u>242,800</u>
		<u>\$610,401</u>	<u>\$638,814</u>
	LIABILITIES		
GENERAL FUND			
CURRENT			
Accounts payable and accrued liabilities		\$ 56,551	\$ 70,408
Deferred revenue		123,450	119,865
Due to Endowment Fund		-	64
Due to Scholarship Fund		789	-
		<u>180,790</u>	<u>190,337</u>
ENDOWMENT FUND			
Due to General Fund		2,176	-
	EQUITY		
GENERAL FUND		126,654	149,642
ENDOWMENT FUND		57,981	56,035
BUILDING FUND		<u>242,800</u>	<u>242,800</u>
		<u>427,435</u>	<u>448,477</u>
		<u>\$610,401</u>	<u>\$638,814</u>

McCAY, DUFF & COMPANY, CHARTERED ACCOUNTANTS

ENTOMOLOGICAL SOCIETY OF CANADA

STATEMENT OF EQUITY

FOR THE YEAR ENDED DECEMBER 31, 1994

	<u>1994</u>	<u>1993</u>
GENERAL FUND		
BALANCE - BEGINNING OF YEAR	\$149,642	\$188,446
Net revenue (expenditure) for the year	(20,875)	(33,857)
	128,767	154,589
Appropriation to Building Fund	(2,113)	(4,947)
BALANCE - END OF YEAR	<u>\$126,654</u>	<u>\$149,642</u>
ENDOWMENT FUND (note 5)		
BALANCE - BEGINNING OF YEAR	\$ 56,035	\$ 53,564
Interest income	4,122	4,483
Gain on sale of investments	-	40
Page charges and reprints	(2,176)	(2,052)
Net revenue for the year	<u>1,946</u>	<u>2,471</u>
BALANCE - END OF YEAR	<u>\$ 57,981</u>	<u>\$ 56,035</u>
BUILDING FUND (note 6)		
BALANCE - BEGINNING OF YEAR	\$242,800	\$242,800
Net rental revenue (expenditure) for the year (schedule)	(2,113)	(4,947)
Appropriation from General Fund	<u>2,113</u>	<u>4,947</u>
BALANCE - END OF YEAR	<u>\$242,800</u>	<u>\$242,800</u>

McCAY, DUFF & COMPANY, CHARTERED ACCOUNTANTS

ENTOMOLOGICAL SOCIETY OF CANADA

STATEMENT OF REVENUE AND EXPENDITURE

FOR THE YEAR ENDED DECEMBER 31, 1994

	1994		1993	
	Budget	Actual	Budget	Actual
REVENUE				
Regular memberships	\$ 19,200	\$ 17,161	\$ 42,200	\$ 40,620
Student memberships	1,000	1,068	2,640	2,780
Subscriptions	100,000	89,217	150,000	127,890
Reprints	16,500	19,486	16,500	14,067
Page charges	36,000	30,464	56,250	47,600
Back issues	4,500	3,795	4,500	3,795
Sales of Arctic Arthropods and Bibliography	-	-	7,000	4,039
Gain on currency exchange	-	-	200	435
Miscellaneous	-	-	-	4,973
Net Book Project revenue	-	-	3,000	6,014
				5,606
REVENUE - Carried Forward	\$177,200	\$161,191	\$282,290	\$266,753
				\$260,514

ENTOMOLOGICAL SOCIETY OF CANADA
STATEMENT OF REVENUE AND EXPENDITURE
FOR THE YEAR ENDED DECEMBER 31, 1994

	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	1994	1993
	Canadian	Canadian	Memoirs	Memoirs					Actual	Actual
	Entomologist	Entomologist	Publications	Publications	Society	Society			Budget	
REVENUE - Carried Forward	\$177,200	\$161,191	\$80,550	\$68,769	\$24,540	\$36,793			\$282,290	\$260,514
EXPENDITURE										
Publishing and mailing costs	90,200	98,990	35,300	30,911	-	-			125,500	146,490
Reprint costs	9,000	10,029	-	-	-	-			9,000	7,836
Bulletin publishing and mailing	-	-	-	-	18,500	17,501			18,500	16,510
Salaries and benefits	58,078	58,817	21,414	21,739	12,328	12,802			91,820	91,895
Editor's expenses	7,400	3,893	100	-	-	-			7,500	3,893
Office	2,000	6,237	1,000	3,118	2,000	6,237			5,000	10,707
Professional fees	1,600	1,550	-	-	1,600	1,550			3,200	4,154
Prizes, awards, brochure, etc.	-	-	-	-	1,400	1,286			1,400	3,200
Honoraria	1,209	1,250	400	-	2,416	2,625			4,025	451
Committees:										
Insect Common Names	-	-	-	-	4,000	700			4,000	3,625
Other	-	-	-	-	-	224			-	-
Support of other organizations	-	-	-	-	18,700	10,433			18,700	1,625
Annual Meeting: Grant	-	-	-	-	4,000	4,000			4,000	17,611
Honorees	-	-	-	-	2,000	1,509			2,000	4,000
Governing Board: Interim meeting	-	-	-	-	3,500	1,258			3,500	-
Annual meeting	-	-	-	-	14,400	5,050			14,400	3,266
Other meetings	-	-	-	-	1,500	456			1,500	6,012
President's discretionary expenses	-	-	-	-	-	-			-	592
General	400	1,078	200	540	-	1,078			-	128
	169,887	181,844	58,414	56,308	86,744	66,709			315,045	2,021
REVENUE (EXPENDITURE) FOR THE YEAR									304,861	320,123
FROM OPERATIONS	7,313	(20,653)	22,136	12,461	(62,204)	(29,916)			(38,108)	(59,609)
Interest on investments	-	-	-	-	25,000	13,639			25,000	25,652
Gain on sale of investments	-	-	-	-	-	3,594			-	100
	-	-	-	-	25,000	17,233			25,000	25,752
NET REVENUE (EXPENDITURE)										
FOR THE YEAR	\$ 7,313	(\$ 20,653)	\$22,136	\$12,461	(\$37,204)	(\$12,683)			(\$ 7,755)	(\$ 33,857)

ENTOMOLOGICAL SOCIETY OF CANADA
STATEMENT OF CHANGES IN FINANCIAL POSITION
FOR THE YEAR ENDED DECEMBER 31, 1994

	<u>1994</u>	<u>1993</u>
CASH PROVIDED BY (USED FOR)		
OPERATING ACTIVITIES		
Cash from operations		
Net revenue (expenditure) for the year		
- General Fund	(\$ 20,875)	(\$ 33,857)
- Endowment Fund	1,946	2,471
- Building Fund	(2,113)	(4,947)
	(21,042)	(36,333)
Items not involving cash		
- Gain on sale of investments		
- General Fund	(3,594)	(100)
- Endowment Fund	-	(40)
	(24,636)	(36,473)
Net change in non-cash working capital balances related to operations - General Fund		
- (increase) decrease in accounts receivable	3,788	(13,277)
- decrease in accrued interest receivable	4,581	328
- (increase) decrease in prepaid expenses	(7,316)	7,272
- increase (decrease) in accounts payable and accrued liabilities	(13,857)	60,366
- increase in deferred revenue	3,585	4,305
- increase in due to scholarship fund	789	-
	(8,430)	58,994
INVESTING ACTIVITIES		
Purchase of investments		
- General Fund	(24,750)	-
- Endowment Fund	(7,920)	-
Proceeds on disposal of investments		
- General Fund	129,094	20,100
- Endowment Fund	-	8,000
Decrease in accrued interest receivable		
- Endowment Fund	-	198
Increase in advance to Book Project	(73,989)	(36,870)
	<u>22,435</u>	(8,572)
INCREASE (DECREASE) IN CASH POSITION DURING THE YEAR	(10,631)	13,949
Cash position - beginning of year	<u>55,420</u>	<u>41,471</u>
CASH POSITION - END OF YEAR	<u>\$ 44,789</u>	<u>\$ 55,420</u>
CASH POSITION		
Cash - General Fund	\$ 24,269	\$ 31,166
Cash - Endowment Fund	<u>20,520</u>	<u>24,254</u>
	<u>\$ 44,789</u>	<u>\$ 55,420</u>

ENTOMOLOGICAL SOCIETY OF CANADA

NOTES TO FINANCIAL STATEMENTS

DECEMBER 31, 1994

1. SIGNIFICANT ACCOUNTING POLICIES

(a) Accrual Basis

Revenue and expenditure are recorded on the accrual basis, whereby they are reflected in the accounts in the period in which they have been earned and incurred respectively, whether or not such transactions have been finally settled by the receipt or payment of money.

(b) Capital Assets

Furniture and equipment purchases are expensed in the year of acquisition, except for the building which has been capitalized.

No amortization is being taken on the building.

(c) Incorporation

Entomological Society of Canada is incorporated without share capital under Part II of the Canada Companies Act and is a non-taxable organization.

(d) Volunteer Services

The Society receives volunteer services, the amount of which cannot be reasonably estimated. Therefore, no representation of these costs have been reflected in the financial statements.

2. INVESTMENTS

	<u>1994</u>	<u>1993</u>
GENERAL FUND		
Bonds, at cost (market value		
1994 - \$121,457, 1993 - \$250,460)	<u>\$124,550</u>	<u>\$225,300</u>
ENDOWMENT FUND		
Bonds, at cost (market value		
1994 - \$39,997, 1993 - \$37,792)	<u>\$ 38,860</u>	<u>\$ 30,940</u>

MCCAY, DUFF & COMPANY, CHARTERED ACCOUNTANTS

ENTOMOLOGICAL SOCIETY OF CANADA

NOTES TO FINANCIAL STATEMENTS

DECEMBER 31, 1994

3. ADVANCE TO BOOK PROJECT

The Entomological Society has advanced funds for the publication of "Diseases and Pests of the Vegetable Crop in Canada" in conjunction with the Canadian Phytopathological Society. Both revenue and expenditures are to be shared in an equitable manner. At December 31, 1994 an accrual was made for sales net of costs in 1994 of \$5,605. This receivable has been reflected in the ending balance of the Advance to Book Project. The remaining advance is expected to be recovered over the next few years.

4. CAPITAL ASSET

	<u>1994</u>	<u>1993</u>
Land and building, at cost	<u>\$242,800</u>	<u>\$242,800</u>

5. 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 eroded and that the income will be utilized to aid in the publication of the Canadian Entomologist.

6. BUILDING FUND

This fund was created through an appropriation from the General Fund to recognize the expenses of the building independent of operational expenditures.

7. COMPARATIVE FIGURES

Certain comparative figures have been restated to conform with current year presentation.

McCAY, DUFF & COMPANY, CHARTERED ACCOUNTANTS

ENTOMOLOGICAL SOCIETY OF CANADA
SCHEDULE OF RENTAL REVENUE (EXPENDITURE)
FOR THE YEAR ENDED DECEMBER 31, 1994

	<u>1994</u>		<u>1993</u>
	<u>Budget</u>	<u>Actual</u>	<u>Actual</u>
REVENUE			
Rental income	\$6,000	\$4,585	\$ 5,245
EXPENDITURE			
Insurance	450	474	411
Property taxes	4,650	4,656	4,632
Repairs and maintenance	2,750	-	3,356
Utilities	<u>1,500</u>	<u>1,568</u>	<u>1,793</u>
	<u>9,350</u>	<u>6,698</u>	<u>10,192</u>
NET RENTAL REVENUE (EXPENDITURE)			
FOR THE YEAR	(\$ <u>3,350</u>)	(\$ <u>2,113</u>)	(\$ <u>4,947</u>)

McCAY, DUFF & COMPANY, CHARTERED ACCOUNTANTS

McCAY, DUFF & COMPANY

CHARTERED ACCOUNTANTS

JOHN W. FRANKLIN, C.A.
THOMAS W. HOWARTH, C.A.
BRYAN E. SULLIVAN, C.A.
ALBERT G. MONSOUR, BADMIN. C.A.
BLAIR E. DAVIDSON, BCOMM. C.A.
G. WARREN TRICKEY, BCOMM. C.A.
ROBERT D. SHANTZ, BMATH. C.A.

CONSULTANT - ELDREN E. MCCONNELL, C.A.

330 McLEOD ST.
OTTAWA, ONT.
K2P 2C5
(613) 236-2367
1 (800) 267-6551
Fax: (613) 236-5041

AUDITORS' REPORT

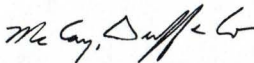
To the Members of
Entomological Society of Canada -
Scholarship Fund.

We have audited the balance sheet of the Entomological Society of Canada - Scholarship Fund as at December 31, 1994. This financial statement is the responsibility of the Fund's management. Our responsibility is to express an opinion on this financial statement based on our audit.

Except as explained in the following paragraph, we conducted our audit in accordance with generally accepted auditing standards. Those standards require that we plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation.

