

Entomological Society of Canada
Soci t  Entomologique du Canada

Bulletin

Vol. 12, No. 2, June - juni, 1980

Editorial	23
1980 Fellows of ESC	23
Notice of Annual Business Meeting - Call for Agenda Items	23
President's Interim Report	24-25
Call for Nominations for Achievement Awards	25
Auditor's Report	26-27
Notice of Annual Meeting	28-29
Participation Call for Insect Photo Salon	29-31
ESC Gold Medal and C.G. Hewitt Award Winners	32
ESQ Normal Criddle Award Winner	32
Post-Graduate Scholarship Winner for 1980	32
Monarch Butterfly Conservation in Mexico	33
Teenage Entomologists Win Science Fair Gold Medal	33
Insect Allergy Survey (Note Insect Application)	34-36
Helen Sollers - Riedel Honoured	36
Marcel Hudon Honoured	37
Philip Corbet Appointed to University of Dundee	38
Prof. and Mrs. F.A. Urquhart Honoured	39
International Commission on Zoological Nomenclature	39-40
Recent Deaths	40
Book Reviews	41-43
Book Notices	43-44
Memoirs of ESC	44
Meeting Announcements	38, 45, 46
Employment - Emplois	46

D.M. Davies

Bulletin Editor

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EDITORIAL

Entomologists together with other scientists must concern themselves with convincing both federal and provincial governments of the importance to Canada of improving support for research and development. Canada's support for research and development during the 1970's (expressed as a percentage of GNP) was lower than most other developed nations. Between 1969-70 alone, it was allowed to fall from 1.16% of the GNP to 0.94%.

Let us hope that John Roberts, in spite of his double portfolio of Environment, and Science and Technology, will be able to see the importance to Canada's economy of increasing governmental support for R & D.

It is important that our Society continue its support of the Biological Council of Canada, which is one of our best hopes for influencing the federal government to improve support for biological research and development, providing a firm long-term base rather than continuing to erode the present already weakened structure for short-term economic and political reasons.

ESC members are urged to use the Bulletin as a medium for exchange of ideas, news and criticisms. The editor wishes to have news of members (honours, transfers, retirements, deaths), upcoming meeting, projects of Canada-wide appeal, humorous anecdotes or items of historical interest.

FELLOWS OF THE ENTOMOLOGICAL SOCIETY OF CANADA 1980

Dr. D.C. Eidt, Fredericton, N.B.
Dr. K.S. Hagen, Berkeley, Calif.
Dr. J.S. Kelleher, Ottawa, Ont.
Dr. B.J.R. Philogène, Ottawa, Ont.
Mr. R.M. Prentice, Ottawa, Ont.
Dr. P.W. Riegert, Regina, Sask.
Dr. A.G. Robinson, Winnipeg, Man.
Dr. W.L. Sippell, Sault Ste Marie, Ont.

NOTICE OF ANNUAL BUSINESS MEETING

The Annual Business Meeting of the Entomological Society of Canada will be held on Tuesday, 7 October 1980, at the Chateau Frontenac, Québec, Québec.

Matters for consideration of this meeting or of the Governing Board meeting to be held on 4 and 5 October 1980 in Quebec City, should be sent to the Secretary, Professor J.E. Laing, Department of Environmental Biology, University of Guelph, Guelph, Ontario N1G 2W1.

Le Réunion Annuelle d'Affaires de la Société Entomologique du Canada aura lieu le mardi 7 octobre 1980, au Chateau Frontenac, Québec, Québec. Ceux qui désirent soumettre de propositions au Conseil de Direction voudront bien les envoyer à l'adresse donnée plus haut.

INTERIM REPORT FROM THE PRESIDENT

Since the last annual meeting in Vancouver, the Executive, Trustees and committees of the E.S.C. have been busy maintaining and advancing the variety of activities that together characterize and justify our professional group. The executive met in Toronto on 23-24 April to conduct business essential to the operation of the Society. Interim reports of the various committees were received and, although official action could not be taken, the Executive was able to advise committees on certain aspects of their operations and to advance recommendations that will go to the Governing Board when it meets in November. This report will not attempt to cover all the activities of the Society but will indicate some of the things that have happened in the last six months.

The Science Policy Committee met in Toronto just before the meeting of the Executive. During the morning of 22 April Drs. K.G. Davey and D.F. Mettrick, President and Past President of the Biological Council of Canada briefed the Science Policy Committee on their experience with current planning for science of the Government of Canada. Against this background, the Committee developed policies to help guide the E.S.C. in making an effective contribution to the science of entomology in Canada. The Committee recommends several actions that, in the absence of a coherent, long-range policy for science in Canada, would enable the E.S.C. to become informed on high priority problems in entomology and to bring these to the attention of appropriate agencies. The recommended actions include the preparation, by the Science Policy Committee, of a dossier of important entomological subjects in need of study in Canada, and that certain of these, with supporting statements, be recommended to the Governing Board as matters of high priority to be brought to the attention of appropriate agencies in government, industry and universities. Secondly, the Science Policy Committee recommends the preparation of a brief showing the need for a continuing, and in some areas increased, permanent research component in government, concerned with the role of insects in the development of natural and food resources in Canada. The Committee also believes that the role of Society in Publication Education would be better served by reverting to a separate Committee charged with responsibility for developing programmes in that area.

In November our Past-President, Dr. R.L. McEwen; Treasurer, Dr. E.C. Becker; and myself met with the publications Committee of NSERC. Since then, our application for a grant to reduce page charges in the Canadian Entomologist has been approved and these charges will be \$40.00 per page until the end of the fiscal year or until the money runs out. Considerable progress has been made to ensure that a Resumé, in French, will accompany papers in the Canadian Entomologist. We expect that these will be available for all papers in the near future.

Out Bulletin Editor produced his first issue in the same format as previous issues but at considerable saving in cost. We will continue to investigate methods of maintaining the service to members by the Bulletin at the lowest possible cost.

The recommendation of the Achievement Awards Committee have been approved by the Governing Board. The names of the recipients of the 1980 awards appear in this Bulletin.

The Biological Survey Committee's contract on "Review and Synthesis of Knowledge on Northern and Arctic Insects" is proceeding on schedule. The Governing Board, with the support of the Publication and Finance Committees have decided to publish, for sale at cost, a book on Northern and Arctic Insects based on this contract. Preparations for publication are progressing well.

The decisions of the Governing Board to appoint a part-time Executive Secretary and to proceed with a proposal for a contract to study insect losses in Canada have been implemented. Dr. G.S. Cooper, a former President of the E.S.C., has filled the post of Executive Secretary on a part-time basis since 1 February. The insect loss contract proposal has been prepared and soon will be submitted to Supplies and Services Canada. Informal discussions suggest that the proposal will be favourably received.

The Employment Committee again has produced "Resumés of E.S.C. Members Seeking Employment", a booklet that appears to be appreciated by potential employers as well as potential employees.

This year the annual meeting of the E.S.C. will be held with the E.S.Q. in Quebec. The major symposium, emphasizing the strategies adapted by insects living in a cold climate, is timely. This subject deserves more research emphasis than it has received in recent years. I anticipate a fine scientific and social programme and hope to see you at the meeting.

This brief report cannot cover all the activities of the Society but I trust that it gives some impression of the vigour with which we are facing our challenges and opportunities. I invite your comments and suggestions on all aspects of the E.S.C. The progress we have made, currently as in previous years, could not have been possible without the willing contributions by many members of their time and talents. The Treasurer, Secretary, Editors and Associate Editors, carry heavy responsibilities but others, including Committee members and those reviewing manuscripts, also deserve commendation. The strength of the E.S.C. lies and will continue to lie in the willingness of members to participate. To all, my thanks and best wishes.

W.J. Turnock
President
Entomological Society of Canada

ENTOMOLOGICAL SOCIETY OF CANADA

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

Members of the Society are invited to nominate persons whom they regard as eligible for these awards. Nominations should be sent to the Achievement Awards Committee, Entomological Society of Canada, 1320 Carling Avenue, Ottawa, Ontario K1Z 7K9 in an envelope marked "Confidential" and should include: (1) the name and address of the nominee(s); (2) a statement of relevant achievements with supporting documentation; 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 30 November 1980.

