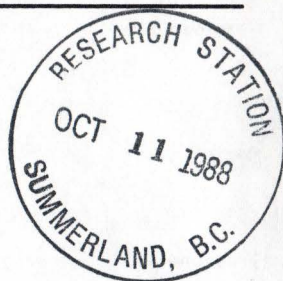

ENTOMOLOGICAL SOCIETY OF CANADA

Bulletin



SOCIÉTÉ ENTOMOLOGIQUE DU CANADA

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Entomological Society of Canada
La Société d'Entomologie du Canada

Bulletin

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Guest Editorial	1
New Dues Structure	1
Graduate Research Travel Grants/ Allocations de Voyage pour Étudiants Gradués	2
Call for Nominations	4
Committees of the E.S.C.	6
Hewitt Award/Le Prix Hewitt	9
Gold Medal Award/La Médaille d'Or	11
Gold Medal Address: The Acid Test — J. Borden	14
1987 Heritage Lecture: Early Days at the Kamloops Bug Lab — J.D. Gregson	17
Grants Available	22
Miscellanea	23
Personalia	23
Book Reviews	24
News of Organizations	26
Meetings	30

R. B. Aiken, Bulletin Editor

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SCIENCE IN CRISIS

Science in Canada is facing a crisis, and a crisis for science in Canada is a crisis for Canada. How politicians can allow Canada to move towards being a net importer of food in a hungry world, how politicians can negotiate away international trade barriers at the same time they withdraw support for the research that gives us the competitive edge, how politicians can fob off technology and "technology transfer" as science leads us to wonder about the integrity of our elected politicians. We thought we were electing leaders, but they announced a glamorous new space research program with no new money, which tells us that they are only interested in doing research they perceive the public might like, not the kind we really need. Few politicians are aware that scientific research is an investment that pays high dividends.

It will be my principal emphasis as President to do what I can to make people and politicians aware of the importance of scientific research to Canadians. My experience on the Science Policy Committee taught me that Canadians are not science conscious, and that is why politicians are able to neglect research funding. I learned that the tactic of the BCC and the AASC, the two umbrella organizations to which we belong, is to lobby MPs and ministers. This has been largely ineffective, which tells me we must rally the public consciousness. I learned that many senior managers in departments with research responsibility find it easier to pare their departments to fit their dole, than to fight for what they need for viable research programs.

We have no alternative but to seek publicity at every opportunity. This goes against the nature of most scientists, but we must swallow that pill or suffer the further decline of scientific research, neglect of libraries and collections, the loss of opportunities for young scientists, and diminishing university enrollments in science.

The Science Policy Committee, under the chairmanship of Jeremy McNeil, and the Public Relations Committee, under the chairmanship of Joe Shorthouse, will be extra busy. They will be pressing other scientific societies to become more active in making voters aware of the stakes so that politicians will have to change their ways. They will need the cooperation of all members, and particularly of the Bulletin to rally members, the Membership and Student Affairs committees to strengthen our constituency, and the Finance Committee which is proposing a financial restructuring to make the Society more viable.

According to David Suzuki, the scientific community needs as much education as does the public. If you really care about your science, find out the facts, share your information with the Science Policy Committee, speak out, and urge our colleagues in other scientific societies to speak out too.

D.C. Eidt, President

NEW DUES STRUCTURE

As a result of considerations by the Finance Committee, the Treasurer, and the Governing Board, a new dues structure was proposed to the membership at the 1988 Annual General Meeting in Vancouver, B.C. The membership at that meeting voted overwhelmingly to accept the changes. These considerations were brought about because of the realization of several important factors, mainly 1) page charges for the Canadian Entomologist and Memoirs were too high resulting in a decline in subject coverage in these publications since many authors were sending manuscripts elsewhere; 2) subscription rates were much too low in relation to other comparable publications, and this led NSERC to severely reduce our publication grant for this year and the next.

The changes, approved at the Annual General Meeting, are:

1. Reduced page charges to Can. Ent. and the Memoirs to \$25.00 a page effective for papers received after July 1, 1988.
2. Increased individual membership to \$80.00/year effective January 1, 1989. Membership to include Can. Ent. and the Bulletin.

3. Included all the Memoirs plus #2 above for \$100.00/year effective January 1, 1989.
4. Increased student membership to \$40.00/year; this includes Can. Ent., Memoirs and Bulletin.
5. Increased subscriptions to \$170.00 in Canada, \$180.00 in U.S. and \$190.00 elsewhere effective January 1, 1989.
6. Increased sustaining membership to \$200.00/year, effective January 1, 1989.

These increases will bring our Society's rate structure in line with those of other major societies. The Governing Board fully realized the impact these increases may have on our membership, and decision was not taken lightly. However, I am confident the majority of the Society's members will support the action. I am also confident you will all see a much improved Canadian Entomologist in the future when the reduced page charge comes into full effect.

D.E. Bright
Treasurer

GRADUATE RESEARCH TRAVEL GRANTS

Preamble

To foster graduate education in entomology the Entomology Society of Canada will offer two research-travel grants, awarded annually on a competitive basis. The intent of these grants is to help students increase the scope of their graduate training. These grants, up to a maximum of \$2,000, will provide an opportunity for students to undertake a research project, or to do coursework, pertinent to their thesis subject that could not be carried out at their own institution.

Eligibility

To be eligible a student must:

- (i) Be enrolled as a full-time graduate student.
- (ii) Be an active member of the Entomological Society of Canada.

Format of the Application Form

The application form will be in the format of a grant proposal, where the applicant will provide the following information:

- (i) The subject of the thesis.
- (ii) A pertinent review of the literature in the field.
- (iii) A concise presentation of the status of the ongoing thesis research.
- (iv) A description of the research or coursework to be undertaken, clearly indicating (a) the relevance to the overall goal of the thesis, (b) an explanation of why such work cannot be carried out at the student's own university, and (c) the justification of the site where the research/coursework will be carried out.
- (v) A budget for the proposed project.
- (vi) An up-to-date C.V.

The application form should also be accompanied by:

- (i) A supporting letter from the senior advisor.
- (ii) When appropriate, a supporting letter from the scientist, or the Department head, at the institution where the applicant wishes to go.

Evaluation Procedure

The scientific merit of each application will be evaluated by a committee that has the option of sending specific projects out for external review by experts in the field. A constructive written report, underlining the positive and negative aspects of the proposal, will be returned to each applicant.

Timetable and Application Procedure

Application forms, **which may be obtained from the Secretary of the Society**, must be completed and **returned by 15 January, 1989** to:

Dr. Neil Holliday, Chairperson
Research-Travel Grant Committee
Department of Entomology
University of Manitoba
Winnipeg, Manitoba
R3T 2N2

The committee will evaluate all applications by **30 April, 1989**, and determine if, and to whom, grants will be awarded. The successful applicants will be informed immediately, thereby providing sufficient time for students wishing to start in the fall to make the necessary arrangements.

ALLOCATIONS DE VOYAGE POUR ÉTUDIANTS GRADUÉS

Preamble

Afin de promouvoir les études graduées en entomologie, la Société d'Entomologie du Canada offrira deux bourses de voyage associées à la recherche. Celles-ci seront décernées annuellement sur une base compétitive. Le but de ces bourses est de permettre aux étudiants gradués d'élargir les horizons de leur formation. Les bourses, d'une valeur maximale de \$2000.00, permettront à des étudiants de réaliser un projet de recherche, ou de suivre des cours pertinents à leur sujet de thèse et qui ne pourraient pas être entrepris dans leur propre institution.

Éligibilité

Afin d'être éligible, l'étudiant doit:

- (i) être inscrit à plein temps comme étudiant gradué.
- (ii) être un membre actif de la Société d'Entomologie du Canada.

Format du Formulaire d'Application

Le formulaire d'application sera dans le style d'une demande d'octroi et l'étudiant devra fournir l'information suivante.

- (i) Le sujet de la thèse.
- (ii) Une revue de la littérature pertinente au domaine d'étude.
- (iii) Une présentation concise du statut du projet de recherche en cours.
- (iv) Une description de la recherche ou des cours qui seront entrepris, indiquant clairement: (a) la pertinence vis-à-vis les objectifs généraux de la thèse, (b) les raisons pour lesquelles ce travail ne peut être entrepris à l'université où l'étudiant est inscrit, et (c) une justification concernant le choix de l'endroit où la recherche/les cours seront entrepris.
- (v) Un budget pour le projet proposé.
- (vi) Un C.V. mis à jour.

L'application devra aussi être accompagnée par:

- (i) Une lettre de recommandation du directeur de thèse, et
- (ii) Lorsqu'appropriée, une lettre d'appui d'un administrateur de l'institution où le candidat désire aller.

Evaluation

La valeur scientifique de chaque application sera évaluée par un comité qui aura l'option d'envoyer des demandes spécifiques pour évaluation par un lecteur externe, expert dans le domaine. Un rapport écrit, contenant une critique constructive, faisant ressortir les aspects positifs et négatifs de l'application, sera retourné à chaque candidat.

Echeances et Procedures

Les formulaires d'application, **qui peuvent être obtenus du Secrétaire de la Société**, doivent être remplis et **retournés pour le 15 janvier, 1989** à:

Dr. Neil Holliday, Chairperson
Research-travel grant committee
Department of Entomology
University of Manitoba
Winnipeg, Manitoba
R3T 2N2

Le comité évaluera toutes les applications pour le **30 avril, 1989**, et déterminera si, et à qui, les bourses seront décernées. Les candidats choisis seront informés immédiatement, cela afin d'allouer suffisamment de temps pour les préparatifs nécessaires en vue d'un départ possible à l'automne.

CALL FOR NOMINATIONS

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

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

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

and should comprise: (1) the name and address of the nominee(s); (2) a statement of relevant achievements not to exceed two 8½ x 11" typewritten pages; and (3) the name of the nominator and at least one seconder. Nominators shall be prepared to submit full documentation on the nominee including a curriculum vitae should the committee request it. To be considered by the Achievement Awards Committee nominations must bear a postmark no later than November 30, 1988.

The following conditions govern these awards:

1. Outstanding contributions should be judged on the basis of
 - (a) superior research accomplishment either as a single contribution or as a series of associated endeavours and which may be either in entomology or a related field where the results obtained are of great consequence;
 - or
 - (b) dedicated and fruitful service in the fields of Society affairs, research administration, or education.
2. No more than one of each award shall be granted per year but, where circumstances warrant, more than one individual may be mentioned in a single award.
3. Recipients need not be members of the Society providing their contribution is judged to have a major impact on entomology in Canada.

