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ENTOMOLOGICAL SOCIETY OF CANADA

Bulletin



Vol. 7

MARCH, 1975

No. 1



NOTICES
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PHOTO SALON p. 13

ENTOMOLOGICAL SOCIETY OF CANADA

EXECUTIVE COMMITTEE

- President: C. R. Harris, Research Institute, Agriculture Canada
University Sub Post Office, London, Ontario N6A 5B7
- President-Elect: G. S. Cooper, Cyanamid of Canada Ltd.
Plaza 1, 2000 Argentia Rd., Mississauga, Ontario L5N 1P7
- Past-President: J. R. McLintock, Research Station,
Agriculture Canada, Saskatoon, Saskatchewan, S7N 0X2

MANAGING COUNCIL

- Secretary: N.S. Church, Research Station, Agriculture Canada
Saskatoon, Saskatchewan, S7N 0X2
- Treasurer: E. C. Becker, 1320 Carling Ave.,
Ottawa, K1Z 7K9
- Editor: P. E. Morrison, Dept. of Biology
University of Waterloo, Waterloo, Ontario

The **Bulletin** is your medium for publishing and receiving news and opinions. It is the principal medium by which the ESC keeps you informed.

CONTRIBUTIONS

Contributions and correspondence should be sent to: D. C. Eidt, Editor, Bulletin of the Entomological Society of Canada, P. O. Box 4000, Fredericton, New Brunswick E3B 5G4. Inquiries about subscriptions and back issues should be referred to the Treasurer, Entomological Society of Canada, 1320 Carling Ave., Ottawa, Ontario, K1Z 7K9.

BOOK REVIEWS

Books for review should be sent to Dr. Carl Yoshimoto, Chairman, Editorial Board, ESC, Biosystematics Research Institute, Agriculture Canada, Ottawa K1A 0C6.

DEADLINE

The deadline for the next issue, Vol. 7, No. 2 for June 1975 is 2 May. The approximate date of mailing will be 6 June.

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P. E. Morrison Editor (Society Publications)

D. C. Eldt Assistant Editor (Bulletin)

Cover Design: M. A. Sydor

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Nous avons le regret de vous annoncer que l'Abbé Ovila Fournier, ancien président de la Société Entomologique du Québec, Filiale de Montréal, 1952-53, de la Société Entomologique du Canada, 1955-56, est décédé le 18 octobre 1974 à l'âge de 75 ans.

We regret to announce the death of J. W. MacBain Cameron, President of the Entomological Society of Canada 1967-1968, President of the Entomological Society of Ontario 1968-1969, at Sault Ste. Marie, Ontario, 4 January 1975.

Editorial

BOOK REVIEWS

Book reviews are an important feature in the *Bulletin* and increasing numbers have appeared in recent issues. Their quality has not always been what it should be, perhaps because authors sometimes lose sight of their purpose. Too often they are little more than annotated lists of contents — the publisher's brochures do that — and they are far too long. A book review should be a critical appraisal, which doesn't mean pointing out binding faults and typographical errors. A perceptive, witty, well written book review with reasoned criticisms has literary merit in its own right. Henceforth the *Bulletin* will be a little fussier.

TIMELY QUOTE

The tendency for the disappearance of entomology as a distinct subject in universities and as an organizational entity in some governmental agencies leaves the entomological societies as the only coherent bodies throughout Canada today which may stand for the science of entomology as a whole. When vital problems arise affecting the overall contribution of our science to the conservation of our natural resources, to the wealth of our country and to the welfare of our people it may be necessary for the national and provincial societies, in their respective spheres, to speak for entomology as a whole. — The late President H. A. U. Monro to the Entomological Society of Ontario, 1966.

STATUS OF THE CANADIAN ENTOMOLOGIST

At the Annual Meeting in Halifax, several members expressed concern to the Governing Board that papers published in *The Canadian Entomologist* were not being considered as research publications by the Research Branch of Agriculture Canada as *The Canadian Entomologist* was not included on a "list of reviewed journals" maintained by the Research Branch. The Governing Board instructed the President to write to Dr. B. B. Migicovsky, Director-General, Research Branch, Agriculture Canada, to clarify the matter. Dr. Migicovsky has responded as follows:

Dear Dr. Harris:

This is in reply to your letter of November 15, 1974, concerning our judgment of the status of *The Canadian Entomologist* as a scientific journal. You and your members may be assured that we consider *The Canadian Entomologist* to be a highly-reputable, scientific journal.

The Branch does not have the "list of refereed journals" to which you refer. It is possible that this is a reference to a special list that was prepared by the Directors of several of our Institutes for a study of the relationship between research productivity and research publications. It also is possible, but highly doubtful, that some of our Directors have taken the time to prepare lists for their own use and that of their staffs.

Our scientists are required annually to report on their productivity, attaching lists of their research and miscellaneous publications. We prepare lists of the research and miscellaneous publications of our establishments and of the Branch. In all such lists, research publications are those published in reputable, refereed, scientific journals. *The Canadian Entomologist* is considered to be one of these journals.

B. B. Migicovsky
Director General
Research Branch

COMMITTEES: CORRECTIONS AND ADDITIONS

(Bulletin 6:98-99, 139)

Achievement Award: G. S. Cooper (Chairman), C. Neilson, H. R. MacCarthy.

Election: K. G. Davey (Chairman), S. E. Dixon, S. B. McIver.

Scholarship: J. R. McLintock (Chairman), G. Ball.

Science Policy: E. Munroe (Chairman), B. N. A. Hudson (Vice-Chairman), W. F. Baldwin, J. A. Downes, C. R. Harris (ex officio), S. B. Hill, F. L. McEwen, L.-C. O'Neil, R. K. Stewart, W. J. Turnock, I. W. Varty.

By-Laws: M. E. MacGillivray (Chairman), J. A. Downes, D. C. Eidt, E. G. Kettela.

Committee on N.R.C. Grants: I. W. Varty (Chairman).

EDITOR



Paul E. Morrison became Editor of *The Canadian Entomologist* and the *Memoirs* in September 1974. He has undertaken to maintain the journal's high standard, to make it an attractive medium to all branches of entomology, and to get the issues on schedule. For Associate Editors, he has John Steele, C. A. Miller, Ray F. Morris, and G. E. Shewell, who help ensure competent reviewing in all fields. Paul is an Associate Professor in the Department of Biology, University of Waterloo.

ELECTION 75

The following is the slate of nominations for election put forward by the Nominations Committee:

For President-Elect:

J. A. Downes
Biosystematics Research Institute
Agriculture Canada, Ottawa

M. E. MacGillivray
Agriculture Canada Research Station
Fredericton, N.B.

For Directors-at-Large: J. L. Auclair
Université de Montréal

J. E. Guthrie
Whiteshell Nuclear Research Establishment
Pinawa, Manitoba

A. J. McGinnis
Agriculture Canada Research Station
Vineland, Ontario

Nominations from the membership were called for by the Secretary by an insert in the December 1974 *Bulletin*.

J. W. Arnold A. J. Thorsteinson
J. McLintock, Chairman

The Honorary Membership Committee is pleased to recommend Mr. Williamson J. Brown and Dr. Robert Glen as Honorary Members in the Entomological Society of Canada.

J. B. Adams, AES J-J Cartier, ESQ
L. G. Putnam, ESS W. A. Charnetski, ESA
P. S. Barker, ESM R. W. Fisher, ESO
N. V. Tonks, ESBC, Chairman

Entomological Society of Canada

Gold Medal



awarded to

Dr. G. G. E. Scudder

Dr. Geoffrey George Edgar Scudder has been awarded the Entomological Society of Canada Gold Medal for Outstanding Achievement in Canadian Entomology. The presentation will be made in August 1975 when the Society holds its Annual Meeting in Saskatoon in conjunction with the Entomological Society of Saskatchewan.

Dr. Scudder graduated with first class honours in Zoology at the University of Wales in 1955, and took his D. Phil. in Entomology at Oxford in 1958. In the same year he joined the Faculty of Zoology at the University of British Columbia, where he has since served in many capacities. During 1964-65 he was Visiting Professor, Department of Zoology, Imperial College, University of London, and in 1965 was an Exchange Scientist, Soviet Academy of Sciences, under the auspices of the National Research Council of Canada. In 1970 he became Research Associate, B.P. Bishop Museum, Honolulu, Hawaii, and in 1972 was a Visiting Scientist to the Wan Ecology Institute, Papua, New Guinea. During 1973 Dr. Scudder became a member of the University of Florida's Galapagos Islands Expedition.

Since coming to Canada Dr. Scudder has achieved an international stature in the field of entomology, has made important contributions to Canadian Biology, and has gained an excellent reputation as a university teacher and academic.

