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Entomological Society of Canada
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EDITORIAL NOTES

Every year the Governing Board of the Society takes on a new look because of replacement of officers, mostly of directors-at-large or directors from affiliate societies, and of course with the election of a president-elect. The 1978-79 Board has, however, a larger number of new faces than is normally the case (page 83).

This year sees the implementation of the new By-Laws of the Society which require the election of a first and second vice-president. It is also marked by the departure of two trustees: G.H. Gerber (Secretary) and P.E. Morrison (Scientific Editor). These are respectively replaced by J.E. Laing from the University of Guelph, Ontario, and D.C. Eidt, from the Maritimes Forest Research Centre, Fredericton, N.B. Dr. Eidt is the former editor of the Bulletin. We wish all of them well.

* * * * *

The presidential address by W.G. Wellington (pages 50-55) is a marked departure from those of previous years. There is no doubt that it is a document of great significance for all Canadian biologists. It is our duty to read it, assimilate it, and give it the widest possible publicity.

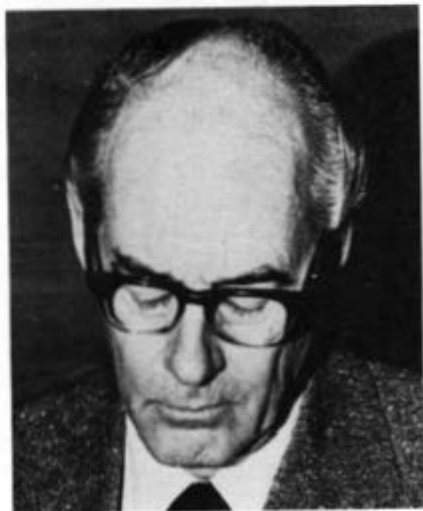
The President's Report

to

The Twenty-eighth Annual General Meeting of the Entomological Society of Canada Ottawa, August 22, 1978

At this point in our annual general meeting, it is the President's duty to report on the state of the Society's affairs. Depending on their interpretation of "Society affairs", some Presidents dwell on administrative matters, whereas others discuss the state of the art, or philosophical questions. But during the past decade, whatever their personal interests, our Presidents have also expressed their growing concern over the decline in Canadian research capability, and the effects of this erosion on our own discipline and mission.

No one but an outgoing President trying to avoid plagiarism would attempt to read ten Presidential addresses at one sitting. This exercise is not the endurance test that one might expect, but it is a powerful antidote for complacency. Again and again, our Presidents accurately predicted the dire long-term consequences of the chopping and changing that began to plague Canadian applied biology during the 1960's. One admires their outspokenness, when being blunt about such matters was less fashionable than it is nowadays. But it is depressing to see how little their foresight and their bluntness influenced the subsequent actions of the politicians and the bureaucrats involved.



Since we are now experiencing the future they predicted so accurately, I need not embellish my predecessors' forecasts. But I believe that we still need their bluntness, so I shall try to match it here. To do so in the minutes remaining, however, I must omit the housekeeping items traditionally presented now. Please look for these in the June and September issues of our Bulletin, where you will find all the reports on the Society's operations. But you will not find among those reports any mention of the long hours and hard labor so freely given by the Governing Board, the Trustees, the Editorial Associates, the members of our Secretariat, and the members of our many Committees. All deserve our warmest thanks for their continuing personal sacrifices and their dedication!

And now for a little bluntness.

Scientific societies traditionally form to provide opportunities for people with similar interests to meet and to talk about their research. The larger societies, such as ours, also publish journals which allow members to reach a larger, international audience. That is how societies have been since the beginning, and that is how most of their members seem to expect them to remain. Certainly, many hint darkly that a society straying too far from that format might very soon find its membership declining almost as rapidly as when fees increase.

Since our beginnings over a century ago, we have carefully maintained that view of ourselves as a Society, even though it has not always been completely accurate. But we can no longer keep that old image intact. Talking and writing to each other brought us out of the last century, but they are no longer sufficient to carry us into the next. We need more than spoken and written words to survive to the twenty-first century as the Entomological Society of Canada, as Canadian entomologists, and as Canadian biologists.

Rapport du Président

28^{ème} Réunion Annuelle de la Société Entomologique du Canada Ottawa, le 22 août 1978

L'usage veut que lors de la réunion annuelle le Président fasse rapport de l'état des affaires de la Société. Suivant leur interprétation des "affaires de la Société", certains présidents ont parlé de questions administratives tandis que d'autres se sont préoccupés de questions philosophiques. Mais, au cours des dix dernières années, quels qu'aient pu être leurs intérêts personnels, les présidents ont également exprimé leur inquiétude croissante au sujet du déclin de la recherche au Canada, et des effets de cette érosion sur notre discipline et notre mission.

Personne, excepté un président sortant qui ne tient pas à faire du plagiat, n'essaierait de lire dix discours présidentiels en une seule et même occasion. Ceci ne représente pas l'exercice d'endurance auquel on pourrait s'attendre mais un puissant antidote contre la complaisance. L'un après l'autre nos présidents ont prédit de façon précise les conséquences désastreuses et à long terme qu'auraient les coupures et les changements qui ont commencé à harceler la biologie appliquée au Canada au cours des années 60. On doit admirer leur franc-parler quand on se rend compte que la franchise brutale dans ce domaine était alors moins à la mode qu'aujourd'hui. Mais il est déprimant de constater le peu d'influence qu'ont eu leurs prévisions et leur franchise sur les actions subséquentes des politiciens et des bureaucrates. Puisque nous vivons actuellement le futur qu'ils ont si précisément annoncé, je n'ai pas besoin d'embellir les prédictions de mes prédécesseurs. Mais j'estime que nous avons toujours besoin de leur brutale franchise, aussi essaierai-je d'en faire autant ici. Cependant, pour le faire dans les minutes qui me restent, je dois laisser de côté les affaires courantes qu'il est de coutume de présenter ici. Veuillez les consulter dans le *Bulletin* de juin et de septembre où vous trouverez tous les rapports sur les activités de la Société. Mais on ne fait pas dans ces rapports mention des longues heures de dur labeur données gratuitement par le conseil de Direction, les Fiduciaires, les Editeurs Associés, les membres du Secrétariat, et les membres des nombreux comités. Tous méritent nos remerciements les plus chaleureux pour leurs sacrifices personnels et suivis, et leur dévouement.

Et maintenant un peu de franchise brutale!

Les sociétés scientifiques se constituent, traditionnellement, pour donner à des personnes ayant des intérêts semblables les occasions de se rencontrer et discuter de leur recherche. Les sociétés plus importantes, comme la nôtre, publient également des périodiques qui permettent aux membres de rejoindre une audience plus nombreuse et internationale. Voilà comment les sociétés ont été depuis le début, et voilà comment la plupart de leurs adhérents semblent s'attendre à ce qu'elles demeurent. Bien sûr plusieurs font la sombre prédiction qu'une société qui s'éloignerait trop de ce format verrait très vite le nombre de ses membres diminuer aussi rapidement qu'augmentent les cotisations.

Depuis nos débuts, voilà un peu plus d'un siècle, nous avons prudemment conservé cette vue de nous-mêmes en tant que Société, bien que ce ne fut pas exactement toujours le cas. Mais nous ne pouvons plus garder cette vieille image intacte. Se parler et s'écrire mutuellement nous a fait sortir du siècle dernier, mais cela ne suffit plus pour nous transporter dans le prochain siècle. Pour survivre jusqu'au 21^e siècle comme Société Entomologique du Canada, comme entomologistes canadiens, comme biologistes canadiens, il nous faudra bien plus que des déclarations écrites ou orales.

In order to survive, and also to help those sectors of the national economy which we serve to solve their problems during the energy-poor years ahead, we must be prepared to act in ways that our nineteenth-century founders never imagined. We need to change our ways, because neither basic nor applied biological research in Canada will be allowed to remain comfortably ensconced in large government and small university establishments. Those responsible for "contracting out" government research projects will see to that.

No one cares much for the process Treasury Board has so ominously named "contracting out". But don't let dislike for that process blur your perception of certain facts about it. For example, it is here, whether you like it or not, and here it will remain, in one form or another. How beneficial — or how inimical — that form might be for biological research will be partly up to us, and societies like us.

The present methods and guidelines for proposing, developing, assessing and awarding government research contracts are a hodge-podge of hasty ad hoc-ery, bureaucratic rigidity, and social scientists' misconceptions of the needs of biological, as opposed to industrial, research. If this mixture is allowed to harden, the process of contracting out research will not be the flexible instrument of Canadian science policy that Senator Lamontagne's Committee intended. Instead, it will become merely another cynical budgetary device for re-distributing tax dollars wherever transitory pressures dictate. And unless biologists soon demonstrate — and I mean *demonstrate*, not *argue* — that the scientific information required to manage renewable resources in the Canadian climate differs significantly from the kind of research required to manufacture complex electronic devices anywhere, we can be sure that those pressures will be incorrectly assessed. For the political, the social, and the economic planners who make those assessments still cling to the delusion that many of the results required in applied biological research need not be obtained locally, but can be imported as needed, like so many cases of tinned goods.

As long as that delusion persists, Canadian applied biology and the enterprises it serves remain at risk. It is not in the national interest to allow them to fail from mismanagement during a period in world affairs when high competence in applied biology is a bare necessity for this nation's survival. So we have a responsibility to our discipline, to other biologists, and to the enterprises we serve, to work toward more rational contracting arrangements for biological research than we presently have.

Since those responsible for the present arrangements remain unmoved by complaints, they should be given examples. And this is how our Society's experience can be valuable to the scientific community. With two research contracts completed, and a third just begun, we are not only able to provide data on the good and bad aspects of the contracting process; we are also in a position to influence its further development, by using our Scientific Committee and our Secretariat to devise and test improvements for it.

As a very minor example, we have detailed inventories of our members' interests, expertise, and facilities — far more accurate dossiers than any consortium of agencies or universities presently has. It would not be difficult to up-date this information, then use our Secretariat as a clearing-house to ensure that appropriate agencies and investigators were made aware of each other's existence, and kept informed of each other's intentions. Even that minor service would make the contracting process less haphazard, and its results more valuable, than the random approach now employed. Beyond our own discipline, we could also share our experience with other societies and the umbrella associations to which we belong, so they could join in developing effective solutions to contracting problems.