4. The award may be granted on different occasions to the same recipient but for different contributions to entomology in Canada.
5. Nominees for the C. Gordon Hewitt Award must be less than 40 years of age throughout the calendar year in which the award is both announced and awarded.

Comité des décorations
Médaille d'Or pour Contribution Exceptionnelle
à l'Entomologie Canadienne
et
Prix C. Gordon Hewitt

La Société invite les membres à lui faire parvenir les noms des personnes qu'ils considèrent éligibles à ces deux prix. Veuillez envoyer vos nominations au:

Comité des décorations
Société Entomologique du Canada
1320 av. Carling
Ottawa, Ontario K1Z 7K9

dans une enveloppe portant la mention "Confidentiel". La nomination doit contenir: (1) le nom ainsi que l'adresse du (ou des) candidat(s) désigné(s); (2) un compte rendu des réalisations pertinentes, ne dépassant pas deux pages (8.5 x 11") dactylographiées; et (3) le nom du parrain et celui d'au moins une deuxième personne appuyant la mise en nomination. Les présentateurs doivent être préparés à soumettre le dossier complet du candidat, incluant un curriculum vitae, si le comité le demande. Pour être acceptées par le Comité les nominations devront porter un sceau postal d'au plus tard le 30 novembre 1988.

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

1. Les contributions exceptionnelles devraient être jugées dans le contexte
 - (a) d'un accomplissement hors pair en recherche, soit comme résultat d'une seule contribution ou d'une série d'efforts reliés, réalisés dans le secteur entomologique ou tout autre domaine connexe et ayant abouti à des résultats de grande valeur;
 - ou
 - (b) de service dévoué et fructueux au profit de la Société, de l'administration de la recherche, ou de l'éducation.
2. Chaque prix ne sera décerné qu'une seule fois annuellement, quoique, les circonstances le justifiant, plus d'une personne pourront collectivement devenir récipiendaires d'un prix.
3. Les récipiendaires ne doivent pas nécessairement être membres de la Société en autant que l'on juge que leur contribution a exercé un impact majeur sur l'entomologie au Canada.
4. Chaque prix peut être décerné à différentes occasions au même récipiendaire mais pour différentes contributions à l'entomologie au Canada.
5. Le candidat désigné pour le prix. C. Gordon Hewitt doit être âgé de moins de 40 ans pour toute la durée de l'année au cours de laquelle le prix est annoncé et décerné.

**COMMITTEES AND REPRESENTATIVES
ENTOMOLOGICAL SOCIETY OF CANADA
1988-89**

STANDING COMMITTEES

Nominating

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Gilles Boiteau, Fredericton (506) 452-3620
Judith Myers, Vancouver (604) 228-3957

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K.W. Richards, Lethbridge
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Peter Harris, Regina (1990)
R.D. McMullen, Summerland (1991)
B.J.R. Philogene, Ottawa (1991)
President, ex officio

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Two members to be named by Chairman
President, ex officio

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Regional Director, Acadian E.S., incumbent: D.J. Larson, 1989, AES Chairman, St John's (709) 737-4573
Regional Director, S.E. Quebec, incumbent: Charles Vincent, 1991, St-Jean-sur-Richelieu (514) 346-4494
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J.S. Kelleher, Cultures list, Ottawa (613) 996-1665
Affiliates' nominees
President, ex officio

Membership

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Neil J. Holliday, Winnipeg, E.S.M.
Affiliates' nominees
President, ex officio

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J.S. Shorthouse, Chair, Sudbury (705) 675-1151
Three TBA
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Publications

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Laurent LeSage (1991), Ottawa
Valerie Behan-Pelletier (1990), Ottawa
Jim Sutcliffe (1990), Kingston
Richard Ring (1989), Victoria
Conrad Cloutier (1989), Quebec
Scientific Editor, ex officio
Bulletin Editor, ex officio
Managing Editor, ex officio
President, ex officio

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Awards:

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Ron H. Gooding, Edmonton
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President, ex officio

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J. Hollebone, Convenor
Affiliates' nominees

Research-Travel Grants

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Dan Quiring, Fredericton
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Steve Tobe, Toronto

Bryan Frazer, Vancouver
Nello Angerilli, ad hoc Committee on Pesticides Policy
President, ex officio

Student Affairs

David Bergvinson, Chair, Burnaby (604) 291-4163
Four TBA
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Pesticide Policy Statement

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Gary Kinoshita, Markham, (416) 470-3675
Stuart Hill, Ste-Anne-de-Bellevue, (514) 398-7909

Diseases and Insects of Vegetables

J.A. Garland, Chair, Ottawa (613) 995-7900
(Cochairman with W.R. Jarvis, Canadian Phytopathological Society)
Guy Boivin, St-Jean-sur-Richelieu
R.P. Jaques, Harrow
L.S. Thompson, Charlottetown
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Engangered Insect Species

A.W. Thomas, Chair, Fredericton (506) 452-3523
Bernard Landry, Ottawa
Others TBA

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1st Vice-President, ex officio

AASC and COPSE

S.B. Hill (Sr. Rep.), Ste-Anne-de-Bellevue
J.M. Campbell, Ottawa



HEWITT AWARD — 1988

Dr. Guy Boivin

The 1988 recipient of the Entomological Society of Canada's C. Gordon Hewitt Award for outstanding achievement in Canadian Entomology by an individual less than 40 years old is Dr. Guy Boivin, Agriculture Canada, Saint-Jean-sur-Richelieu, Quebec.

Dr. Boivin was born in Montreal in 1954. He received his B.Sc. in Biology in 1976 and his M.Sc. in Aquatic Entomology in 1978 from the University of Montreal. He obtained his Ph.D. in Entomology in 1981 at MacDonald College of McGill University under the supervision of Dr. A.K. Stewart. During his graduate studies Dr. Boivin received post-graduate scholarships from both Federal and Provincial granting agencies.

Since 1981 Dr. Boivin has been an entomologist with Agriculture Canada at Saint-Jean-sur-Richelieu. He has developed an extensive research programme on insect pests of vegetables. A major thrust of his research has been directed towards obtaining a better understanding of the biology of the carrot weevil, *Listronotus oregonensis*. His work has resulted in a more effective trap for monitoring populations, and knowledge of the behaviour of this insect under field conditions has provided the basis for methods of cultural and biological control. To ensure that growers benefit from such research Dr. Boivin, in collaboration with Mr. P. Sauriol of the Provincial Ministry of Agriculture, established an integrated pest management programme for carrots, onions and celery grown on organic soils in Quebec. This project covers more than 4,600 acres and has, since its start in 1982, become one of the major programmes of its kind in Canada. It has had a significant impact on growing practices, has dramatically reduced pesticide utilisation and has resulted in considerable annual savings for growers. Dr. Boivin has 40 papers in refereed journals and more than 70 in non-refereed publications. The importance of Dr. Boivin's contributions was recognised by the Société d'Entomologie du Québec in 1985, when he was awarded the Léon Provancher Award.

Dr. Boivin, as an adjunct professor at Macdonald College, is also actively involved in the training of graduate students. He has co-supervised three M.Sc.'s and presently has four M.Sc. and one Ph.D. students under his supervision.

Dr. Boivin is an active member of the Société d'Entomologie du Québec, the Société de Protection des Plantes du Québec, the Entomological Society of America and the Entomological Society of Canada. Since 1985, Dr. Boivin has been the editor of *Phytoprotection*, the official journal of the Société de Protection des Plantes du Québec, which publishes scientific papers dealing with all aspects of plant protection.

The Entomological Society of Canada takes great pleasure in presenting the C. Gordon Hewitt Award to Dr. Guy Boivin, in recognition of his outstanding contributions to Canadian entomology.

Dr. Guy Boivin

Le prix C. Gordon Hewitt de la Société d'Entomologie du Canada, édition 1988, décerné à un jeune chercheur de moins de 40 ans, revient au Dr. Guy Boivin d'Agriculture Canada à Saint-Jean-sur-Richelieu, Québec.

Le Dr. Boivin est né à Montréal en 1954. Il a complété un baccalauréat en biologie en 1976 et une maîtrise en entomologie aquatique en 1978 à l'Université de Montréal. Il a obtenu son doctorat au Collège Macdonald de l'Université McGill, sous la direction du Dr. R.K. Stewart. Pendant ses études graduées, le Dr. Boivin a reçu les bourses du C.R.S.N.G. et du Fonds F.C.A.C.

Depuis 1981, le Dr. Boivin occupe une poste de chercheur en entomologie à la station de recherche d'Agriculture Canada à Saint-Jean-sur-Richelieu où il a développé un important programme de recherche sur les insectes nuisibles des légumes. Une partie importante de ses travaux a été consacrée à l'étude du charançon de la carotte, *Listronotus oregonensis*. Il a mis au point nouveau piège pour dépister plus efficacement ce ravageur et a obtenu une meilleure connaissance du comportement de cet insecte sur le terrain, permettant ainsi de recommander des méthodes de contrôle biologiques et culturales. Pour faciliter le transfert de ses connaissances aux producteurs, le Dr. Boivin, en collaboration avec Monsieur P. Sauriol du Ministère d'Agriculture, des Pêcheries et de l'Alimentation du Québec, a développé un réseau de lutte intégrée dans les cultures de carottes, d'oignons et de céleris en terres noires au Québec. Ce réseau couvre une superficie de plus de 4,600 acres, et depuis son implantation en 1982, ce projet de lutte intégrée est devenu l'un des plus importants au Canada. En limitant l'usage des pesticides, les producteurs ont ainsi sauvé des sommes d'argent importantes chaque année. Ses travaux ont fait l'objet de 37 articles publiés dans des revues scientifiques avec jury, plus de 70 publications connexes et un ouvrage collectif. Cette importante contribution à la communauté scientifique fut reconnu par la Société d'Entomologie du Québec qui lui a décerné le prix Léon Provancher, en 1985.

Comme professeur associé au Collège MacDonald, le Dr. Boivin s'est impliqué activement dans la formation des étudiants gradués. Il a déjà dirigé trois maîtrises et a présentement sous sa direction quatre étudiants à la maîtrise et un au doctorat.

Le Dr. Boivin est un membre actif de la Société d'Entomologie du Québec, de la Société de Protection des Plantes du Québec, de la Société d'Entomologie du Canada et de l'Entomological Society of America. Depuis, 1985, le Dr. Boivin est rédacteur en chef de Phytoprotection, la revue officielle de la Société de Protection des Plantes du Québec.

La Société d'Entomologie du Canada est fière de décerner le prix C. Hewitt au Dr. Guy Boivin, en reconnaissance de sa contribution exceptionnelle à l'entomologie canadienne.



