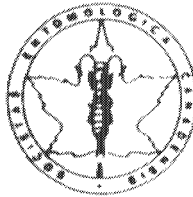




ENTOMOLOGICAL SOCIETY OF CANADA

Bulletin



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LETTER TO THE EDITOR

Dear Dr. Aiken:

I have appreciated very much your Editorial in the Bulletin of the Entomological Society of Canada 18(1).

Some time ago I imagined an "International Society" to protect the authors of scientific papers against the vandalism of the Editors and Reviewers. At that time I sent the "Catalogue of Australian and Oceanic Sarcophagidae" (Diptera) to be edited by a "Computer Programme". The reviewer cut a lot of important information like revision of old species and indications of important figures. When I informed him that, under those conditions, the catalogue became useless, he let me know that the limited amount of money was responsible for the cuts. I concluded that the time spent on the catalogue was lost and nobody paid for it.

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PRESIDENT'S REPORT FOR 1986

It is my pleasure to report to the membership on behalf of the Governing Board on the 36th year of operation of the Entomological Society of Canada. As in preceding years the Society has been active in a number of pursuits some of which have been completed, some are progressing well and others are proceeding but with sometimes agonizing slowness.

We have been and currently are in an atmosphere of fiscal restraint and universities, governmental agencies and commercial concerns are engaged in a continuing battle for funds to stay alive let alone the establishment of new developments. However, entomologists along with other scientists realize the importance of being heard and although many of our efforts do not seem to bear fruit in the short term, we will not be ignored in the long term.

I would like to emphasize the importance of keeping science in front of the Public. It sometimes seems that the media is only interested in publicizing controversial issues such as pesticide misuse, environmental contamination and public health concerns. However, there are positive things as well, a good example is the insect exhibit at Sudbury's Science North which was under the direction of Joe Shorthouse and partially funded by our Society. I hope we can continue to support such public oriented projects with our expertise and our finances if possible.

One year ago, President Susan McIver pleaded for teamwork among professional societies urging us to support organizations such as the Biological Council of Canada and the Association for the Advancement of Science in Canada and to participate fully in their programs. The Governing Board reaffirmed its intention to support these organizations and participate in their programs.

Society Projects

Plans are progressing for the 1988 International Congress of Entomology under the chairmanship of Geoff Scudder. The symposia, invited speakers and other program details are being formulated and a preliminary budget has been prepared. The first announcement of the Congress will be mailed out this fall. In the meantime, our Society is formulating plans for handling our elections and other necessary business in connection with a meeting in July.

The Scientific Committee of the Biological Survey met in April and will meet again in October. A book "Insect dormancy, an ecological perspective" by H. V. Danks was completed and sent to press. A number of items that were on the Science Policy Committee list of neglected areas of research have been taken over by the survey, and it continues to make important contributions to our knowledge of Canadian insects.

The study on the economics of insect control in wheat, canola, and corn funded by Agriculture Canada is completed and the final report is under preparation. The report will be forwarded to Agriculture Canada and will also be published by our Society and made available to our members. A new project was initiated on the economics of insect control in livestock and dairy with a steering committee chaired by Gordon Surgeoner. A proposal for funding has been prepared and submitted to Agriculture Canada. Unfortunately, funds are not available at this time but we hope that the funding picture will improve in the coming year.

Under the Science Policy Committee, a study on the status of microbial control in Canada was initiated a few years ago under the chairmanship of Ozzie Morris. The study was completed last year and a report was prepared and published in July. All Society members have received a copy and copies will be mailed to all institutions and government agencies concerned with microbials. Unfortunately, a printer's error caused a mix-up in the first four pages of the report which was mailed to our members. This error is being rectified and we apologize to the Committee for this unfortunate occurrence. The Society thanks Ozzie Morris and his Committee for preparing an important and significant paper on microbial control and we hope that the recommendations will be supported by governmental action.

For some years the Science Policy Committee has been trying to initiate a similar study on biological control in Canada. We have been able to interest Agriculture Canada in supporting such a study under the general topic of integrated pest management. A meeting is scheduled in Winnipeg which will follow our annual meeting and the Entomological Society of Canada's representatives to this pest management workshop are John Laing and Ozzie Morris. It is hoped that a study on the status of biological control in Canada will emerge from this workshop.

Our 1987 annual meeting will be held in Penticton, British Columbia. It will be a joint meeting of the Entomological Society of Canada, the British Columbia Entomological Society and the Washington State Entomological Society. We invite all of you to the shores of beautiful Lake Okanagan during the apple harvest season. Following the 1988 International Congress in Vancouver, the Acadian Society has invited us to meet with them in 1989 in St. John's, Newfoundland.

Internal Actions

The first problem facing your President was to replace our long-term Treasurer Ed Becker who will soon be our First Vice President. A Search Committee chaired by Bernard Philogène recommended Don Bright who took over the Treasurer duties in January. We are pleased that Don has taken this vital position and look forward to working with him in the coming years. We also have a new Bulletin Editor, Ron Aiken who is completing his first year as editor.

