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Société d'Entomologie du Canada

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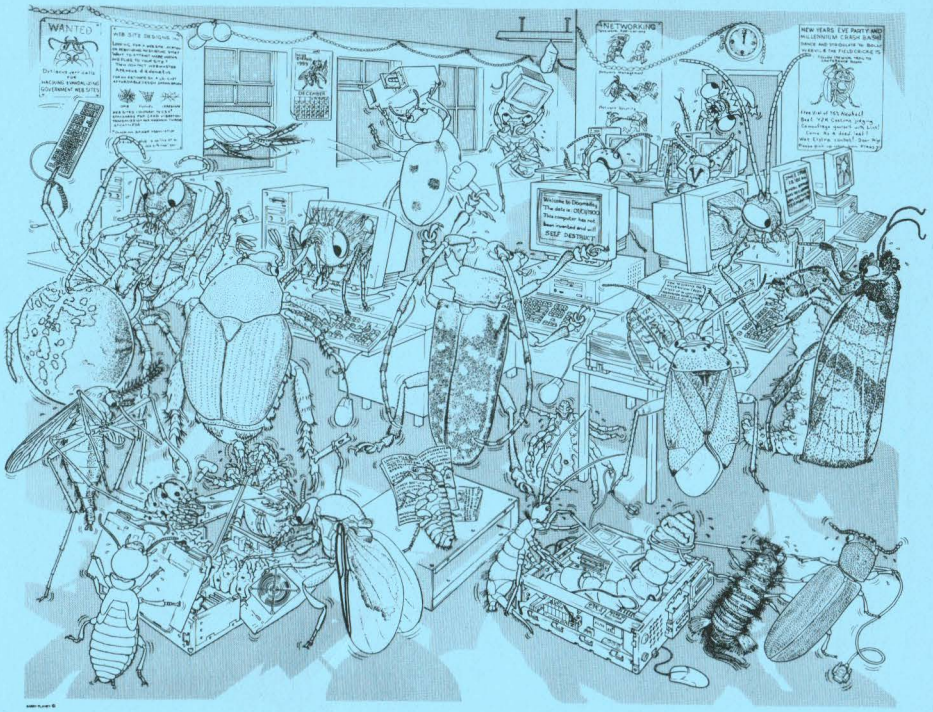

Entomological Society of Canada
Société d'Entomologie du Canada

393 Winston Avenue, Ottawa,
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Web Page for the ESC: http://www.biology.ualberta.ca/esc.hp/homepage.htm

E-mail: entsoc.can@sympatico.ca

The **Bulletin of the Entomological Society of Canada**, published since 1969, presents quarterly entomological news, opportunities and information, details of Society business, matters of wider scientific importance and book reviews.

Le **Bulletin de la Société d'Entomologie de Canada**, publié depuis 1969, présente trimestriellment des informations entomologiques, des occasions, des reseignements sur les opérations de la Société, des dossiers scientifiques d'importance, et des analyses d'ouvrages.

Illustrated on the front cover is a whimsical drawing entitled "The Millenium Bugs." It depicts the chaos and disruption that might have ensued from the inability of computers infected with "Y2K bugs" to roll-over to the year 2000. All insects shown are well established in Canada, except for one which recently invaded North America from Asia. [Drawing courtesy of Barry Flahey, Manotick, Ontario.]

L'illustration de la couverture est un dessin fantaisiste intitulé : "Les bogues du millénaire". Il représente le chaos et le bouleversement qui auraient pu découler de l'incapacité des ordinateurs contaminés par les "bogues de l'an deux mille" à franchir ce passage fatidique. Tous les insectes représentés sont bien établis au Canada, à l'exception d'un qui est originaire d'Asie et a récemment envahi l'Amérique du Nord. [Dessin de Barry Flaney, Manotick, Ontario.]

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The Entomological Society of Canada was founded in 1863 primarily to study, advance and promote entomology. It supports entomology through publications, meetings, advocacy and other activities.

La Société d'Entomologie du Canada a été établie en 1863 principalement pour promouvoir l'étude et l'avancement de l'entomologie. Elle soutient l'entomologie par l'entremise de publications, de réunions et d'autres activités.

SOCIETY BUSINESS / AFFAIRES DE LA SOCIÉTÉ

The mid-term meeting of the Executive Council will be held at the Entomological Society of Canada office in Ottawa on **April 28, 2001**. Matters for consideration at this meeting should be sent to the secretary at the address below.

La réunion de mi-session du Conseil Exécutif aura lieu au Siège social de la Société d'entomologie du Canada le **28 avril, 2001**. Veuillez faire part au secrétaire de tout sujet pouvant faire l'objet de discussion à l'une ou l'autre de ses réunions en communiquant à l'address suivante.

Dr. Rick West
Box 515, Portugal Cove
Newfoundland A0A 3K0
phone and fax: 709-895-2734
email: reely.west@roadrunner.nf.net

Call for Nominations - Second Vice President & Director-at-Large

Nominations for Second Vice President and Director-at-Large must be signed by three members in good standing and received by **30 April 2001** by the Secretary, Dr. Rick West.

Nominations pour Deuxième Vice-Président et Directeur doivent être signée par trois membres de la Société et envoyée avant le **30 avril 2001** au secrétaire, Dr. Rick West.

The *Canadian Entomologist* and past issues of the *Memoirs* are available from the Ottawa office and may be purchased by Mastercard or VISA as well as by cheque or money order.

All regular and student members will have received their 2001 renewal forms by now and are urged to pay promptly, especially if ordering either of the Annual Reviews offered at discount prices. All in Canada are reminded to add the GST or HST applicable to all amounts.

Please send all correspondence concerning the *Bulletin* to:	Please send all correspondence concerning Book Reviews for the *Bulletin* to:
Dr. Hugh J. Barclay *Bulletin* Editor Pacific Forestry Centre 506 West Burnside Road Victoria, B.C. V8Z 1M5 Tel: (250) 363-0736 Fax: (250) 363-0775 E-mail: hbarclay@pfc.forestry.ca	Dr. Vince Nealis Chair, Publications Committee Pacific Forestry Centre 506 West Burnside Road Victoria, B.C. V8Z 1M5 Tel: (250) 363-0663 Fax: (250) 363-0775 E-mail: vnealis@pfc.forestry.ca

The deadline for submissions to be included in the next issue (Vol. **33(1)**) is **February 1, 2001**
La date limite pour recevoir vos contributions pour le prochain numéro (Vol. **33(1)**) est le **1 fevrier 2001**

Joint Annual Meeting of the Entomological Society of Ontario and the ESC

October 21, 2001, in Niagara Falls at the Sheraton Fallsview Hotel and Conference Centre

Program highlights include:

Plenary Session - 2001: An Insect Odyssey, Honouring the Past, Looking to the Future
Contributed Papers, President's Prize Papers, Scientific Posters
Workshops e.g. Insects in Captivity, Entomology in Parks & Protected Spaces
Symposia: Emerging Technologies in Pest Management (Speakers include Larry Larson, President ESA); Tree Fruit Entomology

In Niagara Falls, Canada:

ONE WONDER AFTER ANOTHER: The natural wonders of Niagara Falls have dazzled visitors for hundreds of years and continue to grow in popularity.