Dr. Scudder's interests and achievements are both broad and numerous. He has published, as author or co-author, 140 scientific papers of high merit. His best known scientific publications are in the fields of systematics, morphology and distribution of Hemiptera — more particularly the Lygaeidae. This group of insects includes some of the world's most serious agricultural pests. A major monograph on this group is now in the advanced stage for publication. Geoffrey Scudder's research interests extend far beyond the systematics and distribution of Lygaeidae as indicated by his scientific publications dealing with the ecological and evolutionary studies of aquatic insects and the studies on insect morphology and development, the central theme in all of his investigations being the mechanisms of organic evolution. This interest in mechanisms has been expressed in an outstanding course on modern concepts of evolution for advanced students.

Dr. Scudder is the fourteenth recipient of the Society's Gold Medal Award.

Entomological Society of Canada

C. Gordon Hewitt Award

to

Dr. Robert P. Bodnaryk

Dr. Robert Peter Bodnaryk has been awarded the Entomological Society of Canada C. Gordon Hewitt Award for outstanding achievement in Canadian Entomology. The presentation will be made in August, 1975 when the Society holds its Annual Meeting in Saskatoon in conjunction with the Entomological Society of Saskatchewan.

Dr. Bodnaryk obtained his Ph.D. from the University of Waterloo in 1967. During 1967-68 he was a Post-Doctoral Fellow, Laboratory of Physical Biology, National Institute of Arthritis and Metabolic Diseases, National Institute of Health, Bethesda, Maryland. From 1968 until 1972 he was a Research Scientist, Canada Department of Agriculture Research Institute, Belleville, Ontario. During 1972-73 he was a Visiting Scientist, Department of Zoology, Oxford University, England. In 1973 he returned to Canada to become a Research Scientist, Canada Department of Agriculture, Research Station, Winnipeg, Manitoba.

Dr. Bodnaryk has made important contributions to several general areas in the study of insects. The main areas are: reproductive physiology and biochemistry, tumor induction, "chemical" taxonomy, biochemistry of insect peptides, sclerotization of insect cuticle, active transport of amino acids across the cell membrane, and the interaction of cyclic nucleotides and ecdyson in treating pupal diapause. Dr. Bodnaryk is the author or co-author of more than thirty scientific publications. These publications and the work that he has carried out has attracted widespread interest and contributed greatly to entomology in Canada. His current research is directed toward elucidating the mode of action of ecdyson. Experiments in progress indicate that cyclic nucleotides may be involved in the expression of hormone action. The results have shown that certain cyclic nucleotides can greatly enhance the effect of suboptimal doses of ecdyson, whereas other cyclic nucleotides can block the action of ecdyson completely. These results point to a possible use of hormone-cyclic nucleotide combinations as very effective insecticides.

Dr. Bodnaryk is the first recipient of the C. Gordon Hewitt Award, which is restricted to entomologists under 40 years of age.

NOTICE OF MEETING

The 1975 Annual Business Meeting of the Entomological Society of Canada will be held at Saskatoon, Saskatchewan, Monday evening, 18 August. Matters for the consideration of the meeting or of the Governing Board should be communicated to the Secretary, Dr. N. S. Church, Agriculture Canada Research Station, Saskatoon S7N 0X2.

ENTOMOLOGY, A REGIONAL AND NATIONAL VIEW

A part of the presidential Address, delivered at the 30th Annual Meeting of the Entomological Society of Manitoba held in Winnipeg on 8 November 1974.

I have often wondered what the ideal role of our profession and the Entomological Society of Manitoba that champions its cause should be. What are its chances of becoming a vigorous force — a sort of vanguard society among other vanguard societies in Canada?

Moreover, I have never ceased to wonder how an isolated handful of entomologists have managed to build such a truly professional society, with its refereed technical journal and healthy financial position. Some of the other professions in Manitoba have not been so fortunate. We owe much to those entomologists who have worked hard to build a solid foundation for our Society. That is the infrastructure. What can we do to build a strong superstructure on it? Having tried to do this building job for a year, I stepped down from the Society's presidency with the following reflections. I hope that these thoughts will not only stimulate some thought but also some action.

Our Society is stable, but it is also conservative. Conservatism implies a tendency to prefer an existing situation, rather than one of change. Ironically, the glorious days of thriving, post-war Canadian entomology are over. In 1957, when I began working in Winnipeg, it was unthinkable that a Canadian, trained at the Ph.D. level in Canada's own entomology schools would not find a job in his own profession. This has happened. Until a few years ago no one could believe that well-trained Canadian entomologists with good service records would be abruptly laid off by the Federal Government, the largest employer of professional entomologists in Canada. This also has happened. It is no wonder, consequently, that there is a scarcity of Canadian graduate students in our entomology graduate programs! I certainly do not blame our biology majors when they do not choose to sign up for an entomologist's career. If ever there was a need for aggressive professional societies for entomology, both regional and national, it is now. The constitution of our Society, of course, has never ignored this basic need: "The object of the Society is to foster the advancement, exchange and dissemination of entomological knowledge". How can this goal be achieved if we as a group fail to adjust to an environment that is dramatically changing to our disadvantage?

In the 1960's the decision-makers in government were telling us — and not too quietly — that this country had too many entomologists. What is more, they then went ahead and reduced our numbers. Perhaps they were right in their cost-benefit analysis, and perhaps they were wrong. In any case, if we had been alert at that time our professional societies should have taken the hint and set up their own mechanisms for reappraisal, reassessment and lobbying. We failed to act, however. Our overall conservatism, coupled with complacency and elitism at the national level, and apathy and fatalism at the regional level, persuaded us to opt for the status quo.

Today the average age of an entomologist in the Agriculture Canada Research Branch is 47; 68 of the 172 entomologists are over 50 years old.¹ In recent years the number of entomologists employed by the Federal Government has been declining, and their employer has been subjecting them to a most rigorous evaluation and regrouping process. Younger entomologists are recruited, if they are recruited at all, at a slower rate than ever before. Certainly the morale of Canadian entomologists cannot be called high.

What can we as members of a small regional society do to improve the image of entomology to tax-payers, policy-makers and research funding agencies? In my opinion, improving the image will require the following: a) pinpointing the problems in entomology most relevant to our time; b) concentrating our efforts on these problems; c) developing imaginative programs; d) executing them vigorously. To achieve all this, maximum participation from the membership will be essential.

As a modest beginning we can do something about the most important stumbling block in developing a vigorous society — apathy or the lack of interest and concern. We have all suffered from this malaise at one time or another. In my year as President I listened to many excuses, serious or otherwise, from members whom I approached with requests to work for the Society for only one year. If I had taken those excuses on their face value I would have recommended disbanding our Society! In reality, nevertheless, several of our members did take the Society seriously and completed their assigned tasks with high professional and personal standards. I am convinced that many more of us can do this if we stop to think what is at stake.

During my term as president, our Society was active in more diverse activities than ever before. To highlight a few of these activities I will mention the following: (a) we published three informal newsletters and distributed them at regular intervals to all members; (b) we sent an official representative to the Manitoba Environmental Council and to the Advisory Group on Insect Control of the City of Winnipeg; (c) we presented formal briefs on entomological problems at hearings of the Municipal Board Winnipeg, and the Clean Environment Commission, (d) we organized a successful entomological exhibition at the Polo Park Shopping Center, Winnipeg, in collaboration with the Manitoba Museum of Man and Nature; (e) we appointed, for the first time, a student, a woman and an entomological technician as chairmen of committees; (f) we prepared a revised constitution and by-laws; (g) we organized an insect collection contest for students in Manitoba; (h) we held seven successful luncheon meetings and social events during the year; (i) we strengthened ties with the Entomological Society of Canada.

It now seems that a progressive policy of giving equal opportunity to all members, having diversity in programming and carrying out vigorous action in all matters relevant to entomology in Manitoba has paid off. Our membership has risen from 68 to 100 in a brief period of months.

R. N. Sinha

¹Data revised to December 1974.

VESPA PYROMANIA

Fredericton firemen responded to a call Monday to the Firestone store at Brunswick and Westmorland Street, where the roof-mounted furnace exploded. Fire Chief Harold Doherty said wasps had built a nest on the on-off switch for the furnace, holding it in the "on" position. Heavy black smoke rose hundreds of feet into the air, as oil continued to be fed to the furnace after it blew. The roof around the furnace received minor damage, said the chief.

—The Daily Gleaner, 16 Dec. 1974

UNDERWOOD ENTERS EXTRA INSTAR



G. Reginald Underwood, long-time stalwart with the Forest Insect and Disease Survey, Canadian Forestry Service, Maritimes Region, has put away his hand lens, pinning block, and dissecting tools after more than 25 years of continuous service. His retirement was effective 30 December 1974.

Reg had his first brush with forest entomology in 1947 when he appeared at the Cathedral Barracks in Halifax to assume the duties of a student assistant with the Forest Insect Survey during its first year in Nova Scotia. The tedious rearing of insects was occasionally broken by the provocative giggles of student nurses, from their residence nearby, sunning themselves behind the insectary during their leisure hours. Despite that trying initiation with the Survey, Reg has remained with it and has made a significant contribution in his quiet, inimitable way. For several years prior to retirement, he has supervised the program of identifying and rearing insects and of compiling and interpreting data from these studies for entomological reports and publications. His research during the late 1950's and early 1960's on the biology and morphology of adelgids attacking spruces and pines resulted in several substantial publications as did his more recent studies on the red pine sawfly, the larch sawfly, and other forest insects.