The following conditions govern these awards:

- 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.
- 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.
- Recipients need not be members of the Society providing their contribution is judged to have a major impact on entomology in Canada.
- Each award may be granted on different occasions to the same recipient but for different contributions to entomology in Canada.
- Nominee 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.

The incoming Chairman of Achievement Awards Committee will be:

Glenn B. Wiggins
Department of Entomology
Royal Ontario Museum
100 Queen's Park
Toronto, Ontario M5S 2C6

AUDITORS' REPORT

To the members of ENTOMOLOGICAL SOCIETY OF CANADA

We have examined the balance sheet of the Entomological Society of Canada as at December 31, 1979 and the statement of financial activity for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as we considered necessary in the circumstances.

As is usual in organizations of this kind, it was not possible to verify completely the revenue from all sources and therefore the statements show the recorded revenue.

These financial statements do not include the accounts of the Entomological Society of Canada Scholarship Fund.

In our opinion, subject to the foregoing, these financial statements present fairly the financial position of the Society as at December 31, 1979 and the results of its operations for the year then ended in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Ottawa, Ontario.
May 9, 1980.

Geo. H. Welch & Company
CHARTERED ACCOUNTANTS.

ENTOMOLOGICAL SOCIETY OF CANADA

(Incorporated under the laws of Canada)

BALANCE SHEET

DECEMBER 31, 1979

	<u>1979</u>	<u>1978</u>
<u>ASSETS</u>		
Cash	\$ 49,554	\$ 57,650
Accounts receivable	48,054	35,256
Accrued interest receivable	5,144	5,165
Term deposit - 9 3/4% - due January 15, 1980	25,000	25,000
Government and government guaranteed bonds		
- at cost - (quoted value \$57,637; 1978 - \$67,788)	69,732	74,709
Other bonds		
- at cost - (quoted value \$103,700; 1978 - \$94,100)	<u>110,000</u>	<u>95,000</u>
	<u>\$307,484</u>	<u>\$292,780</u>
<u>LIABILITIES AND SURPLUS</u>		
<u>LIABILITIES</u>		
Accounts payable and accrued liabilities	\$ 2,924	\$ 25,045
Prepaid membership, subscriptions and reprints	<u>36,758</u>	<u>25,570</u>
	39,682	50,615
<u>SURPLUS</u>		
Balance, beginning of year		
As previously reported	248,255	222,478
Adjustment of membership fees for the preceding year (note 2)	6,090	-
As restated	<u>242,165</u>	<u>222,478</u>
Net revenue for year	<u>25,637</u>	<u>19,687</u>
Balance, end of year	<u>267,802</u>	<u>242,165</u>
	<u>\$307,484</u>	<u>\$292,780</u>

STATEMENT OF FINANCIAL ACTIVITY
YEAR ENDED DECEMBER 31, 1979

	<u>1979</u>	<u>1978</u>
REVENUE		
Regular memberships	\$ 22,776	\$ 20,975
Student memberships	2,010	1,570
Sustaining memberships	298	500
Subscriptions	42,261	41,430
Sale of reprints including page charges	91,223	73,351
Sale of back issues	3,968	2,407
Publishing "Memoirs"	28,107	27,812
Interest earned	20,805	18,639
Gains on currency exchange, net of bank charges	8,285	6,229
Government grant for scientific publications	5,000	-
Miscellaneous income	1,167	1,595
	<u>225,900</u>	<u>194,508</u>
EXPENDITURE		
Publishing costs - "Canadian Entomologist"	85,729	76,988
- bulletins	11,560	10,627
- reprints	6,017	4,775
- memoirs	22,125	23,573
Editorial committee	2,063	394
Annual meeting - grants	1,600	-
- travel and expenses	10,225	1,151
Other societies - dues and grants	2,251	3,155
Salaries	35,661	34,434
Directors' meeting expenses	1,225	5,237
Other committee expenses	1,682	-
Honoraria to managing Council	1,600	1,700
Canada pension and unemployment insurance	1,645	1,464
Student encouragement	72	485
Professional fees	800	650
Postage and office supplies	7,879	5,768
Telephone	246	147
Rent	3,300	3,300
President's discretionary expenses	696	1,570
Bad debt expense	5,335	-
General expense	987	2,092
	<u>202,698</u>	<u>177,510</u>
Less recovery in excess of cost re Faunal Survey	2,435	2,689
	<u>200,263</u>	<u>174,821</u>
NET REVENUE FOR YEAR	\$ 25,637	\$ 19,687

Note 1:

These financial statements have been prepared in accordance with generally accepted accounting principles for non-profit organizations.

Note 2:

In 1978, regular memberships relating to 1979 amounting to \$6,090 were incorrectly included in income for the year. The comparative figures for 1978 have been restated to reflect the corrected amount of income relating to regular memberships, and a corrected amount for prepaid memberships.

ANNUAL MEETING REUNION ANNUELLE

SOCIÉTÉ ENTOMOLOGIQUE DU QUÉBEC
ENTOMOLOGICAL SOCIETY OF CANADA

October 5-8, octobre, 1980
CHATEAU FRONTENAC
Quebec, P.Q.

- October 5 octobre: - Registration - Inscription
- October 5 octobre: - Opening Ceremonies - Ouverture officielle
- Gold Medal - médaille d'or
- C. Gordon Hewitt Award - Prix C. Gordon Hewitt
- Symposium: Winter Survival Strategies
Stratégies de survie hivernale
- Réunion générale de la S.E.Q.
- Reception at Laval University
- Réception à l'Université Laval
- October 7 octobre: - Special Interest Groups
Groupes d'intérêt particulier
- E.S.C. annual business meeting
Réunion générale de la S.E.C.
- Banquet
- October 8 octobre: - Submitted papers - communications scientifiques

Information: Dr. J. McNeil, Chairman
Département de biologie
Université Laval
Québec, P.Q.
G1K 7P4

SPECIAL INTEREST GROUPS GROUPES D'INTERET PARTICULIER

The following subjects have tentatively been chosen for the special interest groups. - Les sujets suivants ont été choisis provisoirement.

- I - Biological control in Canada - Lutte biologique au Canada
- II - Aphid biology and ecology - Biologie et écologie des pucerons.
- III - Biting flies - Mouches piqueuses
- IV - Biology and ecology of aquatic insects
Biologie et écologie des insectes aquatiques
- V - Insect physiology - Physiologie des insectes
- VI - Plant - insect interactions
Interactions plantes - insectes

We anticipate four or five invited speakers in each session followed by an open discussion during which time participants will have the opportunity to present personal data (slide and overhead projectors will be available).

Nous prévoyons quatre ou cinq conférenciers invités pour chaque session, suivis d'une discussion ouverte durant laquelle tous les participants pourront présenter leurs propres données (projecteur à diapositives et retro-projecteur seront disponibles).

TENTH ANNUAL INSECT PHOTO SALON ENTOMOLOGICAL SOCIETY OF CANADA

QUEBEC, P.Q., 6-8 OCTOBER 1980

All nature photographers are invited to submit prints and slides of insects, related arthropods, insect damage, nests, tracks etc. for exhibit at the annual meeting.

Winners in each category will receive award certificates, ribbons and a small cash award.

