

Entomological Society of Canada  
Soci t  Entomologique du Canada

*Bulletin*

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H. J. Liu                      Bulletin Editor

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## FROM THE PRESIDENT

At the 1981 annual meeting in Banff the Governing Board requested the Finance Committee and the Treasurer to review with the auditors procedures for the preparation of all financial statements in a consistent format, to discuss with the auditors the format of their report, and to review the use of the Society's reserve funds. As a result of that review, a new auditor, McCay, Duff & Co. of Ottawa, was engaged to repeat the 1981 audit and to recommend improvements in the Society's over-all accounting operations. Their auditor's report for the year ended December 31, 1981 appeared in the June '82 Bulletin (14(2):44-45), and it is evident that the end-of-year audit can now be examined under the same categories in which the budget is proposed at the beginning of the year (cf. Bull. 14(2):46). Beginning in January of this year a new general ledger system of bookkeeping was implemented under the auditor's direction. Treasurer E.C. Becker and the Finance Committee under Chairman J.M. Campbell must be thanked for their diligent response in recent months to the requests from the Governing Board.

The changes have the added advantage that financial statements for certain parts of the Society's activities, such as publishing the Canadian Entomologist or the Memoirs, can be readily extracted. Necessarily, the Treasurer must make some educated approximations for apportioning certain items of income and expenditures to appropriate sectors. Thus \$25 of each \$35 regular membership is attributed to Society affairs and \$10 to The Canadian Entomologist; overhead costs of the Society's office are divided equally between Society affairs and those of The Canadian Entomologist, as are audit fees; the managing editor's time is apportioned between Can. Ent. and Memoirs; and interest received on reserve funds invested is attributed to Society affairs apart from publishing. These assignments having been made, the audited statement for 1981 shows a net loss of \$4800 from a gross income of \$289,221 and a gross expenditure of \$294,021. For 1980 a net gain of \$40,986 was recorded, including \$25,779 from investment interest. The 1981 statement shows a loss of \$8327 for publishing the Canadian Entomologist, even including the NSERC grant of \$27,000. A loss of \$8960 was incurred for Memoirs and other publications, although 1981 saw publication of Arctic Arthropods and the Arctic Bibliography at a cost to the Society of \$25,157; it is expected that at least all of this original investment will be eventually returned through sale of these publications. Providing that an effective marketing system can be developed to recover initial costs and some profit, this sector of the Society's publication affairs would become the base from which other publishing initiatives could be undertaken. Society affairs apart from publishing showed a net profit of \$12,487 for 1981; it will be noted, however, that without the interest of \$34,930 from invested reserve funds, a substantial loss would have been incurred on the basis of income for 1981 alone.

The Finance Committee reviewed the use of reserve funds (\$254,794 at the close of 1981) and unanimously recommended that as an operational policy the Society should budget to maintain an investment fund equal approximately to expenditures for one year (\$294,021 for 1981). The Committee emphasized that many of the activities now being undertaken by the Society could not be supported without the guarantee of the existing investment fund. The following uses of the Fund were emphasized.

1. Revenues and expenditures fluctuate annually. In the absence of an investment fund, annual subscription fees, dues and page charges would have to be increased more frequently to make up for predicted increased expenditures and to avoid borrowing money at high interest rates. With an investment fund, the Society can sustain greater fluctuations in income and expenditures even though on a longer term they would balance.
2. The fund enables the Society to undertake initiatives requiring advance funding with revenue to be recovered over a longer period of time, e.g. publication of Arctic Arthropods, ESC government contracts.
3. Undertakings of the Society to support projects of concern to the entomological community can be subsidized, e.g. the recent transfer of \$10,000 from the reserve to the Scholarship Fund.

and a partial hedge against inflation. To generate this amount of revenue without the fund would require raising each subscription and membership some \$15.

5. The Society gains considerable freedom from outside agencies, particularly government, where decisions regarding funding of page charges, NSERC grants, etc. could have disastrous short-term effects without access to a fund to compensate for unexpected losses in revenue. For example, a recent decision by the Canada Department of Agriculture to reduce publication costs for monographic works published in the *Memoirs* would almost certainly have caused the end of that series if additional short-term revenue had not been available.
6. Reserve funds allow updating of equipment and facilities, when necessary, which would require substantial amounts of capital for one year but would serve the Society for a number of years.

The Finance Committee further recommended that at least 20% of the investment fund be retained in liquid assets available at short notice. Currently the bulk of the fund is in long-term bonds, and these monies are being placed in higher-yielding guaranteed investment certificates as the bonds become mature.

The Entomological Society of Canada is fortunate in having the assets that it does, but these must be balanced against its activities: publishing, operation of a permanent office with salaried employees, Governing Board and committee expenses, government contracts, annual meetings and awards. Having regard to the scope and commitment of these activities, and to current general increases in costs, the reserve fund is not large; and prudent financial management will be required to maintain the increasingly complex undertakings and obligations of the Society.

Glen B. Wiggins  
President

## AWARDS

### EUGENE GORDON MUNROE, GOLD MEDAL RECIPIENT



(photo by Karsh, Ottawa)

The ESC Gold Medal for outstanding achievement in Canadian entomology is awarded, in 1982, to Doctor Eugene Gordon Munroe, and is presented at the Joint Meeting ESA, ESC, ESO, Toronto, Ontario on November 30, 1982. Dr. Munroe is an honorary research associate in the Lyman Entomological Museum and Research Laboratory of McGill University and was for many years until his retirement in 1979 a distinguished entomologist of the Biosystematics Research Institute, Ottawa.

Eugene Munroe is honoured in the first place as an entomologist who has contributed very extensively to the taxonomy and systematics of his chosen group of insects, the Lepidoptera. But his active and retentive mind and his broad biological interests, and his interest also in the progress of his discipline and the general affairs of science, have offered many other avenues of accomplishment and service, on the personal level and in numerous special appointments.

Interested in entomology from earliest youth, Eugene Munroe first collected and studied Lepidoptera under the guidance of Albert A. Winn and George A. Moore at the Lyman Entomological Room, then a part of the Redpath Museum, McGill University. On graduation from high school he visited museums

in England and France and met such authorities as Lord Rothschild, Karl Jordan, W.H.T. Tams, and Fd. Le Cerf. Then followed six months in South and East Africa, spent in field and museum work under the guidance of J.C. Faure, A.J.T. Janse, G. van Son and A.J. Hesse. He entered McGill in 1936 at the age of sixteen and studied under H.B. Fantham, V.C. Wynne-Edwards and N.J. Berrill. In the summers of 1937 and 1938 he collected Lepidoptera in the West Indies and Guayana, and discovered in doing so a lifelong interest in biogeography. These trips led to visits to numerous museums in the U.S. where he met F.E. Lutz, Frank Watson, Wm. P. Comstock, Wm. T.M. Forbes, Andrey Avinoff, and later P.J. Darlington, Jr. and V. Nabokov, all of whom influenced his development; in Canada he visited the National Collection and met J.H. McDunnough and others who later became his colleagues. He graduated from McGill in 1940, with first class honours in Zoology. His master's thesis, under the direction of Prof. E.M. DuPorte, was on the tiger moth genus *Apantesis*. His doctoral work at Cornell, under Wm. T.M. Forbes, returned to his interest in the geography of West Indian butterflies. The thesis provided the basis for several subsequent papers, including the important and still influential study of the classification of the Papilionidae (Memoir 17, E.S.C., 1961). An excerpt, dealing with the theory of island biogeography, was quoted at the Royal Entomological Society of London's Symposium on the Biology of Rhopalocera as recently as 1981.

During the war, Munroe served as a medical entomologist in the Western Canada Plague Survey, at R.C.A.F. Headquarters, and at the Tri-Service Tropical Medicine School. From 1947 to 1950 he worked under Dr. T.W.M. Cameron at the Institute of Parasitology, Macdonald College, on parasitic nematodes, and during this period he also took part in expeditions of the Northern Insect Survey.

In 1950 he moved to the Systematic Entomology Unit, Canada Department of Agriculture. There, under the stimulating direction of George P. Holland, his research developed rapidly. He specialized in the systematics of the moth family Pyralidae but worked also on Geometridae, Saturniidae, Sphingidae and Rhopalocera, and on the orders Megaloptera and Trichoptera. These studies led to a long series of taxonomic publications, including monographs of the North American Odontiinae, the North American species of *Udea*, the European corn borer and allies (with A. Mutuura), *Epicorsia* and related genera, the subfamily Midilinae, and the genera *Vitessa*, *Cosmethella* and *Vitessidia* (with Michael Schaffer), and numerous shorter contributions. He has written five fascicles of the comprehensive illustrated series *The Moths of America North of Mexico*, monographing the subfamilies Scopariinae, Nymphulinae, Odontiinae and part of the Pyraustinae, describing many new genera and species, and giving an overall classification of the subfamilies and higher divisions of the Pyraloidea. Important general works include a conspectus of the Canadian Lepidoptera in *Danks' Canada and its Insect Fauna* (Memoir 108, E.S.C. 1979); the Pyraloidea and Pterophoroidea in the *Wedge Foundation's Check List of the Lepidoptera of America North of Mexico*, and the long section on Lepidoptera in the recently published McGraw-Hill *Synopsis and Classification of Living Organisms*. His publications to date comprise about 150 research papers and 60 related works.

Munroe has been an active collector and curator. He has made field and museum studies throughout North America, and has collected also in western Europe, and widely in Africa, Asia, the Pacific Islands, and tropical America, and has worked at museums in many countries. He developed the organized North American Pyralidae of the Canadian National Collection from 40 drawers to some 300 drawers, and the organized exotic Pyralidae from 15 Schmidt boxes to about 1000 drawers, as well as acquiring extensive material yet to be organized.