The Journey behind the Falls, historic sites, and Butterfly Conservatory are a few of its many attractions. Restaurants, museums, and casino add to its excitement.

Meeting site: Sheraton Fallsview, HOTEL AND CONFERENCE CENTRE, 6755 Oakes Drive Niagara Falls, Ontario, Canada L2G 3W7. Tel. (905) 374-1077. Web site: **www.fallsview.com**

Meeting Chair: Dr. Cynthia Scott Dupree, Dept. of Environmental Biology, Univ. of Guelph, Guelph, Ontario N1G 2W1. Tel. (519) 824-4120 Ext. 2477, email: csdupree@evb.uoguelph.ca

Call for Nominations - Fellows and Honorary Members

The Achievement Awards Committee invites the membership of the Entomological Society of Canada to nominate worthy candidates as Fellows or Honorary Members in the ESC.

Fellows: Fellows may be active or special members or entomologists who have made outstanding contribution to the advancement of entomology. This can be in any area, such as 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. Nominations must be signed by four active members of the Society.

Honorary Members: An Honorary Member may be an active or a former active member of the Society who has made an outstanding contribution to the advancement of entomology. Nominations must be signed by five active members of the Society and are then reviewed by the Achievement Awards Committee. Names are submitted to the Executive Council for approval.

A brief biography of the candidate and a statement of her/his contribution to entomology should be included with all nominations. Nominations for both awards are reviewed by the Achievement Awards Committee and names are submitted to the Executive Council for approval. Nominations should be received by the Committee by **January 31, 2001**. They should be sent in an envelope marked "Confidential" to: Dr. Rick West, Box 515, Portugal Cove, Newfoundland A0A 3K0 email: reely.west@roadrunner.nf.net

Results of the last election: The successful candidates were:
Second Vice-President : Dr. Sandy Smith; *Directors-at-Large:* Dr. Owen Olfert

PERSONALIA

In Memory

John Conroy (1939-2000)

On February 25, 2000, we lost one of the most flamboyant and memorable entomolgists in Manitoba. John Conroy died suddenly in Winnipeg, at the age of 61. John was born in Dublin, Ireland on July 27, 1939. He attended Xavier's School and Clongowes Wood College and later earned his B.Sc. from the National University of Ireland (Dublin) in 1961 and his M.Sc. from the National University of Ireland (Galway) in 1963. John and his wife, Mary, married in Limerick, Ireland on September 17,1963, and immigrated to Canada. They lived briefly in Vancouver, then settled in Winnipeg when John was hired as a lecturer in Biology at United College. He played an integral role in the Biology Department during the transition years as United College gained university status in 1967. John continued his role as the Chair of Biology in United College and became the first chair of the Department of Biology in the new University of Winnipeg.

Along with several of his colleagues, John was encouraged to go back to university to study for his Ph.D. He was part of the limnology group working on Marion Lake, British Columbia, where he conducted research on water mites for his dissertation from the University of Manitoba (1974). He became a full Professor in 1982. John served on numerous department, university and senate committees, but the duty he most enjoyed was that of Chief Marshall for spring and fall convocations at the University of Winnipeg from 1990 to 1997.

At the University of Winnipeg, he taught a challenging variety of courses, including Human Biology, Human Anatomy and Physiology, Zoology of the Higher Invertebrates, and General Entomology. In his entomology course, he held high expectations for his students. He not only expected that they would have a grasp of the biology of insects, but that they have a good understanding of morphology, phylogeny and taxonomy. He also asked that his students make a collection for the course. To have a required collection is becoming a rarity in introductory courses, but this was something that John used to inspire his students. He always encouraged them to get out into the field to collect and study insects. His students acknowledged his confidence in them and were made to feel that they were capable of achieving more than they ever thought possible. John practised a relaxed but dynamic style in the classroom, and he used a bottomless well of stories and anecdotes to enliven the facts as he developed one concept or another in his lectures. He made an effort to get to know his students and took a genuine interest in their welfare and future directions in biology. John's office door was always open, and he always made time for any student who cared to drop by.

John was a member of the Entomological Society of Canada (ESC), the North American Benthological Society, the Acarological Society of America, the Michigan Entomological Society, the Royal Irish Zoological Society, and the Entomological Society of Manitoba (ESM). He served an unprecedented two terms as Executive Secretary of the International Congress of Acarology; this position constituted the chief executive officer of the organization. John sat on the editorial board of the International Journal of Acarology and was a reviewer for many journals.

John brought valuable organizational and parliamentary skills to the table of many ESM meetings over the years. John was a staunch supporter of the rules of order at a meeting, and there was never a dull moment as he, Jock Guthrie and George Gerber debated the finer points of proper procedure. He served as president of the ESM in 1977-1978 and was the chair of the ESM Scholarship Committee from 1986 to 1997. He was the chair of the organizing committee for the Entomological Society of Manitoba annual meeting on three occasions; he chaired the organizing committee for the joint ESM/ESC meeting in 1977 and chaired the local arrangements committee for the 1986 joint ESM/ESC meeting. As a result of his experiences with joint annual meetings, John wrote a step-by-step guide to the process; this was used by ESC meeting organizers for two decades or so. He also participated in a 1983 ESC project to document entomological education in Canada. Perhaps the most notable of John's efforts on behalf of ESC was his service on the Philatelic Committee, which led the charge that resulted in Canada's first insect stamps, issued in time for the 1988 International Congress of Entomology in Vancouver.

The focus for John's research was the taxonomy and ecology of water mites (Acari: Hydrachnellae) and their host-parasite relationships with insects. John published more than 30 peer-reviewed papers on water mites, including descriptions of over 40 new species. John was a keen field biologist, and he spent many hours collecting the mites that became the basis for much of his taxonomic work. The resulting enormous collection of water mites has been transferred to the Canadian Collection of Insects, ECORC, in Ottawa. Although his primary interest was in the water mites, he did not neglect their hosts. So, with the recent increased interest in dragonflies, his 1979 paper with J.L. Kuhn on the Odonata of Manitoba will become the baseline reference for future studies. John was also a very willing collaborator, and his expertise on certain groups of water mites was much in demand. For other researchers, he identified mites from across Canada and into the high Arctic. It did not pass unnoticed by his students that he had a deep passion for his work, and that he believed strongly in the importance of what he was doing. He communicated his enthusiasm in frequent and entertaining seminars on water mites.

Another of John's passions was opera, and strains of his favourite operas could often be heard emanating from his office. He was a long-time member of the Manitoba Opera Association, and on one occasion played the non-singing role of King Duncan in Verdi's Macbeth. The final part of the appearance was when Duncan's body was carried across the stage on a stretcher. John later recounted that this was a very demanding part of the role: on opening night he was very nearly tipped off the stretcher and was not sure whether the slain king could have maintained the role, or whether, in front of an audience of 2000, a rich Irish brogue would have been heard berating the clumsiness of the bearers!

John was an active member of the community of St. Ignatius Church in Winnipeg, acting as a lector, co-ordinator, instructor of confirmation, and chair of the Parish Pastoral Council and the Liturgy Committee. He was also active at various levels in the Liberal Party. He is survived by his wife, Mary, two sons and a daughter, and three grandchildren.