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. Entries must not exceed four photos per section.
5. 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.
6. Sender's name and address should be on the reverse side of all photos.
7. Entries must be packed so that the container may be used for return, and MUST BE ACCOMPANIED BY FOUR RETURN ADDRESS LABELS AND A COMPLETED ENTRY FORM. All submissions should be sent to Dr. C. Cloutier, Département de biologie, Université Laval, Québec, P.Q. G1K 7P4 before 31 August 1980. Entries received without the appropriate fee will not be judged or returned.
8. Entry forms may be obtained from Dr. W.B. Preston, Manitoba Museum of Man and Nature, 190 Rupert Avenue, Winnipeg, Manitoba, R3B 0N2.
9. Entry fee is \$3.00 for the slide section and \$4.00 for the print section, cheques to be made out to the Entomological Society of Canada (Photo Salon).
10. Judging will begin September 15th, 1980 or as soon as possible thereafter. The definite selection of judges is presently underway.
11. Notification cards will be mailed within 10 days of completion of judging and rejected entries returned at this time. All other entries will be returned within 14 days of the end of the public showing. Catalogs will be mailed by November 1, 1980.
12. Public showing will be during the joint meeting of the Société entomologique du Québec and the Entomological Society of Canada, Chateau Frontenac, Quebec, P.Q. 6-8 October 1980.
13. All entries will receive every possible care but neither the Entomological Society of Canada, la Société Entomologique du Québec nor the Insect Photo Salon Committee will be responsible for loss or damage.

DIXIÈME PHOTOSALON ANNUEL D'INSECTES SOCIÉTÉ ENTOMOLOGIQUE DU CANADA

QUÉBEC, QUE. 6-8 OCTOBRE 1980

Tous les photographes intéressés à la nature sont invités à soumettre des imprimés et des diapositives d'insectes ou d'arthropodes apparentés, de dommages causés par les insectes, ou de tout aspect de la vie des insectes, pour être exposées lors de la réunion annuelle conjointe de la Société Entomologique du Canada et de la Société Entomologique du Québec.

Les gagnants dans chaque catégorie recevront certificats et rubans, en plus d'une légère récompense en argent.

Ce concours est organisé en accord avec les exigences internationales établies par la Photographic Society of America.

CONDITIONS DE PARTICIPATION:

1. Cette compétition est réservée à la photographie naturelle (en particulier des insectes), étant ici définie comme l'utilisation de la technique photographique pour illustrer l'observation de faits et de phénomènes de nature entomologique, en particulier ici, de telle façon que toute personne compétente puisse identifier le sujet et attester de l'authenticité de la représentation qui en est faite. Tout élément humain présent devra être discret et ajouté à la signification du phénomène naturel représenté. Les photographies montrant des hybrides de plantes ou d'animaux obtenus artificiellement, ou des variétés horticoles de plantes, ne seront pas acceptées. Les photographies représentant des études de nature-mortes, des ensembles floraux hostensiblement arrangés, des spécimens épinglés, des montages ou ensembles muséologiques, des arrangements ou toute forme de manipulation de nature à modifier la réalité ou la représentation photographique pure et simple SONT INELIGIBLES ET NE DOIVENT PAS ETRE SOUMISES. (EXCEPTIONS: micro et macrophotographies détaillées). Toutes les photographies naturelles doivent être accompagnées d'un titre descriptif, ce qui est très utile si des titres doivent être lus. Les titres à caractère fantaisiste doivent être évités.
2. Le concours est ouvert à tous les photographes.
3. Deux catégories de soumissions seront considérées: a) diapositives; b) imprimés (couleur et noir et blanc).
4. Le nombre maximum de soumissions par participant est de 4 par catégorie.
5. Les imprimés devront être montés sur carton n'excédant pas 16" x 20". Les imprimés doivent avoir été entièrement réalisés par le participant, à l'exception du montage.
6. Le nom et l'adresse du participant doivent figurer à l'endos de toutes les photographies soumises.
7. Les soumissions doivent être expédiées dans un contenant réutilisable pour le retour par courrier, et doivent être accompagnées de 4 étiquettes préadressées en plus du formulaire de participation dûment rempli. Les soumissions doivent être envoyées au Dr. C. Cloutier, Département de biologie, Université Laval, Québec, P.Q. G1K 7P4, avant le 31 août 1980. Les soumissions non accompagnées des droits de participation exigibles ne seront ni jugées, ni retournées.
8. Les formulaires de participation peuvent être obtenus en s'adressant au Dr. W.B. Preston, Manitoba Museum of Man and Nature, 190 Rupert Avenue, Winnipeg, Manitoba R3B 0N2.
9. Les droits de participations sont de \$3.00 pour la catégorie diapositives et de \$4.00 pour la catégorie imprimés. Les chèques doivent être faits à l'ordre de LA SOCIÉTÉ ENTOMOLOGIQUE DU CANADA (PHOTOSALON).
10. Le jugement des soumissions débutera le 15 septembre 1980 ou aussitôt que possible après cette date, et les juges seront choisis sous peu.
11. Des avis seront expédiés dans les 10 jours suivant la fin du jugement et les soumissions rejetées seront retournées à ce moment. Toutes les autres soumissions seront retournées dans les 14 jours suivant la fin de l'exposition publique. Les catalogues seront expédiés le 1er novembre 1980.
12. L'exposition publique des soumissions gagnantes aura lieu à la réunion conjointe de la Société Entomologique du Canada et de la Société Entomologique du Québec au Château Frontenac, Québec, P.Q. du 6 au 8 octobre 1980.
13. Les soumissions recevront toute l'attention et les soins possible de la part des responsables du concours, cependant la Société Entomologique du Canada, la Société Entomologique du Québec et le Comité du Photosalon ne seront responsables d'aucun dommage ou perte qui pourraient survenir.

ACHIEVEMENT AWARDS FOR 1980

The Achievement Awards Committee has recommended that the recipient of the Entomological Society of Canada's Gold Medal for outstanding achievement in Entomology for 1980 be:

GEORGE EUGENE BALL

(Department of Entomology, University of Alberta, Edmonton)

and the recipient of the C. Gordon Hewitt Award for 1980 be:

HUGH VICTOR DANKS

(Secretariat, Biological Survey of the Insects of Canada, E.S.C., Ottawa)

Further details will appear in the September Bulletin.

The Entomological Society of Québec (Société-Entomologique du Québec) has presented the Norman Criddle Award for 1980 to:

FRÈRE FIRMIN LALIBERTÉ, é.c.

(2400 chemin Ste-Foy, Ste. Foy, Québec)



ESC POST-GRADUATE SCHOLARSHIP FOR 1980

On 6 March 1980, one of the two 1980 ESC Postgraduate Awards was presented to Mr. Peter R. Everson by Dr. B.S. Heming on behalf of the Scholarship Committee and Governing Board of the Entomological Society of Canada.

Mr. Everson hails from Victoria, B.C. and earned a B.Sc. in Biology from the University of Victoria in 1979. He is presently studying sexual selection in males of Tetranychus urticae (Acarina: Tetranychidae) for his M.Sc. in Zoology with Dr. John F. Addicott of the Department of Zoology, University of Alberta. He is the author of six publications and has three in preparation. He also holds an NSERC Post-graduate scholarship.

MONARCH BUTTERFLY CONSERVATION

After forty-one years of research, commencing in the summer of 1935, the overwintering Site of the eastern population (east of the Rocky Mountains) in North America of the monarch butterfly, Danaus plexippus plexippus L., was discovered in the Neovolcanic Plateau, a series of volcanic mountains sometimes referred to as the Great Cross Range, in southern Mexico. This unique phenomenon was first reported in the August, 1976 issue of the National Geographic Magazine - the field expeditions and research over the past years being sponsored by the Committee on Research and Exploration of the National Geographic Society and the National Research Council of Canada.

Since countless millions of migrant monarch butterflies congregate each year in various locations (loci), ambiguously referred to as "sites" by some authors, covering the branches and trunks of over a thousand trees in one locus, the possibility of the mass destruction of the butterflies became apparent to us and to many of our colleagues who have written letters of concern. The roosting trees, consisting of various species of conifers, could quite readily be destroyed by fire, that which already posed a serious threat on one occasion when one group lit a fire beneath one of the trees upon which the monarch butterflies were roosting, or excess lumbering practices not to mention other hazards created by visitors intent on taking photographs.

The importance of protecting the overwintering monarchs in the various loci throughout the Mexican Site was brought to the attention of the Mexican authorities.

