Entomological Society of Canada
Société Entomologique du Canada

Bulletin

Vol. 13, No. 2, June - juni, 1981

D.M. Davies Bulletin Editor

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EDITORIAL

It is important that the members read the "Interim Report of the President" in this issue. This indicates what an active, concerned and responsible Executive we have. There are a number of important initiatives underway including the study of the cost of destructive insects in Canada funded by Agriculture Canada, and a membership drive. The Science Policy Committee is also active in investigating employment of recent university graduates in entomology and also the industrial support of entomological research. It is also writing of its interest or concerns regarding actions of MOSST, NSERC, SCITEC and BCC.

There have been several letters written to the Honourable Eugene Whelan and other government ministers concerning the recent federal policy of "French Essential" hiring of scientists for the Research Branch of Agriculture Canada (see Editorial in ESC Bulletin, 13(1) March). A further airing of this matter will appear in the next issue. BCC has taken the position that scientific competence be the primary criterion for hiring scientists in government irrespective of language proficiency and our Society supports the BCC position.

.....

While I admire the gallant French
I have no wish to share a bench
With one whose native tongue transcends
His scientific acumen.

The Bill of Rights we understand
Deplores discrimination and
Demands that all shall have their chance
Whether or not they Vive la France.

The world may well stand back aghast
When scientific skill ranks last,
And genius, if not in french,
Must be ignored in government.

Anon.

NOMINATIONS FOR FELLOWS OF THE ENTOMOLOGICAL SOCIETY OF CANADA

The Board of Governors has agreed that nominations for Fellows of the Society shall be the sole responsibility of the Fellowship Committee who are elected, from the list of Fellows, by members of the Society. This is in accordance with the original guidelines for the Fellowship Committee.

FELLOWS OF THE ENTOMOLOGICAL SOCIETY OF CANADA 1981

The Fellowship Selection Committee has nominated, and the Governing Board has approved the nominations of, the following persons as Fellows of the Entomological Society of Canada.

J.H. Borden	Burnaby, B.C.
D.M. Davies	Hamilton, Ontario
S.R. Loschiavo	Winnipeg, Manitoba
S.B. McIver	Toronto, Ontario
J.N. McNeil	Quebec, P.Q.
Ray F. Morris	St. John's West, Nfld.
F.A. Urquhart	West Hill, Ontario

INTERIM REPORT FROM THE PRESIDENT

For the third successive year, an Executive meeting was held in lieu of a meeting of the Governing Board. It was held April 7-8 in Winnipeg where business arising from the minutes of the 1980 meeting and interim reports of committees were discussed. The purpose of this report is to inform the membership of some of the Society's activities since the 1980 meeting. Recommendations by the Executive will be presented at the next meeting of the full Governing Board for discussion and action.

Last November, we were faced with the necessity of changing the method of financing Memoirs. At a special meeting, the Executive discussed and recommended a pricing formula minimizing the financial risk to the Society. The Governing Board approved the recommendation by phone ballot, and the members were notified of the decision and the reasons for it. Originally intended for one year, the plan must extend into 1982 because the impact of the new pricing schedule will not be known until later this year, by which time many members and subscribers will have paid for 1982. To date, there has been an insignificant reduction in members and subscribers.

NSERC approved a grant of $27,000 for publication of The Canadian Entomologist, thus making it possible to continue the reduced page charge of $35.00 for one year beginning April 1981. Also approved was a contract of $107,000 from Agriculture Canada for a study of the costs of destructive insects in Canada.

The Executive supported a proposal that the Society publish the Arctic Bibliography as a special publication to be sent without change to subscribers and members who have elected to purchase the Memoirs. We shall continue to study the feasibility of publishing the faunal handbook series currently being published by Agriculture Canada.

Plans for the 1981 annual meeting at Banff are progressing well. The theme, "Economics of Entomological Effort" will be developed by experts in fundamental and applied entomological research and integrated control. It is a timely theme in view of the Society's newly launched study of the cost of destructive insects in Canada.

The joint meetings of the Entomological Societies of America, Canada, and Ontario will be held in Toronto, November 28 to December 2, 1982. Dr. F.L. McEwen's appointment as programme chairman begins after the 1981 meeting of the ESA.

The Science Policy Committee met in Winnipeg April 6-7. Several letters were drafted, and these were sent by the President on behalf of the Society:

1. Task Force on Biotechnology MOSST. In our letter, we approved the report of the Task Force, but expressed concern about the inherent risks to non-target organisms with the expanding use of insect pathogens to control insects. We inquired whether a registration system similar to that used under the Pest Control Products Act has been developed for pathogens. The Task Force was interested in this question, which had not been raised before and will discuss it with different branches of government.

2. NSERC five-year plan. In a letter to NSERC we expressed concern that:

   (a) the federal government did not increase NSERC's budget for 1981-82;
   (b) grants for research are inadequate;
   (c) government has failed to attain its research targets;
   (d) only a few entomologists were awarded NSERC research associateships.

3. A letter was sent to the President of the BCC to request further explanation for withdrawal of the BCC from SCITEC, and another to recommend that the BCC readdress the concept of an Agricultural Research Council.

4. A letter was sent to appropriate Ministers in Government to support the position taken by BCC, namely, that scientific competence be the primary criterion for hiring scientists in government irrespective of language proficiency.

Several other matters were discussed by the Science Policy Committee.

1. Need for continued support of Entomology. The committee has undertaken to obtain data on the current employment of graduates in entomology or related sciences from Canadian universities in the last several years. It will investigate industrial support of entomological research in Canada.

2. A preliminary report on entomology curricula in Canada.

3. Degree of involvement of the ESC in SCITEC.

4. Long-term planning and objectives.

5. A list of important entomological subjects in need of study in Canada.

Prior to last year's annual meeting, the Governing Board agreed to support the BCC's request for an increase of $2.00 per Canadian member, but it felt that the increase should be justified. A letter has been sent to the President of the BCC requesting information.

The Scientific Committee for the Biological Survey has kept the Society informed of its activities. Last fall, the secretariat office was established within the National Museum of Natural Sciences. The manuscript on Arctic Arthropods was accepted by the Scientific Editor of the ESC, and publication is anticiapted in late 1981. The Committee selected a number of scientific projects for development, including the preparation of illustrated keys to the families of insects in Canada and studies of arthropod fauna in different regions and habitats in Canada. The Scientific Committee recommended that federal support should be established for the maintenance and improvement of regional centres with faunal collections.

Changes proposed by the Bylaws, Rules and Regulations Committee would make the Bulletin available earlier than at present and would allow members to submit nominations after receiving the March Bulletin and before the current March 31 deadline. The proposed changes will be brought to the Governing Board.

The Membership Committee has devised a kit for use in a membership drive. The Executive approved the preparation of a French version of the kit.

The recommendations of the Achievement Awards Committee were approved by the Executive and the Board. The names of the 1981 recipients of the Gold Medal and C. Gordon Hewitt awards appear in this issue.

The Society scholarships were increased to $1,000 beginning in 1981.

The Society is in a sound financial position, thanks to our Finance Committee, and to a Treasurer who predicts deficits but by some strange alchemy produces surpluses. A talent like his should be most welcome in government finance departments.

Dr. Laing will step down as Secretary after the 1981 meeting. He has served the Society well for the past three years. We are most grateful for his dedicated service. A worthy nominee has indicated his willingness to serve as Secretary pending his acceptance by the Board. Dr. G. Cooper was obliged to resign as part-time Executive Secretary, and this position is in abeyance until the Board re-examines our needs in this area.

Space limitation does not permit a more detailed report on the Society's activities. I can assure the membership that the Executive Governing Board, and Committees are working diligently in the best interests of the Society and of entomology. I thank the members of the Executive for acting on behalf of of the President last fall. As always, the progress that has been made is due largely to the energy, enthusiasm, and dedication of members who are interested enough in the Society to give of their time and expertise. We are indebted to these people.

Samual Ralph Loschiavo
President

ENTOMOLOGICAL SOCIETY OF CANADA

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

Nominating procedure

Members of the Society are invited to nominate entomologists whom they believe deserving of these awards. Nominations should be sent in an envelope marked "Confidential" to the

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

Nominations should comprise: (1) the name and address of the nominee(s); (2) an outline of the major achievements on which the nomination is based; and (3) the names of the nominator and at least one seconder. Nominations should provide complete documentation on the candidate, explaining the value of the achievements to be considered and not merely the general competence of the nominee. To be considered by the Achievement Awards Committee nominations must bear a postmark no later than November 30, of the current year.

Eligibility of nominees

Recipients of the awards need not be members of the Society, nor need they be domiciled in Canada, providing that their contribution is judged to have had a major impact on entomology in Canada.

The objective for the C. Gordon Hewitt Award is to recognize excellence among younger entomologists; nominees for this award must be under 40 years of age throughout the calendar year in which the award is both announced and made.

The awards shall be made annually, save when the Achievement Awards Committee or the Governing Board deem that no awards should be made. No more than one Gold Medal and no more than one Hewitt Award shall be awarded each year, but, where circumstances warrant, more than one individual may be cited in connection with a single award, The award may be made on different occasions to the same recipient(s), but only for distinctly different contributions to entomology in Canada.

Criteria for the awards

Recipients shall be judged to have made an outstanding contribution to entomology in Canada on the basis, not only of demonstrated competence, but also of one or more of the following special criteria:

a) Superior research accomplishment, either as a single contribution or as a series of associated endeavours, in entomology or in a related field in which the results obtained are of great consequence for entomology in Canada;
b) Meritorious contribution to entomological scholarship or literature, whether or not this be based upon the recipient's own original research, and whether or not it be based upon predominantly Canadian material, providing that the contribution be identifiably Canadian in origin;
c) Unusually valuable practical application of scientific or technological expertise in or to the credit of entomology in Canada;
d) Outstanding contributions in the fields of advisory, extension, industrial or public relations work in or to the credit of entomology in Canada;
e) Long, dedicated, and fruitful service in affairs of the Society or of an Affiliate, entomological education or administration in Canada.

ACHIEVEMENT AWARDS FOR 1981

The Achievement Awards Committee has recommended and the Governing Board has approved that the recipient of the Entomological Society of Canada's Gold Medal for outstanding achievement in Entomology in 1981 be:

DOUGLAS KEITH McEWAN KEVAN

(Department of Entomology, MacDonald Campus, McGill University
Ste. Anne de Bellevue, Québec)

and the recipient of the C. Gordon Hewitt Award for 1981 be:

GEORGE HILTON GERBER

(Research Station, Agriculture Canada, Winnipeg, Manitoba)

Further details will appear in the September Bulletin.

ESC SCHOLARSHIP FUND

In 1980 the amount donated to the Scholarship Fund was $2,016.75. The Scholarship Fund as of 31 December 1980, contains $22,174, which includes the $10,000 transferred from the Society's reserves. Contributions for 1981 are earnestly solicited.

NOTICE OF ANNUAL BUSINESS MEETING

The Annual Business Meeting of the Entomological Society of Canada will be held on Wednesday, October 7, 1981, at the Max Bell Building, Banff, Alberta at approximately 3:30 p.m.

Matters for the consideration of this meeting or of the Governing Board meeting, to be held on October 4 and 5, 1981 at Banff, should be sent to the Secretary, J. E. Laing, Department of Environmental Biology, University of Guelph, Guelph, Ontario, N1G 2W1.

La Réunion Annuelle d'Affaires de la Société Entomologique du Canada aura lieu le mercredi, 7 Octobre, 1981, au édifice Max Bell, Banff, Alberta. Ceux qui désirent soumettre des propositions pour cette Réunion ou, au Conseil de Direction, voudront biens les envoyer à l'addresse donnée plus haut.

1982 JOINT MEETING OF ENTOMOLOGICAL SOCIETIES OF AMERICA, CANADA AND ONTARIO

Dr. Freeman McEwen was appointed by President-Elect Dr. S.D. Beck, Entomological Society of America, as Programme Chairman for the joint meetings of the Entomological Societies of America, Canada and Ontario, to be held in Toronto in 1982. We are pleased that this important role was offered to a Canadian of Freeman's calibre and one who is respected by the three Societies. It is a pleasure to announce that Susan McIver has accepted the invitation to be Chairman of the Local Arrangements Committee for 1982. With the participation by these competent people in two major committees we are assured of top quality Canadian content.

As hosts, the E.S.C. and E.S.O. may suggest certain initiatives that could be considered by these Committees. Suggestions should be sent to the appropriate Chairman before November 1981.

S.R. Loschiavo, President, E.S.C.

