



ENTOMOLOGICAL SOCIETY OF CANADA

Bulletin



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of the Entomological Society of Canada *Bulletin*

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JOYEUX NOEL — BONNE ET HEUREUSE ANNEE

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B.J.R. Philogène Editor (Bulletin)

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MADAME LA PRÉSIDENTE



Dr. M. Ellen MacGillivray is the first woman to become president of the Entomological Society of Canada. She is taking on her new responsibilities at a critical moment for entomologists and biologists in Canada. Dr. MacGillivray intends to capitalize on the impact of the Manpower Study which was extensively discussed at the Toronto meeting of the Society. Public awareness of problems faced by entomologists is of particular concern to the new president. No doubt she can call on her feminine intuition to find ways of inspiring Canadian entomologists and the public they serve. (See page 4)

The Prime Minister has chosen, for reasons known only to him, not to answer the President's letter (Bull. Vol. 8, No. 3). It is evident from his failure even to acknowledge receipt of the letter, that he has little or no interest in the welfare of the scientist or the scientific community. Personally, I find his lack of response unacceptable, and I would suggest that the members of our Society take action wherever possible to express their displeasure at such treatment. A copy of the letter will be released to the Leaders of the Opposition, together with a note expressing our resentment at his lack of common courtesy. (See pages 2 — 3)

G.S. Cooper

GOVERNMENT POLICY, SCIENCE AND THE OPPOSITION

Mr. J. Clark, M.P.
Leader
Progressive Conservative Party
House of Commons, Room 409S
Ottawa, Ontario K1A 0A6

September 13, 1976

Dear Mr. Clark:

Attached is a copy of a letter from the Entomological Society of Canada to the Prime Minister of Canada dated May 20th, 1976.

As you will note, this letter outlines the concern of the Entomological Society of Canada for the present lack of science policy in Canada and the progressive destruction of scientific communities. Never in the history of Canada has the morale of the Canadian scientist been as low as it is now. The lack of foresight being displayed by our government can only result in Canada becoming dependent upon other nations to solve our problems in the future, which they may or may not do.

It is also interesting to note at this time that the Prime Minister has, for reasons known only to him, refused to acknowledge receipt of the letter. The courtesy of an answer or at least an acknowledgment of receipt of the letter was expected. There does exist however, the possibility that the ignoring of our letter reflects the level of esteem with which scientific societies are held by the present government.

The attached letter expresses our feelings and concern, and is being forwarded to you for your information.

Yours very truly,
G.S. Cooper, Ph.D.
President

LEADER OF THE OPPOSITION — CHEF DE L'OPPOSITION

September 28, 1976.

Dr. G.S. Cooper, President,
Entomological Society of Canada,
Plaza One — 2000 Argentia Road,
Mississauga, Ontario L5N 1P7.

Dear Dr. Cooper,

Thank you for sending me a copy of your letter to the Prime Minister regarding the present lack of a science policy in Canada.

While urging the government to exercise restraint in its expenditures in order to combat inflation, my Party has, at the same time, emphasized that spending priorities must be clearly defined and established. It is easy to cut back on research funding since the benefits occur in the future and the costs in the present. However, if we lose our talented people and do not develop new products and techniques, we will be the much poorer for it. Maintenance of funds for Scientific Research must be committed on a long term basis and cannot be turned on and off at will if any progress is to be made.

At the present time, my colleagues and I are reviewing our policies and programmes with a view to providing Canadians with a more responsive and responsible government. I know our Caucus Committee on Science and Technology chaired by Mr. Bill Kempling, M.P., will be interested in the opinions you have expressed on this matter. Accordingly, I have taken the liberty of forwarding a copy of your letter to them, for their information and attention.

I appreciate your advising me of your views on this matter and I hope you will continue to keep me informed of your thoughts and ideas.

Yours sincerely,
Joe Clark

ELECTION 1977

The Nominating Committee (G.S. Cooper, Chairman) will prepare the usual slate of nominations for President-Elect and two Directors-at-Large.

Nominations from the membership may be submitted in writing over the signatures of at least three active members of the Society, with a signed statement from the nominee indicating his willingness to accept office if elected. Such nominations shall be submitted to the Secretary, Dr. G.H. Gerber, Research Station, Agriculture Canada, 195 Dafoe Road, Winnipeg, Manitoba R3T 2M9, not later than 31 March 1977.

GOVERNING BOARD MEETING

The Governing Board will meet on 24 and 25 February 1977 in Quebec City. The site was selected so that there could be interaction with students at local universities, as occurred at the University of Manitoba in 1976, University of Guelph in 1975 and at Macdonald College in 1974. Matters for the consideration of the Board should be addressed to the Secretary, Dr. G.H. Gerber, Research Station, Agriculture Canada, 195 Dafoe Road, Winnipeg, Manitoba, R3T 2M9.

AN IMPORTANT MESSAGE FROM PRESIDENT MacGILLIVRAY

TO: Members and Affiliated Societies of the Entomological Society of Canada

In 1974, Dr. C.R. Harris wrote (ESC Bul 6(4): 144-146) about the deploring situation of entomology in Canada. He suggested that until we had statistics on our entomological manpower and an adequate inventory of entomological research programs we would be forced to generalize about the situation and could not establish research priorities. He wrote: "Until we obtain such data we are in a difficult position when it comes to speaking out."

In 1974, an Ad-Hoc Committee initiated the Manpower Survey of Entomologists in Canada. Through its efforts the survey was sponsored by the Public Service Commission and funded by the Department of Supply and Services. In 1976, Dr. F.L. McEwen, Dr. A.J. McGinnis and Dr. Harris, the Manpower Survey Committee, worked actively with a professional consultant and drew up the Brief which you received in your September issue of the Bulletin. **THREE CONCERNED ENTOMOLOGISTS FOLLOWED THROUGH TO GET THE STATISTICS.**

The findings of this Brief, based on your replies to a questionnaire, must now be utilized. The initial step was taken at the Annual Meeting in Toronto when the Brief was presented and an open panel of elected government officials, scientists and those who benefit from entomological research discussed the Brief and actions which might be taken. A taped recording of the panel discussions, about two hours fifteen minutes, is being forwarded to each Affiliated Society. Typed copies of the discussions are available from the Secretary. The Affiliated Societies will make the tapes available to groups or individuals.

The Manpower Committee recommended that every member and Affiliated Society give priority to the Brief, to study it, and to take positive action as suggested by the panelists. Each Affiliated Society, I hope, will give the Governing Board of ESC some concrete suggestions on planning for entomological science policy in Canada for the next decade. The Governing Board and many entomologists fear that unless some very serious planning is done in the immediate future we may encounter extremely serious insect problems.

The Governing Board and Manpower Committee have completed as much as they can do without further help from you. Now it is up to every entomologist in Canada to make his opinion on entomological science policy known to provincial and federal governments, universities, industry and the general public. **NOW IT IS YOUR TURN FOR ACTION.** The Governing Board seeks your support and urges that you take positive action to prevent any further degeneration of our profession.

I can best express it in the words of Dr. Harris: "We are really faced with a choice. We can sit idly by watching support for entomological programs slowly disappearing or we can actively fight for a reassessment of the present policies toward entomological research and development of some realistic long-term goals. Entomology in Canada today is at a very important crossroad. Actions which we do or do not take could have much to do with the path it follows."

M.E. MacGillivray
President

Editor's note: Members are urged to get in touch with Dr. R. Trottier, Agriculture Canada Research Station, Vineland, Ontario. As chairman of the Public Education Committee Dr. Trottier is anxious to form sub-committees in the following areas: (1) Government and industry; (2) Educational institutions; (3) Producers and consumers.

*Entomological Society of Canada Gold Medal for Outstanding Achievement in
Canadian Entomology 1976 Presented to
BRYAN P. BEIRNE
at Toronto, Ontario, October, 1976*



The Entomological Society of Canada awards its 1976 Gold Medal to Dr. B.P. Beirne for his outstanding contributions in entomological research, teaching and extension, not only in Canada but throughout the world.

Bryan Patrick Beirne, now Professor of Pest Management and Director of the Pestology Centre at Simon Fraser University, Burnaby, British Columbia, was born in County Wexford, Ireland, in 1918. He lived in various parts of Ireland and was an avid insect-collector from an early age.

He entered Dublin University (Trinity College) at age 16, graduated at 20 with a B.Sc. (Hons.) and remained there to earn a Ph.D. at age 22 with pioneering work on the taxonomy of the larvae of the Ichneumonidae. He took M.Sc. and M.A. degrees after his Ph.D. because the student fees were less than the income tax he would have had to pay if he were not registered as a student. He held the prestigious Overseas Scholarship of the Royal Commission for the Exhibition of 1851 for three years before becoming a full-time member of the faculty of Trinity College in 1943.

Bryan was married to Betty Curry in 1948. They have a son, Patrick, now a lawyer in British Columbia, and a daughter, Anne, now a CBC Television news reporter in Montreal.

His first job was in medical research: to work out the organization of the blood vessels of the human uterus and placenta. He was a Demonstrator in Zoology in both Trinity College and the Royal College of Surgeons, Dublin. At Trinity he became Instructor, and then Assistant Director of the Museum of Zoology and Comparative Anatomy and Lecturer in Entomology. Despite these specialized titles, his duties were mainly teaching in general zoology, for up to 21 hours a week. For seven years before leaving Ireland he acted as a pest problem consultant to government departments, legal and industrial firms and on the side owned and operated a commercial pest control business.