GOLD MEDAL — 1988

Dr. John H. Borden

The 1988 recipient of the Entomological Society of Canada's Gold medal for Outstanding Achievement in Canadian Entomology is Dr. John Harvey Borden, Centre for Pest Management, Department of Biological Sciences, Simon Fraser University, Burnaby, British Columbia. This Award is presented in recognition for his important contributions to entomological research and teaching.

John H. Borden was born in Berkeley, California in 1938 but grew up in Vancouver as both his parents were eminent professors at the University of British Columbia. He received his B.Sc. in 1963 from Washington State University, and obtained his M.Sc. and Ph.D. in 1965 and 1966, respectively at the University of California, Berkeley. In 1985, following many years of part-time study, he qualified as a Registered Professional Forester.

Dr. Borden joined the Faculty at Simon Fraser University in 1966 where he now holds the rank of Professor. As the Founding Director of the Chemical Ecology Research Group, Dr. Borden has been instrumental in the establishment of an interdisciplinary team that has gained an international reputation for their pioneering work on many aspects of semiochemically-mediated communication systems of insects. This includes the identification of pheromones for 15 species (all of importance in either forestry or agriculture), as well as making major contributions to our understanding of the role of plant volatiles in host location and selection of oviposition sites by insects such as the onion fly. Furthermore, Dr. Borden was the first to experimentally demonstrate the importance of juvenile hormone on the degeneration of flight muscle and on pheromone production in bark beetles. However, he has not limited his research efforts to semiochemicals, having studied learning and host selection in parasitoids, and validated local folklore reporting that the smoke from the sporophores of Indian paint fungus is highly toxic to adult mosquitoes. Up to early 1988 Dr. Borden has authored or co-authored 148 papers in refereed journals and conference proceedings, nine book chapters, one bibliography, a glossary of forest pest management terms, and 20 non-refereed publications, as well as having edited a book. More than 30 additional papers have arisen from work that he has supervised. He is much sought after as a speaker and has given more than 60 invited papers and seminars. He has also presented 59 submitted papers at scientific meetings.

Dr. Borden is dedicated to the transfer of information to user groups and has applied the results of his basic research to the establishment of effective management programmes for a number of bark and timber beetles. Furthermore, several of Dr. Borden's former graduate students have established successful companies in integrated pest management that act as the interface between the research community and the private and public sectors.

The importance and impact of Dr. Borden's research has been recognised by a wide diversity of organisations and he has received the following honours: a U.S. Department of Agriculture Certificate of Appreciation and the C. Gordon Hewitt Award of the Entomological Society of Canada in 1977, Fellow of the Entomological Society of Canada in 1981, the J.E. Bussart Memorial Award of the Entomological Society of America in 1984, the Gold Medal in Natural and Applied Science by the Science Council of British Columbia, the Scientific Achievement Award of the Canadian Institute of Forestry and the Award of Excellence from the Professional Pest Management Association of British Columbia in 1986.

Dr. Borden is also a dedicated teacher and has played a major role in designing the Pest Management Programme at Simon Fraser, especially with respect to the five professional summer courses. He is compassionate, and has retained a boyish enthusiasm for new ideas, making him much appreciated by students at all levels. Furthermore, he has a wonderful sense of humour lightening his lectures with well-placed humorous anecdotes. To date 50 graduate students (11 Ph.D.'s, 9 M.Sc.'s 30 M.P.M.'s) have received degrees under his supervision and 15 are presently enrolled. His graduates are now providing leadership in the different Federal and Provincial Government Agencies, universities and private industry where they are employed. Dr. Borden also plays an active role in public education, through popular articles in newspapers and magazines and appearances on television.

Dr. Borden has continued to serve the scientific community both within Canada and abroad. He was a founding member of the American Registry for Professional Entomologists and has been called upon as a resource person by the Natural Sciences and Engineering Research Council and the British Columbia Premier's Advisory Committee on Science and Technology. He is on the editorial board of two scientific journals and regularly serves as a reviewer for a wide range of publications.

Dr. Borden is a caring person, devoted to his family and dedicated to all facets of the science of entomology. His overall scientific objective, which he approaches with absolute integrity and openness, could best be summed up in his own words; "Massage Nature with one's fingertips rather than pummel her to death with one's fists".

For the quality of his research and teaching the Entomological Society of Canada is proud to award its 1988 Gold Medal for outstanding achievement to Dr. John H. Borden.

LA MEDAILLE D'OR — 1988

Dr. John H. Borden

La Médaille d'Or de la Société d'Entomologie du Canada, édition 1988, est décernée au Dr. John Harvey Borden, du département des Sciences biologiques de l'Université Simon Fraser, Colombie britannique, pour sa contribution exceptionnelle à l'entomologie canadienne.

Le Dr. Borden est né à Berkeley, Californie en 1938 mais il a grandi à Vancouver où ses deux parents ont été d'éminents professeurs à l'Université de la Colombie britannique. Il a reçu son baccalauréat de l'Université de Washington en 1963 et sa maîtrise en 1965 et son doctorat en 1966 de l'Université de Berkeley, en Californie. Après plusieurs années d'études à temps partiel, il obtint, en 1985, un diplôme de Forestier professionnel.

Le Dr. Borden s'est joint à la Faculté des Sciences de l'Université Simon Fraser en 1966 où il est présentement professeur titulaire. Comme directeur fondateur du groupe de recherche en écologie chimique, le Dr. Borden a contribué à l'établissement d'une équipe interdisciplinaire qui a acquis depuis une réputation internationale pour son oeuvre pionnière dans le domaine de la communication chimique chez les insectes. Ceci comprend l'identification des phéromones d'une quinzaine d'insectes (tous étant importants en agriculture ou en foresterie) ainsi qu'une contribution majeure à la compréhension du rôle que les substances volatiles des plantes jouent en servant de guide aux insectes soit pour le repérage de leur plante-hôte ou soit pour le choix de sites de ponte convenables. De plus, le Dr. Borden a démontré l'importance de l'hormone juvénile dans la dégénérescence des muscles du vol et la production de la phéromone chez les scolytes. In n'a toutefois pas limité ses activités de recherche qu'à l'étude des substances chimiques car il a aussi étudié l'apprentissage et la sélection des hôtes chez les parasitoïdes et prouvé que le croquant volant que la fumée dégagée par les sporophores du champignon *Monotrope uniflore* soit très toxique pour les

adultes moustiques, est fondée. Jusqu'au début de 1988, le Dr. Borden a été auteur ou co-auteur de 148 articles publiés dans des revues avec arbitres incluant des rapports de conférences, neuf chapitres de livre, une bibliographie, un glossaire de termes utilisés dans la lutte contre des insectes nuisibles forestiers, 20 publications sans jury, et il a aussi édité un livre. Plus de 30 articles additionnels proviennent des travaux de recherche qu'il a dirigé. Il est grandement demandé comme conférencier, ayant donné plus de 60 présentation et séminaires. Il a aussi présenté 59 communications à des congrès scientifiques.

Le Dr. Borden est aussi intéressé à ce que l'information qu'il génère soit accessible aux divers groupes concernés; il utilise donc les résultats de sa recherche fondamentale pour établir des programmes de lutte contre un certain nombre de coléoptères nuisibles en milieu forestier. De plus, plusieurs de ses étudiants gradués ont réussi à établir avec succès des compagnies spécialisées dans la lutte intégrée contre les insectes nuisibles, devenant ainsi une sorte d'intermédiaire entre la communauté scientifique et les secteurs privés et publiques.

L'importance et l'impact de la recherche du Dr. Borden sont reconnus par plusieurs organismes et il s'est vu décerner plusieurs prix dont: le USDA Certificate of Appreciation et le prix Gordon Hewitt de la Société d'entomologie du Canada en 1977, Compagnion de la Société d'entomologie du Canada en 1981, le J.E. Bussart Award de la Société d'entomologie du Canada en 1981, le J.E. Bussart Award de la Société d'entomologie des Etats-Unis en 1984, la médaille d'Or en Sciences naturelles et appliquées du conseil des Sciences de la Colombie britannique, le prix pour contribution scientifique de l'Institut canadien de Foresterie et le Prix d'excellence du Professional Pest Management Association of British Columbia en 1986.

Le Dr. Borden est aussi un enseignant dévoué qui a joué un rôle de premier plans dans l'établissement du programme spécialisé de maîtrise en lutte intégrée (M.P.M.) à l'Université Simon Fraser, en particulier pour les cinq cours professionnels d'été. Il est en être compatissant, attentionné, accessible, et il donne généreusement de son temps et demeure toujours très enthousiasme pour toutes idées nouvelles. Cette personnalité lui a valu l'admiration des étudiants de tous les niveaux. De plus, il a un merveilleux sens de l'humour dont il se sert pour égayer ses conférences et ses cours, riches en anecdotes humoristiques. Jusqu'à date il a formé 50 étudiants gradués, (11 doctorats, 9 maîtrises, 30 M.P.M.) et 15 autres sont présentement sous sa direction. Plusieurs des ses étudiants gradués sont devenus des chefs de file au niveau des différentes agences des gouvernements provincial et fédéral, ainsi qu'à l'université ou dans l'industrie privé où ils oeuvrent. Le Dr. Borden est aussi impliqué dans l'éducation publique, et ses articles de journaux ou de magazines, ainsi que ses apparitions à la télévision, en sont un bon témoignage.

Le Dr. Borden continue de servir la communauté scientifique aussi bien à l'intérieur du pays qu'à l'étranger. Il a été membre fondateur du American Registry for Professional Entomologists et il agit comme conseiller auprès d'organismes tels le Conseil de Recherche en Sciences Naturelles et Génie et le comité des Sciences et de la Technologie de la Colombie britannique. Il est aussi membre du comité éditorial de deux revues scientifiques et révisé régulièrement des articles scientifiques de sujets variés.

Le Dr. Borden est une personne profondément humaine, aussi dévouée pour sa famille qu'à toutes les facettes de l'entomologie. Son objectif scientifique, qu'il approche avec une entière intégrité et ouverture d'esprit, ne pourrait être mieux résumé que par ses propres mots: "Caresser la Nature du bout des doigts plutôt que de la détruire à coups de poing".

Pour la qualité de sa recherche et de son enseignement la Société d'Entomologie du Canada est fière de décerner au Dr. John Harvey Borden la Médaille d'Or pour 1988 en reconnaissance de sa contribution exceptionnelle à l'entomologie canadienne.

THE ACID TEST

GOLD MEDAL ADDRESS

by

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Isaac Newton once said "If I have seen further it is by standing on the shoulders of giants". I have been privileged to stand on a number of giants' shoulders and I'd like to mention a few of them, for with them I must share this award.