In common with many charitable organizations, the organization derives a part of its revenue from cash donations, the completeness of which is not susceptible to satisfactory audit verification. Accordingly, our verification of this revenue was limited to the amounts recorded in the records of the organization and we were not able to determine whether any adjustments might be necessary to donation revenues, assets and equity.

In our opinion, except for the effect of adjustments, if any, which we might have determined to be necessary had we been able to satisfy ourselves concerning the completeness of donations referred to in the preceding paragraph, this financial statement presents fairly, in all material respects, the financial position of the Fund as at December 31, 1994 and the results of its operations for the year then ended in accordance with generally accepted accounting principles.



Chartered Accountants

Ottawa, Ontario,
March 3, 1995.

ENTOMOLOGICAL SOCIETY OF CANADA - SCHOLARSHIP FUND

BALANCE SHEET

AS AT DECEMBER 31, 1994

	ASSETS	<u>1994</u>	<u>1993</u>
CURRENT			
Cash		\$16,597	\$13,822
Accrued interest receivable		1,536	2,032
Due from Entomological Society of Canada		<u>789</u>	<u>-</u>
		18,922	15,854
INVESTMENTS (note 2)		<u>78,780</u>	<u>78,850</u>
		<u>\$97,702</u>	<u>\$94,704</u>
	SURPLUS		
INCOME FUND			
Balance - beginning of year		\$22,807	\$21,873
Interest income		<u>7,669</u>	<u>7,934</u>
		30,476	29,807
Scholarship awards		<u>6,729</u>	<u>7,000</u>
Balance - end of year		23,747	22,807
CAPITAL FUND			
Balance - beginning of year		71,897	69,990
Donations received		<u>2,058</u>	<u>1,907</u>
Balance - end of year		<u>73,955</u>	<u>71,897</u>
		<u>\$97,702</u>	<u>\$94,704</u>

McCAY, DUFF & COMPANY, CHARTERED ACCOUNTANTS

ENTOMOLOGICAL SOCIETY OF CANADA - SCHOLARSHIP FUND

NOTES TO FINANCIAL STATEMENT

DECEMBER 31, 1994

1. SIGNIFICANT ACCOUNTING POLICY

Revenue and expense are recorded on the accrual basis, whereby they are reflected in the accounts in the period in which they have been earned and incurred respectively, whether or not such transactions have been finally settled by the receipt or payment of money.

2. INVESTMENTS

	<u>1994</u>	<u>1993</u>
Bonds, at cost (market value		
1994 - \$77,338, 1993 - \$86,144)	<u>\$78,780</u>	<u>\$78,850</u>

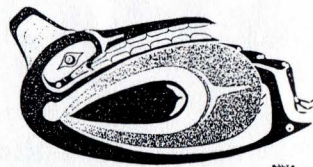
3. STATEMENT OF CHANGES IN FINANCIAL POSITION

This statement has not been prepared as it is the opinion of management that it would not provide additional useful information.

4. VOLUNTEER SERVICES

The Fund receives volunteer services, the cost of which cannot be reasonably estimated. Therefore, no representation of these expenses are reflected in the financial statements.

McCAY, DUFF & COMPANY, CHARTERED ACCOUNTANTS



ESC - ESBC 1995

**The 1995 Joint Meeting of the
Entomological Society of Canada
and the Entomological Society of British Columbia**

Victoria, October 14-18, 1995

Victoria Conference Centre

TENTATIVE PROGRAM

Saturday, 14 October 1995-Harbour Towers

0830-1700 Entomological Society of Canada Governing Board Meeting- Room 415

Sunday, 15 October 1995- Harbour Towers

1000-1500 Registration

1300-1700 Workshops (2)

2000-2200 Linnaean Games: Preliminary session

2000-2200 Workshop (1)

Monday, 16 October 1995- Victoria Conference Centre

0800-1000 Registration

0830-1000 Opening remarks, ESC Awards, Gold Medal Address

1000-1200 Plenary Symposium: " Social Insects: From Molecule to Hive"

- B. Crespi-Simon Fraser University

- M.Winston-Simon Fraser University

- R. Owen-University of Calgary

- D.Gordon-Stanford University

1330-1500 Submitted Papers

Submitted Papers: Graduate Student Papers (President's Prize)

1530-1630 Heritage Lecture

1645-1845 Linnaean Games: Finals

1900-2000 Students meet the Board- Harbour Towers

2000-2300 Wine and cheese- Royal B.C. Museum

Tuesday, 17 October 1995- Victoria Conference Centre

0900-1200 Symposium: "Integrated Pest Management in B.C."

Workshops (2)

1330-1600 Submitted Papers

Poster Session

1630-1730 Entomological Society of Canada Annual General Meeting

1830-2300 Banquet-Harbour Towers

Wednesday, 18 October 1995- Victoria Conference Centre

0900-1200 Symposium: "Biodiversity in the Pacific Northwest"
 Submitted Papers
1200-1300 Entomological Society of Canada Governing Board Meeting-*Chateau*
 Victoria, Harbour Room

Associated Meetings:

Canadian Forum for BioControl
Saturday 14 October, 1995 ~ 0900-1730 Chateau Victoria

Western Forum of the Expert Committee on Integrated Pest Management
October 19-21 Chateau Victoria

Tentative Workshops:

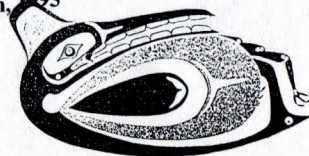
Cone and seed insects- R. Bennet
Gypsy moths- D. Roden
Biting fly feeding behaviour- W. Friend
Pollination- H. Nadel/P. Kevan
Insect pathology-D. Levin
Forest entomology-T. Shore

For additional information please contact:

Terry Shore (Chair),
Canadian Forest Service, Pacific Forestry Centre, 506 West Burnside Rd.,
Victoria, B.C. V8Z 1M5.
Telephone: (604)363-0666
Fax: (604)363-0775
Email: TShore@A1.PFC.Forestry.ca

Bernie Roitberg (Program Chair),
Dept. of Biological Sciences, Simon Fraser University, Burnaby, B.C., V5A 1S6.
Telephone: (604)291-3585
Fax: (604)291-3496
Email: Roitberg@SFU.ca

Hannah Nadel (Organizer of workshops),
7028 Bryrwood Crt., Brentwood Bay, B.C., V8M 1G1
Telephone: (604)544-1386
Email: Hannah.Nadel@bbc.amtsgi.bc.ca



ESC - ESBC 1995

**La Réunion Conjointe de 1995 de la
Société Entomologique du Canada
et de la Société Entomologique de la
Colombie-Britannique**

Victoria, 14-18 Octobre 1995 Victoria Conference Centre

PROGRAMME PROVISOIRE

Samedi, 15 Octobre 1995 - Harbour Towers

0830-1700 Réunion du Conseil de la Société Entomologique du Canada - Salle 415

Dimanche, 15 Octobre 1995 - Harbour Towers

1000-1500 Inscription

1300-1700 Ateliers (2)

2000-2200 Jeux Linnéens: Session préliminaire, Heure de la session finale à confirmer

2000-2200 Atelier (1)

Lundi, 16 Octobre 1995 - Victoria Conference Centre

0800-1000 Inscription

0830-1000 Ouverture, Prix SEC, Allocution - Médaille d'Or

1000-1200 Symposium plénier: "Insectes Sociaux: De la molécule à la ruche"

- B. Crespi - Université Simon Fraser

- M. Winston - Université Simon Fraser

- R. Owen - Université de Calgary

- D. Gordon - Université Stanford

1330-1500 Communications Scientifiques

Communications Scientifiques: Étudiants gradués (Prix du Président)

1530-1630 Allocution Héritage des Anciens

1645-1845 Jeux Linéens: Session finale

1900-2000 Les étudiants rencontrent le Conseil - Harbour Towers

2000-2300 Vin et Fromage - Musée Royal de la Colombie-Britannique

Mardi, 17 Octobre 1995 - Victoria Conference Centre

0900-1200 Symposium: "Lutte Intégrée des insectes en Colombie-Britannique"

Ateliers (2)

1330-1600 Communications Scientifiques

Présentation des posters

1630-1730 Assemblée Générale Annuelle de la Société Entomologique du Canada

1830-2300 Banquet - Harbour Towers

Mercredi, 18 Octobre 1995 - Victoria Conference Centre

0900-1200 Symposium: "La biodiversité du Nord-ouest du Pacifique"

Communications Scientifiques

1200-1300 Réunion du Conseil de la Société Entomologique du Canada - Château

Victoria,

Salle Harbour

Autres Réunions :

Forum Canadien pour la Lutte Biologique Samedi 14 Octobre, 1995 - 0900-1730
Château Victoria

Forum du Comité des Experts de l'Ouest sur la lutte intégrée des insectes et des maladies
9-21 Octobre 1995 Château Victoria

Liste Provisoire des Ateliers

Insectes nuisibles des cônes et des graines - R. Bennet

La Spongieuse - D. Roden

Comportement alimentaire des mouches piqueuses - W. Friend

La Pollinisation - H. Nadel / P. Kevan

L'Entomopathologie - D. Levin

L'Entomologie Forestière - T. Shore

Pour de plus amples renseignements adressez-vous à:

Terry Shore (Président),
Service Canadien des Forêts, Centre Forestier du Pacifique, 506 West Burnside Rd.,
Victoria, B.C. V8Z 1M5
Téléphone:(604)363-0666
Télécopieur:(604)363-0775
Courrier électronique: TShore@A1.PFC.Forestry.ca

Bernie Roitberg (Président du Programme),
Département des Sciences Biologiques, Université Simon Fraser, Burnaby, B.C. V5A 1S6
Téléphone:(604)291-3585
Télécopieur:(604)291-3496
Courrier électronique: Roitberg@SFU.ca

Hannah Nadel (Organisatrice des Ateliers),
7028 Brywood Crt., Brentwood Bay, B.C. V8M 1G1
Téléphone:(604)544-1386
Courrier électronique: Hannah.Nadel@bbc.amtsgi.bc.ca

**The 1995 Joint Meeting of the Entomological Society of Canada
and the Entomological Society of British Columbia**

*Victoria, October 14-18, 1995
Victoria Conference Centre*

REGISTRATION FORM

Check one: Regular ☐ or Student ☐

Name:

.....
Last

First

Initial

Title:
.....

Address:
.....

City:
.....

Province/State:.....

Postal

Code:.....Telephone:.....Fax:.....

Registration fees are in \$ CDN (including banquet ticket and GST).
Late registration (after August 11, 1995) add \$15.00 to each fee.

Please make cheque payable to *ESC/ESBC Joint Meeting 1995*

Registration, *regular* ☐ \$ 110
Registration, *student* ☐ \$ 60
Registration, *accompanying* ☐ \$ 50

.....
Name of accompanying person TOTAL

**La Réunion Conjointe de 1995 de la Société Entomologique du Canada
et de la Société Entomologique de la Colombie-Britannique**

Victoria, 14-18 Octobre 1995
Victoria Conference Centre

FORMULAIRE D'INSCRIPTION

Indiquez: Régulier ☐ ou Étudiant(e) ☐

Nom:.....
Nom de famille *prénom* *initiales*

Titre:.....

Adresse:.....

Ville:.....

Province/État:.....

Code Postal:.....Téléphone:.....Télécopieur:.....

Frais d'inscription en \$Can (incluant les frais de banquet et la TPS).

Inscription tardive (après le 11 août 1995) ajoutez \$15.00.

Veuillez établir votre chèque à l'ordre de:"*ESM/ESBC Joint Meeting 1995*"

Frais d'inscription, *régulier* \$110

Frais d'inscription, *étudiant(e)* \$60

Frais d'inscription, *conjoint(e)* \$50

.....

Nom du conjoint TOTAL

Accommodations:

A number of rooms have been set aside at the Harbour Towers and the Chateau Victoria.

Harbour Towers:

Standard room: single-\$60, double-\$70

1 bedroom suite with kitchen and hide-a-bed: single/double \$80 ; 2 bedroom suite with kitchen and hide-a-bed: single/double \$100; -additional guests (over the double occupancy~\$15)

RESERVATIONS: 1-800-663-5896

Chateau Victoria

Standard room: single/double- \$70; 1 bedroom suite: single/double- \$85

Some rooms have a kitchen available for a one time hook-up fee of \$15. Some larger suites available.

-additional guests (over the double occupancy~\$15)

RESERVATIONS: 1-800-663-5891

It is in the interest of the Entomological Societies of Canada and B.C. that you stay at these hotels and that you let them know you are attending the ESC meeting when making your reservations.

Please return registration form and registration fees to :

Mr. Jim Troubridge

Agriculture Canada

6660 NW Marine Dr.

Vancouver, B.C. V6T 1X2

Hébergement:

Des chambres ont été réservées aux "Harbour Towers" et au Château Victoria.

Harbour Towers:

Chambre standard: occupation simple - \$60, double - 70\$

Suite avec 1 chambre à coucher, cuisine et divan-lit: occupation simple ou double \$80;

Suite avec 2 chambres à coucher, cuisine et divan-lit: occupation simple ou double - \$100.