Reg's "eclosion" occurred in the rural community of Upper Kennetcook, Nova Scotia, a few decades after the beech scale became established in the Public Gardens, Halifax. After graduating from the nearby Windsor Academy and obtaining a teacher's license from the N. S. Normal School (Teacher's College) in Truro, he became a "Mr. Chips" to students in Hants County schools for 5 years. Reg saw service in the Second World War, first as an airframe mechanic and later as a pilot. He then landed smoothly on the campus of the University of New Brunswick where he obtained a B.Sc. in Forestry in 1949, then refueled for a sortie at the University of Toronto where, with minimal flak, he received an M.Sc. in entomology and zoology in 1952.

As to professional organizations, Reg has been a willing workhorse, contributing quietly and capably and in varying capacities, to the Entomological Society of Canada, the Acadian Entomological Society, the Ontario Entomological Society, the Canadian Zoological Society, the Canadian Institute of Forestry (Maritime Section), and the Professional Institute of the Public Service of Canada.

Reg has served his profession unselfishly and well and with his marvelous wife, Marg, a devoted "schoolmarm" of long standing, deserves a relaxing and happy retirement. If you don't find him at home in Fredericton, he may be "up north" picking fiddleheads as the spring floods recede, or casting flies and wetting lines along the tranquil Miramichi in the summer, or indulging in photography on occasion, but certainly every Monday night he will continue to contribute his mellifluous voice to the seraphic harmony engendered by the local Barbershoppers. What bliss!

F. G. Cuming

MORGAN SIPS FREEDOM

Cecil Vernon George Morgan retired at the virile age of 60 from the Entomology Section, Research Station, Summerland, B.C. in September 1974. He had served 32 years with the Agriculture Canada Research Branch. Cecil's main interest was and still is mites, and he has made a significant contribution to the taxonomy, biology and control of mites of tree fruits. In addition to mites, Cecil worked on scale insects, grape pests, and fumigation, and maintained an active interest in a wide range of entomological subjects.

Thus far, he is enjoying retirement so well that his working colleagues rarely see him. However, we expect he will return to entomological pursuits once the heady wine of freedom wears off.

Harold F. Madsen
Agriculture Canada, Summerland



BEP

1975 JOINT MEETING

Canadian Botanical Association
Entomological Society of Canada
Canadian Phytopathological Society
Entomological Society of Saskatchewan

The program of the joint meeting to be held at the University of Saskatchewan in Saskatoon, August 18-22, has now been firmly established. All of the invited keynote speakers (see *Bulletin* 6:140, December 1974) have now confirmed their intention of participating. A special interest group on new techniques in extension, and a discussion group on the integrated control of insects, plant diseases and weeds, are planned for inclusion in the program. A mailing to all members of the participating societies will be sent out in early April; it will include a call for papers, forms for registration and accommodation, and up-to-date information on the program. Should you have any enquiries about the August meeting, the mailing address is:

BEP 1975 Joint Meeting,
Sub Post Office 6,
Saskatoon, Saskatchewan,
S7N 0W0.

HENRY ALBERT BUTLER 1892-1974

Henry Albert Butler, well known entomologist with the Government of Newfoundland and later Agriculture Canada, died at the D.V.A. Ward, General Hospital, St. John's, Newfoundland, 17 October 1974.

"H.A." was born in Kelligrews, Nfld., on 27 January 1892. He received his early education at the Kelligrews public school and the Normal College at Truro, N.S. After a brief period of teaching school in Newfoundland, he entered the Nova Scotia Agricultural College, Truro, in 1911. He graduated in 1913 and won the Percy Johnson Cup as the best all-round judge of dairy cattle. At the outbreak of World War I he volunteered, and went overseas with the famed "Blue Puttees" of the Royal Newfoundland Regiment in September, 1914. He was seriously wounded at Gallipoli in 1916. After convalescence in Malta, he was commissioned to the Royal Welsh Fusiliers and served in India in 1917-18. In 1918-19 he organized and was commandant of a school of instruction for military clerks, Cork, Ireland.

Shortly after his discharge from the army, "H.A." continued his agricultural studies at Macdonald College. In 1920 he represented Macdonald on the International Livestock Judging Team at Chicago. He obtained a B.Sc. (Agr.) degree with honors in 1921 and was appointed to the livestock Branch, Canada Department of Agriculture, in Nova Scotia. While at Halifax he met and married Melissa Hayter. From 1923 to 1928, he worked at the Toronto stockyards.

In 1928 he returned to Newfoundland to become Farm Superintendent, International Power and Paper Company, Corner Brook. From 1931 to 1934 he was Deputy Minister of Agriculture for Newfoundland; from 1935 to 1937, Chief Agriculturist, with charge of agricultural exhibitions; from 1937 to 1949, when Newfoundland was governed by a commission, Insect Control Officer. During the last period he developed an interest in entomology and made many contacts with Ottawa officers of the Entomology Division while seeking advice on methods and materials to control vegetable and forest insect pests. Additional duties during World War II included seven trips to England as a conducting officer for Newfoundland naval and army volunteers.

In 1949, when Newfoundland became Canada's tenth province, "H.A." organized the Field Crop Insect Laboratory at St. John's and was appointed Officer in Charge. In this position he was mainly concerned with the development of suitable controls for such important pests as the carrot rust fly and root maggots attacking brassicas.

Although "H.A." published very few scientific papers during his wide and varied career, he made a major contribution in entomological extension throughout the province. As Insect Control Officer from 1937 to 1949 he was concerned with identification and control of forest, household and garden pests. During this period he maintained a close liaison with the Canada Department of Agriculture; for example, he obtained and distributed throughout Newfoundland several millions of parasites to combat such important forest pests as the European spruce sawfly, the spruce budworm, the larch sawfly and the satin moth. He also introduced a bacterial disease that helped to combat a serious infestation of the hemlock looper.

Those who knew "H.A." will never forget his charming personality, his stock-market discourses, his hearty and infectious laughter, and above all his informality. No other agricultural worker has been so well known throughout Newfoundland and Labrador. He had little or no sense of fear and was able to produce his familiar laugh when everything seemed to be going dead wrong.

Once when his wife phoned to inform him that a fire had broken out in their home, "H.A." replied, "O.K., dear! Don't bother me now; I'm terribly busy but will be home in twenty minutes." Many of his colleagues will remember him best for his theories on the probability that insect larvae become airborne in southern areas, are carried by wind storms, and literally fall out over Newfoundland. He reported larval fall-outs on several occasions and even found larvae in boats anchored off shore. Although he had received very little support for his theory, he was nonetheless enthusiastic about it. It is difficult to explain where the larvae that once fell on his hat as he walked along Water Street actually came from.

During retirement, "H.A." was by no means inactive and spent much time fishing and hunting. He was an ardent philatelist. In 1957 he contested the Humber-St. George's riding for the Progressive Conservative party, and although defeated he made a creditable showing. He failed to win the nomination for the same riding in 1958.

He is survived by four sisters. His wife, Melissa, predeceased him several years ago. Interment was at Fairview Cemetery, Halifax, Nova Scotia.

Ray F. Morris

SCHOLARSHIP FUND

The Scholarship Committee, chaired by John McLintock, has been very active. Thanks to many contributions and some substantial ones, the fund is growing. A financial report is expected before the annual meeting. More money is needed, and it has been suggested that members might like to make annual contributions as they pay their dues.

Dr. McLintock reported to the Governing Board in February that drafts have been prepared of the announcements, regulations, application forms, and instructions for applying for the ESC Scholarship and the ESC Award. These have been patterned after N.R.C. models. French versions have still to be prepared. The Committee is now concentrating on the ESC Award in the hope that the first award can be made in March 1976.

THINGS DONT CHANGE MUCH

Members of the staff are again urged to exercise the utmost economy during the present year. This will necessitate careful consideration before any field trips are undertaken. Useful information regarding the control of pests may frequently be given by telephone if there is not time for correspondence and in this way unnecessary trips will be avoided. — Entomological Branch Newsletter, March, 1924.

CANADIAN ENTOMOLOGIST 100 YEARS AGO

That *redimacula* and *exsertistigma* are described by Mr. Morrison without any mention that I supplied the material . . . is a breach of etiquette. Mr. Morrison should not have hesitated to acknowledge so slight an indebtedness. — (6:101, an incident in the feud between Grote and Morrison).

ROBERT DONALD DIXON 1938-1974



Robert Dixon passed away suddenly at age 36 in Edmonton, Alberta, 22 November 1974.

Born in Edmonton in 1938, Bob at the age of 10 moved with his parents to Sheraton, Manitoba. After completing elementary school in 1954, he worked as a labourer until he joined the Canadian Army in 1955. After his discharge in 1958, he returned to Northern Manitoba where he worked as a fisherman and miner.