John Conroy will be remembered by entomologists and former students for his sense of humour and his contributions to his scientific societies and his discipline. He had the ability to change the mood of a room just by entering. As a raconteur, he was irrepressible; his stories were pithy, witty, and often "like some arthropods" with a terminal sting. He had a story for every situation. We will miss the sound of his laughter.

A. R. Westwood
N.J. Holliday
T.D. Galloway
Winnipeg

Heritage Articles

Just who was Walter Harrington?

Walter was a Forest Insect and Disease (FIDS) ranger, a lepidopterist, a war veteran, farmer, and family man. He had a farm at Glenholme, Nova Scotia, where he kept bees and grew blueberries and vegetables. His wife, Ina, still resides on the farm. They had eight children: four sons and four daughters.

A navy man, he sailed on many ships and ended the war as a petty officer on one of Canada's cruisers, HMCS Ontario. He graduated in the first class of the Maritime Forest Ranger School. Walter, a tall, strong, and powerful man, had worked hard in his youth, and continued this work ethic throughout his service with the Canadian Forest Service. His career began in 1950 and ended in 1979 with his early death at age 56, following an operation for lung cancer.

I first met Walter Harrington in 1946, when he was working as a clerk with the then Mersey Pulp and Paper Company at the Lake Rossignal Depot and I was spending my first summer in the bush as a summer student with the Dominion Forest Service. Our next meeting was in 1950, on my first day on the job at the Cathedral Barracks in Halifax with the Forest Entomology and Pathology section of the Dept. of Agriculture. We became co-workers and friends.

Walter as a lepidopterist

It was fascinating to watch him spreading delicate microleptidoptera with his large, powerful hands, for Walter was a lepidopterist extraordinaire. He became fascinated with Lepidoptera virtually on his first day on the job. In his spare time, throughout all but the last of his career, he operated a light trap at his home, in addition to the trap at the forestry laboratory at the Debert NS sublab of the Fredericton Laboratory. He became friends with A.H. McDunnough, a retired and world-renowned federal lepidopterist who worked for the Nova Scotia Museum until well into his 80s, and Doug Ferguson, who was also with the museum and later with the U.S. National Museum. Walter became their de facto student. His collection, most of it gathered and prepared in his spare time, was housed in the Debert Laboratory and then in the federal offices in Truro. Walter's expertise was used fully by FIDS to identify the contents of all the light traps in the Maritimes. This took place in the winter months. At the time, no one was really aware of the risks of exposure to the lungs by moth scales, which one could not avoid inhaling as boxes of moth specimens were opened. Whether exposure to the scales, possibly exacerbated by smoke when he tended his bee hives, caused his lung cancer is unknown. He was not a smoker.

In this writer's opinion, one of the most wrong-headed decisions made by the CFS administration in the Maritime Region was the decree in the late 1970s that Walter's collection would be broken up and incorporated into the main collection at Fredericton. Wiser heads pleaded for an alternative decision: duplicate specimens could be sent to Fredericton, but the main collection would remain in Nova Scotia where Walter would continue to work on it. It would eventually be housed in the Nova Scotia Museum and, at the suggestion of the Museum, would be kept intact as the Walter Harrington Collection, with due credit to the Canadian Forest Service. This was refused. Walter, who was quiet spoken, said little. There was no change in his work habits, but he never collected another moth.

Walter as a Forest Insect and Disease ranger

Walter was a member of the school of dedicated rangers who worked around the clock in

the summer field season, their working hours dictated by the life cycles of the forest pests they were sampling. Walter avidly collected field samples. Those collected by tree-beating samples (i.e., collected over a canvas mat) were augmented by many hand-collected ones, so that consistently the numbers he collected far surpassed those of any other ranger. He was highly intelligent. Regretfully, he did not have the opportunity to attend university, as he would have made a great scientist. Walter became Chief Ranger in Nova Scotia in 1978.

Walter was untidy, and above all, unassuming. He had one colossally annoying habit in that, if given a set of orders to carry out that were not expressed precisely, he deliberately "executed" them to the letter. Murray Nielson (later Director General of the MRFC), who was studying insect diseases, found this out the hard way when he telegraphed a request to Walter to collect all the Mourning Cloak butterfly larvae "that he could find." After boxes upon boxes of larvae began to fill his laboratory, Murray had to send a frantic cease and desist telegram to Walter or else risk being buried alive in larvae! On another occasion, Walter single-handedly demolished an ill-thought-out bureaucratic edict that FIDS rangers submit detailed reports of their daily activities. His began with "I got in the car, I started the engine..."

A detailed record of Walter's contribution to the Canadian Forest Service is found in the Ranger Reports on file in the Library of the Atlantic Forestry Centre. In particular, his 1958 report "Lepidoptera of Nova Scotia received by the Forest Biology Laboratory at Debert from 1947 to 1954" [Interim Report 1955-2, Forest Biology Laboratory, Debert NS] contains original and useful early information on moth populations in the Maritimes. The specimens he collected can be found throughout the collections in the Atlantic Forestry Centre, the Nova Scotia Museum, and the Canadian National Collection in Ottawa.

D.G. Embree
Fredericton

Just who was CC Smith?

Charlie Smith was a super technician. He started at the Dominion Entomology Laboratory, Fredericton, in 1931, as a "Temporary Investigator" European spruce sawfly investigations, and became permanent in 1933. That was when the European spruce sawfly was becoming the scourge of the eastern boreal forest and soon to become the first big biological-control success story in Canada. Charlie was involved in many things in his career.

When I started at Fredericton in 1956 he was concerned with the control of shade tree pests. A large part of the top floor of the garage built that year accommodated his lab, field equipment, and pesticides. Many of those almost 200-year-old white elm trees in Fredericton wore dark sashes for many years from the Tanglefoot bands Charlie put on them to prevent the wingless females of the fall cankerworm from climbing the trunks. I haven't looked lately, but of those still standing, I'll bet many still wear sashes.

Then there were aphids in the elms. The people who parked downtown hated them because their cars would be covered with black mouldy honeydew. Charlie was involved with that problem, but it proved to be cyclical and went away at the end of the season and didn't come back the next year.

Charlie was heavily involved with the control of Dutch elm disease, and initially under supervision of Dr. Reg Balch, the sanitation program that became a model for other North American cities was begun. Charlie served on the Fredericton Tree Commission from its beginning.

There are some delightful old photographs in the files that show a high pressure sprayer that Charlie used on the streets of Fredericton and Liverpool, NS. There is no doubt in my mind that he had a hand in designing and building it. It could throw a spray over 35 metres into the crowns of those great elms. Try that today, even with pure water. You'd be besieged by angry people.

Charlie published many papers too, some on insect control and some on life history and damage to trees. I am proud to have shared authorship with him and Doug Embree on one concerning the winter moth.

In 1965, when the ESC met in Fredericton, Charlie volunteered to help a delegate from California find a hog farm to look for parasites of house flies. I could never describe the experience in Charlie's words, but the visitor went at it like a kid in a mud puddle and Charlie was convinced he had no sense of smell.