At a Commonwealth Entomological Conference in London in 1948 Beirne met H.G. Crawford (then Dominion Entomologist), W.A. Ross (first President of the Entomological Society of Canada), and A.B. Baird (first Treasurer of ESC) and was persuaded to move to Canada to join the staff of what was then the Biological Control Laboratory, Belleville, Ontario. Because of an administrative technicality he had to be appointed first to the Insect Systematics Unit in Ottawa. When he arrived in Canada in 1949 he found the atmosphere among the Ottawa systematists to be congenial and consequently stayed there for the next six years, in charge of the Hemiptera-Homoptera section.

In 1955 he was transferred to Belleville as Officer-in-Charge, later to become Director when the Laboratory was up-graded to a Research Institute. Under his leadership new lines of work were started and the rate of productivity of the Institute quadrupled. In 1967 he and seven colleagues joined Simon Fraser University in Burnaby, British Columbia, to develop pest management as an integrated subject. The results are a highly productive research group and a structured professional programme leading to the degree of Master of Pest Management, of which Beirne was the chief architect.

He is author of six books, more than 100 research papers, and some 50 shorter notes and articles. They are mostly on insects but include such diverse subjects as mammals, entomological techniques, history and bibliographies, and the foibles of bureaucrats. He first studied Lepidoptera, and his major publications include "A List of the Microlepidoptera of Ireland" and "British Pyralid and Plume Moths. Interest in variation and distribution led to studies in zoogeography that culminated in his book "The Origin and History of the British Fauna".

In Canada he specialized in systematics of Homoptera. These studies ultimately resulted in the well-illustrated monographs, "The Leafhoppers of Canada and Alaska" and "The Cicadas and Treehoppers of Canada".

A continuing interest in biological control stemmed from his early studies on taxonomy of larval and adult Ichneumonidae and on the bionomics of individual pest species and their parasites. This expanded to work on the theory and practice of biological control and of pest management in general. Results included a book "Pest Management" and, more recently, an analysis of causes of successes and failures of biological control attempts against pest insects in Canada.

At Simon Fraser he embarked on the massive task of compiling and classifying all published information on Canadian agricultural insects, to provide a basis for pest studies and for computer analyses. This file now contains an estimated 1.4 million items of information. He directed graduate student work in such areas as the ecology and natural control of various orchard insects outside the orchards, alfalfa pest management, ecology of dung-breeding flies, and mosquito population regulation by aquatic plants.

Beirne was elected a Member of the Royal Irish Academy (M.I.R.A.) in 1944. He is also an F.R.E.S., F.L.S., F.Z.S., Fellow of the Entomological Society of Canada, and a member of various other learned societies including the Entomological Society of America, the Canadian Society of Zoologists, the International Society of Biometeorology, the International Organization for Biological Control, and the British Columbia Research Council.

He is active in international organizations. For example, he was first Chairman of the International Advisory Committee on Biological Control and has been a member of various special committees of the World Health Organization, International Biological Program, International Development Research Centre, Pacific Science Congress, Canadian International Development Agency, and others. Recently, he surveyed research on river-blindness in West Africa, evaluated possibilities for a pest management programme at the University of the West Indies, Trinidad, and participated in pest management conferences organized by the East-West Centre, Hawaii, and by the United States Department of Agriculture.

Bryan is an imaginative innovator and constructive critic who thinks big and whose ideas may seem radical for their time but eventually are accepted as normal. Like all systematists he is a well-organized analyst who classifies data, evaluates it objectively, and selects the significant items. He always operates completely openly, which is sometimes confusing to those of more devious outlook, but does not hesitate to express convictions. He much prefers to be a catalyst and an influence for good than to hold positions of power or prestige.

Bryan has great personal integrity and a dislike for pettiness, and evokes the intense loyalty of associates. Probably his most outstanding characteristics that make him such a good teacher and valued colleague, are his compassion and respect for people and his willingness to help others. He sees humour in everything, doesn't take anything too seriously, except injustice, to which he can react strongly and his enthusiasm and joy in life rub off on everyone who comes in contact with him. He has had, and continues to have, a profound influence for good on the outlook and development of associates and students.

The Entomological Society of Canada takes great pleasure in honoring Dr. Beirne, the fifteenth recipient of the Award.

1962 R.F. MORRIS
1963 A.W.A. BROWN
1964 R. GLEN
1965 M.L. PREBBLE
1966 C.W. FARSTAD
1967 B.N. SMALLMAN
1968 W.G. WELLINGTON
1969 K.E.F. WATT

1970 C.S. HOLLING
1971 J.G. REMPEL
1972 R.W. SALT
1973 B. HOCKING
1974 P.S. CORBET
1975 G.G.E. SCUDDER
1976 B.P. BEIRNE

HONORARY MEMBERS

The Honorary Members of the Society are R.E. Balch, W.J. Brown, E.M. Duporte, R. Glen, G.P. Holland, W.N. Keenan, G.F. Manson, A.D. Pickett and H.H. Ross.

The By-Laws permit the election of one more Honorary Member by the next mail ballot. Any five active members may submit, for consideration by the Honorary Membership Committee, the name of a member who has made an outstanding contribution to the advancement of entomology. The Committee may nominate members for election to Honorary Membership.

Submissions, accompanied by supporting statements, should be sent to the undersigned by 15 February 1977 at the latest, for forwarding to the Committee. Previous submissions will not be considered by the Committee unless they are resubmitted.

George H. Gerber, Secretary
Research Station, Agriculture Canada
195 Dafoe Road
Winnipeg, Manitoba R3T 2M9

MANAGEMENT OF PEST MANAGERS

Entomological Society of Canada Annual Meeting, Toronto, 26 October, 1976
Address by the Gold Medallist,

Dr. Bryan P. Beirne,

Professor of Pest Management, Simon Fraser University

Canadian entomologists are caught in a dangerously deteriorating situation. The needs for better pest damage control continue to intensify because of the population increase, the loss of pesticides from regulation and resistance, and now the apparent climatic changes. At the same time the resources of the Federal research agencies that may be capable of meeting the needs continue to diminish and there does not seem to be any coordinated or organized National plan to expand non-Federal research.

We now have for research at the Federal level a sort of ageing, decaying, inward-looking, well-housed aristocracy that attempts to cope with shifting and developing practical problems with inadequate technician and travel resources and an insufficiently flexible framework. The Federal agencies obviously are looked upon by politicians and administrators as safe targets for staff cuts and budget cuts. This means that they and their research are recognized as not having much support from the public.

I believe that a variety of changes, some of them quite radical, are essential to halt the present situation and to reverse the trends. The reforms that I am advocating are essentially of two kinds: in administrative systems, which are the most important; and in work emphasis.

First, representatives of the segment of the public that is served directly by the research should be involved in deciding what kinds of research are done.

This requires a radical decentralization and reallocation of responsibility and of authority for decisions on how research funds are spent. The responsibility and authority should be transferred from government departments — desirably Provincial as well as Federal — to Regional Councils consisting largely of informed people from outside the government agencies and representing the particular industry — agriculture or forestry — which the government agency exists to serve — rather like the Board of Governors of a Provincial university.

Excluded from this might be research agencies that provide specialized scientific identification, diagnostic, analytical, or other information services nationally, and possibly a few basic research centres that should be clearly labelled as such.

This proposed reorganization should much improve the effectiveness of National research resources in some or all of these ways:

— By improving the often inadequate communication and the sometimes virtually non-existent coordination and integration of research between Federal, Provincial, and non-governmental agencies;

— By producing a more pragmatic balance than hitherto between, for example, work travel and technician assistance, on one hand, and the construction of elaborate buildings, on the other:

— By facilitating work evolution and encouraging the development of a corps of independent consultants through increased long-term, problem-based contracts with specialists outside government. This would also contribute to avoiding the difficulty of what to do with the specialist who is hired as a civil servant for life for a short-term research need;

— By providing, through outside expert consultants, objective analyses of what has and has not been done in particular subjects, on progress of work in projects, and on accomplishments of scientists who are eligible for promotion, and recommending accordingly;

— Hopefully, by eliminating unscientific partiality in appointments and in awards of research grants — for instance, by government departments of agriculture that tend in practice to give them to people from faculties of Agriculture though people from faculties of Science may be equally or better qualified;

— And, of course, by developing through public involvement in decisions public support for the research and an improved public image of scientists.

The second crucially important administrative change needed is that *all scientific administrators should be term appointees.*

To facilitate work evolution and action on new ideas, to inhibit empire-building, and to reduce effects of the Peter Principle, a scientist should serve as a Director or Section Leader for no more than five or six years, after which he should return to full-time research or go to a quite different administrative position. From experience with this procedure at Simon Fraser University I am completely convinced of its virtues.

Third, *procedures should be eliminated in which research publications are a primary basis for promotion.*

Effects of such procedures are to concentrate research on publishable specialties. The consequence is a large body of published information of which too much is "so what?" in relation to practical problems.

This needs to be replaced by a system in which advancement is based on evaluations, by peers from outside the agency, of the efforts of the individual to solve practical problems directly or indirectly. This means that his work should be based on a problem or problems — actually, not just on paper — rather than on a research area as such. It would facilitate and encourage research and development that is truly aimed at solving practical problems, even if that work does not lend itself to publication. Remember, there can be, and there usually is, a great difference between work on a problem and work aimed at solving a problem.

Fourth, there is a *need for an effective system of accountability.*

That is, there is a need for a system by which agencies or individuals who deliberately mislead the public either directly or by concealing relevant information may be held accountable for any harmful consequences. The primary value of a system of accountability is, of course, that its mere existence tends to prevent such things from happening. The need for accountability is obvious in relation to harmful properties of pesticides and other chemicals that are placed in the environment. But accountability — which is an aspect of public disclosure of information — has wide

potential application to any consequences that are actually or potentially harmful to the public of governmental, academic, or industrial secrecy or defensiveness or of institutional or individual prejudice, arrogance, or pettiness.