Personne additionnelle - Supplément de \$15.

RESERVATIONS:1-800-663-5896

Château Victoria

Chambres standard: occupation simple ou double - \$70; Suite avec 1 chambre à coucher: occupation simple ou double -\$85

Certaines chambres ont une cuisine disponible pour un supplément de \$15 pour la durée du séjour. Des suites plus grandes sont aussi disponibles. Personne additionnelle - Supplément de \$15.

RESERVATIONS:1-800-663-5891

En réservant à l'un de ces hôtels, vous supportez les Sociétés Entomologiques du Canada et de la Colombie-Britannique. Il serait bon de mentionner, au moment de votre réservation, que vous participez à la réunion de la SEC.

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

Mr. Jim Toubrige

Agriculture Canada

6660 NW Marine Dr.

Vancouver, B.C. V6T 1X2

The 1995 Joint Meeting of the Entomological Society of Canada
and the Entomological Society of British Columbia
Victoria, October 14-18, 1995
Victoria Conference Centre

SUBMITTED PAPER, STUDENT PAPER AND POSTER PRESENTATION FORM

Please return to:

Bernie Roitberg (Program Chair),

Dept. of Biological Sciences, Simon Fraser University, Burnaby, B.C., V5A 1S6. Telephone:
(604)291-3585 Fax: (604)291-3496 Email: Roitberg@SFU.ca

DEADLINE: Postmarked on June 30, 1995

Type or print in the space below use type no smaller than 12 pitch 10 point (courier typewriter) to allow for reduction. Longer abstracts may be curtailed. Abstracts may be submitted as ASCII files by e-mail or on diskette.

Author(s).....

Address.....

Title.....

Abstract

Form of presentation desired (check one):

Oral presentation: 12 min + 3 min discussion:	<input type="checkbox"/> Regular	<input type="checkbox"/> President's Prize
Poster presentation:	<input type="checkbox"/>	

Name of presenter:.....

*Students are eligible for the President's Prize if they meet the following criteria:

- 1) *they must be enrolled in a graduate degree program or have graduated from the program less than six months prior to the meeting*
- 2) *they must be registered at the meeting*
- 3) *they must be the principal investigator*

La Réunion Conjointe de 1995 de la Société Entomologique du Canada
et de la Société Entomologique de la Colombie-Britannique
Victoria, 14-18 Octobre 1995
Victoria Conference Centre

**FORMULAIRE D'INSCRIPTION: COMMUNICATIONS ORALES (RÉGULIÈRES
ET ÉTUDIANTS) ET PRÉSENTATION D'UN POSTER**

Veuillez retourner à:

Bernie Roitberg (Président du programme),

Département des Sciences Biologiques,

Université Simon Fraser, Burnaby,

B.C. V5A 1S6

Téléphone:(604)291-3585

Télécopieur:(604)291-3496

Courrier électronique: Roitberg@SFU.ca

DATE LIMITE: 30 juin 1995

Présenté par.....

Écrire en lettres moulées ou à la machine dans l'espace prévu. Veuillez ne pas utiliser de caractères plus petits que 10 points ou 12 caractères au pouce (courrier) afin de permettre de réduire le texte. Les résumés trop longs pourront être coupés. Vous pouvez soumettre votre résumé sur disquette ou par courrier électronique sous forme de fichier ASCII.

Auteur(s).....
Organisme et adresse.....
Titre:.....
Résumé:

Type de présentation (ne cochez qu'un choix)

Communication orale: 12 min. + 3 min de discussion

Présentation d'un poster:

Régulier

☐

☐

Prix du Président*

☐

*Les étudiants sont éligibles au Prix du Président s'ils satisfont aux exigences suivantes:

- 1) ils doivent être inscrits à un programme d'études post-graduées ou avoir gradué d'un tel programme dans les six (6) mois précédant la réunion
- 2) ils doivent être inscrits à la réunion
- 3) ils doivent être le chercheur principal

First Canadian Linnaean Games

The Student Affairs Committee is organizing a "Canadianized" version of the E.S.A.'s Linnaean Games for the Annual Meeting in Victoria. The Games were first held at a meeting of the E.S.A. in 1982, and since then have been a great success. The format of the Games involves teams of four people competing against each other to answer questions about entomology. The primary goal of the Games is to provide an activity for students at meetings that is educational and entertaining. The Games are named after Carolus Linnaeus to recognize his contributions to entomology and to reflect the objective of keeping the competition fun. For more information about the history and rules of the Games, refer to the Bulletin of the Entomological Society of America (now American Entomologist), 31(3): 5-6.

The preliminary round of the Games in Victoria is scheduled for Sunday night, with the time of the finals to be announced at a later date. Subject areas for questions will include: behaviour, Canadian entomological current events and history, crop protection, ecology, forestry, morphology, physiology, taxonomy and toxicology. Questions will be presented orally and visually, with the aid of slides. The master list of Linnaean Games questions is available from Troy Danyk (Danyk@abrsle.agr.ca).

The Student Affairs Committee invites all student members of the E.S.C. planning to attend the meeting to submit a team of 4 people, or your name (so that we can put you on a team). Depending on the response, there may be space available for a 'drop-in' team that you can sign up for during registration. Please send in your response by August 1, 1995.

We thank Tom Turpin and Sonny Ramaswamy of the E.S.A. for providing advice, information and equipment for the Canadian Linnaean Games.

Linnaean Games Registration Form

Name of Team:.....

Institution:.....

Team Members:.....

.....
.....
.....

OR

Name of Individual:.....

Institution:.....

Please return to:

Elizabeth Tomlin

Department of Biological Sciences

Simon Fraser University

Burnaby, B.C.

V5A 1S6

tel (604) 291-4163

fax (604)291-3496

e-mail tomlina@sfu.ca

Premiers Jeux Linnéens Canadiens

Le Comité des Affaires Étudiantes organise une version canadienne des Jeux Linnéens de la S.E.A pour sa rencontre annuelle de Victoria. Les jeux ont été tenus pour la première fois lors d'une réunion de la S.E.A. en 1982, et depuis, ont connu beaucoup de succès. Le jeu met en compétition des équipes de quatre joueurs qui doivent répondre à des questions d'entomologie. Le but principal du jeu est de donner l'occasion aux étudiant(e)s qui sont à la réunion de participer à une activité à la fois éducative et divertissante. Les jeux sont nommés en l'honneur de Carl von Linné, afin de reconnaître sa contribution au domaine de l'entomologie, ainsi que pour illustrer l'objectif de garder la compétition agréable. Pour plus de renseignements sur l'histoire et les règles du jeu, référez-vous au Bulletin de la Société Entomologique Américaine (*American Entomologist*), 31(3):5-6.

La manche préliminaire des Jeux de Victoria est prévue pour dimanche soir. La date et l'heure de la finale seront annoncées plus tard. Les questions porteront sur les sujets suivants: le comportement, les événements actuels et l'histoire de l'entomologie canadienne, la phytoprotection, l'écologie, la foresterie, la morphologie, la physiologie, la taxonomie et la toxicologie. Les questions seront posées sous forme orale et visuelle, à l'aide de diapositives. La liste des questions des Jeux Linnéens est disponible auprès de Troy Danyk (Danyk@abrsle.agr.ca).

Le Comité des Affaires Étudiantes invite tous les étudiant(e)s membre de la S.E.C. qui prévoient participer à la réunion à présenter une équipe de 4 personnes, ou à donner leur nom (afin qu'ils soient placés dans une équipe). Il est possible qu'il y ait des places disponibles pour former une équipe improvisée au moment de l'inscription. Veuillez faire parvenir votre réponse avant le 1er août 1995.

Nous remercions Tom Turpin et Sonny Ramaswamy de la S.E.A. pour les conseils, l'information et l'équipement qu'ils nous ont fournis pour les Jeux Linnéens Canadiens.

Jeux Linnéens Canadiens: Formulaire d'inscription

Nom de l'équipe:.....

Institution:.....

Noms des membres de l'équipes:.....

.....
.....
.....

OU

Nom (personne seule):.....

Institution:.....

Veuillez retourner à:

Elizabeth Tomlin

Département des Sciences Biologiques

Université Simon Fraser

Burnaby, B.C.

V5A 1S6

tel:(604)291-4163

télécopieur:(604)291-3496

Courrier électronique: tomlina@sfu.ca

**ACTIVITIES FOR PARTICIPANTS AND THEIR SPOUSES/PARTNERS/FRIENDS
AT THE ESC-ESBC JOINT MEETING IN VICTORIA**

Victoria offers a wide range of wonderful activities and attractions. We'd like to know which of the following interest you and your "accompanying person(s)", so that we can help you enjoy your visit.

So here we go...what would you and your "AP" like to do?

Activities for conference participants and AP's - Sunday, Oct. 15, 1995

(Please indicate with an X, a circle, or highlighter pen which activities you'd prefer.)

1. Trip to a west coast beach for walking, looking in tide pools, and soaking up (hopefully not literally) the tranquility of the west coast in autumn.
2. A whale-watching boat trip.
3. A salmon-fishing boat trip.
4. A trip to Butterfly World.
5. Tour of the city - including heritage houses - and Butchart Gardens
6. Other - namely:

Activities for conference participants and AP's - Mon-Wed., Oct. 16-18, 1995

1. Trip to a west coast beach for walking, looking in tide pools, and soaking up (hopefully not literally) the tranquility of the west coast in autumn.
2. A whale-watching boat trip.
3. A salmon-fishing boat trip.
4. A trip to Butterfly World.
5. Tour of the city - including heritage houses - and Butchart Gardens
6. Trip to Saltspring Island
7. Golf
8. Chocolate making
9. Other - namely:

Would you like to receive a packet of information from Tourism Victoria? _____
If yes, please include your current address.

Please return this form to: Sheila Fitzpatrick
Pacific Agriculture Research Centre
6660 N.W. Marine Drive
Vancouver, B.C. V6T 1X2

**ACTIVITÉS POUR LES PARTICIPANTS ET LEURS ACCOMPAGNANTS A
L'ASSEMBLÉE CONJOINTE DE LA SEC-SECB A VICTORIA.**

Victoria offre un vaste choix d'activités et d'attractions merveilleuses. Nous aimerions savoir quelles activités proposées ci-dessous, vous intéressent et rendront votre visite agréable.

Voici donc...qu'aimeriez-vous faire?

Activités pour les participants(tes) et accompagnants(tes) dimanche le 15 octobre 1995

(Veuillez, encercler, surligner ou marquer d'un X les activités que vous préférez.)

1. Voyage à la côte ouest pour marcher, observer les bassins de marée et s'imprégner de la tranquillité qu'offrent les plages de la côte en automne.
2. Expédition d'observation de baleines en bateau.
3. Pêche aux saumons en bateau.
4. Tour du <<BUTTERFLY WORLD>>.
5. Tour de ville incluant la visite de maisons historiques et une visite aux jardins Butchart.
6. Autre - suggestions:

Activités pour les participants(tes) et accompagnants(tes) lundi le 16 octobre au mercredi 18 octobre 1995

1. Voyage à la côte ouest pour marcher, observer les bassins de marée et s'imprégner de la tranquillité qu'offrent les plages de la côte en automne.
2. Expédition d'observation de baleines en bateau.
3. Pêche aux saumons en bateau.
4. Tour du <<BUTTERFLY WORLD>>.
5. Tour de ville incluant la visite de maisons historiques et une visite aux jardins Butchart.
6. Voyage à l'île Saltspring.
7. Golf
8. Fabrique de chocolat.
9. Autre - suggestions:

.....
Aimerez-vous recevoir une trousse d'informations sur Victoria?

Si oui, veuillez inscrire votre adresse.

Veuillez retourner ce formulaire à: Sheila Fitzpatrick
Pacific Agriculture Research Centre
6660 N.W. Marine Drive
Vancouver, (C.-B.) V6T 1X2

FROZEN MOSQUITO

To commemorate the 1995 Annual General Meeting of the Entomological Societies of Canada and British Columbia, a limited edition print, Frozen Mosquito by B.C. native artist Micheal Blackstock, has been commissioned and is being offered for sale. Frozen Mosquito is a three colour (black, red and blue), hand-pulled silkscreen limited edition print on Stonehenge acid free cotton rag paper. Other items offered for sale and featuring Frozen Mosquito in full colour are oval, bronze lapel pins (with "Entomological Society British Columbia" surrounding the artwork), coffee mugs (with ESC / ESBC, Victoria BC, October 1995), and T-shirts (with full size print across the chest and legend as for the mugs). See below for advance ordering information.

Micheal was inspired to paint the original design by the Tsimshian legend recounting the origin of the mosquito (as translated by William Benyon, 1954). In ancient times, blood sucking animals in human form used to invite travellers to their village and then drain their victims' blood by stabbing their long crystal noses into the unsuspecting people's necks while they slept. One young man awoke in time to discover the villagers' secret and save himself. He fled from the village with the chief in hot pursuit. The chief tracked the young man to a lake where the man had hidden in a tree on the shore. The chief exhausted and soaked himself trying to attack the man's reflection in the water and then, while resting on the shore, the chief froze solid. The young man and his people took the frozen chief and burned him to ashes. When the fire had burned out, a wind came up and blew the ashes into the air where they turned into clouds of mosquitoes.