Even to begin such activities, we must be prepared to spend the Societies funds at a rate that would outrage nineteenth-century sensibilities. Our recent contracts led us to establish a Secretariat. We should be prepared to maintain and even to expand its activities on a permanent basis. We should also recognize that the Scientific Committees we organize to supervise contracts will probably become permanent fixtures requiring support for other than contracting activities. They may, for example, have to engage in particular kinds of lobbying, an activity previously considered too impure for scientists. As a Society, we have pioneered some special kinds of government-funded research. So we should join those

Afin de survivre et aussi d'aider les secteurs de l'économie nationale à résoudre leurs problèmes au cours des années de crise énergétique qui nous attendent, nous devons être prêts à prendre des moyens que nos fondateurs, au 19^e siècle, n'auraient jamais imaginés. Nous devons changer nos façons de faire parce qu'au Canada on ne permettra plus, ni à la recherche biologique fondamentale, ni à la recherche biologique appliquée, de rester confortablement installée dans de grands établissements gouvernementaux et dans de petites universités. Les responsables de la politique de "mis à contrat" pour les projets de recherche gouvernementaux y verront.

Personne ne s'en fait beaucoup pour le processus que le Conseil du Trésor a appelé de façon si menaçante "contracting out". Mais ne laissez pas votre antipathie pour ce processus troubler votre perception de certains faits qui le concernent. Par exemple, il est ici, que vous le vouliez ou non, et il restera avec nous sous une forme ou sous une autre. Les effets bénéfiques ou désastreux de cette façon de procéder sur la recherche biologique dépendent de nous, de sociétés comme la nôtre.



Dr. W.G. Wellington s'adressant à l'assemblée.

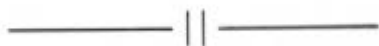
Les méthodes actuelles et les procédures pour proposer, développer, évaluer et octroyer les contrats de recherche gouvernementaux sont un méli-mélo de mesures ad hoc hâtives, de rigidité bureaucratique, de conceptions erronées des besoins de la recherche biologique, par rapport à la recherche industrielle, mises de l'avant par des sociologues. Si l'on permet à cette mixture de se solidifier, le processus de recherche à contrats ne sera pas l'instrument flexible de la politique scientifique canadienne que prévoyait le Comité du Sénateur Lamontagne. A sa place on verra un autre exercice budgétaire cynique pour redistribuer l'argent du contribuable là où les pressions transitoires s'exercent. Et à moins que les biologistes ne démontrent — et j'insiste sur *démontrent*, non pas *argumentent* — que l'information scientifique requise pour gérer les ressources renouvelables dans le climat canadien diffère de façon significative du genre de recherche requise pour manufacturer n'importe où des dispositifs électroniques complexes, nous pouvons être sûrs que ces pressions ne seront pas correctement évaluées. Car les planificateurs politiques, sociaux et économiques qui font ces évaluations s'accrochent encore à l'erreur qui veut que beaucoup de résultats nécessaires à la recherche biologique appliquée n'ont pas besoin d'être obtenus sur place, mais peuvent être importés selon les besoins comme autant de caisses de boîtes de conserves.

Aussi longtemps que se perpétuera cette illusion malheureuse, la biologie appliquée et les entreprises qu'elle dessert resteront en danger. Ce n'est pas dans l'intérêt national de leur permettre d'échouer à cause de mauvaise gestion pendant une période dans les affaires mondiales où une haute compétence en biologie appliquée est une nécessité minimum pour la survie de ce pays. Nous avons donc une responsabilité envers notre discipline, envers les autres biologistes et envers les entreprises que nous servons, d'oeuvrer vers des arrangements contractuels pour la recherche biologique plus rationnels que ceux que nous avons actuellement.

government and university administrators, and those members of other societies, who understand the urgent need to develop rational methods of "contracting out" research in applied biology.

If we refuse to accept these new responsibilities and insist on maintaining only our traditions, we shall soon find that there is no one to talk with and nothing to write. The funds for biological research, the sciences they nurture, and the enterprises these sciences serve in Canada, will all have vanished into the void created by mismanaged and ill-funded contract research.

If you dislike this prospect, then change it. Come out of the nineteenth-century. Reassert your responsibility, as scientists, for managing scientific research. Your stand might encourage social and economic planners to spend more time in their own bailiwicks and less in this one. Although that transfer might not improve the prospects in their fields, it would surely brighten the outlook for ours.



(relevé de la page 53)

Puisque les responsables des dispositions actuelles restent imperméables aux représentations, on se doit de leur donner des exemples. Et voici comment l'expérience de notre société peut être précieuse pour la communauté scientifique. Ayant déjà complété deux contrats de recherche et venant juste de commencer un troisième, nous sommes non seulement capables de fournir des données sur les bons et les mauvais aspects du processus des contrats, nous sommes également en mesure d'influencer son développement futur en utilisant notre comité scientifique et notre Secrétariat pour mettre au point et vérifier les améliorations nécessaires.

Donnons comme exemple mineur les inventaires détaillés des intérêts de nos membres, de leur expertise et des facilités dont ils disposent — en fait des dossiers bien plus précis que n'importe quel consortium d'agences ou d'universités ne possède à l'heure actuelle. Il ne serait pas difficile de garder à jour cette information et ensuite d'utiliser notre secrétariat comme dépositaire et distributeur pour assurer que les agences et les chercheurs appropriés soient mis au courant de leur existence respective et en soient informés de leurs intentions. Même ce service mineur rendrait le processus des contrats moins dangereux, et ses résultats plus valables, que l'approche fortuite employée actuellement. Au delà de notre discipline nous pourrions aussi partager notre expérience avec d'autres sociétés et les associations auxquelles nous appartenons, afin qu'elles puissent participer au développement de solutions effectives aux problèmes contractuels.

Ne serait-ce que pour faire démarrer de telles activités, nous devons être prêts à dépenser les fonds de la Société à un rythme qui outragerait les sensibilités du 19^e siècle. Nos récents contrats nous ont conduits à établir un Secrétariat. Nous devrions être prêts à maintenir et même élargir ses activités sur une base permanente. Nous devrions aussi reconnaître que les comités scientifiques que nous constituons pour superviser les contrats deviendront probablement des éléments permanents qui auront besoin d'aide pour des activités autres que des contrats. Ils peuvent, par exemple, avoir à entreprendre certaines formes de lobbying, une activité considérée jusqu'ici trop impure pour des scientifiques. En tant que société nous avons fait oeuvre de pionnier pour certaines formes de recherche financée par le gouvernement. Aussi, nous devrions nous joindre à ces administrateurs gouvernementaux et universitaires, et à ces membres d'autres sociétés qui comprennent le besoin urgent qu'il y a de développer des méthodes rationnelles de "mettre à contrats" la recherche en biologie appliquée.

Si nous refusons d'accepter ces nouvelles responsabilités et insistons à maintenir seulement nos traditions, nous verrons bientôt qu'il n'y aura plus personne à qui parler et plus rien à écrire. Les fonds pour la recherche biologique, les sciences qu'ils nourrissent, et les entreprises que ces sciences servent au Canada, se seront tous évanouis dans le vide créé par une recherche à contrats mal gérée et mal financée.

Si vous n'aimez pas cette perspective, alors changez-la. Sortez du 19^e siècle. Réaffirmez votre responsabilité en tant qu'homme de science, pour la gestion de la recherche scientifique. Votre prise de position encouragera peut-être les planificateurs sociaux et économiques à passer davantage de leur temps dans leur propre jardin et moins dans celui-ci. Même si ce transfert n'améliore pas les perspectives dans leur domaine, cela rendrait sûrement les nôtres plus brillantes.

**GOLD MEDAL AND
C. GORDON HEWITT AWARD
MÉDAILLE D'OR ET
PRIX C. GORDON HEWITT**

Members are reminded to submit, *by 30 November, 1978*, their nominations for the Entomological Society of Canada Gold Medal for Outstanding Achievement in Entomology and for the C. Gordon Hewitt Award for recipients under 40 years of age. Conditions governing these Awards were summarized in the Bulletin (Vol. 9, No. 2, p. 61). Eligibility for both Awards may be based on research accomplishment of consequence to entomology in Canada, or on service and dedication to research administration, extension, and education, and to the Society or its Affiliates. The Awards will be made only if suitable recipients are nominated.

Nominations marked "Confidential" may be sent to:

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

Nous désirons rappeler aux membres de la Société qu'ils doivent soumettre, *au plus tard le 30 novembre 1978*, les nominations pour la Médaille d'Or et le Prix C. Gordon Hewitt. Les conditions réglementant ces distinctions ont paru dans le N^o 2, Vol. 9 du Bulletin (p. 61). Sont éligibles pour ces distinctions ceux(celles) qui ont fait une contribution remarquable à l'entomologie au Canada dans les domaines de la recherche, l'administration, l'éducation, l'extension et les affaires de la Société et de ses filiales. Les médaille et prix ne seront remis que s'il y a un nombre suffisant de nominations.

Envoyer les nominations avec la mention "Confidentiel" à



"We're not handling the study
of government contract jobs.
We've contracted it out!"

GOLD MEDALLIST ADDRESS

University of Ottawa — August 21, 1978

INTEGRATED PEST MANAGEMENT: BACK TO THE CAVES

R.W. STARK

University of Idaho, Moscow

Today is the fourth most exhilarating day of my life. Three were personal.

Someone once said, "If I have been able to see farther, it is because I stood on the shoulders of giants." I was thus fortunate. I trained at two of the finest institutions in North America — one in eastern Canada, one in western Canada. I entered the old Forest Biology Division of the Department of Agriculture when J.J. DeGryse was the Director. He was followed by Dr. Malcolm Prebble and from these stern but wise taskmasters, I learned much. I was guided and nurtured during my early scientific development by such as George Hopping, George Spencer and Ken Graham, and inspired by the young Turks of that day; Frank Morris, Bill Wellington, Buzz Holling, Ken Watt, and others. I worked with dedicated and intellectually curious neophytes such as Walt Henson, Roy Shepherd, Rob Reid, and Bob Bouchier, and held accountable to reality by unsung heroes of the Forest Insect and Disease Survey, such as Jack Robins, Chief Ranger at Calgary.

Whatever led to my decision to emigrate, my good fortune held. I landed in the most stimulating environment possible in America — the University of California at Berkeley where the seeds of integrated pest management, biological and integrated control, flourished. Again, I profited from association with giants, such as Carl Huffaker, Ray Smith and P.S. Messenger, all pioneers in biological and integrated control and I.P.M., and more young Turks, Bob van den Bosch, Dave Wood, Don Dahlsten, Don Bright, Hamish Kimmins, Norm Johnson, and John Borden. I learned much from European colleagues such as Schwerdtfeger, Jost Franz, Pierre Carle, Pierre Vité, and Alf Bakke.