In September 1960 at the age of 22, he entered high school, graduating in 1963. Possessing an interest in entomology he then entered the Faculty of Agriculture, University of Manitoba, graduating in 1967 with the degree of B.Sc.A. and obtaining a M.Sc. in 1968. His graduate work involved research on mosquito behaviour and control.

In 1968 he joined the Alberta Department of Agriculture as Entomologist working on a wide spectrum of entomological problems. In 1970 he became Head of the Plant Industry Laboratory, the position he held at the time of his death.

He was a member of the Entomological Society of Manitoba, Entomological Society of Alberta, and the Entomological Society of Canada. In addition he was an active member of The Canada Committee on Biting Flies, The Alberta Mosquito Control Association, and North West Mosquito and Vector Control Association, and many other provincial Committees. He was Co-ordinator of Biting Fly Research in Alberta and a leader in the establishment of urban mosquito abatement programs in Western Canada.

Bob was a true agricultural entomologist in that he was always concerned with the agricultural community and its problems in relation to insects.

Bob enjoyed a short but fulfilling entomological career, and as a man was admired by many. He had a love for nature and enjoyed many outdoor activities. He is remembered with great affection by his many colleagues and friends.

M. G. Dolinski

The Wolf, the Bear, and the Rattle-snake, — names which are sufficient to intimidate the stoutest European heart, — are gentle and innoxious when compared with the Musquito. . . . neither your house nor your bed affords you any refuge from those long-legged destroyers of your comfort, the Musquitoes. Go where you will, they will find you out. — Edward A. Talbot, Five years' residence in the Canadas, 1823.

**BOTANICAL, ENTOMOLOGICAL, PHYTOPATHOLOGICAL
PHOTO SALON**

18-21 August, 1975

Biological photographers are invited to submit photos to the joint meeting of the Canadian Botanical Association, the Entomological Society of Canada, and the Canadian Phytopathological Society which will be held in Saskatoon 18-21 August, 1975. Photos of scientific value or of interest to the disciplines of botany, entomology and phytopathology will be accepted.

The Salon will be the fifth annual insect photo contest sponsored by the Entomological Society of Canada. Winners for photographs of insects, related arthropods, insect damage, nests, tracks, etc., will be awarded certificates, and ribbons by the Entomological Society of Canada. First prize in each category will also receive a cash award.

This Salon is the first for the Canadian Botanical Association and the first for the Canadian Phytopathological Society. Ribbons will be given for first, second and third awards for photos of various types of vegetation, flowers, fungi, lichens, plant disease damage, plant disease organisms, etc.

Judges for the BEP Photo Salon will be selected from the appropriate disciplines.

BEP Photo Salon Committee

- S. Zettler, Environment Canada, Winnipeg, Man.
- R. Cheale, Agriculture Canada, Winnipeg, Man.
- K. S. McKinlay, Agriculture Canada, Saskatoon, Sask.
- R. Brust (Chairman), University of Manitoba, Winnipeg, Man.

ENTRY FORM

BEP PHOTO SALON

Name

Street

City Province/State

Postal Code Member Ent. Soc. Canada

Can. Botanical Association Can. Phytopathological Society

Fee enclosed \$ + return postage

Deadline: 18 July

BEP PHOTO SALON

Conditions of Entry

1. Subjects: Botany, Entomology and Phytopathology.
2. The competition is open to amateur and professional photographers.
3. Four Categories: a) Black and White Prints; b) Color Prints; c) Color Slides; d) Photomicrographs.
4. Prints must be 8" x 10" or larger, mounted on 11" x 14" cards.
5. Entries may not exceed 8 photos per person, including slides and prints.
6. All photos should be titled or the subject identified. Sender's name should be on the reverse side.
7. Judging will be completed before the meeting.
8. A completed entry form or a facsimile must accompany each entry.
9. Entry fee is \$1.50 per person.
10. Entries must be postmarked 18 July or earlier.
11. Entries will be returned only if accompanied by a self-addressed envelope and return postage. Foreign entries should be identified to clear Canadian customs. It should be stated on the parcel that the photographs are not for sale, but only for exhibition before a scientific society, and are to be returned to the sender. Make cheques or money orders payable to R. A. BRUST. Foreign entrants should send 50c to cover return postage.
12. Entries will receive every possible care but the BEP Photo Salon Committee will not be responsible for loss or damage.

IMPORTANT

Have you enclosed – prints, return self-addressed envelope with postage, entry form and fee? All conditions must be complied with or entries will not be judged. Address enquiries and make cheques and money orders payable to:

Dr. R. A. Brust
Department of Entomology
University of Manitoba
Winnipeg, Manitoba R3T 2N2

ENCOUNTER AT GUELPH

An unusual encounter took place at the University of Guelph Arboretum Centre during the February meeting of the Governing Board. Dr. Freeman McEwen took the opportunity to arrange for students to meet the visiting entomologists and confront them with the problems facing the profession — as they saw them.

Dr. Eugene Munroe, Biosystematics Research Institute, Ottawa, spoke on the past accomplishments of the Society. Dr. C. R. Harris, Agriculture Canada Research Institute, London, Ontario, spoke on the plans of the Society.

Two graduate students, Mr. Wayne Bradbury, University of Waterloo, and Mr. B. M. J. Tyler, University of Guelph, spoke on what the ESC should do. In a most effective and entertaining manner, illustrated with slides, these two men made their points. Many of the things they felt the Society should be doing, such as providing awards and scholarships, becoming involved in policy-making, running a job market, improving the journal, and involving students, are already receiving attention. They clearly felt the Society was not doing enough.

Some of the things suggested were: Education — provide awards and scholarships, establish a speakers' bureau, become involved in curriculum planning; Policy — establish guidelines for planning, provide advisory staff, be heard in policy-making bodies, document unsolved problems; Image — properly expose the profession, educate the non-entomologist; Jobs — advertise jobs and job-seekers, provide a registry, attune educational policies to the job market; Journal — balanced content, split the journal, provide alternative journals by arrangement with other societies, more papers by other than government people; Student apathy — provide full membership rights, get students involved.

In the ensuing discussion the established professionals and the students discovered that both were concerned about the future of the profession in the context of a general national down-grading of the sciences. Accord was reached when it was found that science policy, education, employment, the public image, free expression of opinion, and the refreshments waiting at the back of room were the principal concerns of both groups.

D. C. Eidt

I N C D N C M

The Annual Meeting of the International Northwestern Conference on Diseases in Nature Communicable to Man will be held on the campus of the University of Saskatchewan, Saskatoon, from Thursday 14 August to noon of Saturday 16 August, immediately preceding the joint BEP meeting. Registration will be Wednesday evening 13 August. The program is not yet complete, but it is expected that part of Saturday morning will be devoted to a session on "Insecticides and control of insect vectors of disease". Other topics being considered are "Recent findings on arboviruses in the INCDNCM region and the Arctic" and "Problems with boreal or Arctic zoonoses".

Acadian Entomological Society

Impression by Arthur J. Lightfoot of



Entomological Society of Canada

the 1974 Joint Meeting, Halifax, N. S.



ACTIONS OF THE GOVERNING BOARD 18-19 February 1975

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|-----------------------|---|
| External Affairs | 1. Approved withdrawal of the Society from the Biological Council of Canada (subject to ratification). |
| Canadian Entomologist | 2. Reaffirmed the Society's desire to cooperate with other scientific societies on matters of mutual interest and concern. |
| By-Laws | 3. Requested continued pursuit of ways to minimize the effects of inflation on costs of publishing <i>The Canadian Entomologist</i> . |
| Executive Committee | 4. Agreed on revised and simplified By-Laws to be submitted to the membership for ratification. An important provision would give Student Members full membership and voting privileges. |
| Achievement Awards | 5. Noted the efforts of the Executive Committee to streamline operations of the Society by delegating more work to committees to leave the Executive Committee more time for policy, to involve the Governing Board more actively in Society operations between Board meetings, to establish contact with senior government and agency officials responsible for science policy, and to improve communications with affiliated societies. |
| Science Policy | 6. Announced the award of the Society's 1975 Gold Medal to G. G. E. Scudder. Dr. Scudder is the fourteenth recipient of the Gold Medal. |
| ESC Award | 7. Announced that the first recipient of the C. Gordon Hewitt Award is Dr. Robert P. Bodnaryk. |
| | 8. Agreed that the Society would participate in the U.N. Conference/Expositions on Human Settlements (Habitat) to be held in Vancouver in 1976, the extent of participation to depend on financial support by the Conference. A Habitat sub-committee was appointed. |
| | 9. Noted with satisfaction that the Federal Public Service Commission has agreed to sponsor and provide generous financial support for the Society's Study on Professional Manpower in Entomology in Canada. Requested the affiliated societies and Regional Directors further assist the study by identifying all entomologists on a regional basis. |
| | 10. Agreed the Extension study has high priority and potential inter-relationships with the Manpower Study. |
| | 11. Agreed to seek funds to develop a project format to initiate the coordinating function of the Biological Survey of the Insects of Canada. |
| | 12. Appointed a committee to study funding of entomological research in universities and government. |
| | 13. Noted progress of Scholarship Committee toward putting the Entomological Society of Canada Postgraduate |