Our efforts to prepare a common names list of Canadian insects has been a long time on the drawing board. A French common names list was published over two years ago and we are completing arrangements to combine the French and English common names into a single publication under the joint sponsorship of the Quebec Society for Plant Protection and the Entomological Society of Canada.

Our Science Policy Committee has continued to support efforts to advise government on the need to support science and is carefully considering action on areas of neglected research in Canada. I have already mentioned the actions taken on microbial control and biological control.

Former President Ray Morris has been trying to convince the Post Office to issue a series of stamps depicting Canadian insects. We now have at least an indication that they will consider a stamp in conjunction with the International Congress of Entomology. We will keep the pressure on and hope that it bears fruit.

The Canadian Phytopathological Society has asked us to join with them in the publication of a book on insects and diseases of vegetable crops. We will name entomologists to a joint steering committee who will plan the preparation of the book. An earlier book, *Diseases of Field Crops*, has been published and has been well received.

The Finance Committee has kept an eagle eye on our expenditures and has made suggestions for reducing expenses. The Governing Board has seriously considered recommendations to reduce costs and will implement as many as they can without adversely affecting the functions of the Board and the Executive.

Submissions for our Gold Medal and Hewitt Awards has declined over the past few years. On the assumption that part of the problem lies with the paperwork necessary to make a nomination, the Governing Board is considering revisions to the nomination procedures. It is hoped that this will encourage more nominations as we are certain that deserving candidates are available.

The total membership in the Entomological Society has fallen in the current year. This decline is among Canadian members and the Board is attempting to ascertain the reasons for this decline. I urge all of you to encourage membership in our Society among your colleagues and among students.

This report brings to a close my tenure as President of the Entomological Society of Canada. I want to thank the Governing Board, and especially the Executive for the support they have given me and their efforts on behalf of the Society. The various committees have all done their job well and without their efforts, the Society would fail to function. Thanks go to our relatively new editor of the *Canadian Entomologist*, Al Ewen, and to his associate and assistant editors. And finally, I thank the membership of the Society for giving me the opportunity to serve you as President for 1986.

E. J. LEROUX — GOLD MEDAL, 1986

The 1986 recipient of the Entomological Society of Canada's Gold Medal for outstanding achievement in Canadian entomology is Dr. Edgar Joseph LeRoux, Research Branch, Agriculture Canada, Ottawa. In presenting this award, the Society recognizes his important contributions in senior management within the branch and his study of population dynamics of insect pests of apple orchards, which utilized the "life table" approach.

Dr. LeRoux was born on January 24, 1922 in Ottawa and attended both primary and secondary schools there. After serving in the Royal Canadian Navy from 1941 to 1946, he obtained his B.A. from Carleton University in 1950. In 1952 he obtained his M.Sc. and in 1954 his Ph.D. in entomology, both from McGill University.



Ed joined Agriculture Canada in 1949 as an Assistant Entomologist, rising to the rank of Senior Entomologist by 1962. He was the first Canadian to study population dynamics of insect pests of apple orchards, applying the "life table" approach that he was developing with co-workers in the Department of Forestry. As a scientist, Ed wrote more than 100 articles in research publications and contributed to three books on insect ecology and physiology. He is acclaimed both nationally and internationally for his research contribution to population ecology of the Canadian orchard pests. For his distinguished contribution to science and to the teaching of science, for his tireless dedication and for his infectious enthusiasm, Ed was conferred with the degree of Doctor of Science, *Honouris causa*, from McGill University.

He joined the staff of the Department of Entomology at McGill University in 1962, continuing his research on population dynamics of forest and crop pests until December 1965 producing 11 graduates, mostly in the Ph.D. program. In 1965 Ed rejoined Agriculture Canada as a Co-ordinator of entomological research. From 1968 until 1975 he was Assistant Director-General of the Research Branch of Agriculture Canada. In September 1975, he was appointed Director-General (Operations) of the Research Branch with responsibility for all 47 Research Stations of the Branch, its personnel and programs across Canada.

Dr. LeRoux was appointed Assistant Deputy Minister (Research) in 1978 after a long public service career as a research scientist, university teacher and administrator. As head of the Research Branch of Agriculture Canada, Ed is responsible for a staff of 900 scientists, the largest research establishment in Canada. These scientists form a network of Stations and Experimental Farms throughout the country. The Research Branch is responsible for about \$327 million dollars spent annually on research in agriculture and food in Canada.

In his job, Dr. LeRoux is at the centre of policy-making for research in agriculture and food in Canada. Over the years, his leadership contributed significantly to agricultural research in Canada and abroad, as well as to the development of the Canadian agri-food industry. He is the Administrator of the Canadian Agricultural Services Co-ordinating Committee, which annually brings the provincial governments, universities and the federal government together to deal with the state of agricultural research in the country.

Ed has travelled widely in pursuit of an international approach on animal and crop production problems through scientific interchange and co-operative agreements. Such missions have taken him to various countries on all of the continents.