To these and many more — but particularly to you, the members of this Society, my colleagues and peers, my most deepfelt thanks for this signal honor.

My title was inspired by the words of one of my favorite authors: "Those charter members of the cave-painting school of population management at least studied their intended prey before modeling it." (Wellington, 1977)

Integrated pest management (I.P.M.) is an eclectic approach to the management of organisms we have defined as pests. It is composed of an inconstant selection of specialties from diverse sources and does not follow any one system but utilizes whatever is considered best in all systems.

Seldom has a concept been endorsed so rapidly and completely. Indeed, it has caught on so quickly that there has not been time for many of the key players to learn the rules of the game. That I.P.M. has flourished is due to the lessons taught by its precursors, biological and integrated control. It has not yet stopped growing; as a part of resource management I believe it will ultimately be absorbed into the more holistic "adaptive environmental assessment management" (Holling, in Press), perhaps retaining some individuality according to the part of the environment or resource being "managed" or because of management objectives.

Integrated pest management promises much and, in the United States at least, has been endorsed at the highest level of government — the office of the President. Ironically and unfortunately, this somewhat unquestioning acceptance may cause setbacks to its implementation — because although it promises much, there are only a few scattered examples of its successful implementation. The present wave of bureaucratic enthusiasm for I.P.M. has led one critic — a spokesman for the pesticide industry — to call it "Imperial Potomac Madness."

I believe, however, that in spite of such potential setbacks, integrated pest management will survive and continue to flourish, for it is based on the solid foundations of ecology and management principles.

The cartoon series, B.C., has an intellectual caveman in it called Wiley, who composed the first dictionary (probably one of Wellington's charter members). One of his friends looks up ecology and finds: "The cycle of life." He looks up cycle: "N. 'to move in a circle.'" He looks up circle: "N. 'to end up where you began.'" He looks up ecology . . . Unlike this caveman, integrated pest management will not go full circle and repeat our sorry record of pest control because I.P.M. relies less on narrow techniques — rather it presents a systematic approach to decision-making which allows resource managers to consider alternative approaches to handling perceived problems. (Campbell, in Press)



R. W. Stark receiving his award from W. G. Wellington with F. L. McEwen looking on.

Wellington (1977) in his usual humorous and erudite way exposed many of the ailments to which science in general, ecology, and now pest management are prone, and presented a compelling argument for putting the "insect" back into "insect ecology." Recently I ran across an interesting bit of trivia. "Insect" in Swahili is *dudu*. (Meinwald *et al.*, 1978) I don't know how many of you are familiar with kindergarten scatology, but *doo-doo* means something totally different. But it seemed a coincidence that while many of us pest management pushers are trying on one hand to get the doo-doo out of pest control we are doing it by trying to get the *dudu* back into insect ecology!

Much has been written on I.P.M. and I will not dwell on technicalities today. I was warned to keep this short and any reasonable treatment of I.P.M. takes hours — days if there are non-believers present. Rather, I would like to speculate that I.P.M. has made two contributions to global society not generally discussed if recognized. These are mutually dependent but not always connected — a common language (not Esperanto) and mutual perception.

George Ordish, in his delightfully short but informative book, "The Constant Pest" (1976) commented on the fact that there was an interval of 115 years from the first compounding of benzene hexachloride to its commercial use as an insecticide, in spite of liberal clues to its lethal properties during that period. He posed three reasons for the delay but does not specify the two I speak of today — the curse of Babel, and loss of mutual perception.

Apparently we once had a common language: "now the whole earth used the same language and the same words."

"And they said, 'Come, let us build for ourselves a city and a tower whose top will reach into heaven and let us make for ourselves a name; lest we be scattered abroad over the face of the whole earth.'"

"And the Lord said, 'Behold, they are one people and they all have the same language. And this is what they began to do and now nothing which they propose to do will be impossible for them. Come, let us go down and there confuse their language, that they may not understand one another's speech.'"

"So the Lord scattered them abroad over the face of the whole earth, and they stopped building the city."

"Therefore, its name was called Babel, because there the Lord confused the language of the whole earth." (Genesis 11: 4, 6-9)

I maintain that integrated pest management through the auspices of international organizations such as the United Nations, the Food and Agricultural Organization, the World Health Organization, and the International Union of Forest Research Organizations has much of the world talking the same language and building together again.

Mutual perception is perhaps even more difficult to achieve. The poem satirizing theology illustrates the point:

"It was six men of Indistan
To learning much inclined,
Who went to see the elephant
(Though all of them were blind)
That each by observation
Might satisfy his mind."

These learned men, depending on what part of the anatomy of the pachyderm they encountered, described it respectively as a wall, a spear, a snake, a tree, a fan, and a rope.

"And so these men of Indistan
Disputed loud and long,
Each in his own opinion
Exceeding stiff and strong,
Though each was partly in the right,
And all were in the wrong!"

So oft in scientific¹ wars
The disputants, I ween
Rail on in utter ignorance
Of what each other mean,
And prate about an elephant
Not one of them has seen."

I maintain that integrated pest management and even more, adaptive environmental assessment and management (Holling, in Press), are teaching the blind to see the whole elephant.

From one who has tried and will continue to try to forward the "return to the caves" in the Wellingtonian sense, my thanks for the honor and opportunity to share these thoughts with you.

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¹With apologies to the shade of John Godfrey Saxe.

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Ordish, George. 1976. *The Constant Pest*. Charles Scribner's, New York, 240 p.

Wellington, W.G. 1977. *Returning the insect to insect ecology: some consequences for pest management*. Environmental Entomology 6(1): 1-8.

CORRECTION ON THE FOUNDING DATE OF THE ENTOMOLOGICAL SOCIETY OF SASKATCHEWAN

While assembling the records of the Entomological Society of Saskatchewan for submission to the Public Archives of Canada it was discovered that the date of formation of the Society had been reported wrongly in the extant literature.

In the Can. Ent. 85(2): 62, 1953 there appeared under the heading Regional Societies: "The Entomological Society of Saskatchewan was founded on November 5th, 1952."

R. Glen, 1956. Entomology in Canada up to 1956. Can. Ent. 88: 290-371. Stated page 297 "— there are seven regional societies. The entomological societies of — Saskatchewan (1953) —".

Curtis W. Sabrosky, 1956. Entomological Societies. Bull. Ent. Soc. Am. 2(4): 1-22. Listed on page 5: "26 Entomological Society of Saskatchewan 1953 — date".

To put the records straight I quote from the minutes of the Formal Organization meeting of the Entomological Society of Saskatchewan.

"The meeting was called to order at 3:00 p.m. May 31, 1952, by Dr. A.P. Arnason. The following were present: A.P. Arnason, P.C. Brown, C.H. Craig, D.C. Eidt, R.B. Lowe, H. McDonald, M.N. MacLeod, H.A. McMahon, L.C. Paul, L.O.T. Peterson, R. Pickford, L.B. Putman, W.W.A. Stewart, R.O. Vibert.

Moved by H. McMahon and seconded by P.C. Brown that we form an Entomological Society of Saskatchewan. Carried unanimously.

Moved by P.C. Brown and seconded by R. Pickford that the constitution as drafted on May 8 be adopted. Carried unanimously."

Thus the Entomological Society of Saskatchewan came into being on May 31, 1952, and has continued actively to the present. The records of the Society which include bound copies of the minutes of the annual meetings from formation to the Ninth Annual Meeting (1952-1961) and the Proceedings, volumes one to sixteen (1962-1977) are deposited in the Public Archives of Canada.

W.W.A. Stewart



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COMMITTEE REPORTS

(1977-78)

REPORT OF THE SCIENCE POLICY COMMITTEE

Committee on Funding of University Research

The final report of this Committee has been submitted and will be published in the *Bulletin* as well as being distributed widely outside the Society.

Extension Study Committee

The survey of this Committee has been completed and final report is projected for the Spring of 1979.

Committee on Entomology in Government

Dr. Don Bright has agreed to chair this Committee and has been in liaison with B.C.C. who have been considering a future study on the Status of Biology in Government.

S.C.I.T.E.C.

S.C.I.T.E.C. has continued its activities in briefing government and the public on the role of science and technology in the Canadian economy.

In February 1978 a brief entitled "From Laboratory Marketplace" was presented to the Federal Cabinet.

In 1977 and 1978 the Parliamentary and Scientific Committee organized discussions between politicians and scientists on a variety of topics including: Renewable Energy Resources, Food from the Land, Food from Water and Genetic Engineering. These have been or will be published.

The 1978 S.C.I.T.E.C. Forum will be on "Politics and Science: Dilemma and Opportunities" and will be held in the Chateau Laurier Hotel, Ottawa, October 23, 1978.

In cooperation with the Science Council they have established a Task Force on Public Awareness of Science and Technology in Canada and they will establish a public awareness pilot project.

A Science and Engineering Week (October 21-28, 1978) is planned for Ottawa. S.C.I.T.E.C. will accept contributions for meetings and exhibits on themes such as Science and Society, Politics, Communications, Energy, Food, Health and the Arts.

Biological Council of Canada

E.S.C. rejoined B.C.C. late in 1977. The Council has been very active in briefing parliamentarians and public servants on such subjects of special interest to us as: Museum Collections and Canadian Science; Canadian Science Journals; Canadian Biology; our National Science.

Canadian National Committee of the International Association on Water Pollution Research (C.N.C./I.A.W.P.R.)

The report has been submitted directly to Dr. Gerber and includes a useful review of the Committee's functions. Dr. Rosenberg would like his report published in full.

R.K. Stewart

REPORT OF REPRESENTATIVE TO S.C.I.T.E.C. — 1978

S.C.I.T.E.C. now represents 55 scientific societies with 70,000 members. Its main function is the promotion of communication both within science and between scientists, politicians, and the general public.

Towards this end S.C.I.T.E.C. has carried out the following activities during the past year:

Communications to Government

1. "From Laboratory to Marketplace"

A brief with this title was presented to the Federal Government. It stressed the need for tax incentives to encourage the growth of high technology industry, and increased support for R & D in government, university and industrial laboratories.

Not long after the Honourable Judd Buchanan announced a series of new measures to stimulate industrial research.