Although primarily a taxonomist, Munroe has been active in several related fields. He was for some years a member of the International Commission on Zoological Nomenclature. He has published on the theory and methods of systematics and on theoretical and practical biogeography. *Canada as an Environment for Insect Life* was written as a background paper for the Tenth International Congress of Entomology in 1956, and more recently has proved a valuable resource for the Biological Survey of Canada. Invitation papers on other aspects of insect geography were presented at the 18th International Congress of Zoology, 1963, in the Annual Review of Entomology, 1965, and elsewhere. In 1960 he conducted a seminar course on biogeography at the University of California, Berkeley. For some time he was informally

forestry and was in particular close touch with the Forest Service. He was consulted also when genetic control as a means of limiting populations of insects was proposed by J.A. Downes. His contributions to applied entomology include summarizing chapters for the Review of Biological Control Programs in Canada, 1959 - 1968 (Commonwealth Agricultural Bureaux, 1971) and for the Second Beltsville Symposium on Agricultural Research (published 1972).

Fairly early in his career he was drawn into administrative activities. He was a director and later chairman of the Classification and Salaries Committee of the Professional Institute of the Public Service of Canada at the time the present Research Scientist series was founded and salary parity for agricultural scientists in government was obtained. He was chief of the Systematic Entomology Unit of the Entomology Research Institute from 1959 to 1965. He was then appointed the first Science Adviser to the Science Secretariat of the Privy Council Office. He rose there to Principal Scientific Adviser and Head of Studies but decided after three years to return to research in the Entomology Research Institute, an activity that he found more fulfilling.

Munroe also has a long record of service to the Entomological Society of Canada. He was editor of The Canadian Entomologist from 1958 to 1961 and was president of the Society in 1964, as well as acting for the seriously ill president, C.W. Farstad, during much of the previous year when the Centennial of Entomology in Canada was celebrated. Later he became the first chairman of the Finance Committee, and subsequently chairman of the Science Policy Committee; he has also served as a representative on the Biological Council of Canada. He participated in the launching of the project for the Biological Survey of Canada, and is still active in Society affairs.

He is a fellow of the Royal Society of Canada (elected 1966), a fellow of the Entomological Society of Canada (as well as a member of the Entomological Societies of Quebec and Ontario), an honorary life member and a former president of the Lepidopterists' Society, a socio de honor of the Sociedad Hispano-Luso-Americana de Entomologia, and a recipient of the Queen's Silver Jubilee Medal; he is also a member of several other entomological and biological societies.

Munroe retired from the Biosystematics Research Institute in 1979 at the age of 60, to gain greater freedom for research and travel. He holds, as already noted, a research associateship at the Lyman Entomological Museum, but still lives near Ottawa and makes frequent visits to the Biosystematics Research Institute. He is chairman of the Editorial Board of The Moths of America North of Mexico and managing director of the Wedge Entomological Research Foundation. He maintains numerous research projects on the systematics of Pyralidae, and continues also to be consulted extensively by confreres on entomological, biological, nomenclatorial, administrative, and policy questions. The Society, in congratulating Doctor Munroe on a fruitful and varied career, offers him also its best wishes for many future achievements.

## STEPHEN SOLOMON TOBE,

### C. GORDON HEWITT AWARD RECIPIENT



The 1982 recipient of the ESC C. Gordon Hewitt Award for outstanding achievement in Canadian Entomology by an individual less than 40 years old is Dr. Stephen S. Tobe, Professor of Zoology, University of Toronto.

Stephen S. Tobe was born in Niagara-on-the-Lake, Ontario in 1944. He received a B.Sc. with honours from Queen's University in 1967, a M.Sc. in Insect Physiology from York University in 1969, and a Ph.D. in Parasitology from McGill University in 1972. An outstanding scholar, he received 3 awards from the National Research Council; a Bursary in 1968-70, a Scholarship in 1970-72, and a Post-Doctoral Fellowship for the years 1972-74. In 1974 he won second prize in the Entomological Society of Canada's writing contest.

Dr. Tobe's M.Sc. work was done in Professor B.G. Loughton's laboratory. He investigated haemolymph protein metabolism in locusts, leading to the subsequent publication of five research papers. His Ph.D. work was concerned with the reproductive physiology of the tsetse fly, the vector of sleeping sickness in Africa. This insect does not lay eggs, but produces eggs one at a time and retains them in a uterus where the larva hatches and grows to maturity by feeding on secretions of a specialized milk gland. Dr. Tobe was among the first to engage in detailed study of this process. He continued to work for a time; and has published under joint authorship an important review and nine research papers.

Dr. Tobe did post-doctoral work at the University of Sussex in collaboration with Dr. G.E. Pratt. This work led to the development of a simple and rapid method for assaying juvenile hormone synthesis and release by insect corpora allata. This research represents a breakthrough in the study of insect endocrine glands and their regulation, since it became possible to measure, for the first time, the rate of juvenile hormone secretion in individual animals. Such a radiochemical assay system provides the means not only to correlate hormone synthesis with developmental and reproductive events, but also to study the effect of experimental manipulations on hormone secretion. At the present time, at least two dozen laboratories around the world are routinely utilizing their assay for juvenile hormone synthesis, including laboratories in Canada, U.S.A., Great Britain, France, Holland, West Germany, Switzerland and Belgium.

The assay has proven to be an enormously powerful tool in the study of endocrine gland regulation in insects. Since 1974 Dr. Tobe has been able to study regulation of the corpus allatum with the precision and ease hitherto impossible. This has led to previously unexpected insights into endocrine regulation as well as to the shattering of a number of conventional dogmas in the field of insect physiology. Some of these are outlined below.

It had been believed that the insect corpus allatum was able to store hormone for release at appropriate times. Drs. Tobe and Pratt demonstrated that no storage of juvenile hormone occurs -- it is released as soon as it is synthesized. Release rate is directly related to rate of synthesis.

Many workers have utilized glandular volume as an indication of synthetic activity of the corpus allatum. Drs. Tobe and Pratt demonstrated that there is no correlation between these parameters and hence glandular volume cannot be used as an interpolative tool.

Drs. Tobe, Pratt and Barbara Stay have demonstrated a correlation between juvenile hormone secretion and egg development. This correlation is so exact that egg length can be used as a precise indicator of corpus allatum activity

mode of action of an insect growth regulator. Drs. Tobe and Pratt with Ms. C.S. Chapman found that surgical transection of the major nerve innervating the corpus allatum resulted in a very rapid loss in the ability of the glands to synthesize juvenile hormone. Hence experiments utilizing implanted glands were doomed to failure in this species; this finding permitted a reinterpretation of previous data on the effects of juvenile hormone on development and reproduction.

Dr. Tobe has observed that contrary to the widely held belief that endocrine glands function symmetrically, insect corpora allata secretion is dramatically asymmetric. This observation has provided valuable insights into the mechanisms of regulation of these glands. Even in insects with precisely regulated glands, asymmetry still occurs and can account for much of the apparent endocrine gland variability reported in the literature; asymmetric functioning and endocrine glands can also be correlated with reproductive strategy. In addition, this observation precludes the hitherto common practice of using one member of a pair of corpora allata as an internal control during experimental manipulation of the other glands.

Some recent work from Dr. Tobe's laboratory has also called into question the classical dogma of the role of the juvenile hormone in metamorphosis in hemimetabolous insects. He has shown that not only is hormone synthesis surprisingly high in the last larval instars but that this enhanced activity may directly influence the reproductive potential of the adult female. It is not clear how metamorphosis ensues in the presence of elevated juvenile hormone titres, but this area could prove an exciting area of research.

Dr. Tobe's work has provided significant insights into the regulation of the corpus allatum in a series of recent experiments. Firstly, he has conclusively demonstrated that electrical stimulation of the neurosecretory cell region of the brain (the pars intercerebralis) stimulates juvenile hormone synthesis in a precise, rapid and reproductive fashion. This is the first direct demonstration of such an effect and should provide the basis for an assay for the elusive neurohormonal factors which stimulate hormone synthesis.

Secondly, cross-reactivity to the inhibitory vertebrate peptide hormone, somatostatin, has been observed in the cerebral neurosecretory cells and the region adjacent to the corpora allata. Such a demonstration is indeed surprising and subsequent experiments with somatostatin *in vitro* have indicated that this vertebrate hormone is indeed capable of modulating the activity of insect endocrine glands. These unexpected findings could represent a breakthrough in the search for the natural regulators of insect endocrine glands.

The assay developed by Drs. Tobe and Pratt and their associated knowledge of feedback loops and regulators may be of great value in the development of novel compounds for pest control, including anti-juvenile hormones and hormone mimics. Their pioneering work in this area resulted in the elucidation of the mode of action of one hormone analogue and this and related analogues are now being produced commercially to control urban insect pests.

Dr. Tobe brings to his work remarkable intellectual gifts, an unflagging enthusiasm for his subject, and an organizational ability which has enabled him to marshal the considerable human and other resources necessary for his research. Dr. Tobe is a superb experimentalist and his major contributions continue to be the devising of novel and effective experimental approaches to current problems. Although he usually publishes in association with other individuals, Dr. Tobe provides the driving force in this work.

Dr. Tobe is an inspiring teacher of graduate and undergraduate students and has made important contributions to curriculum development within the University of Toronto. He has contributed to public education about biology and entomology through numerous radio and television appearances. In addition, Dr. Tobe was Editor of "The Bulletin" of the Canadian Society of Zoologists, and is Associate Editor of the Canadian Journal of Zoology, and is on the Editorial Board of the Journal of Insect Physiology.