I am forever grateful to Drs. Carl Johanson, Bob Harwood and Horace Telford and the late Drs. Maurice James and Ralph Dawson for recruiting a lost wildlife biology student into the fascinating, vital and rewarding field of entomology. Dr. Ron Stark bestowed on me his instant faith in my scientific capabilities, giving me great encouragement and confidence. He also tolerated my sometimes "overbearing and officious" behaviour. Dr. David Wood led me in to the wonderful world of pheromones, taught me scientific judgment, and instilled in me a deep respect for rigorous editing. I have a particularly fond memory of the late Dr. John Chapman who so loved ambrosia beetles that I also could not help but to love them, and him as well. Dr. Bryan Beirne introduced me to his pioneering concept of Pest Management, instructed me on the process of science in modern society, and most importantly for me, taught me how to avoid becoming an administrator. Finally I thank Drs. Milt Silverstein, Cam Oehlschlager and Keith Slessor who through their brilliance as chemists, and uncompromising practice of absolutely the most rigorous science possible, allowed me, through their results, to achieve a certain recognition.

Over the years, many other colleagues have given generously of themselves. I have also been blessed with a particularly remarkable cadre of Research Associates, Post-doctoral Fellows, Graduate Students, Research Technicians and Assistants who have helped me in countless ways. But since these individuals number something over 100, I am sure that they will forgive me for not mentioning even some of them by name.

Looking backward to the start of my entomological career, I see myself 25 years ago as an impossibly eager, rather unpleasantly aggressive, young graduate student consumed by curiosity and by the challenge of becoming an expert on the physiological ecology of forest insects. I was drawn at first by an interest in the effects of temperature on the development and behaviour of insects. But I soon discarded this subject, which I judged to be rather pedestrian, boring and unimportant, in favour of the enticing new world of insect pheromones. Unlike my disdainful dismissal of the study of insect temperature relationships, I welcomed the pursuit of insect pheromones as fast-track, exciting and important. Twenty-five years later it has led me to stand at a podium as a gold medal winner. To borrow from the utterings of a notable local politician, this is "fantastic," and I thank the Entomological Society of Canada for this great honour.

After reminiscing about my own entomological genesis, I began to wonder what future gold medal winners 25 to 35 years hence might be beginning to study today. I do not wish to discount any field of entomology, for they are all important, and achievement in any one could bring a medal. But I contend that 25 to 35 years from now, many of the gold medal winners might well be entomologists specializing in environmental science.

The human race has given itself an acid test, disrupting much of the northern hemisphere with acid rain. The impact of acid rain has been measured mainly by aquatic biologists and botanists. Although plants stressed by an acidic environment may become greatly altered as hosts for insects, there have been relatively few substantive studies on this phenomenon. Perhaps this is because in the grand scheme of actual and potential environmental perturbations, e.g. diminishing of the ozone layer, the greenhouse effect, and nuclear winter, we see acid rain as a minor problem, readily correctable. So perhaps passing the acid rain test is really not that crucial to the science of entomology.

But entomologists will certainly be faced with other tests. I suggest that the greatest test may be posed by the impending greenhouse effect, also a correctable phenomenon, but one with a huge potential impact, of centuries duration. The greenhouse effect will raise the global mean equilibrium surface temperature by 1.5–5.5°C (Bolin *et al.* 1986). It will vastly alter the range and growth potential of many species of plants. It should also alter the range, numbers and impact of the most important primary herbivores, the insects. And yet we have barely thought of, yet alone studied, the potential impacts of the greenhouse effect on insect populations, and the consequences of such changes to agriculture and forestry.

Many beneficial effects on agriculture in northern latitudes are predicted as a result of the greenhouse effect. However, from my perspective as a forester and forest entomologist, let me give you a couple of alarming possible adverse impacts on northern forests. In an exemplary term paper, one student in my graduate course in forest entomology this year speculated on the implications of the greenhouse effect on the green spruce aphid, *Elatobium abietinum* (Bergvinson 1988). This aphid is just on the threshold of becoming a major pest of Sitka spruce in B.C., and is a major pest of this species in Britain. It is held in check naturally by winter mortality, but when mean diurnal temperatures in December are above 6°C, outbreaks usually occur the next spring. The mean frequency of outbreaks in B.C. is approximately 3.8 years. But with only a slight rise in mid-winter temperatures, the aphid populations could be in almost constant outbreak, and could threaten the very existence of its principal host. The ecological and economic consequences could be profound.

The second example comes from the world of insect vectored plant pathogens. Two years ago I was privileged to review a perceptive manuscript on the relationship between temperature and the expression of pathogenicity by the pine wood nematode, *Bursaphelenchus xylophilus* (Rutherford and Webster 1987). This cerambycid-vectored pathogen is present in pines and other coniferous species throughout North American forests. In the southern United States, the principal conifer hosts are tolerant of the nematode. But in the north, mortality occurs principally to the south of the 20°C mean air temperature isotherm in mid-July. If the greenhouse effect were to cause this isotherm to move northward, one can readily predict that the nematode will become highly pathogenic where it was nonpathogenic before, and will kill trees in epic numbers. Thus Canada's coniferous forests could be pushed farther and farther north, and the major ecosystems covering most of this country would be profoundly altered. Such an alteration could change Canada's predominant, world-wide position as a producer of forest products, unless changes in the forest ecosystems could be anticipated, and the economic consequences avoided through the judicious, timely and massive replacement of indigenous species with nematode-tolerant ones.

Clearly, my youthful dismissal of the role of temperature in the physiological ecology of insects was, as are many youthful judgments, ill-founded and somewhat less than visionary. The impending greenhouse effect raises many questions for entomologists. Among them are the following:

- Will insects that are tolerant of high temperatures displace those with lower tolerance?
- Will insects with temperature-induced diapause become year-round pests?
- Will they outcompete those with photoperiodically-induced diapause?
- Will multivoltine insects with short life-cycles reproduce over extended periods, and overwhelm their hosts by sheer numbers?
- Will particular host plants be more, or less, susceptible to insects at elevated temperatures and CO₂ levels?
- Will the impact of insect-vectored pathogens be altered?
- What will be the effect on populations of beneficial insects?
- And will the virulence of microbial pathogens of insects be increased or decreased?

To anticipate and lessen the impact of the greenhouse effect, and to counteract its effect, national and international strategies worked out by coordinated teams of scientists, technologists and social scientists will be needed. Each natural or artificial ecosystem must be studied. Entomologists will be called upon to supplement by many additional studies the available data on the effects of temperature on insect populations and on insect-plant interactions. And all the skill of ecological modellers will be needed to integrate the climatic and biotic data and to predict the most beneficial consequences of the greenhouse effect, as well as the disastrous ones, so that they can be avoided or counteracted if possible. Moreover, one of the essential remedies to the greenhouse effect will be to reforest the earth to provide a deep photosynthetic layer of vegetation to consume CO₂. But the longer we wait, the harder it

will be to re-establish these forests in increasingly harsh environments. Entomologists will become even more critical members of greenhouse teams, because they will be needed to protect trees in the new forests from pest deprivation. The entomologists on successful teams will become scientific heroes, and more than one of them will doubtless win a medal or two for predicting benefits and adverse impact accurately and for conducting pest management operations that spare the human race much hardship. If you are among those entomological heroes of the future, you will need incredible intelligence, skill, knowledge and dedication. I wish you the best of luck.

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EARLY DAYS AT THE KAMLOOPS BUG LAB

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My introduction to professional entomology began in 1932, while camping in Vancouver Island's Forbidden Plateau. I was seeking a rare butterfly for a California collector when I received a telegram asking if I would be interested in helping a certain Eric Hearle solve a blackfly problem at Jasper Park Lodge. He had heard of my interest in insects through William Downes of the Dominion Entomological Laboratory, Victoria, who had earlier judged my insect collection at a fall fair. Although it was late in the summer, I deemed the trip advisable. I was agreeably surprised to be treated as guest of the Lodge together with Hearle, his wife and their two children, while we tested the efficacy of various oil emulsions in the blackfly infested streams. Hearle had found working by himself was too much of a strain because of a severe heart condition that resulted from his having been gassed in World War I.

In answer to a request from B.C. ranchers, the Dominion Department of Agriculture moved Hearle from Indian Head, Saskatchewan, to Kamloops in 1928, to establish a Livestock Insect Laboratory. Years later the Kamloops station was renamed the Veterinary Medical Entomological Laboratory.

Hearle's office was located in the Kamloops Post Office building, but for tick rearing studies a former undertaker's parlour on the main street was rented for \$5.00 per month. He had a capable stenographer, Margaret Hall and one technician assistant, Ted Moilliet, until I came on staff as a summer student in 1933. Ted and I batched in this ghostly insectary along with sheep, rabbits and guinea pigs until it was destroyed by fire in 1934. Hearle died the same year at the age of 45. He was a prodigious worker, taking in his stride early field and taxonomic studies of ticks, warble flies, horseflies, mosquitoes, blackflies and no-see-ums. His notes on the life histories and control of these pests were published posthumously in a 100-page bulletin in 1938, under the title, "Insects and Allied Parasites Injurious to Livestock and Poultry in Canada".

The day of the insectary fire coincided with a visit by our chief from Ottawa, the Dominion Entomologist. The opportunity was taken to purchase 13 ha of land 5 km west of Kamloops in an area known as Mission Flats, from a Mr. Vowles. The old log house on the property, which was constructed by the original owner, a Mr. Cunliffe, provided a sanctuary for our expanding menagerie of animals and much needed laboratory space. The office remained in downtown Kamloops. Under the summer supervision of G.J. (George) Spencer, Professor of Entomology at the University of British Columbia, we embarked into the intriguing study and control of tick paralysis.

Spencer had been spending his summers at an old log schoolhouse north of Kamloops on the Lac Du Bois rangeland studying grasshoppers which he fondly referred to as "gropers". His colorful personality was known and revered by entomologists and students alike. The latter he called his "troops" which he ordered around with military authority. His desk always bore innumerable vials of insects known as "beasts" which were preserved in "pots". He had a childlike and enviable admiration for each and everything that crawled, jumped or flew. The humblest of organisms would often cause him to evoke the rapturous praise, "Isn't it a be-e-a-a-u-utiful beast!".