- Award into operation. The Committee hopes that the first award can be made in the spring of 1976.
- Membership 14. Approved a feasibility study, to be made by the Membership Committee and the Treasurer, of development of a computerized membership list.
- Student Encouragement 15. Approved continued support of Teen International Entomology Group (TIEG) and recommended working closely with such organizations on a regional and national basis to take full advantage of opportunities presented.
- Future Meetings 16. Noted the progress of plans for the 1975 meeting in Saskatoon and the 1976 meeting with the Entomological Society of Ontario.
17. Accepted the recommendations of the Committee on Future Annual Meetings of the ESC that (1) most meetings (about four in every five) should be held jointly with an affiliated society as an equal partner, with the Regional Director from the prospective host region being chairman or vice-chairman of the joint program (scientific) committee, (2) from time to time an independent ESC annual meetings should be held, and (3) program committees should be established at least two years ahead of each meeting.
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ENTOMOLOGY MANPOWER STUDY

We reported earlier (see report – *Bulletin* 6(4): 150) that a study would be conducted on manpower in entomology in Canada and that this study would include projections of manpower needs and entomologists being trained to meet these needs. It had been our intention to conduct this study with our own resources and with assistance from the regional societies. As plans for the study developed, it became apparent that a study of this nature required the talents of a manpower specialist to work with members of our committee. Since this would involve a considerable expenditure, we applied to the Department of Supply and Service for funds to carry out the study. We have been advised that our request has been approved and that a contract for the study will be awarded.

It is our intention to contract this study to a manpower consultant. Our committee will work with the Governing Board representatives of the regional societies to develop a mailing list of all entomologists in Canada and provide that list to the consultant. The consultant will then contact each entomologist by questionnaire to develop an inventory of our present manpower situation. In a similar way, employees of entomologists will be canvassed as to their projections, and universities will be canvassed concerning their current and future plans for training entomologists.

It is hoped that the study will be completed by September 30, 1975. Each entomologist in Canada will be receiving a questionnaire, probably in June. We ask that you reply promptly and provide as much detail as possible. Replies are confidential and will be destroyed when the study is complete. The study will be published and a copy provided to all participants.

Manpower Committee:

A. J. McGinnis, C. R. Harris – *ex-officio*
F. L. McEwen – Chairman

BOOK REVIEWS

Conifer Woolly Aphids (Adelgidae) in Britain, by C. I. Carter. Forestry Commission Bulletin, 42: iv + 51 pp. Her Majesty's Stationary Office, London 1971. Price: 75 p.

This is a useful review of the adelgid species occurring in Britain. A summary of the complex life cycle and of the general morphology of these conifer pests is provided. Keys are given to the genera *Pineus* and *Adelges* and to the various winged morphs of the known British species. A total of 8 species of *Adelges* and 4 species of *Pineus* are recognized of which *A. viridana*, *P. pineoides* and *P. orientalis* are recent British records. The descriptions are supported by clearly labelled outline drawings of the major diagnostic features. For each species, information is given on the feeding sites the known (British) host plants, and on the seasonal history of infestation. In addition, the results of some transfer experiments are discussed. In view of the degree of similarity that exists between some morphs of related adelgid species, precise collecting data and a statistical treatment of all measurements would have been desirable.

A "World Check List" of the described adelgid species, their distribution and their host plants is appended to the main part. The list, however, is neither complete to date of publication nor in agreement with recent attempts at classifying members of the family Adelgidae. In fact, only two genera are recognized i. e. *Adelges* and *Pineus*, with *Gilletteella*, *Cholodkovskya*, *Aphrastasia*, *Sacchiphantes* and *Dreyfusia* placed as subgenera of *Adelges* and *Pineodes* listed as a subgenus of *Pineus*. Perhaps because of the delay between the completion of the study in 1967 and its publication in 1971, the genus *Eopineus* is not mentioned. Of the Nearctic taxa, *Gilletteella cummingae* is not listed, and the related agamospecies *G. coweni* is listed as a synonym of *G. cooleyi*. Furthermore, *Adelges geniculatus* which is synonymized with *A. laricis* should have been treated as a distinct species.

Despite these shortcomings, the booklet can be recommended. It provides adequate descriptions for the identification of the winged forms of some important (and widely distributed) adelgid pests. The photographs of various adelgid colonies on twigs and needles of coniferous trees and of some common types of adelgid galls are of good quality and should enable the non-specialist to recognize this group of insects in the field.

M. Mackauer
Simon Fraser University

Knowledge, Power and Public Policy. Peter Aucoin and Richard French. Science Council of Canada, Background Study No. 31. November, 1974. 95pp. \$2.00 Information Canada.

The public policy implications of the link between knowledge and power as they relate to the concept of Ministries of State are the concern of Drs. Aucoin and French in their Background Study. They are equally concerned with how this concept has been applied in practice to the Ministries of State for Science and Technology (MOSST) and for Urban Affairs (MOSUA). Their pre-occupation is, of course, with MOSST.

The first of these deals with the concept and roles of Ministries of State in the federal context in Canada and with the histories of MOSST and MOSUA. The second is an assessment of the work of MOSST between August 1971, when it was established, and the early months of 1974, when the authors did their research. The third part lays out the authors' conclusions. Although they do not

say it in so few words, Aucoin and French obviously found that MOSST — in the Spring of 1974 — had become a disaster area. Their report should therefore be most useful to the new Minister and the new Secretary, who were appointed during the summer, in their reinterpretation of the Ministry's objectives, activities and programs.

Biology, Ecology, and Host Specificity of Microlepidoptera Associated with *Quercus agrifolia* (Fagaceae). Paul A. Opler. University of California Publications in Entomology, Vol. 75. University of California Press, Berkeley, 91 pp., 7 pls., 1974. \$4.25, paper cover.

This publication deals with the bionomics and evolution of the Microlepidoptera associated with coast live oak (*Quercus agrifolia* Neé). A heterogeneous assemblage of 35 species in 28 genera and 14 families are treated.

The book is divided into ten major categories: Introduction, Materials and methods, Moth taxonomy, Host plant, Biology of individual species, Life cycle adaptations, Host specificity, Biogeographical distribution, Interspecific interactions, and Evolution.

The book is well written, thorough in its treatment, and the conclusions have been based on a substantial amount of data. I found the chapters on life cycle adaptations and interspecific interactions particularly fascinating. Larval feeding and food availability, voltinism, and diapause are shown to be important adaptations in niche segregation.

A study of the bionomics and evolution of such a diverse array of species seems somewhat premature considering the primitive state of the taxonomy of the species involved. This is exemplified by statements such as ". . . while four or five other undescribed species (of *Coptodisca*) have been reared from other *Quercus* species." (p. 6). The author estimates that, of the species found on Californian Fagaceae during his study, "86 species (68 percent) are undescribed." (p. 12).

A few apparent errors in the text were noted. The author states that "Associates of *Q. agrifolia* total 35 species of which 19 (57 percent) were found to be undescribed during the course of this study." (p. 12). An examination of the section on the biology of individual species (pp. 16 - 47) revealed that all but 15 species had been described by 1935. The references in the text to Chaney, 1939 (p. 73) and Trelease, 1923 (p. 74) are listed in the bibliography (correctly) as 1938 and 1924 respectively.

The author found that "Each miner species constructs a mine of a characteristic configuration and area." (p. 66). It is, therefore, unfortunate that the mines of seven species and the habits of more than two-thirds of the external feeding species are not illustrated.

In spite of these few drawbacks, the author has prepared a commendable and significant treatise on the bionomics and evolution of the Microlepidoptera associated with *Quercus agrifolia*. The selection of this species of host plant for the study was a good one for this species not only has a workably small distribution but also disjunctions and a sufficiently good fossil record that biogeographical and evolutionary conclusions could be drawn.

Dr. Opler's book is an important contribution to our scanty knowledge of the bionomics of the Microlepidoptera and should be included in the library of every serious Microlepidopterist.

J. D. Lafontaine

Pests of Field Crops (2nd Edition). F. G. W. Jones and Margaret G. Jones. 2nd edition 1974. Edward Arnold (Publishers) Limited, 25 Hill Street, London W1X 8LL. 448 pp., illust. Also published in Canada by MacMillan of Canada, \$27.95.

This book was first published in 1964. The revised edition continues the original objective of describing pests of British field crops including insects, slugs, snails, plant parasitic nematodes, birds, and small mammals. However, it incorporates many new developments, particularly in relation to pest control and the nature of pesticides. Although the authors stress field crops such as grasses, legumes, cereals, sugar beets, and mangolds, considerable space is devoted also to carrots, onions, potatoes, celery, cole crops, fruits, etc., and stored grains. The title, therefore, could be misleading to North American entomologists.