My fifth point is that there is a *need for increased emphasis in some research areas to meet moral responsibilities to the public.*

While my comments on administrative changes are general, I will illustrate this aspect with examples of some responsibilities specifically of pest managers.

As pest managers we have a moral responsibility to the people of Canada to do what we can to give them protection from potentially harmful chemical pesticides. We do not now do what we could. We rely too heavily on data from United States organizations whose decisions and actions have on occasion obviously been influenced by pressures from agricultural and pesticide lobbies.

In view of the fact that most of the important insect, weed, and vertebrate pests in North America originally came from abroad, we have a responsibility to the people of North America to exert every effort to ensure that newly-established exotic species are eradicated, instead of merely waiting to see whether or not they become pests and then trying to control them if they do.

Then we have a responsibility to the people of other countries to put much-above-average research and development effort onto pest problems that are of international importance and that can be investigated particularly well in Canada. In doing so we would aid developing countries who need the solutions and give some return to advanced countries whose research results we use for our advantage, as well as help ourselves. Only one important pest problem that is investigated more extensively in Canada than anywhere else comes to mind: the problem of birds colliding with aircraft. Obvious examples on which we should concentrate greater effort than now are pests of conifers, the total properties of chemical pesticides, and, above all, biting flies and other arthropods of medical and veterinary significance.

As this is a meeting of the Entomological Society of Canada I will conclude with a view on the future of entomology in Canada.

It should be obvious that I have been completely convinced since the early 1960's that *the future of entomology in Canada is mainly as an aspect of pest management* rather than a separate subject. Entomology, plant pathology, nematology, weed science, and vertebrate pest biology may continue to decline as discrete disciplines, but as aspects of pest management they are starting new growth curves.

Though the pest management concept originated with entomologists, I have the impression that some entomologists are still unclear on what pest management really is. Perhaps they have difficulties in making the radical changes in mental outlook from work based on insects to work on environments and from a pest-killing approach to an environmental-management one.

Pest control and pest management have one objective in common: to prevent or limit the harm caused by pests.

But they differ in several basic ways:

— Pest management has a second, equally important, main objective, which is to avoid harming useful organisms of all kinds, notably people; pest control does not have that objective, though integrated pest control attempts to avoid harm to one kind of useful organisms, the natural enemies of pest insects;

— Pest management is based on kinds of environments; pest control is based on kinds of pests or kinds of controls;

— Pest management is a police system that emphasizes damage prevention; pest control usually is a military operation that emphasizes pest-killing;

— Pest management is directed against all kinds of pests in an environment — weeds, vertebrates, plant pathogens, insects, others; pest control is applied against each kind separately; and

— Pest management is based on facts and therefore on decisions by specialists who are informed on the facts; decisions in pest control are made by anybody.

The development, demonstration, practice, and improvement of pest management, the evolution of entomologists into pest managers, and the absorption into pest management of applied entomology, plant pathology, and the other subjects that exist only because pests exist would be facilitated by the broader changes in the administration of research and development in agriculture and forestry that I have proposed here and which I plan to continue to advocate as opportunity permits. It will be more than merely interesting — it will be critically important to the future well-being of Canadians — to see which will prevail: the needs for change; or the resistance to change.

ENTOMOLOGICAL MILESTONE

Herbert H. Ross, "king of the caddis flies", has, in 1976, concluded his 50th year in entomology. It was on May 5, 1926, that he, a newly appointed Insect Pest Investigator (temporary), reported for duty at the Dominion Entomological Laboratory, Agassiz, British Columbia. Reginald Glendenning, the Officer-in-charge, assigned him to work in the hop fields to study the life history and habits of the red spider mite. This first entomological job lasted until September 24, when Herb resigned to return to his academic studies at the University of British Columbia. He got his summer job back again in April of 1927, and was awarded a B.Sc. in Agriculture on May 11, 1927. He finished that summer's work busily employed dusting the mites with lime-sulfur. Is it any wonder that he turned to taxonomy to get out of the insecticidal fog! From British Columbia he went on to greater things at the Illinois Natural History Survey and today he is still active at the University of Georgia. Congratulations, Herb!

P.S.: The Department of Entomology at the University of Illinois has celebrated its centennial on November 11, 1976. One hundred years of teaching of Entomology is quite a memorable event. To all Illini, Congratulations.

P. Riegert

Entomological Society of Canada C. Gordon Hewitt Award for Outstanding Achievement in Canadian Entomology 1976, Presented to
BRUCE S. HEMING
at Toronto, Ontario, October, 1976



The C. Gordon Hewitt Award of the Entomological Society of Canada for 1976 is presented to Dr. Bruce Sword Heming, Department of Entomology, University of Alberta, Edmonton, Alberta, in recognition of his outstanding achievements in entomological research.

Dr. Heming was born in 1939, at Ithaca, New York, and subsequently moved with his parents to Whittier, California, and then to Guelph, Ontario. He took a Bachelor's degree at Ontario Agricultural College (now University of Guelph) in 1963, and a Ph.D. degree in 1968, at North Carolina State University, Raleigh, North Carolina. Having joined the Department of Entomology, University of Alberta in the fall of 1968 as an Assistant Professor, he was promoted to Associate Professor in 1973. He spent a sabbatical year (1974-1975) at the Laboratorium voor Entomologie, Landbouwhogeschool, Wageningen, Netherlands, where he worked in the laboratory of Dr. René Cobben.

Bruce's lively, wide-ranging interest in insects and his intense but light-hearted enthusiasm for their study are evident to his departmental associates, as well as to undergraduates fortunate enough to have elected to take his courses. His area of special expertise is morphology generally, and more especially ontogenetic development of structure. Just as artists have preferred media for expression, so have scientists. Bruce Heming's medium is the Thysanoptera. (Those who might dismiss the tiny members of this order as nondescript and inconsequential have not had the opportunity to enjoy Dr. Heming's electrifying discourses about the wonders of thrips.)

For his Ph.D. work studies were begun at the nether ends of thrips and comprised detailed investigation of the reproductive systems of males and females of species representing the two suborders, Terebrantia and Tubulifera. He traced development of their sexual organs, both internal and external, through all instars, from hatching to adult.

This was followed by investigation of the pretarsus, which provided for the first time a satisfyingly complete account of structure, mode of development, and function of the unique "bladder-foot" of these insects. This work resulted in numerous discoveries about structure, in establishment of homologies of the various parts, in the first overall account of the mechanism of protrusion and retraction of the bladder-like arolium, and in the unexpected discovery of considerable difference in structure and function of the pretarsus between the early stages on the one hand, and the adult on the other.

Similarly, study of metamorphosis of antennae showed that these structures experienced more complex changes than one would have expected. Striking differences between terebrantians and tubuliferans were ascribed to development of cryptophily by the latter group.

Bruce gives precise accounts of the actual process of metamorphosis of thrips, and precise and detailed comparisons with metamorphic changes in the related Hemiptera and in other orders of insects. Furthermore, he considers the evolutionary implications of the data presented. Because larvae and adults are so similar to one another, the structural changes that occur during the quiescent "pupal" stages seem unnecessary. He proposes that such ontogenetic stages are relics of ancestral phylogenetic stages in which differences between larvae and adults were greater than differences between extinct forms, and thus pupal stages were then necessary for transition from immature to mature form. His work thus provides an important body of fact for assessing the nature of the "pupal" instars of thrips, and for comparing metamorphosis of these insects with that of the more diverse holometabolous Endopterygota.

Presently, he is studying structure and development of the mouthparts, and as well has in an advanced stage of preparation a detailed account of embryonic development of *Haplothrips verbasci* (Osborn). Eventually, his studies will include all of the organ systems of the Thysanoptera.

Bruce's work is imaginative, original, and technically excellent. The high quality of illustrations and written presentations in his publications are evidence of the attention and effort lavished by him on his chosen field of endeavor. Work of such high quality, depth and breadth may foreshadow a renaissance in morphology, implicitly called for by G.G.E. Scudder in his 1975 Gold Medal Award address to our Society. The Entomological Society of Canada is fortunate to count Dr. Heming among its members and it is fitting that we honor him as the second recipient of the C. Gordon Hewitt Award for his outstanding contributions to entomology.

1975 R.P. BODNARYK
1976 B.S. HEMING

MEMOIRS OF THE ENTOMOLOGICAL SOCIETY OF CANADA

"A study of the systematics of the water mite family Pionidae (Prostigmata: Parasitengona)" by Ian M. Smith. 249 pp. Issued 12 October 1976.

"A revision of the genus *Sepedophilus* Gistel (Coleoptera: Staphylinidae) of America north of Mexico". by J.M. Campbell. 89 pp. Issued 6 October 1976.

Copies of the Society's Memoir 34 (1964, Key to the Chalcidoidea of Czechoslovakia) are needed, as well as ones of Canadian Entomologist Supplement 30, 1963 (Catalogue of the Nearctic Chalcidoidea). These would be put to good use through Dr. O. Peck, Biosystematics Research Institute, Ottawa, Ontario K1A 0C6.

FIRST GOLD MEDALIST RETIRES



Frank Morris (Dr. Robert Franklin) retired in September of this year winding down a career that began in the summer of 1936 with the embryonic Canadian Forestry Service. He was a Forestry student of the University of New Brunswick at the time. Like a number of forest entomologists in Canada, Frank cut his teeth on the European spruce sawfly which was epidemic in eastern forests in the late 1930's and early 1940's. This meant survey trips by canoe with Carl Atwood (as far from civilization as possible and only using the purest woodsman's methods for survival), or digging through snowbanks with Malcolm Prebble (press on, regardless) searching for sawfly cocoons in the wilds of the Gaspé.