ENTOMOLOGICAL SOCIETIES — ALBERTA AND CANADA

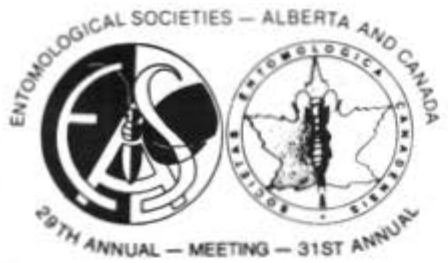
28TH ANNUAL — MEETING — 31ST ANNUAL

OCTOBER 5-9, 1981
BANFF CENTRE
BANFF, ALBERTA, CANADA

JOINT MEETING

ENTOMOLOGICAL SOCIETY OF ALBERTA

ENTOMOLOGICAL SOCIETY OF CANADA



JOINT MEETING
ENTOMOLOGICAL SOCIETY OF ALBERTA
ENTOMOLOGICAL SOCIETY OF CANADA
OCTOBER 5-9, 1981, BANFF CENTRE
BANFF, ALBERTA, CANADA

Theme Symposium

THE ECONOMICS OF ENTOMOLOGICAL EFFORT

Speakers representing the broad fields of Fundamental and Appled Entomological Research, Integrated Control, Goverment, Industry, and Education will show how effort and progress in their area contributes to progress in other areas of science and to the well being of the public who support them financially. Emphasis will be in terms of costs and benefits where feasible. Subject areas and speakers include:

INTRODUCTION: Dr. F. L. McEwen, Department of Environmental Biology, University of Guelph.

ECONOMICS AND ENTOMOLOGY: Dr. K. K. Klein, Agriculture Canada, Lethbridge.

FUNDAMENTAL ENTOMOLOGICAL RESEARCH: Dr. C. Gillott, Department of Biology, University of Saskatchewan.

APPLIED ENTOMOLOGIACAL RESEARCH

ORCHARD PRODUCTION IPM IN BRITISH COLUMBIA: Dr. R. J. McMullen, Agriculture Canada, Summerland.

FLEA BEETLE IPM IN THE CANADIAN PRAIRIES: Dr. W. J Turnock, Agriculture Canada, Winnipeg.

MEDICAL-VETERINARY INSECT PEST MANAGEMENT: Dr. W. O. Haufe and Mr. J. Weintraub, Agriculture Canada, Lethbridge.

GOVERNMENT ADMINISTRATION - B.C. FORESTRY PROBLEMS: Dr. R. F. DeBoo, Ministry of Forestry, Victoria.

EDUCATION: Dr. J. H. Borden, Biological Sciences Department, Simon Fraser University.

SUMMARY AND RECOMMENTDATIONS: Dr. F. L. McEwen, Department of Environmental Biology, University of Guelph.

SPECIAL INTEREST GROUPS

Seven Special Interest Topics (listed below with their chairman) have been tentatively scheduled for either October 5 or October 9, 1981. These sessions are open to everyone and afford participants an unique opportunity to discuss specific areas both formally and informally.

PHOTOGRAPHY FOR AMATEURS AND PROFESSIONALS: Chairman: DR. R. LEECH, 10727 -64 Avenue, Edmonton, Alberta, T6H 1T1

PRACTICAL USE OF INSECT SEX PHEROMONES: Chairman: DR. W. F. STECK, Assistant Director, Prairie Regional Laboratory, NCR, University of Saskatchewan, Saskatoon, Saskatchewan, S7H 2V1

BIOLOGICAL SURVEY OF CANADIAN GRASSLANDS: Chairman: DR. G. PRITCHARD, Department of Biology, University of Calgary, Calgary, Alberta, T2N 1N4

BIOLOGICAL CONTROL BY THE INTRODUCTION OF EXOTIC NATURAL ENEMIES: Chairman: DR. J. S. KELLEHER, Bio-Control Unit, Research Branch, Agriculture Canada, Ottawa, Ontario, K1A 0C6

BLACK FLY BIOLOGY AND CONTROL - PROGRESS AND PROGNOSIS: Chairman: DR. M. CHANCE, Manager, Canada Biting Fly Centre, Department of Entomology, University of Manitoba, Winnipeg, Manitoba, R3T 2N2

HONEYBEES: Chairman: DR. R. SHEUL, Department of Environmental Biology, University of Guelph, Guelph, Ontario, T6H 1T1

LEAFCUTTER BEES: Chairman: DR. K. W. RICHARDS, Agriculture Canada, Research Station, Lethbridge, Alberta, T1J 4B1

Suggested areas for discussion, proposals for active participation, or requests for detailed information should be made directly to the appropriate session chairman.

SUBMITTED PAPERS

Members and non-members alike are encouraged to present papers. Concurrent sessions will be held on October 7 and 8. The scientific program committee reserves the right to reject submissions. Deadline for submission of papers and abstracts is August 15 (see attached REGISTRATION FORM for details). Abstracts will be published in the conference program booklet.

REGISTRATION AND ACCOMMODATION

Registration fees have been established as follows:

Preregistration (by August 15, 1981	$40.00
Late registration	$50.00
Student or spouse	$25.00
Daily registration	$10.00

Conference participants are encouraged to stay at the Banff Centre. Accommodation is limited to a first-come-first-served basis, after which alternative arrangements will be made for you in Banff. All participants staying outside the Centre are encouraged to eat at the Centre ($15/day).

Please complete the attached REGISTRATION FORM by August 15, 1981.

SOCIAL FUNCTIONS

To encourage fellowship and provide yet another forum in addition to the regular coffee breaks, the following functions have been organized:

TRADITION SOCIAL — featuring a multitude of Alberta's finest fish and game together with fine wine.

WESTERN STYLE BAR-B-QUE — buses will transport you into a mountain retreat where you will experience good Alberta beef and western hospitality (remember to bring warm clothing).

GALA BANQUET — the annual meeting would be incomplete without the semi-formal banquet.

LADIES PROGRAM

A visit is planned to the historic Banff Springs Hotel, with lunch, and to the upper hot springs (bring your bathing suit). Together with the three social functions of the meeting, these activities will highlight the Ladies Program. Opportunities will also be provided for shopping and sight-seeing. Further arrangements will be made from the Ladies Registration Desk on Monday, October 5, after a preliminary mail survey of preregistered ladies.

PHOTO SALON

All nature photographers (amateur and professional) are invited to submit black and white prints, colour prints, and slides of insects, related arthropods, insect damage, nests, tracks, etc., for exhibit at the Alberta meeting.

CONDITIONS OF ENTRY and ENTRY FORMS are available in the ENTOMOLOGICAL SOCIETY CANADA BULLETIN (June 1981) or can be obtained by writing to W. B. Preston, Manitoba Museum of Man and Nature, 190 Rupert Avenue, Winnipeg, Manitoba, R3B 0N2.

FIELD TRIP

A field trip to Johnsons Canyon will be arranged for Friday afternoon, October 9, 1981, if there is sufficient demand. Please indicate your interest on the attached REGISTRATION FORM. Details will be available at the registration desk.

TRANSPORTATION (between Calgary and Banff)

Grey hound Buslines (from downtown terminal), Brewster Gray Line (from airport), and VIA Rail (from downtown station) operate regular daily service between Calgary and Banff. Consult your Travel Agent for times and fares.

WEATHER

The weather in Banff tends to be variable. Daytime temperatures average 14°C while evening temperatures average 2°C during this period of October. You are advised to bring some warm clothing for the western barbecue as it could be chilly.

REGISTRATION FORM

Do not defer - reply now

Return to:
Dr. L. Shipp
c/o Agriculture Canada
Research Station
LETHBRIDGE, Alberta
T1J 4B1

NAME & ADDRESS(es):

_____
(Participant)

_____
(Address)

_____

_____
(Spouse's Name; if registering)

_____
(Spouse's Address)

REGISTRATION FEE: **Amount Enclosed**

Pre-Registration $40/person _____
(Deadline August 15, 1981)
Late Registration $50/person _____
Students or Spouses $25/person _____
Day Registration $10/person _____
(Does not include social functions)

ACCOMMODATION:

Date of Arrival

_____ (a) After Breakfast 7:00-9:00 a.m.
(b) After Lunch 11:30-1:30 p.m.
(c)After Supper 5:00-7:00 p.m.
(Please circle one above)

Date of Departure

_____ (a) After Breakfast 7:00-9:00 a.m.
(b) After Lunch 11:30-1:30 p.m.
(c) After Supper 5:00-7:00 p.m.
(Please circle one above)

IMPORTANT:

If the requests for single accommodation exceeeds the quota for our group, it may not be possible to reserve your preference for a single room. As an alternative, please indicate the name of the person with whom you wish to share a room. After the Centre is filled, accommodations will be provided in the city.

1. BANFF CENTRE (rates include meal package)

a) Single with Bath
$46/day/person _____
If unavailable: I will
☐ Share Accommodation
☐ Request Motel

b) Twin Sharing with Bath
$37/day/person _____
Will share with: _____

2. OFF CAMPUS ACCOMMODATION

☐ Indicate here if you require assistance in making off campus reservations.

SUBMITTED PAPER REPLY

Author's Name _____
(Please type or print)

Institution and Address _____

_____

_____

_____

Title of Paper (Not to exceed 15 words)

_____

_____

To Be Read By: _____

PROJECTION EQUIPMENT REQUIRED

☐ 2 x 2 Slide
☐ Overhead
☐ 16mm Movie
☐ Other _____
(Specify)

IMPORTANT: Title and abstract of 200 words or less must be received by August 15, 1981.

SPECIAL INTEREST GROUPS

To assist in scheduling, please indicate which of the following sessions you would like to attend:

☐ Photography for Amateurs and Professionals
☐ Practical use of Insect Sex Pheromones
☐ Biological Survey of Canadian Grasslands
☐ Biological Control by the Introduction of Exotic Natural Enemies
☐ Black Fly Biology and Control - Progress and Prognosis
☐ Honeybees
☐ Leafcutter Bees

FIELD TRIP:

A field trip to Johnsons Canyon will be arranged for Friday afternoon, October 9, 1981 if there is sufficient demand. Will you participate?

☐ Yes ☐ No ☐ Maybe

Eleventh Annual Insect Photo Salon — Entomological Society of Canada and Entomological Society of Alberta 5 — 9 October, 1981

Entry Form: Slide Section (PLEASE PRINT)

Name

Street

City Prov. State

Postal Code ESC Member?

Fee Enclosed

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

Minimum score = 3; Maximum score = 15

Score required for acceptance _____

Permission granted to duplicate slides for use in Nature Exhibition slide sets:

Yes_____ No_____

Eleventh Annual Insect Photo Salon — Entomological Society of Canada and Entomological Society of Alberta 5 — 9 October, 1981

Entry Form: Slide Section (PLEASE PRINT)

Name

Street

City Prov. State

Postal Code ESC Member?

Fee Enclosed

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

Minimum score = 3; Maximum score = 15

Score required for acceptance _____

Mail entries to:
Dr. W. B. Preston,
Manitoba Museum of Man and Nature,
190 Rupert Aveune,
Winnipeg, Manitoba. R3B 0N2
(before 31 August 1981)

INSECT ILLUSTRATIONS IN MARCH BULLETIN

Some members have requested information on these illustrations (those on pages 2 and 23 from advertisements).

page 8: Agonoderus pallipes Fab. - The Corn Seed Beetle (from "Common Insects of Kansas" by Roger C. Smith et al. 1943).

page 9: Monocrepidus vespertinus Fab. - The Southern Corn Wireworm (from "Common Insects of Kansas").

page 14: Plathypena scabra (Fab.) - The Green Clover Worm (from "Common Insects of Kansas").

page 15: Macromia magnifica McLachlan (from "Biologie der Süsswasserinsekten" by C. Wesenberg-Lund 1943).

page 16: "The Western Locusts" by the Rev. C.J.S. Bethune. (Rep. Entomol. Soc. Ont. (1875) 1876, p. 45).

"In our last Annual Report (1874) we devoted a considerable portion of our space to an account of the Locusts (or grasshoppers as they are improperly termed) which were so destructive that year throughout large tracts of country in Manitoba and the neighbouring regions of British America, and in many of the States between the Rocky Mountains and the Mississippi River.

During the present year (1875) it is cheering to find that the extent of the plague has been very much diminished, and that many portions of the West are rapidly recovering from the devastation and suffering of the previous year ...."

ELEVENTH ANNUAL INSECT PHOTO SALON
ENTOMOLOGICAL SOCIETY OF CANADA

BANFF, ALBERTA 5 — 9 OCTOBER 1981

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

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

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

CONDITIONS OF ENTRY:

1. This salon is restricted to nature photography (insect photography in particular) which is here defined as the use of the photographic process to depict all observations of facts and phenomena from entomology, in this case, in such fashion that a well-informed person will be able to identify the subject material and to certify to its honest presentation. Human elements, if present, should be unobtrusive and enhance the nature story. Photographs which depict artificially produced hybrid plants or animals, or horticultural varieties of plants may not be used. Photographs depicting still-life studies, obviously set flower arrangements, mounted specimens, museum exhibits or groups, derivations or any form of photographic manipulation that alters truth of the photographic statement are INELIGIBLE AND SHOULD NOT BE SUBMITTED. (EXCEPTION: detailed micro or macro photographs). Descriptive titles are recommended for nature pictures and are especially helpful when titles are to be read. Cute titles should not be used.

2. The competition is open to all photographers.

3. There will be two sections: a) slides; b) prints (including colour and black and white).

4. Entry fee is $3.00 for the slide section and $4.00 for the print section, cheques to be made payable to: Entomological Society of Canada (Photo Salon).

5. Entries must not exceed 4 photos per section.

6. All prints must be mounted on cards no larger than 16" x 20". All prints must be entirely the work of the exhibitor, mounting excepted. Trade processed prints are not eligible.