In order to bring the need for monarch butterfly conservation to the attention of the Mexican citizens, we worked closely with Mexican Television; a television crew visited our home and laboratory on three occasions in order to obtain documentary material in the northern breeding range of the monarchs. The response to the television hour-long documentary was most gratifying: hundreds of letters were received by the President of Televisa, Miguel Aleman, requesting protection for this unique Mexican phenomenon and suggesting that all areas where the monarch butterflies congregate should be set aside as conservation areas.

As a result of a final meeting in our home with Dr. Ricardo Enriquez, Special Consultant to the Subsecretario Forestal y de La Fauna de Mexico, we were informed that a law would be passed immediately declaring all areas between the levels of 2500-3500 m. of all mountains in the Neovolcanic Plateau as wildlife sanctuaries. The areas which we outlined are patrolled by trained armed guards. A fine of \$800 U.S. is imposed on anyone entering the protected areas without official sanction. Lumbering practices are also forbidden in the designated areas.

F.A. Urquhart
Scarborough College
University of Toronto
West Hill, Ontario M1C 1A4

TWO TEENAGE ENTOMOLOGISTS WIN GOLD MEDAL AT CANADA-WIDE SCIENCE FAIR

Two 17-year olds from Quebec City, Denise Rancourt and Patrice Thibault, were honoured on 17 May for the best exhibit at the 19th Annual Canadian Science Fair held at Thompson, Manitoba. The two teenagers won a Gold Medal and an award of \$2000 for their entry: a catalogue and study of butterflies that they collected throughout Quebec and Labrador over a 5-year period.

INSECT ALLERGY SURVEY — A PRELIMINARY REPORT AND A REQUEST FOR PARTICIPATION

Robert A. Wirtz¹
Division of Cutaneous Hazards
Letterman Army Institute of Research
Presidio of San Francisco, CA 94129

An insect allergy survey (IAS) was conducted by an Entomological Society of America (ESA) committee² in response to a request to examine the problem of health hazards associated with occupational exposure to insects and other arthropods. The survey results were presented to the Section B Committee at the 1979 ESA Meetings where it was recommended that a more extensive survey be conducted in coordination with other entomological societies. The following is a preliminary report on the 1979 survey, including a 1980 survey form. The complete IAS results are scheduled to appear in the September 1980 ESA Bulletin.

Insect allergy surveys were mailed to 136 educational, government, and private research institutions in the U.S. Selections were made from the Arthropod Rearing Society Newsletter mailing list in an attempt to survey institutions actively involved in arthropod rearing. Eighty-two (60.3%) of the institutions contacted responded, with 48 (58.5%) reporting at least one individual with an allergy coinciding with occupational exposure to an arthropod, host animal, or diet. Thirty-two institutions (39.0%) reported no allergies, and two institutions (2.4%) reported no occupational exposure.

A total of 113 individuals, 18 to 79 years of age, reported allergies. Approximately one-third of those responding were women and two-thirds men. The number of arthropod species encountered ranged from 1 to 76, with the mode being two species (28.8%). Individuals at institutions reporting allergies used some type of protective equipment on a "routine" basis 25% of the time and on an "as-needed" basis 60% of the time. The protective equipment included gloves (35%), respirators/face masks (37%), head nets (15%), and other types of equipment, e.g. clothing, exhaust hoods, etc. (13%).

TABLE 1. Source of reported allergies.

Category	No.	%
Lepidoptera	69	61.1
Coleoptera	13	11.5
Orthoptera	11	9.7
Hymenoptera	11	9.7
Acarina	9	8.0
Diptera	8	7.1
Diets	6	5.3
Host animals	6	5.3
Other	<u>13</u>	<u>11.5</u>
TOTAL	146	

*Multiple responses from 113 individuals

¹The opinions or assertions contained herein are the private views of the author and are not to be construed as official or as reflecting the views of the Department of the Army or the Department of Defense.

²IAS Committee Members: W. A. Brindley, J. R. Gorham, A. M. Hammond, J. D. Hoffman, M. H. Weiden, and R. A. Wirtz, Chairman.

The sources of the reported allergies were divided into nine general categories (Table 1). The Lepidoptera were by far the predominant source of allergenic material reported by the individuals surveyed. The majority of allergies were reactions to the scales of the moths or butterflies. The species of Lepidoptera frequently implicated as sources of occupational allergies are listed in Table 2. Of the 13 Coleoptera causing allergies, 5 were weevils, while 9 of the 11 allergic reactions to Orthoptera were due to cockroaches. Honey bees were reported in 8 of the 11 allergic reactions to Hymenoptera, and mosquitoes were responsible for 5 of the 8 allergies to Diptera. As with the moths, most of the reported allergies were due to scales from the adult mosquitoes. Eight of the allergies to the Acarina were attributed to mites and 1 to ticks. Most of the diet allergies were due to the dry ingredients used in artificial rearing media. All host animal allergic reactions were to rodents (Table 1).

TABLE 2. Sources of frequency of lepidopteran allergies reported in the survey.

Species	No.
Gypsy moth	32
Tobacco hornworm	8
Pink bollworm	4
Tobacco budworm	3
Silkworm	3
Greater wax moth	3
Moths - unspecified	4
Seven other species were reported 1-2 times each	12
TOTAL	69

Over 68% of the responding individuals had a daily exposure to the arthropod causing the allergy, while 12.4% reported weekly exposure. Although 8 individuals reported observing symptoms upon first contact, and one person reported exposure for 20 years before developing an allergic reaction, most estimates ranged from 1 week to 7 years with a mode of 12 months (20.8%). The suspected origins of the allergic responses are listed in Table 3, and the types of reaction are given in Table 4. The majority of the responses (77%) attributed to airborne material (Table 3), as well as the allergic reactions of sneezing, runny nose (68%), and eye irritation (62%) (Table 4), are reflections of the large number of allergies attributed to the scales of Lepidoptera and Diptera (Table 1).

TABLE 3. Suspected origins of allergic responses.

Suspected Origin	No.	%*
Airborne material	87	77.0
Contact	72	63.7
Sting	8	7.1
Bite	4	3.5
Other	4	3.5
No response	5	4.4
TOTAL	180	

*Multiple responses from 113 individuals

Of the 113 persons reporting arthropod allergies, 69% stated that it had been necessary to stop work or transfer personnel because of this problem. Forty-nine percent of those responding had consulted a physician concerning their arthropod allergy, and 47% stated that the allergy had required some type of medication or medical treatment. Self-treatment (e.g. over-the-counter antihistamines) was reported by 24% of those responding, while 25% of the

individuals were receiving prescription drugs, and 4% desensitization inoculations. Breathing difficulties, reported by 34% of those responding (Table 4), or strong allergic reactions of any type are potentially serious and warrant consultation with a knowledgeable physician. Anaphylactic shock, a life-threatening reaction, was reported by 3 individuals (2.7%, Table 4). Individuals considering desensitization inoculations for stinging Hymenoptera should have their attending physician examine "Insect Allergy: The State of the Art," by L.M. Lichtenstein *et al.*, in *J. Allergy Clin. Immunol.*, 64(1): 5-12, July 1979. The Canadian Honey Council has endorsed the venom immunotherapy treatment of sensitive individuals discussed in this article.

TABLE 4. Type of allergic reaction

Reaction	No.	%*
Sneezing, runny nose	77	68.1
Skin irritation	70	61.9
Eye irritation	70	61.9
Breathing difficulty	38	33.6
Anaphylactic shock	3	2.7
Other (e.g. fever)	4	3.5
TOTAL	262	

*Multiple responses from 113 individuals

The IAS results document an occupational health hazard that has been obvious to many, suspected by others, and ignored by a few. The problem of occupational arthropod allergies and the legal and ethical questions which arise must be addressed by entomologists and colleagues in related areas.

A major goal of the 1980 IAS Committee is to conduct a more extensive survey to identify specific potential health hazards associated with arthropod rearing. To that effect, a survey form is included at the end of this report. Please fill it out, even if you participated in the 1979 IAS, and mail it to the address printed on the reverse side of the survey form. Additional information on specific problem areas or procedures and guidelines used in your laboratories to reduce exposure would be appreciated.