Obviously the good life was too much for Frank because he switched his allegiance to the most infamous of all forest pests in eastern Canada — the spruce budworm. In 1944-1945, when Reg Balch was in charge of forest entomology investigations in the Maritimes, an opportunity arose for the Province of New Brunswick, the Government of Canada, and a wood processing industry, to join forces in seeking a solution to the budworm problem through intensive forest management. Frank Morris was chosen as Project Leader — Entomology, and the Green River Watershed in northwestern New Brunswick was selected as the study area. Frank's approach to the entomological studies were far from conventional. He quickly saw the need for sound sampling techniques to determine changes in the abundance of successive life stages within a generation (life table). He argued that intensive sampling was required to determine how a population changed in time and space, while careful monitoring of natural control factors and processes might reveal the 'why' of the population change and the casual pathway. The backbone of this approach was, in essence, to count insects, and, in retrospect, it obviously took a combination of gentle persuasion, a con-artist technique, and promises of Saturday night parties to convince a support staff (and unpaid wives) that counting millions of budworms was a fun game.

The life-table approach to a resource management problem was not a short-term technique and thus it was not until 1963 that the budworm story emerged in print. The entire monograph was greeted with interest by entomologists, but one chapter in particular, on Key-factor Analysis (and Frank's original paper on the subject in 1959) presented a concept that made entomologists and ecologists here and abroad return to their dusty field notes to determine if a simple but elegant analysis could indeed pinpoint key factors or processes in their data. And the mathematically-minded had a field day in re-examining some of the underlying principles in regression and time series analysis used in the key-factor method, while the armchair ecologists plugged random numbers into their computers to determine

if the whole concept was a hoax. Even the hoary argument of density-dependence-independence was re-awakened. Thus, many insect ecology papers published in the 1960's were cued from, or made reference to, the Morris' key-factor analysis. One could not ask for a greater sign of respect from fellow research workers.

During two decades of field-orientated research Frank realized that in many instances population behaviour in the field could only be described from careful observations of groups of individuals under controlled conditions. Thus in the 1960's he chose an experimental animal, the fall webworm, that was easy to count in the field and to handle in the laboratory. His 16 papers probe at the aspects and interactions of climate, food supply, parasitism, and genetic change in the dynamics of this species. His study techniques of the budworm and fall webworm are models in research methodology that have been and continue to be copied with success by many workers.

Frank is not a world traveller and he only attended a few international conferences. He preferred to present his views in clearly-written and well-documented publications and his long publication list varies from "On Skunks and How to Remove Them" to "Influence of genetic changes and other variables on the encapsulation of parasites by *H. cuneus*". Frank's hobbies are just as varied — from archery to radio-controlled model aircraft with added exploits in the University of New Brunswick swimming pool. His overseas and Canadian friends, and particularly his fellow workers at the Maritimes Forest Research Centre, Fredericton, hope that he will continue to write and enjoy his hobbies during retirement. We sincerely wish him and Cecelia the best of luck and invite friends to contact them at 425 Waterloo Row, Fredericton.

C.A. Miller and Colleagues
Maritimes Forest Research Centre

FELLOWS OF THE SOCIETY

Any four active members of the Society may present a nomination for Fellowship over their signatures. This nomination shall include a review of the nominee's contribution as support for the nomination. The contribution may be in any area — research, teaching, application or administration — and may be judged on the basis of contribution to and stimulation of the work of others, as well as by direct personal effort. It will usually, though not necessarily, be cumulative over ten years or more.

Members are requested to submit, by January 28, 1977, their nominations marked "Confidential" to the Chairman of the Fellowship Selection Committee, as follows:

D.G. Peterson
Room 2087
K.W. Neatby Building
Central Experimental Farm
Ottawa, Ontario K1A 0C6

COMMITTEE REPORTS

PUBLICATIONS COMMITTEE REPORT, 1976

The Committee met on January 30, 1976. Several procedures and policies designed to facilitate processing of manuscripts for The Canadian Entomologist were recommended and subsequently implemented.

Three new associate editors for The Canadian Entomologist have been appointed: D.G. Finlayson for toxicology, R.J. Jaques for general biology and insect pathology, and J. McNeil for papers in French.

The Canadian Entomologist now publishes Scientific Notes. An announcement of such appeared in The Bulletin.

Unfortunately the NRC grant for subsidy of page charges for university authors publishing in The Canadian Entomologist was not renewed.

The pool of reviewers for manuscripts and books was significantly increased by volunteers who responded to an announcement in The Bulletin. Many thanks to those who volunteered!

S.H. Gage
S.B. McIver (Chairman)
G. Pritchard
H. Salkeld

V.R. Vickery
W.G. Wellington
C.M. Yoshiomoto

REPORT OF THE BY-LAWS COMMITTEE

The By-Laws approved by the members by referendum in 1976 were submitted to the Department of Consumer and Corporate Affairs for their necessary approval. They were returned for a few minor changes necessitated by the Canada Corporations Act. When these changes, which will not require another ballot, are made and approved, the new By-Laws will become immediately effective.

The Rules and Regulations and the Committee Guidelines are being studied by the Officers, Trustees and committee chairmen as they particularly affect their offices. It is planned to have them returned about the end of November. The new By-Law Committee, will effect the necessary revision, study them in Committee and have, if possible, a final revision for the consideration of the Board at the midwinter meeting early in 1977.

Antony Downes, E.G. Kettela
M.E. MacGillivray, D.B. Waddell
D.C. Eidt, Chairman

Editor's note: The amended By-Laws of the ESC received the approval of the Minister of Consumer and Corporate Affairs on November 9, 1976.

REPORT OF THE MANPOWER COMMITTEE

The Manpower Committee had an active year. Several meetings were held in Ottawa and Guelph with the consultant (Potentia Associates) responsible for preparing the Manpower Study. The latter was completed and submitted to the Department of Supply and Services on schedule at the end of March. Subsequently the Manpower Committee drafted a paper summarizing results of the study. It was published in the Bulletin of the Entomological Society of Canada thus making the highlights of the study available to our membership. Arrangements were made for the ESC to obtain additional copies of the complete manpower study. These will be available on loan to those wishing more detailed information than that available in the paper.

The Manpower Committee was concerned that proper authorities be made aware of the results of the Manpower Study. We suggested to the ESO-ESC Program Committee that a one day symposium relating to the study be held at the Annual Meeting in Toronto. The Program Committee agreed to this suggestion and assigned the Manpower Committee responsibility for organizing that symposium. It was our feeling that there was little point in talking to the "converted" and in cooperation with President Cooper we selected and invited representatives of industry, agriculture, and government (politicians) to attend and participate. Responses have been encouraging. Members have been made aware of the symposium via the Bulletin.

The Manpower Study has been completed thus accomplishing the assignment given to this committee. We would, however, like to point out to the Governing Board that the conclusions derived from the study still need to be "sold" to those concerned with planning science policy in Canada. This should be a prime goal not only of the Governing Board but of all individual members. If we do not continue to push hard, the report will simply gather dust and be forgotten.

C.R. Harris
A.J. McGinnis
F.L. McEwen (Chairman)

FELLOWSHIP SELECTION COMMITTEE REPORT

The Committee, consisting of G.P. Holland (Chairman), R.E. Balch, D.K. McE. Kevan, E.J. LeRoux, G.F. Manson and A.S. West, did not formally meet again as a group after July 15, 1975, when it convened in Dr. LeRoux's office to work out the final selection of fellowships. This meeting was reported on July 18, 1945.

At the end of this report the attention of the Governing Board was drawn to the matter of designing a suitable diploma or certificate to be issued to the new fellows.

The Governing Board decided to avail themselves of our help and so G.P. Holland with E.J. LeRoux and E.C. Becker, Treasurer of the Society, carried the matter forward. Dr. LeRoux took leadership in the actual designing of the scroll. After considerable discussion over the merits of English or French or both we decided on Latin as being in keeping with the academic achievement noted, and avoiding any controversy over bilingualism.

In English, the inscription reads:

*The Entomological Society of Canada
Confers on
"James J. Macgregor"
the status of
Fellow
of the Society
in recognition of his outstanding
contributions to the field of entomology*

Secretary

President

The Latin version was composed by Dr. E. Gareau of the Department of Classical Studies, University of Ottawa.

Dr. LeRoux spent considerable time considering the size, quality of paper, colours, and mounting of these diplomas, and these were kept in mind by Mr. Ross Jackson, Director of the Graphics Unit, and by Dr. E.C. Becker, when he submitted the artistic mock up for commercial appraisal. A version acceptable to the Society was decided upon and the individual names of the 25 Fellows selected at this time were inscribed in red by Mr. Go Sato of the Coleoptera Section, Biosystematics Research Institute. These copies have already been dispatched to the recipients.

This concludes the functions of this committee.

G.P. Holland (Chairman)

R.E. Balch, D.K. McE. Kevan, E.J. LeRoux, G.F. Manson, A.S. West

REPORT OF THE SCHOLARSHIP FUND RAISING COMMITTEE

To date \$2,579.20 has been raised for the Scholarship Fund from contributions from 26 ESC members, four non-members and one Regional Society. Interest on bank and deposit certificate to date is \$242.69. The total amount in the Scholarship Fund is \$2,821.89. This is approximately 10% of what is required to provide an adequate Scholarship.

Why did the fly fly? Because the spider spied her!