The text contains an introductory chapter on the origin and nature of pest problems, followed by a concise, well-illustrated section on insect structure and classification. Separate chapters are devoted to discussions of representatives of the insect orders of economic importance in Britain, insect orders of minor economic importance, and arthropod pests other than insects. The authors have eliminated some sections which appeared in the first edition relating to foreign pests and to pests of fruits, but still too much space is devoted to these and other non-field crop pests.

Of interest to me were the chapters on slugs and snails, nematodes and vertebrate pests, which are informative and up to date. Slugs and snails are illustrated by two colored plates.

In Chapter 14, "crops and their pests" the authors have grouped together crops and their major pests, and have discussed the information required before control measures are attempted, as well as recommending control practices.

In Chapter 15 they discuss "pest management" in general, and have updated, to some extent, information relative to pest control. Throughout the text the authors stress natural control, biological control, integrated control, control by disrupting reproduction, the use of hormones, pheromones, phytonones, and resistant varieties, and indirect control measures such as crop rotation, as well as direct methods that repel, deter, trap, or kill the pest. The final chapter on pesticides discusses screening of pesticides, types of pesticides, mechanisms of toxic action, formulation, compatibility, hazards, toxic residues, and pesticide legislation.

Metric units have been adopted throughout the text with two or three exceptions. Although there are no keys to identification of pests, the book is extensively illustrated with excellent line diagrams, many original, which should serve useful for identification. Thirty-two pages of black-and-white photographs are included, some quite good, others which would be of more benefit in color. The book is not entirely free of technical errors, but the meaning is, nevertheless, clear in most cases. For example, on p. 166 they refer to the organochlorine compounds malathion and azinophos-methyl, but most readers will recognize these as organophosphorous compounds.

One drawback of the book for North American readers is the frequent encounter with common and scientific names of insects not consistent with those in use in the U.S. and Canada. Many of the pests discussed do not occur in North America.

The book should be a most useful teaching aid in British agricultural colleges and universities and a worthwhile reference in any entomological or zoological library. It would also be useful to Plant Protection personnel in North America involved with intercepting foreign pests.

L. S. Thompson
Agriculture Canada, Charlottetown

Insect Pest Management. Merle Shepard. M.S.S. Information Corporation, 655 Madison Avenue, New York, N.Y. 10021, 1973, 269 pp. \$7.50.

This paperback is a custom-made book of readings on insect pest management. The editor has assembled fifteen papers from several scientific journals and proceedings of scientific conferences to represent important work in pest management: six were published between 1955 and 1969 and nine were published since 1970. His collection is designed to acquaint the student of insect pest management with some of the tools for application and implementation of a management program.

The book has eight sections: (1) Pest management background, (2) Natural enemy component, (3) Plant-insect interaction, (4) Economic threshold, (5) Integrated control, (6) Pesticides, (7) Sampling methods, and (8) Pest management systems. In the first section Southwood and Way, Geier, Geier and Clark, and Clark emphasize consideration of the ecosystem, the ecological basis of pest management, and the need of maintaining species diversity in agro-ecosystems. In the following section, DeBach, Knipling, Sailer and Cameron discuss the use of different biotic factors in evaluating strategies of pest management. The papers in the six remaining sections are contributed by Pimental, Headley, Stern *et al.*, Smith, Waters, Gonzalez, and a subcommittee comprised of several scientists. Pimental examines evidence supporting the genetic feedback mechanism as a controlling factor in natural populations. Headley in discussing the concept of economic threshold develops some mathematical models as a basis for establishing rational control programs and policies. Stern *et al.* discuss the implication of the integrated control system. Smith examines the merits and demerits in pesticide use in pest management. Waters discusses the mechanics in application of sequential sampling for insect surveys. Gonzalez attempts to exemplify the development of a sound sampling procedure as a basic need for population management. The last section is coincidentally a discussion of a broad summary of pest management concepts.

The editor shows considerable bias in selecting papers and as a result the book is unbalanced and repetitious. The omission of population modelling is one of the serious shortcomings; modelling is a prerequisite for any management plan. For evaluation of biological facets of an ecosystem, it requires quantitative consideration of many variables affecting the insect populations. Once the basic data applicable to various factors have been obtained, they must be organized into a workable form. The technique suited for this integration is modelling. Canadian contributions in population modelling have been pioneering and very profound but unfortunately the editor did not include any.

Apart from this book's shortcomings, this type of publishing venture is extremely useful since it can bring together the best work of eminent scientists.

M. K. Mukerji

Blattariae (Schaben). M. Beier. *Handbuch der Zoologie*, 4(2)2/19, 127pp, 74 figs. Walter de Gruyter, Berlin. DM 150.00 (In German).

This publication, the most recent contribution of Professor Beier to the *Insecta* portion of the *Handbuch*, is a comprehensive review of present knowledge of cockroach biology. Understandably, and happily, exhaustive detail is avoided in a work of this length (95 pp of actual text), but previous major works on circumscribed areas of cockroach biology have been used as a base. These, and other more minor sources, are given in the references, and may be consulted by those wishing to delve more deeply into matters of particular interest. This publication, being an introductory, though comprehensive, guide to cockroach biology, pretends to no innovation in the information presented. The references, totalling 981, are complete to early 1972.

The text is divided into nine major parts. The first six, entitled 'Historical Introduction', 'Ordinal Characters', 'Palaeontology & Phylogeny', 'Systematics', 'Distribution', 'Ecology & Ethology', and 'Economics', are treated clearly but briefly, and are obviously secondary to the main theme. In all, these six topics are allowed 17 pages. The primary emphasis is on 'Morphology, Anatomy, & Physiology', and 'Reproduction & Development', which occupy the remaining 78 pages.

Historically the Cockroaches are traced from their first mention by Aristotle, to Linnaeus, followed by familial and tribal concepts of authors to the present. 'Systematics' gives the present status of the order, with four sub-orders (Polyphagoidea, Blaberoidea, Blatteroidea, and Epilamproidea), 28 families (numerous sub-families), and about 3,500 recent species. Keys are given to sub-orders, families and, in one case, sub-families. Each taxon is characterised, and typical genera named. Under 'Geographical Distribution', after generalities, a single sub-section examines the remarkable 'Dispersal' of major taxa and certain species. Sub-sections of 'Ecology & Ethology' are 'Habitats', 'Myrmecophily & Termitophily', 'Synanthropy', 'Associations', 'Care of Young', 'Activity', 'Annual Cycles', and 'Predators & Parasites'. 'Economics' reviews the association of Man and Cockroaches, and the remarkable variety of viral, bacterial, and other diseases transmissible by Cockroaches.

Sub-headings under 'Morphology, Anatomy, & Physiology' are, 'Head', 'Thorax', 'Legs', 'Wings', 'Abdomen', 'Integument', 'Sound Production', 'Epidermal Glands', 'Tracheal System', 'Respiration', 'Tactile Organs', 'Stretch Receptors', 'Scolopal Bodies', 'Light Receptors', 'Nervous System', 'Endocrine System', 'Musculature', 'Digestive Tract', 'Salivary Glands', 'Fat Body & Mycetocytes', 'Circulatory System', 'Blood', 'Internal Reproductive Systems', and 'Germ Cells'.

'Reproduction & Development' treats of 'Parthenogenesis', 'Pheromones', 'Mating', 'Oviposition', 'Eggs', 'Embryogenesis', 'Postembryogenic Development', and 'Regeneration'.

Apart from the basic topic of each section, or sub-section, other relevant points are dealt with, such as biochemistry, factors affecting, etc., depending on the topic. Little, if anything, seems to be omitted.

As I am unable to speak authoritatively on cockroaches, to the standard of this publication, I am unable to comment on the objectivity of the interpretations offered by Professor Beier, but I am of the opinion that there is little if any subjectivity evident. The only other comments I can offer are, firstly, to wonder why certain sub-sections such as 'Musculature', 'Digestive Tract', etc. are so far removed from the main body of anatomical sub-sections. Secondly, all

illustrations are taken directly from original papers which, with the wide range of topics covered, assures consistent high quality, though styles differ. All are fully acknowledged and, consistent with the text, citations are by number referable to the 'References'. Indeed, documentation throughout is copious, probably exhaustive and, in parts, exhausting, despite the use of numbers.

The book is soft-cover, 12" by 8 3/4", of soft but strong paper with little glare, with suitable-sized type for generally easy reading, set in two columns per page. The text is easily read, being very little subject to the involved complexities of which German is, on occasion, capable.

All in all, Professor Beier is to be commended on a valuable contribution to the literature on cockroaches.

A. P. Nimmo,
University of Alberta

Biological Control by Natural Enemies. Paul DeBach 1974. The MacMillan Company of Canada Limited 325 pp., Paper \$7.50.

Professor DeBach is the dean of biological control workers in California and a book by him on this topic is bound to draw wide attention.

He begins by showing the detrimental effects that can be deliberately induced if chemicals are applied indiscriminately where natural enemies are holding prey populations in check. The next chapter gives a synopsis of the important groups of natural enemies. This is followed by a chapter on "biological control ecology", in which principles are discussed, including the observation that despite field and laboratory studies beforehand, there is still uncertainty how effective an introduced natural enemy will be.