Spencer was born and spent his early days in India. Thus, he made wondrous curries that perhaps caused his pate to be so hairless and shiny. To quote him, "Water beetles would land on it". His driving was atrocious. Many times he had to be rescued from mud holes and ditches. Eventually, he gave up his driver's licence. To most of us, this seemed a very wise decision. One summer, Spencer had a fine, mechanically-minded though painfully loquacious helper named Ivor Ward. Ward, who usually assisted Ronald Buckell, devised and fabricated a grasshopper bait spreader.

The Field Crop Inspection Section, with Ronald Buckell in charge, was established in 1939, when the Dominion Entomological Laboratory was moved from Vernon to Kamloops. Buckell has been shell shocked in World War I. He was a shy bachelor who by his own account was courted, according to his embarrassment, only by a lovesick grassland porcupine. Buckell and Spencer did much of their rangeland work in the distant Chilcotin area of the Cariboo. Those were the days of Model T and Model A Fords which, of necessity, had their running boards equipped with spare gas and water containers. Buckell even had a second gas tank installed under the back seat of his vehicle. When Ottawa chiefs visited it was always appropriate to show off this spectacular but dusty and muddy back country. They were always fed chocolate bars, canned meat, bread and cheese lest they might discover the fictitious Chilcotin village called "Open Hole", that regularly appeared on their expense accounts, was indeed non-existent. The myth of "Open Hole" was craftily devised to recover the cost of the above-listed foods which had to be carried with them because there were very few places that served meals in this vast, unpopulated, rangeland area. It mattered not, because camp-out expense accounts were never large. However, once I was chastised for innocently submitting a 10 cent lunch claim for a bunch of bananas after I had batched one month while on assignment at the University of British Columbia for only \$5.00. It was feared that I might establish a precedent. Actually, I was most surprised to learn that the Department would pay for meals while on field assignment because I was earning the magnificent sum of \$110.00 a month.

Following graduation with my Masters degree in 1936, I was appointed a full-time employee. The same year Moilliet resigned to help his brother on a sheep ranch and was replaced by George Holland. Here evolved another outstanding entomologist with hobbies wide and varied. An accomplished accordianist, he had a flair for sail-boating, model boat building, including a replica of "The Bounty", and was an avid collector of old guns. The firing of one of his big blunderbusses on November 5, Guy Fawkes' gunpowder-plot day became an annual event in his quiet Kamloops neighbourhood. In keeping with his hobby of antiquities, he had a phenomenal memory for historical dates. Once when driving home from Salmon Arm, he cited all dates and names of ancient battles as they came up on the car's odometer. Holland was initially interested in herpetology. He had a pet tortoise named Margaret and a rubber boa snake which he wore around his wrist when dating girls. Upon employment at the lab, he soon became an avid collector of birds and mammals for their ectoparasites. Of these, the fleas became his career-long study and ticks became mine.

Our specimen collections and collecting permits created some unusual episodes. The local Canada Customs Officer when confronted with a collection of preserved fleas received from Europe, had no better category under which to enter them than that of 'canned meat'. Sometimes our collected specimens saved embarrassment. Upon my return from a biting fly stint in Alaska, in addition to my specimens I carried a collection of fleas for Holland in a number of vials together with specimen skins of their rodent hosts. I also had a dismantled, 4-10 collectors shotgun in my baggage. When asked by the Customs Officer what I had to declare, I confessed to a box of stuffed mice. Such an unusual admission took the rest of the astonished, disembarking passengers through the re-entry process in short order as each was asked whether he or she had stuffed mice in their baggage. We always had open hunting permits for collecting whatever hosts we wished at any time we needed them. In spite of the permit, George was once embarrassed after arriving back at his car holding a fine out-of-season game bird when he was confronted by a Conservation Officer. Like Disney's mouse who was caught red-handed stealing eggs from an eagle's nest, all George could mutter was "cock pheasant!". George's talent for sketching, whether old boats or caricatures of animals or fellow hikers, soon found a profession outlet in the masterful renditions of flea anatomy as depicted in his illustrious monograph on the Fleas of Canada, Yukon Territories and Alaska.

One of the pleasures of these early days was the convening of our small group at the annual meetings of the Entomological Society of B.C. The site varied. Occasionally it was held at Vancouver, in the Okanagan or at Kamloops but most often at centrally located Lytton. Ensclosed in comfortable lounge chairs in the old hotel, the participants gave vent to their year's observations. J.R.J. Llewellyn-Jones, looking much like Beatrix Potter's Jeromy Frog, would cite at great length one of his dozen or more lists of food plants of lepidopterous larvae. Buckell would add a note on grasshoppers or even dragonflies, followed by A.D. Heriot, who with the horny hands of an orchardman, would in antithesis demonstrate the workings of the feeding stylets of a tiny mealybug. Spencer's paper, "Upon the Mating Habits of Firebrats", still comes to mind. In stentorian tones and amorous gestures, he would describe in detail the love dance of the couple whose courtship involved much antennal touching, pursuit and coyance before the male deposited his spermatophore "just about three quarters of an inch in

front of the female. The male then turns, touches her head rapidly with his antennae and turns away to let the female, her body raised, move straight forward until her ovipositor is over the spermatophore".

Back at the Mission Flats lab, Allen Mail was appointed Officer-in-Charge in 1938. Holland and I viewed a new boss with apprehension until the intruder put us at ease with an "Ach away, laddies, just carry on as yurr doin". He soon had a well equipped three-story, \$12,000 office-laboratory building under construction. This was a far cry from our old log quarters which boasted only a hand-driven centrifuge, an old stereomicroscope, a home-made microtome and little other apparatus. Mail resigned in 1943, to work on the antibiotic, penicillin in the U.S.A. I was appointed Officer-in-Charge of the laboratory in 1944.

The Canada Department of Agriculture was reorganized into Experimental Farms and Science Service in 1937. Our Veterinary and Medical Insects Lab became a part of the latter. This appellation was now appropriate. Colin Curtis was taken on staff in 1948, to deal with man-biting flies and a unit of the Laboratory of Hygiene, Department of Pensions and National Health was established in our building. This group was commanded by Veterinarian Frank Humphreys and a staff of sixteen which included two survey crews with mobile field laboratories. Their main interest was to determine the existence and extent of plague, tularemia and Rocky Mounted spotted fever in B.C. and Alberta. Beside the office in the Entomology building they had separate, quarantined buildings for disease testing and the housing of several thousand guinea pigs. They conducted tests for diseases in animal hosts and their vectors and our officers of the Veterinary and Medical Insects Lab made the vector identifications. Their work was completed in 1954, when the unit moved to Ottawa. The quarantine buildings were turned over to the Veterinary and Medical Lab.

The partnership between our two units had been cemented by the concomitant formation in 1946, of an organization known as the International Conference on Diseases of Nature Communicable to Man. This group was an off-shoot of the Great Plains Conference of Entomologists. The cumbersome title was abbreviated to INCDCNM and its members, known as the "Inkidinks", met every year at various locations in western Canada and the north-western United States, to discuss the role of vectors in disease transmission to both man and their other animal hosts. Many colorful characters emerged in this organization. I recall a notable evening at the Banff Hotel when Montana entomologist, Cornelius B. Phillip, conducted a mirror trick that gave the illusion of him being levitated by a puff of the participant's breath. In this case the participant was a certain Fergus O'Rourke who had been studying tick paralysis at our lab. Fergus, a firm believer in what he saw, had an inward infectious laugh that sounded like a balloon being rubbed. Teetotaller Colin Curtis, who had retired early to his hotel room but was within earshot, needed considerable convincing next morning that the party had been in total control of itself.

Field work at the Mission Flats lab was extensive and varied. With the advent of World War II, Veterinary and Medical entomologists sought and tested new chemical controls. The traditional diesel oil mosquito larvicide gave way to DDT which we measured out literally by the handful and the City of Merritt's motto at that time, "Oils well that ends well", became obsolete. Oil of Citronella was replaced by a variety of synthetic repellents which Holland and I tested for periods of up to twelve hours each in the worst mosquito breeding areas we could find. One such site required a day-long drive to the top of the Big Bend section of the Columbia River which is now flooded by water stored behind the Mica Dam. Derris powder for warblefly control became scarce during the post-war years and was replaced by systemic materials. The latter miraculously killed the immature larvae within cattle in the autumn. Tests of boluses, then pour-ons took place at the Empire Valley Ranch, located on the west side of the Fraser River with help from a mud- and dung-spattered crew of eight. Popping the pussy mature warble cysts in the backs of the untreated control cattle both in the field and at the lab still had to be done the following spring. On such occasions Holland, who was staying at a boarding house, complained of the coincidence that he was invariably served custard and raisins at dinner. George had a strong stomach and delighted in showing off to his fellow boarders by eating dried Chinese dytiscid beetles until it was pointed out to him that the little, white, moving specks were not grains of salt but mites.

The study to ascertain the flight habits and flight range of warble flies in the field necessitated the collecting of large numbers of grubs as they emerged from infested cattle. For the first time, a method was devised to rear adults from the puparia in the laboratory. These were marked with colored paint and released at dawn from central rangeland locations. Tethered cattle were located at varying distances and directions away from the release sites. The lab became a place where cattle wore girdles and flies had painted toenails!

The flight patterns of mosquitoes were studied also. However, in this instance it was the

hosts that were centrally located. Mosquitoes were reared in cages located at various distances and directions from the periphery of Kamloops. When in the adult stage these caged pests were marked with colored dyes and released. The public was invited to participate in our experiment by swatting all mosquito offenders that attacked them and returning these flattened pests to us. Tests on wet blotting paper revealed their flight range to be only about three miles. However, in Alaska, distances of over 100 miles were recorded.

Benzene hexachloride replaced pine tar for tick control, but not before hundreds of cattle and sheep had died from tick paralysis. Hundreds of ticks were collected each spring for studies on this disease by sweeping their habitats with metre-square cotton flags. On one occasion during World War II, a policeman hiked all the way up a mountainside to see if I was signalling to an enemy with my tick flag! Some people even suggested that flannel night-gowns would be the appropriate apparel for such field work.

All these arthropod-parasite projects demanded a full staff of research officers and helpers which, at its peak in 1952, numbered over a dozen. George Rich and Jerry Weintraub were in charge of warbles and Ken Bournes, myiasis. Rich also had a great memory, not only for his war years but for poems too. He once recited all of Robert Service's poems while we drove back from Williams Lake. He was expert at handling cattle and, with his assistant Dick Ireland, contributed greatly to warble field tests. Jerry conducted oviposition and flight studies before moving to Lethbridge. He discovered that a nuptial flight was necessary before oviposition occurred and clocked his females as they spun, tethered to a miniature merry-go-round.