He raised shade trees for sale, things like linden and Norway maple, most of which he sold to the city. When I saw Charlie about 4 years ago he was still raising nursery stock. For the lab archival collection, he gave me a brass plaque from the lab building abandoned in 1952 that he had squirreled away in his basement. He was worried then if he would pass an obligatory drivers' test. He did.

He didn't look much older in 1998 than he did when I first met him in1956. The next time I saw him, in the hospital last October, was the last. Charlie died later that month, aged 91. I think of him every time I look at the beautiful Amur maples and Pachysandra on my property.

Doug Eidt
Fredericton

PUBLICATIONS

Book Reviews

Goff, Y. M. Lee. 2000. A Fly for the Prosecution. *How Insect Evidence Helps Solve Crimes.* Harvard University Press, Cambridge Massachusetts, London England, $225 pp, $22.95 (US) Hardcover.

Forensic science is an area that is growing exponentially, both in its scientific understanding and its public interest. A Fly for the Prosecution, How Insect Evidence Helps Solve Crimes by Dr. M. Lee Goff of the University of Hawaii is the first book to tell the story of a forensic entomologist, from the point of view of the person himself. Dr. Goff's incisive, detailed and often humorous description of forensic entomology will be a popular addition to any library.

Dr. Goff is one of the leaders of the field of forensic entomology worldwide, and one of the pioneers in North America. He was the founding chair of the American Board of Forensic Entomology. His book takes the reader through his experiences as he entered the field of forensic entomology. He engagingly describes his first entry into the field from the point of view of an academic and scholar rather than that of a police officer or traditional police lab scientist. This is something all of us in the field can relate to as we entered into the police world.

Dr. Goff describes in great detail the use of insects in criminal investigations, liberally illustrating his information with detailed case histories. He clearly illustrates how insects are used in death investigations, to determine time of death, as well as aiding in many other facets of the investigations. He goes through cases in a step by step manner, carefully showing the reader how insect evidence is analyzed.

Insect colonization of a body, be it human or animal, is a complicated process with the body supporting an entire transitory ecosystem. The book describes the process of decomposition, and the many factors which affect decomposition and insect colonization rates and patterns. Dr. Goff's pioneering decomposition research in Hawaii, using pigs as human models are described, together with the problems he faced doing this type of research, yet overcame.

Insect evidence is primarily used to determine time since death and this is well illustrated with detailed explanations of methods and case histories. However, insects can be used to tell us much more about a crime scene. Dr. Goff illustrates this with case histories involving the moving of the body by the killer, child abuse, determining wound sites and presence of drugs. In a story to which all of us who have testified as expert witnesses can relate can, Dr. Goff describes his first experiences in the legal system. This is an important area as people entering forensic science from an academic background are completely unused to court testimony and the legal system. In the same manner, the courts themselves are often very unfamiliar with our work. Lee describes this well, from the point of view of an academic and this is something that someone contemplating entering this field will find very helpful.

Although police officers working crime scenes are often regularly exposed to very disturbing scenarios, academics, in general, are not! This is often one of the most concerning aspects to people contemplating entering this field, or any area of forensics "will I be able to handle it?". Dr. Goff describes his own first experiences with victims of violent deaths and describes his mechanisms of coping.

Forensic entomology is becoming more and more well known to the police and public alike. This book will be an excellent guide for those entomologists who are contemplating entering this fascinating field, as well as a valuable guide for police and the legal profession to see the science from the point of view of the scientist. For the general public who wish to learn more about this field, this book will be an intriguing addition to their libraries.

Gail Anderson
Burnaby, B.C.

Hawkins B.A. and H.V. Cornell. 1999 *Theoretical approaches to biological control.* Cambridge University Press, 40 West 20th Street New York 10011-4211 USA . ISBN 0 521 57283 5 Hardback. 424 pages, 89 line diagrams and 18 tables. CAN $ 95 http://www.cup.org

These are interesting times for the practice of biological control with its merits and deficiencies being debated in the broader scientific literature (eg Cory & Myers 2000. *Tree* 15:137; Strong & Pemberton, 2000 *Science* 288:1969). Fundamental assumptions about biocontrol are being challenged as the scientific community expands its consideration of issues such as preservation of biodiversity and the impacts of invasive species. A book that details the theoretical basis for the practice of biological control is timely and Hawkins and Cornell have assembled an impressive group of authors to meet this challenge.

The book is divided into 5 sections. The specific authors and chapter titles are available at **http://www.cup.org** (Quicksearch: Author Hawkins). Section 1 presents an overview of the synergism between ecological theory and biological control practice. Berryman provides a historical review of the development of ecological theory as it relates to biological control in general. Briggs et al focus the lens more closely at theory as it applies to insect parasitoids. Nigel Barlow contributes, what I found to be one of the most useful reference chapters in the book, a brief synopsis for each of some 50 models that have been applied in biological control. Graduate courses or Journal discussion groups will find this a useful starting point for looking at modeling in biocontrol.

Section 2 is entitled Ecological Considerations and includes 6 detailed perspectives on biological control theory. These chapters are quite specific and all use a modeling approach to illustrate their points. Other specific perspectives could have been included, a chapter examining the role of chemical ecology, for example, would have been welcome but obviously the editors had to make choices. The chapters that are included in this section will interest a narrower audience and this may affect the utility of the book.. For example, the chapter by Jervis and Kidd is a good review of the importance of adult parasitoid nutritional ecology. But should it be placed at the same level as the theoretical and practical arguments that have filled the literature concerning the nature of density dependance and biological control?

Section 3 is titled Spatial Considerations and includes three chapters. The consideration of spatial scale has long been recognized to be important in ecology, however its implementation on the applied side for the improvement of biological control has not been as conspicuous. With the explosion of research considering metapopulation theory and landscape ecology driven by Hanski and others, hopefully biocontrol practitioners will implement the potential. The editors indicate that the issue of spatial scale is covered in several contexts in the other sections of the book but it is appropriate that they saw fit to identify it as a separate section in the book. The chapter by Hastings is of particular interest because he argues for consideration of the transient behavior of populations rather than their equilibrium states. Even if this view does not receive wide application in biological control, this chapter forces the reader to consider alternative assumptions.

Section 4, is entitled Genetic/evolutionary Considerations and contains 4 chapters. The editors suggest that the application of genetic theory to specific problems in biological control has been limited because the theory associated with things such as host shifts is relatively new. Reviews such as Hunterís will remedy this situation, linking theory to practice, by providing concrete focus on how manipulation of the genetic structure of natural enemies could be used to improve biocontrol.

The final section of the book deals with Microbes and Pathogens and as such could be a topic for a separate book. The emphasis of the previous four sections is on insects for biological control which may also reflect where bulk of theoretical effort has been in biological control. Regardless, the 5 chapters included will interest researchers looking for an introduction to biocontrol theory as it relates to pathogens. The editors indicate that they wanted to draw attention to the parallels that exist for insects and pathogens when being used for biological control and they have achieved this goal. As in earlier sections, some of the chapters in this section are quite specific (eg Chapter 21: K.B. Johnson. Dose response relationships in biocontrol of plant disease and their use to define pathogen refuge size) and may not be of as much interest to entomologists.