Frozen Mosquito is the seventh print offered by the artist. Micheal Blackstock was born in 1961 and has been doing native art since he was 25 years old. A self taught artist, Micheal is a status native with the Gitanmax Band in Hazelton, BC as well as a professional forester. An original Micheal Blackstock painting entitled "The Watchmen" hangs in the British Columbia Legislature. Three of Micheal's prints are sold out and his art can be found in many fine native art galleries throughout B.C. He has recently been chosen to represent the Prince George region in the Provincial Juried Art Show Objects and Images.

Micheal believes in offering small, limited edition print runs (60-150) of the highest quality. Frozen Mosquito was printed in Victoria, B.C. by the world famous Pacific Editions Limited Workshop in February, 1995. The edition consists of 100 prints (10"x14"): 1 Printer's Proof, 10 Artist's Proofs, and 89 signed and numbered copies. This is the only limited edition printing of this design.

Please see page 99.

ORDERING INFORMATION:

Artist's Proofs:	\$100.00
Signed and numbered copies:	\$35.00
Lapel pins:	\$7.00
Coffee mugs:	\$10.00
T-shirts:	\$20.00

Contact:

Robb Bennett
ESBC Secretary
c/o B.C. Ministry of Forests
7380 Puckle Road
Saanichton, B.C. V8M 1W4
ph. 604-652-5600
fax 604-652-4204
e-mail: rgbenet@mfor01.for.gov.bc.ca

MOUSTIQUE GELÉ

Pour commémorer la réunion générale annuelle de 1995 des Sociétés Entomologiques du Canada et de la Colombie-Britannique, une édition à tirage limité du "Moustique Gelé", une oeuvre de l'artiste autochtone Britanno-Colombien Michael Blackstock, a été commandée et est maintenant mise en vente. Le "Moustique Gelé" est une sérigraphie en trois couleurs (noir, rouge et bleu) faite sur coton "Stonehenge" sans traitement à l'acide. D'autres items sont aussi offerts, représentant le "Moustique Gelé" en couleur: des épinglettes ovales de couleur bronze (avec l'inscription "Entomological Society British Columbia" encerclant le dessin), des tasses (avec l'inscription ESC / ESBC, Victoria BC, October 1995), et des T-shirts (avec la reproduction grandeur nature sur le devant et une inscription, comme sur les tasses). Pour commander à l'avance, voir les renseignements au bas de la page .

Pour faire le dessin original, Michael fut inspiré par la légende Tsimishian racontant l'origine du moustique (tel que traduit par William Benyon, 1954). Dans les temps anciens, des animaux suceurs de sang prenant des formes humaines, avaient l'habitude d'inviter les voyageurs dans leur village et de drainer le sang de leurs victimes en enfonçant leur long nez de cristal dans le cou des voyageurs pendant leur sommeil. Un jeune homme, réveillé à temps, découvrit le secret du village et s'enfuit, le chef à ses trousses. Ce dernier suivit les traces du jeune homme jusqu'à un lac où il s'était caché dans un arbre sur la rive. Le chef s'épuisa en essayant d'attaquer l'image du jeune homme dans l'eau et, trempé, gela comme un glaçon alors qu'il se reposait sur la rive. Le jeune homme et son peuple prirent le chef gelé et le brûlèrent. Quand le feu fût éteint, un vent se leva qui souffla les cendres dans les airs, où elles se transformèrent en nuages de moustiques.

Le "Moustique Gelé" est la septième reproduction offerte par l'artiste. Michael est né en 1961 et il s'adonne à l'art autochtone depuis l'âge de 25 ans. Artiste autodidacte, Michael est un autochtone de la Bande Gitnanmax de Hazelton C.B, ainsi qu'un forestier agréé. Une peinture originale de Michael Blackstock intitulée "The Watchmen" ("Les Gardiens") se trouve dans l'édifice de la Législature de la Colombie-Britannique. Trois des reproductions de Michael sont épuisées, et ses oeuvres se retrouvent dans plusieurs galeries d'art autochtone à travers la C.B. Il a récemment été choisi pour représenter la région de Prince George au Concours Provincial d'Images et d'Objets d'Arts.

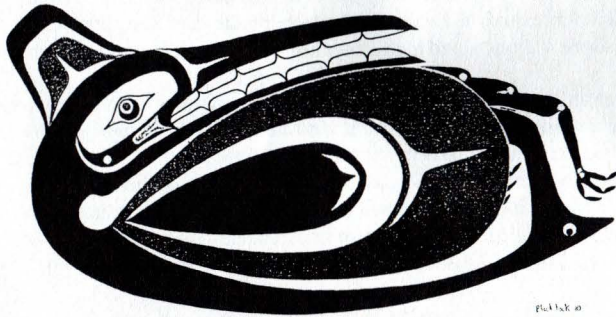
Michael préfère offrir des quantités limitées (60-150) d'une très haute qualité. Le "Moustique Gelé" a été imprimé à Victoria C.B., par la maison d'édition de renommée mondiale "Pacific Limited Workshop" en Février 1995. Le tirage comprend 100 copies (10" x 14"): 1 épreuve de l'imprimerie, 10 épreuves de l'artiste, et 89 reproductions signées et numérotées. Ceci constitue le seul tirage de cette oeuvre.

RENSEIGNEMENT SUR LES COMMANDES:

Épreuves de l'artiste:	\$100.00
Reproductions signées et numérotées:	\$35.00
Épinglettes:	\$7.00
Tasses:	\$10.00
T-shirts:	\$20.00

Contactez

Robb Bennett
ESBC Secretary
c/o B.C. Ministry of Forests
7380 Puckle Road
Saanichton, B.C. V8M 1W4
tel: 604-652-5600
télécopieur: 604-652-4204
rgbennet@mfor01.for.gov.bc.ca



IN MEMORY

John Elwood McFarlane
1929-1995

The McGill community was saddened to learn of the sudden death of John E. McFarlane at his home in Terrasse-Vaudreuil on 17 January 1995. Jack is survived by his wife Clare and children Sarah, Tom and Joanna and family.

Jack, a native of Tisdale, Saskatchewan, received his B.A. (with Distinction in 1949 and High Honours in Biology in 1950) and M.A. (1951) from the University of Saskatchewan, and obtained his Ph.D. from the University of Illinois in 1955. Jack joined the former Department of Entomology (Macdonald Campus) as an Assistant Professor in 1955; he was promoted to Associate Professor in 1965 and Professor in 1973. He chaired the Department of Entomology and served as Director of the Lyman Entomological Museum and Research Laboratory from 1986 until his early retirement in 1992.

Jack served his Faculty and University well. He was a respected teacher of Introductory Zoology, Histological Techniques and Insect Physiology, and at one point taught courses on both campuses. He was a member or chair of a variety of committees, especially within the Faculty of Agricultural and Environmental Sciences and the Faculty of Graduate Studies and Research. Jack's colleagues respected him for his wisdom, judgment and high standards in both academic and research matters.

Jack was an accomplished scientist; as an insect physiologist he is best known for his research on facets of the physiology of house crickets. His research had been supported by NRC/NSERC for 32 years, and at his retirement he had 86 publications in refereed journals and five book chapters. Jack was a keen researcher, to the extent that he was the sole author of 40 of those publications and senior author of another 16. He never had more than two graduate students at a time, in order to give them adequate supervision and still enable him to do his own research. He supervised the research of 10 M.Sc. and 10 Ph.D. students.

Jack was a member of a number of scientific societies and held office in several. In particular, he served as Associate Editor of the Canadian Journal of Zoology and was a Director of the Entomological Society of Canada. He became a Fellow of the Entomological Society of Canada in 1983.

Jack was a professional, and inspired those who interacted closely with him, especially his graduate students and colleagues in the former Department of Entomology. Colleagues and friends on both campuses will also remember him fondly at the theatre, on the trails of the Morgan Arboretum or at the keys of a piano!

D.J. Lewis
Macdonald Campus
McGill University

NEWS OF ORGANIZATIONS

International Commission on Zoological Nomenclature

The following applications were published on 30 March 1995 in Vol. 52, Part 1 of the *Bulletin of Zoological Nomenclature*. Comment or advice on these applications is invited for publication in the *Bulletin of Zoological Nomenclature* and should be sent to the Executive Secretary, I.C.Z.N., c/o The Natural History Museum, Cromwell Road, London SW7 5BD.

Case 2914 *Diplocentrus mexicanus* Peters, 1861 (Arachnida, Scorpiones): proposed confirmation of the rediscovered holotype as the name-bearing type.

W. David Sissom

Department of Biology and Geosciences, West Texas A & M University, Box 808 WT Station, Canyon, Texas 79016-0001, U.S.A.

Abstract. The purpose of this application is to reinstate the rediscovered holotype as the name-bearing type of *Diplocentrus mexicanus* Peters, 1861, a species of scorpion from the states of Mexico and Oaxaca in Mexico (family DIPLOCENTRIDAE Pocock, 1893). The original material had been presumed lost and a neotype designated; the holotype and neotype are now found to belong to different subspecies. *D. mexicanus* is the type species by monotypy of *Diplocentrus* Peters, 1871. The genus *Diplocentrus* includes 30 species distributed from southeastern United States throughout Mexico to Belize, Guatemala and Honduras.

Case 2941 *Nepa rustica* Fabricius, 1781 and *Zaitia stollii* Amyot & Serville, 1843 (currently *Diplonychus rusticus* and *Belostoma stollii*; Insecta, Heteroptera): proposed conservation of the specific names

John T. Polhemus

University of Colorado Museum, 3115 South York St., Englewood, Colorado 80110, U.S.A.

I.M. Kerzhner

Zoological Institute, Russian Academy of Sciences, Universitetskaya naberezhnaya 1, St Petersburg 199034, Russia

Abstract. The purpose of this application is to conserve the specific names of *Diplonychus rusticus* (Fabricius, 1781) from Asia and *Belostoma stollii* (Amyot & Serville, 1843) from the New World. In 1775 Fabricius had applied the name *Nepa rustica* to what was probably *B. stollii*, but in 1781 he changed the description and provenance and used *N. rustica* for the Asian species. It is proposed that the 1775 use of *N. rustica* be suppressed.

Case 2918 *Aspidiphorus* Ziegler in Dejean, 1821 (Insecta, Coleoptera): proposed conservation as the correct original spelling, and ASPIDIPHORIDAE Kiesenwetter, 1877 (1859): proposed placement on the Official List

Joseph V. McHugh

Department of Entomology, Comstock Hall, Cornell University, Ithaca, New York 14853-0999, U.S.A.

Abstract. The purpose of this application is to conserve the universally accepted spelling *Aspidiphorus* Ziegler in Dejean, 1821 for a genus of 12 nominal species of small beetles which feed on slime moulds and have a broad distribution in the Old World. It is also proposed that the name ASPIDIPHORIDAE Kiesenwetter, 1877 (1859) should be placed on the Official List as the valid name for the family group that includes both *Aspidiphorus* and *Sphindus* Megerle in Dejean, 1821.

Case 2872 XANTHOLININI Erichson, 1839 and QUEDIINI Kraatz, 1857 (Insecta, Coleoptera): proposed precedence over senior synonyms, and *Quedius* Stephens, 1829: proposed designation of *Staphylinus levicollis* Brullé, 1832 as the type species

Alfred F. Newton, Jr.

Field Museum of Natural History, Roosevelt Road at Lake Shore Drive, Chicago, Illinois 60605, U.S.A.

Abstract. The purpose of this application is the conservation of the staphylinid beetle family-group names XANTHOLININI Erichson, 1839 and QUEDIINI Kraatz, 1857, which have senior but unused synonyms. The type species of *Quedius* Stephens, 1829 has been cited as "*Staphylinus tristis* Gravenhorst, 1802" but this is not an available name for the relevant taxon and it is proposed that the valid nominal species *S. levicollis* Brullé, 1832 be designated as the type species in accordance with the current taxonomic usage.

Case 2916 *Metablastothrix* Sugonjaev, 1964 (Insecta, Hymenoptera): proposed designation of *Blastothrix (Metablastothrix) isomorpha* Sugonjaev, 1964 as the type species

Natalia D. Voinovich, Vladimir A. Trjapitzin & Eugeny S. Sugonjaev

Zoological Institute, Russian Academy of Sciences, 1 Universitetskaya naberezhnaya, 199134 St Petersburg, Russia

Abstract. The purpose of this application is the designation of *Blastothrix (Metablastothrix) isomorpha* Sugonjaev, 1964 as the type species of the encyrtid genus *Metablastothrix* Sugonjaev, 1964. At present the type species is *Microterys truncatipennis* Ferrière, 1955 but this was based on a misidentification. *Metablastothrix* has a Holarctic distribution and the species are secondary parasitoids of some injurious coccids. Conservation of the generic name will help to ensure stability in the economically important family ENCYRTIDAE Walker, 1837.