Not only was there a large staff at the lab, but also a large and varied assortment of animal inhabitants for the study of parasites. Tick species, particularly, required that a wide variety of hosts be kept for their rearing because many are host specific. Animal house occupants included tree and ground squirrels, chipmunks, groundhogs, packrats, fitches, gerbils, tortoises, lizards, rats, white mice, a goose and of course, rabbits, guinea pigs and hamsters. Each was carefully fed and cheerfully talked to by technician Perry Darling. So appealing was the menagerie that classes of school children were regular visitors to the lab. In the earlier days, many of our animals were annual visitors at the Kamloops Fall Fair. In its time, the farm also catered to cattle, horses, sheep, dogs, pigs and a deer.

The investigators themselves became voluntary, and often involuntary, hosts at times. In one case, Holland and I deliberately allowed a number of Pacific Coast ticks to attach to our arms so that we could test the validity of the many popular remedies reported for getting them to 'back out'. As we had expected, none of the remedies had any effect other than to kill the ticks while still attached. This species has long mouth parts and when seemingly encysted, removal is difficult and painful. A West Vancouver lady believed this to be especially true. She had asked us why the ticks attached themselves in two rows on the underside of her little female canine! One of our technicians even fed capsules of human lice on herself. She and her husband later divorced! Others became unwilling hosts in the cause of science. I remember Dave Arnott of the Field Crops Section being so allergic to blackflies that on his return from the field on one occasion, we could hardly recognize him because of the puffed-up facial features. He had been working in the Peace River area studying mite damage in grass seed crops. Thereafter, his revelations changed my habit of chewing on the succulent nodes of grasses!

Tick paralysis caused by the Rocky Mountain wood tick can be fatal if the tick is not removed. Thirty human fatalities have been recorded in B.C. and about 300 cases of human paralysis where the individuals have recovered following removal of the tick. When a child was reported paralysed at Vavenby, B.C., we took a chance and pleaded with the mother to leave the tick on her child while we made a hundred mile dash to observe first-hand and film the symptoms of a typical and progressive case. Fortunately, the child recovered and we got valuable documentation.

In 1955, shortly after the Lab of Hygiene left, the Field Crops Insect Laboratory staff of six transferred from their offices in the Kamloops Post Office and the two units were integrated as the Canada Department of Agriculture, Entomology Laboratory, with Richard Handford Office-in-Charge. With him came Research Officers Doug Finlayson, Fred Banham and Dave Arnott. Earlier the same year, Mac MacCarthy transferred to Vancouver to establish and head a Field Crop Insect Section in a remodeled barn on the University of B.C. campus.

The Field Crop group arrived in the post-DDT era to continue their studies on vegetable, forage and rangeland insect and mite pests. They investigated the life histories and control of vegetable pests such as tuber flea beetle, red-backed cutworm, onion maggot, onion bulb fly, cabbage maggot, cabbage butterfly, carrot rust fly, as well as leafhopper species, that vectored witches broom on potato and *Lygus* spp. that reduced the germination of carrot seed crops.

On the range, they studied the life history, ecology and control of several grasshopper species that destroyed the vegetation and endemic beneficial insects that biologically controlled rangeland weeds including giant sagebrush. Work also was done on forage crops to control pests including an eriophyid mite that reduced the germination of grass seed crops.

In 1957, a \$110,000 cement block headerhouse, with seven office-laboratories on the second floor, was added to the original frame structure. The following year a \$40,000 Lord and Burnham greenhouse was constructed at ground level on the south side of the new structure. Later, a dyke was built around the property to stop occasional flooding from the Thompson River. The old Cunliffe log house which had been converted to be our original animal rearing facility and laboratory in 1934, was demolished and replaced with a modern caretaker's residence. There were now eight buildings on the site including the above, a barn, a combination garage and blacksmith shop, an implement shed and a dual furnace heating plant.

In 1960, Finlayson transferred to the Field Crop Insect Section at Vancouver. Studies of ticks continued with the appointment of Paul Wilkinson from Australia, to conduct field testing and population studies.

Administration of the previously amalgamated Entomology Sections at Mission Flats was further integrated in 1962, with the Agriculture Canada Range Research Station located on the north side of the Thompson river with Handford as Director. Operations continued at both locations. Banham transferred to the Entomology section of the Summerland Research Station in 1965, Arnott retired in 1968 and Handford retired in 1970. Once again, the "newcomers" were gone as the Field Crop Insect Section in Kamloops was closed.

Tick paralysis, with its intrigue and world-wide distribution continued to evoke interest from Ottawa, local medical circles and international tick research in general. The fact that a tick spat into a tube had won me a trip to Cairo, Egypt and Nairobi, Kenya and led to fascinating studies which involved extruded hamster cheek pouches, perfused rabbits' ears, electronics and the final detection but not the nature of the causative toxin and its variance among specimens of ticks on the west and east sides of the Rocky Mountains. There, my part in this story and the history of the laboratory ends. In 1971, I retired, Wilkinson was moved to Lethbridge and Rich to offices of the Kamloops Range Research Station across the Thompson River. Upon the latter's death in 1973, tick studies in B.C. ceased. The large collection of preserved specimens, together with innumerable collecting records, now reside in Ottawa.

The 43 years of the laboratory's existence had been happy and memorable ones for a total of over eighty persons. Many of these early students, part-time and professional personnel moved on in life to eminent careers. Ian McTaggart-Cowan, a world authority on mammals, became Chancellor of the University of Victoria, Ken Bournes and the late Morley Neal, Professors of Zoology in eastern Canada, and Frank Beebe became a well known artist in the Provincial museum at Victoria. Three of our students became medical doctors and one a veterinarian.

Visitations by our Ottawa chiefs had been intimate and kindly ones. Arthur Gibson was the first. With appropriate encouragement he could light a match by letting it fall untouched to the ground. "See, it lit", he would say. While attending the University of Alberta, I recall seeing a young but very tall Ken Neatby drop a basketball into the hoop at eyelevel. Years later during a visit when Holland was showing off his archery prowess, Neatby, who then was head of Science Service, remarked that our staff was the most congenial of all he had known. H.G. Crawford, Cecil Twinn (who somehow managed to shut himself on the wrong side of a slip-wire farm gate), Bev Smallman (who got me an oscilloscope) and jovial Robert Glen were some of our other chiefs. To each and all we were indebted for their encouragement, their sanctions and our funding. Discoveries and progress, mostly at little monetary expense, came easily, for our vocational ground was relatively untrodden upon. One needs only to nostalgically refer to the titles of literally hundreds of publications which emanated from the combined laboratories to appreciate the grass-roots spade work of pest ecology, biology and control that came about from this enthusiasm.

Just as all this accomplishment is now history, so is the old Mission Flats laboratory also a place of the past. The narrow one-way lane that led to it from a constriction between the CP railway and the swift-moving Thompson river is now a paved highway. In winter, when snow drifts enroute to the lab were deep, we used to walk on their tops to get to work. Holland and I would sometimes ski down the snow-covered Thompson river until one day George looked back and saw water in our tracks! George's greatest delight was during the '48 flood when he was able to sail right around the lab. As so often happens, the carefully designed flood doors to the building failed to work and we had four feet of water in the basement.

Following the lab closure in 1971, the City of Kamloops purchased the property but later re-sold it to Weyerhaeuser Canada. They demolished the buildings and now use the property

for pulp chip storage. Not a vestige remains. Indeed, today few residents of Kamloops even know that such an establishment ever existed. Like the dodo bird, the Kamloops Bug Lab is extinct but to some of us its many memories will linger on.

GRANTS AVAILABLE

International Society of Arboriculture

GRANTS FOR SHADE TREE RESEARCH AND EDUCATIONAL PROJECTS

Each year since 1975, the International Society of Arboriculture has awarded grants to encourage scientific and educational research on shade trees. Horticulturists, plant pathologists, entomologists, soil specialists, and others, are invited to submit a brief outline of a proposed project for which a grant might assist in purchase of equipment, technical or student help, or otherwise contribute to the work. For 1987 (deadline Dec. 1, 1986) the Trustees voted 12 grants @ \$1500; for 1988 (deadline Dec. 1, 1987), 10 grants @ \$2000; number & amounts for 1989 (**deadline Dec. 1, 1988**) are not yet voted.

Individuals self-supported or privately or publically employed are eligible. There are no restrictions based on religion, race, sex, age, or nationality of the applicant. The grants are not expected to cover all research costs but to aid, stimulate and encourage scientific studies of shade trees. The ISA requires that administrative overhead *not* be deducted from grants it awards. Recipients will be requested to publish their results in ISA's "Journal of Arboriculture," editor Dr. Dan Neely, III. Nat. Hist. Surv., 607 East Peabody, Champaign, IL. 61820, telephone 217-244-2168.

Interested researchers should prepare not more than 2 pages in the English language, outlining:

- (1) Name, address and telephone number of Principal Investigator.
- (2) Institution(s) and date(s) of Investigator's college and/or graduate degree(s).
- (3) Title and purpose of the project.
- (4) Intended use of the grant money. (NO "overhead" allowed!)
- (5) Individuals involved in the research.
- (6) Citations to 2 relevant publications by the researcher. (Don't send reprints.)
- (7) **MOST IMPORTANT: HOW WOULD THE RESULTS HELP ALL ARBORISTS IN THEIR DAILY WORK?** (Bear in mind: 6 reviewers are arborists, 5 are scientists.)
- (8) What is the anticipated total cost of the entire project, regardless of whether or not you get an ISA grant and regardless of the amount of the grant?
- (9) What is the anticipated total duration of the entire project, regardless of whether or not you get an ISA grant?

To receive consideration **proposals must be received by December first!** All proposals will be reviewed separately by each of the 11 members of the ISA Research Committee. Recipients of grants (and all other applicants) are notified by about mid-March. Send proposal to:

Dr. Francis W. Holmes
Professor, Shade Tree Laboratories
University of Massachusetts
Amherst, MA. 01003

Out of fairness to applicants who comply with our rules, we reserve the right to forward **ONLY THE FIRST 2 PAGES** per application to members of our evaluating committee! For the same reason, proposals received after December 1st are considered one year later.

MISCELLANEA

Laboratory Cultures of Insects and Other Arthropods in Canada

A copy of the 1987 list is still available from the undersigned. A revised list will be prepared for 1989. Members are urged to submit a list of their cultures in a spirit of cooperation. They may be asked for a small nucleus colony as well as information on rearing methods.

J.S. Kelleher
Biosystematics Research Centre
Research Branch, Agriculture Canada
Ottawa, Ontario
K1A 0C6
Phone (613) 996-1665

Cultural Methods for Pest Control

We need your help!