7. Sender's name and address should be on the reverse side of all photos.

8. Entries must be mailed to: Insect Photo Salon, Dr. Wm. B. Preston, Manitoba Museum of Man and Nature, 190 Rupert Avenue, Winnipeg, Manitoba, R3B 0N2, and must be received by August 31, 1981.

9. Judging will begin September 8, 1981, or as soon as possible thereafter.

10. Judges will be: Mrs. Judy Berthman, Winnipeg, Manitoba, (Nature photographer; President of the Manitoba Camera Club; member of: Professional Photographers of Manitoba Association; Professional Photographers of Canada; Manitoba Naturalists Society.).

    Dr. Terry D. Galloway, Department of Entomology, University of Manitoba, Winnipeg, Manitoba, (Assistant Professor; amateur photographer).

    Alternate Judges: Mr. Don Berthman, Winnipeg, Manitoba, (Professional photographer; member of: Professional Photographers of Manitoba Association; Professional Photographers of Canada; Manitoba Naturalists Society; Nature photographer).

    Mr. Doug Smaill, Manitoba Museum of Man and Nature, Winnipeg, Manitoba, (Supervisor of Audio Visual Services; Professional Photographer).

11. Public showing will be during the joint meeting of the Entomological Society of Alberta and the Entomological Society of Canada, the Banff Centre, Banff, Alberta, 5-9 October 1981.

12. Entries must be packed so that the container can be used for return, and MUST BE ACCOMPANIED BY FOUR RETURN ADDRESS LABELS AND A COMPLETED ENTRY FORM. Entries received without the appropriate fee will not be judged or returned.

13. Entry forms available from: Insect Photo Salon Chairman, W.B. Preston, Manitoba Museum of Man and Nature, 190 Rupert Avenue, Winnipeg, Manitoba, R3B 0N2.

14. Entries will receive every possible care, but neither the Entomological Society of Canada, nor the Entomological Society of Alberta, nor the Insect Photo Salon Committee will be responsible for loss or damage.

15. Notification cards will be mailed within 10 days of completion of judging. Rejected entries will be returned within 21 days of completion of judging. All other entires will be returned within 21 days of the end of the public showing. Catalogs will be mailed by November 10, 1981.

ONZIÈME PHOTOSALON ANNUEL D'INSECTES
SOCIÉTÉ ENTOMOLOGIQUE DU CANADA

BANFF, ALBERTA, 5 — 9, OCTOBRE 1981

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

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

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

Conditions de Participation

1. Cette compétition est réservée à la photographie naturelle (en particulier des insectes), étant ici définie comme l'utilisation de la technique photographique pour illustrer l'observation de faits et de phénomènes de nature entomologique, et en particulier ici, de telle façon que toute personne compétente puisse identifier le sujet et attester de l'authenticité de la représentation qui en est faite. Tout elément humain présent devra être discret et ajouté à la signification du phénomène naturel représenté. Les photographies montrant des hybrides de plantes ou d'animaux obtenus artificiellement, ou des variétés horticoles de plantes, ne seront pas acceptées. Les photographies représentant des études de nature-mortes, des ensembles floraux hostensiblement arrangés, des spécimens épinglés, des montages ou ensembles muséologiques, des arrangements ou toute forme de manipulation de nature à modifier la réalité ou la représentation photographique pure et simple SONT INELIGIBLES ET NE DOIVENT PAS ÊTRE SOUMISES. (EXCEPTIONS: micro et macrophotographies détaillées). Toutes les photographies naturelles doivent être accompagnées d'un titre descriptif, ce qui est très utile si des titres doivent être lus. Les titre à caractère fantaisiste doivent être évités.

2. Le concours est overt à tous les photographes.

3. Deux catégories de soumissions seront considérées: a) diapositives; b) imprimés (coleur et noir et blanc).

4. Les droits de participations sont de $3.00 pour la catégorie diapositives et de $4.00 pour la catégorie imprimés. Les chèques doivent être faits à l'ordre de LA SOCIÉTÉ ENTOMOLOGIQUE DU CANADA (PHOTOSALON).

5. Le nombre maximum de soumissions par participant est de 4 par catégorie.

6. Les imprimés devront être montés sur carton n'excédant pas 16" x 20". Les imprimés doivent avoir été entièrement réalisés par le participant, à l'exception du montage. Les imprimés produisant de commerce sont inéligible.

7. Le nom et l'adresse du participant doivent figurer à l'endos de toutes les photographies soumises.

8. Les soumissions doivent être envoyées au Photosalon d'Insectes, Dr. W.B. Preston, Manitoba Museum of Man and Nature, 190 Rupert Avenue, Winnipeg, Manitoba R3B ON2, avant le 31 août 1981.

9. Le jugement des soumissions débutera le 8 septembre 1981 ou aussitôt que possible après cette date.

10. Les juges seront: Mme. Judy Berthman, Winnipeg, Manitoba (un photographe intéressé à la nature; président du Manitoba Camera Club; membre de: Professional Photographers of Manitoba Association; Professional Photographers of Canada; Manitoba Naturalists Society).

    Dr. Terry D. Galloway, Department of Entomology, University of Manitoba (professeur adjoint; photographe amateur).

    M. Reg. Sims, Agriculture Canada Research Station, Winnipeg, Manitoba (photographe professionnel; membre du Biological Photographers Association).

    Les juges alternes: M. Don Berthman, Winnipeg, Manitoba (photographe professionnel; membre de: Professional Photographers of Manitoba Association; Professional Photographers of Canada; Manitoba Naturalists Society; au photographe intéressé à la nature).

    M. Doug Smaill, Manitoba Museum of Man and Nature, Winnipeg, Manitoba (surveillant des Services "Audio-Visual"; photographe professionnel).

11. L'exposition publique des soumissions gagnantes aura lieu à la réunion conjointe de la Société Entomologique du Canada et de la Société Entomologique de l'Alberta au Banff Centre, Banff, Alberta du 5 au 9 octobre 1981.

12. Les soumissions doivent être expédiées dans un contenant réutilisable pour le retour par courrier, et doivent être accompagnées de 4 étiquettes préadressees en plus de formulaire de participation dûment rempli. Les soumissions non accompagnées des droits de participation exigibles ne seront ni jugées, ni retournées.

13. Les formulaires de participation peuvent être obtenus en s'adressant au Photosalon d'Insectes, Dr. W.B. Preston, Manitoba Museum of Man and Nature, 190 Rupert Avenue, Winnipeg, Manitoba R3B ON2.

14. Les soumissions recevront toute l'attention et les soins possible de la part des responsables du concours, cependant la Société Entomologique du Canada, la Société Entomologique de l'Alberta et le Comité du Photosalon ne seront responsables d'aucun dommage ou perte qui pourraient survenir.

15. Des avis seront expédiés dans les 10 jours suivant la fin du jugement. Les soumissions rejetées seront retournées dans les 21 jours suivant la fin du jugement. Toutes les autres soumissions seront retournées dans les 21 jours suivant la fin de l'exposition publique. Les catalogues seront expédiés le 10 me novembre 1981.

HELEN SALKELD RETIRES

Dr. E. Helen Salkeld retired from the Experimental Taxonomy Section of the Biosystematics Research Institute (BRI) in Ottawa in December, 1980.

As a graduate of Ontario Agricultural College, with an abiding interest in the land, Helen's research focused on the physiology of insect-crop interactions, and more specifically on the effect of insecticides on the early stages of insect development. She received her Ph.D. from the University of London after three years spent at the Rothamsted Experimental Station, studying the effect of the stage of development of the insect egg on its resistance to insecticides. After this she returned to Ottawa to join the Vegetable Insect Section of the Entomology Division, working at the Experimental Farm for part of the year and spending summers at Bradford Marsh, field-testing insecticides for the control of the carrot rustfly.

In 1955 Helen was invited to return to the Department of Insecticides and Fungicides at Rothamsted to extend her Ph.D. work studying the mode of action of ovicides. She returned to Ottawa as a member of what was then the Physiology and Genetics Section of the Entomology Research Institute (ERI), and during the next few years she carried out a comprehensive study of the anatomy, physiology and biochemistry of the salivary glands of Oncopeltus fasciatus (Dallas). This work distinguished the functions of the three lobes, and associated the anterior lobe with the formation of the stylet sheath. At this time she developed techniques for the histochemical study of esterases and localized their distribution in the glands.

In 1960, again by invitation, Dr. Salkeld spent a year at the New York Agriculture Experimental Station at Geneva, working on the mode of action of organophosphates when used as ovicides. This topic was included in a review article on the Use and Action of Ovicides, coauthored with Dr. E.H. Smith, which appeared in the 1966 edition of the Annual Review of Entomology. Resuming her work in Ottawa, she moved into a study of the enzymes in developing organs and tissues and of organogenesis in embryos. Esterases were characterized by their reactions to inhibitors and localized at various stages in the developing embryo and nymph of O. fasciatus.

As the objectives of ERI changed to those of BRI, Dr. Salkeld's work was reoriented towards comparative studies of the chorionic sculpture patterns of insect eggs and of the internal structure of the egg shell. The resulting publications provide a valuable and extensive collection of SEM photographs of insect eggs, particularly those of Lepidoptera (Noctuidae and Geometridae) with many accompanying observations of taxonomic characters and keys to identification.

The quality of Dr. Salkeld's research has always been enhanced by a realistic concept of its practical application. Her willingness to spend time advising and providing information on farm and garden problems was well known and brought all kinds of people to her office for assistance. In such a way she has been an outstanding advocate for entomological research in agriculture.

Helen has retired early to pursue her interests in farming a smallholding in North Gower, Ontario. The quality of the apples at the Colonial Inn Farm is outstanding, to mention only one of the crops which flourish there. We all wish her good luck in this continuing phase of her enterprises, although not without regret at losing a colleague whose honest and forthright approach refreshed our days.

B.N. Anne Hudson

RECENT DEATH

HANEC, William, Winnipeg, Manitoba. On 8 May 1980, age 49. Formerly with the Department of Entomology, University of Manitoba. Member E. S. C.; member E. S. M., former editor of Proceedings and president of E. S. M.

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DEDICATION TO RESEARCH

CYANAMID

BIOLOGICAL SURVEY OF CANADA
(TERRESTRIAL ARTHROPODS)

Meeting of the Scientific Committee

The Scientific Committee for the Biological Survey Project met in Ottawa on 9-10 April 1981. Guests from several government departments also attended certain parts of the meeting.

Dr. Lemieux, Director of the National Museum of Natural Sciences, informed the committee that the Board of Trustees of the Museums Corporation had recently formally ratified the establishment of the Biological Survey of Canada within the Museum.

Scientific Projects

The committee continued its discussions of selected subjects important to an exploration of the Canadian fauna. The background to these projects, and some other continuing projects not discussed below, was given in Bull. ent. Soc. Can. 12(4): 92.

Arthropod fauna of the Yukon

This project has now been supported through an N.S.E.R.C. cooperative grant to Drs. Scudder and Wiggins, in addition to existing interest in the Biosystematics Research Institute and elsewhere. A report by the Yukon subcommittee proposed that participants in the project should convene annual workshops, and that the work accomplished should be reviewed in five years' time as a book, "The insect fauna of the Yukon". A preliminary prospectus of such a volume was discussed by the committee, and other discussions are continuing among interested scientists.

A synopsis of the biological themes of significance in the Yukon is being prepared for publication by Mr. Downes and Dr. Matthews.

Beringian Refugium

Dr. Matthews presented a report on this project, which is closely linked to the Yukon study, together with a list of specific requirements (e.g. on particular taxa or sites) that would assist paleoentomological work. With others, Dr. Matthews was continuing this research, and would endeavour to develop a display for use at meetings, for the information of interested biologists and geologists.

Paleoentomological studies in Northern Quebec

Dr. Matthews reported that a paleoentomological project in Quebec was feasible, based on the availability of fossil material and of personnel, and might be pursued by investigators there. He was in contact with people in the province who were interested in paleoentomology and other fossil studies, in bog faunas, and in northern insects.

Prairie fauna

Dr. Pritchard plans to arrange a special interest group on the arthropod fauna of the prairies at the Annual meeting of the E. S. C. in Banff in October 1981, from which more detailed proposals can be developed.

Insects of freshwater wetlands

Two initiatives are being developed by the subcommittee chaired by Dr. Rosenberg. The first is a study of prairie marshes, focussing on 3 selected sites at different latitudes, with emergence trapping of adults and rearing of larvae, and in liaison with other wetland scientists. A registry of interested scientists is being developed, an item is being drafted for publication, and a package of standard methods is being assembled.

The insects of bogs are also of great scientific interest and are inadequately known. Several recent developments that might allow a project on this extensive habitat type to be initiated are being considered further.

Aquatic insects of Newfoundland

This project, begun during the Pilot Study, has been moving forward with major efforts especially by Dr. Larson in St. John's. Dr. Colbo has undertaken to prepare a document for the next meeting of the Scientific Committee to help guide the development of the project and show what assistance is needed to continue it.

Arthropod fauna of springs

Springs (resurgent groundwater) are of particular interest in Canada from both zoogeo graphical and ecological perspectives. A broad nationwide survey will be coupled with more detailed study of a few selected habitats. This is intended to lead eventually to a substantial publication on the arthropods of springs. The springs project will also serve to test a scheme for the detailed recording of data (see Data Banking below).