Acknowledgements

The author thanks the Insect Allergy Committee members and Dr. C.H.G. Eisenberg, Chief, Division of Cutaneous Hazards, for their comments on the content and format of this manuscript and survey form.



HELEN SOLLERS-RIEDEL HONOURED

The 67th Annual Meeting of the New Jersey Mosquito Control Association, Inc. on 12-14 March 1980 was held in honour of Helen Sollers-Riedel "for her contribution in the collection and dissemination of information regarding mosquitoes and their importance to mankind". Since 1958 she has provided excellent annual reviews of the world literature on mosquitoes and mosquito-borne diseases, written in a most interesting style. At this March 1980 meeting in Cherry Hill, New Jersey she presented a paper "The 1979 international mosquito and disease situation". The Entomological Society of Canada is proud to have her as a member and hopes that she will continue her invaluable contribution to this area of entomology.

MARCEL HUDON HONOURED — HOMMAGE À MARCEL HUDON

Marcel Hudon, L.Sc. (Agr.), M.Sc. (Ent.), an entomologist and recently assistant director at Agriculture Canada's research station at St. Jean, Québec, has received a Merit Award of \$2500 under the Federal government's Incentive Award Plan. This award, presented on 9 April by Agriculture Minister Eugene Whelan, recognizes Mr. Hudon's outstanding contributions to agricultural science and the agricultural industry. Mr. Hudon has played a key role in promoting and expanding corn production in Canada. Since 1953, he has conducted bio-ecological research on the European Corn Borer, and his many publications have given him an international reputation on this subject. His work led to a project on the ecological and chemical control of the pest allowing for commercial production of sweet corn in southwestern Quebec. He has also played a role in the introduction of grain corn for cattle in the area.

Since 1969 he has worked on a major project involving 16 other countries to breed early corn varieties with resistance to insects and diseases, particularly to the corn borer. Mr. Hudon established a laboratory-rearing unit where more than four million corn-borer eggs are produced annually. These are used by scientists in Canada and abroad to infest experimental corn. It saves corn breeders precious time in testing new corn varieties for resistance.



Marcel Hudon, L.Sc. (Agr.), M.Sc. (Ent.), entomologiste et récemment assistant directeur à la station de Recherches d'Agriculture Canada à St.-Jean, Québec, a reçu la Prime au Mérite de la Fonction Publique du Canada. Cette Prime au montant de \$2500 remise par le Ministre de l'Agriculture m. Eugène Whelan en date du 9 avril dernier, feut preuve de sa contribution exceptionnelle à l'agriculture tant au point de vue scientifique qu'industriel. M. Hudon a joué un rôle clé dans la promotion et l'expansion de la production du maïs au Canada. Depuis 1953, ses recherches bio-écologiques sur la Pyrale du maïs et ses nombreuses publications lui ont acquis une réputation internationale en la matière. Son travail porte sur le contrôle écologique et chimique de ce fléau tenant compte de la production commerciale du maïs sucré dans le sud-ouest du Québec. M. Hudon est également impliqué dans l'introduction du grain de maïs pour le bétail.

Depuis 1969, M. Hudon travaille sur un projet d'empieur internationale auquel coopèrent 16 autres pays, à produire des lignées de maïs précoces résistantes aux insectes, particulièrement à la Pyrale du maïs, et aux maladies. Il a mis sur pied un laboratoire d'élevage où sont produits annuellement plus de 4 millions d'oeufs de Pyrale du maïs. Ces oeufs sont utilisés, par les scientifiques tant au Canada qu'à l'étranger, pour infester le maïs expérimental. Cette méthode rapide d'évaluation de la résistance des nouvelles lignées de maïs nous permet de sauver un temps précieux.

FORMER ESC PRESIDENT ACCEPTS NEW POST

Philip S. Corbet, Professor of Zoology, University of Canterbury, Christchurch, New Zealand and, for 1979-1980, Commonwealth Visiting Professor in the University of Cambridge, has been appointed to the Chair of Zoology in the Department of Biological Sciences at the University of Dundee.

Professor Corbet was educated first in Wiltshire. He received a B.Sc. (I-class Honours in Zoology) from the University of Reading, a Ph.D. (Entomology) from the University of Cambridge in 1953 and a D.Sc. (Zoology) from the University of Reading in 1962. He was elected Fellow of the Institute of Biology of London in 1967 and named Fellow of the Entomological Society of Canada in 1977. In 1974 the Entomological Society of Canada awarded him its Gold Medal for Outstanding Achievement. He received the Sc.D. degree of the University of Cambridge in 1976.

Professor Corbet was appointed Invertebrate Zoologists to the East African Freshwater Fisheries Research Organization, Uganda, in 1954. He has held subsequent posts as Entomologist to the East African Virus Research Institute (1957-1962), Research Scientist, Entomology Research Institute, Canada Department of Agriculture (1962-1967), Director of the Department's Research Institute at Belleville (1967-1971), Professor and Chairman, Department of Biology, University of Waterloo, Ontario (1971-1974), Professor and Director, Joint Centre for Environmental Sciences, University of Canterbury and Lincoln College, New Zealand (1974-1978) and Professor, Department of Zoology, University of Canterbury (1978 to date).

He has held membership of many professional bodies including the New Zealand Environmental Council, the New Zealand Man and Biosphere Committee, the New Zealand Government Independent Fact-Finding Group on Nuclear Energy, the FAO Expert Panel on Integrated Control of Agricultural Pests, the Western Hemisphere Regional Section of the International Organization for Biological Control (Chairman 1969-1971), the Advisory Committee on Entomological Research of the Defence Research Board of Canada (Chairman 1970-1972), the Entomological Society of Canada (President, 1971-1972) and the Entomological Society of New Zealand (Vice-President 1976-1978).

His research has covered a variety of topics within the broad disciplines of zoology and ecology and his numerous publications show particular concentration on the areas of freshwater biology and medical entomology, involving specialization on the biology of mosquitoes. Much of his research has concerned seasonal and daily patterns of insect development and behaviour, but he has worked also in other fields, including taxonomy, the epidemiology of insect-borne viruses, pest control, reproductive physiology, arctic microclimate and fish ecology. He has authored or co-authored three books.

Professor Corbet and his wife have a daughter aged 2. He takes up his appointment in Dundee on 1 January 1981.

PERSONALIA

Professor and Mrs. F.A. Urquhart, University of Toronto, received the Mexican Televisa II Award at a recent meeting in Acapulco for their assistance in producing for Mexican television an hour-long documentary on the Monarch Butterfly, illustrating its summer northern breeding, migration and winter congregation in the southern Mexican Neovolcanic Plateau.

52nd annual meeting of the Eastern Branch, Entomological Society of America from 24-26 September 1980 at the Baltimore Hilton Hotel, Baltimore, Maryland, U.S.A. For information write G.L. Jubb, Jr., Sec.-Treas., Ern Br. ESA, Pennsylvania State University, 662 N. Cemetery Road, North East, PA 16428, U.S.A.

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

The Commission hereby gives six months' notice of the possible use of its plenary powers in the following cases, published in Bull. zool. Nom., Volume 36, part 4, on 18th February 1980, and would welcome comments and advise on them from interested zoologists. Correspondence should be addressed to the Secretary, c/o British Museum (Natural History), Cromwell Road, London, SW7 5BD, United Kingdom, if possible within six months of the date of publication of this notice.