His reputation as a research manager has led him to become member or chairman of numerous committees and councils, both nationally and internationally. To mention only a few: Agricultural Committee of the Organization for Economic Co-operation and Development (chairman, 1978-1980); FAO Panel of Experts on Integrated Pest Control; World Horticultural Council; Negotiated Grants Committee, National Research Council, Co-Chairman Canadian-Soviet Commission on Co-operation in Agriculture; and MOSST Consultative Committee on ADMs. As well, Ed maintained active membership in many scientific organizations including being president of the Entomological Society of Quebec, the Entomological Society of Canada, the Biological Council of Canada, and the Navy League of Canada (Quebec Division), as well as Honorary Treasurer of SCITEC. Some of the honours Ed has received include the Jubilee Medal, Governor General of Canada; Fellow, Entomological Society of Canada; Armand Frappier Medal; and Fellow, Agriculture Institute of Canada.

GOLD MEDAL ADDRESS

Agri-Food Science: Finding the Path

by

E. J. LeRoux

Ladies and gentlemen, fellow entomologists, fellow scientists. I feel a great deal of pride here today in accepting this year's gold medal of this historic Society. An added bonus of course is to receive it from the hands of Dr. Madsen, a long-time friend, colleague and co-worker. In accepting this medal I must say I receive it not only on my own behalf but also on behalf of my co-workers, valiant men and women of the Research Branch of Agriculture Canada with whom I have spent the major part of my scientific career. In honouring me today you are also honouring them — for my achievements are their achievements.

My tribute to my staff arises from what I have personally observed of their accomplishments during my eleven years now as operational head of one of the finest agri-food research organizations in the world. I am also very much aware of the significant scientific successes and impacts of the Branch under former operational heads in our hundred-year history.

And our history was heavily shaped by our entomologists. So, to be honoured by my fellow entomologists today is to indeed experience a moment of rare personal gratification.

We in this assembly are entomologists by profession, learning and choice. While insects are our subject matter for research we equally identify with all of biology. This is as it should be because scientific investigation in food production where we labour deals with the whole spectrum of biological disciplines, from the cell to the population.

We are at a time in biology where we can make a quantum leap forward in this science, this science of living entities. And the instrumentation now available to biologists — such as electron microscopes, nuclear magnetic resonance spectrometers (NMRS), computers, radioactive tracers — provides us new powers of accurate measurement and predictive manipulation. These equipment aids make possible sound and reproducible technology in biology in a way heretofore only possible in the pure sciences of physics and chemistry.

And the advances we make — and we have a long and complicated way to go — will undoubtedly hugely influence the future shape, nature and capacity of our food production system in this country. The level of success will depend largely on the amount of resources the country is willing to devote to capitalizing on these unique and far-reaching scientific opportunities for food.

National Science Guidelines

On the edge of retirement, I can look back at a lifetime of scientific endeavour. I have been student, researcher, professor and administrator. On the basis of empirical evidence alone, let me say science cannot perform at nearly the level at which it is capable in the agri-food sector without a set of nationally accepted guidelines relative to the special needs of this instrument. Productive science, by its very nature, is far more vulnerable than many other human activities to the direct and indirect impacts of short-sighted and short-term acts, approaches, attitudes, laws, rules and programs.

For this and other reasons, it is essential that this country have a coherent and cohesive set of guidelines governing the application of science to food production. Such guidelines must once and for all recognize the importance of science as the driving force behind the delivery of the technology that will strengthen the competitive power of Canada's food production system.

There are at least seven what I call "considerations" that must underpin the formulation and application of guidelines to the science of food production in Canada and it is these points that I want to leave to your reflection today.

Long-term Nature of Science

What are these "considerations" or conditions or understandings? First, it must be recognized that science by its very nature, particularly biology, is primarily long-term, in all the ramifications of that phrase. Even at its quickest, science normally takes a long time to generate substantial change in agri-food technology.

That is the nature of scientific effort and inquiry. The process of genuine scientific achievement is measured and considered and built on past scientific achievement. As such, science as a productive vehicle for the Canadian food production system will be hampered and disrupted by any act, private or public, that interferes with that fundamental process. **You cannot have productive science on any terms. You can only have it on the terms of the scientific instrument itself.**

Back to biology. In that infinitely complex science, **time** to properly examine, decipher and rationalize phenomena is paramount. There is no such thing as a short-term research project in biology. Even so-called applied projects last at least five years. It took Agriculture Canada scientists seven years simply to determine tolerance levels by animals and humans to vomotoxin, a serious poison produced by a fungus, *Fusarium graminearum*, on Canadian winter wheat. And there remains much more research to be done to obtain the necessary additional knowledge required to effectively control this disease threat to this important crop.

And pertinent to those who carry out the scientific inquiry, the scientists, it must be understood that it takes years to train such creative individuals to a high level of research productivity.

Accordingly, the supply of scientists capable of making advances in particular fields cannot be created overnight. A budding scientist who entered an agricultural college as a student in the fall of this year will not receive his doctorate in his discipline until 1995 and will not become a truly productive researcher until the early part of the next century.

We must therefore have a sound national science employment climate, not the converse, if we are to ensure that there will always be an abundant supply of talented scientists emerging from Canadian schools and universities to meet our new and traditional needs. Bad planning today will mean a critical shortage in the year 2000 and beyond.