Data Banking of Faunal Information

A master list of standard fields for a field or input data sheet has been developed. Selected parts of the list are being extracted to use in the project on the arthropods of springs. Preliminary discussions with the National Inventory Programme of the National Museums of Canada have been held, and additional discussions will take place after the springs format has been completed, with a view to using the National Inventory Programme system for a preliminary field test this season. The results of such a test will guide further developments not only for the springs project, but also for the data banking interests of the Biological Survey in general.

Regional Centres

A draft item for publication, identifying the need for regional centres for research, education, and reference, as well as the curation of specimens - as recommended by the Pilot Study - was discussed at the meeting and is now being brought to final form. A paper on this subject is to be presented at the "Workshop on the Care and Maintenance of Natural History Collections", to be held in Ottawa during May 1981.

National Faunal Series

The subcommittee presented a generalized scheme for four parallel series of publications that might best focus treatments of the Canadian biota: systematic monographs, handbooks, ecological monographs, and syntheses. This concept had been discussed in a preliminary way with some interested agencies (B.R.I., N.M.N.S.) and with the E.S.C., and general approval was given at the meeting. These ideas will be discussed in more detail to try to build a consensus among interested parties to provide a more effective focus for publications on the fauna of Canada than is currently available.

Symposia related to the Biological Survey of Canada

Mr. Downes reported that the proceedings of the previous Biological Survey symposium (Ottawa, 1978), "Temporal and Spatial Changes in the Canadian Fauna", had now been published (Can. Ent. 112(11): 1089-1238, 1980 [1981]).

Mr. Downes outlined general ideas for a symposium on "The Origins of the North American Insect Fauna" at the 1982 joint meeting of the E.S.C. and E.S.A. in Toronto, and is proceeding with this proposal with the approval of the committee.

General activities of the Secretariat

Dr. H. V. Danks of the Secretariat has almost completed a first round of visits to entomological centres in Canada (see Bull. ent. Soc. Can. 13(1): 22), with visits to Ste. Anne de Bellevue, Quebec; Guelph, Ontario; St. John's, Newfoundland; Halifax and Kentville, Nova Scotia; and Fredericton, New Brunswick.

A list of requests for cooperation, together with a leaflet about the survey, were distributed during March to interested entomologists.

Matters discussed between the Secretariat and various entomologists, and at the Scientific Committee meeting, have included:

1. Funding for faunal studies: there is some evidence that the work of the Survey has helped some of its projects (e.g. Yukon) to gain support.

2. The increasing number of retirements in entomology: commonly there have been no defined plans for replacement of individuals who retire, nor for the retrieval of information, based on experience, that will soon be lost.

BIOLOGICAL SURVEY OF CANADA
(TERRESTRIAL ARTHROPODS)

Available on request is a "List of requests for material or information required for studies of the Canadian fauna"

This list is intended to facilitate cooperation among entomologists by encouraging those who visit suitable areas, while engaged in other studies, to collect material of particular interest to workers elsewhere.

This list has been prepared by the Biological Survey of Canada (Terrestrial Arthropods), which acts as a clearing house for information of this sort. In addition, active projects on the fauna of the Yukon Territory and on the aquatic insects of Newfoundland are currently being coordinated under the auspices of the Biological Survey of Canada. Other projects on the fauna of the prairies, freshwater wetlands, and springs are in early stages of development.

For copies of this list and more information about projects of the Survey, write to Dr. H.V. Danks, Biological Survey of Canada (Terrestrial Arthropods), National Museum of Natural Sciences, Ottawa, Canada K1A 0C6.

PERSONALIA

(ESC MEMBERS IN THE NEWS)

David E. Leonard, University of Maine at Orono, is the editor of the Annals of the Entomological Society of America. Ray F. Smith, Berkeley, California has been elected to the U. S. National Academy of Sciences. Richard A. Butts has taken the post of regional entomologist in the Peace River Region, Alberta. He will be coordinating a pest management programme for the lygus bug in alfalfa, conductiong various insecticide field trials, and establishing a diagnostic laboratory for the region. We wish him success with his new reponsibilities. Thomas S. Ward is a member of the U. S. Peace Corps in St. Lucia, West Indies. He has a forestry assignment but has been able to incorporate some entomology and pest management into his work. He teaches at the local Agricultural College. He is planning management strategies for the mahogany shoot borer, Hypsipyla grandella Zeller, in mahogany plantations, and, as a secondary project, tropical bee-keeping.

MORE ON THE XVI INTERNATIONAL CONGRESS OF ENTOMOLOGY

This congress, held in Kyoto from 3-9 August 1980, was the first Congress of Entomology hosted by Japan and approximately 2,000 scientists from 80 countries attended (including 53 Canadians). To commemorate this Congress, the Philatelic section of the Tokyo Central Post Office issued a 50-yen (ca .25¢) stamp. This stamp, designed by Motohara Morita, features Luhdorfia japonica (Lepidoptera: Papilionidae) - common name Gifucho - on a wood-grain background. Twenty-six million stamps were printed.

BOOK REVIEWS

Manual of Nearctic Diptera. Volume 1. J. F. McAlpine, B. V. Peterson, G. E. Shewell, H. J. Teskey, J. R. Vockeroth, D. M. Wood (Editors). Minister of Supply and Services. vi + 674 pp. $40.00 (Canada), $48.00 (other countries).

This long-awaited work has been in preparation since January 1966, when the late Dr. J. G. Chillcott first secured authorization for the project from Agriculture Canada. Following his untimely death in 1967 the work has proceeded under the control of the six-member editorial group listed on the title page. All are members of the Diptera Section of the Biosystematics Research Institute, Ottawa. The illustrations have been mostly prepared by Ralph Idema, a staff artist at the Institute.

The work will appear in two volumes. This first volume contains introductory chapters on the morphology and terminology of the adults by Dr. J. F. McAlpine and of the larvae by Dr. H. J. Teskey. Both authors have also provided keys to families. Then follow the treatments of 43 families, with keys to the genera occurring in the Nearctic Region. The remaining 65 families of Cyclorrhapha (Muscomorpha) will be treated in volume 2. We are also promised additional general chapters on ecology and evolution in volume 2.

An enormous amount of labour has evidently gone into the preparation of this manual over many years. The copious illustrations are of particularly high quality, and a special word of praise is needed for Ralph Idema, whose work is both aesthetic and accurate. I am especially pleased to see the inclusion of Teskey's general treatment and key to larvae. Our knowledge of the larvae of Diptera lags far behind that of the adults, and this updated introductory treatment was sorely needed.

The text of this first volume contains much which excites my enthusiasm, and which will prove invaluable for future reference. But my enthusiasm is mixed with dismay at certain passages in the introductory material, particularly at the non-phylogenetic "classification" and the misleading treatment of the structure of the male terminalia. The latter is a complex and confusing subject on which I have much unpublished information arising from correspondence with leading morphologists. By failing to consult me before publication, the editors have placed me in the position of having to make serious criticisms in this review. This need not have been necessary.

Since I do not see any value in making criticisms without supporting arguments, I have to devote much more space in this review to criticizing the passages to which I object than to praising those of which I approve. To put the matter in proper perspective, the text criticized here amounts to about ten pages out of 674, so the nonsense content of this work is not unusually high. In fact it is remarkably low by comparison with most textbooks. But it is a pity that it was not reduced still further.

Now to my criticisms.

Phylogeny

The section on phylogeny has been deferred to the second volume of this manual, but we are given a table showing the systematic arrangement (pp. 2-3). This is said to be "evolutionary", by which the Mayrian sense of the term seems to be intended since there are some traditional paraphyletic groupings which should not appear in a strictly phylogenetic (cladistic) presentation. For instance, the basic subdivision of the Diptera in the phylogenetic system is into the Polyneura (Tipulomorpha) and the rest (Oligoneura), not between the Nematocera (a paraphyletic grouping) and the Brachycera. Other traditional paraphyletic groupings are the Aschiza and the Acalyptratae. This is a disappointment. I think that a reference work of this kind should contain an up-to-date cladistic presentation. There is too much that is arbitrary in the scheme presented here for my taste. This is particularly evident in the breakdown of the "Acalyptratae", which contains several retrograde features in comparison with my 1972 book. For instance, the authors evidently do not understand the structural characterization of the Drosophiloidea (as Ephydroidea), since they include four families which do not belong (Chloropidae, Cryptochetidae, Tethinidae and Canacidae).

Hennig would have had harsh comments on that proposal if he were still alive, since he regarded his definition of the Drosophiloidea as a significant achievement and I was able to support his concept with additional data in my 1972 book. At the infraorder level the grouping Asilomorpha is probably erroneous, since there are strong grounds for grouping the Empidoidea (Orthogenya) more closely with the Cyclorrhapha in the group Eremoneura, as discussed in my 1972 book. The concept of Asilomorpha here proposed no doubt follows Hennig's (1973) treatment, but subsequently Hennig (1976b: 47) accepted again the validity of the concept Eremoneura.

Further comment may be reserved until the chapter on phylogeny is published. But the table provided does not suggest that we will be treated to the most reliable and up-to-date cladistic analysis.

Male Genitalia and Proctiger

The section on adult morphology and terminology by Dr. J. F. McAlpine appears reliable in most areas, as far as I can judge, but is marred by some serious confusion regarding the homologies of the male genitalia and the proctiger of both sexes. The background circumstances may need some explanation.

In my 1972 book I homologized the clasping structures of the Orthogenya (Empidoidea) and Cyclorrhapha with those of other Diptera on the assumption of continuity of function, one of the accepted indirect criteria of homology to be applied in cases where complete transformation series are not available. This necessitates several changes in the accustomed terminology, something many traditionalists evidently find upsetting. While several important European authors have accepted my interpretation and the consequent changes in terminology, most North American workers have resisted. Hennig (1976a,b) entered the fray by rejecting my interpretation of the clasping structures and offering a new interpretation of his own in its place. Although his new interpretation is in fact quite different in substance from the traditional interpretation in that it attributes certain structures to a different segment, it is attractive to the traditionalists since couched in their familiar terminology. Hence the welcome given to it by McAlpine (p. 55), no doubt in the belief that my heretical terminology has been finally laid to rest. However, Hennig in fact refuted nothing. His new interpretation is impossible, and can be refuted by reference to several ontogenetic studies.

This is not to say that I find nothing of value in Hennig's (1976a,b) papers. They do contain valid new information and conclusions. But they also contain much that is confused and erroneous, and reveal a remarkable lack of understanding of recent ontogenetic literature. Since few taxonomists have a sufficient background in this literature to distinguish Hennig's sound arguments from the unsound, there is presently much confusion regarding the validity of his new interpretations and those of mine that he tried to refute. McAlpine and his advisors have fallen into the pitfall of accepting Hennig's demonstrably impossible "working hypotheses" regarding the fate of the 10th segment in the Orthogenya and Cyclorrhapha, namely that the clasping lobes (the so-called surstyli) are derivatives of the 10th tergite which have somehow migrated to a ventral position and that the processus longi (and their homologues) are derivatives of the 10th sternite. A chain reaction of errors ensues and vitiates much of their text.

I call Hennig's interpretation impossible, because it is incompatible with everything we know about the ontogenetic development of the genital segment and proctiger in the Cyclorrhapha.

In Eucalliphora Black (1966) describes the proctiger as formed by the posterior papilla of the genital disc which is already well differentiated by 32½ hours after puparium formation. The clasping lobes are formed as lobes of the evaginated lateral papillae which form the large saddle-shaped sclerite (periandrium in my terminology, interpreted as the epandrium by McAlpine), their separation by fissures from that sclerite apparently not occurring until very late in development. This completely accords with the assumption prevailing prior to Hennig's (1976a,b) works that these claspers are articulated lobes differentiated from the saddle-shaped sclerite (however the latter may be homologized) and so must belong to the same segement. Dobzhansky's (1930) account of the development of the genital disc of Drosophila leads to the same conclusion. The clasping lobes do not become separated from the saddle-shaped sclerite until a late stage of development and have nothing to do with the proctiger which is differentiated from the genital segment at a very early stage. If any doubt remains, reference should be made to Laugé's (1968) careful reconstruction of the transformation

series between male-type and female-type intersexes in Drosophila. She concluded on the basis of a complete series of intermediates that the male and female proctiger are homologous and of the same segmental origin (apparent segment 10). The clasping lobes never appeared on or contiguous with the proctiger, thus refuting Hennig's suggestion that they may be derivatives of the 10th tergite. This tergite has simply been lost in most male Brachycera, and has not migrated anywhere. It appears together with male structures on the proctiger in some of Laugé's intersexes.

Hennig's suggestion that the processus (not processi as written in this manual!) longi and their homologues (bacilliform sclerites, interparameral sclerites etc.) represent the 10th sternite is also refuted by Black's study, which shows the processus longi as developing in membrane of the 9th segment by 116 hours after puparium formation.

There are only three possible interpretations of the clasping structures of Cyclorrhapha which are possible in the sense that they are compatible with the ontogenetic evidence and assign all sclerites to their correct segment. They are as follows:

(1) That the saddle-shaped sclerite is the 9th tergite (epandrium) and that the clasping lobes are differentiated from it (epandrial hypothesis). This is the most prevalent interpretation in the North American literature, and entails the use of the term surstyli in its original sense (articulated lobes differentiated from the 9th tergite) for the clasping lobes.