In summary, the editors and authors should be commended for this book. If readers are looking for an exhaustive source reviewing all aspects of biological control presenting a state of the science, I would recommend the Handbook of Biological Control edited by Bellows and van Driesche, also published in 1999. If however, readers are looking for arguments as to where biological control should be going, I think this book will be an excellent starting point for the discussion. If you are rich (the handbook is CAN$ 215) buy both. But if you have to choose, buy this one.

Rob Bourchier
Lethbridge

Service, Mike W. 2000. *Medical Entomology for Students, 2nd ed.* (paperback). Cambridge University Press. 283 p. ISBN 0-521-66659-7. $39.75 (US).

Given the importance of medical entomology it is surprising there is little available in the way of a good, reasonably-priced student textbook covering the subject. Appearing four years after publication of the first edition, the second edition of Medical Entomology for Students attempts to rectify this but falls short of the mark.

The author has impressive credentials: an emeritus professor of medical entomology at the Liverpool School of Tropical Medicine, he has an extensive list of research publications on medical entomology, especially biting Nematocera. In the preface to the first edition, Service states his aim to be 'to provide basic information on the recognition, biology and medical importance of arthropods and guidelines for their control.' This aim is underscored by the following caveat (emptor?): 'it is always difficult to decide how much detail to include and what to omit; you cannot satisfy everyone.' This reviewer falls within the dissatisfied group.

The book is composed of twenty chapters and a short glossary and index. Commencing with three chapters addressing culicids and finishing with five on Acari, the interstices are filled by chapters on simuliids, phlebotomines, ceratopogonids, tabanids, glossinids, muscids/fanniids, myiasis, siphonapterans, anoplurans, cimicids, triatomines, and blattarians.

Surprisingly, no chapter deals with biting and stinging Hymenoptera and non-Acari Arachnida. Most north temperate entomologists (student and professional) lack sufficient understanding of arthropod venoms and associated human morbidity and mortality. A section on venoms, defensive secretions, and allergens should be included.

Most chapters are brief and follow a similar outline of morphology, life cycles, medical importance and control, and relevant references. Presentation of information is clear and easily understood but commonly verbose and coverage of topics is inconsistent. For instance, nearly a full paragraph is devoted to symptoms associated with tick paralysis (interesting topic but hardly an important medical issue) while little or no symptoms are discussed for the truly significant tick-borne rickettsiae, arboviruses, and Lyme disease.

Chapters usually have good numbers of illustrations; figures are generally useful but of poor quality. Each chapter has a habitus frontispiece. Unfortunately, these are generally crude renderings, unlabelled, poorly sized and placed, and usually occurring again within the body of the chapter (often immediately following the frontispiece!). Eliminating figure repetition and associated white space would shorten the book by about 20 pages or more than 7%. Editing of

writing style would likely have resulted in similar space savings. Then, with perhaps 40 extra pages to play with, the author would have had much less trouble deciding 'how much detail to include and what to omit.'

The glossary contains about 130 entries ranging from needless banalities ('bromeliad,' 'Old World') to serious stuff ('trans-ovarial transmission,' 'amplifying host'). Regardless of the silly entries, this is a practical section.

The book's primary strengths lie in its easy-to-read style, simple layout of chapters, and separate glossary. Its main weaknesses are wasted space, poor figures, inconsistent coverage, and no information on arthropod venoms.

Would I pay nearly 40 US dollars for this 283 page paperback if I was a student enrolling in a medical entomology course? No. I would loudly wail and bemoan the disappearance from print of Herm's Medical Entomology then fork over a few more dollars (well, okay, thirty more) for a paperback copy of the much superior 725 page 2nd edition (1995) of D. S. Kettle's Medical and Veterinary Entomology. Kettle will retain its value and usefulness and remain on students' bookshelves years after graduation.

Robb Bennett
Victoria, B.C.

Zombori, Lajos and Henrik Steinmann. 1999. *Dictionary of Insect Morphology (Handbuch der Zoologie; Bd. 4, Arthropoda: Insecta, Teilbd. 34).* de Gruyter, Berlin, New York. 402 p. ISBN 3-11-0114898-6. $249 (US).

This offering, Part 34 in the Handbuch der Zoologie - Arthropoda: Insecta series, is a translated and 'enlarged version' of a Hungarian work originally published by the authors in three parts between 1984 and 1991. The authors are, respectively, the Deputy Director of the Hungarian Natural History Museum and an emeritus professor of zoology at the University of Budapest. From the publishers' advertisement this is 'An up-to-date, comprehensive yet compact source of the external and internal morphology of the insect [*sic*] containing more than 8,000 entries and over 200 figures. The ideal source for the researcher and student.'

A one-page introduction gives a very brief account of the evolution of insect morphology nomenclature, the need for the current volume, and an explanation of the structure of entries in the dictionary. Then follows the meat of the matter: 262 pages of mixed English/Latin/Greek vocabulary entries. This is augmented by a final section containing 207 well-labelled schematic line drawings of external and internal parts of insects. A bibliography of some 200 titles covers the relevant world literature from the early 19th to the late 20th century.

Vocabulary entries are each encountered twice: once in English and once in Greek or Latin. English terms are entered in singular and plural form followed by the Greek/Latin equivalents and definitions and figure references. Greek/Latin terms are entered in standard nominative form followed by the genitive ending and gender and pointers to the English equivalent terms.

The authors have made a great effort to include all possible permutations of morphological terminology. Possibly they have been a bit overzealous. Thus, there are nearly seven double-

column pages dealing with abdomen terminology under various headings and sub-headings. These entries range from an inclusive definition of 'abdomen' sensu lato to minutiae such as 16 individual definitions, figure references, and Latin equivalents for the 'first' to 'eighth ventral abdominal tracheal commissure[s]' as well as their dorsal counterparts. There follows, later in the vocabulary, an entire column of 'commissura trachealis abdominalis * ' entries cross-referenced back to the individual English entries. Scrupulous editing would have produced a concise formatting protocol to reduce the significant amount of repetitive entries without sacrificing information. Undoubtedly this would have reduced the number of pages (and perhaps also the asking price) considerably.

The schematic drawings are clean, simple, and well-labelled. I think they form an excellent and valuable collection to have under one cover. The primary users of this volume will be well versed in basic insect morphology and likely will not bemoan the lack of beautifully stippled habitus drawings made from actual specimens. Over half of the figures are previously unpublished, the remainder are mostly from earlier works of the authors with some taken from other notable works such as Snodgrass' Principles of Insect Morphology and Imm's A General Textbook of Entomology.

Insect taxonomists, systematists, and comparative morphologists will appreciate having access to this book. Unfortunately, the excessive price likely will keep it out of the hands of private individuals (especially we depauperate frostbacks here in Canada - perhaps if the publishers truly feel that this is '[t]he ideal source for the researcher and student' they will see fit to reduce the price by about 66%) but I would expect to see this item in major entomological libraries and collections.

Overall, I believe Dictionary of Insect Morphology to be a useful volume in spite of its editing shortcoming and pricing longcoming. It deserves a place alongside other distinguished references such as those of Snodgrass, Imms, Torre-Bueno and R. W. Brown.

Robb Bennett
Victoria, B.C.