Need for Basic Research

My second "consideration" deals with basic research. There continues to persist in some circles the view that there is something "less useful" about basic research as opposed to applied research, where we see a more immediate practical application of results. Yet, basic research is fundamental to the maintenance of a strong Canadian science base in the agri-food field and elsewhere.

Borrowing economic terms, basic research is the **capital** investment from which **interest** — the new technology — flows. None of us today would be enjoying the benefits of electricity, atomic power, computers, chemotherapy, radio and so on without basic research done at a time when there was little or no practical application in sight.

In the agri-food field for example, basic research in genetics has been a major preoccupation at Agriculture Canada for many years. And this foundation work for technological breakthroughs continues to this day in our laboratories.

Barring major setbacks this basic research will one day move food production into a new era of undreamed-of efficiency with attendant improvements in food quality, safety and variety. So, the need for heavy emphasis on basic research is paramount to the maintenance of our national science and food capability.

Science as Life-support System

My third "consideration" suggests science be seen as the principal supporter of our country's food life-support system. In both the personal physical sense and the economic sense, our science-driven food production system underpins the general wellbeing of all Canadians. That system now supplies not only our people with an abundance of generally safe, good-quality and nutritious food but also supplies a steady flow of food products to other countries. Some 40 percent of our crop production is exported.

We all need to recognize this fact and ensure that the level of scientific support for our system is maintained without the jerks and starts, the ups and downs of the past. Otherwise, market opportunities — with all the monetary and social benefits such opportunities hold for Canada — will continue to be lost.

In general, it can be a serious mistake to downgrade agri-food research when we experience an economic downturn in this country. If we want to be first in the world market place we should increase our scientific effort during such downturns so we can be ahead of our competitors when times improve. Japan knows this trick and applies it well.

Today, we have a huge wheat crop, disappointing prices and tight markets. In terms of supplies at least, it is reminiscent of the 1970 wheat glut which triggered the federal LIFT (Lower Inventory For Tomorrow) program to reduce our wheat acreage. But we did not curtail our long-term wheat variety research. Our breeding program was maintained for when times improved. That improvement came very soon with the arrival of Russia as a big buyer of Canadian wheat and on that occasion we had the varieties to meet the demand.

Science and Nationhood

My fourth "consideration". It must be recognized that science is as important to the shaping of our national life as the arts, our democratic system and the other factors that make us what we are as a developed people and nation.

In this connection the Toronto Globe and Mail carried an apparently serious story the other day asking whether Canada should get out of farming. It was suggested it was too

expensive to keep our farmers in business with large subsidies in a country with an environment generally hostile to agriculture.

The message was that we should give up on our historic national preoccupation with food, since a ready supply of foodstuffs to meet our needs, supposedly at lesser cost, could be provided by other countries more agriculturally endowed than Canada. Let me respond. Giving up on agriculture would mean the end of the formal science that supported it for the last century.

Giving up on either seems about as sensible as foregoing free elections because they are too costly. In the same manner that we have to pay a price for democracy, we must pay a price for an independent food supply, so we are never entirely beholden to other nations, particularly in times of international crisis.

Recall also that it was our science-driven preoccupation with food that was fundamental to our western expansion and our growth and development as a nation. On this let me make two points.

First, to give up on either science or farming in Canada today would be to turn our backs on an agriculture and food system which permeates our whole socio-economic structure, our culture, and our way of life. Agriculture and food constitute one of Canada's largest economic activities, operating in many fields. And science has been the major bulwark against threats to the satisfactory survival of this life support system.

The second point. To give up on either science or farming in Canada would also be to turn our backs on food short countries and peoples we as a developed nation have historically helped. And we all know that Canada's aid policy is the act of a mature nation. While it is true that many developed countries have overall food surpluses, it is equally true that many peoples in the world are still subject to recurrent threats of rampant starvation. In the face of this situation Canada must remain in a position to meet its moral obligations to those who continue to suffer malnutrition and starvation.

For Canada to fill all its obligations at home and abroad, to act therefore as a self-respecting and responsible nation, our whole agri-food system must be strengthened and fortified. Any rational approach governing science and food production in this country must reflect the view that both are sewn into our national fabric. This fabric cannot be unravelled if culture and nationhood have any meaning at all.

Science and Patron

"Consideration" number five lays funding and leadership responsibility for agri-food science primarily on the doorstep of government. Science is inordinately expensive, but inordinately worthwhile because of the economic returns that inevitably flow from a thriving scientific community. But the expense is such that only big government in Canada has the financial wherewithal to protect, support and sustain a scientific program in the food sphere capable of meeting Canada's extreme needs.

That is not to excuse other patrons from responsibility. The universities, private industry, co-operatives, and foundations must do their share. But the task historically has been beyond them as a group.

In agri-food research particularly, it has been the federal agriculture department which has played the dominant role in Canada since formal science began to be a major factor in agricultural life a century ago. This, in my view is as it should be. And that support continues to be essential to maintain a critical mass of well-housed and well-equipped, scientists. That support is therefore essential to the survival of our agri-food research instrument.