RICHARD BAYARD DOMINICK
1919-1976

Dr. Richard Bayard Dominick, President of the Wedge Entomological Research Foundation and an Editor of *The Moths of America North of Mexico*, died suddenly and unexpectedly on 4 May 1976 in the grounds of his home at the Wedge Plantation, McClellanville, South Carolina.

Dick Dominick was endowed with unusual intelligence, energy and tenacity, with enormous and infectious enthusiasm, and with compelling personal charm. He put these gifts, supported by inherited money, at the disposal of a wide range of interests in natural history, conservation, exploration, education and other worthy fields. He was interested in entomology from boyhood, and specimens he collected as a youth are among those illustrated in Klots' *A Field Guide to the Butterflies*. However, his serious commitment to entomology began relatively late in his life, when he began intensive collecting and study of the Lepidoptera of coastal South Carolina, and when with Douglas Ferguson he founded *The Moths of America North of Mexico*. The zeal with which he pursued both undertakings is reflected in the results. In less than ten years he formed what is undoubtedly the best collection that has ever been made of any lepidopterous fauna between the Middle Atlantic States and Florida. His collecting arrangements, which included a walk-in moth trap, portable and dispersed light and bait traps and Malaise traps, rearing cages of heroic dimensions, vehicles, nets, paths and preserves, were not only impressive but also highly productive. His collection was prepared and is housed in the Wedge Laboratory, a professionally designed facility with an excellent library and array of cabinets and apparatus, including a color photography and developing studio and a vacuum freeze-drying apparatus designed by Dr. Dominick and used by him to materially advance the technique of preserving lepidopterous larvae. The collection itself is notable for the richness of its species representation, for the high quality of the specimens and series, and for the large number of previously rare or unknown species that it contains. By far the greater part of the collection is identified and systematically arranged, and many of the leading specialists in North America have worked on the material. For the present the collection remains located at the Wedge Laboratory, where it is being studied from time to time by visiting lepidopterists; ultimately it will become the property of the United States National Museum of Natural History.

It was one of Dr. Dominick's dearest wishes to live to see the completion of *The Moths of America North of Mexico*; both fate and the inherent slowness of entomological authors decreed otherwise, and he actually saw only the first eight out of a projected 100-plus parts. He had personally completed the photography for several additional parts, including two of Pyralidae, one of which has subsequently appeared and the other of which has passed page proof, the Orgyiidae and the introductory part of Gelechioidea, both in press, and the Notodontoidea, of which the text is still in the author's hands. These few parts were, however, sufficient to set the tone of the work and to give it the momentum which it is hoped will carry it to completion. It is impossible to overestimate Dr. Dominick's influence on the development, form and progress of *The Moths of America North of Mexico*. Investing a substantial sum of money to launch the series was perhaps the least of his

contributions. Starting with a knowledge of the principles of optics, he trained himself as a skilled color photographer and processor, and carried his interest through to every technicality of production and printing. He devoted equal attention to the format and style of the text, persistently questioning and criticizing until every aspect met his high standards. He was merciless with authors, browbeating, inspiring, reasoning, persuading and cajoling until the last ounce of work was wrung out of them. Photography sessions at the Wedge were real marathons, batch after batch of moths being arranged, photographed, inspected, rephotographed, with processing and reprocessing proceeding in endless succession until all retired exhausted to prepare for another day's work. During the last months of his life Dr. Dominick concerned himself with external and continuing funding for the Wedge Foundation. He was successful in enlisting the support of a very distinguished group of patrons, headed by H.R.H. The Duke of Edinburgh, K.G., K.T. Subsequently he approached a large number of persons and companies and energetically pressed the Foundation's case with senators and congressmen in Washington. I am convinced that the intensity of these efforts undermined Dick's health and contributed materially to his premature death.

Entomology was only one aspect of a rich and varied life. Dr. Dominick received the baccalaureate from Yale University, majoring in English, and later qualified in medicine at Columbia University. He specialized and practiced for a short time in ophthalmology. During the Second World War he flew with the United States Naval Air Service. He was decorated with the Purple Heart and with the Air Medal. He had a wide circle of friends in many walks of life. He maintained residences at McClellanville and in London, England. He belonged to the Entomological Society of America, the Lepidopterists' Society, and the Entomological Society of Canada as well as to a number of non-entomological organizations.

He is survived by his wife Tatiana (née Djeneeff), two children, four step-children and a grandson. He transformed the lives of everyone who knew him. He will be mourned by a wide circle of friends as well as by his family.

Eugene Munroe

RECENT DEATHS

TURNER, Ken. Toronto, Ont. On 25 August 1976, age 55. Member ESC, ESO. Ontario Department of Lands and Forests.

MESSENGER, P.S. Albany, Calif. On 16 August 1976. Member ESC. Professor, University of California.

STUDENT ENCOURAGEMENT IN B.C.

The British Columbia Entomological Society has used funds from the Canadian Entomological Society to foster student interest in entomology by donating copies of "Insects in the Classroom" to 23 Secondary schools in British Columbia. This book written by John Borden and B.D. Herrin is published by the B.C. Teachers' Federation. It includes brief descriptions of the insect orders and discusses insect development and populations. But the section which we feel might best attract the attention of the curious student is that on projects and experiments which can be done with insects. We hope to be able to continue this project in the future as funds permit so that eventually most schools in B.C. will have a copy of this book.

XV INTERNATIONAL CONGRESS OF ENTOMOLOGY

The XV International Congress of Entomology became a reality when some 2,300 delegates representing 65 or more countries met in Washington, D.C., U.S.A., August 19-27, 1976. The conference was appropriately held in the U.S.A. at a time when that country was celebrating its Bicentennial year and the organizers ensured that the celebrating spirit so prevalent in the nation's capital became a part of this entomological extravaganza.

The scientific program included every possible entomological subdiscipline and its subject matter ranged from highly specialized to very generalized topics. Its contributors varied from renowned, seasoned guest speakers to unknown, non-tested students.

The meeting generally speaking was well organized and offered the delegates a variety of seminars, symposia, panels, meetings with contributed papers, poster sessions and informal conferences. All events appeared to be well attended. Presentations varied as expected from excellent to not so good reflecting a cast of contributors who ranged from well prepared to unprepared speakers. Question and answer periods followed a similar pattern.

Scientific sessions started daily at 8:30 a.m. on a formal note. Discussion regarding them generally ended in the wee hours of the next morning. The entire conference was a hive of activity from beginning to end.

Hospitality, services and facilities were second to none. The President's Reception on Friday, August 20th set the hospitality stage which was shored by the "Champagne Reception" on Sunday, August 22nd and properly dismantled with the "Farewell Wine and Cheese Party" on Thursday, August 26th.

Tuesday, August 24th was allowed as a "Tour Day" and provided a mid session break that was especially needed by highly active delegates nearing exhaustion at that point in time. It also provided an opportunity for foreign delegates to visit beautiful Washington and environs. Tours were organized for a diverse audience including time for avid collectors.

The film and exhibit aspects of the conference allowed delegates ample opportunity to absorb quickly a mass of information which normally would take prolonged periods of time.

The program itself was well designed and provided each delegate with a quick reference to all activities taking place at any one time. It also gave them a guide in booklet form to meet their specific requirements throughout the Congress. If any criticism could be made it would have to be that there was too much offered in the period allotted.

I personally felt that the Congress was a huge success and I must congratulate all those who were responsible for its organization and eventual implementation. It was a job extremely well done considering the constraints within which the organizers had to work.

Congratulations are appropriate and we can only hope that future Congresses will succeed as well.

C.D.F. Miller
Research Coordinator
(Biosystematics)

BOOK REVIEWS

Practical Insect Pest Management. T.F. Watson, L. Moore and G.W. Ware. 1975. W.H. Freeman and Company. San Francisco. 196 pp. ISBN 0-7167-0558-3. \$5.95.

The paperback is a self-teaching manual on insect pest management. The general theme of the book is to explain the principles of management of insect pests of crop plants in its present state, to the agricultural extension personnels and advanced high school and college students.

The book is divided into five units: 1. Nature of insect pest management, 2. Basic elements of insect pest management, 3. Components of insect pest management, 4. Potential components of insect pest management and 5. Establishment of insect pest management programs. Each unit has several sections and each section consists of varying subsections. Usually a question pertinent to the subject matter of the subsection is posed to test understanding of the reader and the answer is provided for verification.

There are several drawbacks of the book. The most important one is that the authors have failed to discuss the vital role of modelling pest ecosystems as one of the principal components of pest management programs. The ultimate aim in managing any pest in an ecosystem is to maintain it, through selective controls, in a state that the interactions of man, pest and the environment are ecologically compatible and socio-economically feasible. This goal can only be achieved through the development and implementation of dynamic models which should be based on real-time measurements of biotic and abiotic components of the ecosystems. The design and management of pest ecosystems will be an iterative process involving the development and testing of dynamic models.

The direct dependence of crops and insect pests on their physical environment makes weather an extremely important component in decision-making processes. Real-time weather data is essential for agricultural scientists to sense the state of pest-crop systems. This concept is also lacking in the book.

The book is quite unbalanced as more than one-third of the same contains discussions on insecticides — their chemical structures and uses. The authors claim that the aim of the book is to explain pest management to the laymen. I wonder how the laymen would be able to appreciate all those chemical structures and formulae of various insecticides!

There are several poor statements buried within the book; one that particularly bothered me is the authors' interpretation of Figs. 4.1 and 4.2. I believe they are quite erroneous in saying "future improvements in all areas of crop production should result in a continual rise of the curves shown in these two figures." The characteristics of these curves should remind anybody of the law of diminishing returns. The effect upon productivity of various input gradually levels off and may even reverse itself. The higher the yield the smaller the net return of each additional identical amount of input. An efficiency analysis would reveal that many of our modern agricultural practices are merely transforming calories of fossil fuels into calories of food at a net loss of calories.