In recognition of his outstanding contributions to Canadian Entomology, the Entomological Society of Canada is pleased to present Stephen S. Tobe with the C. Gordon Hewitt Award for 1982, at the Joint Meeting ESA, ESC, ESO, Toronto, Ontario, November 30, 1982.

## NEW HONORARY MEMBERS

Dr. M.D. "Jinx" Proverbs



'Jinx' received his Ph.D. from McGill University and was employed by Agriculture Canada at Summerland from 1951 until his retirement in 1980. His principal research was on control of codling moth by the sterility method and he became an international authority on autocidal control. In 1965, he was assigned as coordinator and advisor for programs on control of insects by the male sterility principle by the international Atomic Energy Agency and spent a year in Vienna, Austria. He was consulted by many agencies and countries on the sterility principle, trained a number of overseas scientists and evaluated sterility programs for several countries. Among these assignments were Trinidad and Jamaica 1960, Gainesville, Florida 1969, Budapest, Hungary 1970, Volcani Institute, Israel 1973, Wadenswil, The Netherlands 1973,

Athens, Greece 1974, and Heidelberg, Germany 1977. He presented invitational papers, and participated in seminars and symposia at scientific societies in Canada, the U.S., England, Europe, New Zealand, Australia, Greece and other countries.

He was awarded the Lockheed Memorial Prize from McGill University in 1944 and received the Canadian Silver Jubilee Medal in 1977.

Dr. Arthur Grant Robinson



Dr. Robinson's career in entomology began in 1948, when he worked as a summer student at Agriculture Canada Research Station, Morden, Manitoba. He continued to work for Agriculture Canada during the summers of 1949 - 1952 at the Brandon Research Station. After spending a year at the Agriculture Canada Research Station, Vineland, Ontario, Grant joined the University of Manitoba as an Assistant Professor of Entomology in 1953. He became an Associate Professor in 1957 and a Professor in 1966. From 1977 until his retirement in August 1981, he served as Head, Department of Entomology, University of Manitoba.

Dr. Robinson has had a distinguished career in teaching and administration at the University of Manitoba and an outstanding career as a researcher in insect biosystematics and economic entomology. In addition, Grant has made major contributions to extension entomology in Manitoba and to entomological affairs in Canada through his active participation in the Entomological Societies of Manitoba and Canada.



## PERSONALIA

Carl B. Huffaker, past-president, Entomological Society of America has been recognized by his peers by being elected to the National Academy of Sciences. He has been active in national and international affairs. He is a member of the Global International Organization for Biological Control being its president from 1972-76. He served on a US/USSR Integrated Pest Management Committee that organized a joint research and exchange effort in this field. In this area he has also contributed to conferences and working task forces of the Food and Agricultural Organization and the UN Environment Program. We congratulate this ESC member. (excerpted from ESA Newsletter 5(6):1,7. June 1982).

Daniel B. Bartell is the new assistant dean for resident instructions at Montana State University. He was previously involved in teaching and research in the Department of Entomology, Texas Tech. Congratulations to this ESC member.

The Department of Environmental Biology, University of Guelph, Ontario, has bid farewell to two of its favourite teachers who retired this summer. David H. Pengelly introduced a whole generation of undergraduates to the study of insects, through his courses in taxonomy, morphology and ecology. Thanks to his influence, many of these same students proceeded to graduate work and to careers in entomology. His graduate students worked in systematics, and on several aspects of the biology of social insects. Dave is remembered also for the many years that he served the Entomological Society of Ontario as Secretary and Treasurer. Stuart E. Dixon helped develop many an enquiring mind through his enthusiastic approach to insect physiology. Over the years, Stu, his graduate students and postdoctoral fellows studied the control of reproduction in the American cockroach and caste differentiation in the honeybee. We send our very best wishes to Dave, Stu, and their families.

Garry H. Whitfield has joined the staff of the Agriculture Canada Research Station, Lethbridge, as a Research Scientist. Garry will be investigating the ecology of the insect pests associated with crops, such as sugar beets and sweet corn, which are grown under irrigation in southern Alberta. Although originally from Ontario, Garry obtained his Ph.D. degree from Michigan State University, where he studied aspects of the population biology of the onion maggot.

Recently, two systematists accepted appointments at Canadian universities. Robert Roughley is now Assistant Professor in the Department of Entomology, University of Manitoba. Before leaving for Winnipeg, Rob was completing his Ph.D. thesis on systematics of the water beetle genus Dytiscus, in the Department of Entomology, University of Alberta, Edmonton. He will now be responsible for graduate and undergraduate teaching in insect taxonomy and crop protection, and will be continuing his research on the taxonomy of aquatic beetles. Stephen Marshall has assumed the duties of Assistant Professor in the Department of Environmental Biology, University of Guelph, Ontario. Until recently, Steve was studying systematics of the Sphaeroceridae (Diptera) towards his Ph.D. degree, also in the Department of Environmental Biology. His new responsibilities will include teaching undergraduate courses in systematics, and developing graduate courses. He will be continuing his research on Diptera involved in decomposition. Congratulations Rob and Steve.

Faculty and graduate students of the Department of Entomology, University of Alberta, Edmonton, having endured a particularly cold and snowy winter, departed to study insects in several regions of America and Europe this spring and summer. Ronald Gooding got an early start, and proceeded to Antwerp, Belgium, where he studied tsetse flies and the transmission of trypanosomes.

Carabids were collected by George Ball and David Maddison in Arizona and northern Mexico, and by Felix Sperling in Ecuador. W. George Evans left to study carabids also, but at the University of Victoria, B.C., where he is spending a sabbatical year. Three graduate students headed for the southern United States: Robert Anderson to collect weevils, Gary Gibson in quest of microhymenoptera, and James O'Hara after tachinids. Eastern Canada was visited by Jean-Francois Landry, who is studying microlepidoptera. And, yes, some even went north: Jeffrey Cumming to Lesser Slave Lake where he collected aculeate Hymenoptera, and Douglas Currie with Eric Maw who collected blackflies in the Yukon Territory.

Students in the Master of Pest Management Program, Simon Fraser University, Burnaby, British Columbia, gained experience in both theoretical and practical aspects of pest management in numerous off-campus trips this past summer. This part of their professional course program included not only 1 to 2 day group outings to public and private-sector institutions and a day spent individually with an urban pest control operator, but also several visits of longer duration. Two weeks each were spent at Agriculture Canada Research Stations at Summerland, British Columbia, and Lethbridge, Alberta. A 4-day visit to the British Columbia Forestry Service, Cowichan Lake Experiment Station was arranged also.

## REPORTS FROM COMMITTEES

### Elections Committee

The Secretary mailed 888 ballots to members. Of these, 404 were received on or before July 15, 1982. On July 19, these ballots were opened and counted and these are the results.

For Second Vice-President: S.B. McIver is elected.

For Directors-at-Large: J.M. Campbell and J.A. McLean are elected.

For the Fellowship Selection Committee: J.A. Downes and D.K. McE. Kevan are elected.

On the Honorary Membership ratification vote: M.D. Proverbs and A.G. Robinson were ratified.

On the matter of the By-Laws: The proposed revision was approved by a majority greater than 2/3 of the total votes cast. One ballot was spoiled.

F.M. Barrett (Chairman)  
D. Barnes  
D.L. Gibo

## NEWS OF ORGANIZATIONS

### Commonwealth Institute of Entomology

The Institute played a unique role in applied entomology since it was founded some 70 years ago to provide information on insects and other arthropods of importance to humans, and to stimulate research on them.

These have remained the primary objectives of the organization throughout various changes of name and status, and increases in size and scope.

The Institute is now one of four Institutes and ten Bureaux comprising the Commonwealth Agricultural Bureau (CAB), an organization sponsored by member Commonwealth Governments for the collection, collation and international dissemination of information of value to agricultural scientists and biologists world-wide. It achieves its aims by means of three services:

1) Publications:

The Review of Applied Entomology  
Series A (Agricultural) and B (Medical and Veterinary)  
The Bulletin of Entomological Research  
Distribution Maps of Pests (world distribution maps)  
Miscellaneous Publications  
Systematic Monographs

2) Taxonomic Services

CIE's Identification Service - world insects  
International Training Courses  
Consultancy - planning and execution of survey projects  
Information - specific problems about economically important arthropods

3) Library Services

Computerized Information Retrieval from CAB Abstracts Database - publishes Review etc.  
Retrospective Searches - for material prior to start of Database  
Annotated Bibliographies - collections of abstracts on a particular topic  
Document Delivery - can supply photocopies of almost every paper abstracted in the Review.  
CIE Library - extensive; use best by appointment  
Micrographics - can produce, duplicate and enlarge most types of microform

For further information on any of the services write to: Commonwealth Institute of Entomology, 56 Queens Gate, London SW7 5JR, UK.

Science For Peace

This Toronto-based organization states as its objectives:

- to raise awareness, especially among Canadian scientists and educators, of the clear and present danger of war waged with weapons of mass destruction, especially nuclear weapons;
- to make specific proposals towards reducing the danger of war;
- to encourage scientific activities directed towards peace, and to urge the publication and dissemination of the findings of peace research;
- to encourage educational activities directed towards peace;
- to interact with other expert groups for exchange of information, and for educational and research activities;
- to provide scientific and technical advice to other groups having compatible objectives.

Interested members of ESC may write to Science For Peace, Department of Physics, University of Toronto, Toronto, Ontario, M5S 1A7, for information regarding membership and activities.

International Commission on Zoological Nomenclature

Reference: ITZN 11/4 (A.N.(S.) 122

16 June, 1982

The Commission hereby gives six months notice of the possible use of its plenary powers in the following cases, published in the Bulletin of Zoological Nomenclature, volume 39, part 2, on 15 June, 1982, and would welcome comments and advice on them from interested zoologists. Correspondence should be addressed to the Secretary, 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.