The following Opinions were published on 30 March 1995 in Vol. 52, Part 1 of the *Bulletin of Zoological Nomenclature*. Copies of these Opinions can be obtained free of charge from the Executive Secretary, I.C.Z.N., c/o The Natural History Museum, Cromwell Road, London SW7 5BD.

OPINION 1794. *Sigara coleoptrata* Fabricius, [1777] (Insecta, Heteroptera): specific name conserved, and *Notonecta obliqua* Thunberg, 1787: specific name placed on the Official List.

OPINION 1795. *Corisa sexlineata* Reuter, 1882 (currently *Sigara (Tropocorixa) sexlineata*; Insecta, Heteroptera): specific name not conserved, and that of *C. confluens* Fieber, 1851 placed on Official List.

OPINION 1796. *Platynectes* Régimbart, 1879 (Insecta, Coleoptera): conserved.

OPINION 1797. *Oecothea* Haliday in Curtis, 1837 (Insecta, Diptera): conserved, and *Helomyza fenestralis* Fallén, 1820 designated as the type species.

PUBLICATIONS BOOK REVIEWS

E. Wajnberg and S.A. Hassan [eds.] *Biological Control with Egg Parasitoids* Published by CAB International, on behalf of the International Organization for Biological Control (IOBC), Berkshire, UK, 1994, 286 pp., \$(U.S.)75.00, ISBN: 0-85198-8962

As the title, *Biological Control with Egg Parasitoids* suggests, the book attempts to summarize information on the applied biology of egg parasitoids for (quote): "non-specialized students studying agriculture, research entomologists working on egg parasitoids or commercial operators in biological control programs." Nine of the twelve chapters deal largely or exclusively with the genus *Trichogramma*: the systematics of the Trichogrammatidae (J. D. Pinto & R. S. Stouthamer); their worldwide use in biological control (Li Li-Ying); methods of testing for efficacious populations for use in biological control programs (S. A. Hassan); artificial diets for *Trichogramma* and other egg parasitoids (S. Grenier); quality control in mass production (F. Bigler); release methodologies (S. M. Smith); habitat location (D. A. Nordlund); host acceptance and progeny allocation (J. M. Schmidt); and intra-population genetic variation (E. Wajnberg). The remaining chapters address the biology of egg parasitoids in a more general manner: biological control with other egg parasitoids (F. Bin); physiological interactions between egg parasitoids and their hosts (S. B. Vinson); and overwintering strategies of egg parasitoids (G. Boivin). The authors are well qualified to discuss their subject areas and are "up to speed" with the latest developments in their fields.

The book offers a valuable summary of much of the information published on egg parasitoids in the last fifteen years, particularly the voluminous output produced by the IOBC working group, "*Trichogramma* and other Egg Parasitoids" (Les Colloques de l'INRA #9, 43, 56). The table of contents is well designed, allowing rapid access to specific items of interest. On the artistic side, there is an animation of egg parasitism that can be viewed by flipping through the bottom corners of the right hand pages.

Most of the "sins" of the book are those of omission. The underlying emphasis of the book is on the rearing and release of *Trichogramma* as inundative control agents and the use of "other" egg parasitoids receives insufficient attention. The book does not present a full and balanced discussion of the limitations of the use of *Trichogramma* in biological control. The rearing of parasitoids from artificial or semi-artificial diets is covered, yet the far more widespread technique of rearing *Trichogramma* from insect eggs is not discussed. People with a general interest in pest management would have benefitted from more discussion of the unique aspects of egg parasitoids as biological control agents in comparison with parasitoids of other life stages. The book could have been much more comprehensive with greater discussion of these topics.

The book is not well indexed. For example, at least 46 species of *Trichogramma* are discussed in the text, yet there are only five species cited in the index.

Several chapters offer superb reviews of their topic areas, while others are too superficial to constitute a meaningful review of their topic. Three (excellent) chapters were written by Canadian researchers. Two of these are very relevant to the practice of biological control in Canada ("Overwintering

Strategies of Egg Parasitoids” by Guy Boivin and “Methods and Timing of Releases of *Trichogramma* to Control Lepidopterous Pests” by Sandy Smith). The third “Canadian” chapter (“Host Recognition and Acceptance by *Trichogramma*” by Jonathan Schmidt) is a comprehensive discussion of the behavioural aspects, physiology and ecology of parasitoid-host interactions at the time of oviposition.

The book may not have completely fulfilled the promise of its title, but the information compiled in it constitutes a useful contribution to the literature on egg parasitoids. It would be a valuable resource for people working with the *Trichogramma*, as it offers a comprehensive, contemporary review of information on these parasitoids. It is likely a worthwhile addition to the libraries of people with an interest in biological control. For “specialized students studying agriculture” or those with non-applied interests in parasitoid biology, other books exist that adequately cover egg parasitism within the larger context of biological control or studies in parasitoid biology.

J. Corrigan
Department of Environmental Biology
University of Guelph
Guelph, Ontario

Pielou, E.C. 1994. *A Naturalist's Guide to the Arctic*. University of Chicago Press, Chicago. 327 pp. Softcover, \$(U.S.)19.95 ISBN 0-226-66814-2

This book aims to present information in one short volume on a wide variety of topics of interest to naturalists visiting the arctic. To ensure portability, it emphasizes information of interest in the field, rather than reference material that can be consulted later. Consequently, hardly any technical references are cited, and coverage emphasizes phenomena and organisms of the greatest popular interest. Much of the material has had to be simplified without being misleading, and for the most part this has been done very successfully.

Early chapters are on Sky (the sun, moon, magnetic pole, etc.; 14 pp.), Climate and atmosphere (seasons, near-ground climates, mirages, etc.; 12 pp.), Terrain (icecaps, permafrost, patterned ground, etc.; 35 pp.) and Seas (icebergs, sea ice, etc.; 14 pp.). Later chapters treat organisms, including field guides to species of plants, birds, mammals and some fish (except for species that are very difficult to identify in the field); most species mentioned are illustrated. These chapters cover Plant life (treeline adaptations, reproduction, communities, etc.; 115 pp., including a 90-page guide to about 200 species), Birds (migration, adaptations, breeding, etc.; 63 pp. including a 54-page guide to about 90 species), Mammals (mostly accounts of just over 30 species; 45 pp.); and Fish (chiefly descriptions of 11 species; 8 pp.). Insects are dealt with in a final chapter of 13 pages, considered in more detail below.

The book is well written, though occasionally cryptic (p. 311; harvestmen (wingless, spidery creatures), awkward (p. 18: summer is the period when the temperature remains above freezing all through the 24-hour day (this is an average: frost is possible at any time)), or too familiar (p. 1: readers not in the mood for heavy thinking on these topics should skip . . .).

Insects are dealt with relatively briefly, and also I noticed a few imprecisions of content in this chapter. There are sections on bumblebees (with particular reference to pollination), the role of flies in pollination and as food for birds, on mosquitoes and blackflies, warble flies and nose bots of caribou, and butterflies. Only five insect species and some genera of butterflies are mentioned specifically. However, there is nothing on other characteristic arctic arthropods such as carrion and other larger flies, spiders, springtails, or the lice associated with vertebrates. The style is popular, and although the numbers

and interest of insects in the arctic is noted, the oestrids are introduced as follows: "...caribou are victims of two other, truly revolting insects: warble flies and nose bots.

This book will be of very limited value to entomologists and others for its entomological content; nevertheless, entomologists will find it a convenient general reference, because it contains a wealth of background information of interest to those visiting the arctic that is difficult to find elsewhere. Moreover, it provides in one convenient volume the means for identification, and further information on the distribution and biology, of most common species of arctic plants and vertebrates.

H.V. Danks

Biological Survey of Canada (Terrestrial Arthropods)

Canadian Museum of Nature

Ottawa, Ontario

Ananthakrishnan, T. N. and R. Gopichandran. 1994. *Chemical Ecology in Thrips-Host Plant Interactions*. International Science Publishers, New York, NY. 125 pp. Cloth (\$59.00) ISBN 1-881570-33-9.

Insects and plants have been at war since the first apterygote nibbled a Devonian fern, and much of the battle has been waged with chemical weaponry. Our efforts to understand the dynamics, outcomes and consequences of the skirmishes have helped produce the field of chemical ecology, which is beginning to mature through the integration of ecological and evolutionary theory with improved understanding of plant and insect biochemistry (e. g., Roitberg and Isman 1992). Ananthakrishnan and Gopichandran have undertaken a review of the chemical ecology of one battalion of minute plant enemies, the Thysanoptera or thrips, and this book is the result. How well does it further our understanding of insect-plant chemical conflicts, especially with respect to the idiosyncracies of this taxonomic group?

The authors begin the book with an overview of the literature describing the chemical and nutritional world of insects, with examples from Thysanoptera. They next discuss thrips feeding mechanisms, and the causes and manifestations of thrips attack and damage to various plants and plant parts. Two chapters focus on plant counterattack: one describes changes in plant biochemistry in relation to leaf age and thrips population size, whereas the other reviews the various means whereby plants avoid or resist thrips infestation, or at least cut their losses. The authors devote one chapter each to the nutritional and chemical ecology of thrips-plant interaction on two battlegrounds, flowers and galls, and they end the book with a description of their methods of biochemical analysis.

The book succeeds in bringing together current information, and presenting new data, in a timely field for an insect order with much to contribute to it. This information, however, is difficult to extract and judge because it is usually presented bereft of hypothesis-testing context. Even for a field as newly-synthesized as chemical ecology, this lack of logical organization from theory is problematic and leaves the reader with a series of examples of highly variable usefulness and relevance, and uncritical statements of extant hypotheses, rather than an idea of how the details of thrips-plant interactions illuminate plant-insect chemical dynamics in general.

Who should buy this book? Workers fighting their own battles with thrips pests will find here many useful references and examples, that may serve as clues for improved control of some of the most damaging and recalcitrant pests in the world. By contrast, chemical ecologists whose work is structured

by theory are likely to find the book frustrating but also tantalizing. The data presented here would benefit immensely from a more explicit ecological and evolutionary framework, and thus are of wildly varying use as evidence in the accumulation of knowledge; however, some of the described cases of thrips-plant chemical interactions, such as the accumulation of both nutrients and toxins in thrips galls, provide fascinating hints of how such conflicts of interest are maintained or resolved. Finally, I advise readers with peripheral or recently-prompted interests in chemical ecology to keep clear of this book, lest they have their curiosity dulled by myriad facts whose relationship to theory is undescribed. Understanding the ancient battles of insects and plants is a difficult endeavour, and knowledge of evolutionary strategy will be critical to learning the intricate workings of the weaponry.

Reference

Roitberg, B. D. and M. B. Isman. 1992. *Insect Chemical Ecology: An Evolutionary Approach*. Chapman and Hall, New York, 359pp.

Bernard Crespi
Department of Biological Sciences
Simon Fraser University
Burnaby, B.C. V5A 1S6.

Bernays, E.A. and R.F. Chapman. 1994. *Host-Plant Selection by Phytophagous Insects*. Chapman and Hall, New York. 312 pp., 153 figures. Soft cover, \$(US) 24.50.

In a world where so many technical volumes are multi-authored, and often little more than modestly edited symposium proceedings, it is a treat to read a volume that can tackle a multidisciplinary area of inquiry with a multi-faceted approach, yet be concise, fluid and harmonious. It is to the authors' credit that they have assembled so much information in a form that is both accessible and enjoyable to read. This book, representing the second in the series entitled "Contemporary Topics in Entomology," is a tour-de-force for the husband-and-wife team of Bernays and Chapman. In one volume they have drawn upon their collective sixty plus years of research experience, much of it spent investigating the physiological and behavioral bases of feeding in locusts and grasshoppers, but also incorporate the most up-to-date findings from the scientific literature, to provide a comprehensive view of how and why insects select specific plants from the many available to them in the environment.

The book is divided into eight chapters. Following a short introductory chapter, entitled "Patterns of Host-Plant Use," is a more lengthy one on "Chemicals in Plants." This second chapter, while hardly exhaustive, gives the reader a good overview of secondary metabolites in higher plants, focussing on those of putative ecological significance. In addition to being factually error-free, this chapter also addresses the important issues of intraspecific chemical variability, and differences in chemical content between tissues of a single plant. The third chapter, "Sensory Systems," is a clear, concise review of insect olfaction, gustation and vision that could easily stand alone on its own merits.

The following three chapters, rich in citations to the primary literature, are the "meat in the sandwich" from my perspective. These are entitled "Behavior: The Process of Host-Plant Selection," "Behavior: Impact of Ecology and Physiology," and "Effects of Experience." In these chapters, the authors delve into the interface between insect and plant, bringing together the best and most current information on insect behavior and physiology, including several examples of their own, unpublished studies. Particularly welcome is a section in Chapter 4 entitled, "What happens in the field?" that draws attention to the sometimes tenuous link between reductionist bioassays in the laboratory and observations

and experiments on insects in the "real world." The chapter on experience is an excellent review of habituation and learning in insects as they relate to gustation and feeding.