We are doing a study to make available the best information on cultural controls of field and horticultural insect pests, for farmers and horticulturists who want to reduce their dependence on pesticide. This will be based on practical experience of farmers and published information.

If you have successfully used cultural methods for control of any insect pests (planting design, rotation, management practices such as cultivation, fertilization or management of adjacent environments, etc.), please write to us as soon as possible giving all the details. Our final report will be completed by Fall 1988 and the results will be published soon after.

This is your opportunity to be part of the solution!

Please send information to:

Renée Lapointe / Micheline Lévesque
Ecological Agriculture projects
Box 191, Macdonald College
21,111 Lakeshore
Ste-Anne de Bellevue, QC, CANADA
H9X 1C0
(Telephone: 514 - 398-7771)

PERSONALIA

Nello Angerilli

Nello Angerilli has left Agriculture Canada to take up a position with the Eastern Indonesia University Development Project of Simon Fraser University. He will be an advisor to the Rector of Universitas Sam Ratulangi in Manado, Sulawesi Utara, Indonesia and will continue his research interests as well. He looks forward to hearing from anyone who might like to visit either the virgin tropical rainforest habitat of the area or the tropical agroecosystems present there, consisting primarily of coconut, cloves, rice, cocoa and soybeans.

John Conroy

John Conroy of the Department of Biology, University of Winnipeg, has been elected to the International Executive Committee of the Congress of Acarology. In February, he was elected Secretary of the IEC.

Eaton, J.L. 1988. *Lepidopteran Anatomy*. Wiley Interscience, New York, N.Y. xiii + 257 pp., 194 figs., 2 appendices, index. Hard cover, US\$49.95.

According to the publisher's blurb, this volume is the first in a series on the morphology of "key insect groups" to be produced under the editorship of C.W. Shaefer. A more appropriate title for it might be "Anatomy of the Tobacco Hornworm, *Manduca sexta* (Lepidoptera, Sphingidae)" since this is the only species considered except for a few comments on exocrine glands and sound production in other lepidopterans at the book's end. Eaton defends his decision to use this species as a model for the order by citing its large size and popularity with experimental biologists and by emphasizing that the "... differences between *Manduca* and other ditrysian Lepidoptera ... are not great. ..." (A third reason he neglects to mention is that eight of his published papers reappear, more or less revised, as chapters or parts of chapters in the book.) Within these limits, the author has produced a useful volume.

The book contains 11 chapters treating the egg (3 pp., 3 figs.), larval skeletomusculature (66 pp., 52 figs.), pupa (3 pp., 3 figs.), adult skeletomusculature (52 pp., 47 figs.), nervous (41 pp., 21 figs.), circulatory (10 pp., 12 figs.) and respiratory systems (13 pp., 12 figs.), gut, salivary glands and excretory system (14 pp., 13 figs.), reproductive system (8 pp., 6 figs.), exocrine glands (18 pp., 17 figs.) and sound production and hearing (8 pp., 8 figs.). In appropriate chapters, the differences between fifth instar larvae and adults and males and females and details such as sense organ number are fully presented. Selected references numbering from one (chapter 1) to 31 (chapter 10) appear at the end of each chapter and provide adequate entry into the recent behavioral, physiological, ultrastructural and comparative literature (though notably absent is Niels Kristensen's classic (1984) study on primitive moths which includes a detailed reconstruction of the ground plan of the Lepidoptera —*Steenstrupia* 10: 141-191). However, none of these papers is cited in the text except in the last two chapters.

The text of the book is straight description, is in the active voice and is clear and concise throughout. A few comments on function appear in most chapters but no attempt is made to relate structure to the behavior, evolution or phylogenetic relationships of *M. sexta* or of other lepidopterans.

Illustrations in the book are abundant and, for the most part, are large, clear, fully labelled line drawings, rather crudely executed with a pen having a coarse nib. These greatly assist one in following the text except for those illustrating the innervation of thoracic muscles (Figs. 5.13-5.17: their fine details are difficult to read) and are placed adjacent to where they are discussed. Abbreviations on them are referred to in the text where appropriate and are constructed in such a way that the name of the structure can be guessed without referring to the list at the end of the book (appendix 2).

My principal criticism is of the long section on muscles and innervation. Though admirably complete, this section is tedious to read and difficult to use. Its contents could have been presented much more concisely and effectively as a series of tables with one for each tagma or segment of the larval and imaginal bodies. The tables for "muscles" could have had columns for: *muscle*, *origin*, *insertion*, *function*, *number of fibers*, and *figure(s) where illustrated*, and those for "nerves" could have had columns for *nerve*, *origin*, *number of branches*, *organ(s) innervated*, and *figure where illustrated*. There is also no introduction to or glossary of terms, nothing on larval chaetotaxy or pretarsi, no indication of figure size (a few measurements do appear in the text), frequent incorrect reference to figures, problems with the spelling of the singular and plural forms of 'lacinia' and 'sensillum', and a rather large number of typographical errors.

The book will be of great use to physiologists and developmental biologists using *M. sexta* as a research animal and as a baseline study for lepidopterists studying these character systems in other species. Unfortunately for Eaton, a multi-authored, two volume work on Lepidoptera with a large morphological component and currently in preparation under the editorship of N.P. Kristensen is soon to appear in English in de Gruyters' *Hanbuch der Zoologie* series, which may render Eaton's book obsolete.

Bruce Heming
Department of Entomology
University of Alberta

Slack, Adrian, 1988. *Insect-eating Plants and How to Grow Them*. University of Washington Press, Seattle, 172 pp., 103 color illus., 68 drawings, glossary, bibliog., index. Soft cover, US\$19.95.

This is a paperback edition of a book first published in England in 1986 by Alphabooks Ltd. The book is written in a popular style, and with its attractive layout and use of numerous, and beautifully rendered, color photographs and line drawings, should appeal particularly to amateur plant fanciers who would like to grow this specialized group of plants. It should be, as well, a useful reference source for professional horticulturists because of the detailed information presented on the cultivation of all 15 genera of carnivorous plants.

The book is essentially a "How To" publication presenting only the basic information on the plants themselves, relying on other publications, listed under recommended reading, to fill in the details. The main subject of the book is the cultivation of insect-eating plants.

The author attempts to win over the novice gardener by introducing the subject with one of the best known examples of insect-eating plants, the Venus fly trap. In this initial treatment, the author sets the format that, with some variation, will be followed in nearly every group—a brief introduction to the plant and its peculiarities, the cultivation and care of the plants, pests and diseases, and propagation. This is followed by the main points on the cultivation of insect-eating plants in general.

The section on cultivation outlines such basic aspects as the type of water to be used, fertilizers, light, compost materials, and growing plants in the home. An even more detailed outline of propagation in the greenhouse and out of doors, complete with diagrams on how to make an artificial bog, is given for the serious gardener or nurseryman.

The treatments of the remaining 14 genera follow, species in the larger genera are grouped artificially according to geographical origin or possession of some basic feature. For those groups where hybrids are readily formed, and in particular in *Sarracenia* and *Nepenthes*, the hybrids are presented at some length. Information is given at the end of the book on chemicals, plant sources, and societies.

The main criticisms of the book relate to several typographical matters that probably would not even be noted by the lay reader but may be irksome to the professional botanist or horticulturist. One of these is the incorrect use of a double capital letter followed by a period as the abbreviated form for the generic name when listing several species of one genus. The correct and traditional use is a single capital letter and period preceding each specific epithet or hybrid name under those circumstances when it is unambiguous to use an abbreviation. Another typographical convention that is misapplied is that of the single quotation marks that should only be used in a horticultural book to enclose officially recognized cultivated varieties, as recommended in the International Code of Nomenclature of Cultivated Plants. Unfortunately, single quotation marks are used to highlight an unnamed species (p. 111, 'species nova No. 4'), an unnamed hybrid (p. 80, '*S. purpurea* x *S. oreophila*'), and descriptive nouns (p. 112, 'eye'). Double quotation marks should have been used in such cases. A minor inconsistency is the omission of the x in front of the specific epithet of some hybrid names. It would also have been preferable to have the species and hybrids of large genera summarized in the form of comparative charts or simple "keys" in appendices rather than relying on descriptions in the text to suffice for their characterization.

The book on the whole is of excellent quality and content, providing the reader with a wealth of information acquired by the author over many years of study and cultivation of a most interesting and unusual group of plants.

Erich Haber
Botany Division, National Museum of
Natural Sciences
P.O. Box 3443, Station D, Ottawa, K1P 6P4

BOOK NOTICES

Evans, P.D. and V.B. Wigglesworth (Eds.). 1988. *Advances in insect physiology*, vol. 20. Academic Press, London, Toronto, etc. 222 pp. Hard cover, £29.00.

The 1988 volume of this well-known series, like earlier volumes, provides a modest number of detailed reviews of subjects in insect physiology. The current volume comprises 5 papers: The turnover of phototransductive membrane in compound eyes and ocelli, by A.D.

Blest; Honey bee learning, by J.L. Gould and W.F. Towne; The formation of a neurohaemal organ during insect embryogenesis, by P.H. Taghert, J.N. Carr and J.B. Wall; Thermoregulation and heat exchange, by T.M. Casey; and Molecular targets of pyrethroid insecticides, by D.B. Sattelle and D. Yamamoto.

Each chapter has a detailed list of contents, and an extensive reference list which includes the full titles of the works cited. A thorough 8-page subject index to the volume is also provided.

Mound, L. and A.K. Walker. 1986. Tubulifera (Insecta: Thysanoptera). Fauna of New Zealand, No. 10. Science Information Publishing Centre, DSIR, Wellington, N.Z. 140 pp., 286 figs. Soft cover, N.Z. \$29.50.

This attractively produced volume provides information on 68 species in 29 genera in the suborder Tubulifera found in New Zealand. Of these, 31 are new species. Introductory information is given on distributions and faunal relationships, life histories and host relationships, systematics, and diagnostic characters. A key to, and description of, all of the genera and species in the suborder is provided. It is profusely illustrated with 286 clear line drawings. There is a taxonomic index which includes a previous volume in this series (No. 1), by the same authors, which dealt with the suborder Terebrantia. Together, these volumes provide a good introduction to the Thysanoptera; they would be of use to students of this group throughout the world.

Cox, J.M. 1987. Pseudococcidae (Insecta: Hemiptera). Fauna of New Zealand, No. 11. Science Information Publishing Centre, DSIR, Wellington, N.Z. 228 pp., 134 figs. Soft cover, N.Z. \$49.95.