2. Parliamentary and Scientific Committee

Six meetings covering energy, food and genetic engineering have been held to inform parliamentarians concerning the scientific aspects of matters of national importance. The first two have been published by EMR and the others will be published by the appropriate government department (summaries of all sessions appear in the S.C.I.T.E.C. Bulletin). In future sessions, politicians may suggest how scientists could better influence government!

Communication Among Scientists and Technologists

3. 1978 Annual Forum: "Politics and Science: Dilemmas and Opportunities"

This will be held on October 23, 1978 at the Chateau Laurier Hotel in Ottawa. The forum will focus on energy, housing and employment. Pre-registration cost for non-members is \$35 (\$25 for members).

Proceedings of last year's forum, "Research for Survival" are available for \$8 from the S.C.I.T.E.C. office. It includes papers on risk assessment, role of ecology in decision-making, role of media, and Canada's contribution to world food supplies.

4. Interscienca

S.C.I.T.E.C. has joined Interscienca, a major international scientific society and is playing an active role in the organization of conferences. It is likely that the 1979 Symposium may be held in Canada with forestry as its theme.

5. Centre for Science and Learned Societies (formerly H.O.S.S.T.E.)

It is expected that the Centre will be functioning in Ottawa in 1979 with 12 societies as tenants.

6. Publications

Recent issues of S.C.I.T.E.C.'s Bulletin have improved considerably in quality and contain reports of the many activities of S.C.I.T.E.C., important correspondence with Government and reviews of various Government and Science Council publications.

Science Forum (available to S.C.I.T.E.C. members for \$7.50/annum) has also been considerably improved with a view to attracting a wider audience.

7. U.N. Conference on Science and Technology (1979)

S.C.I.T.E.C. is helping to coordinate Canada's input to this Conference, which will probably focus on food, energy, natural resources, industrialization, and tropical diseases.

In preparation for this S.C.I.T.E.C. co-sponsored a Mini-Symposium last November entitled "Technology Transfer for Development". The discussion covered knowledge versus hardware transfer and decentralized small scale versus centralized large scale projects.

Communication to the General Public

8. Task Force on Public Awareness of Science and Technology in Canada

S.C.I.T.E.C. is playing an active role in this Task Force which is being coordinated by the Science Council. An extremely thought provoking meeting was held in Ottawa in March at which presentations were made by David Suzuki and representatives of S.C.I.T.E.C., the Royal Society, I'A.C.F.A.S., and Science Forum. It was decided that a public awareness pilot project would be established and monitored.

9. Science and Engineering Week (Oct. 21-28, 1978 — Ottawa)

It is hoped that this first "Week" will become nation-wide by 1979 or 1980. Each day will be devoted to a specific theme, i.e., Science and Society, Politics, Communication, Energy, Food, Health and the Arts. Those interested in participating should contact Mark Fleiszer through the S.C.I.T.E.C. office.

Other Business

10. John Harcourt, S.C.I.T.E.C.'s Executive Director for the past seven years has retired and a replacement is being sought.
11. Corporate membership is under consideration and views of members are being solicited.
12. Suggestions and feedback concerning S.C.I.T.E.C.'s goals and activities are welcomed as are visitors to their office (Suite 202, 151 Slater Street, Ottawa K1P 5H3, Phone 613-232-0240).
13. Those wishing to take out individual membership should send \$10 to the above address.

Comments

The need for entomologists to become cognisant of the broader aspects of science and of the implications of the attitudes prevalent in government and among the general public increases in proportion to the tendency to specialize. It is essential that we know what we want as a group as only then will we be in a position to benefit from such organizations as S.C.I.T.E.C. At the moment we benefit from their activities only in a general, indirect way. In order to improve this situation a list of suggestions has been presented to the Board of Governors. Members with suggestions should send them to the Secretary with a copy to me.

Stuart B. Hill

THE BIOLOGICAL COUNCIL OF CANADA: REPRESENTATIVES' ANNUAL REPORT

Since the Entomological Society of Canada voted last August to re-join the Biological Council, the latter's new constitution has come into effect, thus providing each member society with Executive as well as with Council representation. During the past year, meetings of the whole Council were held in October and in April, and the Executive also met in the interim during September and February. During 1977-78, our Society has been represented by J.A. Downes, R.K. Stewart, and W.G. Wellington.

The Executive once again was invited to meet with the caucuses of all the parties, and increased the number of representations to ministers and senior public servants on subjects affecting Canadian biological science. Among the briefs presented, those of special interest to our Society included: Museum Collections and Canadian Science (addressed to the Secretary of State); Canadian Science Journals published by the National Research Council of Canada (addressed to the Prime Minister); Canadian Biology: our National Science (presented to the Task Force on Public Awareness).

The Museum brief dealt with the need for greater support for taxonomic work and Canadian collections. Discussions and correspondence arising from that presentation may lead to a contract for the Council to carry out a study on the needs in natural-science collections across the nation. The proposed contract has been endorsed by the Board of Trustees of the National Museums and is presently under negotiation.

The brief on Canadian Science Journals was prompted by last summer's news that the government was considering withdrawing support for the journals published by N.R.C., thus shifting the costs to the disciplinary groups concerned. Council's brief stated very clearly the damage such action would do to Canadian science if the ramifications were not thoroughly explored.

The brief on Canadian biology emphasized the need for maintaining franco- as well as anglophone participation in applied biological projects of major national concern, such as those involving the Gulf of St. Lawrence or the Boreal Forest, and examined the consequences of fragmenting those efforts because of language problems. The brief also emphasized the need for adequate language facilities at national meetings in order to maintain the required contacts, and suggested some ways in which support for such facilities could be developed. The Council's brief was very well received, since it represented an important area that had not been previously considered. No other scientific group had approached the Task Force on National Unity.

REPORT OF THE BULLETIN EDITOR

Volume 9 had 160 pages and carried two supplements: one in the March issue entitled "A pilot study for a biological survey of the insects of Canada" Canada" (4 pages), and one in the June issue "Resource catalogue for entomological instruction". With Volume 10 the Bulletin has taken a new look. The hard cover and brown lettering were dropped; advertisement appeared in the June issue, and a smaller type has been in use. A further step is still required to reduce costs further: the hiring of part-time help for typing of printer's codes. This will hopefully begin in September 1978. Affiliated societies, apart from sending in their list of officers, are still neglecting the Bulletin as a medium of communication.

Bernard J.R. Philogène

EIGHTH ANNUAL INSECT PHOTO SALON 1978

Thirteen people entered 22 slides, 4 colour prints, 6 black and white prints and 4 photomicrographs. Since the photomicrographs were all entered by the same two people, no awards were granted in this category.

Three judges, consisting of two professional photographers and one nature photographer arrived at the following decision:

Coloured Slides

First	— Grasshopper depositing eggs	Maria Zorn
Second	— <i>Phidippus</i> with eggs	Maria Zorn
Third	— Ichneuman wasp	Maria Zorn
Honourable mention	— <i>Nezara viridula</i>	W.L. Sterling

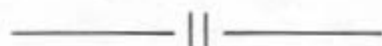
Coloured Prints

First	— Apple Maggot emerging from Apple	D.J. Hamilton
Second	— Giant Hornet	Tom Stovell
Third	— Tent Caterpillar Damage	Mrs. M. Lally

Black and White Prints

First	— Newly emerged Giant Sawfly	Mrs. B. McHaffie-Gow
Second	— Caterpillar of Anise Swallowtail	Mrs. B. McHaffie-Gow
Third	— Chrysalis of Anise Swallowtail	Mrs. B. McHaffie-Gow
Best in the salon:	Grasshopper depositing eggs	Maria Zorn

W.B. Preston, Chairman, Mr. A. Ashraff, R.W. Sims, G. Rawn, H.H.J. Nesbitt, Local Convener.



Report of the Research/Extension Committee

The "Survey of Research/Extension Flow of Entomological Information" was mailed to a total of 143 entomologists representing all ten provinces of Canada. A total of 43 completed questionnaires were returned to the Committee. Analysis of the returned questionnaires has been partially completed and a start has been made on a Committee Report.

W.J. Turnock, R.F. DeBoo, M.G. Dolinski
R.J. Whitman, Chairman

ROBERT PATRICK GARDINER

1941-1978



Pat Gardiner died on May 24th as a result of a highway accident which occurred south of Ottawa. Pat was well known to all who were involved in evaluation and use of pesticides in Canada having worked with Chipman Inc., in both eastern and western Canada during the past thirteen years.

Pat emigrated to Canada after receiving his Bachelors and Masters degrees from Cambridge University in England. He commenced employment with Chipman in 1965 as a Technical Assistant in the Technical Department located at Hamilton. He held positions as Quebec District Manager and the position of Western Technical Service Supervisor in western Canada before assuming his position as Development Coordinator in 1971 in Hamilton. In this position he was responsible for the development of all new pesticides for the Canadian market. During his career with Chipman he was instrumental in introducing several new pesticides to the Canadian market.

Pat was a close and valued associate to many applied entomologists in agriculture and forestry. His dedication and understanding of entomological problems, his ready enthusiasm, wit and good humour were greatly appreciated by his many colleagues and associates who had the pleasure of working with him on joint field projects. He had presented several papers on the use of pesticides in Canada and was a member of several government industry committees on pesticides. At the time of his death he was involved in a joint project with the Canadian Forestry Service assessing the impact on the environment of the new synthetic pyrethroid insecticides when applied to forests for the control of the Eastern Spruce Budworm.

He was a member of the Agricultural Institute of Canada, the Ontario Institute of Agrologists, the Quebec Society of Agronomes and the Entomological Society of Canada.

He is survived by his wife Solange and daughters Julie and Michelle in Burlington and his mother and a brother in England.

R. Costen

Entomological Society of Canada Postgraduate Scholarship Award

Mr. David Bernard Levin, University of Guelph, is the third recipient of the Entomological Society of Canada Postgraduate Scholarship Award of \$500.00.