The next three chapters are devoted to a history of biological control by reference to some projects from the earliest known observations to the present time. Those engaged in foreign explorations will find the detailed accounts of the hardships and determination of the early explorers especially interesting. It leads one to question why more is not being done today when travel and many other amenities are so much easier; Professor DeBach certainly points this out and several times he notes the savings that could have been obtained if action had been taken earlier. In summary he emphasizes the cost-benefit ratio of 30 to 1 for biological control as the proper measurement of comparison with other control methods rather than the success of establishment of imported natural enemy species. In the closing chapters the author points out the dependence of biological control on research in systematics, biology and ecology, discusses conservation and augmentation of natural enemies including sections on public involvement; he also reviews other biological methods - plant resistance, cultural methods and others.

The last chapter is devoted to Professor DeBach's main theme that the pesticide load must be drastically reduced so that natural enemies may meet their full potential in controlling pests.

There is something of value for every reader, from those who are casually interested in pollution reduction to those who are actively engaged in biological control.

J. S. Kelleher

Proceedings of the Summer Institute on Biological Control of Plant Diseases and Insects. Edited by Fowden G. Maxwell and F. A. Harris. 1974. Published by University Press of Mississippi, Jackson, Miss. Cloth (\$12.50) or paper (\$5.00), 647 pp.

These proceedings are divided into five parts: I. Concepts of pest management, II. Parasites and predators of arthropods, III. Biological control of weeds, IV. Host plant resistance for control of plant pathogens and insects, and V. Insect pathogens.

The first two papers set the tone for these proceedings and both do an excellent job; L. D. Newsom comes to grips with some of the problems facing entomologists and says many things that have needed to be put into print for a number of years. R. L. Rabb, R. E. Stinner and G. A. Carlson broadly describe the basic features of a sound management design.

There are other papers which stand out because of their utility or the new concepts they introduce. These include papers in part II by: M. L. Laster on increasing natural enemies through crop rotation and strip cropping, K. S. Hagen and R. Hale on supplementary feeding of natural enemies and R. L. Metcalf's paper on selective use of insecticides in pest management. Several of the other papers in Part II contain useful information but do not present much that cannot be found in other publications on the subject.

The papers in Part III give good general reviews of the status of biological control of terrestrial weeds (K. E. Frick) and of aquatic weeds (F. D. Bennett).

The greatest amount of space in these proceedings is allocated to Part IV which deals with resistance to plant pathogens and insects. T. Kommendahl discusses some interesting points on the effect of crop rotation on disease production. S. D. Beck gives a detailed account of the theoretical aspects of host-plant specificity. Several papers in Part IV deal with specific crops or specific insects: corn and cotton are reviewed most frequently but cereals, legumes and vegetables are also dealt with. R. L. Gallun discusses the problem of biotypes and A. A. Bell gives a detailed account of the biochemical bases of resistance of plants to pathogens, including about 370 references on the subject. J. A. Klun examines insect hormone mimics and gives examples of other chemical plant derivatives related to host-plant resistance. P. A. Hedin, F. G. Maxwell and J. N. Jenkins review insect-plant attractants, feeding stimulants, repellents, deterrents and other factors affecting insect behavior and summarize the literature on these topics in a useful table.

Part V, the last section, deals with Insect Pathogens. A. M. Heimpel too briefly discusses the development and progress of insect microbial control. T. A. Angus reviews bacterial pathogens and C. M. Ignoffo examines aspects of viral pathogens. Other pathogens (protozoa, fungi and nematodes) are also reviewed. The paper on nematodes should have been included in Part II. Other aspects of pathogens are discussed including: dispersion, production, integration of pathogens into pest management systems, pathogen safety and use.

There are some poor general statements buried within the text of some of the papers. One that particularly bothered me was a statement made by C. Lincoln, who, in discussing the cotton pest management program, states . . . "Crude as the data are, its sheer mass should yield useful information that can be extracted by computers." This view, too common among some entomologists, is unfortunate. J. F. Shafer's summary of the history, status and future outlook of host-plant resistance to plant pathogens and insects falls into a similar category.

On the other hand, F. W. Stehr's paper on release, establishment and evaluation of parasites and predators does not present data but does give a mature discussion concerning the need for quantitative evaluation of biological control. R. I. Sailer's paper contains a well-balanced discussion of exploration for and importation of exotic arthropod parasites and predators. He also provides a list of criteria which he considers prerequisites of a good foreign service candidate. Perhaps with slight modification the same criteria apply to all entomologists, especially the final point: high frustration tolerance.

The major criticism I have of these proceedings is the lack of mathematical treatment of some of the elements of biological control which have sufficient background to warrant such treatment. This lack of modelling, in my view, reflects the present state of biological control in most places, and indicates that it is more art than science. Rabb *et al.* present information that should be useful to those interested in developing conceptual models. I hope that this particular criticism stimulates more quantitative activity in the field of biological control because these proceedings lead one to believe that the field is wide open.

There are many positive aspects of these proceedings, including the broad range of topics covered in considerable detail with extensive literature citations. The editors have done a good job in putting the papers together. These proceedings, as well as being economical for their size, provide a source of information on biological control that should be on the bookshelf of most entomologists.

Stuart H. Gage
Agriculture Canada, Saskatoon

Insects of Eastern Pines A. H. Rose and O. H. Lindquist. Canadian Forestry Service, Environment Canada, Great Lakes Forest Research Centre, Sault Ste. Marie, Ontario. Paper. 127 pp, 191 color plates.

This attractive handbook deals with 90 species of insects, mites, vertebrates, and diseases that attack pines in Eastern Canada. It is based on 25 years of data accumulated by the Forest Insect and Disease Survey.

The book has four principal parts. The first gives brief notes on past history, types of injury and control. This followed by excellent color photographs of 7 common species of pine cones and needles and types of insect larvae and adults associated with them. In the next part one may identify the insects responsible by the type of injury through the use of the flow chart keys. In the fourth part, each insect, mite, animal and pathogen causing damage to pines is discussed, with the life history of each species beautifully illustrated by numerous color photographs. A brief note on injury to pines caused by agencies other than insects, other animals, and diseases is given at end of the text.

This is a useful guide and reference hand book especially for the non-technical reader.

Carl M. Yoshimoto
B.R.I., Ottawa

FORTHCOMING MEETINGS

- North Central Branch ESA, 25-27 March 1975, Kellogg Center, East Lansing, Michigan.
- Acadian Entomological Society, Kentville, N. S., 7-9 April 1975.
- FAO/IUFRO Second Symposium on Forest Diseases and Insects, 7-12 April 1975, with field tours 2-6 and 14-19 April, Delhi, India.
- Genetics Society of Canada, 4-6 June 1975, University of Saskatchewan, Saskatoon.
- Pacific Branch ESA, 24-26 June 1975, Thunderbird Motel, Jantzen Beach, Portland, Oregon.
- Amercian Arachnological Society, 24-26 June 1975, Central Missouri State University, Warrensburg, Missouri 64093. W. B. Peck, Coordinator. Theme: Phylogeny of the Arachnids.
- Canadian Federation of Biological Societies, 24-27 June 1975, University of Manitoba, Winnipeg.
- Canadian Society of Zoologists, June 1975, University of Guelph.
- Seventh International Biometrical Congress, 17-23 August 1975, University of Maryland, College Park, Md. Of interest to entomologists is the entomology sub-group of the Permanent Study Group on "Effects of weather and climate on plants, trees and their pests". Interested persons should contract R. T. Huber, Dept. of Entomology, Purdue University, Lafayette, Indiana 47907.
- The Canadian Botanical Association, 18-21 August 1975, Saskatoon.
- Canadian Phytopathological Society, 18-21 August 1975, Saskatoon.
- Entomological Society of Canada, 18-21 August 1975, Saskatoon.
- VIII International Plant Protection Congress, 21-27 August 1975, Moscow, USSR.
- Entomological Society of America, 1-4 December 1975, Marriott Hotel, New Orleans, Louisiana.
- XV International Congress of Entomology, 19-27 August 1976, Washington, D.C., U.S.A.
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INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

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.* 31, part 3, 20th September 1974)

1888. Suppression of *Cicada cingulata* (Fabricius) var. *obscura* Hudson, 1891 (Insecta, Homoptera).
2031. Designation of a type-species for *Oxystomina* Filipjev, 1918 (Nematoda).
2048. Suppression of *Polygramma* Chevrolat, 1837 (Coleoptera, Chrysomelidae).