This is an excellent treatment of the mealybugs of New Zealand which would be useful to scale workers everywhere. Descriptions and figures of 114 species in 28 genera are provided with 61 species and 8 genera described as new. Twenty-five new combinations and 5 synonymies are proposed. Introductory material includes an historical review of previous work on mealybugs in New Zealand, material on morphology, economic importance and collecting and preparation techniques. A key to genera and keys to species in individual genera are given as well as a checklist of host-plants and the mealybug species recorded from them. This volume is well-illustrated with 134 clear line-drawings.

NEWS OF ORGANIZATIONS

International Commission on Zoological Nomenclature

The following Opinions were published on 25 March 1988 in Vol. 45, Part 1 of the *Bulletin of Zoological Nomenclature*.

Opinion 1472 *Cyclaxyra* Broun, 1893 (Insecta, Coleoptera): conserved

Opinion 1473 *Tetropium* Kirby, 1837 (Insecta, Coleoptera): conserved

Opinion 1474 *Tropiphorus* Schönherr, 1842 (Insecta, Coleoptera): conserved

Opinion 1475 *Dexia* Meigen, 1826 (Insecta, Diptera): *Musca rustica* Fabricius, 1775 designated as the type species

Opinion 1476 *Agomyza* Fallén, 1810 (Insecta, Diptera): *Agomyza reptans* Fallén, 1823 designated as the type species

Opinion 1477 *Napomyza* Westwood, 1840 (Insecta, Diptera): conserved

- Opinion 1478 *Lycaena mirza* Plotz, 1880 (currently *Azanus mirza*; Insecta, Lepidoptera): specific name conserved
- Opinion 1479 *Antispila* Hübner, [1825] (Insecta, Lepidoptera): *Antispila stadtmuellerella* Hubner, [1825] designated as type species
- Opinion 1480 *Apanteles ornigis*, Weed, 1887 (currently *Pholetesor ornigis*; Insecta, Hymenoptera): specific name conserved

The following applications, and one general article, were published on 25 March 1988 in Vol. 45, Part 1 of the *Bulletin of Zoological Nomenclature*. Comment or advice on these applications is invited for publication in the *Bulletin* and should be sent to the Executive Secretary, I.C.Z.N., c/o British Museum (Natural History), Cromwell Road, London SW7 5BD, U.K.

General Article **An appraisal of the Zoology of C.S. Rafinesque**

Alwyne Wheeler
*Department of Zoology, British Museum (Natural History), London
 SW7 5BD, U.K.*

Case 2607 ***Hydrobius* Leach, 1815 and *Berosus* Leach, 1817 (Insecta, Coleoptera): confirmation of type species.**

M. Hansen
*Department of Entomology, Zoologisk Museum, Universitetsparken 15, DK 2100
 Kobenhavn, Denmark.*

Abstract. The purpose of this application is the confirmation of *Dytiscus fuscipes* Linnaeus, 1758 and *D. luridus* Linnaeus, 1761 as the respective nominal type species of the water beetle genera *Hydrobius* Leach, 1815 and *Berosus* Leach, 1817. To conserve current usage the hitherto overlooked original monotypy of *Hydrobius* Leach, 1815 is set aside.

Case 2481 ***Elachista* Treitschke, 1833 (Insecta, Lepidoptera): proposed conservation, and confirmation of type species designation.**

E.S. Nielsen
CSIRO Division of Entomology, GPO Box 1700, Canberra, A.C.T. 2601, Australia

I.W.B. Nye
British Museum (Natural History), Cromwell Road, London, SW7 5BD, U.K.

Abstract. The purpose of this application is the conservation of the name *Elachista* Treitschke, 1833 (leaf-mining microlepidoptera) by the suppression of the unused senior homonym *Elachista* Kollar, 1832. In addition the Commission is asked to confirm that the type species of *Elachista* Treitschke, 1833, is *E. bifasciella* Treitschke, 1833.

Case 2617 ***Collas alfaciariensis* Ribbe, 1905 (Insecta, Lepidoptera): proposed availability as a senior synonym of '*Collas australis* Verity, 1911'**

S.E. Whitebread
Maispracherstrasse 51, CH-4312 Magden, Switzerland

L. Rezbanyai-Reser
Naturmuseum Luzern, Kasernenplatz 6, CH-6003 Luzern, Switzerland

H. Geiger
Zoologisches Institut, Balzerstrasse 3, CH-3012 Bern, Switzerland

Abstract. The purpose of this application is confirmation that the specific name *alfacariensis* Ribbe, 1905 is available for the European butterfly known in English as Berger's Clouded Yellow, and that the often used name *australis* Verity, 1911 is not available from its first publication.

Case 2411 ***Ludita* Nagy, 1967 (Insecta, Hymenoptera): proposed designation of *Tiphia villosa* Fabricius, 1793 as type species**

C. van Achterberg

Rijksmuseum van Natuurlijke Historie, Postbus 9517, 2300 RA Leiden, The Netherlands

Abstract. The purpose of this application is the designation of the nominal species *Tiphia villosa* Fabricius, 1793 as type species of *Ludita* Nagy, 1967, a genus of parasitic wasps. The original selection being based on a misidentified species, this solution maintains *Ludita* in its original meaning.

Case 2608 ***Vespa triangulum* Fabricius, 1775 (currently *Philanthus triangulum*, Insecta, Hymenoptera): proposed conservation of the specific name.**

Wojciech J. Pulawski

Department of Entomology, California Academy of Sciences, Golden Gate Park, San Francisco, California 94118, U.S.A.

Abstract. The purpose of this application is the conservation of the specific name *triangulum* Fabricius, 1775 in the sphecid wasp genus *Philanthus* by the suppression of the unused senior synonym *Vespa ruspatrix* Linnaeus, 1767. The species is a predator of honeybees and often known as the 'bee-wolf'.

THE BIOLOGICAL SURVEY OF CANADA (TERRESTRIAL ARTHROPODS) SURVEY REPORT

The Scientific Committee met in Ottawa on 21-22 April 1988. Recent developments discussed at the meeting are reported below. A full account is given in the Fall 1988 issue of the Newsletter of the Biological Survey of Canada (Terrestrial Arthropods).

Notes on selected scientific projects

1. *Keys to the families of Canadian arthropods*

Publication of the first fascicle of the keys series has again been delayed, until late in 1988, as production of such Survey publications is being tested through desk-top publishing.

2. *Arthropods of peatlands in Canada*

Work on the Wagner bog in Alberta continues, showing that some elements of the fauna, notably Ichneumonidae, are surprisingly diverse. Interesting faunal comparisons are being made with other sites in Alberta and in Ontario.

3. *Arthropods of freshwater springs in Canada*

The list of speakers for a symposium to be held on October 3, 1989 during the Annual Meeting of the Entomological Society of Canada/Acadian Entomological Society in St. John's, Newfoundland, has been finalized. Some items on spring arthropods have been published, and a bibliography is being updated.

4. *Arthropods of the boreal life-zone*

Limited specific work continues and a review paper summarizing features of the boreal insect fauna is being prepared.

Other scientific priorities

1. *Origins of the North American insect fauna*

"Origins of the North American insect fauna", a publication in the Memoirs of the Entomological Society of Canada stemming from a symposium held under the auspices of the Survey, is in press.

2. Faunal catalogues

The Survey emphasized the value of faunal catalogues, which are very widely useful and involve research, but which traditionally have received little recognition.

3. Fauna of Beringia

Additional contacts have been made with Soviet scientists about the possibility of cooperative work on the "Beringian" fauna.

Liaison and exchange of information with other organizations

1. National Museum of Natural Sciences

Dr. S. Cumbaa, Acting Assistant Director for Collections and Research of the National Museum of Natural Sciences, reported that the Museum will be staffing later this year a full-time entomology position, primarily for research but including some curation and involvement with public programmes. In the meantime, a short-term position has been staffed to assist in organizing the Museum's entomological collection and related facilities. Dr. Cumbaa also reported that plans for new exhibit space include a hall for live insects.

2. Biosystematics Research Centre

Dr. I.M. Smith reported that the Biosystematics Research Centre is making a major effort to attend the International Congress of Entomology and to put on a display there about the activities of the BRC. Also, Agriculture Canada, and especially the Central Experimental Farm which includes BRC, has been involved in a major government review. BRC is part of that review, and expects that biosystematics, including entomology, will continue to be well-supported.

3. Canadian Forestry Service

Dr. B.H. Moody reported that a pilot project has been initiated for an expert national data-base system for the Forest Insect and Disease Survey.

4. Other organizations

The Survey has been in touch with the Association of Systematics Collections, the Royal Society of Canada, the Society of Canadian Limnologists, the Consortium of State Biological Surveys, the XVIIIth International Congress of Entomology, the Agriculture Canada Research Branch, the Xerces Society and other bodies. A "National Biological Diversity Conservation and Environmental Research Act" has been introduced into the U.S. Congress. Initiatives for a "Biological Survey" in the United States are being developed chiefly from this perspective of the conservation of biological diversity.

Other items

1. Biological Survey of Canada publications

The Committee discussed the Survey's own publication series and protocols for its production. Reviews of the Survey's book *Insect Dormancy*, published in the Monograph series, have been excellent and sales have been satisfactory.

2. Survey activities at the International Congress of Entomology

The Committee confirmed that the Survey would produce a booklet on the Canadian insect fauna and entomological resources and would prepare an exhibit for the International Congress.

3. Other matters

The Committee also discussed information about the study of climatic change, the Survey's Trust Fund or Foundation, attendance by government scientists at scientific conferences, local developments and studies on the fauna in various regions of the country, workshops on the fauna (a Coleoptera workshop will probably be held in 1990), the Annual Report of the Committee to the MMNS for 1998, and various recent publications about the Canadian fauna and related topics.

H.V. Danks

MEETINGS

Annual Meeting of the Entomological Society of Manitoba

November 3 & 4, 1988

The 44th Annual Meeting of the Entomological Society of Manitoba will be held this year at the Freshwater Institute, 501 University Crescent, University of Manitoba Campus in Winnipeg, on 3 & 4 November, 1988. The theme of this year's meeting is "Innovative Applications of Integrated Pest Management". The theme speaker is Dr. R.L. Metcalf, Department of Entomology, University of Illinois at Urbana-Champaign, who will present a paper on "Applied Chemical Ecology and Integrated Pest Management: The Story of *Diabrotica* Beetles".

In addition this year's meeting will feature a symposium based on the theme. Symposium speakers will include Dr. G. Kinoshita, Cyanamid Canada; Dr. Y. Prevost, School of Forestry, Lakehead University; Mr. L. Harris, Saskatchewan Agriculture; Dr. N. Holliday, Department of Entomology, University of Manitoba.

For further information, please contact:

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