ENTOMOLOGICAL SOCIETY OF CANADA

STATEMENT OF FINANCIAL ACTIVITY

YEAR ENDED DECEMBER 31, 1977

	<u>1977</u>	<u>1976</u>
REVENUE		
Regular memberships	\$ 16,323.00	\$ 16,414.20
Student memberships	1,415.00	1,319.93
Sustaining memberships	250.00	100.00
Subscriptions	17,147.33	35,189.42
Sale of reprints including page charges	108,433.81	84,366.00
Sale of back issues	2,589.05	3,277.13
Publishing "Memoirs"	34,372.00	32,661.00
Interest earned - net	18,729.32	18,312.19
Gain on sale of securities	-	210.00
Gains on currency exchange, net of bank charges	<u>2,919.46</u>	<u>(336.55)</u>
	<u>202,178.97</u>	<u>191,513.32</u>
EXPENDITURE		
Publishing costs - "Canadian Entomologist"	92,276.33	70,032.69
- bulletins	11,686.98	8,667.28
- reprints	6,519.04	6,226.89
- memoirs	26,951.91	24,979.39
Annual meeting - grants	443.13	5,145.94
- travel and expense	7,020.74	3,202.69
Other societies - dues & grants	22.00	1,728.82
Salaries	31,383.97	30,794.20
Directors' meeting expenses	5,309.32	2,461.04
Honoraria to Managing Council	1,600.00	1,600.00
Canada pension and unemployment insurance	1,490.09	699.38
Student encouragement	850.00	950.00
Professional fees	650.00	625.00
Postage and office supplies	3,482.36	3,178.28
Telephone	154.27	174.52
Rent	3,131.98	2,865.52
Editorial committee	1,923.01	1,318.72
General expense	908.85	543.53
President's discretionary fund	1,582.75	241.97
Scholarship award	<u>500.00</u>	<u>-</u>
	197,886.73	165,435.86
Less recovery of overhead expenses re Faunal Survey	<u>1,436.45</u>	<u>-</u>
	<u>196,450.28</u>	<u>165,435.86</u>
NET REVENUE FOR YEAR	<u>\$ 5,728.69</u>	<u>\$ 26,077.46</u>

ENTOMOLOGICAL SOCIETY OF CANADA

(Incorporated under the laws of Canada)

BALANCE SHEET

DECEMBER 31, 1977

<u>ASSETS</u>	<u>1977</u>	<u>1976</u>
Cash	\$ 14,803.88	\$ 16,001.38
Accrued interest receivable	5,399.89	4,814.50
Accounts receivable	49,308.57	26,880.50
Term deposits - 8 3/4 % due December 29, 1978	10,000.00	10,000.00
- 9 3/4 % due January 15, 1980	25,000.00	25,000.00
Government and government guaranteed bonds - at cost - (quoted value \$71,481; 1976 \$77,000)	74,708.44	79,923.03
Other bonds - at cost - (quoted value \$98,250; 1976 - \$94,762)	<u>95,000.00</u>	<u>95,000.00</u>
	<u>\$274,220.78</u>	<u>\$257,619.41</u>

LIABILITIES AND SURPLUS

LIABILITIES		
Accounts payable and accrued liabilities	\$ 21,583.37	\$ 15,458.69
Prepaid memberships, subscriptions and reprints	29,409.00	25,411.00
Deferred revenue - advances re annual meeting	<u>750.00</u>	<u>-</u>
	51,742.37	40,869.69
SURPLUS		
Balance, beginning of year	216,749.72	190,672.26
add:		
Net revenue for year	<u>5,728.69</u>	<u>26,077.46</u>
Balance, end of year	<u>222,478.41</u>	<u>216,749.72</u>
	<u>\$274,220.78</u>	<u>\$257,619.41</u>

AUDITORS' REPORT

To the members of

ENTOMOLOGICAL SOCIETY OF CANADA

We have examined the balance sheet of the Entomological Society of Canada as at December 31, 1977 and the statement of financial activity for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as we considered necessary in the circumstances.

As is usual in organizations of this kind, it was not possible to completely verify the revenue from all sources and therefore the statements show the recorded revenue.

These financial statements do not include the accounts of the Entomological Society of Canada Scholarship Fund.

In our opinion, subject to the foregoing, these financial statements present fairly the financial position of the Society as at December 31, 1977 and the results of its operations for the year then ended in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

G. A. Willett & Company.
CHARTERED ACCOUNTANTS.

Ottawa, Ontario
May 15, 1978.



M. René Martineau recevant son parchemin de Compagnon de la Société Entomologique du Canada des mains du secrétaire, G.H. Gerber (à droite) et sous le regard satisfait du président sortant, W.G. Wellington, lors du banquet à Ottawa le 22 août 1978.

SPEAKING OF YOUTH

Teen International Entomology Group (TIEG) produces an excellent publication of entomological orientation. The Entomological Society of Canada aids in supporting this magazine. At present, there are only 26 subscribers in Canada.

Anyone wishing copies should write:

TIEG Office
Department of Entomology
Michigan State University
East Lansing, Michigan 48824
U.S.A.

A yearly subscription costs:
\$2.00 adults
\$1.00 students and teens.

(see also page 75)

BIOLOGICAL SURVEY OF THE INSECTS OF CANADA

Completion of Pilot Study

The Final Report of the Pilot Study was submitted on June 30. The manuscript for *Canada and Its Insect Fauna* has been completed and accepted for publication. The volume is presently on schedule to appear in March 1979.

Contract Proposal (Northern review)

The Society's unsolicited proposal for a "Review and synthesis of knowledge on northern and arctic insects" (see *Bull. ent. Soc. Can.* 10 (2) : 43) has been accepted in principle with general support from a variety of interested government departments, and it is hoped that a contract, to run until 1980, will have been signed by the time this issue of the *Bulletin* appears. This will permit the Society to continue its active concern in understanding the Canadian insect fauna, until the Final Report of the Pilot Study has been evaluated.

General activities of the Biological Survey Project

The Pilot Study's initiatives for co-operative work are continuing through the interest of participating individuals. The regional projects in Newfoundland and British Columbia are being extended through work conducted this year. Plans are also being made for the development of projects in the Yukon Territory in 1979. Anyone with interests in these or other potential co-operative projects is urged to contact the Biological Survey office.

Part of the Annual Meeting of the Society will have been devoted to Biological Survey-related ideas. In addition to a display and a one-hour plenary session on the Biological Survey Project itself, there is a major symposium on "Temporal and spatial changes in the Canadian insect fauna", directly relevant to the objectives of the project. Indeed, the development of this symposium was stimulated in large part by the existence of the Pilot Study.

Continuing Biological Survey of the Insects of Canada

The Final Report of the Pilot Study is presently being evaluated by the government of Canada. A summary of this report (below) indicates key findings and recommendations, and briefly reiterates the background to the Biological Survey idea.

Introduction

In 1977 a contract was signed between the Entomological Society of Canada and Supply and Services Canada for a *Pilot Study for a Biological Survey of the Insects of Canada*. This undertaking established a small Secretariat and an advisory Scientific Committee to determine the resources for insect identification and biology in Canada; to assess the present state of knowledge of the insect fauna and the requirements for the future; and to test the feasibility of co-operation among entomologists in such a Biological Survey. From this basis, the Pilot Study was to recommend the form that a continuing Biological Survey of the Insects of Canada should take. It was also asked to assess for a continuing Biological Survey the possibility of including all animals and plants, the potential role of National Parks of Canada as survey sites, and existing data systems for handling biological information.

The report documents the work of that Pilot Study and presents its recommendations.

A Biological Survey of the Insects of Canada

In 1974, the Entomological Society of Canada pointed out that although the diverse insect fauna of Canada was of considerable importance in a great variety of ways, it was very poorly known. The Society published a Brief¹ calling for a Biological Survey in order to

¹*Bull. ent. Soc. Can.* 6(2), 16 pp.

develop a knowledge of the insect fauna commensurate with the needs of the day. These needs related not only to insects of agricultural forestry and medical significance, but also to the more diffuse requirements of environmental concerns and the management of complex living natural resources.

Discussion of the 1974 Brief and widespread support by individuals, societies, government agencies and universities, led in 1976 to the submission to Supply and Services Canada of an unsolicited proposal for a Pilot Study for a Biological Survey of the Insects of Canada. The need was seen for an organisation that would act as a clearing house for information and as a focus for discussion of scientific needs. This focus would permit a coherent pursuit of knowledge and understanding of the fauna that would profit a great diversity of separate interests.

The Pilot Study was established for the period January 1, 1977, until June 30, 1978, and has successfully fulfilled the requirements of the contract as set out below.

Achievements of the Pilot Study

The *assessment of the state of knowledge* has been focussed into the manuscript of a publication "Canada and Its Insect Fauna" (now in press), that will provide the major scientific basis from which a continuing survey can be given direction. This wide ranging synthesis by 59 contributing authors considers the physical environment and its history, the habitats and geographic ranges that have resulted, the state of knowledge of each order of insects, and general problems of the nature of the fauna in relation to Canadian conditions. Mirrored there are important national needs in entomology identified by the Biological Survey.

The assessment shows that only about half of an estimated 66,000 species of insects and related groups have even been described, and environmental relationships are known for very few of these. Large and ecologically important groups such as soil forms and parasites are especially poorly known. The early stages of Canadian species — usually the major feeding stages — have been described for only about 8% of the fauna. The fauna of many areas has been little explored, especially in the northwest, despite recently accelerating exploitation of northern resources.

Many individuals and agencies canvassed during the Pilot Study therefore urged increased support of studies in insect identification and biology, especially for the production of guides for species identification.

The *assessment of resources* has included the publication of an "Annotated list of workers on systematics and faunistics . . .", published in January, 1978, and a list of "Collections of Canadian Insects . . .", published in March 1978. Extensive summaries of various facilities for systematic and faunistic work have been completed.

Organisations that use entomological information (e.g. consulting firms conducting environmental studies) lack expertise and manpower in systematics for identification of the organisms collected. There are over 300 Canadian entomologists interested in systematics and faunistics, but many of these work in other fields of endeavour. They are scattered across the country in about 100 establishments. There is a similar number of collections of preserved material: many are valuable national or regional resources, yet some of these are inadequately maintained.

The Pilot Study was also asked to test the *feasibility of co-operative efforts* in support of a biological survey. Co-operation for preparation of "Canada and Its Insect Fauna" was outstandingly successful, and in addition several types of voluntary co-operation in the field were initiated by the Pilot Study. Preserved material and information were exchanged, enhancing the efficiency of use of existing resources. Three regional projects, founded from a national perspective but exploring elements of the faunas of Newfoundland and British Columbia, were also established, and are proving to be especially fruitful. These co-operative efforts are continuing.

The *proposed permanent organisation* takes the form of a small full-time Secretariat, and a larger nationally representative deliberative body of entomologists, the Scientific Committee. This organisational concept makes available a wide range of disciplinary expertise, interests and affiliations at very low cost, to allow new scientific approaches and practical needs to be monitored from a national perspective and accessed in an orderly way. The successful testing of such a co-ordinating centre, indeed, is one of the major achievements of the Pilot Pilot. Such a small but discrete organisation is needed because the existing agencies that carry out entomological work are numerous and scattered.