Apart from some of the drawbacks, it should be useful to the undergraduate students as a reference book.

M.K. Mukerji
Agriculture Canada, Saskatoon

In previous years, if an undergraduate student came by and asked for a general reference on insect ecology, my immediate thought was to protect him from exposure to several recently published or reprinted books which might well have dulled his interest in this topic forever. Therefore, I welcomed the arrival last year of Peter Price's "Insect Ecology". Students really seem to like it.

The title is a slight misnomer since "Insect Ecology" is more a general ecology textbook with a bias towards insect examples. The book is divided into four parts: Trophic Relationships, Populations, Coexistence and Competition, and Communities and Distributions. Some sections are particularly insect oriented such as those on insects under insecticide stress and biological control but in general the topics covered are those which are also included in other recent ecology texts.

"Insect Ecology" is kept relatively small by two factors and still includes a wide variety of topics. First, Price uses the technique of exposing a general topic and then referring the reader to studies where more detailed information or discussion can be found. In some cases tables are used to summarize in a short space references to specific types of work. For example, references for sources of life tables of natural populations, theories of population regulation, and examples of territoriality in insects are all given in a very convenient tabular form.

Second, the size of the figures is relatively small, which generally doesn't matter but makes some appear crowded and complicated. In picking out particular examples of crowded and difficult figures to read for this review, I found that the two most obvious cases (Figures 7.9 and 8.9) come from Price's own publications. Overall, however, the figures, which are almost all graphs, are clear.

Price's approach is good. He gives both sides of an argument or problem. The chapters are integrated with numerous cross references. The discussion of predator and prey population dynamics (Chapter 5) was particularly lucid and I am glad to have this account at my finger tips.

Part II, Populations, was also good. One topic which might have been included in this section however is a better critique of key factor analysis. This approach to the study of insects had had a strong and sometimes detrimental influence on insect population ecology (R.L. Kitching, *Ecology* 57:830). The emphasis on numbers which this technique demands has often detracted from observations on the quality of insects. Some discussion of the assumptions and pitfalls of this technique (Gilbert, N., 1973. "Biometrical Interpretation" Oxford) would have improved this section as a guide to budding insect ecologists.

The book is well referenced with about 1,080 citations, but the citations show a strong Anglo-American bias with only 3% being from books or journals published outside North America and England. The taxonomic, author, and subject indices as well as detailed topic indices for each chapter facilitate efficient use of the book and its references. My major objection to the book is the beginning chapter, Trophic structure of community (shouldn't that be communities?). In comparison to the dynamic style of the rest of the book, this chapter is a disappointment. The long and complicated quote which starts chapter 2 is an example of the ponderous style with which the book begins. But I recommend persistence, for once past the beginning part of chapter 2, interest will overtake the force of persistence.

In conclusion, I would like to say thanks to Dr. Price for writing the book and making the life of an entomology teacher easier. I recommend it to all those doing insect ecology as a synthesis of basic ecology and a wealth of examples from the insect literature.

Judith H. Myers,
Institute of Animal Resource Ecology,
University of British Columbia
Vancouver, B.C. V6T 1W5

The Distribution and Diversity of Soil Fauna. John A. Wallwork. 1976. Academic Press, London, New York and San Francisco. 370 pp. Price \$27.25.

In this book Wallwork examines the soil fauna in light of the vegetational characteristics which affect its distribution and diversity. Gross habitat types are discussed with respect to the environmental and physical factors that influence the horizontal and vertical distribution of the animals, the taxa present and their relative numbers, and an attempted synthesis of major trends in these ecological parameters.

The first chapter provides in 26 pages a brief introduction to the groups of animals found in and on the soil. Expecting little in so short a section, I was surprised to feel satisfied that I had received some nugget of information which would prepare me for what was to come.

Chapter 2, "Methods for studying distribution and diversity," deals with only the mathematical aspects of sampling and interpretation of data. I found this section excellent for a non-mathematician in providing a means and encouragement to plan and organize research better.

The chapters on the varying habitats consist mostly of interesting description. Included are discussions of grassland, moorland, fenland, heathland, sand dunes, forests, cold deserts and hot deserts. Special habitats of soil animals are also included, such as agricultural areas, decaying wood, rocks and trees. The discussion is varied and makes good use of comparison. A strong attempt at using examples from all geographical areas is made, but the lack of adequate research in areas other than Europe gives this book a strong British flavor. The summaries are overly repetitive of the material in the chapters. The concluding synthesis ties together thoughts on distribution and diversity in the soil.

The generic name *Pardosa* is used on page 187 for several species of wolf spiders, while *Lycosa* is used for the same species several times (pages 91, 156 and 190). *Pardosa* is the correct genus for these species, and should be preferred here because the genus as a whole has a tendency to occur in fields, grasslands or open areas. One wonders why the 'acid-tolerant' earthworms on page 105 were the least able to live in acid conditions, and why birch leaves on page 213 have a larger C/N ratio but are as palatable as leaves with a low C/N ratio.

This book is recommended for anyone interested in soil ecology or soil animals. It provides a needed overview of soil animals and their relation to vegetational and environmental factors. I would like to suggest this book be used as a part of graduate courses in terrestrial or animal ecology, but the high price prohibits such use.

Robert J. Wolff
Zoology Department

Southern Illinois University
Carbondale, Illinois 62901, USA

History of Fruit Growing and Handling in United States of America and Canada

The book has 360 pages, 67 illustrations and an index of 20 pages. The price is \$16.95 postpaid. Canadian orders should go direct to the printers, Regatta City Press Ltd., Kelowna, B.C. V1Y 1W2.

It was prepared under the auspices of the American Pomological Society, the members of which are mainly United States and Canadian citizens. It was conceived by Dr. D.V. Fisher of the Summerland, B.C. Research Station as a successor to Hedrick's book, **History of Horticulture in North America to 1860**. It was fitting that it should be published in 1976, the Bicentennial Year of the United States. However, in keeping with the two nation society, it was printed in Canada. Originally, it was intended to cover the period 1860 to 1960, but it proved to be such a time consuming task to get manuscripts from over 100 authors, many of them still actively engaged in teaching, research, and extension, that the time was extended to 1972. It was inevitable that the authors, who wrote their sections in the early years, did not have the recent data which was available to those who submitted their manuscripts in the '70's. Anyway, it was a very large undertaking and it is good to have such a permanent record of the growth of the fruit industry in U.S. and Canada over more than a century.

Section I deals with the development of fruit growing in the American States and Canadian Provinces. The length of the contribution from each author was based on the value of the industry in that area in the early 1960's. The shifting trends in crops, varieties, and methods are much in evidence in all regions.

Section II written by J.R. Magness is a story of the contribution of the United States Department of Agriculture, highlights followed by reports on research with the major fruit crops and concluding with the location and staff of the various federal laboratories throughout the nation.

Section III, Research in Handling, Storage and Transportation of Fruit by the United States Department of Agriculture, was written by W.T. Pentzer. It deals with maturity, precooling, storage containers and transport problems and gives location and staff of the laboratories.

Section IV, Research by the Canada Department of Agriculture, written by D.V. Fisher, includes information on the history of the experimental farm system, research on fruit breeding, rootstocks, spacing, nutrition and irrigation of crops, storage, and processing.

Section V, Development of Chemical, Biological and Physical Methods of Control of Insects and Mites, was prepared by several authorities in particular fields, edited and assembled by C.V.G. Morgan and H.F. Madsen. It deals with inorganic and organic insecticides, acaricides, residues, resistance to pesticides, biological, integrated, and autocidal control.

Section VI, Diseases of Fruit Plants and Development of Control Methods, was written by E.G. Sharwelle, M.F. Welsh, and D.L. McIntosh. Progress in the control of fungus, bacterial, and virus diseases, and nematodes is recorded. Minor element disorders also have a place.

Section VII contains a Bibliography of North American Pomological Literature assembled by G.L. Slate, an invaluable contribution of over 1,000 titles.

Section VIII, History of the American Pomological Society by H.B. Tukey is a record of the organization and accomplishments of the sponsoring society.

W.H. Upshall
Vineland, Ontario

Sphecid wasps of the world. A generic revision. By R.M. Bohart and A.S. Menke, in collaboration with H.S. Court, F.D. Parker, E.E. Grissell, and D.P. Levin. 695 pp., 190 figs. (many plates). University of California Press, Berkeley, Los Angeles, London. June 25, 1976.

It is a pleasure to be asked to review a book of this nature. The scope and the philosophy behind the whole work is exactly what is desired in almost every group of biota in the fast moving field of contemporary taxonomy. This book may therefore serve as a model for students of other groups to follow. It is a highly commendable fact that the authors, competent specialists, decided to undertake a tedious work to help others to unravel their problems by putting critically together all accumulated information in the Sphecidae. They apparently earned themselves a merit for a sharp increase in sphecid studies that will, no doubt, follow soon. Numerous projects held back because of wanting data or tangled situations could be now finished. We may look forward to a rainfall of good sphecid papers to come soon.