Need for an Independent Technology

"Consideration" number six. It is my firm belief that Canada must retain a high degree of independence in its capability to develop its own agri-food technology. We must have the scientific capacity to solve our own food production problems in this country. Others may not be that interested, or, contrary to some economists' belief, the price may be too high.

It is erroneous to suggest we can readily substitute foreign-made technology for that made at home. Our commercial crops are really pieces of technology researched and created to meet our special crop needs. Our early settlers came to Canada, many with seeds and varieties of crops they brought from their homeland. Crop failure after crop failure in this new land resulted because their varieties were unsuited to Canadian conditions.

Clearly we needed Canadian-made crop varieties with special characteristics that allowed them to flourish in our hostile environment. It was Agriculture Canada scientists who developed Marquis wheat and a multitude of other varieties that have largely sustained our food production in the 20th century. Their creative genius is still at work today along with their colleagues at universities and other institutions.

What we in Canada need from world science to add to our own data base is a continuous

flow of technology information which can only effectively come through fruitful and sustained contacts between our scientists and their counterparts abroad. It is the cross-fertilization of ideas between scientists that is paramount in the creation of new technology. And this process is in the best tradition of science. With the help of this scientific interchange, Canadian scientists can remain in the forefront of creative technology development for our agriculture and food.

The most dramatic example of the importance of making our own technology in Canada is the creation of an edible oil industry based on reshaping traditional rapeseed crops to our own needs. The result for Canada is a billion-dollar Canola oil industry built over the last two decades on the back of Canadian research. Our Canola experience alone shows we will always need a powerful domestic scientific establishment to meet the precise needs of our sprawling variegated food production base and the industries built upon it.

Science and Leadership

"Consideration" number seven. Of considerable importance to the scientific community supporting the food industry is the administrative role in carrying out the mandate. Our great national science effort in food production must be science-driven and science-led. Its leaders must be people trained in science for how else can they properly lead?

When Agriculture Canada's research arm was formed 100 years ago, its first leader was a scientist with an inquiring mind who launched a research station system that led to the world-class national network we have today. But administrative responsibility for scientific effort in food production has to some degree slipped away from scientists as society grew more complex. It is a trend of doubtful value for the science community which must have strong science leadership and a climate of freedom and understanding to create and manage change in the food production system.

Conclusions

Taken together, what do these seven "considerations" tell us? They tell us that the measured and long-term nature of the scientific effort supporting food requires equally consistent nurturing by our patrons. They tell us that basic science, much of it biology, is fundamental to the long-term economic health of our food production and processing industry.

Our seven "considerations" tell us also that our national spirit in Canada, our cultural vigor, our economic health, our democratic maturity and technical independence as a nation are intimately bound up with a science-driven food system. The "considerations" tell us the science effort behind food production is dependent to some degree on two important factors. First, the science effort must be science-driven, which means it must be committed to goals and philosophy arising principally from the agri-food research community itself rather than from elsewhere. Second, the science effort must also be dependent on administrative leaders drawn from, trained in and committed to a science-driven agri-food research community.

If a widely accepted set of guidelines governing the application of science to food production is to emerge at all, our scientific community must play a catalytic role in their development. Fortunately, scientists are well versed in the methods used to generate action and consensus — dialogue, dialectic and discussion. And since it is they who supply the creative technology inventions that drive our food system, so also it should be they who rightly take a wider responsibility in the shaping of our agri-food research future.

Central to the creation of a national consensus on the approach of science to food is the federal government, that traditional, dominant and constitutionally endowed presence in the agri-food research picture. No national focus will emerge without its willing participation.

Science and government have been successful partners for a century in food production. From that partnership must evolve the semantic carpentry work necessary to build an edifice of words to direct, lead and inspire as never before the agri-food research sector. The principal beneficiaries will be three in number — our food production system, our supporting science, our country.

ALLOCUTION

La science agro-alimentaire: trouver la voie

par

E. J. LeRoux

Mesdames et Messieurs, amis entomologistes et amis scientifiques. C'est un très grand honneur pour moi d'être ici aujourd'hui pour recevoir la médaille d'or que décerne cette année votre société historique. Le plaisir est d'autant plus grand pour moi puisqu'elle me sera remise par le Dr Madsen, un vieil ami à moi, un collègue et un compagnon de travail. Cet honneur rejaillit non seulement sur moi mais aussi sur mes compagnons de travail, ces hommes et femmes si remarquables de la Direction générale de la recherche à Agriculture Canada, avec qui j'ai travaillé presque tout au long de ma carrière scientifique. Mes réalisations sont aussi les leurs.

Je tiens à rendre hommage aux membres de mon personnel aujourd'hui, parce que je les ai vus à l'oeuvre durant les onze années pendant lesquelles j'ai été chef de l'une des organisations spécialisées dans la recherche agro-alimentaire les plus compétentes au monde. En cette année du centenaire de la Recherche, je m'en voudrais de ne pas souligner les succès et les progrès accomplis au sein de la Direction générale sous l'administration des autres chefs qui ont occupé ce poste au cours des cent dernières années.