(2) That the saddle-shaped sclerite represents a fusion of the gonocoxites and epandrium and that the clasping lobes are the gonostyli (=telomeres) (fusion hypothesis, as proposed by Ulrich 1972).

(3) That the saddle-shaped sclerite is formed by growth of the gonocoxites across the dorsum (following loss of the true epandrium) and that the clasping lobes are the gonostyli (periandrial hypothesis in the form proposed in my 1972 book).

In assigning homologies I place high weight on similarity of structure and function, according to which criteria the latter two hypotheses appear to me much more probable than the first (traditional) interpretation. In respect of these criteria there is little to choose between the latter two hypotheses. But I prefer the third because positive evidence for the fusion of gonocoxites and epandrium postulated in the second hypothesis is lacking in the described ontogenetic processes. The only contrary published argument which impresses me as having any possible validity is Hennig's (1976b) argument that certain hypandrial apodemes in Empididae are homologous with the "basimeral" (gonocoxal) apodemes of Tabanomorpha and true Asilomorpha. This raises the vexed question of apodeme homologies, to which I will return below. Further objections to my homologies of the clasping structures stated by McAlpine, Matsuda and Andersson (p. 55, first paragraph) have little substance. McAlpine's claim, quoted also by Matsuda (1976), that gonopods and surstyli occur together in Platypezidae and Empididae depends on assuming that certain slender hypandrial processes in these insects represent reduced gonopods or gonocoxites (as shown on Fig. 132-133). In the absence of transitional stages showing that such a reduction process has occurred, the interpretation seems to me most improbable. McAlpine's interpretation (p. 51) that the pregonites of Calyptratae represent the gonopods is inconsistent with his interpretation of the postgonites as paraphyses ("parameres"). Black (1966) has shown that the pregonites and postgonites develop by subdivision of the same papillae, so both structures must have the same morphological value. She interpreted both as paraphyses ("parameres"), no doubt correctly since their musculation from the aedeagal apodeme is scarcely reconcilable with their interpretation as subdivided gonopods or gonostyli. Salzer (1968) accepted Black's view in his outstanding morphological study of Calliphora. Andersson (1977) argued against the interpretation of pregonites and postgonites as paraphyses on the grounds that they sometimes bear macrotrichia, and would interpret them as gonocoxites and gonostyli. This is scarcely compatible with their function and musculature (gonostyli should be musculated from the gonocoxites and function as clasping lobes), and I am of the opinion that the premise of his argument, that macrotrichia can develop only on some surfaces but not on others, is incorrect.

I would not have criticized McAlpine (and whoever else advised him) so harshly if they had retained the traditional interpretation of the clasping structures (alternative 1 above), since I would then merely have disagreed with their judgement of relative probabilities, something which is no doubt subjective to some degree. But, instead of one of the three possible interpretations, they have selected an impossible one which assigns some sclerites to the wrong segment. The list of consequent errors in their text on the male terminalia is long. To avoid repetition and undue length, only some of the more important instances need be stated, as follows:

P. 45 It is erroneous to state that tergite 10 "tends to form a pair of lateral lobes, the surstyli", as explained above. Irrespective of which view is taken of the homologies of the "surstyli" they can only belong to the 9th segment. In most male Brachycera the 10th tergite is lacking, though it can be found in some primitive forms (e.g. Rhagionidae).

The "ventral epandrial plate" (=processus longi, interparameral sclerite etc.) of Orthogenya (Empidoidea) and Cyclorrhapha is not the same as the 10th sternite but belongs to the 9th segment. The true 10th sternite, when present, can be found on the ventral surface of the proctiger. Both sclerites can be found in the same individual in many male Empididae and Platypezidae, something which ought to have alerted Hennig and McAlpine to the fact that these sclerites cannot be homologous.

There is no evidence for the retention of the tergite and sternite of the 11th segment in any Diptera, male or female. Even in the more primitive sister-group the Mecoptera these sclerites are only retained in the females. The sclerite labelled "hypoproct"(11th sternite) on Fig. 132-133 is in fact the 10th sternite, misinterpreted as the 11th as a consequence of the previous error.

P.54 The sclerites called tergite 10 here are not all homologous, since some (the "surstyli") belong to the 9th segment.

P.55 The series of sclerites called sternite 10 are likewise not all homologous, some (e.g. bacilliform sclerites, processus longi,"interparameral sclerite") belonging to the 9th segment.

The proctiger in Diptera (of both sexes) consists of the 10th and 11th segments, which are not demarcated from one another. The misinterpretation of certain sclerites of the 9th segment as representing derivatives of the 10th tergite and sternite leads to inconsistency in the interpretation of the proctiger, the ventral plate being interpreted correctly as sternite 10 in some figures but as the hypoproct (sternite 11) in others.

This confusion over the segmental origin of the proctiger has unfortunately also been carried over into the discussion of the female. It is not practical to apply the term proctiger to the 11th segment alone (as suggested on page 37), since the demarcation between the 10th and 11th segments shown in female Mecoptera is lacking in Diptera. On page 44 it is stated that "in general no separate tergite (true epiproct) or sternite (true hypoproct) of segment 11 is found in female Diptera", a statement with which I would concur with removal of the phrase "in general". Yet we find the 10th tergite and sternite erroneously labelled as epiproct and hypoproct in the figures of Schizophora on page 43. This is inconsistent with the text, and with the correct labelling of these sclerites on other figures. In one figure (of Rhagio mystaceus, Fig. 94) I note that both an "epiproct" and 10th tergite is claimed to be present. However, the area labelled "epiproct" is not a separate sclerite but part of the lobed first cercal article according to the treatment of the female terminalia of primitive Brachycera by Nagatomi & Iwata (1976). The true 11th tergite and sternite found in female Mecoptera have to my knowledge never been found in any Diptera, in which loss of these sclerites and reduction of the number of cercal articles to two appears to be a groundplan (constitutive) character.

Turning to other questions concerning the male genitalia, I find one proposal which I support. This is that the term gonopods be restored for the biarticled appendages which form the clasping mechanism in Diptera (in all Diptera according to the periandrial hypothesis, or only in some Diptera according to the traditional interpretation). The two articles should be called the gonocoxite and gonostylus, as suggested. This now seems to me preferable to the usage in my 1972 book, where I followed Snodgrass in calling the gonopods parameres and their two articles the basimeres and telomeres. A good summary of how this problem of interpretation arose is given on page 45. Essentially the objection to the gonopod

interpretation arose from attempts to base homologies on whether or not structures developed from "primary phallic lobes". I am becoming increasingly convinced that the underlying assumption of this approach, that the early stages of ontogeny are more resistant to evolutionary change than the final structures, is invalid especially for the Holometabola. What has finally convinced me is Dahl's (1980) demonstration that in the Tipulomorpha the claspers (gonopods) are not derived from the genital disc as in all other Diptera but from separate laterosternal zones of proliferation on the ninth larval segment. She interprets this as demonstrating that the apparent gonopods of Tipulomorpha are not homologous with those of other Diptera, but that substitution has occurred. She convinces me otherwise. It is difficult to believe that there is no continuity in the evolution of such functionally essential structures, which has been substituted and that this process has been subject to particularly active evolution in the Holometabola. If this conclusion is correct, then perhaps we should not worry too much about "primary phallic lobes" and base our homologies between the orders of Holometabola more on functional morphological comparisons.

Restoration of the gonopod terminology unfortunately allows McAlpine to apply the term "parameres" to the processes called paraphyses in my 1972 book, following an alternative tradition for the use of this term in Diptera. I do not support this action, which cannot be justified on present information. The term paramere was originally proposed for Coleoptera, and its application to other orders remains disputed. I have exchanged letters with Dr. G. Mickoleit of the University of Tübingen who has been working on this problem, but he tells me it is not yet solved. In the circumstances I recommend the use of Snodgrass' term paraphysis (as in my 1972 book) for processes between the gonopods and the base of the aedeagus, and avoidance of the term paramere.

This commentary on the homologies of the male genitalia in Diptera would not be complete without reference to apodeme homologies, a matter raised by Hennig (1976b) in his criticism of my views. I did not treat the homologies between the apodemes of Cyclorrhapha and those of other Diptera satisfactorily in my 1972 book, where I erroneously suggested that the aedeagal apodeme of Cyclorrhapha might be homologous with the ejaculatory apodeme of the Orthogenya (Empidoidea) and that the ejaculatory apodeme of Cyclorrhapha might be a new (neomorphous) structure. McAlpine (p. 53) follows me in the first mistaken homology when stating that "when present in the Nematocera and most orthorrhaphous Brachycera the aedeagal (i.e. ejaculatory) apodeme is a simple internal extension of the aedeagus". Hennig (1976b) claims that the aedeagal and ejaculatory apodemes of Cyclorrhapha may have arisen by splitting of a previously single apodeme (the ejaculatory apodeme of other Diptera) in disagreement with my 1972 view. In fact Hennig's interpretation is just as impossible as was mine, since both involve the same naive fallacy. This is that we failed to distinguish between endophallic apodemes formed as outgrowths of the invaginated integument of the endophallus/ejaculatory duct and exogenous apodemes formed as ingrowths from the outer body wall. Tha aedeagal apodeme of Cyclorrhapha is an exogenous apodeme, and so cannot be homologous with the ejaculatory apodeme of the Orthogenya and other Diptera, since the latter is endophallic in origin. Nor can it have arisen by the splitting process suggested by Hennig, since splitting of an endophallic apodeme could only produce two endophallic apodemes. Following such misleading commentary (p. 54), when he complains of confusion between aedeagal and ejaculatory apodemes in the "Nematocera and orthorrhaphous Brachycera". I am not sure that there is any confusion except in the terminology. My present opinion is that all such unpaired apodemes involved in the ejaculatory function are homologous with one another and with the ejaculatory apodeme of Cyclorrhapha, which differs in that it has lost its muscular connections with the outer body wall and come withdrawn into the body cavity. One of the positive features of Hennig's (1976b) discussion is that he has demonstrated that the presence of this "free" ejaculatory apodeme is a groundplan character of the Cyclorrhapha, thus opening the way to its homologization with the ejaculatory apodeme of other Diptera once his impossible splitting hypothesis has been disposed of. What then is the origin of the "aedeagal apodeme" of the Cyclorrhapha? Unpaired exogenous apodemes of this type are not found in other Diptera. So either the apodeme is new (neomorphous) or it has arisen through fusion of the paired exogenous apodemes found in other Diptera, this fusion having been made possible by withdrawal of the ejaculatory apodeme into the body cavity. These paired apodemes are called gonocoxal apodemes and parameral (i.e. paraphysial) apodemes by McAlpine (p. 5]), which I suspect are all homologous though this needs to be checked. Hennig (1976b) calls them basimeral apodemes and attempts to refute the periandrial and fusion hypotheses by arguing that the hypandrial

apodemes of Empididae are their homologues and show that the apparent hypandrium in this group includes fused gonocoxites as indicated by the attachment of the apodemes. Hennig raises a valid problem of interpretation here, but his approach to homologization is too cavalier for my liking. First, his premise that exogenous apodemes must necessarily be attached to the gonocoxites should not be assumed uncritically. Secondly, there are other paired apodemes which could possibly be homologous with the "gonocoxal" apodemes in some Empididae, such as the paired apodemes arising from the base of the aedeagus shown in Hennig's (1976b) own figure of Microphorus (Fig. 37). Thirdly, some of Hennig's supporting argument about sclerotized bridges is invalid, since the areas in question are not all equivalent. Thus whether Hennig's interpretation of the fate of the paired exogenous apodemes in the Orthogenya (Empidoidea) is correct and constitutes valid evidence against the fusion and periandrial hypotheses remains uncertain and in need of further study.

I regret the need to have taken McAlpine to task at such length regarding what is but a lesser part of his contribution to this volume. Much of the rest of his presentation on morphology seems sound, and it is not my intention to try to discredit everything. But we will never rectify the prevailing confusion concerning interpretation of the male genitalia, especially of Cyclorrhapha, if impossible opinions are allowed to profliferate in reference books and remain unanswered. That would mean that young workers entering the field would have to unlearn what they have learnt from the reference books before they could make any real progress. I ought perhaps to have directed my criticisms at Hennig two or three years ago rather than at McAlpine now. But I had not appreciated how readily my colleagues could be misled by impossible interpretations because of their lack of background in the morphological literature.

Conclusion

The concept of publishing an introductory manual on Diptera designed to serve the needs of "professional biologists, teachers, students and informed amateurs" appears to me valid, and the popularity of the previous Curran (1934) manual suggests that the present work will be widely used. My criticism of certain passages in this first volume should not be taken to mean that I oppose the manual project. Far from it, I recommend that there should be continuing revision of this work and new editions issues at regular intervals. Our knowledge of the Diptera is progressing rapidly in many areas, and agencies which support the production of reference books should also provide the means of updating them. I regard this manual as potentially complementary to the "Flies of the Nearctic Region" series, which I have founded. That series will provide dipterists with the means of publishing detailed monographs on particular families and particular topics. The function of providing a concise introductory treatment can be fulfilled by successive editions of this manual.