Walker, J.B., J.E. Keirans and I.G. Horak 2000. *The genus Rhipicephalus (Acari, Ixodidae): a guide to the brown ticks of the world.* Cambridge University Press, Cambridge, New York, Melbourne, and Madrid. xii + 643 pp. Hard cover, £70.00, US$105.00. Publisher's websites: www.cup.cam.ac.uk, www.cup.org

This is the first published guide to the world fauna of the tick genus *Rhipicephalus*, treating 74 species as recognized by the book's authors. Both males and females are known for all species, the nymph is treated for 57 of them, and the larva for 55.

The book's preliminary chapters on format for accounts of species, a glossary, and *Rhipicephalus* species names of the world are useful. In particular, chapter 5 on species names presents valid as well as other names attributed to the genus, currently recognized synonymies, references and depositories of type material for each entry.

The book's heart, Chapters 6 through 11, includes historical reviews, references, keys to

males and females, accounts of individual species, and host/parasite lists. It is divided into two, rather artificial sections, according to whether species occur in the Afrotropical region (Chapters 6-8), in which 85% of the species occur, or outside that region (Chapters 9-11). This is an awkward arrangement for users focussing on faunas outside the Afrotropical region, as the figures, accounts and host/parasite lists for species, including the ubiquitous *R. sanguineus*, that occur both in and beyond the Afrotropical region are presented only in chapters for that region.

The book emphasizes the difficulty in identifying species of *Rhipicephalus*, and the keys themselves present difficulties. The keys neither refer to figure numbers, which must be regularly consulted to understand the meaning of many key couplets, nor refer back to previous couplet numbers, which hinders pursuit of couplet alternatives to reach a determination. In the key to males of Afrotropical species, one wonders why it begins with a couplet that refers only to subadanal plates, which are neither treated in the glossary nor included in the figure that shows structures used in the keys; these plates are present in only one of 64 species treated in this key, and even then, they are readily visible only on engorged specimens. In the key to females of Afrotropical species, couplets 5 and 19-21 are difficult ones concerning degree of expression of character states, and couplet 38 does not work for leading to *R. bequaerti* and only weakly for *R. lunulatus*. In the key to females of species outside the Afrotropical region, the distinction between punctate versus impunctate scapulae is not clear for species keyed in couplets 10 and 12, based on their illustrations.

Accounts of individual species in chapters 7 and 10 each include five subheadings: "Diagnosis", with brief descriptions and illustrations for each instar available, followed by notes on identification; "Hosts", with a detailed table of host species, including number of records, and with distinctions between adult and immature tick preferences and seasonal data; "Zoogeography", including a distribution map, and anticipated distribution and relevant altitudinal and precipitation patterns; "Disease relationships"; and "References". The figures are superb, with line dorsal habitus illustrations of male and female, and micrographs of selected regions of the body of all instars available. Descriptions are well ordered and generally consistent in content, though a statement on spiracles is given only sporadically for females. Notes on identification are especially valuable in clarifying previous misidentifications and indicating uncertain taxonomic status for subsets of several species, for example, separate treatment of *R. pravus* and *R. sp.* near *pravus*. Maps also distinguish between these subsets, as well as unconfirmed or doubtful locality records. Disease relationship sections in chapters 7 and 10 for *R. sanguineus* and *R. bursa* do not note a vectoring potential for Lyme disease, although this is listed in the table on transmission of tick-borne diseases of humans in the book's final chapter.

Chapter 12 presents species groups of *Rhipicephalus*, based on diagnostic attributes of the capitulum of nymphs and larvae. These attributes are then illustrated by line figures for each species included in the groups. Although useful in some cases, these distinctions are difficult in others, indicating perhaps why the authors did not attempt to produce keys to the immatures. To lessen these difficulties, the diagnoses of nymph and larva given in the species accounts in preceding chapters perhaps could have been more useful by italicizing salient attributes.

Two tables on transmission of tick-borne diseases of animals and humans constitute the final chapter. For each disease, the causal agent, the species of animals affected, the tick species vectors, the number of hosts used by the tick species in its life cycle, and the stages in which acquisition and transmission of the disease pathogen occurs, with key references to original find

ings are presented. The single index is comprehensive.

This book is valuable not only as a comprehensive, up-to-date compilation from widely scattered literature on ticks of this genus, but also as a source of much new information, including descriptions of two new species, corrections of previous misidentifications and in turn of data on distribution and hosts, and presentation of other previously unpublished data. The authors' use of the term "rhipicephalids" for this genus of ticks may disturb some readers, as this is not based on their recognition of a suprageneric category for it. Some systematists may be disappointed by the purely alpha-taxonomic presentation of species in this genus. The species groups based on attributes of immatures are also not of a phylogenetic nature. However, a sound alpha- taxonomic presentation is useful in itself, above all for purposes of identification and associated distributional and host information, but also as a basis for future cladistic analyses, which may involve attributes from other anatomical or molecular sources.

This handsome, rather massive (ca 2 kg) book, with large clear type in double columns and large format (27.5 x 21 cm page area) is well bound, nearly error-free, and reasonably priced for its size and content. It is recommended as an essential reference tool for workers worldwide who may have any of a variety of interests in *Rhipicephalus* ticks - all the more so in this era that is exposed to problems of globalization more than ever before.

Evert E. Lindquist
Ottawa

New Book Available

Parution de livre: Vincent, C., B. Panneton & F. Fleurat-Lessard 2000 (eds.). La lutte physique en phytoprotection. Editions INRA, Paris, 347 p. Pour informations: **www.inra.fr/Editions/**
An english version of the book will be published in 2001 by Springer (Heidelberg, Germany).

SCHOLARSHIPS AND GRANTS

Entomological Society of Canada Graduate Research-Travel Grants Invitation for Applications

Preamble

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

Eligibility

To be eligible, a student must:

1) be enrolled as a full-time graduate student
2) be an active member of the Entomological Society of Canada

Format of the Application Form

The application form will be in the format of a grant proposal, where the applicant will provide the following information: 1) the subject of the thesis; 2) a pertinent review of the literature in the field; 3) a concise presentation of the status of the ongoing thesis research; 4) a description of the research or course work to be undertaken, clearly indicating a) the relevance to the overall goal of the thesis, b) an explanation of why such work cannot be carried out at the student's own university and c) the justification of the site where the research/course work will be carried out; 5) a budget for the proposed project; 6) anticipated dates of travel and date on which grant money is needed.

The application form should also be accompanied by: 1) an up-to-date C.V.; 2) a supporting letter from the senior advisor; 3) When appropriate, a support letter from the scientist or Department Head at the institution where the applicant wishes to go.

Evaluation Procedure

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

Timetable and Application Procedure

Application forms, which may be obtained from the Secretary of the Society, must be completed and returned to the Secretary of the Society by **15 January 2001**. The committee will evaluate all applications by 30 April 2001 and determine if, and to whom, grants will be awarded. The successful applicants will be informed immediately, thereby providing sufficient time for students wishing to start in the fall to make necessary arrangements. Grants must be used in the 12 months following the award.

Recipients must provide a short final report, as well as a detailed list of expenses, in the three months that follow the trip. Any money not spent must be returned to the Society.

