



ENTOMOLOGICAL SOCIETY OF CANADA

Bulletin



SOCIÉTÉ ENTOMOLOGIQUE DU CANADA

Vol. 11

March — mars

NO. 1



ACTION REQUESTED — PRENDRE NOTE
Pp. 2, 3, 6, 7, 9, 10, 11, 28

Entomological Society of Canada
Société Entomologique du Canada

Bulletin

Vol. 11, No. 1, March — mars, 1979

Editorial	1
ESC Postgraduate award — Bourse de la SEC	2-5
The Canadian Entomologist	
— an acknowledgement	5
— notes to contributors	6
Notice of meeting	7
Nominations for the 1979 ballot	7
BCC/CCB Report	8-9
Annual meeting — 1979 — Réunion annuelle	10
Ninth Annual Insect Photo Salon	11-12
Robert Van Der Bosch 1922-1978	13
Colin Curtis	14
Joan F. Bronskill Memorial Award	14
C.W. Woodworth Award	14
B.T. on the go — le B.T. à la rescousse	15
Biological survey project	16-17
Book Reviews	17-24
Books received — availability to Society Members	24
Personalia	25
C.R. MacLellan retires	25
International Commission of Zoological Nomenclature	25-26
Meeting announcements	26
Affiliated Society Officers	27-28
Canadian Agricultural Insect Pest Review — 1978	28

B.J.R. Philogène

Bulletin Editor

Cover Design: M.A. Sydor

Published by the
Entomological Society of Canada
1320 Carling Avenue, Ottawa



Look behind the Blue Bullseye

For quality agricultural chemicals backed by years of scientific research and development, field testing, and on-the-job performance.

- ® **BAYGON insecticide**—controls mosquitoes, blackflies.
- ® **BAYTEX insecticide**—for effective mosquito control.
- ® **DASANIT insecticide/nematicide**—controls pests attacking vegetables, corn, ornamentals.
- ® **DI-SYSTON systemic insecticide**—the dependable original for use on field crops, vegetables, ornamentals.
- ® **DYLOX selective insecticide**—controls chewing and sucking insects on field crops, tobacco, vegetables, flowers, shrubs and trees.
- ® **DYRENE fungicide**—protects vegetables, fruit, turf and tobacco from disease.
- ® **FURADAN® systemic insecticide**—for use on corn, vegetables, sugar beets, potatoes, rape.

® **GUTHION insecticide**—the dependable original for broad-spectrum control on more than 40 crops.

® **METASYSTOX-R systemic insecticide**—proven control on field crops, fruit, vegetables, ornamentals, sugar beets.

MONITOR® 4.8 liquid insecticide—for use on cole crops, potatoes.

® **MORESTAN miticide/fungicide**—for fruits, ornamentals.

® **SENCOR herbicide**—growers' first choice for weed control in soybeans, potatoes, tomatoes and barley.

® **SYSTOX systemic insecticide**—performs dependably on fruit, vegetables, field crops, sugar beets.

For complete information, contact us now!

79303C

Chemagro Limited,
1355 Aerowood Drive,
Mississauga, Ontario L4W 1C2

BAYGON, BAYTEX, DASANIT, DI-SYSTON, DYLOX, GUTHION, METASYSTOX, MORESTAN, SENCOR and SYSTOX are Reg. TMs of Bayer AG

DYRENE is a Reg. TM of Mobay Chemical Corporation

FURADAN is a Reg. TM of FMC Corp

MONITOR is a Reg. TM of Chevron Chemical Co.



RESPONSEability
to you and nature

Entomological Society of Canada
Bulletin
Société Entomologique du Canada

Vol. 11, No. 1

March — mars 1979

EDITORIAL

Important words of our vocabulary such as "insects" "entomologists" or even "managers" do not easily lend themselves to ongoing analysis by editors. Other words should also be looked at. Take for instance "conference". This is one of our strategic words — both in English and en français. I have no doubt the following will inspire the reader.

"Everything is being handled by conferences because no one individual will take the responsibility. The result is that, as the officers composing the conferences know nothing about the subject, the wrong thing is invariably done because the line of least resistance is always followed, no matter whether it is good or bad.

Following is the note that I received from Dunwoody:

AMERICAN EXPEDITIONARY FORCES
U.S. AIR SERVICE

April 18, 1918

Hullo:

How is the zone of Advance?

Have just returned from Tours. Is this the thing you wanted? My visit made me think of it.

A Conference is a collection of human beings of almost superhuman intelligence, gathered together for the purpose of passing a series of resolutions based on their combined ignorance of a particular subject.

As a general rule, every Conference faces a crisis.

Every Conference has a main bore, an auxiliary bore, and other bores stationed at strategic points. When anybody ventures an original idea it is the duty of the main bore to head it off. He usually succeeds."

(FROM: Great Battles of World War I in the Air. p.106. Weathervane Books, N.Y. as reported by General William Mitchell, commander of American Air Forces in 1918).

ANNOUNCEMENT
ENTOMOLOGICAL SOCIETY OF CANADA POSTGRADUATE AWARD
1979

The Entomological Society of Canada will offer a postgraduate award to assist a student in undertaking his or her first year of graduate study and research leading to an advanced degree in entomology. The award will be made to a man or woman on equal terms on the basis of high scholastic achievement.

The purpose of this announcement is to outline the eligibility requirements, the method of application and the regulations governing the use of the award.

All communications regarding the award should be addressed to:

Dr. J.E. Laing, Secretary
Dept. of Environmental Biology
University of Guelph
Guelph, Ontario N1G 2W1

POSTGRADUATE AWARD

A Postgraduate Award valued at \$500.00 for 12 months will be awarded for a first year of postgraduate study and research in entomology in Canada.

Eligibility

The successful candidate must be either a Canadian citizen, or a landed immigrant with a baccalaureate from a Canadian university. The award is conditional until the recipient has provided evidence that he, or she, has been accepted by a graduate school to engage, during the 1979-80 academic year, in a program of study and research for an advanced degree with full graduate student status. Failure to provide this evidence will result in cancellation of the award. Before the scholar may receive his or her award a statement must be provided by the Dean of Graduate Studies at the university of tenure certifying that the student has been accepted for graduate studies and research with the full status of a graduate student. A scholar who enters a graduate school as a qualifying candidate is not eligible to hold the Postgraduate Award of the E.S.C. The award to a student who was unable to gain admission to a graduate school as a fully qualified student will be cancelled.

Tenure

The Entomological Society of Canada Postgraduate Award is granted for tenure in Canada. A successful candidate may carry out his or her postgraduate research at the Canadian university of his or her choice. Tenure may commence on or after May 1979 but not later than the date on which the academic year begins.

Method of Application

The Entomological Society of Canada Postgraduate Award will be announced before 1 September 1979. Candidates should submit a properly completed form, with supporting documents in accordance with the instructions printed on the application form. Applications must be received by the Secretary of the Society not later than 15 June 1979.

REGULATIONS

Demonstrating and Instructing

The Award holder is permitted under normal circumstances to demonstrate or instruct for a maximum of 200 hours per annum, provided that the Head of his or her department considers it desirable and that it does not hinder the progress of his or her work. The Award holder may accept remuneration for such work at the rate in effect at the university concerned.

Emolument from Other Sources

Apart from demonstrating and holidays, an award holder will devote his or her whole time to study and research and will not undertake any paid work, but he or she may hold another award or scholarship.

Transfers

After the postgraduate award is made, any change in the course of study or in the university of tenure requires prior approval of the Entomological Society of Canada Scholarship Committee. A request for permission to transfer must be supported by statements from each Head of department concerned.

The Award is made on condition that the winner engage in a program of graduate studies and research for an advanced degree in Entomology. Students who, after receiving the Award decide to transfer to a graduate program other than entomological cease to be eligible and their award will be cancelled.

Absence Through Illness

If, on account of illness, an Award holder is absent continuously for more than two weeks, the Scholarship Committee of the Society should be notified.

Payment of the Award

The Award will be paid in January 1980 on receipt of a report of satisfactory progress from the supervisor.

Additional Allowances

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

XXXXXXXXXXXX

AVIS

Bourse de la Société Entomologique du Canada aux étudiants post gradués — 1979

La Société Entomologique du Canada offrira une bourse aux étudiants en première année d'études post-graduées en préparation d'un diplôme supérieur en entomologie. La bourse sera accordée à un étudiant ou une étudiante en raison des seuls critères de réussite académique.

Le but de la présente est de préciser les conditions d'éligibilité, le processus de demande et les exigences rattachées à cette bourse.

Toute correspondance relative à la bourse doit être adressée à.

Dr. J.E. Laing, Secrétaire
Dept. of Environmental Biology
University of Guelph
Guelph, Ontario N1G 2W1

Bourse d'études post-graduées

Une bourse d'études post-graduées d'un montant de \$500.00 sera accordée pour 12 mois à un étudiant en première année de travaux de recherches entomologiques au Canada.