2057. Suppression of *Coccus sativus* Lancry, 1791, *Coccus mexicanus* Lamarck, 1801 and *Coccus silvestris* Lancry, 1791 (Insecta, Homoptera).
2062. Conservation of *Aphis pyri* Boyer de Fonscolombe, 1841 and the suppression of *Aphis pyri* Kittel, 1827 and *Aphis pyri* Vallot, 1802 and seven other binominals proposed by Kittel in 1827 (Insecta, Homoptera).
2091. Designation of type-species for *Dactylopius* Costa, 1835 and *Pseudococcus* Westwood, 1840; proposed suppression of *Diaprosteci* Costa, 1828 (Insecta, Homoptera).
- (see Bull. zool. Nom. 31, part 4, 13th January 1975 (exact publication date).
1884. Suppression of *Parnalius* Rafinesque, 1815 (Insecta, Rhopalocera).
2012. Suppression of *Calomicrus taeniatus* Wollaston, 1867 (Insecta, Coleoptera).
2025. *Striglina* Guenée, 1877 to be given precedence over *Daristane* Walker, 1859 (Insecta, Lepidoptera).
2036. Designation of *Hydrophorus binotatus* Fallén, 1823 as type-species of *Hydrophorus* Fallén, 1823 (Insecta, Diptera).
2060. Suppression of *Xiphidium glaberrimum* Burmeister, 1838 and *Orchelimium cuticulare* Audinet-Serville, 1838 (Insecta, Grylloptera).
2063. Designation of a type-species for *Kerrichiella* Rosanov, 1965 (Insecta, Hymenoptera).
2066. Suppression of *Heterodera urticae* Pogosyan, 1962 (Nematoda).
2067. Suppression of *Thrips rufa* Gmelin, 1790 (Insecta, Thysanoptera).
2069. Suppression of *Phloeotrogus* Motschulsky, 1863 (Insecta, Coleoptera, SCOLYTIDAE).
2070. Suppression of *Anodius* Motschulsky, 1860 (Insecta, Coleoptera, SCOLYTIDAE).
2071. Suppression of *Leiparthrum* Wollaston, 1854 (Insecta, Coleoptera, SCOLYTIDAE).
2072. Suppression of *Olonthogaster* Motschulsky, 1866 (Insecta, Coleoptera, SCOLYTIDAE).
2075. Designation of type-species for *Megasternum* Mulsant, 1844 and *Cryptopleurum* Mulsant, 1844 (Insecta, Coleoptera, HYDROPHILIDAE).
2078. Designation of type-species of *Platyrrhacus* Koch, 1847 (Diplopoda).

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. Those received early enough will be published in the *Bulletin of Zoological Nomenclature*.

ERRATUM. Dr. Peter Eaton, E.P.S. was the rapporteur for the Special Interest Group on Environmental Monitoring, Aquatics (*Bulletin* 6:141). Dr. Kingsbury was an active participant.

THE CANADIAN ENTOMOLOGIST

Total Issues Mailed December:

	<u>1965</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
Members	748	810	791	793	805	829
Students	138	130	113	132	139	141
Subscribers	654	894	884	911	980	996
Exchanges	66	35	35	37	42 ¹	43 ¹
Gift					13 ²	15 ²
	<u>1,606</u>	<u>1,869</u>	<u>1,824</u>	<u>1,873³</u>	<u>1,979</u>	<u>2,024</u>

¹Includes free list

²Donor Member

³The drop reflects the change to deleting unpaid members early in the year.

There are 33 Emeritus members receiving the *Bulletin*, otherwise circulation is the same.

CAN/OLE

The Science & Engineering Library of Concordia University, Sir George Williams Campus, is offering an on-line reference retrieval service to scientists in the province of Quebec. This service, called CAN/OLE (Canadian On-Line Enquiry), provides immediate access to references from *Chemical Abstracts* (1973-74), *Biological Abstracts* (1973-74), *Engineering Index* (1970-74) and *Information Service in Physics, Electrotechnology, Computers and Control* (1970-74). Users are charged a service fee of \$25.00 for a complete CAN/OLE search. For more information, in English or French, contact the Science & Engineering Library of Concordia University Sir George Williams Campus, Montreal, telephone 879-4188.

PEST CONTROL CHEMICALS

A new edition of the CSA Standard entitled, "Common Names for Pest Control Chemicals" (CSA Standard Z143-1974) is now available. The new Standard contains 332 names that have been officially approved as common names for the complex chemicals used for the control of pests. An addendum consisting of approximately 100 additional common names is in preparation and it is anticipated that it will be published and available in the near future.

The new Standard may be obtained at \$8.00 per copy from:
 Canadian Standards Association,
 178 Rexdale Boulevard,
 Rexdale, Ontario.
 M9W 1R3

L. A. Roadhouse, ESC Representative
 C.S.A. Comm. on Common Names
 of Pest Control Chemicals

EMPLOYMENT

The Entomological Society of Canada maintains a list of employment opportunities in Canada for members, and has an employment office at annual meetings of the Society. Positions wanted and available are published in the **Bulletin**. Forms for the use of prospective employers and employees are available on request. Those seeking employment through and filing curricula vitae with the Employment Committee will please indicate their membership in the ESC.

Please direct all inquiries and correspondence to: A. G. Robinson, Chairman, Employment Committee, Entomological Society of Canada, Department of Entomology, University of Manitoba, Winnipeg R3T 2N2.

Do not direct inquiries to the Bulletin.

POSTE EN ENTOMOLOGIE

Qualifications: Ph.D ou D.Sc.

Spécialité: éco-physiologie ou physio-biochimie des insectes, avec un intérêt pour l'entomologie appliquée.

Langue: française ou disposé à apprendre le français dans les plus brefs délais.

Tâches d'enseignement: — Au premier cycle: participation aux cours de base en entomologie et en biologie. — Aux deuxième et troisième cycles: cours dans sa spécialité.

Recherches: direction d'étudiants gradués et poursuite d'un programme de recherche qui s'articulera à ceux déjà en cours au Département en entomologie.

Salaire et rang académique: fonction de l'expérience du candidat.

Le Département de biologie compte 24 professeurs qui effectuent des recherches surtout dans les disciplines suivantes: biologie cellulaire, écologie animale, écologie marine, entomologie et physiologie générale et comparée. Il y a actuellement plus de cinquante étudiants gradués.

La lettre de candidature, accompagnée du *curriculum vitae* et du nom de deux répondants, doit être adressée à:

Dr Lucien HUOT, directeur,
Département de biologie,
Faculté des Sciences et de Génie,
Université Laval,
Québec G1K 7P4

EXCHANGES. I shall be pleased to exchange specimens or specific information about French insects. I specialize in Coleoptera (Buprestidae and Carabidae) and Lepidoptera. Reini Aulnette, 16 rue docteur Joussetin, 28.100 Dreux, France.

PERSONALIA

John Anderson has joined the Veterinary-Medical Entomology Section, Agriculture Canada, at Lethbridge, as a visiting scientist. Professor Anderson is spending one year Sabbatical Leave from the Division of Entomology and Parasitology, University of California, Berkeley. While at Lethbridge, Andy is studying the capacity of black flies from southern and northern Alberta to produce a batch of eggs without taking a blood meal.

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Evan Gushul of Lethbridge was awarded the Entomological Society of America's award of excellence plaque for the best exhibit by a member at the 18th Pacific Coast Insect Photographic Exhibition at Sparks, Nevada. The Exhibition was held in conjunction with ESA's 58th Annual Meeting.

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Glenn McLeod of London Research Institute, Agriculture Canada will be at L'Assomption, Quebec for one year beginning in September. While there he will work with Marcel Dupre on the biology of cutworms on tobacco in the hope that they will be able to develop methods to predict the occurrence of these insects in the spring.

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Dr. W. T. Cram, Agriculture Canada, Vancouver, is on a year's sabbatical at the University of Reading in England. Tom will work on aphid physiology with Dr. H. F. van Emden. He has already covered much ground within the United Kingdom visiting research establishments, especially those dealing with the strawberry tortrix.

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Dr. Peter Perrin, who did his graduate work in biochemistry at UBC, is the new Pesticide Officer at the B.C. Department of Agriculture Station, Cloverdale. He is responsible for administering the B.C. government regulations re pesticide applicators and for extension programmes to train pesticide applicators in the proper procedures for use of pesticides.

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Marcel Hudon, Research Entomologist, and Morgan Chiang, Geneticist, of the St. Jean Research Station, attended last September the 6th annual Work Planning Conference of the International Working Group on the European corn borer which was held for the first time in North America, at the University of Minnesota, St. Paul. Ten of the 14 nations cooperating in this project were represented. The conference and excursions through USDA establishments and universities of the Midwest (Minnesota, Iowa, North and South Dakota) lasted 2 weeks. On their way back to Europe, Marcel as the coordinator of the Working Group for 1974, hosted his colleagues, entomologists and maize breeders, in a 4-day entomological, agricultural and sight-seeing tour of the Montreal area.

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Matti Hamalainen of Finland is in Canada for a year of study and research. He was at Simon Fraser University until the end of December and is now at the Agriculture Canada Research Station, Winnipeg. Mr. Hamalainen is on a doctoral program and comes to Canada to gain experience and training in stored products entomology.

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Dr. Alan Campbell has been appointed by the Canadian International Development Research Institute, Ottawa, to study stored grain insects at the Agriculture Canada Research Station, Winnipeg, for five months effective 1 January.

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