The final two chapters are entitled "Genetic Variation in Host Selection" and "Evolution of Host Range," the former subject gaining importance as we try to apply laboratory results to the field, and the latter examining an area that has fascinated entomologists for decades.

The book is of uniformly high quality, including the numerous figures, many displaying experimental data. It also contains a useful glossary, subject index, and reference lists at the end of each chapter. Given that the book was completed in early 1993, there are many references from 1991 and 1992 cited.

This book is essential for researchers studying insect-plant interactions and/or insect feeding behavior. Those whose teaching includes these subjects will also find this book extremely useful, owing to its many appropriate, concise examples. However, the modest price of the book makes it an extraordinary value, and worthy of consideration by entomologists of all stripes, even those not directly concerned with the insect-plant interface.

Murray B. Isman
Department of Plant Science
University of British Columbia
Vancouver, BC V6T 1Z4

Hölldobler, B. and E.O. Wilson. 1994(October). *Journey to the Ants*. The Belknap Press of Harvard University Press, Cambridge, Massachusetts. 228 pp. \$(US) 24.95.

In a remarkable tour de force, this relatively short book succeeds in exploring a large variety of the characteristics that are identified with the success of the approximately 10,000 species of ants. These insects, like the termites, are all highly social (eusocial), and they constitute the "object all sublime" of the 500 or so myrmecologists that study these versatile hymenopterans. And as this book demonstrates, it would be no exaggeration to state that no greater examples of informed myrmecophily can be found than in the persons of Bert Hölldobler and Edward Wilson.

This book is both a personal and scientific narrative, the authors describing both their myrmecological acculturations (Chapter 2) and their scientific explorations of a variety of ant species. This book is clearly a labor of love as the authors endeavor to characterize ants as the apogee of the social insects. As they explore the world of ants, it is difficult to argue with the authors' conclusion that ants are the preeminent social invertebrates. In 16 chapters they have treated a dazzling variety of ant-related topics and while significant contributions by several investigators are not included, the scope of the author's treatment of the world of ants is outstanding. There is something for everybody, and behaviorists, ecologists, parasitologists, chemical linguists, and researchers in general will find this book both fascinating and illuminating. The diverse hymenopterous actors described by the authors are powerfully illustrated in a series of photographs, drawings, and elegant paintings.

If one requires proof of the dominance of ants (Chapter 1), Hölldobler and Wilson provide it by pointing out that in a Brazilian rain forest the dry weight of all ants is four times that of the land vertebrates. In the canopies of these rain forests the ants can constitute 70% of the individual insects. But dominance notwithstanding, the authors describe the queen as both the strength and the Achilles' heel of the colony,

her death ultimately resulting in the death of the workers as well. The reader will find chapters dedicated to the extraordinary behaviors of workers that have evolved less conventional lifestyles. For example, the fungus-growing ants, the famous leaf-cutting ants (*Atta* spp.), are treated in a chapter on "The Superorganism". These ants can form colonies of several hectares with a depth of at least 6-7 meters. Equally impressive are the army ants which mount coordinated raids with thousands of workers in spite of the fact that they are essentially blind.

However, ants are not perfect and a number of social parasites have exploited them for food. On the other hand, ants have utilized a variety of insects as "cows" and in diverse cases they have "adopted" plants as homes that also provide food. These versatile hymenopterans would seem to have the capacity to survive in the deteriorating world that man has thrust upon this eminently vulnerable planet. If an environmental Götterdämmerung befalls the good earth, Hölldobler and Wilson have no doubt which animals will survive. Hopefully in my next reincarnation I will be an ant.

Murray S. Blum
Department of Entomology
University of Georgia, Athens, Georgia 30602

Vogel, S. 1994. *Life in Moving Fluids: the physical biology of flow*. Princeton University Press, Princeton, NJ. 467 pp. Hardcover. \$(US) 49.50. ISBN 0-691-03485-0. Second edition, revised and expanded. Illustrated by S.T. Beety and the author.

Early in 1980 I asked a hydraulic engineer for assistance in determining water flow patterns around black fly larvae. The conversation was short. I was told in no uncertain terms that any of the formulae that might apply just would not work on "things as small as bugs". So for me, Vogel's 1981 edition of *Life in Moving Fluids* was a revelation. Now, biologists without a great deal of training in mathematics, physics or engineering could come to grips with the physical aspects of how organisms deal with and manipulate their environment.

Vogel managed this with delightful simplicity and humour. Even the most arcane subject was rendered understandable and the physical world became a different place - drain holes, water beetles, snow drifts and swallows could be looked at with greater appreciation.

Since the 1980's, investigation into biological aspects of fluid dynamics has matured as a field of endeavour and this is well evident in Vogel's second edition. There is a plethora of new examples and the text is greatly expanded with new material, some of which a decade ago might have been considered beyond mere biologists.

Authors surely write the final chapter of their book to be read last. However, I recommend first reading Chapter 18, "Do it yourself", or if not, then very soon after beginning. It will prove a useful "mind-set" when reading the rest of the book.

This current work follows closely the format Vogel established in his first edition, that is, "explain don't just mention". So each chapter begins with a theoretical consideration of the subject, deals with the required formulae and then gives examples. Of importance Vogel clearly identifies areas where caution is necessary. But most times he encourages application of the "principles". For example, he makes it very clear that one of the basic ratios of fluid flow, the Reynolds number, is not written in stone and may be applicable within an order of magnitude.

One major difference in this edition is that Vogel left out the two appendices that dealt with building flow tanks and flow visualization. This is reasonable given that these techniques are now well described elsewhere. Most of the original chapters are still present in one form or another, all having been brought up-to-date. For example, in the chapter on flow at low Reynolds numbers there is a very timely consideration of "Wall Effects" and problems that may occur if they are ignored. There is much more material on flight and on use of vortices by organisms. An important new chapter, one that rubber duck aficionados will appreciate, is on "Flow at fluid-fluid interfaces", that deals with waves, waves and communication, and use of surface tension for locomotion. For the entomologist, there are examples using insects throughout the book. The book is a gold mine of answers to commonly asked questions by enquiring students. Ever wondered why golf balls are dimpled? The answer to that explains why a new baseball bat is also dimpled. Vogel provides another gold mine of possible research projects by noting where there is lack of data for some animals and phenomena.

Not only will this book educate you, but you will find yourself laughing while reading it. How many scientific books can claim to be genuinely funny whilst still making the point? Vogel went far with the first sentence of his first edition - "Fluid flow is not currently in the mainstream of biology ...". My favourite sentence in this edition is in Chapter 7 where Vogel considers drag on duck bodies. He notes that - "In drag these ducks are turkeys".

If you are interested in how organisms relate to their physical surroundings, this book is absolutely necessary.

Doug Craig
Department of Biological Sciences
University of Alberta
Edmonton, Alberta

Hawkins, B.A. *Pattern and Process in Host-Parasitoid Interaction*. Cambridge University Press. New York, NY. 190 pp. hard cover, \$(US)42.95 ISBN 0-521-46029-8

Over the past several years, B.A. Hawkins and his collaborators have published a number of papers about the species richness of parasitoids and related topics. This book brings together and extends this work, asking what patterns are visible in the occurrence of parasitoids that attack broadly herbivorous holometabolous insects, and what mechanisms might explain the patterns. The first short chapter introduces this approach, and is followed by a good explanation of the origin and analysis of the data. The two longest chapters treat parasitoid species richness and analyze patterns in the taxonomic composition and some ecological features of parasitoids. Shorter chapters consider patterns of mortality and hyperparasitoids. A final chapter synthesizes more general conclusions from the patterns observed.

The book is a scientific monograph, reminiscent of a long research paper, but the potential severity of such an approach is offset in several ways. First, the content is clearly structured. Second, data have not been gathered indiscriminately and moreover appropriate tests of statistical significance are used throughout, even on difficult non-parametric data. Third, the detailed data are summarized in clear and helpful figures. Fourth, each chapter has lengthy conclusions and brief summary sections. Finally, on rare occasions the writing takes a lighter turn: for example (p. 59) elaborating a famous quotation about the diversity of Coleoptera: "God may have an inordinate fondness for beetles, but parasitoids do not".

The conclusions drawn by Hawkins are supported by both the amount of data and the approach. The raw data come from analysis of the parasitoid complexes of 1,289 hosts in 108 families in 85 countries. Care is taken to test for potential biases of various sorts. For example, characteristic patterns in the distribution of parasitoids across feeding niches are revealed: leaf miners tend to be the most, and root feeders the least, heavily parasitized. The potential biases of sample size, host taxonomy and feeding biology (caused by pseudoreplication or restriction of host taxa), and larval vs. pupal parasitoids are then tested in turn, showing that they are not a major influence on the observed patterns with respect to feeding niches. However, the section on hyperparasitoids is less satisfying. Hyperparasitoids show patterns too (despite some weaknesses in the data), but the clearest trends may depend to a degree on Hawkins' restriction to "obligate hyperparasitoids" (which occur chiefly on externally feeding herbivores), eliminating the many facultatively hyperparasitic endoparasitoids from consideration.

Hawkins' analyses lead to a number of interesting conclusions. In particular, he recognizes the key role of feeding niches as providing "refuges from parasitism" or as determining "susceptibility to parasitoids", which dictate the species richness and composition of parasitoid complexes (and even of their hyperparasitoids), as well as rates of parasitism, and other features. Moreover, such habitat elements are involved in other patterns. For example, exposed hosts support fewer parasitoids towards the tropics, whereas concealed hosts support the same or greater numbers of parasitoids. Some of these findings lead to ideas of yet wider interest. For example, because a few key species appear to cause much of the mortality of a given host, most of the "extra" parasitoid species found in species-rich systems may contribute little to host mortality or population dynamics. Such a conclusion is of interest in the context of biological control (data from biological control studies figure prominently in some of Hawkins' assessments), community structure, and biodiversity, of course.

Nevertheless, Hawkins properly ends with a caution that data are deficient. Much better data than for most regions are available for Britain, showing parts of some patterns more clearly. Data on chalcidoids are very limited, especially for the tropics. Consequently, the trends have had to be determined through a "haze of imperfect data and a mass of ecological and evolutionary complexity." The book ends with the sentence: "I remain an optimist, but then I am not in full possession of the facts."

This book will be of interest to students of parasitoids, biological control, diversity and other topics, providing not only interesting patterns and hypotheses for further testing, but also demonstrating some of the proper conceptual and statistical avenues by which valid conclusions can be extracted from large but scattered data sets.

H.V. Danks
Biological Survey of Canada (Terrestrial Arthropods)
Canadian Museum of Nature
Ottawa, Ontario

Rust, M.K., J.W. Owens, and D.A. Reiersen (Eds.), 1995. *Understanding and Controlling the German Cockroach*. Oxford University Press, New York. 430 pp. Hard-cover, no price supplied. ISBN 0-19-506495-X.

This book is a compilation of technical information on the biology and management of the German cockroach, one of the most common and obnoxious species of structural pests that affect people in their homes, offices, restaurants and other situations. Similar information summaries, though far less detailed and current, have been prepared before and can be found in books and manuals on urban entomology (including the pest manager's bible, Arnold Mallis' *Handbook of Pest Control*).

The authors of the 14 chapters making up this book have drawn together relevant information from over 1200 publications. The combined bibliography is a treasure trove of references on cockroaches. The first 4 chapters deal with the identification, distribution, life history, behaviour, and importance of this pest. The 5th chapter covers detection and monitoring. The next 7 chapters cover the methods and materials used in chemical management of cockroaches. The penultimate chapter looks at alternative control strategies. The final chapter attempts to pull everything together to present a practical cockroach management strategy. This volume will be an excellent reference for those researchers, educators, and professional pest managers who need a comprehensive overview of this species. That said, the book has several shortcomings.

First, it suffers from a relative paucity of illustrations. Highly research- and text-orientated, there are too few tables, charts, diagrams, and photographs to clarify the hundreds of points made in the text. Among those few photographs included are some that are best described as "murky". Some of the charts appear to have been scanned in from old typescripts that do not meet current publication standards.

Second, there is no glossary. Although some of the strange terms used in the text are explained when they appear (e.g., delusory cleptoparasitosis), many terms are assumed to be understood by all readers. A glossary would have made this book much more readable to the average pest control operator.

Third, the book lacks a balance between the amount of attention given to the biology and the control of this pest. Only about a quarter of the book deals with the bionomics of this species. Most of the book addresses chemical control methods, materials, and equipment.

Also, a pictorial key to the North American species of cockroaches is conspicuous by its absence. If accurate species identification is the cornerstone of integrated cockroach management, this book is missing a key element.

Despite these shortcomings, the authors and editors have produced a valuable reference book that should facilitate a much better understanding of the biology and management of this important pest species. I would highly recommend it to those entomologists and educators who are involved in training structural pest managers.