Eligibilité

Le candidat choisi doit être un citoyen canadien ou un résident reconnu du Canada avec un baccalauréat d'une université canadienne. La bourse ne sera accordée que lorsque le

candidat aura soumis un dossier démontrant qu'il est enregistré aux études supérieures pour l'année académique 1979-80, et que son programme établi en vue d'un diplôme supérieur donne tous les privilèges rattachés au statut d'étudiant post-gradué. A défaut de ce dossier, la bourse sera annulée. Avant de recevoir sa bourse, le Doyen de l'Ecole des Etudes Supérieures aura soumis par écrit un témoignage d'authenticité du programme d'études et de statut de l'étudiant. Un étudiant qui s'inscrit en vue de compléter l'obtention de crédits ne peut pas faire une demande pour la bourse de la S.E.C. Si la bourse était accordée à un candidat qui n'aura pu obtenir son admission à une Ecole de Gradués, celle-ci sera annulée.

Endroit

La bourse ne peut être obtenue qu'au Canada. Le candidat pourra s'inscrire à l'université de son choix. La bourse prendra effet en Mai 1979 ou plus tard sans excéder la date du début de l'année académique.

Formalités de la demande

La bourse sera annoncée avant le 1^{er} septembre, 1979. Les candidats devront soumettre leur candidature à l'aide du formulaire approprié et y ajouter tous les documents requis sur la formule de demande. Les demandes devront être reçues par le Secrétaire de la Société au plus tard le 15 juin, 1979.

RÈGLEMENTS

Démonstration et cours

Le boursier pourra dans des circonstances normales donner des séances de cours ou de démonstration jusqu'à un maximum de 200 heures par année pourvu que le chef de son département en exprime le désir et considère que ces tâches additionnelles n'iront pas à l'encontre du progrès de l'étudiant. Le boursier peut accepter une rémunération au taux normal à l'université où il se trouve.

Autres sources de revenus

Sauf pour fins de démonstration et les jours de congé, le boursier devra consacrer tout son temps à l'étude et à ses recherches et n'accepter aucune autre rémunération, mais pourra jouir d'une autre bourse or d'un prix.

Transferts

Après acceptation de la bourse, tout changement dans le programme d'études ou déplacement vers une autre université devra recevoir au préalable l'approbation du Comité de la Bourse de la S.E.C. Une telle demande doit être accompagnée de documents provenant des deux Chefs de départements concernés.

La Bourse est accordée pour poursuivre des études du 2^e ou 3^e cycle conduisant à l'obtention d'un grade en entomologie. Les récipiendaires de la Bourse qui décideront de changer d'orientation pour d'autres disciplines que l'entomologie deviendront inéligibles et se verront retirer leur bourse.

Absence pour maladie

Si, pour des raisons de maladie, un Boursier s'absente pour plus de deux semaines, il doit en informer le Comité de Sélection de la Société.

Paiement de la Bourse

Le paiement de la bourse se fera au cours de Janvier 1980 sur réception d'un rapport satisfaisant du professeur du boursier.

Frais supplémentaires

La Bourse consiste en un montant total. Il n'y a pas d'autres formes de prix accordés par la Société. Des frais supplémentaires pour assister, par exemple, aux réunions scientifiques, ou pour frais de cours, publications, etc., ne sont autorisés pour aucune raison.

D.B. LEVIN RECEIVES ESC SCHOLARSHIP



The Entomological Society of Canada each year presents an award of \$500.00 and a certificate to a first-year student in a graduate program in Entomology. The award is based on high scholastic achievement. The candidate is selected by the Entomological Society of Canada Scholarships Award Committee from applicants from across Canada. This year's winner is Mr. David Bernard Levin, Department of Environmental Biology, University of Guelph. Mr. Levin is working with Professor J.E. Laing on host-parasite relations and is studying the role of *Apanteles* parasitoids in the transmission of granulosis virus in *Pieris rapae* (Linné). The award was presented to Mr. Levin at Guelph on February 20, 1979 by Dr. F.L. McEwen, President of the Society.



THE CANADIAN ENTOMOLOGIST — AN ACKNOWLEDGEMENT

Of all the activities of the Entomological Society of Canada, publication of *The Canadian Entomologist*, and its supplement, the *Memoirs*, involves the most members. The least obvious people are the anonymous reviewers, many not even ESC members, who collectively spend many hours with recognition only from the Editor and usually an Associate Editor. I considered publically thanking all reviewers in the *Bulletin* at the end of each year but some subjects involve so few people that it could identify some reviewers to authors. Suffice it to say that Dr. Paul Morrison, Scientific Editor until 26 August 1978, and I are fully aware of the gratitude authors feel for the improvements in their papers made possible by good reviews. Our job has been made easier and would have been impossible at times without your, the reviewers', help. Thanks.

D.C. Eidt
Scientific Editor

THE CANADIAN ENTOMOLOGIST

Authors of manuscripts to be submitted to *The Canadian Entomologist* are advised to pay careful attention to the "Notes to Contributors" found on the back cover of a recent issue. Most authors solicit reviews from colleagues and many manuscripts go through institutional "in-house" reviews before being submitted. Such manuscripts are nearly always in better shape than others when received, and reach publication sooner. Authors should pay particular attention to titles and abstracts because these are the keys to their work.

Abstract

An abstract in the language of the text, of preferably not more than 200 words, should precede the text of scientific papers (scientific notes do not have abstracts). A translation in French or English is desirable, and acceptable in a third language if for good reason. An abstract should convey the scope of the paper and give as much information as possible. It will normally *outline* the purpose and methods of the work, and *detail* important findings and conclusions. Further information on writing the abstract may be obtained from 1320 Carling Avenue, Ottawa K1Z 7K9.

The abstract is not an intrinsic part of the paper — it must be intelligible on its own, without reference to the main text. It should enable a reader to decide whether or not to read the paper; it should be suitable for filing and for use by abstracting journals. A good title and abstract help information services to publicize work rapidly and facilitate future retrieval.

Objectives

The objectives should be clearly stated and the conclusions should neither leave an objective unanswered nor address an unstated objective.

Acknowledgements

Acknowledgements must be brief. Do not include persons or institutions to whom a letter of appreciation would be more appropriate. Do not include persons who were paid unless their contribution was far in excess of what could reasonably be expected. It is not necessary nor desirable to repeat words of appreciation when mention in the section is enough. For example, write "John Smith constructively criticized the manuscript, identified the specimens, or allowed us to use his field station", not "The authors wish to thank John Smith who very kindly . . .".

The above measures should improve indexing, resolve objectives and findings, save valuable journal space, and reduce review time. They apply as well to *Memoirs of the Entomological Society of Canada*.

NOTICE OF MEETING

The 1979 Annual Business Meeting of the Entomological Society of Canada will be held on Wednesday afternoon, 3 October, at Vancouver, British Columbia.

Matters for the consideration of this meeting or of the Governing Board meeting to be held September 30th and October 1st, 1979, in Vancouver, should be sent to the Secretary, Professor J.E. Laing, Department of Environmental Biology, University of Guelph, Guelph, Ontario N1G 2W1.

NOMINATIONS FOR THE 1979 BALLOT

Second Vice-President:

P.W. Riegert,
Department of Biology,
University of Regina,
Regina, Saskatchewan. S4S 0A2

G.B. Wiggins,
Department of Entomology,
Royal Ontario Museum,
Toronto, Ontario. M5S 2C6

Directors-at-Large:

W.G. Friend,
Department of Zoology,
University of Toronto,
Toronto, Ontario. M5S 1A1

B.S. Heming,
Department of Entomology,
University of Alberta,
Edmonton, Alberta. T6G 2E3

M.D. Proverbs,
Entomology Section,
Agriculture Canada Research Station,
Summerland, B.C. V0H 1Z0

Fellowship Selection Committee:

M.E. MacGillivray,
Agriculture Canada Research Station,
Fredericton, N.B. E3B 4Z7

H.E. Madsen,
Entomology Section,
Agriculture Canada Research Station,
Summerland, B.C. V0H 1Z0

R. Martineau,
Laurentian Forest Research Centre,
Ste. Foy, P.Q. G1V 4H7.

Additional nomination from the membership must be submitted **not later than March 31, 1979.**



BCC/CCB REPORT

Over the past six months the BCC/CCB has been particularly concerned about three areas of science policy:

- a) The implementation of the June 1st, 1978 announcements by Minister Buchanan on the new government incentives to stimulate R & D.
- b) The actions of the new Natural Sciences and Engineering Research Council.
- c) A proposal to establish an independent Agricultural Research Council of Canada.

The new R & D objectives announced by Minister Buchanan, included a goal for R & D expenditures to reach 1.5% of GNP by 1983. To put this in context MOSST estimated that to meet this goal would require increased expenditures in the university sector of approximately 18-20% per annum (10% real growth p.a.); for the government sector 10% p.a. (2% real growth p.a.) with the balance in the industrial sector. The Minister's own Advisory Committee, under John Shepherd, Vice-Chairman of the Science Council, recently concluded that R & D in the university sector would have to grow annually by 30% per annum and the industrial sector by 27% in order to meet the government's objectives within 5 years.

For the university scientist the question is what form will these increased funds take? Our meetings with Mr. McNabb, President of NSERC, suggest that new funding will be almost entirely restricted to areas of national concern, under the strategic grants programme.

The BCC/CCB responded to the MOSST Discussion Paper of June 1st on Research and Development by publishing our own Discussion Paper in early October under the title "Towards Integration and Maximization of Resources applied to Research and Development in Canada".