La Société d'entomologie du Canada Allocations de Voyage pour Étudiants Gradués
Appels pour Allocations

Préambule

Afin the promouvoir les études graduées en entomologie, la Société d'Entomologie du Canada offrira deux bourses de voyage associées à la recherche. Celles-ci seront décernées annuellement sur une base compétitive. Le but de ces bourses est de permettre aux étudiants gradués d'élargir les horizons de leur formation. Les bourses, d'une valeur maximale de $2,000 permettront à des étudiants de réaliser un projet de recherche, ou de suivre des cours pertinents à leur sujet de thèse qui ne peuvent être entrepris dans leur propre institution.

Éligibilité

Afin d'être éligible, l'étudiant doit:

1) être inscrit à temps plein comme étudiant gradué
2) être un membre actif de la Société d'Entomologie du Canada

Format du Formulaire de Demande

Le formulaire de demande sera dans le style d'une demande d'octroi et l'étudiant devra

fournir les renseignements suivants: 1) le sujet de la thèse; 2) une présentation de la littérature pertinente au domaine d'étude; 3) une présentation concise du statut du projet de recherche en cours; 4) une description de la recherche ou des cours qui seront entrepris, indiquant clairement a) la pertinence des objectifs généraux de la thèse, b) les raisons pour lesquelles ce travail ne peut être entrepris à l'université où l'étudiant est inscrit, et c) une justification concernant le choix de l'endroit où la recherche/les cours seront entrepris; 5) un budget pour le projet proposé; 6) dates prévues pour le voyage et date pour laquelle la bourse sera requise.

Le demande devra aussi être accompagnée: 1) d'un C.V. complet mis-à-jour; 2) d'une lettre de recommendation du directeur de thèse; et 3) lorsque convenable, une lettre d'appui d'un administrateur d l'institution que le candidat désire fréquenter.

Évaluation

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

Échéances et Procédures

Les formulaires de demande, qui peuvent être obtenus du Secrétaire de la Société, doivent être remplis et retournés pour le **15 janvier 2001** au Secrétaire de la Société. Le comité évaluera toutes les demandes pour le 30 avril 2001 et déterminera si, et à qui, les bourses seront décernées. Les candidats choisis seront contactés immédiatement, cela afin d'allouer suffisamment de temps pour les préparatifs nécessaires à un départ possible à l'automne. La bourse doit être utilisée dans les 12 mois suivant l'octroi.

Les récipiendaires devront préparer un court rapport final, en plus d'une liste détaillée de leurs dépenses, dans les trois mois suivant le voyage. Tout argent non dépensé devra être remis à la Société.

Entomological Society of Canada Postgraduate Awards 2001 and Keith Kevan Scholarship

The Entomological Society of Canada will offer two postgraduate awards of $2,000 each to assist students beginning graduate study and research leading to an advanced degree in entomology. The postgraduate awards will be made on the basis of high scholastic achievement.

In memory of Dr. D. Keith McE. Kevan, the Entomological Society of Canada is also offering one postgraduate award of $1,000 to assist graduate students studying systematics in entomology. The award will be made on the basis of high scholastic achievement and excellence in insect systematics.

Invitation for Applications

Eligibility: Applicants for either scholarship must be members of the Entomological Society of Canada.

- **Postgraduate Award:** The successful applicants must be either Canadian citizens or landed immigrants with Bachelor's degrees from Canadian universities. Applicants must begin their first year of postgraduate studies between **15 June 1999 and 31 December 2001**. The studies and research must be carried out at a Canadian university. Each award is conditional upon certification by the Department Head that successful applicants have been accepted into the first year of a program of study and research for an advanced degree with full graduate status. A stu

dent who was unable to gain admission or enters graduate school as a qualifying candidate is not eligible to receive an award.

- **Keith Kevan Scholaship:** The successful applicant must be a graduate student at the time of application, studying at a Canadian university of be a Canadian citizen studying abroad.

Method of Application -Applicants must submit a properly completed form , with support documents. Application forms are available at **http://www.biology.ualberta.ca/esc.hp/form.htm**, or from the Chair of the ESC Student Awards Committee. The original and 3 copies of the application must be submitted to the Chair of the Student Awards Committee postmarked no later than **10 June 2001**. Please specify if you are applying for the Postgraduate Award, the Keith Kevan Scholarship, or both.

Process of Selection and Award Presentation -Applications will be reviewed by a committee of the Society. An announcement of the two winners will be made at the annual meeting of the Society and each winner will receive a certificate. Payment of the award will be made in October 2000.

Regulations

Earnings from Other Sources -Award holders are permitted, under normal circumstances, to demonstrate, instruct or assist in non-degree related research for a maximum of 200 hours per annum, provided that the Head of their Department considers this is desirable and that it does not hinder the progress of their studies. Apart from these assistantships, award holders will devote their full time to study and research and will not undertake any paid work during the school term. They may hold other awards and scholarships.

Transfers -Awards are made on the condition that the winners engage in a program of graduate studies and research for an advanced degree in entomology in Canada. Students, who after receiving the award, wish to change their graduate program or transfer to a foreign university may be asked to decline the award. Any change in the course of study, department or university in which an award winner is registered requires prior approval of the Scholarship Committee. A request for permissions to transfer must be supported by statements from Heads of Departments.

Additional Allowances -The award stipends are all-inclusive. There is no provision for additional grants by the Society for any purpose. Additional grants, for example, to attend meetings, pay course fees, meet publications costs, etc., will not, under any circumstances, be authorized.

All communications regarding these awards, including requests for applications, should be addressed to: Dr. Rick West, Box 515, Portugal Cove, Newfoundland A0A 3K0, Tel and fax: 709-895-2734 email: reely.west@roadrunner.nf.net

La Société d'entomologie du Canada Bourse pour Etudiants Post-Gradués 2001 et Bourse Keith Kevan

La Société d'entomologie du Canada offrira deux bourses d'une valeur de $2,000 chacune pour aider des étudiants qui débutent des études post-graduées et des recherches en vue de l'obtention d'un diplôme d'études supérieures en entomologie. Les bourses seront accordées aux étudiants ou étudiantes en raison des seuls critères de réussite académique.

Aussi, en mémoire de Dr. D. Keith McE. Kevan, la Société d'entomologie du Canada offrira une bourse d'un montant de $1,000 pour aider les étudiants qui entreprennent des études en taxonomie des insectes. Cette bourse est accordée en raison des critères d'excellence académique et de la prééminence en taxonomie des insectes.

Avis

Éligibilité: Les candidats pour chacune des bourses doivent être membres de la Société d'entomologie du Canada.

- **Bourse Post-graduée:** Les candidats doivent aussi être Canadiens ou résidents reconnus du Canada et détenir un baccalauréat d'une université canadienne. Les candidats doivent obligatoirement avoir débuté leur première année d'études post-graduées entre le **15 juin 1999 et le 31 décembre 2001**, et effectuer leur étude et recherche dans une université canadienne. Les bourses ne seront accordées que lorsque les directeurs de Département auront certifié que les candidats choisis sont inscrits en première année d'un programme d'études supérieures, et ce avec tous les privilèges attachés au statut d'étudiant gradué. Un étudiant qui n'a pu être admis à l'École des Gradués, ou qui s'incrit en vue de compléter l'obtention de crédits, n'est pas éligible à la bourse.