The National Museum of Natural Sciences, which is charged with the acquisition and dissemination of knowledge on the fauna and flora of the country, is the logical permanent location for such a broadly based enterprise. The Biological Survey of the Insects of Canada would be a central resource for the use of all interested individuals, operational agencies and universities. It is recommended that this organisation within the National Museum of Natural Sciences be supported from an additional allotment of funds to the budget of the Museum, "Biological Survey of Canada".

The development of an *all-inclusive Biological Survey of Canada* is envisaged by the eventual addition of similar modules for other groups of organisms; it is not proposed that the scope of the Biological Survey of the Insects of Canada itself be broadened, but rather that it be used to develop and test a concept that can then be applied to other groups. Such use of the Biological Survey of the Insects of Canada as a model, in which a scientific society assumes a larger and continuing responsibility for the planning and fulfilment of nationally important goals within its discipline, has not only attracted the support of other biologists (e.g. Biological Council of Canada), but is consistent with recent goals of government planning for science (Science Council of Canada, Ministry of State for Science and Technology).

As its *major role*, the Biological Survey organisation would guide biological survey efforts through discussion and examination of knowledge and resources, and by acting as a centre for information on resources and current operations. This would include guiding the development of field operations, and the publication of up-to-date lists of personnel and other resources as carried out during the Pilot Study. The organisation would rely on established channels for the main publication of systematic and faunistic work, but the Survey would help to focus necessary work by preparing bibliographies of definitive literature, and arranging for reviews or symposia in areas of priority. These roles, and resultant co-operative endeavours, would also foster the preparation of works on the fauna.

A major benefit of the proposed survey organisation is that it could act in an advisory capacity to assist the fulfilment of specific entomological needs of any government department if asked to do so. For instance, it could make available information on faunal resources of an area, and on design of sampling programs, as well as on national needs. Establishment of avenues of communication with appropriate government agencies is proposed for this purpose. Lest existing agencies are unable to effect some of the projects identified by the survey as of national importance, modest funds should be available for disbursement on the advice of the survey to support the necessary projects.

Recommendations are also made on the more effective use of existing and prospective *entomological manpower*, including the establishment of liaisons with government agencies, such as Ministry of State for Science and Technology, concerned with planning for national manpower needs.

The Pilot Study revealed a key need for the support of strong regional resources, and especially of *regional collections*, in addition to a strong national collection. It is recommended that continued federal support for regional collections be established, since local changes in personnel and priorities have often led to the neglect of valuable material. It is further proposed that some funds earmarked for support of regional collections be assigned on the basis of advice of the Biological Survey of the Insects of Canada, with its awareness of national areas of need.

As called for by the contract, preliminary recommendations are given on available *data systems* for handling the sort of biological information to be collected by a Biological Survey of the Insects of Canada. An automated (computer) system is necessary for organising and disseminating biological survey data. An evaluation made by the Pilot Study shows that most of the existing systems are basically capable of handling the required types of scientific data, so that various practical considerations (e.g. cost, location), influence choice of a system. The cost implications of developing a system are so great that a relatively expensive developmental phase (far beyond the scope of the Pilot Study) is necessary before any single system can be recommended for adoption.

Advice on the feasibility and desirability of using *National Parks of Canada* as potential survey sites was called for. The Pilot Study found that most of the important insect zones and habitats of Canada were represented in the National Parks. Moreover, because the Parks represent a unique and permanently protected national resource of species and eco-systems (the living equivalent of reference material preserved in museums), they offer study sites of unique value in any continuing Biological Survey of the Insects of Canada. Long-term research on their insect faunas is therefore recommended. To this end, establishment of "study centres" associated with selected Parks is also recommended, whereby outside expertise could be more readily enlisted to collect basic information about the Parks to assist especially both Park management and public education.

In summary, therefore, the Pilot Study has developed a detailed basis for the establishment of a Biological Survey of the Insects of Canada. This would be an important step forward in the national scientific effort, both in its own right and as a model for broader purposes.

H.V. Danks
Biological Survey Project
Entomological Society of Canada
202 — 1316 Carling Avenue
Ottawa, Ontario
K1Z 7L1

A CANADIAN INSTITUTE OF BIOLOGY

Just over a year ago, in April, 1977, the Biological Council of Canada ratified a Prospectus for a Canadian Institute of Biology and authorized the Executive to take the appropriate steps in presenting the proposal to the biological community of Canada.

The proposal was jointly supported by the B.C.C./C.C.B. and the Canadian Committee of University Biology Chairmen (C.C.U.B.C./C.U.D.B.C.). The unique features of such an Institute were that it would be based on individual membership and, secondly, had as its goal the legal recognition of biology as a profession in all of the provinces of Canada.

Five thousand, five hundred copies of the Prospectus were printed and distributed as follows:

1. Based on the membership figure submitted to the B.C.C., the secretary of each of the member societies of the B.C.C. received sufficient copies to include one for each member in the next society mailing. The Canadian Society of Cell Biology also distributed copies to its members.
2. The chairmen of all biology departments affiliated through C.C.U.B.C. similarly received sufficient copies to distribute to all faculty members and to the Graduate Union.

3. The Canadian Federation of Biological Societies received copies for all their directors.

The proposed Institute was specifically discussed at all of the 1977 A.G.M.'s of the member societies of the B.C.C./C.C.B. In addition, a number of societies arranged to have a forum discussion on the concept of an Institute as part of the programme for their annual meeting. Similarly, a number of Biology Departments invited members of the B.C.C./C.C.U.B.C. executives to visit and speak on the Institute.

The Prospectus, in inviting potential members to register, clearly indicated that if, by December 31st, 1977, less than 500 applications had been received, the B.C.C. and C.C.U.B.C. would discontinue their sponsorship of the Institute and all monies collected would be returned.

On December 31st, 1977, one hundred and thirty-three (133) registrations had been received. In agreement with the Prospectus, registration fees for those applicants have been returned in full.

The purpose of this memorandum is to place on record the efforts of the two sponsoring organizations to promote the proposed Institute. Secondly, to inform the biological community of Canada of the outcome of the proposal and, thirdly, to make it clear to everyone that neither the B.C.C. nor the C.C.U.B.C. is continuing their sponsorship of the proposal and are taking no further steps to develop a professional organization for Canadian biologists.

D.F. Mettrick, President, B.C.C./C.C.B
K.G. Davey, Chairman (1977), C.C.U.B.C./C.U.D.B.C.

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE ANNOUNCEMENT

The 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.* 35, part 1, 31 July, 1978).

- 680 *Blatta germanica* Linnaeus, 1767 (Insecta, Dictyoptera, Blattodea): proposal to conserve and to designate it as type-species of *Blattella* Caudell, 1903.
- 2143 Proposal to conserve the specific name *tenebricola*, as published in *Linyphia* by Wider, 1834, but in the sense of Kulczynski, 1887 (Arachnida).
- 2213 HESPERIIDAE Latreille, 1809 (Insecta, Lepidoptera): request for addition to the Official List.

Comments should be sent in duplicate (if possible within six months of the date of publication of this notice in *Bull. Zool. Nom.* 35, part 1), citing case number to:

R. V. Melville,
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*.

The Bugged Page

THE FUTURE OF THIS PAGE

The Public Education Committee would like to make this page available to all entomologists both amateur and professional. Let it be a platform for your opinions. Do you have nagging questions you would like answers to? Write out the questions along with your name and address. Are you in need of distribution records? Specimens? Have you entomological books for sale? Let us know and we will make sure it gets on this page.

Write to:

The Educational Committee
E.S.C.
c/o Dr. G.A. Surgeoner
Department of Environmental Biology
University of Guelph
Guelph, Ontario
N1G 2W1.

REQUEST FOR INFORMATION

I am interested in obtaining information concerning the biology of *Calosoma* spp. (Coleoptera: Carabidae) (Caterpillar-hunters), in particular *C. frigidum* Kirby. Observations concerning breeding periods and habits, habitat and range, exceptional as well as average population levels, and prey species, would be appreciated, in order to determine the extent of influxes observed in central and southern Ontario. Data for other regions would also be useful.

Please send observations to:

William J. Crins
1336 Bunnell Drive
Burlington, Ontario
L7P 2E1

A SPECIAL ADDITION OF THE ONTARIO NATURALISTS

Recently the Ontario Naturalist produced a special addition entitled, "All About Insects." This is an excellent volume filled with many colour prints and is recommended for all entomologists both professional and amateur.

Copies may be obtained by writing to:

The Ontario Naturalist
1262 Don Mills Road
Don Mills, Ontario
M3B 2W8

Requests should state Vol. 18, No. 1.
Price \$2.00.

CAREERS IN ENTOMOLOGY

Think back to your old high school guidance teacher. I will always remember his face when I told him I wanted to be an entomologist. A what! The Public Education Committee of the Entomological Society of Canada has recently completed a pamphlet entitled, "Careers in Entomology." These are free on request from the regional societies or from the E.S.C. I am personally sending one to my old high school. I would suggest that we should all do the same. Keep a few copies on hand for inquiring youngsters.

THE UNITED NATIONS CONFERENCE

ON

SCIENCE & TECHNOLOGY FOR DEVELOPMENT (UNCSTED)

As one major initiative towards the establishment of a New International Economic Order, the United Nations has decided to arrange for a World Conference on Science & Technology for Development to be held in 1979. The goal of the conference will be to identify effective ways and means by which developing countries can enhance their capacity to apply science and technology to the solution of their perceived socio-economic problems. The main objectives of UNCSTED as stated in the Un Resolution are:

- a) To adopt concrete decisions on ways and means of applying science and technology in establishing a new international economic order, as a strategy aimed at economic social development within a time frame;
- b) To strengthen the technological capacity of developing countries so as to enable them to apply science and technology to their own development;
- c) To adopt effective means for the utilization of scientific and technological potentials in the solution of problems of development of national, regional and global significance, especially for the benefit of developing countries;
- d) To provide instruments of co-operation to developing countries in the utilization of science and technology for solving socio-economic problems that cannot be solved by individual action, in accordance with national priorities.