Roy Ellis
Prairie Pest Management
P.O. Box 757
Carman, MB R0G 0J0

Highley, E., Wright, E.J., Banks, H.J. and Champ B.R. 1994 *Stored Product Protection: Proceedings of the 6th International Working Conference on Stored-product Protection*. CAB International, Wallingford, 1274 pp. 2 Vol. Set, Hard cover, \$(US) 250.00. ISBN-0 85198 932 2

Since the original meeting in Savannah Georgia in 1974, the International Working Conference on Stored-Product Protection has met every 4 years at various sites around the world. The original scope of the conference was limited to entomology of durable commodities, but it has been since expanded to cover the mycology and agricultural engineering aspects of storage. These proceedings report on the work presented at the sixth conference held in Canberra, Australia in April 1994 that attracted over 400 participants from 30 different countries. There are three types of articles in the proceedings: invited key note addresses, review papers that give an overview of an area citing past work and suggesting future

areas of research, submitted papers that cover original work and session summaries that outline the papers presented and the discussion held during the sessions.

Of particular interest to entomologists are the sections dealing with stored-product insect problems. As with most fields of entomology, there has been an effort by stored-product entomologists to find alternatives to the traditional wide spectrum chemical insecticides. Four sessions dealt specifically with this problem (number of papers per session): Integrated Commodity Management (18), Sampling and Trapping (21), Biological Control (13), Physical Control (4) and Inert Dusts (8). The sessions that dealt specifically with traditional chemical control measures, Fumigation and Controlled Atmospheres (50) and Grain Protectants (34), also had several papers on alternatives such as: inert atmospheres, new fumigants to replace methyl bromide that is being reduced because it damages stratospheric ozone, insect growth regulators and botanical insecticides. Other entomological sessions were Insect Biology (26) which covered topics such as pheromones, host selection and behaviours and Quarantine and Regulatory Issues (6). Besides the regular session there are reports from the workshops: Appropriate Storage, Expert Systems, On-Farm and Small-Scale Storage and Extension, and Standards.

Storing grain also requires knowledge of mycology and engineering and how storage affects end-use quality. Each of these fields had its own session: Storage Fungi and Mycotoxins (19), Storage Engineering (15) and Grain Quality (11).

As is common in many proceedings, there is no subject index that makes finding the information in the hundreds of papers difficult. The editors have included an author index and a listing of the names and the addresses of the participants.

If you are an entomologist, mycologist or engineer working in the field of stored product-protection, these proceedings provide a wealth of up-to-date information that in many cases will not appear elsewhere. The proceedings of the five previous International Working Conferences on Stored-product Protection can be obtained from Dr. Valerie Wright, 2950 West 12 Ave, Manhattan KS, 66502, USA, Fax: 913-532-6232 for from between 7.50 and 100 US\$.

Paul Fields
Agriculture and Agri-Food Canada
Research Centre
Winnipeg, Manitoba, R3T 2M9

Nijhout, H. Frederik. 1994. *Insect Hormones*. Princeton University Press, Princeton, NJ. xi + 267 pp. Cloth. \$(US)35.00.

According to the advertising flyer, Professor Nijhout's goal in writing this book was 'to provide a complete, concise, and up-to-date source for students and nonspecialists seeking an overview of the dynamic and wide-ranging science that insect endocrinology has become since its beginnings nearly eighty years ago in the study of insect metamorphosis.'

The book includes 9 chapters and an epilogue, 91 line illustrations and 15 halftones, an extensive reference list, and both author and subject indexes. The first two chapters are general in nature, the first providing an introduction to the endocrine structures found in insects, the second discussing the various cellular/molecular mechanisms by which hormones act and the methods used by insect endocrinologists

for assaying hormones and their effects. Chapter 3 deals with the role of hormones in metabolism and homeostasis. In Chapter 4 Prof. Nijhout presents a wide-ranging account of growth, molting and metamorphosis, as a basis for his detailed discussion of the endocrine regulation of these processes in the following chapter. Chapters 6 through 9 examine the endocrine aspects of reproduction, diapause, polyphenisms, and behavior, respectively, and it is commendable that for each topic the author first provides the background information necessary to make the part played by hormones understandable. In his short Epilogue Prof. Nijhout stresses the danger, given the diversity and evolutionary age of Insecta, of overgeneralization and the use of 'model systems'; rather, the evolution of insects has been paralleled by the development of multiple molecular forms of hormones, the onset of multifunctional roles for the same hormone, and the use of different hormones to regulate the same function.

My major criticisms of the book would concern the lack of careful editing and aspects of the organization of the material. Poor editing has resulted in such 'gauffs' as 'the ovaries and testes (my emphasis) of many adult female insects' (Chapter 1, l. 6), unnecessary repetition (e.g., readers are told three times in the first 17 pages of the book that neurosecretory cells are specialized neurons), and loose or inaccurate use of terms (e.g., 'instar' which, we are informed, has become the preferred term among insect physiologists for the period between successive ecdyses, yet some 15 lines on the author writes 'While the new instar is still enclosed within the cuticle of the previous one..'). The main difficulty with the organization of topics, in my opinion, is the inclusion of details of the structure and source of the major insect hormones and their analogues (including those available as 'pesticides') in Chapter 5 (endocrine control of molting and metamorphosis). It would have been more logical (and useful to readers not specifically interested in molting and metamorphosis), in view of the multifunctional nature of these hormones in both juvenile and adult insects, to have included this information, along with details of the homeostatic hormones considered in Chapter 3, in a chapter on their own, between Chapters 1 and 2, that is, following on nicely from the anatomical basis of insect endocrines and providing a useful background for the discussion of mechanism of action that follows. As it stands, specific hormones are mentioned many times before the reader has any substantive details about their nature. Chapter 4, with 39 pages, is overly detailed and could easily have served its purpose in far less space.

Notwithstanding these criticisms, Prof. Nijhout's book is a valuable contribution to the literature in insect endocrinology. The author has provided an accurate synthesis of the state of knowledge for those processes in which hormones are major players. The presentation is such that the contents should be readily understandable to the audience for which it is intended.

Cedric Gillott
University of Saskatchewan
Saskatoon, Saskatchewan

Lawrence, J.F. and E.B. Britton. 1994. *Australian Beetles*. Melbourne University Press, Melbourne, Australia. x + 192 pp., 16 plates. Price \$44.95. Hard cover.

Adapted from Chapter 35, Coleoptera, of *The Insects of Australia* (second edition), also published by Melbourne University Press (1991), this volume is sufficiently aesthetically pleasing to warrant some initial comment about its physical properties. Large in surface dimensions (8.5" X 11" - convenient for making xerox copies), and bound in brown buckram with the title on the spine, its glossy white dust cover is graced with a color photograph (taken by a distinguished orthopterist) of a splendid

ruteline scarab beetle. On the infolded portion of the dust jacket are photographs of the authors, with a bit of personal information about each. The paper seems to be of very good quality with a matt finish (except for the photographic plates, which are on high gloss paper). The carefully edited text is in two-column format. Illustrations (by several gifted illustrators, principally F. Nanninga) are copious and superb, with habitus figures of larvae and adults of all families treated. The frontispiece is an exquisitely rendered representation of a remarkable carabid adult, representing a precinctive (or endemic) Australian genus and species. In brief, this volume is a bibliophile's delight!

Written by two distinguished research scientists of the Entomology Section, CSIRO, *Australian Beetles* is a taxonomically focused account of the diversity of an important segment of the fauna of Australia. The authors begin their introduction with a light-hearted quip, reflecting perhaps their own delight in their subject: "When a budding Liverpool rock band was looking for a name, it is not surprising that they chose such a well known entity as the beetle (with just a twist of Lennon)". Seeming to have regarded the purpose of the book as self-evident, the authors did not advise readers about this matter. The dust jacket provides something of a statement of purpose, however: "There are possibly 30,000 species of beetle in Australia -- no one knows for sure. But professional entomologists, students and keen amateurs alike will find what *is* known about this striking, diverse and intriguing order of insects in this comprehensive book".

Comprehensive it is. The 117 beetle families known from Australia are considered in the context of the world fauna of some 177 families, arrayed in a total of 19 superfamilies, six series and four suborders.

The text is organized in three chapters: Introduction; Classification and Keys; and Family Treatments. The introduction includes an extensive, well illustrated, detailed and accurate account of structural features of both adults and larvae, with emphasis on those structures that are useful in family-level identification and classification. Little attention is given to internal systems. Other items treated in the introduction are: etymological notes; fossil history of beetles; habitats, with reference to Australia; "Biology" (an odd sub-title [one would think that the entire book is about beetle 'biology']); and special features of the Australian fauna, principally with regard to distribution patterns.

The basis of the classification used is referred to briefly, and the classification itself is presented as a list of names in tabular form, covering about a page and a half. For each taxon, total number of Australian species is indicated, and the name of each family with Australian representatives is numbered.

Keys form the major part of Chapter 2. To identify the members of 117 families based on adult features, 255 couplets are required; for the larvae, 266 couplets. These high numbers indicate the difficulty inherent in beetle identification: because of extensive variation, even in supposedly diagnostic features, families must be defined polythetically, meaning that all members share a preponderance, but not all, of a suite of readily observed diagnostic features -- hence the need to use more than a few tightly linked character states for family assignment, and the need for multiple key entries for many families. Thus, while under ideal conditions, one could identify 117 taxa in a key of 116 couplets, for the beetles, more than twice as many couplets must be used as there are families. The couplets contain references to illustrations of structural features, and page references associated with family names, which, in turn, are associated with appropriate figures. Thus, it is easy to find the illustrations needed for making comparisons.

For five of the more diverse families (Carabidae, Staphylinidae, Scarabaeidae and Chrysomelidae) keys to subfamilies (and/or tribes) based on adult features are placed appropriately in Chapter 3. For the scarabs, cerambycids and chrysomelids, keys to larvae are provided, as well.

In Chapter 3, information is presented about the taxa in a linear sequence that parallels as closely as possible their phylogenetic relationships. Each taxon (suborder, series, superfamily, and family) is characterized by structural features of adult and immature stages, and for families, additional information (amount in proportion to the group's diversity in Australia) is provided about geographical distribution and way of life of the members.

Two facts that I found especially interesting are that the Australian fauna contains a terrestrial, flightless species of dytiscid (throughout the rest of the world, beetles of this family are aquatic as larvae and adults), and a eusocial species of platypodine weevil (this level of social development is otherwise unknown in the Coleoptera). Also, the Müllerian mimicry rings, based on black and orange lycids or black and red (or pink) cantharids, each involving as well members of six to eight other families of beetles, are of general interest. Specimens representing the families of the lycid ring are illustrated in color.

The content of this volume differs from the beetle chapter (35) in *The Insects of Australia* (second edition) principally in the addition of parts of the Introduction, six black and white plates of various sclerites taken with a Stereo-Electron Microscope, and eight color plates, illustrating living beetles in their habitats. Some family names are changed, and an additional four families are recognized for the Australian fauna (see below for details). References and index refer to Coleoptera, only.

The strong points of *Australian Beetles* are in depth of coverage (including a world perspective), the detailed information about larvae (roughly comparable to that for adults) and the very high quality and quantity of figures. The classification is current, including changes in ranking or postulated relationships that have led to recognition of four more families in Australia since publication of *The Insects of Australia* (second edition, 1991): Family Passandridae (previously Subfamily Passandrinae, Family Cucujidae); Family Caridae (previously included in Attelabidae); Family Boridae (one Australian genus, included previously in Pythidae); and Family Pyrochroidae (by shift of Subfamily Pilipalpinae from Pythidae). The reference section cites only 20th Century publications, but collectively, these are excellent as an introduction to the literature about beetle classification and diversity.

I was disappointed about the absence of some types of information. Lack of an explicit statement of purpose leads one to wonder if there was a purpose in producing the book (a cynic might suggest the main reason being to enhance the profits of the publisher by reissue in a new package of previously published material).

Although a publication is expected to give emphasis to what is known about a subject, it would have been well in this one to offer some generalities about what is not known, at least as a rationale for additional collecting. The authors provide a very good section about collecting methods, but do not explain why collecting of additional material is not only desirable but also essential if Australians are to gain adequate knowledge of insect diversity.

References to evolutionary aspects of diversity are surprisingly few, considering that the taxa are arrayed in a sequence based on putative phylogenetic relationships, and that *Australian Beetles* was produced in the final decade of the 20th Century, 135 years after publication of the first edition of

Darwin's *Origin of Species*. The word "evolution" is not in the index, and the entry "phylogenetics" refers only to a discussion of the families of suborder Adephaga. One finds here and there in the text other references to phylogenetic relationships, but none evidently extensive enough to warrant entries in the index. Even though Jarmila Kukalova Peck and John Lawrence used evidence from wing venation extensively (in a paper published in 1993) to develop an hypothesis about phylogeny of the beetle suborders, the discussion of these appendages in *Australian Beetles* in principle could have been written in pre-Darwinian times.