Case No

- 327 Revived proposal for the suppression of the Aphid names of Rafinesque under the plenary powers (Insecta, Hemiptera, Aphididae).

Reference: ITZN 59

16 June, 1982

The following Opinions have been published by the International Commission on Zoological Nomenclature in the Bulletin of Zoological Nomenclature, volume 39, part 2, on 15 June, 1982:

Opinion No.

- 1203 (p.95) ERIOCOCCIDAE Cockerell, 1899 conserved; type species designated for Eriococcus Targioni-Tozzetti, 1868 (Insecta, Homoptera).
- 1204 (p.99) Acrydium undulatum J. Sowerby, 1806 (Insecta, Orthoptera): placed on the Official List.
- 1208 (p.109) Goniurellia Hendel, 1927 (Insecta, Diptera): designation of type species.
- 1213 (p.122) Toxorhynchites brevipalpis Theobald, 1901 (Insecta, Diptera): conserved.

R.V. Melville,  
Secretary

**JOINT MEETING: UPDATE**



The Program Committee met in Toronto, July 19 - 21, 1982, and finalized the program for the Joint Meeting of the Entomological Society of America, Entomological Society of Canada, and Entomological Society of Ontario at the Royal York Hotel, Toronto, November 29 - December 3.

The meeting will open officially on Monday evening at 7:30 p.m., although a number of events will occur earlier. The official opening will be highlighted by an address by each of the Society presidents: S.D. Beck (ESA); G.B. Wiggins (ESC), and R. Harmsen (ESO). Following the official opening registrants will be treated to a wine and cheese reception starting at 9:00 p.m. and this will gradually evolve into dancing to a live orchestra until 1:00 a.m.

Tuesday morning, bright and alert, registrants will attend the Plenary session where awards, other than to students, will be presented and Joint Meeting business of a general nature attended to. Following a brief recess the plenary session will reconvene to hear the Founders' Memorial Award Lecture and the Gold Medal Award address.

Regular section programming begins on Tuesday afternoon and between then and noon on Friday almost 900 submitted presentations, 27 symposia and formal conferences, 34 workshops and conferences and a wide variety of meetings will

have been held. It promises to be an excellent meeting and while there are many concurrent sessions, accommodations are such that these should run smoothly, with adequate meeting rooms and, hopefully, a minimum of conflicts.

In a meeting with so many special events, highlights are hard to identify since these will differ with the interest of the registrant. Two features of this meeting, however, are worthy of special note. One of these recognizes the contributions of students to the societies. On Wednesday morning 128 students will present papers in the President's Prize Competition. This is an outstanding response by our graduate students to an invitation to participate in a competition that has been traditional with the Entomological Society of Ontario for many years and is carried out also in some of the branches of the Entomological Society of America. There will be eight sections in the student competitions, one in each of sections A, B, D and F, and 4 in Section C. A prize will be awarded in each of the 8 sections. The second feature is the large number (54) of papers offered by Display Presentation. These will be given special attention because they offer an alternative to paper reading sessions and, if they prove popular, could reduce pressure on paper-reading sessions in future meetings. This year they will be displayed in a prominent area in the main convention foyer with each presenter allowed one hour for presentation and discussion.

Each of the sections has developed a program of symposia and submitted paper sessions.

Symposia in Section A deal with the origin of the insect fauna; cladistics and with entomological collections. Those in Section B discuss vitellogenins and, in a two-part symposium honouring C.W. Kearns, mode of action of insecticides and insect resistance. Section C, with its diverse membership is sponsoring four symposia dealing with insect adaptations to cold temperate climates, population ecology, mating strategies of parasitic Hymenoptera and insect transmission of plant disease. Section D has five invitational speakers dealing with highlights of medical and veterinary entomology, hornflies, ticks and western equine encephalitis in addition to symposia on blood feeding in the Diptera and pests and vectors in parks. Five symposia are included in Section E's program and these include chemigation, IPM, urban entomology and the medfly. Section F is sponsoring symposia on bioethics in pest management, forest spraying, and migration of moths. Additional symposia deal with the spruce budworm, genetics in entomology and international programs in entomology. Formal conferences include use of computers (teaching and learning); mites of public health importance (Acarology); zoogeography and ecology of aquatic insects (Aquatics) and insects of ornamental plants and turf.

This year's Joint Meeting provides the opportunity for some international attention in a two-part conference on the biology, classification and phylogeny of the Hydradephaga (Coleoptera), an international symposium several years in the making.

An additional highlight of the Joint Meeting will be the Awards luncheon on Thursday at noon. Student awards will be given to the eight winners of the President's Prize competition and the 5 Branch awards will be presented.

A few additional notes on the Toronto meeting are in order.

Currency - While most Toronto businesses will accept American currency, they may not all give a full premium. Those with non-Canadian currency should obtain Canadian funds at their local bank or use the banks in Toronto. There is a good supply of banks right next to the Royal York. Toronto businesses readily accept major credit cards.

Travel - The Toronto International Airport is serviced by many airlines. The Airport is about 15 miles from the Royal York and there is regular bus service every 20 minutes. Fare is \$5.50. Taxis are available; fare about \$18.00. Train service is also excellent and the train station is next to the Royal York.

Those travelling by car should follow the Gardiner Expressway and exit at Bay Street.

Hotel Reservations - Canada's most acclaimed football game, the Grey Cup, is played in Toronto on Sunday, November 28. Hotels will be booked solid for the weekend. Unless there is some compelling reason to come early, do not arrive before Sunday evening or Monday. If you have to come early, book early.

Weather - It may be rainy or sunny but the odds are for sunny with daytime temperatures near 40°F and night temperatures around 25°F.

Freeman L. McEwen  
Chairman, Program Committee  
Joint Meeting ESA, ESC and  
ESO

#### Notice of Annual Business Meeting

The Annual Business Meeting of the Entomological Society of Canada will be held on Wednesday, December 1, 1982, at the Royal York Hotel, Toronto, Ontario at approximately 3:30 p.m.

Matters for the consideration of this meeting or of the Governing Board meeting, to be held on November 28 and 29, 1982 at Toronto, should be sent to the Secretary, Dr. H.G. Wylie, Research Station, Agriculture Canada, 195 Dafoe Road, Winnipeg, Manitoba, R3T 2M9.

La Réunion Annuelle d'Affaires de la Société Entomologique du Canada aura lieu le mercredi, 1 Décembre 1982 à l'Hôtel Royal York, Toronto, Ontario. Ceux qui désirent soumettre des propositions pour cette Réunion ou au Conseil de Direction, voudront bien les envoyer à l'adresse donnée plus haut.

#### ESA Annual Road Race

This race will be held on Monday, 29 November, 1982 from 12 noon to 3 p.m., on the Boardwalk, The Beaches, Toronto. The entrance fee is \$3.00. Please send it to The Entomological Society of America, 4603 Calvert Road, College Park, MD 20740, U.S.A.

### **MEETING ANNOUNCEMENTS**

Joint Meeting Entomological Society of British Columbia and North-West Mosquito and Vector Control Association, at the Harbour Towers Hotel, 345 Quebec Street, Victoria, on 23 - 24 September, 1982.

CONTACT: Dr. Les McMullen, Pacific Forest Research Centre, 506 West Burnside Road, Victoria, British Columbia V8Z 1M5.

Entomological Society of Alberta Annual Meeting, at the Alberta Environmental Centre, Vegreville, Alberta, on 22 - 23 October, 1982.

CONTACT: Mr. Michael G. Dolinski, Crop Protection and Pest Control Branch, Alberta Agriculture, Edmonton, Alberta T5K 2C8.

Entomological Society of Saskatchewan Annual Meeting, in the National Research Council Conference Room, on the campus of the University of Saskatchewan, Saskatoon, Saskatchewan on 6 October, 1982.

CONTACT: Dr. Warren F. Steck, National Research Council, Prairie Regional Laboratory, Saskatoon, Saskatchewan S7N 0W9.

Entomological Society of Manitoba Annual Meeting, at the Freshwater

Institute, on the campus of the University of Manitoba, Winnipeg, Manitoba on 4 - 5 November, 1982.

CONTACT: Dr. John Conroy, Department of Biology, University of Winnipeg, Winnipeg, Manitoba.

La Société entomologique du Québec tient ses réunions à St. Hyacinthe, le 21 - 22 octobre, 1982.

Veillez prendre contact avec: Dr. Claude Ritchot, Station des Recherches agricoles, 3300 rue Sicotte, B.P. 480, St. Hyacinthe, P. Québec J2S 7B8

The following Western Committee meetings will be held at the Convention Inn South, Edmonton, Alberta, on 18 - 21 October, 1982:

Western Committee on Crop Pests. (Contact Mr. Michael G. Dolinski, Alberta Agriculture, Edmonton)

Western Committee on Livestock Pests. (Contact Mr. F.J.H. Fredeen, Agriculture Canada Research Station, Saskatoon)

Western Committee on Plant Disease Control. (Contact Dr. P. Platford, Manitoba Agriculture, Winnipeg)

Western Committee on Vertebrate Pests. (Contact Dr. D. Pastuck, Manitoba Wildlife Branch, Winnipeg)

Eastern Branch, Entomological Society of America, at the Sheraton Hartford, Hartford, Connecticut, on 29 September - 1 October, 1982.

CONTACT: F. Christian Thompson, Systematic Entomology Laboratory, ARS USDA, c/o U.S. National Museum, Washington, DC 20560, U.S.A.

Willi Hennig Society (for the furtherance of scientific procedure in systematics), at the University of Maryland, College Park, on 19 - 22 November, 1982.