- 1237 Carabus caerulescens Linnaeus, 1758, C. cupreus Linnaeus, 1758, and Cicindela rupestris Linnaeus, 1767 (Insecta, Coleoptera): designation of type specimens.
- 2128 BUNGARIDAE Fitzinger, 1826, not to be given priority over ELAPIDAE Boie, 1827 and HYDROPHIIDAE Fitzinger, 1843; URIECHINAE Cope, 1893, not to be given priority over APARALLACTINAE Bourgeois, 1968 (Reptilia, Serpentes).
- 439 Ogygiocaris Angelin, 1854 and Ogygites Tromelin & Lebesconte, 1876 (Trilobita): proposed conservation.
- 2164 Barbus altianalis Boulenger, 1900 and B. rueppellii Boulenger, 1902 (Pisces): proposed conservation.
- 2219 Ceutorhynchus Germar, 1824 and Rhinoncus Schönherr, 1826 (Insecta, Coleoptera): proposed conservation and designation of type species.
- 2298 Cophixalus Boettger, 1892 (Amphibia, Salientia): proposed designation of type species.
- 2294 Bellota Peckham & Peckham, 1892 (Araneae): proposed designation of type species.
- 3030 Simia leucophaea F. Cuvier, 1897 (Mammalia, Primates): proposed further steps to conserve.

The following Opinions have been published recently by the International Commission on Zoological Nomenclature in the Bulletin of Zoological Nomenclature, Volume 37, part 1, 8th May 1980.

Opinion No.

- 1147 (p.11) Status, for the purposes of the type fixations, of the remains of Chironomid Larvae (Insecta, Diptera) provided by Thienemann to Kieffer for the description of new species based on the adults reared from those larvae.
- 1148 (p.27) Stabilisation of the generic name Orchelimum Audinet-Serville, 1838 and the specific name Orchelimum vulgare Harris, 1841 (Insecta, Coleoptera) by use of the plenary powers.

The Commission regrets that it cannot supply separates of Opinions.

Please note that there is an error in the printing of OPINION 1147 in the Bulletin of Zoological Nomenclature, Vol. 37: page 11. After the title and before (1) of the Ruling should be inserted:-

"In the case of species CHIRONOMIDAE established by Professor J.J. Kieffer from adults provided by Professor A. Thienemann:"

R.V. Melville,
Secretary

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

The Commission hereby gives six months' notice of the possible use of its plenary powers in the following cases, published in Bull. zool. Nom. Volume 37, part 1, on 8th May 1980, and would welcome comments and advise on them from interested zoologists. Correspondence should be addressed to the Secretary, c/o British Museum (Natural History), Cromwell Road, London, SW7 5BD, United Kingdom; if possible within six months of the date of publication of this notice.

- 2081 Mesoplodon Gervais, 1850 (Mammalia: Cetacea); proposed conservation.
2129 Prodorylaimus Andr ssy, 1959 (Nematoda); proposed designation of a type species.
2197 Peggischisme Kirkaldy, 1904 (Hemiptera Heteroptera); proposed designation of a type species.
2216 LYMANTRIIDAE Hampson, (1893) (Insecta Lepidoptera); proposed precedence over ORGYIIDAE Wallengren, 1861 and DASYCHIRIDAE Packard, 1864.
2264 Harminia Fairmaire, 1852 (Insecta, Coleoptera); proposed designation of a type species.
2268 Acmaea limatula Carpenter, 1864 (Mollusca, Gastropoda); proposed conservation.
2289 Rafinesque, 1822 "On the turtles of the United States" (Reptilia, Testudinines); proposed suppression.
2291 Chrysolina Motschulsky, 1860 (Insecta, Coeloptera); proposed conservation.
635 Chuangia Walcott, 1911 (Trilobita); proposed conservation.

R.V. Melville
Secretary

RECENT DEATHS

KEENAN, W.N., Ottawa, Ontario. On March 11, 1980, age 88. Former Director, Plant Protection Division, Agriculture Canada. Honorary member ESC, former member ESO.

HUGHES, Kenneth M. (an ESC member) died unexpectedly of a heart attack on 17 April 1980 at Brookings, Oregon. He was a member of USDA, Pacific Northwest Forest and Range Experiment Station, Corvallis, Oregon until his retirement in October 1979. He was a pioneer in insect virus research and was the only person to follow the development of knowledge on nuclear polyhedrosis viruses from its beginning in 1947, when the virus was first diagnosed in the Douglas-fir tussock moth at the University of California (Berkeley). Among his major contributions at Berkeley was a thorough study of the granulosus virus of the variegated cutworm. At Corvallis his most important discovery was that of two types of nuclear polyhedrosis virus that affect the tussock moth. His research laid the foundation for much of the unit's work and led to a group Superior Service Award in 1977 for research resulting in development of one type of nuclear polyhedrosis as an environmentally safe microbial insecticide to control the tussock moth.

HANEC, William, Winnipeg, Manitoba. On May 8, 1980, age 49. B.S.A., M.Sc., University of Manitoba; Ph.D., University of Wisconsin. Insect physiologist, especially interested in cold-hardiness of insects. Member of the Academic Staff of the Department of Entomology, University of Manitoba 1959-1977. Former member of the ESC and ESM.

ERROR

In the ESC Bulletin, volume 11(3) pp. 63-64 the reviewers for the book "Biochemistry of Insects", ed. Morris Rockstein, Academic Press 1978 were inadvertently omitted but are now recognized as K.W. Hruday and R.J. Read, University of Alberta.

BOOK REVIEWS

Species of Aphytis of the World (Hymenoptera: Aphelinidae). David Rosen and Paul DeBach. Dr. W. Junk BV Publishers, The Hague, Boston, London, 1979. (Series Entomologica, vol. 17). 1X + 801 pp., 1341 figs., 7 tables. Dutch guilders 260.00/Can \$150.00.

As primary parasites of armored scale insects, species of the genus Aphytis Howard command considerable interest in biological control. This book summarizes the authors' research, of nearly 30 years, into the biology, taxonomy, and use in biological control of Aphytis parasites. The book is divided into a general part and a specific part.

The general part provides an overview of the developmental biology, adult behaviour, ecology, economic importance and utilization, and generic and subgeneric classification of the genus Aphytis. There follows chapters on adult morphology, intraspecific variation, a review of biosystematic studies, and a key to the 90 species recognized as valid. In the specific part, the authors provide a detailed description of all species which are classified in 7 groups. The known synonyms and homonyms of each species are listed together with notes on geographic distribution, host records and use or potential use in biological control. It is worth noting that most species were carefully redescribed from type material and that published host records were verified by the authors. Included among the species are 14 new taxa (acutaspidis, amazonensis, antennalis, argenticorpus, bedfordi, equatorialis, hyalinipennis, longicaudus, malayensis, mandalayensis, perplexus, pinnaspidis, salvadorensis, and tucumani) and several new combinations and new synonymies. The book is lavishly illustrated with over 1300 line drawings and photographs, of which many were taken with a scanning electron microscope. The review is rounded out with comments on 18 doubtful species or species known only from the original description. The geographical distribution and the host records of the Aphytis species are tabulated as an appendix, which is followed by some 280 references.

The writing is clear, easy to follow and generally free of discursive statements. I am less well satisfied with the organization which resulted in a separation of the general comments on the various species groups from the description of individual species. Also, the parts on the phylogeny and geographic distribution of the genus Aphytis are useful as an introduction but would merit further study, preferably in the context of a comparative analysis of related groups. The book is a tribute to years of collaborative research by Drs. Rosen and DeBach and their students and associates. In spite of its rather high cost, I consider the book indispensable for any serious worker interested in the genus Aphytis or the family Aphelinidae. The work provides a sound basis for future taxonomic studies by delineating the extent of current knowledge and by identifying problem areas in need of further research. Moreover, the book will prove a treasure trove of challenging ideas for the insect parasitologist and the comparative morphologist.

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Carabid Beetles, Their Evolution, Natural History, and Classification. T.L. Erwin, G.E. Ball and D.R. Whitehead (Eds.), 1979, 640 pp. Dr. W. Junk b.v., The Hague. \$115.00 (U.S.)

This volume contains the proceedings of the First International Symposium of Carabidology, held in conjunction with the XVth International Congress of Entomology. The general theme is "where we have been, where we are, and where we are going". The book contains over 30 papers classified under the headings "Historical Perspectives", "Systematics", "Natural History" and "Techniques". "Systematics" is the largest section with 20 papers and more than 400 pages.