We also released in December a Brief to the President and Members of NSERC, entitled "Biology, Biologists and Government", in which we briefly listed the principles forming the major theme running through the series of Briefs and Statements published by the BCC/CCB in the last 5 years. We proposed that Canada's renewable, natural resources, i.e. Agriculture, Fisheries and Forestry, be designated as new areas of national concern, and outlined both the type of infrastructure required to integrate and develop the strategic grants programme with other ongoing work, particularly in the government sector, and secondly, specific topics requiring increased research thrusts in the three new areas of national concern proposed.

However, we firmly believe that the greatest contribution that the university sector can make to national R & D is in basic research, and that that itself should be a national priority area meeting Minister Faulkner's objectives which he outlined when proposing the establishment of the NSERC:

- to encourage excellence in research
- to provide a base of advanced knowledge in the universities
- to maintain a basic capacity for research training
- to encourage curiosity-orientated research

(Hansard, House of Commons, Vol. 120, 43, December 13th, 1976).

In November, a new Minister was appointed to MOSST, the Hon. A. Gillespie. As Mr. Gillespie was the first Minister of MOSST, and is now the sixth (in as many years), the wheel has come full circle! MOSST continues to be led by a Minister having two portfolios, the other, in this case, being Energy, Mines and Resources. It remains to be seen, particularly in the light of the Andras/Chrétien cut-backs of August-September, how far the new Minister will be able to stimulate R & D activities in the few months remaining before a general election.

Finally, the BCC/CCB was commissioned to prepare a proposal to create an independent Agricultural Sciences Research Council, which would complete the circle of research councils presently established. The Agricultural Institute of Canada, which now has Observer Status on the BCC/CCB, co-operated in the preparation of the proposal, which has also been submitted to the Minister of Agriculture. The formation of a new Agricultural Research Council is not a formal policy of the BCC/CCB and we will not be taking any further steps to promote the proposal. Other groups, such as the AIC, are following this matter further.

An exchange of representatives between the BCC/CCB and the Science Policy Committee of the Federation of Biological Sciences has also been established, so that we remain closely informed of each other's activities and actions. This, together with the new formal link with the AIC, indicates that the Biological Council of Canada is now more than ever an influential voice for Canadian biology and biologists in the broadest sense. Perhaps this drawing together of the biological umbrella organizations is the realization that it is in our mutual best interests to collaborate and support one another in areas of common concern. Nevertheless, the BCC/CCB will continue to vigorously put forward the specific concerns and views of its member societies.

Other matters of business at the Fall meeting of Council included the appointment of a Committee to prepare an unsolicited proposal to DSS to carry out the proposal review of museum holdings in the biological sciences, as originally proposed in our brief to the Secretary of State.

Considerable concern was expressed over the report of the Royal Society of Canada on scientific publications, commissioned by NRC, entitled "The Press of Knowledge". The number of current biological journals in Canada was attacked in the report with no supporting evidence to justify the conclusions presented. Fortunately the BCC/CCB is represented on the new Advisory Board for Scientific Publications set up by the NRC.

The officers elected or continuing for 1978-79 were as follows:

President:	D.F. Mettrick
Vice-Presidents:	J.M. Anderson R.H. Haynes
Secretary:	C. Gruchy
Treasurer:	L. Lapierre

D.F. Mettrick,
President,
December, 1978.

INSECT COLONIES

The Entomological Society of Canada publishes a list of insects and other arthropods maintained in Canadian laboratories. The list will be revised in 1979.

This information facilitates the obtaining of subcultures and the exchange of information on culture methods. To ensure that this list is complete we depend on Canadian workers to supply the information. If you do have such colonies please provide the following details as soon as possible:

Species cultured
Name, address and telephone number

J.S. Kelleher
PILS-Research Program Service
Agriculture Canada
Ottawa, Ontario
K1A 0C6

First Notice — Première Annonce

ANNUAL MEETING REUNION ANNUELLE

*Entomological Society of British Columbia
Entomological Society of Canada*

**October 1-4, 1979
Holiday Inn, City Center
Vancouver, B.C.**

- October 1 — Registration; Board of Governor's meeting
- October 2 — Opening Ceremonies
 — Symposium I — "Decision Making and
 Pest Management"
 — Gold Medal and Hervitt Award
 — ESBC annual business meeting
 — Poster Session
- October 3 Submitted Papers
 — ESC annual business meeting
 — Evening Barbecue — Simon Fraser University
- October 4 Symposium II — "Insect growth regulators"
 — Northwest Mosquito and
 Vector Control Association meeting
- Information: Dr. Peter Belton, Chairman
 ESBC/ESC meeting
 Department of Biological Sciences
 Simon Fraser University
 Barnaby, B.C. V5A 1S6

**NINTH ANNUAL INSECT PHOTO SALON
ENTOMOLOGICAL SOCIETY OF CANADA**

VANCOUVER, B.C., 2-3 OCTOBER, 1979

All nature photographers are invited to submit black and white prints, colour prints and slides of insects, related arthropods, insect damage, nests, tracks, etc. for exhibit at the Vancouver, British Columbia meeting.

Award certificates and ribbons will be presented to the winners in each category, and a small cash award to each prize winner.

This salon is conducted in accordance with international standards set forth by the Photographic Society of America.

Conditions of Entry:

1. This salon is restricted to nature photography (insect photography in particular) which is here defined as the use of photographic process to depict all observations of facts and phenomena from entomology, in this case, in such fashion that a well-informed person will be able to identify the subject material and to certify to its honest presentation. Human elements, if present, should be unobtrusive and enhance the nature story. Photographs which depict artificially produced hybrid plants or animals, or horticultural varieties of plants may not be used. Photographs depicting still-life studies, obviously set flower arrangements, mounted specimens, museum exhibits or groups, derivations or any form of photographic manipulation that alters truth or the photographic statement are **INELIGIBLE AND SHOULD NOT BE SUBMITTED**. (EXCEPTION: detailed micro or macro photographs). Descriptive titles are recommended for nature pictures and are especially helpful when titles are to be read. Cute titles should not be used.
2. The competition is open to all photographers.
3. There will be two sections: a) slides: b) prints (including colour and black and white).
4. Entry fee is \$2.00 for the slide section and \$3.50 for the print section.
5. Entries must not exceed 4 photos per section.
6. All prints must be mounted on cards no larger than 16" x 20". All prints must be entirely the work of the exhibitor, mounting excepted.
7. Sender's name and address should be on the reverse side of all photos.
8. Entries must be mailed to: Insect Photo Salon, c/o W.B. Preston, Manitoba Museum of Man and Nature, 190 Rupert Avenue, Winnipeg, Manitoba R3B 0N2 and must be received by August 31, 1979.
9. Judging will begin September 15, 1979, or as soon as possible thereafter.
10. Judges will be:
Dr. John H. Borden, Professor, Pestology Center, Department of Biological Sciences, Simon Fraser University, Burnaby, B.C.
Mr. Wes McDiarmid, Biological Photographer, Agriculture Canada Research Station, Vancouver, B.C.
Mr. Basil Fox, Photographer, Western Forest Products Laboratory, Vancouver, B.C.
11. Public showing will be during the meetings of the Entomological Society of Canada, Holiday Inn, City Center, Vancouver, B.C., 2-3 October, 1979.

12. Entries must be packed so the container can be used for return, and **MUST BE ACCOMPANIED BY A RETURN ADDRESS LABEL AND A COMPLETED ENTRY FORM**. Entries received without the appropriate fee will not be judged or returned.
13. Entry forms available from: Insect Photo Salon, c/o W.B. Preston, Manitoba Museum of Man and Nature, 190 Rupert Avenue, Winnipeg, Manitoba R3B 0N2.
14. Entries will receive every possible care, but neither the Entomological Society of Canada, nor the Insect Photo Salon Committee will be responsible for loss or damage.
15. Notification cards will be mailed within 10 days of completion of judging. Rejected entries will be returned within 21 days of completion of judging. All other entries will be returned within 21 days of the end of the public showing. Catalogs will be mailed by November 9, 1979.

**NINTH ANNUAL INSECT PHOTO SALON
ENTOMOLOGICAL SOCIETY OF CANADA**

**Entry Form: Slide Section
(PLEASE PRINT)**

Name _____

Street _____

City _____ Prov. _____
State _____

Postal Code _____ ESC Member? _____

Fee Enclosed _____

No.	Title	1	2	3	Tot.	Acc	Award
1.							
2.							
3.							
4.							

Minimum score = 3;
Maximum score = 15

Score required for acceptance _____

**Entry Form: Print Section
(PLEASE PRINT)**

Name _____

Street _____

City _____ Prov. _____
State _____

Postal Code _____ ESC Member? _____

Fee Enclosed _____

No.	Title	1	2	3	Tot.	Acc	Award
1.							
2.							
3.							
4.							

Minimum score = 3;
Maximum score = 15

Score required for acceptance _____



ROBERT VAN DEN BOSCH
1922-1978

Entomologists, ecologists, biological control specialists, and environmentalists saw their ranks deprived of an outstanding individual on 19 November 1978 when Professor Rober van den Bosch died suddenly while engaging in one of his favorite pastimes, jogging.