CONTACT: Dr. C. Mitter, Entomology Department, University of Maryland, College Park, MD 20742, U.S.A.

North American Symposium on Allelopathy, at the University of Illinois, Champaign, on 14 - 17 November, 1982.

CONTACT: Ms. Carol Holden, Conferences and Institutes, University of Illinois, 116 Illini Hall, 725 S. Wright Street, Champaign, IL 61820, U.S.A.

International Workshop on Biotaxonomy, Classification and Biology of Leafhoppers and Planthoppers of Economic Importance, in London, U.K., on 4 - 7 October, 1982.

CONTACT: Director, Commonwealth Institute of Entomology, 56 Queen's Gate, London, SW7 5JR, U.K.

Consequences of Insecticide Use, at the British Museum (Natural History), London, U.K., on 20 October, 1982.

CONTACT: Dr. J.J. Cooper, Institute of Virology, Oxford, U.K.

XV Pacific Science Congress (Conservation, Development and Utilization of the Resources of the Pacific), in Dunedin, New Zealand, on 1 - 11 February, 1983.

CONTACT: Secretary-General, Pacific Science Congress, P.O. Box 6063, Dunedin, New Zealand.

III International Mycological Congress, in Tokyo, on 28 August - 3 September, 1983.

CONTACT: Professor K. Tubaki, Secretary-General, c/o International Congress Service Inc., Chikusen Building SF, 2-7-4 Nikombashi, Chuo-ku, Toyko, Japan.

IV International Congress of Plant Pathology, in Melbourne, on 17 - 24 August, 1983.

CONTACT: Dr. G. Weste, Department of Botany, University of Melbourne, Parkville, Victoria 3052, Australia.

X International Congress of Plant Protection, in Brighton, Sussex, U.K., on 20 - 25 November, 1983.

CONTACT: Mrs. R.A. Bishop, Frank Bishop (Conference Planners) Ltd., 144/150 London Road, Croydon, Surrey CR0 2TD, U.K.

## BOOK REVIEWS

Denno, R.F. and H. Dingle. 1981. Insect Life History Patterns. Springer-Verlag, New York. vi + 225 pp. U.S. \$29.80.

This volume is a collection of 12 papers presented at a symposium held during the National Meeting of the Entomological Society of America in Denver, Colorado, U.S.A. in November 1979. The editors introduce the volume and provide a briefer introduction for the three subsections: Host plant variation and insect life histories; Population and species variation in life histories; Life histories and nonequilibrium populations. These titles reflect the broad range of evolutionary and ecological topics touched on in the volume. All the papers discuss herbivores or insects associated with a particular plant habitat. However, life history patterns rather than plant-insect relationships provides a unifying theme for the book.

In the first section on host plant variation, two papers deal with the micro-evolutionary consequences to Homopterans of within plant and among plant variation in host quality. The third paper investigates the possibility of sympatric speciation in a leafhopper complex. I finished this section more convinced than ever of the close and complex relationships that many insect herbivores have with their hosts.

In the next section five of six papers use geographic variation to provide insight into the evolutionary factors affecting life histories. Most of the papers provide summaries of detailed ecological studies published elsewhere and use this information as evidence for testing current theories of life history patterns. In general, the theories are found wanting. I found the paper by C.S. Isdock entitled "Natural Selection and Life History Variation: Theory plus Lessons from a Mosquito" to be a particularly convincing blend of theory and ecological data.

The last four papers are studies of community ecology in which life history patterns of the community members are emphasized. Again summaries of previously published data are used to assess ecological theory concerning competition, coexistence among species and colonization.

In their introduction, the editors attempt to draw together these very different papers, and are only partly successful. Admittedly their task is difficult since the papers range very widely through ecological sub-disciplines. Denno and Dingle conclude that the "theoretical edifice" for life history patterns is seriously flawed and offer some considerations which they believe could "provide the framework for restructuring the foundation." I found the papers covered so many different aspects of insect life history patterns that I was unable to draw insights from the various papers and bring them to bear on any specific part of life history theory. It appears that the editors had the same problem.



The strong attraction of this volume for entomologists will be the opportunity to observe how a number of very fine studies of insect biology have been used to assess and develop ecological and evolutionary theory.

Robert J. Lamb  
Agriculture Canada Research Station  
Winnipeg, Manitoba

Gillott, Cedric. 1980. Entomology. Plenum Press, New York and London. xvii + 729 pp.

In his preface, Cedric Gillott states that this text is intended to provide a balanced introduction to entomology for senior undergraduates with a background in invertebrate biology, animal physiology, and ecology. This would make it suitable for entomology courses in biology or zoology departments. However it seems unlikely that it would be suitable for introductory courses in entomology departments where the first course in entomology is taken at an earlier stage by students without this background. Nevertheless, given the extensiveness of certain sections, it might be suitable as a reference work for various courses within entomology departments. The following discussion of Gillott's book was prepared jointly by several members of an entomology department and attempts to keep in mind the several possible uses of the text.

Section I concerns the evolution, diversity and classification of Insecta. It was generally felt that although well-presented, this section is misplaced. Topics such as arthropod and insect evolution, and insect classification, would be better placed after a discussion of insect structure and development. This would allow terms and concepts to be defined when they are first used instead of several chapters later as is the case in this text. For example, the term "eruciform" is first used on page 229 but not defined until page 571. This problem is substantially compensated for by the extensive subject index, but could have been further alleviated by the inclusion of a glossary of terms. The chapters on insect classification were considered to contain many useful features, such as the inclusion of the synonyms and common names of the higher taxa. However one reviewer felt that the figures describing the phylogeny of the orders, for example, Figure 6.1, are distracting and unnecessary since they present material of a highly specialized nature to students without the background to evaluate it. Another reviewer felt that this section could be improved by a key to the classes of Arthropoda and regretted the absence of keys to the families within the insect orders. The inclusion of the latter, however, would require an enormous increase in the size of the text and might not be feasible.

Section II and III deal with anatomy and physiology, and reproduction and development respectively. Together they cover a wide range of material in considerable detail. Most topics are fairly up to date, although work prior to 1974, and the second edition of *Physiology of Insecta* by M. Rockstein (Academic Press), seems to have been stressed. As a result, the coverage in some fields, for example neurophysiology or muscle physiology, omits many more recent developments. A need to condense material seems to have had a number of effects. Concepts are often presented with little or no supporting data. Throughout the entire two sections there are no more than a dozen tables or figures presenting numerical or graphical information. One reviewer considered this particularly regrettable in a text aimed at senior undergraduates for whom an important goal should be the critical interpretation of data and ideas rather than the memorization of facts. Where figures are provided, there is sometimes too little supporting information in the text. For example, it seems unlikely that Figure 19.8, describing the endocrine control of egg development, could be deciphered without an extensive background in insect endocrinology since there is virtually no supporting explanation in the text and no accompanying key to the symbols used in the figure. However, in general, the figures in these sections are excellent, although there are several errors which might cause confusion. For example, Figure 11.4 refers to the "apophysial membrane", while the text refers to the "ecdysial membrane". Also, in Figure 18.2, some arrows for bulk flow point in the wrong direction. Several statements throughout these sections are either

in error, or would provoke considerable argument among physiologists. For example, on page 372 circadian rhythms are described as a form of learning, while on page 460 it is implied that insects have a myelin sheath. Many of these problems may be the result of the author's attempt to condense information.

In Section IV, the author deals with insect ecology, including a chapter on each of abiotic, biotic and applied aspects. There was a general feeling among the reviewers that although it was well-presented, this section calls into question Gillott's claim to a balanced treatment of entomology. It was felt that a number of areas were not treated in the depth warranted by their significance in modern entomology and ecology. These areas included, among others, such topics as predator-prey and parasitoid-host interactions, vector-pathogen relations, integrated control. As did previous sections, this section contains several errors of varying degrees of severity. For example, on page 595 the author stated that "rate of development is inversely proportional to temperature" when what he means is that duration of development is inversely proportional to temperature. In Table 24.3 he describes the reproductive output of 3 viviparous species (Aphis fabae, Glossina spp., and Melophagus ovinus) in eggs per female.

Throughout the text, there are a number of errors in nomenclature. The Entomological Society of America convention for assigning common names has been inconsistently applied, so that, for example on a single page (page 255) both "horseflies" and "horse flies" can be found. Scientific names are also sometimes incorrect as well as inconsistent. For example the pea aphid appears in Table 24.2 as both Macrosiphum pisi and Acyrtosiphon pisi, while the correct name is Acyrtosiphon pisum. Such errors are particularly to be regretted in a text teaching classification and nomenclature.

Many of the problems pointed out in this review are problems associated with any first edition and will no doubt be eliminated in future editions. Given that assumption, the majority opinion among the reviewers seemed to be that the text contains an enormous amount of material which, for the most part has been clearly presented. The text provides in-depth coverage for senior undergraduates taking their first and only entomology course but is too detailed and in some areas too advanced for junior undergraduates in an entomology program. However, if coupled with current research papers and more recent reviews, the text could conceivably provide a basic, background reference for other entomology courses.

Various Members of Staff  
Department of Entomology  
University of Manitoba  
Winnipeg, Manitoba

Hudak, J. and A.G. Raske, Editors. 1981. Review of the spruce budworm outbreak in Newfoundland - its control and forest management implications. Canadian Forestry Service, Newfoundland Forest Research Centre Information Report N-X-205, xxxix + 280 pp. St. John's, Newfoundland. (English text, French Summary).

Subtitled "Canadian Forestry Service submission to the Newfoundland and Labrador Commission on Forest Protection and Management," the report is a synopsis of information covering various aspects of the spruce budworm fir-spruce forest complex with special emphasis on Newfoundland.