- **Bourse Keith Kevan:** Le (La) candidat(e) doit être étudiant(e) gradué(e), inscrit(e) à une université canadienne ou citoyen canadien étudiant à l'étranger.

Procédure: Les candidats devront soumettre leur candidature à l'aide du formulaire approprié et y joindre tous les documents requis. Les formulaires sont disponibles auprès du président du Comité des bourses aux étudiants de la Société ou sur notre site internet à l'adresse suivante: **http//www.biology.ualberta.ca/esc.hp/form.htm**. Le formulaire original, ainsi que trois copies, devront être envoyés au président du Comité des bourses aux étudiants de la Société et reçus au plus tard le **10 juin 2001**. Veuillez préciser si vous désirez les formulaires pour la Bourse Post-graduée ou la Bourse Keith Kevan.

Sélection et remise des bourses: L'analyse des candidatures se fait par un comité de la Société, et l'annonce des récipiendaires se fera à la réunion annuelle de la Société où ils recevront un certificat. Le paiement de la bourse aura lieu en octobre 2000.

Règlement

Autres sources de revenus: Un boursier pourra normalement donner des séances de cours ou de démonstration et être auxiliaire de recherche jusqu'à un maximum de 200 heures par année, en autant que le Directeur de son département considère cela profitable et que ces tâches additionnelles ne nuisent pas au progrès de l'étudiant. Mises à part ces exceptions, un boursier devra consacrer tout son temps à ses études et recherches et n'accepter aucune autre rémunération. Il peut cependant jouir d'une autre bourse ou d'un prix.

Transferts: Les bourses sont accordées à condition que les boursiers entreprennent des études graduées en vue de l'obtention d'un diplôme en entomologie au Canada. Les boursiers qui décideront de changer de champ d'études, ou de transférer dans une université hors du Canada peuvent se voir retirer leur bourse. Après acceptation de la bourse, tout changement de programme d'études, de département ou d'université devra recevoir au préalable l'approbation du

Comité de la Bourse de la SEC. Une telle demande doit être accompagnée de documents provenant des Directeurs des départements concernés.

Frais supplementaires: La somme offerte est invariable. En aucun cas la Société n'accordera de montant supplémentaire. Des frais additionnelles, par exemple, pour assister aux réunions scientifiques, payer des frais de cours, défrayer des coûts de publications, etc..., ne seront autorisés sous aucune considération. Toute correspondance relative aux bourses, incluant les demandes de

Toute correspondance relative aux bourses, incluant les demandes de formulaires doit être adressée à: Dr. Rick West, Box 515, Portugal Cove, Newfoundland A0A 3K0, Tel and fax: 709-895-2734 email: reely.west@roadrunner.nf.net

MEETINGS

Fifth Latinoamerican Meeting on Scarabaeoidology

Quito- Ecuador, March 5-9, 2001

The Biological Sciences Department at the Catholic University of Ecuador is organizing the Fifth Latinoamerican Conference on Scarabaeoidology, which will be held on March 5-9, 2001.

This conference is addressed to people interested in conservation, diversity, evolution, biology, ecology, behavior, and pest control, of species belonging to the Family Scarabaoidea (Insecta: Coleoptera).

For the members of the organizing committee it is a great pleasure to invite you to participate in this scientific event as oral speaker or as attendant. We are sure that your participation and contributions will be crucial for the successful of this important scientific meeting.

Presentations of abstracts:

- Deadline for reception: January 5, 2001
- Submit a written copy and a diskette containing a concise paper summary (do not protect the diskette nor the file) to: Museum QCAZ, Department of Biology, Apt. 17-01-2184, Pontifice Catholic University, Quito-Ecuador, or e-mail to escarabajo@ puceuio.puce.edu.ec/.
- The paper summary must have the following format:

Written on computer using Rich text Format. Written in Times letter, 12 points. Title in bold and in the center. Surname and name of author(s), in the center. Name and address of Institution (s) to which author(s) belong. Abstract must be no more than 400 words. Please, indicate type of presentation (slides, acetates, powerpoint, infocus, zip, etc). No indication will be assumed as slide presentation.

Oral presentations

- Each magisterial conference will be of 40 minutes, and 10 minutes for questions.
- Oral presentations will be of 15 minutes, and 5 minutes for questions.

Registration ($US)	Until January 30, 2001	After January 30, 2001
Students	25	35
Professionals	55	85

General Information:

Quito city, the Ecuador's capital is located at 2800 meters above sea level. March month in Quito is characterized by beautiful sunshine mornings overlapped sometimes with rainy afternoons. Average daily temperatures range from 11 to 23 C, and night temperatures range from 10 to 5 C. As the weather can be changeable we recommend that you bring a sweater and a raincoat. The electrical power voltage in the city is 110 V. To come to Ecuador it is not requirement the yellow fever vaccine, however we recommend it if you wish to visit the Amazon forests after the conference.

For more information or suggestions, you can contact us at:

Giovanni Onore, Member of the V Latinoamerican Conference Organizing Committee
Scarabaeoidology Museum QCAZ, Pontifice Catholic University of Ecuador, Apart. 17-01-2184.
email: Escarabajo@puceuio.puce.edu.ec

ENTOMOLOGICAL SOCIETY OF CANADA
LA SOCIÉTÉ D'ENTOMOLOGIE DU CANADA

393 Winston Ave., Ottawa, Ontario K2A 1Y8

Application for membership - (new members only)
Demande d'adhésion (nouveaux membres seulement)

Name and Address (please print):
Nom et Adresse (lettres moulées):

telephone (bus.) / téléphone (au travail):

Fax:

Electronic mail address / Adresse electronique:

Keywords describing interest (up to six):
Décrivez vos intérêts en utilisant jusqu'à six mots clés.

Membership is a personal affiliation; publications are the personal property of the individual member. Membership is on a calendar year basis.
Cotisation est une affiliation personnelle; publications payees ici appartient a l'individu. La cotisation des membres s'applique à l'année civile.

MEMBERSHIP DUES / COTISATION

Regular member / Cotisation regulier with/avec...Cdn $80.00 + $5.60 GST (Can) ....$.....
The Canadian Entomologist & Bulletin US$74 ($100 Cdn) (U.S.A. & Int'l)

Student member / Cotisation étudiant with/avec...Cdn $20.00 + $1.40 GST (Can) ....$.....
The Bulletin US$18 ($25 Cdn) (U.S.A. & Int'l)

or with/ou avec The Canadian .Entomologist & Bulletin...Cdn $40.00 + $2.80 GST (Can) ....$.....
US$36 ($45 Cdn) (U.S.A. & Int'l)
(ask your professor to endorse this form/demande l'appui de votre professeur)

Endorsement/Signature du professeur .....

Enclose cheque or money order (or use Mastercard or VISA) payable to : Entomological Society of Canada
Inclure un chèque ou mandat (ou utilisez Mastercard ou VISA) payable à: Société d'Entomologie du Canada

If you need an official receipt, please check: .....

Si vous désirez un recu officiel, indiquez, s'il vous plaît: .....

Please copy and distribute to interested non-members. Thankyou.

ENTOMOLOGICAL SOCIETY OF CANADA - 2000
LA SOCIÉTÉ D'ENTOMOLOGIE DU CANADA - 2000

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