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BOOK REVIEWS

Hall, J.C. and N.L. Evenhuis 1980. Bombyliidae. Vol. V, Pt. 3 No. 1. 76 pp., 7 figs. In Flies of the Nearctic Region, Ed. G.C.D. Griffiths, E. Schweizerbart'sche Verlagsbuchhandlung (Nägele U. Obermiller) Stuttgart. U.S. $ 44.40.

This publication and another discussed in an accompanying review are the first of a long series to appear irregularly over the following years treating the systematics of all families of Diptera of Canada, Alaska, Greenland, the contiguous United States and northern Mexico. The series is patterned after, and has the same publisher, as "Die Fliegen der palaearktischen Region" which was initiated in 1924 and is still incomplete.

This number comprises primarily descriptions and a key to 59 Nearctic species of Bombylius. Twelve species are described as new. Being the first number of the family series, keys to subfamilies of Bombyliidae and genera of the first subfamily to be dealt with in the series, the Bombyliinae, precede the species descriptions. The latter keys are reliable. The species descriptions are well organized and easy to interpret but comparison with identified specimens discloses an annoying failure of the descriptions and species key to encompass the variability, primarily in hair coloring, in many of the species. Thus, without extensive experience, it is mandatory to have an authoritatively identified reference collection at hand to confidently identify many of the species.

The publication is nicely printed. I noted no typographical errors and only one author error; pendens has Cole as its author in the description and Curran in the key.

As in its European counterpart, the description of a taxon is rarely completed in an issue. In the present case the last few couplets of the key to species of Bombylius will begin the next number. This break is an annoyance and could be very inconvenient especially if, as in Der Fliegen, 30 years passed before completing a species description. With a little juggling by the printer the gaps could be limited to less than a page which would be slight waste for the convenience of a complete treatment. This is especially crucial in a key.

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Stone, A. 1980. History of Nearctic Dipterology. Vol. 1, Handbook Pt 1. in "Flies of the Nearctic Region" by Graham C.D. Griffiths ed. E. Schweizerbart'sche Verslagsbuchhandlung, Stuttgart. 1980. DM 68/vs $38.80.

A treatment of Nearctic Diptera, modelled on its famous Palaearctic counterpart, Lindner's "Die Fliegen" has now been launched under the general editorship of Dr. G.C.D. Griffiths of Edmonton. The nearctic series will be published in West Germany, where the copyright will reside. One must assume that vol. I, pt 1 is intended to give the whole series a good send-off.

Whether by choice or necessity, Dr. Stone has limited his history to about 60 pages, a small enough allotment for the task and one that obviously forced him to examine his options carefully. In the event he has chosen to write a compendium of more or less useful facts and figures plus a series of mini-biographies of eminent dipterists. The paper breaks down as follows: A short introduction is followed by 6 pages dealing with major publications. This is perhaps the most generally useful and informative section of the work, and although the author sometimes forgets that he is writing a history and lapses into pedantry more suitable for a college textbook, he does effectively review, even if very briefly, the main contributions to dipterology by workers in physiology, insect control, medical entomology, beneficial insects, and genetics. His next section of 22 pages titled "History of the Families of Diptera" is less satisfying. Family by family, he merely extracts and rearranges information already available in the Catalog of the Diptera of America north of Mexico (1965), giving numbers of genera and species, and names of main contributors with publication dates tied in to the Catalog bibliography. However, this tabulation ends with a useful supplementary bibliography bringing the post-Catalog list of major works on nearctic Diptera up to 1978. The last 30-odd pages, titled "Some Leading Specialists", must be read in the context of a statement made by the author in his introduction. "The history of a science consists of the workers in the field, the nature, quality, and quantity of their work, and the circumstances under which it was conducted. This latter includes the background and training of the scientist, whether professional or amateur." These biographies are somewhat more factual than anecdotal, but readers will no doubt enjoy the personal revelations scattered among them, most perhaps for the first time. Included are studio portraits of Loew, Osten Sacken, Williston, and Aldrich, plus an interesting group photo of U.S. dipterists of 1914 vintage. A criterion for "eminence" had to be devised in order to limit the number of names according to the space available. The author chose to record for posterity those who had described more than 100 new species. This had the unhappy effect of eliminating himself, and the even unhappier one of including among the 56 names no less than 17 eighteenth and nineteenth century Europeans (first come, first served). There seems to be minimal justification for this. With the exception of Loew and Osten Sacken, these early authors were very marginally involved in the natural history of North America, and their contributions could have been adequately combined in a half-page summary with the resulting release of 6 pages for more relevant material. In this way, some serious omissions could have been remedied, such as the virtual absence of any attempt at a broad overview of the subject. It is not that Dr. Stone is unaware of at least some of the imperatives that govern the growth and direction of Dipterology on this continent. He says, for instance, "..the economic importance of insects...has remained the leading incentive in America for the study of insects". Indeed it has. And this fact has influenced the history of research in Diptera - that most "economic" of orders - in ways which he might well have discussed at some length. But he made his choice, and we must accept it. The other history still remains to be written.

In his preface to this series, Dr. Griffiths expresses the hope that his project will be completed in 20 years. Surely this is too optimistic a forecast. The Palaearctic counterpart began in 1925 and is still unfinished.

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LABORATORY COLONIES OF INSECTS AND OTHER ARTHROPODS IN CANADA

The above list is to be revised in 1981. Past cooperators have been contacted directly but additional contributions would be welcomed. Copies of the 1979 list are still available on request. Write to Dr. J.S. Kelleher, Bio-Control Unit, Research Programme Service, Research Branch, Agriculture Canada, Room 1133, K.W. Neatby Building, Ottawa, Canada. K1A 0C6.

BOOK REVIEWS

Dornfeld, E.J. 1980. The Butterflies of Oregon. Timber Press, P.O. Box 92, Forest Grove, Oregon 97116, U.S.A. 276 pp., 4 color plates, 48 black and white plates, 192 maps. Price $24.95 U.S.

This book treats the 150 species of butterflies that occur in Oregon, as well as five more that are expected to occur.

The introductory chapters, particularly "Oregon Physiography and Butterfly Distribution", are excellent. The text for each species includes a general range; range and habitat in Oregon; diagnostic adult characters; life history information; and for many species, references to additional information. Sketches of genital characters are included for some of the more difficult species complexes. More extensive use of tables and inclusion of keys to difficult genera would have enhanced the value of the book as an identification aid.

The diagnoses of adult characters are for most species sufficient for identification but could be improved in some of the more difficult genera such as Speyeria. In Speyeria discussions of differences between subspecies take up most of the text. Proliferation of subspecific names in Speyeria has reduced the value of the category to a minimum.

The book is well illustrated; black and white photographs are included of upper and undersides of both sexes and, for most species, each subspecies is illustrated. Unfortunately, in some species, differences between sexes, between subspecies, and in some groups, between species cannot be seen in black and white photographs. Much better use could have been made of the color plates. Most of the large, showy, familiar species are illustrated in color while few species in the more difficult groups are included. In Callophrys, for example, species are distinguished by characters such as brown vs. gray uppersides and extent and shade of green on the underside. In the black and white plates, where none of these characters is visible, 16 photographs of three species are included; in the color plates, the underside of one species is shown. Restriction of the use of color plates to groups where it is important for identification would have greatly increased the usefulness of the book.

"The Butterflies of Oregon", in spite of these minor shortcomings, is a very useful, well-written, attractively produced book that hopefully will serve as a model for similar works on other States and Provinces.

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Heinrich, B. (Editor) 1981. Insect Thermoregulation. John Wiley and Sons, Toronto. ix + 328. $35.00

A heterothermic animal has the best of both worlds. When appropriate, it has the familiar advantage associated with homeothermy, such as sustained high rates of aerobic metabolism and substantial physiological and behavioral independence of variations in thermal conditions in the environment. But when circumstances dictate, it can exploit the advantages of poikilothermy and ectothermy, such as frugality of energy expenditure and the capacity for waiting out periods of prolonged food shortage or inclement environmental conditions. Heterothermy has arisen independently and repeatedly in the class Insecta, those marvelously adapted life strategists with whom we share the planet. Our problems are not theirs, and in the face of the every-growing crisis of food and fuel shortage one wonders whether or not our own expensive and demanding homeothermy has steered us in the right evolutionary direction! Insect thermoregulation is a topic of considerable fascination for modern biologists, and the more so since insects had been thought until quite recently to be uniformly cold-blooded and therefore primative and uninteresting.

The book, Insect Thermoregulation, arose from papers presented as a symposium sponsored by the American Society of Zoologists at the Annual Meeting held in 1978. The papers have since been revised and in some cases greatly expanded, under the expert editorship of Bernd Heinrich. References as late as

1980 are cited in certain chapters. The text is organized into seven chapters, which in my opinion would have benefited from a more logical arrangement. G.A. Bartholomew's chapter entitled "A Matter of Size: An Examination of Endothermy in Insects and Terrestrial Vertebrates" would have been a more appropriate choice for the lead-off chapter than R.J. Josephson's chapter "Temperature and the Mechanical Performance of Insect Muscle". The latter of course is central to the subject of thermoregulation in large flying insects, but unfortunately it is heavy-going for the beginner. Indeed, it is a puzzle why this chapter was not placed closer to A.E. Kammer's chapter on "Physiological Mechanisms of Thermoregulation". Other chapters by T.M. Casey (Behavioural Mechanisms of Thermoregulation), T. Seeley and B. Heinrich (Regulation of Temperature in the Nests of Social Insects) and B. Heinrich (Ecological and Evolutionary Perspectives) then follow in logical order. There is also a certain amount of repetition of material throughout the book -- but this is forgiveable in a discipline whose modern experimental foundations rest on the seminal contributions of a dozen or fewer workers during the past decade.

Insect Thermoregulation will find itself on many biologist's reading list. The book contains suitable material for undergraduate reading in animal and comparative animal physiology and should be required reading for students of insect physiology.

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BOOK NOTICES

Quist, John A. 1981. Urban Insect Pest Management for Deciduous Trees, Shrubs and Fruits, Pioneer Science Publishers, Box 1301, Greeley, Colorado, 80632, U.S.A. 176 pp. US $20.00.

This 176 page book initiates the first organized approach toward resolving the complicated considerations involved with insect pest management on urban ornamentals. In the past, insect control recommendations have not been sufficiently organized and available to be helpful for urban homeowners interested in ornamental insect control. Among the reasons for this is the great variety of urban ornamentals, and the many insecticides from which to choose. Another reason is that insecticide applications can be difficult to apply when special equipment is unavailable. The purpose of this evaluation is to list the insect pests occurring on the important host plants and provide the simplest approaches to pest control for each host and incorporate these into pest management procedures.

The important native trees and shrubs used as ornamentals are considered, along with horticultural varieties of introduced species. About 50 genera of host plants are discussed representing many plant species. Over 310 species of insects are considered and the relative frequency of injury is estimated. Fifty insecticides have registration for use on these host plants. Insecticide sprays are replaced wherever possible with alternate methods of control or by methods of application that minimize equipment needs. Wherever "spot" sprays will better accomplish the objective, they are suggested as a replacement for the full-cover spray in order to reduce pollution. Pheromone-trap recovery records have become very important pest management procedures. Weekly trap recovery records are used to identify maximum flight periods and thereby time insecticide applications for efficient control and reduced spraying.

Periodic additions to this publication will be made available to each book purchaser so that this book will remain current. These updates will contain new regulatory changes, new product information, and information concerning new research findings.

In addition, a bi-monthly newsletter is being planned that will cover areas of short term and immediate concerns for those persons involved in insect pest management.

Mordue, W., Goldsworthy, G.J. Brady, J., and Blaney, W.M. (1980) Insect Physiology. 108 pp. $16.95 John Wiley and Sons, Toronto.

This slim book is an introductory text offering a general coverage of modern insect physiology for undergraduates. The text is lucid and supplemented with many large (often full page) drawings, graphs, structural formulae and other figures. There is a certain amount of wasted space in the form of blank or nearly blank pages at the ends of sections and blank space on some figures. An entire page is given to a word diagram of the metabolism of ecdysone: a few sentences in the text would have conveyed the same information. Perhaps students can use these spaces for notes, but at 20¢ a page it is expensive copy.

Insect Physiology can be admired in many ways but mostly because it does a good job of conveying factual information and concepts clearly and concisely. There are exceptions, however. In attempting to cover the whole field of insect physiology at an introductory level, the authors occasionally give way to sweeping statements, some of which have no foundation in the literature. For example, on P. 9, it is stated that the hyperglycaemic hormone activates the kinase which converts the inactive form of phosphorylase to its active form. While it is true that phosphorylase in fat body becomes activated after treatment by this hormone, it has never been shown in insects that the effect is due to the activation of a protein kinase. Moreover, the statement is incorrect: the hormone activates adenylate cyclase. It is cyclic AMP produced in the reaction that may or may not activate a specific cyclic AMP -dependent protein kinase in the fat body. Again, on P. 43, it is stated that bursicon increases the permeability of haemocytes to tyrosine, yet none of the original studies in the literature included direct measurements on translocation of tyrosine across a permeability barrier, and none of the accepted criteria for active transport was invoked in these studies. Although Insect Physiology is an introductory text, such lack of rigor in dealing with the literature should be avoided at any level because it ultimately weakens the discipline.