The report is divided into 12 sections, plus references and appendices, and includes contributions from forty-four Canadian Forestry Service authorities on the population dynamics, impact and management of the eastern spruce budworm.

The literature reviews which form the basis of the presentation are designed to address the terms of reference of the Royal Commission, and are therefore not comprehensive, but they clearly give a broad overview of the major features of the forest-insect interaction and the problems involved in each of the possible management options.

A detailed analysis of the damage caused by the spruce budworm is followed by an evaluation of the economic impact of the present outbreak in Newfoundland, in which the consequences of the possible management options are clearly laid out. This is followed by a review of current and potential control measures and their environmental effects. The report concludes with an outline of forest-management decision-making in Newfoundland in general, and the role of the Canadian Forestry Service in particular.

In a few instances, the submissions of individual contributors give conflicting views, notably with regard to forest susceptibility to budworm in relation to the homogeneity of the forest cover. Also, the report recognizes that a failure of forest agencies to maintain communications with the public and politicians has led to a credibility gap and lack of support for vital protection programs. In spite of this recognition, the Reye's syndrome controversy receives very little attention in the report, and no improved communication procedures are proposed. However, these minor points do not detract from the value of this report as a guide to budworm dynamics and impact in a decision-making framework.

Alan J. Thomson  
Canadian Forest Research Centre  
Victoria, British Columbia

Laird, Marshall, Editor. 1981. Blackflies, The Future for Biological Methods in Integrated Control. Academic Press, London. xii + 399 pp.

Because of the international interest in blackflies and their control, this is a timely publication. The book covers a wide range of subjects associated with blackflies but not all of the papers address the future of biological methods in integrated control which is a shortcoming. Perhaps this is because the authors of the papers dealt with their own very specific interests. There are 27 papers in the book, organized into eight sections.

The five papers on Systematics illustrate the problems of blackfly systematics very well. Two papers on cytotaxonomy present a new approach to resolving the classification of blackflies. For the first time, a glossary of morphological features of blackflies has been compiled, which should be useful in standardizing descriptions of species and preparing workable keys.

The six papers on Control Methods are accounts of progress on specific control projects of varying magnitude in different parts of the world. All but one of the papers are very informative, provide a fairly good review of the literature and imply that the different regions have unique problems and each control project requires its own particular type of management. The article "Blackfly Control Occasioned by Major Hydroelectric Projects in the USSR - 1955 - 1965" is very general, difficult to read and contains little useful information.

Notably absent from this book is an account of the control program used in the Saskatchewan River System. There, blackfly control has been practised on an extensive scale since 1947 and the results of these efforts have been a basis for some of the projects described in this book.

The four articles on Predators, Parasites and Pathogens cover the subject adequately and provide a reasonable update on their status as biocontrol agents. In the two papers "Mermithid Nematodes of Blackflies" and "Mermithidae: Taxonomic Criteria for their Juvenile Stages and Blackfly Biocontrol Prospect", there is some nematode classification of the various characters in the immature stages. The lack of valid stable characters in immature stages of nematodes is a problem in nematode taxonomy which results in many collections being unidentified and recorded.

Although the article on "Blackfly Physiology" is very brief, it provides a fair review of the literature and contains some of the author's observations and results. The lack of laboratory colonies of blackflies is blamed for the deficiencies in information on blackfly physiology.

The four articles on Ecology are comprehensive reviews of the literature that include observations and results of the authors. Some subject matter is repeated in other articles in this volume but this is not serious. The article on the "Effects of Chemical Treatments Against Blackfly Larvae on Fauna of Running Waters" is very appropriate, and perhaps should have been included in the section on Control. However, the article does point out that side effects from chemical control are a possibility and there are trade-offs that have to be considered seriously in every control program. The article "Bionomics of Adult Blackflies" is a very useful reference article even though there is some overlap of information in the article on "Blackfly Physiology".

The two articles on Trapping Technology describe trapping techniques which could be useful to students of blackfly biology. Although some of the techniques are proven, the authors admit that there is no single standardized method of collecting and sampling the various stages of blackflies and researchers have to modify and/or improvise techniques for their own purposes.

The two articles on Colonization provide very little in a way of a recipe for colonizing a species of blackflies. The authors imply that there is a vast array of species and perhaps sibling species that are suitable for colonization but have never been tried. Although these two articles provide little in the way of recipe they do provide a good introduction and offer a challenge to blackfly investigators.

The three articles on Mass Production of Pathogens are an appropriate conclusion to the book. If biocontrol is to be practical, mass production of pathogens, parasites and predators is vital. The two pictures on pages 320 and 321 take up space in the book and do not add anything for the text.

The book does not contain any information on repellents or other forms of personal protection which in some parts of the world is the only way people can cope with the problem and should be considered in integrated control programs.

Some of the contributors of this book related their work to the future of biological methods in integrated control, but these attempts were isolated and did not relate to the problem as a whole. A useful addition to the book would have been a short chapter or article by the editor giving his interpretation of the knowledge presented by the contributors and relating this knowledge to the future for biological control methods in integrated control.

The book is well produced. The quality of the printing, photographs and line drawings is excellent. The book has a list of contributors and author and subject indices. There are very few typographical errors (untreated should read untreated - page 85). At least two references are omitted (Vavra & Undeen, 1980 - page 192 and Mondet et al., 1977c - page 163). I would have preferred to have the references at the end of each article rather than at the end of the book. The drawing of the blackfly is very appropriate for the cover and at the head of each article.

The book is priced at \$58.00, which is rather high and may limit its use by students and some research workers but it should be a useful addition to University and Research Libraries.

J.A. Shemanchuk  
Agriculture Canada Research Station  
Lethbridge, Alberta

Ross, H.H., Ross, C.A. and Ross, J.R.P. 1982. A Textbook of Entomology. 4th Edition. John Wiley & Sons, Inc. Somerset, New Jersey, U.S.A. vi + 666 + 30 pp. \$25.95 U.S.

This is the textbook I wish had been available when I began to study entomology. It is the best textbook on the subject that I have seen, and is better on several counts than previous editions of the same book.

This edition contains 128 more pages and 57 more illustrations than the previous edition. The subject matter is covered in 12 chapters, two of which are new. References are included at the end of each chapter, except for Chapter 8, "The Orders of Entognaths and Insects", in which pertinent references are included within the chapter, following each Order. Many of the references are new; the material in each chapter has been amplified and updated.

Chapter 1 is much the same as in the 3rd edition, but a section on "Sources of Entomological Information" has been added. A few entomological journals are mentioned, but inexplicably the "Canadian Journal of Zoology", which contains a few entomological papers is included but not "Canadian Entomologist", which is one of the oldest and most prestigious entomological publications in North America.

Chapter 2, "Arthropoda: Insects and Their Allies", has been largely rewritten. The diagram of the "suggested family tree of the Arthropoda" is revised and the Trilobita are shown as ancestral to all of the higher arthropods. Each class of the group is defined and discussed.

Chapter 3, "External Anatomy" is greatly enhanced by the inclusion of a number of selected Scanning Electron Microscope photographs of various morphological structures. Structures which function to produce sound are omitted here as they appear in "Communication" in Chapter 6.

"Internal Organ Systems", Chapter 4, is hardly altered from the previous edition, but covers the topics adequately.

The section on physiology, Chapter 5, called "Life Processes", has been rewritten and updated. It includes several S.E.M. pictures which add to the ease of understanding of function. This chapter is an excellent introduction to the subject.

Chapter 6, "Response and Behavior" is a new chapter which includes up to date information on sensory receptors, including S.E.M. photographs of antennal receptors and compound eye structure. Function of the nervous system is discussed briefly but adequately. There are also sections on Endocrine System and Hormones and on Communication. The latter includes visual and auditory and chemical components, including clear but brief discussions of pheromones, allomones and kairomones and their functions. The chapter concludes with excellent discussion of responses both "stereotyped" and "learned" and organization in the social insects.

"Life Cycles, Growth and Reproduction", Chapter 7, differs very little from the previous edition. It covers embryology, metamorphosis, reproduction, food habits and seasonal cycles.

The largest chapter, Chapter 8, "The Orders of Entognaths and Insects" makes up more than one-third of the entire volume. All of the currently recognized orders (though one has recently been split into two) are characterized, discussed and illustrated in a clear, easy to read manner. Suggested family trees are given for the major orders as well as for the entire assemblage. The latter has been altered from that of the previous edition in the light of new information. These "trees" are excellent in that they portray the relationships and presumed evolutionary pathways, including, to some extent, the major structural modifications which made possible "evolutionary jumps". This could have been taken a bit farther as the diagrams show "jumps" without explanations. This chapter, as in previous editions includes keys and is well illustrated.

Chapter 9, "The Past History of Insects" discusses the evidence for phylogeny and interrelationships of existing insect groups. This includes fossils of many groups and a very clear discussion of plate tectonics or continental drift. The outline of classification of extinct insect orders is excellent, as is the brief story of insects in the history of life on this planet.

"Ecological Considerations", Chapter 10, has been nearly completely rewritten and gives the reader a fairly comprehensive view of modern knowledge of insect ecology and of ecological principles. Population dynamics and r -

and K - selection characteristics are clearly explained, as are population balance and the influences of climatic and biological factors.

Chapter 11, "Useful Insects" is new. It presents in taxonomic sequence predators, parasites and parasitoids which assist in maintaining population equilibrium. Also discussed are insects which are useful in weed management, pollination, production of useful products, and those with aesthetic value and species of general scientific interest. There is also a short section on insects as decomposers and their role in nutrient recycling. I would like to have found more detail on the important topic of pollination.