Nos entomologistes ont largement contribué à bâtir notre histoire. Aussi, le fait d'être honoré par mes amis entomologistes aujourd'hui me procure un plaisir incommensurable.

Nous sommes tous des entomologistes de profession et de carrière. Bien que l'entomologie soit notre domaine privilégié de recherche, tout ce qui concerne la biologie nous intéresse également. Et c'est tout naturel, puisque la recherche scientifique en matière d'alimentation touche à toute la gamme des disciplines biologiques, en partant de la cellule jusqu'à l'être humain.

La biologie, dont l'objet est la matière vivante, a atteint de tels sommets qu'elle pourrait faire maintenant un pas de géant. La technologie de pointe qui met à la disposition des biologistes des appareils comme les microscopes électroniques, les spectromètres à résonance magnétique nucléaire, les ordinateurs et les marqueurs radioactifs nous permet d'obtenir des données exactes et de faire des manipulations prédictives. Tous ces appareils nous permettent de créer des techniques précises et reproductibles en biologie, ce qui n'avait été possible jusqu'ici que grâce aux sciences pures de la physique et de la chimie.

Tous les progrès que nous faisons — et Dieu sait que nous avons encore bien des obstacles à surmonter — influenceront sans contredit de façon très importante la structure, la nature et la productivité de notre système canadien de production alimentaire au pays. L'ampleur de nos succès dépendra largement du nombre de ressources que le pays est prêt à investir dans ces projets scientifiques exceptionnels et de grande portée dans le domaine de l'alimentation.

Lignes directrices nationales

Après avoir été étudiant, chercheur, professeur et gestionnaire, me voici au seuil de ma retraite et permettez-moi d'évaluer les progrès accomplis en science. Si l'on en croit l'expérience, je peux affirmer que dans le domaine agro-alimentaire la science ne peut atteindre sa pleine efficacité sans qu'on adopte une série de lignes directrices à l'échelle du pays dont l'objectif serait de répondre aux besoins spécifiques dans ce domaine. La science de la production, de par sa nature, est beaucoup plus sensible que bien d'autres activités humaines aux répercussions directes et indirectes de mesures, de décisions, de lois, de règlements et de programmes qui seraient trop restrictifs et qui seraient appliqués à court terme.

Pour cette raison et pour bien d'autres, il est essentiel que ce pays se dote d'un système de lignes directrices cohérentes et cohésives régissant l'application de la science à la production alimentaire. De telles lignes directrices doivent une fois pour toutes reconnaître que la science est la force motrice qui gouverne la mise au point de techniques qui rendront notre système de production alimentaire toujours plus compétitif.

Il y a environ sept "secteurs" ou ce que j'appellerais "préoccupations" qui doivent étayer la formulation des lignes directrices et leur application à la science de la production alimentaire au Canada. C'est justement de ces sept points dont j'aimerais vous entretenir aujourd'hui. Ils donnent matière à réflexion.

Le facteur temps et la science

Quelles sont ces "préoccupations"? La première, c'est de reconnaître que la science de

par sa nature, surtout la biologie, exige des efforts à long terme, dans tous les sens de cette expression. Même lorsque les résultats sont très rapides, il faut habituellement attendre assez longtemps avant de voir des améliorations considérables dans les techniques agro-alimentaires.

Telle est bien la nature des travaux de la recherche scientifique. Les authentiques réalisations de la science d'aujourd'hui et de demain reposent sur les réalisations scientifiques d'hier. Toute décision prise soit par le secteur privé, soit par le secteur public, qui entrera en conflit avec le processus fondamental de la recherche entravera ou perturbera la recherche scientifique appliquée au système de production alimentaire au Canada. **Vous ne pouvez pas avoir une science rentable à n'importe quelles conditions. Il faut absolument respecter la nature même de la recherche scientifique.**

Revenons à la biologie. Dans cette science si complexe, il faut consacrer un temps considérable à examiner, à comprendre et à expliquer les phénomènes. Il n'existe pas de projets de recherches à court terme en biologie. Même ces projets dits de recherche appliquée durent au moins cinq ans. Il a fallu sept ans aux scientifiques d'Agriculture Canada pour seulement pouvoir déterminer les niveaux de tolérance des animaux et des humains à la vomitoxine, un produit très toxique d'un champignon, *Fusarium graminearum*, qui s'attaque au blé d'hiver canadien. Et il faudra effectuer encore bien des recherches pour en arriver à lutter encore plus efficacement contre cette maladie qui cause des pertes énormes à l'une de nos plus importantes cultures.

Par ailleurs, il faut bien se rendre compte que la formation d'un chercheur requiert de nombreuses années avant qu'il puisse atteindre un haut niveau de productivité. Par conséquent, il est impossible de créer du jour au lendemain un réseau de chercheurs capables de réaliser des progrès dans des domaines très spécialisés. Un étudiant qui a commencé ses études dans un collège agricole cet automne ne recevra pas son doctorat avant 1995 et ne sera vraiment productif qu'au début du prochain siècle.