The introduction, by G.E. Ball, does not introduce the book but rather the section on historical perspectives, since it deals with the work of R. Jeannel, P.J. Darlington, Jr. and C.H. Lindroth. Both Darlington and Lindroth give historical perspectives: Darlington's is an account of his personal experiences, while Lindroth critically reviews the contributions of European carabid taxonomists of the past. This section is a useful history of carabidology and a reminder of the extent to which current research is based upon the accumulated work of previous generations.

The second on systematics is subdivided under the headings "Speciation", "Holomorphology: Classification and Phylogeny", "Zoogeography, Historical and Contemporary", and "Paleontology". Speciation is covered by D.R. Whitehead (meanings of speciation patterns) and D.H. Kavanaugh (rates of speciation). Whitehead's paper is frustrating to read as there are several detailed references to figures in his other publications; if the reader must refer to figures, the author should include them with the text.

The sub-section on holomorphology includes a conspectus of carabid classification by G.E. Ball. This outlines, with the aid of summarizing figures, carabid classification systems from pre-Linnean times to the cladistic ideas of today. It will be of particular use to the non-taxonomist by clearing away some of the confusion caused by the plethora of systems and names that have been used to classify carabids. The rest of the sub-section deals with carabid characters as yet little used in classification schemes. Outstanding here is P.M. Hammond's copiously-illustrated account of wing-folding mechanisms in Adephaga. Since the majority of beetles have flight wings that are longer than their elytra, it is surprising that so little work has been performed on the way in which the beetles' wings are stowed. Hammond's research, and his clear presentation of results, should spark renewed interest in this much neglected field. Almost as neglected are the characteristics of carabid larvae: papers by H. Goulet and by R.C. Thompson should partly alleviate this. Thompson's key to the tribes of larvae of North American carabids is easier to use than van Emden's key to larval genera (van Emden, F.I., 1942. *Trans. R. Ent. Soc. Lond.* 92, 1-99), but could be improved if his figures were labelled to explain the terminology. Referring the user to the figures of van Emden leads to difficulties: the quality of photocopies is not always sufficient, and originals of the 1942 paper are rare. Notwithstanding this, Thompson's figures and key are generally useful, although Figs. 41-42 and Fig. 64 do not correspond with their captions.

The division of biogeography and paleontology into two sub-sections exemplifies the gap between these two subjects. Most of the papers on biogeography, attempt to explain how current carabid distribution patterns result from continental drift, dispersal, or both. The papers on paleontology details the assemblages of fossil carabids found in one or a few locations and show that carabid paleontology is far from providing sufficient data to test the hypotheses that biogeographers propose. At one point, biogeographic and paleontological papers do complement each other. C.H. Lindroth contends that the prevalence of brachypterous carabids in western Scandinavia is evidence of refugia in which carabids survived the last glaciation. However, G.R. Coope found fossil evidence in Britain indicating that climatic fluctuations during glaciation caused dramatic changes in fauna in unglaciated refugia. He maintains that the brachypterous forms of western Scandinavia could not survive full glaciation and that the "refugia" are the beachheads of carabids which dispersed in from Britain as the glaciers receded. Both points of view are dependent upon assumptions which may be tested by further work; one hopes that this will be done. These difficulties in determining the events of the last 20,000 years cast doubts on the validity of other hypotheses proposed in the biogeography section. Many of these are based only upon current carabid distributions, and deal with events in the Mesozoic era: their greatest value may be in pointing out the weaknesses of the available data.

The section on natural history commences with a paper by H.U. Thiele on habitat selection by carabids; this is reminiscent of his recent book (H.U. Thiele, 1977. *Carabid beetles in their environments (Zoophysiology and Ecology 10)* Springer-Verlag). R.T. Allen's paper on the carabids in agricultural habitats is a useful literature review in this rapidly growing field, while R. Freitag has performed a similar valuable service for those interested in the effects of pollution on carabids. The final paper in this section is by T.L. Erwin, who has brought together data on the ecology of carabids in various biomes and related it to their morphological adaptations, and to the selection pressures which may be operating. This is used as a basis for a hypothetical model of carabid evolution. Despite misgivings concerning the adequacy of data for the 250 million years covered, I found this paper fascinating reading: it prompts ideas for numerous hypotheses in addition to those Erwin proposes.

The standard of the science and of its presentation in the book are generally high. The quality of the production and the relative freedom from typographic errors are admirable. Does the book truly represent the state of carabidology in 1976? I believe it to be a rather biased account; G.E. Ball, in the epilogue, admits that carabid ecology is not well covered, and commends the reader to Thiele's book (H.U. Thiele, op cit.). It is reasonable for the two books to cover different areas of carabidology; however, it is misleading that "Natural History" gets second billing in the title of this book when less than one seventh of the contents are unalloyed ecology. This objection is not serious if the book is intended merely as a record of the symposium for those who attended it. However, I assume it was meant for a wider readership; it should encourage new interest in the field. This latter function would have been enhanced if the editors had required definitions for the more esoteric terms. Other editorial improvements would have been inclusion of the institutional affiliation of contributors, and of a precis of the discussion which presumably followed each paper. However these are minor points, detracting little from a book which will stand for many years as a milestone, a summary of the state of evolutionary and systematic carabidology in the mid-seventies. I recommend it to any serious student of carabids or of insect biogeography and evolution.

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BOOK NOTICES

Pest Management in Transition: With a Regional Focus on the Interior West, Edited by Pieter de Jong. (1979) Westview Press, Boulder, Colorado, U.S.A., 141 pp., \$16.50.

This book contains the proceedings of a conference on Pest Control Strategies for the Future, held March 30-31, 1978, which focussed on pest problems of agriculture and forestry in the interior west of the U.S.A. The book is divided into four parts: Overview; Pest Management in the Interior West; Control Strategies; Implementation. Well-known pest control specialists such as D. Pimental and R. van den Bosch, as well as the views of farmers, ranchers, and the National Audubon Society are represented. Most of the 21 contributions are short, under 10 pages, and represent summaries of studies published elsewhere.

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Biocontrol News and Information. D.J. Girling ed. Published by Commonwealth Agricultural Bureaux. Farnham House, Farnham Royal, Slough SL2 3BN. U.K.

This new journal will publish quarterly beginning in March 1980 at a yearly price of £ 30.00. A sample issue dated September 1979, received for review, contained 106 pages, 78 of which comprised 533 abstracts of published papers dealing with some phase of biological control of weeds and animals, chiefly insects. Abstracted papers included reports on the release or application of natural enemies for control, observations on the occurrence of parasites, predators or pathogens in untreated pest populations, and contributions to the biology of natural enemies. The abstracts were grouped into major sections depending on the crop attacked by the host pest: e.g. field, orchard, or ornamental crops, forest trees, stored products, medical and veterinary pests, and weeds. Sections on integrated control, techniques, taxonomy, biology and ecology contained abstracts difficult to classify by crop. Both author and species indices were provided.

The rest of the issue consisted of a feature article on controlling parasite weeds and a number of short news items. Most of the latter report the release, establishment or successful control by natural enemies, or progress reports of current control projects.

It appears that the main purpose of the publication is to provide a compilation of abstracts in the field of biological control. Most of the abstracted papers were published in 1978, a few in 1977 or earlier. Generally, the abstracts were not verbatim copies of the author's abstract.

As most of the papers would eventually appear in other abstracting journals the main attraction of this publication is its convenient collection and classification of current biological control literature. English-speaking workers will also appreciate abstracts of papers published in Japanese, Russian or other middle European languages.

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Pimental, David and John H. Perkins (Editors). 1980. Pest Control: Cultural and Environmental Aspects. AAAS Selected Symposium 43. Published by Westview Press Inc., 5500 Central Avenue, Boulder, Colorado 80301, U.S.A., for the American Association for the Advancement of Science, 1776 Massachusetts Avenue N.W., Washington, D.C., 243 pages, hard cover, price U.S. \$20.00.