The many commendable features of the book, however, outweigh any of its shortcomings. It is a useful book that fills a need in undergraduate teaching.

Robert P. Bodnaryk

Camatini, Marina (Editor). 1980. Myriapod biology. Academic Press, London, U.K. XVIII + 448 pp. Price (U.S.) $66.00.

This is a collection of 40 papers given at the Fourth International Congress of Myriapodology, held at Gargnano, Italy in 1978. The papers are grouped under subject headings such as Cytogenetics (3 papers), Systematics (6), Anatomy and Embryology (8), Ecology and Biogeography (8), Endocrinology and Life Cycle (6), and Evolution (9). The last section is of broad interest, and includes discussions of the controversial position of the myriapods as a possible stem group for the Hexapoda; contributors to this last include S.M. Manton (Uniramian Evolution, with Particular Reference to the Pleuron), S. Ranzi (On the Origin of the Arthropoda), and A.P. Gupta (Origin and Affinities of Myriapoda).

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Hollis, D. (Editor). 1980. Animal Identification: a Reference Guide. Vol. 3, Insects. British Museum (Natural History) and John Wiley & Sons, U.K. VIII + 160 pp. Cloth bound.

The purpose of this book is "to provide a list of primary references which will enable non-specialists to set about identifying insects from any part of the world". The book is a useful compendium of key world literature for insect identification to family level. It is thoroughly indexed.

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Heie, Ole E. 1980. Fauna Entomologica Scandinavica. Volume 9. The Aphidoidea (Hemiptera) of Fennoscandia and Denmark. I. Scandinavian Science Press Ltd., Klampenborg, Denmark.

Volume 9 of "Fauna entomologica scandinavica" is the first of four planned volumes dealing with the superfamily Aphidoidea of Norway, Sweden, Denmark, Finland and contiguous areas of West Germany and the U.S.S.R. This first volume comprises the introductory chapters to the superfamily and the systematic treatment of the families Mindaridae, Hormaphididae, Thelaxidae, Anoeciidae and Pemphigidae. The next volume will deal with the Drepanosiphidae (including subfamilies Drepanosiphinae, Phyllaphidinae and Chaitophorinae). The third volume will include the Aphididae (Pterocommatinae and Aphidinae:Aphidini), and the final volume the remaining species of Aphididae (Macrosiphini), and the Lachnidae.

This seemingly innocuous first volume is much more than a geographical list of species. It has sections on morphology, systematics, classifications, polymorphism, bionomics and ecology, zoogeography, and collecting and preparation of aphids. A major contribution from Dr. Heie is his historical survey of previous classifications of aphids, and his own proposals for a revised classification. If the next three volumes are as interesting and helpful as this first one, I would earnestly advise all persons working in any way with aphids, to purchase all four volumes.

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Wharton, Robert. 1980. Review of the Nearctic Alysiini (Hymenoptera, Braconidae) with discussion of generic relationships within the tribe. University of California Press, Berkeley, California. (University of California Publications in Entomology, Vol. 88). 112 pp. $15.00.

The Alysiini are a large (1000 + species) and abundant group parasitising Diptera larvae or puparia; many attack economic pests. Now, for the first time in 150 years, here is a classification that contains more than minor adjustments to the Haliday arrangement of the 1830's. The author has applied Hennigian concepts, not a novelty nowadays but new to the Alysiini. This is not a complete revision but mainly a generic synopsis with descriptions of several new genera and species. One of the larger genera, Idiasta and several small genera, are revised. In a large introductory section the author applies statistical analysis to the double problem of variation in the size of various parts among individuals of a species and also variation in the reproducability of the same measurement on an individual specimen and its affect on the confidence that can be placed on single figure ratios as commonly used in keys and descriptions. Workers in unrelated taxonomic fields will find the paper worth purchasing for the introductory section alone.

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Jones, J.C. 1981. The Anatomy of the Grasshopper (Romalea microptera). x + 281. Charles C. Thomas, Springfield, Illinois. $27.50

This is a textbook and laboratory guide to the external and internal anatomy of the grasshopper. It contains invaluable material for laboratory dissection, some of which was heretofore unavailable from older and less complete sources. There are at least 150 well-labelled working line drawings of virtually every aspect of grasshopper anatomy. The accompanying text is excellent. On the one hand, Professor Jones gives helpful, encouraging and even sympathetic guidance for students of insect anatomy. (The more difficult and time-consuming dissections are indicated in the test.) On the other, he presents a meticulous, well-researched and referenced work for teachers and researchers.

The Anatomy of the Grasshopper will be received with enthusiasm by teachers of biology and entomology. Likely, it will be the standard laboratory manual for many generations of students.

Robert P. Bodnaryk

LAIRD, M. 1980. Bibliography of the Natural History of Newfoundland and Labrador. Academic Press, London, September 1980. lxxi + 376 pages, hard cover. $57.50

This bibliography records all published natural history for the Province of Newfoundland and Labrador from early colonization up to the present time. It has been produced at a very opportune time, as interest in this area's biology has never been greater. In compiling this unique bibliography, the author has researched through a vast literature going back far beyond the specialized development of modern botany, zoology and related sciences and disciplines.

As indicated on the dust cover, this bibliography makes available a vast amount of biological information, much of which has been buried, until now, in books whose titles do not reveal that they contain material of natural history interest. In such cases, extensive annotations are supplied. The introductory essay consisting of 71 pages is concerned with particular aspects of the biology of Newfoundland and Labrador. For example, it considers the magnitude of the summer pest problem due to Labrador's mosquitoes, blackflies and other biting Diptera, the history of the Newfoundland dog, and the suggestion that a now extinct sirenian may have accounted for various "mermaid" records from coastal waters around the Province. The bibliography includes previously unpublished photographs and numerous illustrations from little known early maps and books, all arranged and explained by the author in his very capable and unique ("Lairdian") manner.

The format is exceptionally attractive, and binding, printings, maps and figures are of good quality. This bibliography is an essential reference work for natural historians as well as all concerned with the flora, fauna, ecology, fishery and general resource-based industries of northern North America. In addition, it will also provide a valuable reference text for public, university and high school libraries.

Ray F. Morris
St. John's West, Newfoundland

Rose, A.H., and O.H. Lindquist. 1977. Insects of Eastern Spruces, Fir and Hemlock. Canada Dept. Environment, Foresty Service Tech. Rept. 23. 159 pp. $5.00 (Can.), $6.00 (elsewhere).

This is a handbook, or manual, on the pests of spruce, fir, and hemlock in Canada east of the Rockies. It is intended for forest managers, extension workers, and the general public. Illustrations are profuse and colourful, with more than 100 showing healthy or damaged trees, and with nearly as many showing close-up views of the causal organisms. There is little or no synonymy, no maps, and no diagnostic statements to help the reader separate closely similar species. Keys are of the pictorial kind. Control measures are carefully restricted to appropriate kinds of pesticide by mode of action.

C.D. Dondale
B.R.I., Ottawa

Rose, A.H., and O.H. Lindquist. 1980. Insects of Eastern Larch, Cedar and Juniper. Canada Dept. Environment, Foresty Service Tech. Rept. 28. 100 pp. $6.95 (Can.), $8.35 (elsewhere).

This handbook, or manual, has the same scope, purpose, and format as Tech. Rept. 23, but treats the main pests of larch, cedar, and juniper in Canada east of the Rockies.

C.D. Dondale
B.R.I., Ottawa

BOOK RECEIVED

Proceedings of the Entomological Society of Manitoba Volume 36, 1980 (P. S. Barker, ed.). Winnipeg, Manitoba.

BOOK NOTICES

Advances in Insect Physiology, Vol. 15, 1980 (Ed. Berridge, M. J., Treherne, J. E. and Wigglesworth, V. B.) 624 pp. Academic Press, Toronto. $96.00.

Volume 15 of this well-established series includes the following review articles: Transpiration, Temperature and Lipids in Insect Cuticle by A. R. Gilby: Intercellular Junctions in Insect Tissues by N. J. Lane and Helen leB. Skaer; Acetylcholine Receptors of Insects by D. B. Sattelle; Biogenic Amines in the Insect Nervous System by P. D. Evans; Integration and Behaviour and Physiology in Ecdysis by S. E. Reynolds.

A cumulative List of Authors and cumulative List of Chapter Titles is provided for the series in Volume 15.

Robert P. Bodnaryk

Brodsky, K. A. 1980. Mountain Torrent of the TIen Shan. Monographiae Biologicae, Vol. 39: XI + 311 pp. 91 figs., 63 Tables. $79.00 U. S.

This book is a basic natural history of one of the most extreme aquatic habitats, torrential streams in the Tien Shan mountains of central Asia. These streams are characterized by very swift currents (2-4 m sec^{-1}), great seasonal and diurnal fluctuations in discharge and turbidity, surprisingly little annual variation in temperature over most of their length, and, in most cases, isolation from other rivers since they disappear into the surrounding desert. Such conditions support a fauna which is dominated by a unique assemblage of species, many endemic to the area but nonetheless exhibiting morphological and behavioral adaptations typical of the inhabitants of torrential streams throughout the world. The strongest chapters of the book describe and discuss these adaptations with emphasis on the Ephemeroptera, Trichoptera, Blepharoceridae, Deuterophlebiidae and Simuliidae.

The book begins with a general description of the Tien Shan (a map would have been very helpful), the riparian and aquatic flora, hydrology and chemistry, and a definition by example of what the author means by a mountain torrent. After the discussion of the major groups of invertebrates, there is a review of the fauna of the nearby Western Pamirs, a general review of the torrential fauna and the way it reflects environmental conditions, a discussion of vertical zonation and the diet of torrential fish. The approach throughout is essentially qualitative. Though counts per unit area are often given, the author stresses that these indicate only orders of magnitude. Considering the prospect of merely standing in a current of 4 m sec^{-1}, that degree of accuracy seems quite commendable.

Like the others in the series, the book itself is beautifully produced and a joy to handle. There are, however, an unfortunate number of typographical errors and the translation is, to say the least, rough in many places. Editing by an English-speaking biologist could have greatly improved it. This book should be of interest to anyone concerned with the responses of animals to extreme conditions, whether at the level of the species or the community. It is also a point of access to a lot of Russian literature which is otherwise largely unknown. It's worth reading, but, considering the price, ownership might best be left to libraries.

D. R. Barton
Winnipeg, Manitoba

INSECT SLIDE SETS

INSECT AND PLANT DISEASE SLIDES for identification from Photography Division, Office of Information, USDA, Wash., D.C. 20250. Full set, 225 insect and 175 plant diseases, $55. Five subsets can be purchased: Diseases of Agronomic crops (63 slides, $16). Diseases of Hort.Crops (112 slides, $22). Insects of Agronomic Crops and Stored Products (88 slides, $18), Insects of Hort.Crops and Shade and Forest Trees (94 slides, $18.50) and Misc. Insects (Beneficial, Household, Poultry and Livestock, and stinging and biting arthropods (43 slides, $14.50). All sets come with list for easy slide access.

BOOKS RECEIVED

Timberlake, P.H. (1980). Supplementary Studies on the Systematics of the Genus Perdita (Hymenoptera, Andrenidae). Part II. University of California Press, Berkeley, California (University of California Publications in Entomology, Vol. 85). 72 pp. $8.00.

Timberlake, P.H. (1980). Review of North American Exomalopsis (Hymenoptera, Anthophoridae). Parts I-IV. University of California Press, Berkeley, California (University of California Publications in Entomology, Vol. 86). 158 pp. $17.00.

Lindgren, B.S. (1980). Pests of Lodgepole Pine, Pinus contorta, with Particular Reference to Potential Impact in Sweden. Swedish University of Agricultural Sciences, Forest Entomology Reports No. 3. 125 pp. 30- Swedish crowns.

Comptes-Rendus, Vème Colloque d'Arachnologie d'Expression française, Universitat de Bercelona, Barcelona, Spain. 1979. Available from Dr. Maria Rambla, Departamento de Zoologia, Universidad de Barcelona, Barcelona 7, Spain. Price not stated.

Howden, H.F., and O.P. Young (1981). Panamanian Scarabaeinae: taxonomy, distribution, and habits (Coleoptera, Scarabaeidae). Contrib. Amer. Ent. Inst. 18 (1), 204 pp. Available from the senior author (Dept. of Biology, Carleton University, Ottawa, Ontario, K1S 5B6, Canada). $15.00.

Hackman, W. 1980. Enumeratio Dipterorum Fenniae. Notulae Entomologicae, Vol. 60, pp. 17-48 (Nematocera and Brachycera), 117-162 (Cyclorrhapha), 163-164 (Explanatory notes, corrections, and additions). Entomological Exchange Association, Helsinki. Available from Helsingin Hyönteisvaihtoyhdistys, Zool. Mus., P. Rautatiek. 13, SF-00100 Helsinki 10, Finland. Price U.S. $8.00.