Van, as he was called by most who knew him, was born in Martinez, California on 31 march 1922. He received his primary and secondary education in public schools there, and then attended the University of California at Berkeley where he received his B.A. in Physical Education in 1943. From 1943 to 1946 he served as Deck Officer with the Amphibious Forces, U.S. Naval Reserve, and saw heavy combat action in the Pacific. In 1947 he returned to the University of California, Berkeley as a student in entomology, receiving his Ph.D. in that field in 1950. He was a member of the University of Hawaii Faculty from 1949 to 1951, when he joined the University of California at Riverside from which he transferred to the Berkely Campus in 1963.

A lifelong specialist in biological control, he searched for natural enemies of pests on the continents of Europe, Africa, and Asia, spending much of this hunting time in Iran, Pakistan, Afghanistan, Kashmir, and Japan. His searches resulted in the successful importation and colonization of several natural enemies of Oriental fruit fly, black scale, spotted alfalfa aphid, alfalfa weevil, walnut aphid, and various pests of ornamentals. He pioneered in the development of integrated control for alfalfa and cotton pests, and in the formulation of the fundamental concepts of integrated pest management. His expertise is demonstrated in his more than 150 publications. He understood the complexity and fragility of ecosystems, and he clearly perceived the undesirable ecological, economic, and social effects of certain agricultural strategies which are adopted to the exclusion of integrative, less objectionable ones. Thus he became a strong, forceful proponent of multidisciplinary, integrative methods of pest control. His concern for our environment and his contempt for those who defile it were expressed, in his inimitable style, in numerous talks and writings to his colleagues and students, to farmers, politicians, farm workers, environmentalists, and agribusiness and lay people. His strongly felt ideas are brought together and poignantly expressed in his last book "The Pesticide Conspiracy."

His passion for the good bugs did not diminish his enthusiastic participation in sports. He was a football player on his Alma Mater's team, an avid volleyballer, and a faithful jogger.

Besides being a researcher, a teacher, and an administrator in the Division of Biological Control, and the Department of Entomological Sciences at the University of California, Berkeley, he was a member of the Board of Directors of the Rachel Carson Trust, and on various occasions a consultant to organizations such as the United Farm Workers, the Ford Foundation, the Environmental Protection Agency, and the Food Agriculture Organization of the United Nations, and an invaluable resource person to a variety of other groups and institutions concerned with environmental issues. He was a Fellow of the American Association for the Advancement of Science, and a Guggenheim Fellow.

Professor van den Bosch is survived by his wife, Margaret, one brother and one sister.

(Editor's note: see review on page 20 of Van Der Bosch's last book.)

B.C. ENTOMOLOGIST DIES

The recent death of **Colin Curtis** marks the passing of one of British Columbia's early authorities on biting insects which affect man, livestock and wildlife.

Formerly a science teacher and a director of audio-visual education in Victoria, Mr. Curtis was employed at the Federal Department of Agriculture, "Mission Flats" laboratory at Kamloops, from 1948 until his recent retirement in 1969. During this period he was engaged in various phases of life-history, identification and control studies involving blackflies, no-see-ums, snipeflies and mosquitoes, as well as spiders. Among his publications are several pertaining to mosquito control and a Monograph on the Mosquitoes of British Columbia published by the Provincial Museum.

Mr. Curtis was also widely known among Ham Radio operators, with whom he kept in regular touch until his recent illness, and, in addition, maintained a knowledgeable interest in early B.C. steamship and railway history.

His wife Audrey, two sons and four grandchildren are left to mourn.

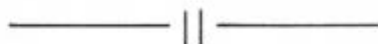
Alastair McLean



JOAN F. BRONSKILL MEMORIAL AWARD

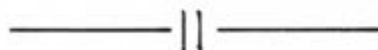
The first presentation of this annual award was given in August 1978, to Miss Lynn Martin, a student graduating from the Qunite Secondary School, Belleville, Ontario. Miss Martin, who is attending Queen's University this fall, obtained a 96% average in Grade 13 Biology last year.

The award this year was \$250; The balance should provide at least this much for each winner in the future.



C.W. WOODWORTH AWARD

Past-President **W.G. Wellington** has been selected by the Pacific Branch of the Entomological Society of America to receive the C.W. Woodworth Award for Outstanding Achievement in Entomology, when the Branch convenes its Sixty-third Annual Meeting in Fresno, CA, June 26, 1979.



B.T. ON THE GO — LE B.T. À LA RESCOUSSE

Scientists of the Canadian Forestry Service believe they are close to having a safe, non-polluting control agent for the spruce budworm which now threatens the forest economy of several regions in Canada. At present, the only control available is aerial spraying of chemical insecticides which present ecological problems. Consequently, the development of biological control techniques for the budworm has long been a high priority for Environment Canada. This biological method uses a bacterium, *Bacillus thuringiensis* (B.T.) which causes a fatal disease in budworm larvae. It is commonly used in agriculture and has long been recognized as safe for humans and animals because it attacks only a restricted group of defoliating insects (*Lepidoptera*).

The technique has been studied by Dr. W.A. Smirnof, a research scientist at Environment Canada's Laurentian Forest Research Centre in Sainte Foy, Quebec. In progress since 1971, Dr. Smirnof's experiments have been particularly encouraging in the past three years. He has tested various concentrated, water-based formulations containing B.T., an anti-évaporant, an adhesive and chitinase, an enzyme which increases the effects of the bacteria. Applied at the rate of 4.7 litres per hectare either by helicopter or small airplane, these formulations have proved very promising, reducing larval populations by 90 per cent and providing foliage protection ranging from "Acceptable" to "Very Good" depending on the level of larval populations before treatment and the degree of defoliation in previous years. Further, and most importantly, two consecutive years of B.T. treatments restored vigour and foliage to heavily defoliated fir stands approaching death.

Questions of costs and operational techniques for large-scale use are still under study, but the results of recent years are extremely encouraging. (from an Environment Canada press release).

* * * * *

Le contrôle biologique de la tordeuse des bourgeons de l'épinette apporte des résultats encourageants. Les scientifiques du service Canadien des forêts croient avoir trouvé un agent de contrôle de la tordeuse des bourgeons de l'épinette qui soit sûr et non polluant.

La tordeuse menace actuellement l'économie forestière de plusieurs régions du Canada. Pour l'instant, le seul moyen de contrôle consiste en une série d'arrosages aériens aux insecticides chimiques. Mais comme la pulvérisation présente des problèmes écologiques, la mise au point de méthodes biologiques de contrôle de la tordeuse a toujours constitué une priorité pour Environment Canada.

La méthode biologique utilise une bactérie "*Bacillus thuringiensis*" (B.T.) qui provoque une maladie mortelle chez les larves de l'insecte. Cette bactérie est utilisée fréquemment en agriculture et elle est depuis longtemps reconnue sans danger pour l'homme ou pour la faune puisqu'elle ne s'attaque qu'à un groupe restreint d'insectes défoliateurs, les lépidoptères. Cette méthode a été étudiée par le Dr. W.A. Smirnof, un chercheur scientifique du Centre de Recherche Forestière des Laurentides d'Environnement Canada situé à Sainte-Foy, Québec. Commencées en 1971, les expériences du Dr. Smirnof sont devenues particulièrement encourageantes au cours des trois dernières années. Le Dr. Smirnof a alors mis à l'essai diverses formules aqueuses et concentrées contenant du B.T., un anti-évaporant, un adhésif et de la chitinase, une enzyme qui augmente les effets de la bactérie. Dispersées au taux de 4.7 litres à l'hectare, soit d'un hélicoptère ou d'un petit avion, ces formules se sont révélées fort prometteuses: les populations de larves étaient réduites de 90 pourcent et la protection du feuillage variait d'"Acceptable" à "Très Bonne", selon les niveaux de populations larvaires avant le traitement et le degré de défoliation des années précédentes. De plus, et c'est là un élément de grande importance, un traitement au B.T. pendant deux années consécutives a même permis de restaurer la vigueur et l'état du feuillage de peuplements de sapins fortement défoliés et sur le point de mourir.

Les questions de coût et de techniques opérationnelles pour l'utilisation du B.T. à grande échelle sont encore à l'étude, mais les résultats des dernières années sont extrêmement encourageants.

(d'un communiqué d'Environnement Canada)

BIOLOGICAL SURVEY PROJECT

Review and Synthesis of Knowledge on Northern and Arctic Insects

The first meeting of the Scientific Committee for this contract (see *Bull. ent. Soc. Can.* 10 (4): 112-113) took place in Ottawa on 14-15 December 1978. Three guest consultants, Dr. E.E. Lindquist (Ottawa), Dr. K.G. Philip (Fairbanks, Alaska), and Dr. D.M. Wood (Ottawa), also attended the meeting. The second afternoon was taken up by a useful exchange of information and views with visiting representatives of various interested government departments.

At this meeting, terms of reference and the scope of the project were defined. All arthropods that are air breathing at some stage of the life cycle (including insects, spiders, mites, and springtails, but excluding freshwater crustaceans, for example) will be considered. Arctic (above tree line) and subarctic (open forest, forest-tundra) areas of the world will be treated, but special attention will be given to areas above tree line in Canada, Alaska and Greenland.

It was agreed that two documents should be produced. One would review and discuss the composition, distribution, function and environmental significance of northern, especially arctic, insects, together with necessary background information on northern areas. The second would provide a comprehensive indexed bibliography of the literature on the arctic insects of North America, including Greenland.