The chapters of this book provide a current and historical perspective of insect control in the U.S.A. The emphasis is on the relationship between entomological priorities and the changing social milieu- environmental, economic and political. The chapter titles reflect this emphasis: Society and Pest Control; The Quest for Innovation in Agricultural Entomology, 1945-1978; The Economic Milieu of Pest Control - Have Past Priorities Changed?; Pesticides - Environmental and Social Costs; Pesticides and Controversies - Benefits vs. Costs; Pest Management and the Social Environment - Conceptual Consideration; Legal Aspects of Pest Management. A disclaimer, that "This small book will not provide answers for all the questions raised in the introduction", is justified but the book does provide a description and analysis of concepts upon which future solutions may be based. For example, the description of the different philosophical approach to pest management by proponents of "Integrated Pest Management" and those of "Total Population Management" and the effect of this on their research programmes may provide a useful conceptual base for research planning. Although the focus of the book, the information on pest losses, environmental impact, political and social forces is almost entirely on the U.S.A., pest managers in other countries will find much material that could be useful to their own situation.

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MEMOIRS OF THE ENTOMOLOGICAL SOCIETY OF CANADA

No. 110. "Spruce budworm (Lepidoptera: Tortricidae) moth flight and dispersal: New understanding from canopy observations, radar, and aircraft." D.O. Greenbank, G.W. Shaefer, and R.C. Rainey, F.R.S. 49 pp. Issued 20 February 1980.

MEETING ANNOUNCEMENTS

A two-day symposium on "Insect Systems: Milestones and New Horizons in Endocrinology, Physiology and Development" will be held 27-30 December 1980 in the Seattle Centre, Seattle, Washington, U.S.A. This seminar is in honour of Professor Carroll M. Williams who for over 40 years has been a leader in insect endocrinology, physiology and development. This symposium with 19 speakers, ample discussion and a special dinner (Honouring Dr. Williams) is part of the programme of the 1980 meeting of the American Society of Zoologists, American Microscopical Society, American Society of Limnology and Oceanography, Animal Behaviour Society, Canadian Society of Zoologists, Ecological Society of America, Society of Systematic Zoology and Western Society of Naturalists.

Symposium speakers are:

- W.H. Telfer (Univ. Pennsylvania) - *Insect oogenesis: the origins of ooplasm*
G.R. Wyatt (Queen's Univ.) - *Hormonal regulation of vitellogenin synthesis*
K.G. Davey (York Univ.) - *Hormonal regulation of vitellogenin uptake*
J. Postlethwait (Univ. Oregon) - *Genetic analysis of hormonal control of vitellogenin synthesis*
H.F. Nijhout (Duke) - *Physiological control of prothoracicotropic hormone secretion*
L.I. Gilbert (Northwestern) - *Regulation of insect endocrine glands*
L.M. Riddiford (Univ. Washington) - *Hormonal regulation of epidermal cell development*
J.H. Willis (Univ. Illinois) - *Juvenile hormone: the status of "status quo"*
W.S. Bowers (N.Y. Agric. Exp. Station) - *How antijuvenile hormones work*
F. Kafatos (Harvard) - *Structure, evolution and developmental expression of chorion genes*
J. Hoffman (Univ. Louis Pasteur) - *Role of ecdysteroids in insect embryogenesis*
B. Stay (Univ. Iowa) - *Hormonal regulation of a pregnancy cycle*
J. deWilde (Agric. Univ. Wageningen) - *Environmental control of hormone levels*
P. Cherbas (Harvard) - *Hormone action in Drosophila cells*
W.R. Harvey (Temple) - *Active transport ATPase in the Cecropia midgut*
J.W. Truman (Univ. Washington) - *Hormonal control of insect behaviour*
T. Ohtaki (Kanazawa Univ.) - *Ecdysteroid metabolism*
J. Siddall (Zoecon Corp.) - *Future of insect growth regulators*
H.A. Schneiderman (Monsanto Co.) - *After-Dinner Speaker*

A room for informal discussion with the Symposium participants will be available throughout the meeting.

Contributed papers in areas of insect biology relevant to the Symposium are encouraged. Abstracts are due 15 August. Write for forms plus a brochure with details of the meeting to the American Society of Zoologists, Box 2739 California Lutheran College, Thousand Oaks, CA91360, or call (805)492-3585.

The 29th annual meeting of the Central International Forest Insect and Disease Conference (CIFIDC) will be held September 29, 30, and October 1, 1980 at the University of Michigan's Camp Filtbert Roth near Iron River, Michigan. The programme will feature current problems in the Lake States. Those not on the regular mailing list may obtain registration information from: John Whitter, School of Natural Resources, S.T. Dana Building, University of Michigan, Ann Arbor, MI 48109, U.S.A.

ENTOMOLOGISTS AVAILABLE — ENTOMOLOGISTES DISPONIBLES

The Employment Committee of the Entomological Society of Canada has published the 1980 edition of the booklet containing the resumes of members who are looking for employment. A copy of this booklet has been sent to all present employers of entomologists in Canada, including all Agriculture Canada and Environment Canada research stations, as well as the chairmen of all university biology departments. If you are an employer of entomologists and do not have access to this publication, a copy may be obtained from:

The Chairman
Employment Committee
Department of Environmental Biology
University of Guelph
Guelph, Ontario
N1G 2W1

Le Comité de L'Emploi de la Société Entomologique du Canada a publié un 1980 édition d'un livret contenant les c.v. des membres à la recherche d'un emploi. Une copie de cette publication a été envoyée à tous les employeurs d'entomologistes au Canada, y inclus Agriculture Canada et Environment Canada, ainsi qu'aux directeurs des départements de Biologie. Si vous n'avez pas accès à cette publication, vous pouvez en obtenir une copie à l'adresse ci-dessus.

EMPLOYMENT — EMPLOIS

POSITIONS AVAILABLE

INTEGRATED BLUEBERRY PEST MANAGEMENT PROJECT LEADER. Full-time professional position for a period not to exceed two years. Initial appointment through 9/30/81; reappointment subject to performance and availability of funds. **LOCATION:** Department of Entomology, Deering Hall, University of Maine at Orono. **DEADLINE OF APPLICATION:** August 15, 1980 or until suitable applicant is found. **DATE FOR FILLING POSITION:** October 1, 1980 or as soon as possible thereafter. **SALARY:** \$16,000 minimum. **TRAVEL:** Automobile required. Official travel expense reimbursed at 18¢ per mile. **SPECIFIC QUALIFICATION:** Ph.D. degree in entomology required, with training in agricultural crop production, integrated pest management, and pesticide application methods. Ability to meet people easily and to gain cooperation is essential. Ability to work successfully with advisory boards, volunteers and local residents. Ability to work effectively with other Extension professional staff. **RESPONSIBILITIES:** In cooperation with other Extension staff and advisory committees, plan, conduct, evaluate and report on the integrated blueberry pest management programme. Although assigned primarily to eastern Maine, this full-time Extension position is responsible for providing leadership in a new integrated pest management programme on low-bush blueberries statewide. Programme emphasis will be reducing or eliminating insecticide applications for the blueberry maggot through fly monitoring with traps and eliminating environmental problems with insecticides. Leader duties will include training and management of summer scouts, dissemination of information to growers, collecting and computer storage of data, education of and maintaining good relationships with growers and concerned citizen groups, reporting progress of the IPM project. **APPLICATION FORM** available from the Cooperative Extension Service, 100 Winslow Hall, University of Maine, at Orono 04469, U.S.A. Telephone (207)581-2211. **AN EQUAL OPPORTUNITY EMPLOYER**

JOINT MEETING OF ESC AND ESA IN 1981

1981 Joint Meeting of the Entomological Society of Canada and the Entomological Society of America will be held on 5-9 October 1981 at the Banff Centre, Banff, Alberta. Further details are available from Dr. Wm. A. Charnetski, Agriculture Centre, Agriculture Canada, Lethbridge, Alberta T1J 4B1

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Contributions and correspondence should be sent to: D.M. Davies, Department of Biology, McMaster University, Hamilton, Ontario.

BUSINESS INQUIRIES

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

DEADLINE

The deadline for the next issue Vol. 12, No. 2 for June 1980 is 15 May. The approximate date of mailing will be 15 June.