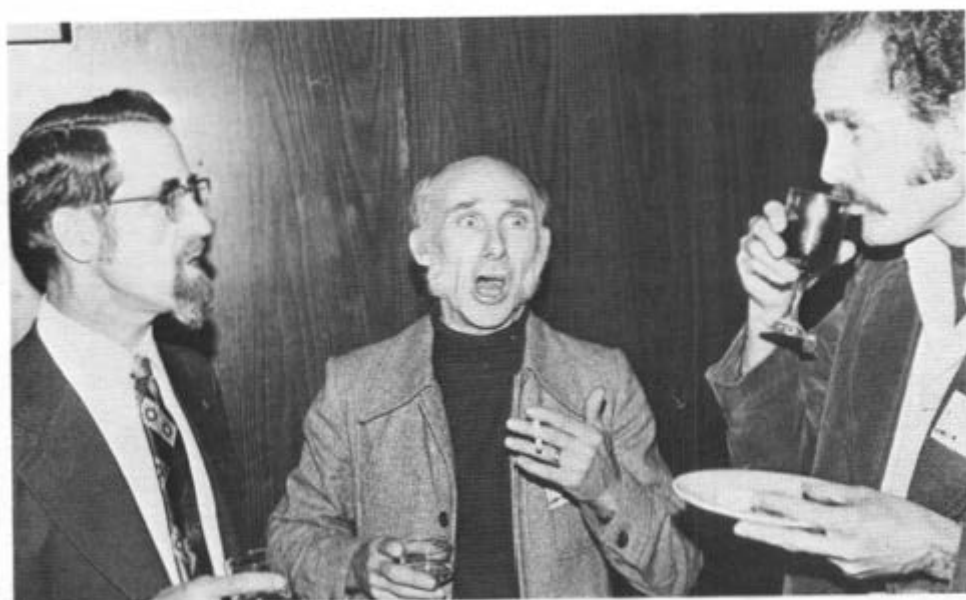
The book is obviously a product of large-scale, longlasting preparations. The authors succeeded in getting grants for major museum trips overseas to study types and all other relevant material; a reference working collection of almost all genera of the world was assembled. Assistance was solicited from practically all world students of Sphecidae. This plus the experience of all co-authors resulted in a very competent compilation of first hand information. There are many original ideas and views not published before. The value of the book is therefore not only in its meticulous and highly critical review of the past knowledge but also in great deal of new information. These two elements are sometimes difficult to discriminate from each other but this is rather a matter of pure arbitration.

The chapters on Introduction, Behaviour and Zoogeography seem rather laconic; however, this was not the real goal of the book. The rather special terminology of sphecid morphology is amply illustrated and explained in chapter of Morphology. A useful glossary of terms is attached. The chapter on Systematics of the Sphecidae that covers also a discussion on groups related to sphecsids, data on fossils, philosophy of supraspecific categories and the family statistics were reduced to bare minimum. Synonymic Generic Catalog of the Sphecidae that follows is a summary of all known generic synonymies, type-species designations, homonymies and emendations. Although useful in its present form it would probably serve even better purpose if the data were listed with respective genera in the systematic part. Now the reader must check back and forth to relate the history of the genus with the list at the beginning of the book. The suggested re-arrangement would also solve the problem of citation of some new taxa (e.g. *Chilosphex* Menke, new genus) proposed first in the list, without description, and later again in the systematic part with the original description. Keys to subfamilies and tribes are well constructed; however, as any key encompassing the world fauna it must count for all possible exceptions. So, for example, the separation of the Pemphredoninae (couplet 8 of 16 couplets), on the basis of petiole composed of sternum only, holds for all but several genera of that subfamily; the authors admit this in a footnote but this does not help the matter. The systematic part is well organized and balanced. The authors decided to stay in the middle of the way between the two extremes, viz. the splitters vs. the lumpers. They had an undeniable advantage in studying by far the most representative spectrum of the world fauna to decide the validity of the taxa discussed. Altogether 11 subfamilies comprising 33 tribes, 226 genera and 7,634 species are recognized. The focus is, of course, on genera, generic diagnoses, the limits of genera etc. It is also here where most of the original ideas are being presented. In each genus the paragraphs follow from generic diagnosis, systematics (with discussion), references, habits and biology, to eventually an alphabetic checklist of world

species. In the species the reference to original description, distribution and synonymy are given. Many holotypes were examined, however, only some species the types of which were seen are marked with an asterisk; I do not see a practical purpose for this discrimination. In the same way the authors did not propose new names for objective homonyms but preferred to leave this job for someone else. The list of references seems to be pretty complete; this part of the book will be, no doubt, of extraordinary help to future workers. All illustrations are of very high quality and are directly aimed to help the reader to get over even the smaller humps of the keys. The lateral "habitus" pictures of many genera are instructive, however, the dorsal view in some genera may perhaps serve the purpose even better. In general the authors did not spare efforts to arm the book with maximum figures possible. The simple dendrograms showing possible relationships are instructive although sometimes tend to be overly simplified.

Concluding on the whole I feel I could not possibly come with more eulogy on this beautiful piece of work. The few minor rebukes raised above certainly do not diminish the merits of this book but stem rather from individual taste and differences in approaches to a given subject. This book has met the target right in the middle and its timing could not be better. I am fully convinced that it will become an indispensable tool to any serious student in the fascinating group of Sphecidae. This fact may be further enhanced by the feeling that the tool we are now holding in our hands is a very good one.

Lubomir Masner
Biosystematics Research Institute
Ottawa



Toronto, October 1976: an amazing meeting . . .

BOOKS RECEIVED

Benoit, P. 1975. Noms français d'insectes au Canada avec noms latins et anglais correspondants. (French Names of Insects in Canada with Corresponding Latin and English Names.) 4th ed. Agriculture Quebec, Publication QA38-R4-30. 214 pp.

Candy, D.J. and B.A. Kilby. 1975. Insect Biochemistry and Function. Chapman and Hall, London. 314 pp. £8.50.

Carcasson, R.H. 1960. The Swallowtail Butterflies of East Africa (Lepidoptera, Papilionidae). Illustrations by author, 30 pp. Reprinted in 1975 by E.W. Classey Ltd., Faringdon, Oxon, England. Available in North America from Entomological Reprint Specialists, P.O. Box 77971, Dockweiler Station, Los Angeles, Calif. 90007. \$4.95.

Gregory, W.W. 1975. Checklist of The Butterflies and Skippers of Canada. Lyman Entomological Museum and Research Laboratory Memoir No. 3 (Special Publ. No. 10). 44 pp. \$2.00.

Langston, R.L. and J.A. Powell. 1975. The Earwigs of California (Order Dermaptera). Bull. Calif. Insect Survey vol. 20, 25 pp. Univ. Calif. Press, Berkeley. \$2.00.

Williams, M.L. and M. Kosztarab. 1972. The Insects of Virginia: No. 5. Morphology and Systematics of the Coccidae of Virginia with Notes on their Biology (Homoptera: Coccoidea). Research Division, Bulletin 74, Virginia Polytechnic Institute and State University, Blacksburg. 215 pp.

Bright, D.E. **The Insects and Arachnids of Canada.** Part 2. The Bark Beetles of Canada and Alaska (Coleoptera: Scolytidae). Canada Agriculture Publication 1576. Price \$7.00 in Canada, \$8.40 other countries. Catalogue No. A 42-42/1976-2. The 214 species of Scolytidae known or suspected to occur in Canada and Alaska are treated in keys, descriptions, distribution maps and biological data. Numerous illustrations are included.

Copies may be obtained by mail from:

Department of Supply & Services
Printing and Publishing
Mail Order Section
Martel Bldg.
270 Albert St.
Ottawa, Ontario K1A 0S9

*(This applies to Bright's
book only)*

Over the counter sales are at:

Printing Bureau
Room 2736
45 Sacred Heart Blvd.
Hull, Quebec

VII INTERNATIONAL COLLOQUIUM OF THE SOIL ZOOLOGY
COMMITTEE OF THE ISSS

Soil Biology as Related to Land-Use Practices

Location: To be held for the first time in North America on the

CAMPUS OF THE STATE UNIVERSITY OF NEW YORK
COLLEGE OF ENVIRONMENTAL SCIENCE AND FORESTRY
SYRACUSE, NEW YORK

Date: Tentatively scheduled for late July, 1979

Organizing Secretary: Daniel L. Dindal
Department of Zoology
SUNY CESF

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE
ANNOUNCEMENT

A.N.(S) 100

Required six months' notice is given of the possible use of plenary powers by the International Commission on Zoological Nomenclature in connection with the following names listed by case number: (see Bull. Zool. Nom. 33 part 2, 30 September 1976).

- Z.N.(S.) 2128 ELAPIDAE Boie, 1827 (Reptilia: Serpentes), suppression and validation of names related to.
- Z.N.(S.) 2094 COLOBIDAE Blyth, 1875 (Mammalia: Primates), proposal to give precedence to, over SEMNOPITHECIDAE Owen, 1843 and PRESBYTINA Gray, 1825.
- Z.N.(S.) 83 *Pleurocera* Rafinesque, 1818 (Gastropoda), proposed designation of type-species for.
- Z.N.(S.) 2140 ERIOCOCCIDAE Cockerell, 1899, proposed conservation of, and *Eriococcus* Targioni-Tozzetti, 1868, proposed designation of type-species for (Insecta: Homoptera).
- Z.N.(S.) 2084 *Tanystropheus* H. von Meyer (1852), (Reptilia) proposed conservation of.
- Z.N.(S.) 2080 *Sminthopsis murina* var. *constricta* Spencer, 1896 (Marsupialia: DASYURIDAE), proposed suppression of.
- Z.N.(S.) 2162 *Genypterus* Philippi, 1857 (Pisces), proposed conservation of.

Comments should be sent in duplicate, citing case number, to the Secretary, International Commission on Zoological Nomenclature, c/o British Museum (Natural History), Cromwell Road, London, SW7 5BD, England, if possible within 6 months of the date of publication of this notice. Those received early enough will be published in the Bulletin of Zoological Nomenclature.