Because the late commencement of the contract had resulted in the deletion of funds for publication of the manuscripts produced, a subgroup of the Scientific Committee, Drs. K.G. Davey, F.L. McEwen and G.B. Wiggins, was appointed to consider funding and avenues for publication.

Since the meeting, the Scientific Committee has been supplemented by the appointment of Dr. V.G. Marshall, Pacific Forest Research Institute, Victoria, B.C.

An extensive file of references has now been compiled by the Secretariat, together with background information. Abstraction, analysis and indexing of these materials has begun.

Other Biological Survey Project initiatives

The Pilot Study report is now being considered, but as explained in earlier *Bulletins*, recommendations relating to the longer terms aspects of the proposed survey cannot take effect before 1980. In the meantime, the Scientific Committee will continue to encourage cooperation among entomologists in the ways initiated during the Pilot Study.

This is to be done chiefly on a regional basis, by local liaison especially through regional societies, by the convening of local meetings at intervals for exchange of ideas among area scientists outside the Scientific Committee, and in other ways. Your support of the following regional coordinators is requested:

Atlantic and Newfoundland:	R.F. Morris
British Columbia:	G.G.E. Scudder
Ontario:	I.M. Smith
Prairies:	G.E. Ball
Quebec:	P.P. Harper

J.A. Downes agreed to maintain interest on a national scale through regular contact and exchange of ideas with these regional coordinators.

Regional projects begun during the Pilot Study continue to bear fruit. For example, the project on *Newfoundland* insects (see *Bull. ent. Soc. Can.* 9 (2): 72; 9 (3): 102) is continuing and would welcome additional supporters from within and without the province.

The recognized interest in northern insects has resulted in an attempt to launch a long-term project on arthropods of the *Yukon Territory*, and these initiatives are being pursued especially by Drs. G.G.E. Scudder, G.E. Ball and G.B. Wiggins (through research grant applications), and Dr. J.V. Matthews (through existing interests of the Geological Survey of Canada).

In *Ontario*, some possibilities of studying faunas in selected Provincial Parks is being investigated, following enquiries by the Ontario Provincial Parks Branch.

In the province of *Quebec*, initiatives envisaged include some liaisons among major collections.

Finally, contacts with other zoologists and botanists interested in the Biological Survey idea are being maintained through the Chairman of the Scientific Committee, Dr. Scudder.

Canada and Its Insect Fauna

The volume *Canada and Its Insect Fauna*, publication of which will complete the documentation from the Pilot Study, is now in a late printing stage, and should be distributed soon after this issue of the *Bulletin* appears.

This memoir comprises 573 pages, about 270 pages taxonomically arranged, the remainder considering the history, distribution, and adaptations of the fauna, and other topics.



BOOK REVIEWS

Richards, O.W. and R.G. Davies. 1978. *Imms' Outlines of Entomology*. 254pp. £3.95 paperback. £7.50 hardcover. Chapman and Hall. Daly, H.V., J.T. Doyen, and P.R. Ehrlich. 1978. *Introduction to Insect Biology and Diversity*. 564 pp. \$U.S. 19.50. McGraw-Hill.

When selecting a textbook for an introductory course in entomology, I am guided by two considerations: price and content. We have seen an incredible increase in the price of the standard textbooks over the last few years, such that we shall probably only be able to find these books on the reference shelves of the larger libraries in the near future! I therefore eagerly awaited the appearance of Daly *et al.* and a new edition of *Imms' Outlines* with the hope that they might provide the right content at the right price for students in general entomology courses.

Imms' Outlines has always been to my mind a small classic. It has been around now for so long that it surely cannot contain any serious factual errors and I noticed only one typographical error in this edition, although the many different labelling styles on the figures may detract from an otherwise attractive layout and there is an awkward mixture of metric and english measurements on p. 11. The book is 30 pages longer than the previous edition, but the only major change in content has been in the final chapter on insect phylogeny, which has been entirely rewritten to include the views of S.M. Manton.

Insect Biology and Diversity is a new book written by three Californian entomologists and dedicated to the "attitude of free enquiry" of the late R.L. Usinger, at whose suggestion the book was first started. There are four sections: The first, 'Insects as Organisms', is a conventional but well done account of insect morphology and physiology. The second, 'Population Biology of Insects', is definitely not conventional but is a gem. Based on Ehrlich's *Process of Evolution*, it presents in 30 pages an introduction to population biology, which subject no student in entomology should be without. Part 3, 'Insects in Relation to Environment', is a good account of insect ecology, while the last part, 'Insect Diversity', occupies half the book and is a systematic account of the insects Order by Order. The arrangement of

the Orders is generally to my liking, although I think the authors go too far in giving the maddis ordinal status separate from the cockroaches, and not far enough when they combine the chewing and sucking lice. There are descriptions of the North American Families and keys at least to the Superfamily level and usually to Family. Specialists will undoubtedly have criticisms of many of the keys. I thought that the key to the Diptera looked a bit short and in fact a *Drosophilid* would not key out. Similarly the key did not work for a Phymatid. A half-dozen other insects did key out easily for me.

The whole book is well illustrated with clear diagrams, in most cases of adequate size. All are drawn and labelled in the same style, although some carry scale lines while others do not. Inevitably a new book contains minor errors (I made a list of more than 70), but putting these aside, I like this book very much. It combines excellent coverage of insect systematics, structure and function, with coverage of the insects as living organisms. I think the price is a bit steep for a student textbook, although it offers much better value for money than do its competitors.

If price is an important consideration in selection of a textbook for introductory entomology courses, the paperback edition of *Imms' Outlines* may be the choice. Beware, however. The reasonable price quoted by the U.K. publisher may bear little relationship to that in effect in Canada. The hardcover edition is already overpriced at £7.95, but the American publisher (John Wiley) advertises it at \$22.50; I presume this is in U.S. funds, making the Canadian price more than \$26.00, and that is ridiculous.

G. Pritchard.

* * * * *

Pest Control Strategies. Edward H. Smith and David Pimentel Eds. 1978. Academic Press, N.Y. XV + 334 pp. ISBN 0-12-650450-4.

The book comprises the papers presented at a Symposium at Cornell University in June 1977. The aim of the organizers was to assess the current state of pest control in the United States of America by looking at the past and present with an eye to the future.

The book is divided into four sections: I. Introduction, II. Complexity of pest management, III. Case studies of pest management, IV. Obstacles and incentives.

The first paper (W. Muir) outlines the objectives of the Symposium followed by a paper (M.P. Cutler) that deals with the role of U.S.D.A. in integrated pest management.

The section "Complexity of pest management" has four papers and provides overviews on: interactions of factors in biological systems (R.D. O'Brien), history and complexity of pest management (R.F. Smith), socioeconomic and legal aspects of pest control (D. Pimentel), and the U.S. Agriculture in 2000 A.D.

There are eight papers in the next section, "Case studies of pest management": Alfalfa weevil (E.J. Armbrust), pests on deciduous tree-fruits (B.A. Croft), pests in potatoes (H.D. Thurston), insects in corn (W.H. Luckmann), and pests of soybean (L.D. Newsom). The next three papers are not specifically on case studies as such but on the application of computer technology to pest management (D.L. Haynes and R.L. Tummala), the future of weed control (B.E. Day) and pest management in urban areas (W. Olkowski and others).

The last section has five papers each of which provides an overview on: the prospects of pest management (C.B. Huffaker and others), policy formulation (T.P. Grumbly), industry perspectives (R.D. Whetstone), constraints in the implementation of management programs (W.R.Z. Willey) and various needs to successful development and implementation of management programs (E.H. Smith).

There are several drawbacks in the book. It is disappointing that hardly anything new has been said here. Several papers are rather reruns of previous debates and discussions.

Moreover, some of the case studies are inadequately reviewed. There are approximately 352 citations in the book, and only one of these comes from outside of the United States. This is most surprising. Surely, studies done outside of the United States have also contributed to the principles of pest management.

Apart from the above drawbacks, it should be useful to students in the United States as a reference book.

M.K. Mukerji
Agriculture Canada, Saskatoon, Saskatchewan

Pimentel, D., Editor. 1978. World Food, Pest Losses, and the Environment. AAAS Selected Symposia Series 13, 206 pp. Westview Press, Boulder, Colorado. \$16.50.

A book of the scope indicated by this title and with some fourteen authors has to be uneven in approaches and coverage. Nevertheless, the result is a thought-provoking work that contains a remarkable amount of information, mainly presented concisely.

D. and M. Pimentel make educated guesses that pests destroy nearly half the world's food supply: 35% preharvest and 10-20% postharvest. R.F. Smith and D.J. Calvert conclude that the development of sound plant protection systems could reduce losses by as much as 50%, and R.O. Drummond *et al.* point out that ruminant products could be increased on a world basis by 50% through research in animal production. J.L. Apple emphasises the need for integrated pest management. W.R. Fortick reviews weeds as pests; and J.R. Pederson stresses the need for reliable data and increased effort on reduction of post-harvest food loss, which he suggests may be up to 50%.

H. Guggenheim, in a long and interesting analysis of the situation in Mali, argues that current official marketing practices are one of the major impediments to increased production. Finally, post-harvest losses are discussed further by M. Mulner *et al.*, this time as a priority of the United Nations University.