Up to five subjects areas are to be selected to provide a common focus. While the final decision on these has not yet been made, the areas favoured by Canada are:

1. *Food* (production, transportation, storage, distribution)
2. *Energy* (emphasis on renewable resources)
3. *Natural Resources* (finding, exploitation and development of mineral and fibre resources)
4. *Industrialization* (with emphasis on manufacturing industry)
5. *Tropical Diseases* (medicine)

The conference itself will be intergovernmental but every attempt will be made to obtain contributions from the non-governmental sector. SCITEC, in conjunction with the Royal Society of Canada and in co-operation with other scientific and engineering societies has been asked to:

- a) inform members of the scientific and technological community of Canada about the establishment, organization and functions of UNCSTED;
- b) to keep the Ministry of Science and Technology, on behalf of the Government of Canada, reliably informed on a current basis of the reaction to, and interest in UNCSTED by members of the scientific and technological community of Canada;
- c) to respond to requests for information from members of the scientific and technological community of Canada about UNCSTED; and
- d) to co-ordinate and focus the reaction to, and interest in UNCSTED by members of the scientific and technological community of Canada, including the reactions to, and interest in initiatives taken by governments or the secretariat of UNCSTED.

To this end, SCITEC will provide the engineering and scientific community with additional information as it becomes available over the next few months. In the meantime, briefs or case-studies are invited from individuals, institutions and societies which will provide concrete suggestions, based on experience, concerning the mechanisms and structures by which developing countries can apply science and technology in ways which are seen as desirable by these countries in solving their socio-economic problems.

These briefs or "case-studies" should be sent to the SCITEC office not later than December 1, 1978. A list of additional information sources is also available from SCITEC. Members of the scientific and engineering community wishing to obtain more information regarding UNCTAD are invited to contact the SCITEC office, 202 — 151 Slater Street, Ottawa, Ontario K1P 5H3.

LA CONFERENCE DES NATIONS UNIES

SUR

LA SCIENCE ET LA TECHNIQUE AU SERVICE DU DEVELOPPEMENT

Les Nations Unies ont décidé de préparer une Conférence mondiale sur la science et la technique au service du développement qui se tiendra en 1979; cette importante initiative vise à établir un nouvel ordre économique international. Les objectifs de cette Conférence consistent à trouver des voies et des moyens pour que les pays en développement puissent faire servir davantage la science et la technique à solutionner leurs problèmes socio-économiques. Les principaux objectifs de la Conférence, selon la résolution des Nations Unies, seront:

- "a) d'adopter des décisions concrètes concernant les voies et les moyens d'utiliser la science et la technologie pour établir un nouvel ordre économique international qui, à l'instar d'une stratégie, poursuit le développement économique et social en un délai prévu;
- b) de renforcer la capacité technologique des pays en développement, pour leur permettre d'appliquer la science et la technologie à leur propre développement;
- c) d'adopter des moyens efficaces pour utiliser le potentiel scientifique et technologique en vue de résoudre les problèmes dus au développement sur le plan national, régional et mondial, favorisant surtout les pays en développement;
- d) de fournir aux pays en développement des moyens de coopération qui leur permettent d'utiliser la science et la technologie pour résoudre, conformément aux priorités nationales, les problèmes socio-économiques qu'une action individuelle ne saurait solutionner."

Nous choisirons jusqu'à cinq domaines qui seront soumis à une étude commune. Bien que le choix de ces domaines ne soit pas encore définitif, voici ceux que le Canada préfère:

1. *l'alimentation* (production, transport, entreposage, distribution);
2. *l'énergie* (surtout les ressources renouvelables);
3. *les ressources naturelles* (découverte, exploitation et mise en valeur des ressources minérales et de celles des fibres);
4. *l'industrialisation* (surtout l'industrie manufacturière);
5. *les maladies exotiques* (médecine).

La Conférence elle-même sera intergouvernementale, mais nous mettrons tout en oeuvre pour obtenir la collaboration du secteur non gouvernemental. SCITEC, conjointement avec la Société Royale de Canada et en coopération avec d'autres sociétés scientifiques et techniques, a été priée:

- a) d'informer les membres de la communauté scientifiques et technologique du Canada sur l'établissement, l'organisation et les fonctions de ladite Conférence;
- b) de tenir, au nom du Gouvernement du Canada, le Ministère d'Etat aux sciences et à la technologie régulièrement au courant des réactions et de l'intérêt que manifestent les scientifiques et les technologues canadiens concernant la Conférence;
- c) de répondre aux demandes de renseignements que les scientifiques et les technologues canadiens formulent sur ladite Conférences; et
- d) de coordonner et de concentrer les réactions et l'intérêt des scientifiques et des technologues canadiens touchant la Conférence, y compris les réactions et l'intérêt relatifs aux initiatives des gouvernements ou du secrétariat de la Conférence.

A cette fin, SCITEC communiquera aux ingénieurs et aux scientifiques les renseignements aussitôt que ceux-ci lui parviendront au cours des prochains mois. En attendant, elle invite les individus, les institutions et les sociétés à lui présenter des mémoires ou des études de cas et à lui fournir des suggestions concrètes fondées sur l'expérience, sur les mécanismes et les structures que permettront aux pays en développement de faire servir la science et la technologie à solutionner les problèmes socio-économiques de ces pays, comme ils le désirent.

SCITEC devrait recevoir ces mémoires ou ces études de cas, au plus tard le premier décembre 1978. SCITEC peut également fournir une liste d'autres sources d'information. Les scientifiques et les technologues qui désirent se renseigner sur ladite Conférence, doivent s'adresser au secrétariat de SCITEC par téléphone: (613) 232-0240; ou par écrit: 151 rue Slater, suite 202, Ottawa (Ontario), K1P 5H3.

* * * * *

ADDENDA

TO

Collections of Canadian Insects and Certain Related Groups 1978

(Insert in *Bulletin*, Vol 10, No. 1 March 1978)

add to page 3:

BRITISH COLUMBIA Burnaby

16a Dept. of Biol. Sci., Simon Fraser U.; S.A. Halford (Museum Technician); Burnaby V5A 1S6; 11,000 Insecta, mostly B.C.; space and equipment limited.

add to Tables (p. 12; pp. 14-15), under 16a:

Early stages: Col., Dipt., Lep. (all less than 100) Adults (thousands): Col. (2.8), Dipt. (3), Hem. (.8), Hom. (.7) Hym. (2), Lep. (.7), Neur. (.1), Odon. (.1), Orth. (.2); Colem., Ephem., Plec., Siphon., Thysan. (all less than 100).

BOOKS RECEIVED

Hardin, G. and C. Bajema. 1978. *Biology, its principles and implications*. Freeman, San Francisco. 790 pp. \$U.S. 16.00.

Traugott-Olsen, E. and E. Schmidt Nielsen. 1977. *The Elachistidae (Lepidoptera) of Fennoscandia and Denmark*. *Fauna Entomologica Scandinavica* Vol. 6, 299 pp. Scandinavian Science Press, Klampenborg, Denmark. D.kr. 160.00.

Labeyrie, V. (Editor). 1977. *Comportement des insectes et milieu trophique*. Actes du Colloque International No. 265, Tours, septembre 1976. Centre National de la Recherche Scientifique, Paris. 493 pp.

Centre for Overseas Pest Research. 1977. *Annual Report 1976*. Ministry of Overseas Development, London. £3.00. 149 pp.

Burton, J.J.S. 1978. *Tabanini of Thailand above the Isthmus of Kra (Diptera: Tabanidae)*. Entomological Reprint Specialists, Los Angeles. 165 pp. \$15.00.

Freifelder, D. (Editor). 1978. *Recombinant DNA. Readings from Scientific American*. W.H. Freeman, San Francisco. 160 pp. \$U.S. 12.00 (cloth), \$U.S. 6.50 (paper).

BOOK NOTICES

Martin, J.E.H. *The Insects and Arachnids of Canada, Part 1. Collecting, Preparing and Preserving Insects, Mites, and Spiders*. Agriculture Canada, Ottawa. 182 pp. \$3.50.

Publication of this handbook was preceded by Bright's Bark Beetles of Canada and Alaska (*ESC Bulletin* 9 (1)), but this is the logical first volume in Agriculture Canada's series, *The Insects and Arachnids of Canada*. It replaces Bryan Beirne's *Collecting, Preparing and Preserving Insects* which was published in 1955, and it has essentially the same Table of Contents, but it has been extended to include more information on the Arachnids, updated (most of the references are post-1955) and includes more diagrams.

The book is intended to acquaint amateur entomologists with the basic methods of obtaining arthropod material and preparing a collection, and to serve as a guide to both amateur and professional entomologists on how to prepare material for submission to the Identification Service of the B.R.I. It may be obtained by mail from Printing and Publishing, Supply and Services Canada, Hull, Quebec K1A 0S9, as presumably may all future parts in the series.

Protection Ecology. Vol. 1 No. 1. May 1978. Elsevier Scientific Publishing Company, Amsterdam. U.S. \$62.25 per year.

The first issue of "An International Journal devoted to the study and management of noxious organisms in plant and animal industries" contains an editorial entitled "Protection ecology" by the Editor-in-Chief (P.W. Geier) and five scientific papers, four of which concern arthropods and the other deals with *Phytophthora*. This issue also includes four Book Reviews, a list of New Books, and a Guide for Authors. The editorial policy is contained in the editorial and free sample copies of the journal are available from the publishers.

BOOK REVIEWS

MATSUDA, R. 1977. The Aradidae of Canada. Hemiptera: Aradidae. *In* The Insects and Arachnids of Canada. Part 3. Biosystematics Research Institute, Ottawa, Ontario. Publication 1634: 1-116. Printing and Publishing, Supply and Services Canada, Ottawa, Canada K1A 0S9. Price: in Canada, \$4.00; in other countries, \$4.80.

KELTON, L.A. 1978. The Anthocoridae of Canada and Alaska. Heteroptera: Anthocoridae. *In* The Insects and Arachnids of Canada. Part 4. Biosystematics Research Institute, Ottawa, Ontario. Publication 1639: 1-101. Printing and Publishing, Supply and Services Canada, Ottawa, Canada K1A 0S9. Price: in Canada, \$4.00; in other countries, \$4.80.

These two publications, being Parts 3 and 4 of the Insects and Arachnids of Canada, follow the general format established in Part 2 by D.E. Bright on the Scolytidae (see review, *Bull. Ent. Soc. Can.* 9: 43-45, 1977). In the Aradidae handbook, Matsuda has sections on structure and terminology, methods, keys to subfamilies and genera, then brief descriptions of species, ending with a glossary. In the Anthocoridae handbook on the other hand, Kelton's sequence is collecting and preserving specimens, classification, morphology, definitions of morphological terms, keys to subfamilies and genera, and then descriptions of species. Kelton has a list of scientific and common names of plants, but although Matsuda associates 27 species of aradids with plants, no similar list is appended. Further, while Matsuda characterizes the subfamilies and genera in the key only, synoptic descriptions of higher taxa are provided in addition by Kelton.