Finally, Chapter 12, "Insect Pests and their Control" covers the ways in which insects are pests of crops, humans and animals, as well as control. The control section includes all modern aspects of control and management of pest species as well as chemical controls. It does not include control recommendations and will not become outdated on this score as some textbooks do, but does include a complete resume of past and current chemicals used for pest control. Integrated pest management is treated briefly but concisely.

A complete index is provided.

I searched for faults in this book. There are very few, and these are errors in spelling in the references, mostly names of authors (e.g., p. 312, Cantrell for Cantrall; p. 630 Gregory for McGregor; p. 312, Phasmoptera for Phasmatoptera). Many illustrations are from other works and in these the scientific names have not been updated (p. 306, Fig. 8-24, Acrydium ornatum, should be Tetrix ornata; p. 198, Fig. 6-17, Stenobothrus should be Chorthippus, as Stenobothrus is Palaearctic and the name has not been used for North American species for nearly 100 years). These are trivial errors when compared with the entire work.

The dust cover calls this book a "classic introductory level text" and ends with the following: "In its balanced coverage and integration of new developments, this text has no peer". I agree. I recommend it highly for students and classes in introductory and general entomology.

W.R. Vickery  
Professor of Entomology and  
Curator, Lyman Entomological Museum  
and Research Laboratory  
Macdonald College, McGill University  
Montreal, P. Q.

## BOOK NOTICES

Dondale, C.D. and J.H. Redner. 1982. The Sac Spiders of Canada and Alaska (Araneae: Clubionidae and Anyphaenidae). In The Insects and Arachnids of Canada. Part 9. Biosystematics Research Institute, Ottawa, Ontario. Publication 1724:1-194. Canadian Government Publishing Centre, Supply and Services Canada, Ottawa, Ont., Canada K1A 0S9. Price in Canada, \$8.95; in other countries, \$10.75.

This is the second contribution in the Insects and Arachnids of Canada series written by the authors on the families of spiders occurring in Canada and Alaska. Part 5 provided a key to the families and a detailed treatment of the crab spiders. Part 9 deals with the sac spiders, the Clubionidae and Anyphaenidae; eight genera and 66 species are discussed in the former family, three genera and six species in the latter. Certain species that are assumed to occur in Canada and Alaska, but which have yet to be collected, are included.

Keys are written in both English and French, a useful innovation begun in this volume, and one that will continue in future issues of the series. Keys allow the specific determination of both male and female specimens.

Families and genera are described and compared to related taxa. Each species treatment contains a synonymy, descriptions and diagnoses of both

sexes when known, a statement on range and an informative section where information is available.

There are 52 range maps (including all species treated) and 339 figures, notable for their clarity and relevance to the text. A discussion on sac spider anatomy, a glossary of anatomical terms, and a substantial reference list are also contained in this comprehensive little handbook.

Robert A. Cannings  
British Columbia Provincial Museum

Hecht, M.K., B. Wallace, and G.T. Prance (Eds.) 1982. Evolutionary Biology. Vol. 14. Plenum Press, New York. xiii + 445 pp. U.S. \$39.50.

This volume continues a fourteen year tradition of publishing longer review articles and original papers on evolutionary biology. As in the past some papers on insects are offered, but the volume as a whole will be of more interest to an evolutionary biologist than an entomologist. Of the six papers, three deal with aspects of *Drosophila* biology. The others range among bacterial metabolic pathways, protected polymorphisms and genetic relationships of human races.

Robert J. Lamb  
Agriculture Canada Research Station  
Winnipeg, Manitoba

Odhiambo, T.R. (Ed.) 1981. The Biology, Ecology and Control of the Sorghum Shoot fly, *Atherigona soccata* Rondani. In Insect Science and its Application. Vol 2 (3). Pergamon Press. 127 pp. U.S. \$36.00.

This volume is a special issue of the journal and consists of the papers presented at an International Study Workshop convened jointly by the International Centre of Insect Physiology and Ecology and the International Fund for Agricultural Development held in Nairobi, Kenya in May 1980. It contains 21 papers on the shoot fly, an important tropical pest. The topics range from comparative ultrastructure to integrated control and a 50 year overview of research. Contributors were drawn from across Africa and Asia.

Robert J. Lamb  
Agriculture Canada Research Station  
Winnipeg, Manitoba

## NEW BOOKS AND PUBLICATIONS

A revision of the genus *Lorithon* Thomson of North and Central America (Coleoptera: Staphylinidae). J.M. Campbell. ESC Memoir No. 119, 1982. 116 pp. \$8.50 (Members, \$6.40) postpaid. Available from ESC, 1320 Carling Avenue, Ottawa, Ontario K1Z 7K9.

Biological Control of Black Flies (Diptera: Simuliidae) with *Bacillus thuringiensis* var. *israelensis* (Serotype 14): A review with Recommendations for Laboratory and Field Protocol. D. Molloy, Ed. Entomological Society of America Miscellaneous Publication, Volume 12, No. 4, 1982. 30 pp. U.S. \$3.60 to ESA members, U.S. \$6.00 for non-members (add U.S. \$1.00 per copy if outside U.S.A.) Available from ESA Sales Department, 4603 Calvert Road, College Park, MD 20740, U.S.A.

Butterflies of the Rocky Mountain States. C.D. Ferris and F.M. Brown, Eds. University of Oklahoma Press, Norman, Oklahoma, 1981. 464 pp. (4 colour plates). U.S. \$35.00 (cloth), U.S. \$15.95 (paper).

Nematoda and Nematode Diseases, Part I: A-B. Mildred A. Doss and Deborah T. Hanfman. Bibliographic records on Nematoda and nematode diseases of animals that have accumulated in the main files of the Index-Catalogue of Medical and Veterinary Zoology during the period 1920 - 1964 are being prepared for publication. They are being issued as Special Publication No. 6 of the Index-Catalogue. It is a continuation, in part, of the Roundworm Catalogue compiled by Stiles and Hassall (published as Hygienic Laboratory Bulletin No. 114) which has been reprinted for distribution with Special Publication No. 6. The only requirement for receiving both publications is two self-addressed gummed mailing labels (postage is not required). Mail your request and labels to: Index-Catalogue of Medical and Veterinary Zoology, Animal Parasitology Institute, Building 1180, BARC-East, Beltsville, Maryland 20705, U.S.A.

Revision of the subfamily Xantholinae of America north of Mexico (Coleoptera: Staphylinidae). Ales Smetana. ESC Memoir No. 120, 1982. 394 pp. \$26.00 (members \$19.00) postpaid. Available from ESC, 1320 Carling Avenue, Ottawa, Ontario K1Z 7K9.

Science in Society: Its Freedom and Regulation based on 1st National Conference of Canadian Student Pugwash, an organization dedicated to the responsible use of science in our society. Available from Canadian Student Pugwash Publications, Suite 805, 151 Slater Street, Ottawa, Ontario, Canada K1P 5H3.

Science Notes, a quarterly newsletter published by the Ministry of State for Science and Technology (MOSST); designed to give background information about various research and development issues in Canada. To get on mailing list write to Communications Services Division of the Ministry of State for Science and Technology, 270 Albert Street, Ottawa, Ontario, Canada K1A 1A1.

## UPDATE ON PUBLICATIONS

The following ESC Memoirs are now available:

No. 115: The polyphyletic nature of Apanteles Foerster (Hymenoptera: Braconidae): A phylogeny and reclassification of Microgastrinae. W.R.M. Mason, 147 pages. Price: \$10.25 (members, \$7.60) postpaid.

No. 116: Revision des Trichoptères canadiens. I. La famille des Rhyacophilidae (Annulipalpia). F. Schmid. 83 pages. Price: \$6.50 (members, \$4.85) postpaid.

No. 117: Guide to the Geometridae of Canada (Lepidoptera). II. Subfamily Ennominae. 3. W.C. McGuffin. 153 pages. Price: \$10.50 (members, \$7.80) postpaid.

No. 118: Taxonomic monograph of the genus Pityophthorus Eichhoff in North and Central America (Coleoptera: Scolytidae). Donald E. Bright. 378 pages. Price \$25.25 (members, \$18.30) postpaid.

Also available:

Arctic arthropods. A review of systematics and ecology with particular reference to the North American fauna. H.V. Danks. Hard covers, 608 pages. Price: \$37.00 (members, \$26.50) postpaid.

Bibliography of the arctic arthropods of the nearctic region. Compiled by H.V. Danks. 125 pages. Price: \$6.00 (members, \$4.50) postpaid.

The following ESC Memoirs are in press:

A catalogue of the eggs of some Canadian Geometridae (Lepidoptera), with comments. E.H. Salkeld.



La famille des Xiphocentronides (Trichoptera: Annulipalpia). F. Schmid.

Revision des Trichopteres canadiens. II. Les Glossosomatidae et Philopotamidae (Annulipalpia). F. Schmid.

The publication, Catalogue of the world Cicadelliodea by Metcalfe, is being revised. Please send relevant information published between 1955 to end of 1980 to Professor Paul W. Oman, Department of Entomology, Oregon State University, Corvallis, OR 97331, U.S.A.

Back issues of the Index-Catalogue of Medical and Veterinary Zoology are available free of charge by requesting them from: Index-Catalogue of Medical & Veterinary Zoology, Animal Parasitology Institute, Building 1180, BARC-East, Beltsville, Maryland 20705, U.S.A. Users and libraries should complete their sets now as reprinting of back issues is not planned. This Index-Catalogue will no longer be published and distributed by the U.S. Federal Government - one of the many publications eliminated in the government's cutback effort. However, Oryx Press will publish and distribute the same publication (that will still be prepared by the USDA for the Animal Parasitology Institute). Oryx Press has also been publishing the Bibliography of Agriculture for eight years, as well as important research publications in many fields.