A strongly recommended book.

Bryan P. Beirne
Simon Fraser University

* * * * *

"Pennington's Butterflies of Southern Africa" Edited by C.G.C. Dickson with Dr. D.M. Kroon. A.D. Donker (Pty) Ltd., Johannesburg, South Africa. 474 pp., 198 plates in colour. R 50.96 in South Africa, £35.00 in the United Kingdom.

K.M. Pennington, the author of this sumptuous volume, was a remarkable field naturalist who for more than fifty years collected and studied the butterflies of southern Africa. As a schoolmaster he was able to spend his long vacations exploring many remote areas throughout southern Africa and eventually assembled a superb collection of butterflies, (now in the Transvaal Museum, Pretoria). After his retirement in 1958 he decided to place his unrivalled knowledge of South African butterflies on record, but died in 1974, having almost completed the task. C.G.C. Dickson, an equally eminent lepidopterist, edited the manuscript and brought it up to date, arranged for the photography of the plates and saw the resulting book through the press with the assistance of D.M. Kroon and others.

The area covered is Africa south of the Zambezi and Cunene rivers, the so-called Southern African Subregion. This is the only detailed account of the 780 species which are known to inhabit this vast area. It includes all 150 or so new species described from South Africa since the publication in 1952 of W. Peters' "Provisional Check-list of the Butterflies of the Ethiopian Region" as well as many new subspecies and changes in status. The text is followed by 38 colour plates in which Gowan Clark's superb paintings of the life histories of

South African Hesperiid butterflies are reproduced for the first time. It would have been useful to add Clark's work on the early stages of other butterfly families, but since the majority of these paintings have been published elsewhere, they have been omitted, presumably to keep down the cost and bulk of the book and to save involvement in questions of copyright.

There are 160 colour plates showing the ventral and dorsal aspects of both sexes of all the species and subspecies mentioned in the text, as well as mimetic and seasonal forms and notable aberrations. The plates are splendid reproductions of superb photographs and the great majority of the specimens used were intact, well mounted and reasonably fresh. The book ends with a well organized and surprisingly complete list of food plants compiled by D.M. Kroon, an adequate bibliography (over 300 entries), a comprehensive index and finally a map showing most of the localities mentioned in the text.

This is an attractive, well printed book with few misprints and a credit to all concerned with its production. However, like all works of man, it has its imperfections. There seems to have been some discrepancy between the author's intentions and the desire of his successors to turn the book into a sumptuous tribute to his memory. Pennington's informal, chatty prose suggests that the book was intended for beginners and amateurs. The addition of so much material, especially the lavish scale of the illustrations, has raised the cost of this work to a level which is probably beyond the reach of many of those for whom it was intended. This is bound to be regarded as a definitive work and for many years to come no one is likely to try anything covering the same field and range. Nevertheless, much of the information required by an advanced student is not in the book. There is no attempt to relate the fauna of southern Africa to that of the rest of the continent. Endemism, whether at the specific or generic level, is hardly mentioned and specific ranges beyond the Zambezi are ignored or barely hinted at. The subfamily and tribal classification is uneven and incomplete. There are no diagnoses, descriptions or even brief distributional notes on the genera. The use of the trinomial formula for nominate subspecies is inconsistent, so that very often one cannot be sure whether the insect referred to is typical or whether no subspecies have been described. Finally, there are several plates of very similar looking Satyrids and Lycaenids which cannot be determined without dissection, but no figures of the genitalia, though the genitalia of some *Charaxes* are shown.

To conclude, the merits of this book far outweigh its defects and it is sure to become an indispensable reference work for all those interested in African butterflies.

R.H. Carcasson
Provincial Museum of British Columbia
Victoria

* * * * *

AN UNUSUAL OBITUARY

The Pesticide Conspiracy. Robert van den Bosch with a preface by Paul Ehrlich. Doubleday and Company Inc., Garden City, New York 1978. 208 p. Glossary 3 p., Notes and References 11 p. Selected bibliography.

Do not go gentle to that good night
Rage, rage, against the dying of the light.
Dylan Thomas

The Pesticide Conspiracy is an angry book by an angry man. "It is a tale of personal outrage that I hope proves highly infectious". It is also Dr. van den Bosch's last tale. On the eve of publication, he died.

As its title connotes it is a documented story of villainy, of sound technology repressed and hampered by powerful vested interests — public and private. Although a sound treatise on integrated control and pest management the substance of the book is politics, deceit, corruption and treachery. It is written in the language of the street — passionate and often vulgar. Chapter titles are designed to excite curiosity and imagination for the author wanted his outburst read by all. "The Pesticide Treadmill; The Melancholy of Ol' King Colton; The Making of an Eco-radical or Pardon My Paranoia; The Politics of Pest Control; Sticking it to Caesar — The Sociology of Pest Control; The Terrible Tussock Tussle; The Instant Professionals; Of Aphids Knees and Bloody Marys; The Rape of EPA (Environmental Protection Agency); Science For Sale; Freedom of the Press, Well, Sort of; The Sorriest Loser; Bomb Disposal.

The choice of purple prose was deliberate for von den Bosch chose to address his opponents and their oft-reluctant followers in their language and mentality — a mentality which called him in their captive trade publications a liar, "a scientific fraud, a disgrace to the university, a sensation-seeking intellectual prostitute, a charlatan." Thoughtful scientists know he was none of these. His scientific contributions to biological and integrated control have earned him a place among the greats and, ironically, enabled him to pursue his lonely crusade within the free environment of the University of California at Berkeley, with only minor harassment from within.

Embedded among the polemics is an excellent treatment of integrated control and pest management and of successful implemented programs — the most complete I have seen. They are there to show the reader the alternatives now available to the "pesticide treadmill". The main theme, however, is an exposé of the powerful forces which actively oppose such innovative technology and the factors which lead educators, scientists, politicians, bureaucrats and administrators to go along with the opposition — fear, greed, corruption and ignorance. It is exciting and titillating reading because van den Bosch does not hesitate to name names where adequate documentation exists.

It is a constructive book aside from its scientific merits for the author appeals to integrity and conscience of which the scientific community is a bastion — only slightly breached. In his final chapter "To Turn the Worm" he proposes reasoned and reasonable if somewhat naive, solutions to remove the barriers to effective technological implementation. These include: elimination of the pesticide *salesman* from pest control *advisement*, constraints in private use of biocides, upgrading of university pest-control research, teaching and extension, including training of qualified pest management specialists, allocation of federal support funds for pest-control research only to those institutions of demonstrated quality and commitment, creation of medium-term fellowships by private and public granting agencies, again only to institutions demonstrably proficient in pest management, reorganization within the U.S. Department of Agriculture, specifically removal of most pest control policy-making and research to a National Institute level, the establishment and enforcement of a "no strings attached" policy at universities for grants received, establishment of a scientific, non-partisan mechanism through the National Academy of Sciences to oversee the conception and operation of national pest eradication/control programs, legislation to ensure production and use of only environmentally safe, selective pesticides.

Although based on entomological experiences, the arguments apply to all fields where biocides are used. Also, although the problems described are largely American, I am sure they are not unique to that country. (Remember the Crown Corporation established to perpetuate pesticide spraying for the spruce budworm?) The tone and style of the book will offend many scientists. It will undoubtedly be labeled non-scientific. But I assure you it is based on sound science and personal experience of an outstanding scientist. More important, it is a shocking and startling social commentary. It should be read by all followed by a period of solitary contemplation and soul-searching.

"Nature is emitting signals warning us that under the existing format the future is ominous . . . She has many voices . . . one of the clearest is that of insects . . . (but) the rumble of a mud slide (on) a denuded mountainside . . . the crunch of alkali (on over-irrigated) land, the voice of (dust-laden) wind." Will we listen? Can we overcome corruption,

greed, deceit, and ignorance and *collaborate* with Nature? These are Dr. Robert van den Bosch's final questions to the scientific community and the public he served so well.

R.W. Stark
Professor, College of
Forestry, Wildlife and Range Sciences
University of Idaho

* * * * *

Merritt, R.W. and K.W. Cummins. (Eds.). 1978. An Introduction to the Aquatic Insects of North America. xiii + 441 pp. Kendall/Hunt. Dubuque, Iowa. \$21.95 U.S.

This book attempts to satisfy the needs of both amateur and professional aquatic entomologists. Contributing authors have presented clear and easy to follow keys to the families of aquatic and semi-aquatic insects as well as a wealth of literature (over 1700 bibliographic entries) on the taxonomy, ecology and distribution of genera. The book makes extensive use of tables in presenting such information, thus keeping it to a reasonable size and making information retrieval rapid and efficient. The first such table appears in the introduction and deals with the North American literature on the identification of aquatic insects in general, something which is of use to beginning students.

As is true throughout most of the book, chapter 2 on morphology utilizes clear, well labeled figures (of plecopterans) to illustrate basic insect structure.

Chapter 3 deals with collecting, sampling and rearing techniques using both tables (techniques) and figures (equipment) to present much information in as little space as possible.