While these two new publications are the first of hopefully many in the series of Hemiptera, it is unfortunate that they are of unequal quality. While the size of type in the keys has been enlarged in Parts 3 and 4, it is evident that there is a lack of editorial consistency in the series. An obvious sign of this is the lack of an index in Part 3. Further, while the Introduction is placed before the Acknowledgements in Part 3, the reverse occurs in Part 4. The size of type and use of type face is not consistent: the type in the species headings differs in the two parts. Bold face is used in the section headings in the species descriptions in Part 4, but not in Part 3. Colons are used after such headings in the latter, but not in the former. Even the mode of reference to figures and the description reference citation under each species is not consistent. In the key to the aradid species, page references are given, but this does not occur in the anthocorid keys.

Part 3 on the Aradidae appears to have been put together rather hurriedly and lacks the thoroughness one expects in a publication of this type. It is not clear why this part did not treat all of the Aradoidea of Canada. Why was the Meziridae, with the single species *Mezira pacifica* Usinger, not included? The genus *Mezira* was included in the Monograph of the Aradidae published by Usinger and Matsuda in 1959. One wonders where *M. pacifica* will be treated in The Insecta and Arachnids of Canada. Certainly a single species cannot warrant a further handbook; the Meziridae belong with the Aradidae in the Aradoidea.

While 47 species of Aradids are considered in Part 3, according to Matsuda six of these have not yet been recorded in Canada, although they are in the adjacent states of the U.S.A. One assumes that they are included because they might be expected to occur in Canada, but this is not explicitly stated. Indeed, it would appear that two of them at least are recorded from Canada already: Matsuda has either missed the records, or if they are known and are incorrect, this is not discussed in the text.

While *Aradus acutus* (Say) is widely distributed in the U.S.A., Matsuda gives no Canadian records, although Brown (1929, *Ann. Rept. Ent. Soc. Ont.*: 60: 146-157) reports the species from Manitoba (Awame). Likewise, *A. basalis* Parshley is said to occur in New Hampshire and Maine only, yet Brown (*loc. cit.*) lists the species from New Brunswick (Bathurst).

In addition to the above omissions, there are a number of published provincial records that are not incorporated by Matsuda. These include:

A. abbas Bergr. — N.B., St. John and N.S., Kentville (Brown, *loc. cit.*).

A. parshleyi V-D. — Alta, Edmonton (Brown, *loc. cit.*; Strickland, 1953, *Can. Ent.* 85: 193-214).

A. persimilis V-D. — Newfoundland, Gander (although determination preliminary (Lindberg, 1958, *Acta Zool. Fennica* 96: 1-25).

A. robustus Uhler — N.W.T. (Parshley, 1921, *Trans. Am. Entomol. Soc.* 47: 1-106; Brown, *loc. cit.*).

A. shermani Heid. Quebec (Moore, 1950, *Contr. Inst. Biol. Univ. Montreal* 26: 1-49).

A. uniannulatus Parsh. Quebec, Joliette and Montreal (Moore, *loc. cit.*).

It is not clear whether these determinations have been found to be incorrect, or if the published records have been overlooked by the author. It may be that the brevity required in these handbooks precludes a discussion of these records, but the reviewer feels this is an important omission if so.

While the Aradidae part was in press, a revision of the North American *Aneurus* was published by Picci (1977, *Quaest. Ent.* 13: 255-308). Picci has made a number of changes which are new and not included in Part 3. The treatment of *Aneurus inconstans* Uhler is satisfactory, but there is a record now also for Alberta.

According to Picci (*loc. cit.*), *Aneurus septentrionalis* must be changed. Brown (*loc. cit.*) listed two species of *Aneurus* from Canada, in addition to *A. inconstans*. These were *A. septentrionalis* Walker from N.S., Que., Ont., Alta. and B.C., and *A. simplex* Uhler from B.C. Matsuda does not mention *A. simplex* but lists *A. septentrionalis* from the same provinces as Brown (*loc. cit.*). Picci has now synonymized *A. septentrionalis* under *A. simplex* and records the species from the Yukon, N.W.T., B.C., Alta., Man., Ont. and Alaska. Further, she has described the new species *A. borealis* from Alaska, Yukon, B.C., Sask., Ont. and Quebec. This section of the handbook is therefore in need of modification.

A check of the key for *Aradus* against available material indicates that despite the frequent use of relative lengths of antennal segments, it works reasonably well. The first part of couplet 16 should obviously read "Median process of head robust and extending slightly beyond middle of 2nd antennal segment.", while the supplementary statement in the second part of couplet 29 is somewhat confusing and can cause trouble.

The line drawings in Part 3 are simple and adequate, but the habitus photographs leave much to be desired. That of the male *A. debilis* (Plate 12c) is particularly bad. Ink illustrations would have been much better for all of the aradids.

Part 4 on the Anthocoridae by Kelton, is much more satisfactory, and is of a high standard. The keys work well and are fairly easy to use. The illustrations are good and clear. Even the scanning electron microscope photographs, although of varying quality, are a useful inclusion in the publication.

One notes a fair amount of space wasted in the publication, for example at the bottom of pages 33, 39 and 49. If such space could have been distributed through the text, it might have allowed the author to indicate exactly which records are new in the literature. As it is, these publications do not indicate the original data.

While some attempt has been made to include material available from certain Museums across Canada, it seems that this was not exhaustive. Kelton in particular says that most of the material for his work was personally collected. The distribution data could have been more complete if all of the available material in Canada was examined. The collections have recently been listed by the Pilot Study for a Biological Survey of the Insects of Canada (see *Bull. Ent. Soc. Can.* 10(1), March, 1978), so they need not be excluded in the future.

The maps in Part 4 have been reduced too much. The cropping and reduction in Part 3 is better. In Part 4, one may note that the antenna of *Acompocoris lepidus* is off the top of page 90. This is not a good arrangement. Further, while it is stated that drawings have been done at various magnifications, no scale lines are actually given. It is evident that all adult drawings are to the same scale and are reproduced about 20x natural size. It would have been useful to so state.

While Kelton states clearly that he is following the classification, and presumably the order proposed by Carayon for the Anthocoridae, Matsuda gives no explanation for the order he uses for the Aradidae. When the treatment is not alphabetical, some explanation is warranted.

The index in Part 4 is good in that it lists genera, species and the synonyms are given in italics. Synonyms are not easily traced in Part 3, and the lack of an index will seriously hinder the use of this latter part.

One hopes that future parts of this important series of publications will establish a clear format to be followed by all authors. There is a need for consistency and continuity. One hopes that no more will appear without an adequate index.

G.G.E. Scudder



Treherne, J.E., M.J. Berridge, and V.B. Wigglesworth. 1978. *Advances in Insect Physiology*. Volume 13. Academic Press, London. 376 pp. £18.00.

This 13th volume of *Advances in Insect Physiology* contains five articles by authors from Canada, Russia, U.S.A., and West Germany. The articles are "Long-Chain Methyl-Branched Hydrocarbons: Occurrence, Biosynthesis, and Function" (D.R. Nelson), "Insect Visual Pigments" (R.H. White), "Structure and Function of Insect Peptides" (R.P. Bodnaryk), "Insect Flight Metabolism" (A.E. Kammer and B. Heinrich), and "Neuroethology of Acoustic Communication" (N. Elsner and A.V. Popov). This volume is attractively produced and continues the high standards, both of style and content, set by previous volumes.





The 1978-1979 Board. From left to right: J.E. Laing (New Secretary), G.H. Gerber (Outgoing Secretary), W.C. Turnock (1st Vice-President), F.L. McEwen (President), E.C. Becker (Treasurer), H. Madsen, J.M. McNeil, W.G. Wellington (Past-President), D.C. Herne, R.F. De Boo, J.D. Shorthouse, P.W. Riegert, D.C. Eidt, (Scientific Editor), J.C. Arrand, B.J.R. Philogène (Bulletin Editor), Absent: S.R. Loschlavo (2nd Vice-President), G.E. Ball, R.H. Burrage, A. MacPhee, R.A. Ellis, J.A. Shemanchuk.

POSITION WANTED

CROP PROTECTION SPECIALIST. Born 1946. Entomology Ph.D. U.S.A. 1973. Ten years of extensive field experience in crop protection entomology. 1967-69: research and development with an international pesticide organization in Asia. 1969-70: biology and control, and plant resistance of sorghum insects with the Rockefeller Foundation in Asia. 1970-75: tobacco insect research in a university in North America. 1975-77: entomologist with an international agricultural research institute in humid tropics of West Africa. March-June 1978: entomologist (consultant) in a USAID food crops research project in East Africa. Extensively travelled to Anglophone and Francophone countries of West Africa. Some working knowledge of French. Available at short notice. Seeking suitable position preferable in Canada but willing to accept any international short or long term assignment with willingness to travel extensively anywhere. Contact Entomologist 102-245 Westwood Road, Guelph, Ont. N1H 7H5. Phone (519) 836-8145.

The **Third International Conference on Ephemeroptera**, sponsored by the Freshwater Institute, the University of Manitoba and the International Union of Biological Sciences will be held in Winnipeg, Manitoba from July 4-10, 1979. The Conference is open to persons interested in any aspect of Mayfly biology and will consist of invited papers, submitted papers, local collecting trips etc. Two collecting and sightseeing tours are associated with the Conference: A preconference tour to Southern Ontario (June 28 — July 4, 1979) and a postconference tour to Saskatchewan and Alberta (July 10-17).

Persons interested in receiving further information on this conference should contact:

John F. Flannagan, convenor
3rd International Conference on Ephemeroptera
Freshwater Institute
Fisheries and Marine Service
501 University Crescent
Winnipeg, Manitoba
Canada R3T 2N6

PERSONALIA

Dr. Geddes Simpson, editor of the *American Potato Journal* and professor-emeritus of entomology at the University of Maine at Orono, has received the Distinguished Member Award of the national honor society of Phi Kappa Phi. The award is the highest granted by the society and is reserved for members who in their life and career achievements best exemplify the society's ideals. In 1975 he was the university's first recipient of the Presidential Research Award.