Nous devons donc créer un climat favorisant l'embauche de scientifiques à l'échelle nationale, et non le contraire, si nous voulons être certains d'avoir toujours un nombre suffisant de bons chercheurs diplômés de nos écoles et de nos universités canadiennes, et capables de répondre à nos besoins actuels et futurs. Si nous faisons de mauvaises prévisions aujourd'hui, nous ferons face à une pénurie importante de chercheurs dans les années 2000.

Recherche fondamentale: nécessaire

Ma deuxième "préoccupation" porte sur la recherche fondamentale. Certains milieux persistent à croire que la recherche fondamentale est "moins importante" que la recherche appliquée, parce que, disent-ils, avec la recherche appliquée on obtient des résultats immédiats et concrets. Mais, faire une telle affirmation, c'est oublier que la recherche fondamentale est la source même du progrès dans le domaine agro-alimentaire et autres.

Dans la langue des économistes, on peut dire que la nouvelle technologie est à la recherche fondamentale ce que l'intérêt est au capital. Personne d'entre nous aujourd'hui pourrait bénéficier des avantages que nous procurent l'électricité, la puissance atomique, les ordinateurs, la chimiothérapie, la radio et j'en passe sans qu'il y ait eu au préalable des travaux de recherche fondamentale effectués au moment où les applications pratiques paraissaient à peu près inexistantes.

Dans l'agro-alimentaire par exemple, Agriculture Canada accorde une place importante à la recherche fondamentale dans le domaine génétique depuis de nombreuses années. Et ce travail de base se poursuit toujours dans nos laboratoires dans le but de mettre au point de nouvelles technologies.

À moins de contretemps considérables, c'est grâce à la recherche fondamentale qu'un jour la production alimentaire atteindra un niveau d'efficacité insoupçonné et qu'on pourra accroître la qualité, la salubrité et la variété des aliments. C'est pourquoi, il est important d'insister fortement sur le besoin de faire de la recherche fondamentale, car cette recherche est le pilier de notre science nationale et de nos compétences en alimentation.

La science: système de survie

Passons maintenant à ma troisième "préoccupation". Je voudrais que la science soit considérée comme la pierre angulaire de notre système canadien d'alimentation. Notre système de production alimentaire qui repose sur la recherche scientifique a toujours eu pour objectif le bien-être général de tous les Canadiens. Grâce à ce système, nous avons aujourd'hui non seulement une abondance d'aliments généralement salubres, de bonne qualité et nutritifs, mais nous pouvons aussi fournir un apport constant de produits alimentaires aux autres pays. Environ quarante pour cent de notre production agricole est exportée.

Nous devons tous reconnaître ce fait et nous assurer que le niveau de soutien scientifique de notre système est maintenu de façon constante sans que nous ayons à subir les hauts et les

bas de la recherche dans le passé. Autrement, nous continuerons de perdre ces débouchés commerciaux — avec tous les avantages monétaires et sociaux que de tels marchés représentent pour le Canada.

En général, on peut commettre une grave erreur en dévalorisant la recherche agro-alimentaire lorsque le pays connaît une récession économique. Si nous voulons être à la tête du marché international, nous devons profiter de la situation pour intensifier nos recherches, ce qui nous permettra de devancer nos concurrents au moment de la reprise économique. Le Japon est passé maître dans cet art.

Nous sommes aux prises aujourd'hui avec une récolte abondante de blé, des prix à la baisse et des marchés très tendus. Si nous regardons seulement du côté des approvisionnements, la situation rassemble à celle que nous avons connue en 1970. La surabondance de blé a forcé le gouvernement fédéral à mettre sur pied le programme LIFT (*Lower Inventory For Tomorrow*) afin de réduire nos superficies consacrées au blé. Mais nous n'avons pas pour autant diminué nos recherches à long terme sur les variétés de blé. Nous avons continué d'appliquer notre programme de sélection en vue de jours meilleurs. La situation n'a pas tardé à s'améliorer puisque la Russie est devenue un gros acheteur de blé canadien et que nous avons mis au point les variétés qui nous ont permis de répondre à la demande.

Science et nationalité

Voici ma quatrième "préoccupation". Il faut reconnaître que la science est tout aussi nécessaire à l'édification de notre entité nationale que les arts, notre système démocratique et tous les autres domaines qui font de nous ce que nous sommes en tant que peuple qui vit dans un pays développé.

Dans cet ordre d'idées, le *Toronto Globe and Mail* a publié récemment un article supposément sérieux dans lequel on se demandait si le Canada devrait abandonner l'agriculture. On y laissait entendre qu'il était trop coûteux d'aider, par des subventions considérables, nos agriculteurs à garder leurs exploitations dans un environnement qui est généralement hostile à l'agriculture. Bref, d'après cet article, nous devrions abandonner notre rôle national historique de producteur d'aliments, puisque d'autres pays mieux dotés que le Canada dans le domaine de l'agriculture pourraient facilement répondre à nos besoins en denrées alimentaires, et ce, à un coût qui serait supposément moindre. Laissez-moi vous dire ce que j'en pense. Abandonner l'agriculture voudrait dire mettre fin à toutes ces années de recherche précieuses et rentables.