As is pointed out in their introduction, Merritt and Cummins have placed an emphasis on ecology, using Cummins' functional group approach. After six introductory chapters, each order is considered in a single chapter (with the exception of the Diptera, covered in five) and has a table of ecological and distributional data for the families and genera. For this reason, chapter 4, "The Ecology and Distribution of Aquatic Insects" written by Cummins, has been reduced to three pages, two of which are tables. This chapter may be criticized for its brevity, but because of the ecological information presented in each ordinal chapter, I see no reason for repetition here, and it is not the intent of the book to present ecological theory.

Now that I have defended the format and intention of this chapter, I must say that it contains the most blatant errors in the entire text. Table 4C is entitled "General classification system for aquatic trophic relations". In it, Cummins divides and subdivides his "functional groups" and lists the orders of insects covered in the book, placing a "+" beneath an order to indicate what functional groups are represented in the order. Numerous errors detract from the usefulness of the table. For example, the Orthoptera, although dealt with in the book, are not listed in this table. Secondly, horizontal lines have been used to separate functional groups while spacing serves to separate subdivisions within a group. Because of a missing line and improper spacing, "piercing-herbivores" appears to be a subdivision of "scrapers" rather than "piercers". And because of a lack of vertical lines it is often impossible to determine under which order a "+" falls. If these lines are drawn, the real problems become evident. From "piercing-carnivores" down, all of the "+"s have been shifted one space to the left, thus leading to ludicrous implications such as engulfing hemipterans, piercing-carnivorous lepidopterans and parasitic coleopterans. These printing errors aside, there are at least ten errors of either omission or inclusion in the remainder of the table, assuming that information in ordinal tables in the subsequent chapters is basically correct. Also, it is not made clear what is meant by a "+" in parentheses.

Chapter 5, on phylogenetic relationships and evolutionary adaptations, by V.H. Resh and J.O. Solem is clear and concise, much more in keeping with the overall tone of the book. Genealogical trees of many of the orders are presented and morphological adaptations, along with their significance, examples and exceptions, are presented in tabular form.

Chapter 6, including general classification and ordinal keys, is followed by individual chapters devoted to the orders of aquatic and semiaquatic insects. Each chapter, written by an expert on the group, begins with an introduction to the order (centered around life-cycles) followed by a brief discussion of the morphology of the group. These sections are to the point and include definitions of terms, thereby obviating the inclusion of a glossary. In addition, morphological synonyms are often included, a touch which will be appreciated by novices. These chapters are excellent and only a few minor points need to be raised concerning them.

The chapter on Ephemeroptera by G.F. Edmunds is taken from his book, *The Mayflies of North and Central America*, co-authored by S. Jensen and L. Berner. The figures are excellent but are labeled with arrows which are not defined in the figures or their captions. The arrows point to taxonomically important characters used in the keys, but some characters are pointed out which have generic importance in the original text and are not used in the familial keys of this book. These should have been omitted and all the remaining arrows defined, in view of the fact that persons not familiar with the Ephemeroptera would be using this book.

In the chapter on Trichoptera, couplet 3 of the adult key asks the student to consider the condition of the 5th segment of the maxillary palps. The couplet leads to 4 families containing males having fewer than 5 palpal segments, a fact which may be confusing to novices.

Finally, in the trophic relations table for Coleoptera, adult Dytiscids are considered piercing-carnivores rather than engulfers. The keys in this chapter contain a number of errors. Corrections for these and some other minor errors in the book are available from the publishers.

The only other section necessitating comment is that containing chapters on the Diptera, and this only because of its merits. After separating the families in the initial chapter, the Tipulidae, Culicidae, Simuliidae and Chironomidae are considered to the generic level. In all these chapters, mouthpart and head capsule characteristics are avoided whenever possible, something a student unfamiliar with Dipteran larval taxonomy will appreciate. In addition, W.P. Coffman, in his chapter on chironomids offers suggestions for the proper preparation of specimens for identification.

Overall the book is an up-to-date (basic literature review as of April 1977), concise introduction to aquatic insects which, with its numerous figures and large, readable print, will make it a standard introductory reference in this field of study.

S.B. Berté
Department of Biology
University of Calgary

* * * * *

Ordnung Coleoptera (Larven), by Bernhard Klausnitzer. 1978. Dr. W. Junk b.v. Publishers, The Hague, Netherlands. 378 pp., 35 pl., 1098 text figures. US \$73.00, soft cover.

Immature stages of Coleoptera are in general poorly known. However, considerable progress is being made towards the correction of this situation throughout the world. The present work, resulting from a team effort of the author and 11 co-authors, is certainly one of the important contributions in this field.

The volume represents part of the series of handbooks for identification of the soil fauna of Europe; its main goal is to easily identify the larvae of Coleoptera. Also included are "nonepigenous" families (such as Coccinellidae, Mycetophagidae, etc.) as long as the larvae of the species belonging to these families are known to be active, at least occasionally, on the ground, or where pupation usually takes place on or in the ground (e.g. Endomychidae). As a result of this approach, the keys to families include 93 out of 98 families of beetles represented in Europe. In addition to the 23 monogeneric families included, another 47 families are keyed out to genus; the larvae of no less than 70 families can therefore be keyed out to genus (a total of 653 genera). No keys below the generic level are given in this volume, but a continuation of this handbook is planned which would provide keys to species.

A short and useful synopsis of diagnostic level larval characters is followed by keys to suborders and families. In Polyphaga, the key to families is preceded by a key to super-families as they were proposed by Crowson in his work, "The natural classification of the families of Coleoptera" (1955). For each family, a short diagnosis for the larvae is given together with basic data on their bionomics, followed by the key to genera. The keys are accompanied by a large number of drawings of morphological details which facilitate the usage of the keys. The drawings are simple, yet instructive; some of them, however, are slightly too small (e.g. pp. 96 and 98). The treatment of families is followed by the list of references, and by the plates with larval habitus drawings, which are mostly reprinted from publications of other authors. The list of references is extensive and very useful; however, it is not exhaustive since some shorter papers dealing with larvae of European beetles are missing. Several families of minor importance for the study of the soil fauna (e.g. Cerambycidae, Chrysomelidae) are treated in an appendix. The reviewer does not see any need for such an appendix, the families should have been treated together with the rest of the families in the main part of the book. It is also very surprising, that the large family Staphylinidae, which constitutes a significant component of the soil fauna, is treated in this appendix. An index of scientific names concludes the book.

The authors of this volume are to be congratulated on the results of the difficult task they undertook. The book they produced will be indispensable not only for all students of soil fauna, but also for many ecologically and taxonomically oriented entomologists, both in Europe and North America. However, the price of the volume does seem to be excessively high.

A. Smetana
BRI, Ottawa

BOOKS RECEIVED

Mound, L.A. and S.H. Halsey. 1978. Whitefly of the World. A Systematic Catalogue. British Museum (Natural History) and John Wiley. 340 pp. US \$29.00.

Russwurm, A.D.A. 1978. Aberrations of British Butterflies. 151 pp. 40 colour plates painted by the author. E.W. Classey. £12.50.

G.C. Steyskal *et al.* 1978. Taxonomy of North American Flies of the Genus *Limnia* (Diptera: Sciomyzidae), University of California Publications in Entomology. Vol. 83. 53 pp. US\$7.00.

"Publications listed as Books Received or given Book Notices (but not Book Reviews) are available to Society members by writing to Gordon Pritchard, Department of Biology, University of Calgary, Calgary, Alberta, T2N 1N4. Only 1 copy is available and it will go to the first request opened; unsuccessful correspondents will not be notified. This offer applies to publications listed in the *Bulletins* from Vol. 10, No. 2, and will be in effect until further notice."

PERSONALIA

Philip S. Corbet has resigned as Director of the Joint Centre for Environmental Sciences at the University of Canterbury and Lincoln College, New Zealand, and has been appointed to a Chair in the Department of Zoology at the University of Canterbury. During the academic year 1979-80 he will be at the University of Cambridge, England as a Commonwealth Visiting Professor based in the Department of Applied Biology.

C.R. MACLELLAN RETIRES

C.R. (ROGER) MacLellan retired on December 28, after 28 years with Agriculture Canada.

Born in New Glasgow in 1923, Mr. MacLellan entered the army at an early age and served overseas as a Canloan officer with the British Army, Scottish Unit. He was wounded in Holland and in 1944 was awarded the Military Cross and in 1953, the Canada Decoration. In 1946, he returned to Canada with the rank of Lieutenant and continued to serve, commanding the West Nova Scotia Regiment from 1960 to 1962.

He completed his high school after the war and entered Nova Scotia Agricultural College. He received his B.Sc. (Agr.) from McGill in 1950 and M.A. from Queens University in 1954, majoring in entomology.

Since joining the entomological staff until his retirement he has worked on the population dynamics of the codling moth. In 1965 his study was broadened to include the dynamics of other species, the family Olethrentidae (budmoth) and the family Tortricidae (leafrollers).

In 1962-64 he conducted research studies on the natural enemies of the light brown apple moth in Australia at the request of the entomology division, CSIRO, Canberra, Australia.

Although Mr. MacLellan, his wife Edna, and son William are spending a holiday with their daughter Catherine and family at Fort Smith, N.W.T., he will be returning in February to offer an insect and mite monitoring service to the fruit growers of the Annapolis Valley.



INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE ANNOUNCEMENT

A.N.(S.) 107

The required six months' notice is given of the possible use of plenary powers by the International Commission on Zoological Nomenclature in connection with the following names listed by case number: (see *Bull. Zool. Nom.* 35, part 2, 31 October, 1978).

640 *Notonecta striata* Linnaeus, 1758 (Insecta, Hemiptera): designation of a neotype under the plenary powers.

Comments should be sent in duplicate (if possible within six months of the date of publication of this notice in *Bull. Zool. Nom.* 35, part 2), citing case number to:

R.V. Melville,
The Secretary,
International Commission on Zoological Nomenclature,
c/o British Museum (Natural History),
Cromwell Road,
LONDON, SW7 5BD,
England.

Those received early enough will be published in the *Bulletin of Zoological Nomenclature*.

The following Opinions (listed by number) have been published recently by the International Commission on Zoological Nomenclature (see *Bulletin Zoological Nomenclature*, Volume 35, part 2, 31 October, 1978).

Opinion No.

1107 (p.88) Conservation of *Dermacentor andersoni* Stiles, 1908 (Acarina, IXODIDAE).

- 1110 (p.99) *Microterys* Thomson, 1875 (Hymenoptera, CHALCIDOIDEA): conserved under the plenary powers.
- 1111 (p.101) *Leucospis gigas* Fabricius, 1793 (Hymenoptera, LEUCOSPIDAE) conserved under the plenary powers.
- 1112 (p.104) *Madiza* Fallén, 1810 (Diptera, MILICHIIDAE): designation of a type-species under the plenary powers.

The Commission cannot supply separates of Opinions.

MEETING ANNOUNCEMENTS

12TH ANNUAL NORTHEASTERN FOREST INSECT WORK CONFERENCE, HOTEL SYRACUSE, SYRACUSE, NEW YORK, APRIL 10-11, 1979

Please reserve these dates for our Work Conference. I will forward a program and registration material in the near future. It is difficult to maintain an updated mailing list, so please pass this announcement along to interested colleagues who may not have received one.

I believe that the Work Conference can play an important role in maintaining lines of communication between forest entomologists and forest managers in the northeastern U.S. and eastern Canada. Let us continue our tradition of high attendance and useful dialogue.

Contact D.C. Allen, Chairman 12th NEFIWC College of Environmental Science and Forestry, Syracuse, N.Y. 13210

XXXXXXXXXXXXXXXXXXXXXXXXXX

Québec City — The Department of Environment Canada will host a conference concerning contaminants in the environment "Les contaminants dans l'environnement" at the Château Frontenac Hotel in Quebec City, the 14th and 15th of May 1979.

The conference will provide a discussion form for professionals in the environment field. The working language of the conference will be French, however, simultaneous English language translation will be available.

There will be four sub-themes:

- 1) distribution of contaminants in the atmosphere;
- 2) contaminants in the aquatic and terrestrial environment;
- 3) contaminants and food;
- 4) contaminants and human health.

Conference participants are also invited to take part in field day on May 16th at the Cap Tourmente National Wildlife Area. Located approximately 50 kilometers east of Quebec City, the Wildlife Area is one of the most attractive and interesting of the Canadian Wildlife Service's national network.

The organizing committee is chaired by Mr. Claude Triquet, Inland Waters Regional Director, Environment Canada, Québec City. You can write him at P.O. Box 10100, 2700 Laurier Blvd., Ste-Foy, Québec G1V 4H5. His phone number is (418) 694-3921.

XXXXXXXXXXXXXXXXXXXXXXXXXX

Canadian Phytopathological Society/American Phytopathological Society, Pacific Division. "Plant Disease Control a Continuing Challenge". University of Lethbridge, Alberta — June 25-27, 1979.

**ENTOMOLOGICAL SOCIETY OF CANADA
SOCIÉTÉ ENTOMOLOGIQUE DU CANADA**

EXECUTIVE COUNCIL — CONSEIL EXÉCUTIF

President	F. McEwen Department of Environmental Biology University of Guelph Guelph, Ontario N1G 2W1
First Vice-President	W.J. Turnock Research Station, Agriculture Canada 195 Dafoe Road Winnipeg, Manitoba R3T 2M9
Second Vice-President	S.R. Loschiavo Research Station, Agriculture Canada 195 Dafoe Road Winnipeg, Manitoba R3T 2M9
Past-President	W.G. Wellington Institute of Animal Resource Ecology, U.B.C. Vancouver, British Columbia V6T 1W5

TRUSTEE — FIDUCIAIRES

Secretary	J.E. Laing Department of Environmental Biology University of Guelph Guelph, Ontario N1G 2W1
Treasurer	E.C. Becker 1320 Carling Avenue Ottawa, Ontario K1Z 7K9
Scientific Editor	D.C. Eidt Maritimes Forest Research Centre Dept. of Fisheries and the Environment P.O. Box 4000, Fredericton, N.B. E3B 5P7
Bulletin Editor	B.J.R. Philogène

DIRECTORS — ADMINISTRATEURS

Directors-at-Large	G.E. Ball	H.F. Madsen
	R.H. Burrage	R.F. Morris
	R.F. De Boo	J.D. Shorthouse
Regional Directors	J.C. Arrand, E.S.B.C.	D.C. Herne, E.S. Ont.
	J.A. Shemanchuk, E.S. Alta.	J.N. McNeil, S.E. Qué.
	P.W. Riegert, E.S. Sask.	A. MacPhee, Acadian E.S.
	R.A. Ellis, E.S. Man.	

CONTRIBUTIONS

Contributions and correspondence should be sent to: B.J.R. Philogène, Bulletin of the Entomological Society of Canada, Department of Biology, University of Ottawa, Ottawa, Ontario K1N 6N5.

BUSINESS INQUIRIES AND BOOKS FOR REVIEW

Inquiries about subscriptions and back issues, and books for review should be sent to the Entomological Society of Canada, 1320 Carling Avenue, Ottawa, Ontario K1Z 7K9.

DEADLINE

The deadline for the next issue Vol. 11, No. 2 for June 1979 is 15 May. The approximate date of mailing will be 15 June.

AFFILIATED SOCIETY OFFICERS

1978-1979

ENTOMOLOGICAL SOCIETY OF ALBERTA

<i>President:</i>	Dr. H.R. Wong
<i>Vice-President:</i>	Dr. W.A. Charnetski
<i>Secretary-Treasurer:</i>	Dr. D.A. Craig Department of Entomology University of Alberta Edmonton, Alberta T6G 2E3
<i>Director from Affiliated Society to E.S.C.:</i>	Mr. J.A. Shemanchuk

ENTOMOLOGICAL SOCIETY OF ONTARIO

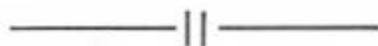
<i>President:</i>	Dr. D.H.C. Herne
<i>President-Elect:</i>	Dr. P.E. Morrison
<i>Past President:</i>	Dr. E.A.C. Hagley
<i>Director from Affiliated Society to E.S.C.:</i>	Dr. D.H.C. Herne
<i>Editor(s):</i>	Dr. W.E. Heming Dr. C.R. Ellis
<i>Secretary:</i>	Dr. M.V. Smith Department of Environmental Biology Graham Hall University of Guelph Guelph, Ontario N1G 2W1
<i>Treasurer:</i>	Dr. D.H. Pengelly (same address as above)

ENTOMOLOGICAL SOCIETY OF SASKATCHEWAN

<i>President:</i>	Dr. J.F. Doane
<i>Vice-President:</i>	Mr. Ron Hooper
<i>Secretary-Treasurer:</i>	Dr. D.P. Peschken Research Station Agriculture Canada Box 440 Regina, Saskatchewan S4P 3A2
<i>Director from Affiliated Society to E.S.C.:</i>	Dr. P.W. Riegert

SOCIÉTÉ ENTOMOLOGIQUE DU QUÉBEC

<i>Président:</i>	Dr. J.N. McNeil
<i>Vice-Président:</i>	Dr. L. Jobin.
<i>Secrétaire:</i>	Monsieur A. Cloutier Station de Recherche, Agriculture Québec 867, blvd l'Ange Gardien C.P. 10, l'Assomption, Québec
<i>Trésorier:</i>	Monsieur C. Bouchard
<i>Archiviste:</i>	Dr. J.M. Perron
<i>Éditeur des Annales.</i>	Dr. J.G. Pilon Département des Sciences Biologiques Université de Montréal C.P. 6128, Montréal, Québec H3C 3J7
<i>Représentant à la SEC:</i>	Dr. J.N. McNeil



CANADIAN AGRICULTURAL INSECT PEST REVIEW — 1978

This publication of the CDA Research Branch is a review of agricultural insects in Canada. It is the only record of its kind for Canada and is of great interest to many research workers, graduate students and research managers in Canada as well as many countries abroad.

The Entomological Society of Canada has a mandate to further the interests of entomology and its members should cooperate in this endeavor. In particular the Review includes new records, changes in distribution abnormal pest outbreaks as well as observational and quantitative data on damage and populations.

Information on desirable format and style can be obtained from the undersigned but we would be glad to have copies of any reports, publications etc. from which data could be extracted.

J.S. Kelleher
CAIPR
PILS-Research Program Service
Agriculture Canada
Ottawa, Ontario
K1A 0C6