Supplement 24 of the Index-Catalogue of Medical and Veterinary Zoology comprises seven parts in nine volumes (3700 pages): Part 1, Authors; Part 2, Protozoa; Part 3, Trematoda and Cestoda; Part 4, Nematoda and Acanthocephala; Part 5, Arthropoda and Miscellaneous Phylia; Part 6, Subject Headings and Treatment; Part 7, Hosts. Several Special Publications are also available: No. 1: Checklist of the Internal and External Parasites of Deer; No. 2: Bibliography of Chagas Disease (1909-1969); No. 3: Ticks and Tickborne Diseases; No. 4: Checklist of Types in the U.S National Parasite Collection; No. 5: List of Translations; No. 6: Nematoda and Nematode Diseases (and its companion publication, a reprinted edition of the Stiles and Hassall Roundworm Catalogue), and an unnumbered Special Publication, Trematoda and Trematode Diseases. For information and orders write to: The Oryx Press, 2214 North Central at Encanto, Phoenix, AR 85007, U.S.A.

## **OPPORTUNITIES FOR ENTOMOLOGISTS**

### **IN INTERNATIONAL DEVELOPMENT**

#### IDRC - Cooperative Programs

The International Development Research Centre, created by the Parliament of Canada in 1970, supports research designed to contribute to Third-World development. In 1981 the Cooperative Programs Unit was created to promote collaboration between research groups in Canada and in the developing world. Three associated aims are to: develop the scientific and technological research capacity of the participating Third-World institution(s) or group(s); create channels of communication whereby results of relevant Canadian research can be transferred to Third-World researchers and subsequently to users; and influence the direction of Canadian research toward Third-World concerns.

Interim priorities in the Agriculture, Food and Nutrition Sciences (AFNS) division that have relevance to entomologists include the following:

Crops - basic studies on modes of interaction between pests and hosts, particularly on groups of insects and other pests common to Canada and one or more developing countries.

Forestry - pest monitoring methodologies.

Livestock - physiology of host/parasite interaction and drug resistance to parasites.

The focus is research collaboration between established groups in all academic, governmental and private sectors.

Funds can be appropriated for: direct research costs, including equipment, materials and salaries both in the developing country and in Canada (core support for institutions is not available under this program); international travel and training related to the project.

Project evaluation will consider such factors as the developing country's interest and commitment, scientific merit of the proposal, the proposed arrangements for collaboration and the application of the research. Proposals should include sections dealing with background considerations, objectives, methodology, potential uses, and budget.

Initial proposals may be submitted by either developing-country or Canadian groups; they should indicate the extent of prior contact between the potential participants. IDRC will not take responsibility for linking Canadian researchers with potential collaborators in developing countries. Financing is available, however, to enable developing-country partners to participate fully in the preparation of proposals if a preliminary proposal has been approved.

Interested entomologists representing established Canadian research groups are encouraged to write for further details to: IDRC, Cooperative Programs Unit, Box 8500, Ottawa K1G 3H9.

#### CIDA - How to get on the Roster

Each year many Canadians with special skills are recruited by CIDA (Canadian International Development Agency) to carry out Canada's programme of cooperation in developing countries. CIDA also helps the United Nations, its specialized agencies and other international organizations to find suitable Canadians for technical assistance assignments under their auspices.

CIDA responds to specific requests for technical assistance from developing countries and some international organizations in a wide range of technical and professional fields. As the priorities of development change, different skills are in demand, so CIDA maintains a roster of potential candidates with qualifications in many fields of activity. (Curriculum vitae forms are available from the address below). Overseas assignments normally involve highly specialized work that demands adaptability as well as a high level of professional competence and currently relevant experience. Often the CIDA "cooperant" (CIDA's word for those assigned under a technical assistance contract) is also responsible for the training of local counterparts - citizens of the country, who must carry on the work when the Canadian returns home. Assignments are normally for two years, but in some specialized areas there may be assignments of less than one year. Candidates should be Canadian citizens, with sound professional training and at least five years of experience in a particular field.

Three areas have been designated as priority areas in CIDA's development assistance programming: agriculture and food production, energy, and human resource development. These areas, globally recognized as priorities for all developing countries, are supported in CIDA programming through its direct country-to-country activities and through support of national and international organizations that address these problems.

Agriculture and food production encompass i) programme and project activities designed to enhance productivity and the recipients' ability to achieve greater self-sufficiency in food, ii) food aid, and iii) activities contributing directly to the production, transportation, storage and marketing of food from plant as well as animal sources. In 1980-81, CIDA's budget was \$1.2 billion and more than 30 per cent of Canada's development assistance was devoted to the agriculture sector.

An example of CIDA's bilateral assistance aid is provided by the following project for plant protection in Niger, which received a \$10 million contribution from CIDA. This project aims to provide technical assistance and necessary supplies for pest control to the National Service for Plant Protection (SPVN) and the National Institute for Agricultural Research (INRAN), both parts of the Department of Rural Development in Niger. Five

Canadian advisers will be sent to the Department of Rural Development and to INRRAN in Maradi, and scholarships will be provided for 30 Nigerians to become specialists in that field. Insecticides, vehicles, manual spraying equipment and laboratory equipment will all be supplied, and storage facilities and offices constructed.

Experienced entomologists who wish to investigate the possibility of participating in CIDA projects are invited to contact: Human Resources Directorate, Canadian International Development Agency, 200 Promenade de Portage, Hull, Quebec K1A 0G4.

#### CIDA - Scholarship Programme

CIDA realizes that in certain disciplines it is necessary not only to foster an interest in international development but also to encourage Canadians to pursue their studies to a higher level of achievement. It is for this reason that the CIDA Scholarship Program has been established.

The awards are available to Canadian citizens who:

- 1) have completed a post-secondary programme of studies (degree or diploma); and
- 2) indicate their intention to pursue an active career in international development work. (Applications for Ph.D. programmes will not be considered).

Priority is given to applications in the following fields: food production and distribution, energy, rural and urban development, education, health and population, the role of women, and shelter. Preferred applicants will be those who have already indicated a career intention by working in development programmes. This experience may have been gained with public or private, international or domestic development programmes.

Each candidate must present a programme of one of the following types, to cover a maximum of two (2) years:

- 1) an academic programme combined with a period of fieldwork in one or more developing countries; or
- 2) a research project undertaken principally in one or more developing countries.

Each type of programme must include a substantial period of fieldwork in one or more developing countries. It must have a practical orientation and must not be used exclusively for theoretical or scholarly studies. Each applicant must outline his/her programme as fully and clearly as possible, including a chronological summary of planned activities, and submit the completed application form between October 1st and the January 31st closing date.

Entomologists who wish to obtain further information about the CIDA Scholarship Programme are invited to contact: Human Resources Directorate, Canadian International Development Agency, 200 Promenade de Portage, Hull, Quebec K1A 0G4.

Stuart B. Hill  
Department of Entomology  
Macdonald Campus  
McGill University

The Bulletin welcomes articles on international entomology, e.g. describing international aid or cooperative research projects that ESC members have participated in, and will run a series if sufficient interest is expressed.

Editor

## POSITIONS AVAILABLE

Assistant Professor - the Department of Biology, McMaster University invites applications for a 1983 Natural Sciences and Engineering Research Council University Research Fellowship. This position will have the rank of Assistant Professor in the Department of Biology. The ideal candidate should have a strong experimental approach to animal ecology, and some preference will be given to those with a background in invertebrate biology. The term of the Fellowship should begin in April 1983. A completed curriculum vitae, including the names of at least 3 referees, should be received no later than October 1, 1982 by S.F.H. Threlkeld, Chairman, Department of Biology, McMaster University, 1280 Main Street West, Hamilton, Ontario L8S 4K1. NSERC University Research Fellowships may be held only by Canadian citizens or landed immigrants.

Two postdoctoral positions - in insect biochemistry; to study metabolism of chitin or tyrosine and synthesize compounds that inhibit cuticle formation and degradation. Send resume and names of 3 referees to: Dr. Karl J. Kramer, Department of Biochemistry, Kansas State University, Manhattan, Kansas 66506, U.S.A.

Postdoctoral Fellow/Research Associate - in insect endocrinology; experience in neuropeptide or receptor-protein biochemistry preferred. Salary commensurate with experience; minimum \$16,000. Send curriculum vitae, brief statement of research experience, and names of 2 referees to: Dr. S.S. Tobe, Department of Zoology, University of Toronto, Toronto, Ontario M5S 1A1.

## RECENT DEATHS

Karl Ritter von Frisch died on 12 June, 1982 in Munich, Germany at the age of 95 years. He was born in Vienna and his fascinating research dealt with bee behaviour culminating in the discovery of the language of the bees. In 1973 he was awarded the Nobel Prize.

William H. Fell, Winnipeg, Manitoba, on 9 June, 1982. Graduated in entomology in 1949 from the University of Manitoba and worked for the Forest Entomology Unit, Agriculture Canada, until he rejoined the R.C.A.F. in 1951.

## EDITOR'S REMARKS

The Bulletin serves to strengthen the lines of communication among entomologists across this country. Also, it provides insights for entomologists in countries other than Canada to the activities and concerns of members of the ESC. Since this Society includes graduate students and amateur entomologists, the Bulletin welcomes news of recent or upcoming activities, either by them as groups or as individuals. This may be accommodated in established sections, such as Personalia or News of Organizations, or in special articles or columns. As well as continuing to cater to the immediate interests of the membership through, for example, providing news of meetings, new books, records of Society decisions, the Bulletin will publish Guest Editorials describing and commenting on longer-term, more general, national or international concerns of entomologists. Anyone who is interested in, concerned or enthusiastic about this concept, or who requires further information, please contact the (new) Editor.