R.V. MELVILLE

Secretary to the International Commission
on Zoological Nomenclature.

6th October, 1976.

BLACK FLIES CONFERENCE

The White Mountains Region Association, the Entomology Department, University of New Hampshire, and the State Department of Agriculture of New Hampshire will sponsor, the *First Inter-Regional Conference on North American Black Flies* January 30th through February 2, 1977, at the Balsams Hotel, Dixville Notch, N.H.

Participants will include several Canadian researchers as well as representatives of universities throughout New England and New York State. In addition, technical representatives from Chevron, Shell, Thompson-Hayward, Zoecon, Chemagro, and American Cyanamid will also participate.

Invited papers include: systematics, ecology (behavior), larvicides and adulticides research, biological control approaches, and development of black fly control research.

Persons interested in attending the conference should write the White Mountains Region Association, Box 471, Lancaster, N.H. 03584, or call (603) 788-2061.

BACK ISSUES WANTED . . .

The Entomological Society of Canada keeps a supply of Back Issues of the volumes of the **CANADIAN ENTOMOLOGIST**, its *Memoirs* and *Bulletins*. Some of the issues are out of stock in our stacks, and the Society would appreciate the donation of duplicate or unwanted issues as listed below:

Vol.	83	No. 1,3,6	
	85	No. 4	
	88	No. 1,7	
	89	No. 1,4,6,7,10,12	Memoir 5
	90	No. 1,5,11	
	91		Memoir 11
	92	No. 2,6	
	93	No. 2,3,4	
	94	No. 1,3,4,7,10	
	95	No. 7	Memoir 30, 31
	96		Memoir 32-35
	97	No. 1,2,3	Memoir 40-42
	98	No. 4	Memoir 48-49
	99		Memoir 50-51
	101	No. 1,2,3,7,8	Memoir 60,61
	105		Memoir 88,90
	106		Memoir 92

WHAT IS AN ENTOMOLOGIST? An Image out of the Past

In the year 1875, General G. Custer, who was defeated by the Sioux a year later, headed an expedition that toured the Yellowstone Valley. Included in the entourage was a group of several dozen scientists from the Smithsonian Institute and from Yale University. Because the latter were to make an inventory of the Natural History of the area, the tour was made on foot but guarded by three companies of cavalry, one of infantry and some artillery. Every professor had a bodyguard of five men to protect him from the ever present Sioux. Major Barbour explained it thus:

"Those Yale professors just worried the life out of the soldiers. They would go around picking up bugs and chasing butterflies all over the prairie, and would break up rocks and pow-wow over them with magnifying glasses until the soldiers swore that every man of them was a howling idiot."

One of the professors managed to evade the surveillance of his detail, wandered out on the prairie and was captured by the Indians. They were amazed at the collection of "truck" in his collecting bag, for they pulled out pieces of clay, a variety of rocks, lizards, etc. When the old professor suddenly darted aside, caught a peculiar-looking bug and began to examine it with his magnifying glass, the Sioux knew that here was a "peculiar" white man. One of them led him by the hand to the top of a hill and set him free by sending him in the direction of the army encamped below.

The professor extolled the politeness and courtesy of the Indians to General Custer. The Indian chief, however, was glad to see him go because of the native's reverence, bordering on absolute fear, of an insane person. Could the massacre, on June 25, 1876, have been averted if entomologists had scheduled a collecting trip in the valley of the Little Big Horn that day?

(news item from Ent. News 5:20, 1894).

* * * *

ENTOMOLOGICAL SUTURES

R.M. Middleton (Jour. Lin. Soc. 25:405-6. 1896) reported a curious fact concerning the use of ants in Asia Minor. Surgical or accidental incisions of the skin were sutured using the mandibles of the ant presumed to be *Cataglyphus viatica* Fabr. The margins of the cut were held together with one hand while ants, whose mandibles were wide open in self-defence when handled, were applied to the wound with the other hand. The insects grasped the raised surfaces of the wound, penetrated the skin on both sides and retained a tight sutural grip even after the head was severed from the body. A row of ten heads, with mandibles attached to the skin, effectively closed a wound one inch in length. When the wound healed, in about three days time, the heads were removed.

This is entomological pioneering at its best — and it is applied entomology at that!

P. Riegert

PERSONALIA

Dr. W.G. Wellington, Director of the Institute of Animal Resource Ecology at the University of British Columbia, has been appointed Chairman of the Resource Ecology and Planning Council of the University. The Council has been formed to coordinate and to initiate graduate teaching and research in fields related to the management of renewable resources, and to supervise the work of interdisciplinary students in resource management programmes that cross Departmental or Faculty boundaries.

Best wishes to **Dr. E. Melville DuPorte**, Emeritus Professor of Entomology, McGill University (MacDonald Campus) and Honorary Member of the Society, 85 YEARS YOUNG on October 24, 1976, two-thirds of a century at MacDonald College, member of the staff for 64 years . . . and still at work.

POSITIONS WANTED

PhD. North Carolina State University 1973, with major interest in host plant resistance, economic entomology, product development; with experience in tropical agriculture in Nigeria; desires position in Research and/or Teaching, available November 1977. Please quote reference No. 46-4 76.

PhD. University of Sherbrooke 1975, recently completed 27 months as PDF at Laurentian Forest Research Centre; with special interests in ecology of forest insects, biological control, population dynamics; available immediately for position in research and/or teaching. Please quote Reference No. 43-1-76.



Dr. G.S. Cooper handing over the presidency to Dr. M. Ellen MacGillivray

NOMS FRANCAIS D'INSECTES AU CANADA
FRENCH NAMES OF INSECTS IN CANADA

Corrections et amendements à la liste, 4e édition, 1975

L'éditeur remercie les entomologistes canadiens et américains qui ont signalé certaines erreurs dans la 4e édition de cette liste. Nous vous recommandons d'effectuer ces corrections dans votre exemplaire. Nous vous serions reconnaissants de porter à l'attention du Comité toute erreur additionnelle.

p. 12, 2e para., 6e ligne: ... nous enjoignons le ...

p. 13, 6e ligne: ... donc préféré suivre ...

p. 17: biffez toute la ligne où apparaît *Dendroctonus monticolae* Hopk. = *Dendroctonus rufipennis* (Kby.)

p. 98, 120, 127: *Hylemya planipalpis* (Stein) doit être changé pour *Hylemya anthracina* (Czerny)

p. 164: biffez complètement le 7e insecte en liste — scolyte xylographe, *Xyleborus xylographus* (Say)

p. 169, colonne de droite: Changer *Archips parallela* (Rob.) pour *Choristoneura parallela* (Rob.)

p. 181, colonne du centre: Changer *Archips rosaceana* (Harr.) pour *Choristoneura rosaceana* (Harr.)

Paul Benoit, secrétaire,
Comité des Noms français d'insectes au Canada
C.P. 3800,
Sainte-Foy, Québec G1V 4C7

(418) 694-3920



Members of the ESC are encouraged to submit articles to the I.A.W.P.R. journal — "Water Research." This is one way to improve the spread of knowledge generated by entomological research into the effects and control of various kinds of water pollution.

FIRST NOTICE

Annual Meeting

**ENTOMOLOGICAL SOCIETY OF CANADA
ENTOMOLOGICAL SOCIETY OF MANITOBA**

August 22-24, 1977

University Center
University of Manitoba
Winnipeg, Manitoba

SYMPOSIUM I, 23 August

"Damage Assessment in the Agro-Ecosystem"
Chairman: F.L. McEwen

SYMPOSIUM II, 24 August

"Insect Factors in Human and Animal Health"
Chairman: S. McIver

SUBMITTED PAPERS, 23, 24 August

Contributors must complete and submit the "Submitted Paper" reply form to Dr. J.C. Conroy, not later than *1 March, 1977*.
(See page 35)

SPECIAL INTEREST GROUPS

*Informal conferences on specialized topics will be arranged on request. Members interested in leading and/or participating are asked to forward the "Special Interest Group" tear sheet to Dr. J.C. Conroy not later than **March 1, 1977**.*

PHOTO SALON

Contact: Miss June Herbert, Agriculture Canada Research Station, Kentville, Nova Scotia.

The scientific programme will also include a keynote address on **"Entomological Information needed by Regulatory Bodies"**, the presentation of the Hewitt Award, the Gold Medal Award and Address, and a presentation by Miss A. Criddle on **"The Criddles of Aweme"**.

Board of Directors' Meetings and the Annual General Meeting are scheduled on 20, 21, 22 and 24 August.

SPECIAL INTEREST GROUPS REPLY FORM
(Deadline — 1 March 1977)

RETURN TO:
Dr. J.C. Conroy
Department of Biology
University of Winnipeg
515 Portage Avenue
Winnipeg, Manitoba R3B 2E9

Participant's (Leader's) Name _____

Address _____

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(Deadline — 1 March 1977)

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Author's Name (Please Type) _____

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SUBMITTED PAPER REPLY FORM (Continued)

Title of Paper (not to exceed 15 words) _____

To be read by _____

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The new Board (1976-77): From left to right — G.S. Cooper (Past-president), R.F. De Boo, B.J.R. Philogène, S.B. Melver, R. Brust, W.A. Charnetski, G.H. Gerber, P.W. Kiegi, R. Martineau, W.G.

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CONTRIBUTIONS

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

BUSINESS INQUIRIES AND BOOKS FOR REVIEW

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

DEADLINE

The deadline for the next issue Vol. 9, No. 1 for March 1977 is 15 February. The approximate date of mailing will be 15 March.

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