PERIODICAL RECEIVED

Litterae Entomologicae (International Magazine of Entomology). This journal wishes to be international rather than national. "Even if you are only interested in insects of your country, it is possible that a foreign entomologist comes and hunts in your region, and discovers there is an insect that he will describe in a magazine of his country! To guard against this kind of disadvantage, Litterae Entomologicae also wants in publishing the "entomological novelties" to be an information magazine. Of course we can't know all [that] is described in the world; it isn't a complete list of new descriptions but a widest possible summary (therefore you can let us know the novelties that you have described or [about which] you have read, and that we have forgotten.....[It] is to become a magazine that would publish only descriptions of all origins, identification tables..... We would be also happy if each author, whatever his language and origin of the studied insects, sends us a summary of his article refering....[to] the name of insect, a short description, the location of capture, his remarks....as well as the name of the magazine that publishes the whole text.....

"As for the [section] of our magazine, "FORUM ENTOMOLOGICAE", its aim is to be used as intermediate between all the entomologists of the world....for exchange of insects or ideas....and the research of information, to organize expeditions, meetings, for the purchase of material, insects, books..... FORUM ENTOMOLOGICAE will be used as intermediate to the formation of an entomological club on a world-wide front". For a copy of the first issue (18 pp.) of 28 February 1981 or for more information contact: Michel Grotz, Editor, Rue des Vennes 250, B-4020 Liège, Belgique/Belgium.

SCHOLARSHIPS FUND

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CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES CODE NUMBERS FOR INSTITUTIONS

During 1979 and 1980 the U.S. Fish & Wildlife Service has begun to certify United States institutions as exempt under provisions of the Convention on International Trade in Endangered Species (CITES) and assign CITES code numbers to such institutions. Bishop Museum wishes you to know that our CITES number is US024. This number must be displayed on all international shipments to Bishop Museum (loan to us, return of Bishop Museum material loaned to you, exchange or gift for Bishop Museum to accession) of any species on the CITES list. Copies of the CITES list are available from the "Management Authority" in your country. Failure to display the CITES code number can result in permanent seizure of the specimens by the U.S. Fish & Wildlife Service or your own wildlife agency.

Similarly, Bishop Museum needs to display your CITES code number on our shipments to you (loans to you, return of material lent to Bishop Museum, exchange or gift for accession in your collection). It would greatly aid us if you would notify us of your CITES number. "Management Authorities" seem to need prompting from the scientific community to begin this registration process. We strongly urge persons and institutions to request their country's "Management Authority" to issue a CITES code number to their institution. In countries that have not signed or ratified the CITES treaty, Bishop Museum understands it is possible to have the CITES Secretariat in Switzerland assign a number to institutions engaging in non-commercial loans or exchanges of museum and herbarium CITES specimens.

We are taking the unusual step of bringing this matter to your attention because of the enormous time and paperwork involved in making loans, exchanges, or gifts of CITES species to institutions without code numbers. After initial experiences with the resulting work, Bishop Museum is forced to consider making loans, exchanges, and gifts of CITES species only to institutions which have CITES code numbers. We urge that you take all feasible steps necessary to obtain a CITES code number.

With sincere hope for continued international cooperation in science, I remain,

Sincerely yours,

Anita Manning, Registrar
Bishop Museum, Box 19000-A
Honolulu, Hawaii 96819
U.S.A.

MEETING ANNOUNCEMENTS

Lepidopterists' Society is meeting from 30 July to 2 August 1981 with the Sociedad Mexicana de Lepidopterologiá which is hosting the meeting at the Hotel Hacienda Cocoyoc in the state of Morelos, Mexico. The meeting site is a 100-acre resort complex, a restoration of the private estate of Hernando Cortez, originally built in 1560. Cocoyoc is near Cuautla about 55 miles south of Mexico City. For further details write to Julian P. Donahue, Natural History Museum, 900 Exposition Blvd., Los Angeles, California 90007, U.S.A.

The 26th annual Southern Forest Insect Work Conference will be held this year at the Gainesville Hilton in Gainesville, Florida, on August 10-13, 1981. As current and projected fuel and fiber demands continue to increase, efficient forest management becomes ever more important. Forest- and pest-management are inseparable in efficient resource management. We think your readers would be interested in our current focus on applied and integrated pest management and would welcome their input into these discussions.

For further details write to Garland N. Mason, Secretary-Treasurer, SFIWC, Southern Forest Experiment Station, Forest Service, US Department of Agriculture, 2500 Shreveport Highway, Pineville, Louisiana 71360, U.S.A.

The annual meeting of the Society for Invertebrate Pathology will be held from 17-21 August 1981 in Bozeman, Montana. For information contact: J.E. Henry, Rangeland Insect Laboratory, Montana State University, Bozeman, MT 59717, U.S.A. phone 994-3344.

The Entomological Society of Saskatchewan will hold its annual meeting on Saturday, 17th October 1981 at the University of Regina, Regina, Saskatchewan. For further information write to D. Peschken, c/o Research Station, Agriculture Canada, Box 440, REGINA, Saskatchewan, S4P 3A2.

Société entomologique du Québec will hold its annual meeting at the Université du Québec à Montréal (UQAM) on 14-16 octobre 1981. For information contact Monsieur Gilles Bonneau, Laboratoire d'entomologique forestière, Complex scientifique du Québec (C-0-1), 2700 rue Einstein, Ste-Foy, Québec, G1P 3W8.

Entomological Society of Manitoba has planned its annual meeting for 5-6 November 1981 at the Freshwater Institute, Winnipeg. For details write to Dr. Robert J. Lamb, Research Station, Agriculture Canada, 195 Dafoe Road, Winnipeg, Manitoba R3T 2M9.

The 9th International Congress, International Union for the Study of Social Insects will be held from 9-13 August 1982 at The University of Colorado. Invited symposia will include: foraging behaviour and pollination; roles of social insects in ecosystems; competition and population dynamics; predation; social parasitism and defence; communication; caste and ergonomics; evolution and ontogeny of eusociality; presocial behaviour; economically important social insects; and neurobiology and behaviour. For information contact: Secretary, IUSSI, EPO Biology, Campus Box 334, University of Colorado, Boulder, CO 80309, U.S.A.

The 5th International Congress of Parasitology will be held from 7-14 August 1982 in Toronto, Canada. Further information may be obtained from Secretariat, I.C.O.P.A-V, Department of Zoology, University of Toronto, Canada M5S 1A1. Telephone (416) 978-6956

The International Colloquium on Invertebrate Pathology and Microbial Control will be held at the University of Sussex, Brighton, UK from 5-10 September 1982. The subject covers applied and fundamental aspects of the pathology of invertebrates, both terrestrial and aquatic. Further information available from Dr. C.C. Payne, Glasshouse Crops Research Institute, Worthing Road, Littlehampton, West Sussex, UK, BN16 3PV phone (09064) 6123.

MEETING ANNOUNCEMENT

* CALL FOR PAPERS *

EASTERN SPRUCE BUDWORM RESEARCH CONFERENCE will be held at the University of Maine, Orono, Maine during week of January 4, 1982.

We invite papers for the following sessions: (1) Implications of spruce budworm epidemics on local, state, and regional economics; (2) The evolution of public policy and forest insect protection programs in North America; (3) Forest management practices and the spruce budworm: A discussion of inplace and experimental management strategies used to minimize the present and future impact of the spruce budworm on the forest; (4) Survey and detection of forest insect defoliators with emphasis on spruce budworm monitoring; (5) The spruce budworm complex and secondary insects: The biology and ecology of Choristoneura fumiferana, its parasites, predators and competitors, including the effects of secondary insects on decadent fir and spruce; (6) Ecological implications of spruce; (6) Ecological implications of spruce budworm control within the forest ecosystem: The effects of chemical, biological and silvicultural controls on non-target organisms; (7) Biological and chemical insecticides: Application technology-efficacy.

Poster presentations are also invited.

For papers to be considered for presentation, a preliminary abstract must be received no later than September 1, 1981. Abstracts will be published as part of the conference program.

Please submit abstracts to: Mr. Philip J. Malerba, Special Projects Forester, St. Regis Paper Company, Northern Timberlands Division, Bucksport, Maine 04416, U.S.A., telephone - (207) 469-3131 Ext. 431.

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

Ref. No.: A.N. (S.) 117 4 March, 1981

The Commission hereby gives six months' notice of the possible use of its plenary powers in the following case, published in Bull. Zool. Nom., Volume 38, part 1, 26 February 1981, and would welcome comments and advice on it from interested zoologists. Correspondence should be addressed to the Secretary, International Commission on Zoological Nomenclature, c/o British Museum (Natural History) Cromwell Road, London, SW7 5BD, U.K. if possible within six months of the date of publication of this notice.

1437 Xenocrepis Foerster, 1856 (Hymenoptera: Chalcidoidea): proposed designation of a type species.

Ref. No.: ITZN 59 4 March, 1981

The following Opinions have been published recently by the International Commission on Zoological Nomenclature in the Bulletin of Zoological Nomenclature, Volume 38, part 1, 26 February 1981.

Opinion No.

1162 (p.49) Schizoneura meunieri Heie, 1969 (Insecta: Hemiptera): conserved under the plenary powers.

1164 (p.57) Refusal of request to suppress Calomicrus taeniatus Wollaston, 1867 (Insecta: Coleoptera).

1166 (p.64) Liparthrum Wollaston, 1854 (Coleoptera, Scolytidae): conserved.

1167 (p.67) Phloeosinus Chapuis, 1869 (Coleoptera, Scolytidae): conserved.

The Commission regrets that it cannot supply separates of Opinions.

R.V. Melville,
Secretary.

ENTOMOLOGISTS AVAILABLE

ENTOMOLOGISTES DISPONIBLES

The Employment Committee of the Entomological Society of Canada has published the 1981 edition of the booklet containing the resumés of members who are looking for employment. A copy of this booklet has been sent to all present employers of entomologists in Canada, including all Agriculture Canada and Environment Canada research stations, as well as the chairman of all university biology departments. If you are an employer of entomologists and do not have access to this publication, a copy may be obtained from:

The Chairman
Employment Committee (Entomological Society of Canada)
Department of Environmental Biology
University of Guelph
Guelph, Ontario
N1G 2W1

Le Comité de L'Emploi de la Societé Entomologique du Canada a publié un 1981 édition d'un livret contenant les c.v. des membres à la recherche d'un emploi. Une copie de cette publication a été envoyée à tous les employeurs d'entomologistes au Canada, y inclus Agriculture Canada et Environnement Canada, ainsi qu'aux directeurs des départements de Biologie. Si vous n'avez pas accès à cette publication, vous pouvez en obtenir une copie à l'adresse ci-dessus.

EMPLOYMENT — EMPLOIS

POSITIONS AVAILABLE

APICULTURE: The Department of Environmental Biology, University of Guelph, has been authorized to recruit two faculty members to have major responsibilities for the International Programs in Apiculture. The positions are at the Assistant Professor level: one will be a probationary appointment, the other on a two-year contractual basis.

Responsibilities of the positions will include:

(a) Direction of ongoing programs in apiculture in developing countries.
(b) Development of new projects in developing countries and expansion of existing ones to improve local apiculture.
(c) Training of students from developing countries.
(d) Participation in the teaching and research programs for the department.

It is envisioned that the positions will be about 60% in international apiculture and 40% in research and teaching within the department.

Qualifications: A Ph.D. in apiculture and some experience, preferably in international apiculture. Willingness to travel extensively and work in developing countries.

Applications should include a complete resumé and the names of three references and should be sent to: F.L. McEwen, Department of Environmental Biology, University of Guelph, Guelph, Ontario, Canada, N1G 2W1.

Closing date: July 1, 1981.
Appointment subject to final budgetary approval. Contingent upon the availability of funds, the positions will be available as soon as suitable candidates are found.

"EARTHWATCH" NEEDS ENTOMOLOGISTS

Earthwatch has several expeditions that need entomologists. Social Insects of the Rain Forest, Rain Forests of Belize, and the Exploration of the Baja are the ones coming up with disciplines in entomology. Only members of Earthwatch go on expeditions. For more information, contact the EARTHWATCH office, 10 Juniper Rd., Box 127, Belmont, MA 02178, U.S.A.

OFFICERS OF AFFILIATED SOCIETIES

The Acadian Entomological Society (to April 1982)

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Secretary-Treasurer: Dr. Gilles Boiteau
Research Station, Agriculture Canada
P. O. Box 20280, Fredericton, N. B. E3B 4Z7
(506) 452-3260
Directors to ESC: Dr. R. H. Storch (To October 1981)
Dr. J. H. Herbert (From October 1981)

Société entomologique du Québec (to oct. 1981)

President: Dr. André Francoeur
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Laboratoire d'entomologie forestière
Complexe scientifique du Québec (C-0-1)
2700 rue Einstein
Ste-Foy, Québec G1P 3W8 (418) 643-2380
Trésorier: Monsieur Claude Bouchard
Editeur des Annales: Dr. Jean-Guy Pilon
Représentant à la SEC: Dr. Pierre-Paul Harper

Entomological Society of Manitoba (to Nov. 1981)

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Entomological Society of Saskatchewan (to Oct. 1981)

President: Dr. Alfred P. Arthur
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(for Entomological Societies of Ontario, Alberta and British Columbia see December 1980 Bulletin - p. 112

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*Because essential submissions were received by the editor as late as 18 days after the 15-May deadline, this Bulletin issue went to the McMaster University printer on 3 June. Please provide submissions for the September Bulletin on or before 15 August.