The ending is abrupt and not particularly informative. The final sentence of the text (p. 159) does nothing more than name "two common platypodines". Surely, the authors could have offered a concluding section of general value. Such a section might have included a glance from the past to the future, describing how knowledge of the Australian beetle fauna has expanded, and where we might be in another decade or score of years. It might have addressed the general area of endangered species and conservation, in terms of Australian Coleoptera. Such matters occupy a prominent place in the current effort to raise public awareness of biodiversity and its importance. The authors might have urged young Australians to eschew the pleasures of the sea beaches (and the associated risk of shark attack) and the comforts of the couch in front of the 'telly', and to go forth into the forests, swamps, and deserts of the outback, to seek the specimens and life history data required to advance to another plateau the understanding of the local beetle fauna, and to find thereby as well, the deep satisfaction to be derived from discovery and synthesis of new knowledge.

Regardless of such complaints, *Australian Beetles* must be a source of deep satisfaction to the Entomology Section of the Commonwealth Science and Industrial Research Organization of Australia, the government unit that sponsored major parts of the careers of the authors, and that earned through the work of all of its scientists an enviable reputation throughout the world. This book is, indeed, an element of the flowering of Australian entomology.

This volume will be of use to coleopterists, world-wide. Purchasers from continents other than Australia will receive a valuable general synopsis, and keys to adults and larvae of about two-thirds of the extant families, including most of those that are geographically widespread. Australians will receive a volume that treats their entire fauna taxonomically, and is a valuable source for relatively detailed information about the fauna.

For those who own already a copy of volume 2 of the *Insects of Australia* (second edition) a decision will have to be made if the additional illustrations, a few more pages of text, some classificatory changes and the convenience of concentration in one place of references and index to beetles make *Australian Beetles*, worth the purchase price. Librarians, strapped for funds, will have to weigh these points very carefully.

Bibliophiles will want this book for its aesthetic features, alone. I think it's a good buy, even for those who own the parent volume, and I recommend it to coleopterists in particular, as well as to those interested more generally in biodiversity.

George E. Ball
Department of Biological Sciences
University of Alberta

POSITIONS AVAILABLE

Post-doctoral position Position available July 1 1995 or sooner for a postdoctoral research associate with expertise in and extensive experience with coupled gas chromatography-electroantennography (GC-EAD), and isolation and/or bioassay of compounds mediating insect behaviours. Candidate will participate in several projects involving semiochemicals of Diptera, Coleoptera and Heteroptera. Send C.V., list of publications, brief description of research interests, and names, addresses, and phone numbers of 3 references to Jocelyn G. Millar, Assoc. Professor, Dept. of Entomology, University of California, Riverside, CA, 92521, U.S.A. (Posted Jan 31, 1995).

Graduate student opportunities Bryan Epperson, Assistant Professor of Genetics, is recruiting graduate students, who have a wide range of interests, theoretical or experimental, whole organism or molecular, population genetics or ecology. My aim is to gather a strong group in genetics and statistical computing. There are opportunities for grad fellowships. I am building a research program with two prongs, one the continuation of my theoretical work for NIH on spatial distributions, the other a molecular and other genetics experimental laboratory. Michigan State University of course has immense depth of talent in so many areas. Grad students could start in Summer (May 15th) or Fall semester (late August). But they will need to send in applications for MSU very soon. Responses should be sent to bryan@alpha.for.msu.edu. (Posted Feb 7, 1995).

Integrated pest management (sub-tropical) position A major agricultural company located in southern Florida has a position open in its Research and Development Department. The position requires a masters degree related to integrated pest management, and individuals who have experience in sub-tropical crops and soils. To apply, send resume outlining education, experience and present salary to: Israel Baez, Employee Relations Manager, P.O. Box 208, Belle Glade, FL 33430, 407-996-7621. (Posted Feb 11, 1995).

Post-doctoral associate, insect ecologist/community ecologist Position available May 1, 1995; open until filled. Salary: \$27,012 plus benefits (guarantee 1 year of support within a 4 year project). Objective of project is to evaluate and compare territory quality for several species of endangered vertebrate insectivores. Work involves comparing insect communities within the territories of insectivorous vertebrates that are located within recently burned and unburned California coastal sage scrub habitat. Position includes supervision of full time technicians and requires field-work at sites located throughout southern California. Project is multidisciplinary and involves components of insect and avian ecology, community ecology, and conservation biology. Qualifications: Ph.D. in Biology, Entomology, Ecology or related life science discipline. Experience and familiarity with some of the following: insect identification, insect sampling techniques, community analysis and comparison techniques, multivariate statistical techniques, spatial analysis techniques including GIS, and vertebrate habitat evaluation techniques. Knowledge of California flora, insect and avian fauna, and some experience supervising technicians useful. Send C.V., statement of research interests and names, addresses, and phones of 3 references to Dr. Rick Redak, Department of Entomology, University of California, Riverside, CA 92521; tel 909-787-7250; fax 909-787-3086; e-mail redak@ucr1.ucr.edu. (Posted Mar 7, 1995).

Forest Entomologist Position The Delaware State Department of Agriculture is seeking a Forester/Forest Entomologist. Salary is \$28,075 to \$35,094. Minimum qualifications: B.Sc. in forestry or related field. Special requirements: forest insect and forest tree disease survey and detection experience. Experience in forest entomology and forest pathology principles, application and practices. Info: Florence Frost, State of Delaware, Dept. of Agriculture, 2320 South DuPont Highway, Dover, DE 19901; tel 302-739-4811; fax 302-697-6287. (Posted Mar 22, 1995).

Graduate research opportunity The Plant Science Unit at the University of Missouri has an opening in entomology/agronomy/chemistry to conduct research investigating the mechanism of resistance of corn lines to the European corn borer. Experience and/or interest in entomology and chemistry preferred. Annual stipend of \$9,800 plus tuition and research expenses. The position is available immediately and open until a suitable candidate is found. For more information, contact Dean Barry (314/882-1116) or Bruce Hibbard (314/882-6281; agrobrrh@mizzou1.missouri.edu). Send letter of interest, unofficial transcripts, and names, addresses, phone numbers, and e-mail addresses of at least 3 potential references to Dr. Dean Barry, USDA-ARS, 243 Agricultural Engineering Building, University of Missouri, Columbia, MO 65211. (Posted Apr 11, 1995).

Graduate student opportunity I have openings in my laboratory for graduate students interested in tick biology. Most of my research projects are in the areas of physiology, endocrinology and pharmacology, and include: (1) hormonal control of salivary gland degeneration, (2) hormonal control of egg development, (3) pharmacological control of salivary fluid secretion. However, other areas which relate to these important ectoparasites are of interest as well. For further details, including tuition, financial support etc., please contact: W. Reuben Kaufman, Department of Biological Sciences, University of Alberta, Edmonton, Alberta, Canada T6G 2E9; tel: 403-492-1279; 403-492-9234; e-mail reuben_kaufman@biology.ualberta.ca. (Posted Apr 21, 1995).

Research Associate (Oberassistent/in) in Applied Entomology We are seeking a creative and cooperative scientist with strong expertise and postdoctoral experience in dispersal and ecology of insect herbivores in agroecosystems. Responsibilities include (1) research together with undergraduate and graduate students on population dynamics including qualitative as well as quantitative field and laboratory studies, with special emphasis on insect dispersal and herbivore/plant interactions, (2) participation in teaching and administration. Send curriculum vitae, three publications and three references to: Prof. Dr. Silvia Dorn, Institute of Plant Sciences, Applied Entomology, ETH Zentrum, Clausiusstr. 25, CH-8092. Zürich.

UPCOMING MEETINGS / RÉUNIONS À VENIR

International Plant Protection Congress

July 2-7, 1995, The Hague, The Netherlands

The theme of the congress will be *Sustainable crop protection for the benefit of all*.

CONTACT: XIII International Plant Protection Congress, c/o Holland Organizing Centre, Parkstraat 29, 2514 JD The Hague, The Netherlands. Tel. (+31-70) 365-78-50; Fax. (+31-70) 361-48-46.

Society for Invertebrate Pathology Annual Meetings

July 16-21, 1995, Cornell University, Ithaca, NY

The 28th Annual Meeting of the Society for Invertebrate Pathology will be held in Ithaca NY on the Cornell Campus. Symposia are being organized around the following topics: baculovirus biology and applications, the role of *Bacillus thuringiensis* in pest management, cooperative research between industry and non-profit organizations, pathogen-parasitoid interactions, pathology of marine invertebrates, protozoan biology, the use of fungi in the lab and the field, aerial dissemination of fungi, and other topics. Deadline for submission of abstracts is April 15. For more information contact Dr. H. Alan Wood, Boyce Thompson Institute for Plant research, Tower Road, Ithaca, NY 14853 Tel: 607-254-1200; Fax: 607-254-1242; Internet: haw5@cornell.edu

Phytochemical Society of North America

August 12-16, 1995, Holiday Inn, Sault Ste. Marie, Ontario, Canada

Phytochemical Redundancy in Ecological Interactions. The theme of the main symposium will stress the diversity, overlap, and variety of plant chemical defenses against biological stress including insects, fungi, and large herbivores.

CONTACT: Dr. Mamdouh Abou-Zaid, Natural Resources Canada, Forest Pest Management Institute, P.O. Box 490, 1219 Queen Street E., Sault Ste. Marie, Ontario, Canada, P6A 5M7. Tel. 705-949-9461, Ext. 2416; Fax. 705-759-5700; Internet Mabouzaid@eecnpclcd.fpmi.forestry.ca

Colloque International sur la prévision et la dépiestage des ennemis des cultures

10-12 octobre 1995, Québec, Canada

Cet événement aura lieu dans le cadre des activités du Symposium de la FAO, marquant le 50^e anniversaire de fondation de cet organisme à Québec en 1945.

PERSONNE-RESSOURCE: M. Michel Letendre, Réseau d'avertissements phytosanitaires, Services de phytotechnie de Québec, MAPAQ, Complexe scientifique (D.1.300.10), 2700, rue Einstein, Sainte-Foy (Québec) CANADA G1P 3W8; Téléphone 418-644-4689; Télécopieur 418-646-0832.

International Symposium on Agricultural Pest Forecasting and Monitoring

October 10-12, 1995, Quebec City, Canada

This event is being organized as part of the activities of the 1995 FAO Symposium, marking the 50th anniversary of FAO's founding in Quebec City.

CONTACT: M. Michel Letendre, Réseau d'avertissements phytosanitaires, Services de phytotechnie de Québec, MAPAQ, Complexe scientifique (D.1.300.10), 2700, rue Einstein, Sainte-Foy (Québec) CANADA G1P 3W8; Téléphone 418-644-4689; Télécopieur 418-646-0832.

Agrobiotec Conference and Exhibition

October 19-22, 1995, Ferrara, Italy

Sessions will include: "Biodiversity for the Progress of Biotechnology and Biotechnology for the Conservation of Biodiversity", "Transgenic Solanaceae: Research and Applications", "Regulation, Protection and Acceptance of Research, Results and Products", "Advanced techniques in fruit tree breeding".

CONTACT: BOLOGNAFIERE, Via Bologna, 534, 44040 Chiesuol del Fosso, Ferrara, Italy.

7th International Symposium on Pollination

June 24-28, 1996, Lethbridge, Alberta, Canada

Pollination: from theory to practise. General topics will include: Implications of evolutionary theory to applied pollination ecology; Modelling pollination; Pollination techniques/methods/standardization; Pollinator foraging behaviour; Commercial bumble bee management for pollination; Native bee management for pollination; Role of pollinators in species preservation, conservation, ecosystem stability and genetic diversity

CONTACT: Dr. Ken Richards, Agriculture and Agri-Food Canada, Lethbridge Research Centre, Lethbridge, Alberta, Canada T1J 4B1. Tel. (403) 327-4561; Fax. (403) 382-3156; Email: Richards@abrsle.agr.ca.

XX International Congress of Entomology

August 25-31, 1996, Palazzo dei Congressi, Florence, Italy

CONTACT: Organizing Secretariat, OIC, Via A. La Marmora, 24, 50121 Florence, Italy
Fax. ++39-55-5001912

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Scientific Editors/Editeur Scientifique

The Canadian Entomologist

P. Kevan
Dept of Environmental Biology
University of Guelph
Guelph, Ontario N1G 2W1
Tel. 519-824-4120
Fax. 519-837-0442

Memoirs

V. Behan-Pelletier
Centre for Land and Biological Resources
Research, Agriculture Canada
Ottawa, Ontario K1A 0C6
Tel. 613-996-1665
Fax 613-995-6833

Bulletin Editor

F.F. Hunter
Department of Biological Sciences
Brock University
St. Catharines, Ontario L2S 3A1
Tel. 905-688-5550 ext. 3394
Fax. 905-688-1855
hunterf@spartan.ac.BrockU.ca

Entomological Society of Canada, Head Office
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