Abandonner l'un ou l'autre serait aussi peu logique que de renoncer à des élections gratuites parce qu'elles sont trop coûteuses. La démocratie se paie de la même manière que l'auto-suffisance sur le plan alimentaire. Il ne faudrait jamais dépendre entièrement d'autres pays, surtout dans des périodes de crises internationales.

N'oublions pas non plus que ce sont nos recherches en alimentation qui ont permis le développement de l'Ouest et la croissance et la prospérité de notre pays. J'aimerais ici faire deux remarques.

Premièrement, renoncer aujourd'hui à la recherche et à l'exploitation agricoles au Canada serait comme tourner le dos au système agro-alimentaire qui fait partie de notre structure socio-économique, de notre culture et de notre façon de vivre. L'agriculture et l'alimentation constituent l'une des activités économiques dans bien des domaines. Et la recherche scientifique a toujours été notre principal bouclier contre tout ce qui menace l'existence de notre système de survie.

Deuxièmement, renoncer à la science ou à l'agriculture au Canada serait abandonner à leur sort les pays dont la production alimentaire est faible et que nous avons aidés en tant que pays développé. Et nous savons tous que la politique d'aide du Canada aux pays en voie de développement est le signe indiscutable de la maturité d'une nation. Faut-il rappeler que pendant que les pays développés ont un surplus d'aliments, d'autres pays subissent de cruelles pénuries de denrées? Face à cette situation, le Canada doit être prêt à s'acquitter de ses obligations morales face à ceux qui continuent de souffrir de la malnutrition et de la famine.

Pour que le Canada puisse remplir toutes ses obligations ici et à l'étranger, pour qu'il puisse par conséquent agir en tant que pays responsable et fiable, il faut renforcer et fortifier notre système agro-alimentaire. Toute approche rationnelle régissant la science et la production alimentaire au pays doit montrer sans équivoque que les deux vont de pair. Elles ne peuvent être dissociées. Cette union ne peut être brisée si notre culture et notre fierté d'être Canadiens ont un sens pour nous.

La recherche et son financement

Ma cinquième préoccupation touche au financement de la recherche. Il revient au

gouvernement de financer et d'orienter la recherche. Il faut bien sûr reconnaître que les coûts de la recherche sont énormes, mais n'oublions pas qu'elle est très rentable grâce aux réalisations exceptionnelles de nos chercheurs. Ses retombées économiques sont inestimables. Mais, l'investissement nécessaire à la recherche est tellement considérable que seul le gouvernement a les ressources financières pour protéger, soutenir et encourager un programme scientifique dans le domaine de l'alimentation qui soit en mesure de répondre aux besoins essentiels du Canada.

Je ne veux pas dégager de leurs responsabilités les autres sources de financement de la recherche comme les universités, le secteur privé, les coopératives et les sociétés qui doivent également faire leur part. Mais, jusqu'ici, elles n'ont pu, à elles seules, suffire à la tâche.

Dans le domaine de la recherche agro-alimentaire en particulier, c'est le ministère fédéral de l'Agriculture qui a joué un rôle dominant au Canada puisque la science objective a commencé à être un facteur important dans le domaine agricole il y a un siècle. D'après moi, il doit en être ainsi. Cette forme d'encouragement demeure essentielle pour que nous puissions garder au pays un nombre important de chercheurs et mettre à leur disposition de l'équipement et des installations appropriés. Ce soutien est donc essentiel à la survie de la recherche agro-alimentaire.

L'indépendance technologique est essentielle

Ma sixième préoccupation porte sur la technologie. Je crois fermement que le Canada doit assurer sa plus grande autonomie possible dans ce domaine afin de développer sa propre technologie agro-alimentaire. Il faut des chercheurs compétents pour résoudre nos problèmes de production alimentaire au pays. Nous ne devons pas compter sur les autres pour régler nos problèmes; il peut arriver qu'ils ne s'y intéressent pas ou que le coût soit trop élevé, quoiqu'en pensent certains économistes.

Ce serait une erreur de penser que nous pourrions facilement remplacer notre technologie par celle des autres pays. Nos produits agricoles commerciaux sont vraiment le fruit de plusieurs années de recherches qui ont permis de répondre à nos propres besoins alimentaires. Les premiers colons sont venus au Canada, avec des semences et des variétés de cultures provenant de leurs pays d'origine. Malheureusement, leurs variétés n'étant pas bien adaptées au climat et au sol du pays, ils ont connu une série de mauvaises récoltes.

Il nous fallait donc créer des variétés capables de résister à notre climat rigoureux. Ce sont les chercheurs d'Agriculture Canada qui ont créé le blé Marquis et une multitude d'autres variétés qui nous ont assuré, depuis le début du siècle, une abondante production alimentaire de grande qualité. Leur esprit créateur inspire encore aujourd'hui nos chercheurs dans les universités et les autres secteurs de la recherche.

Tout en assurant notre autonomie technologique, nous devons maintenir un lien constant avec les chercheurs de tous les pays afin de leur communiquer les résultats de nos travaux et de suivre les progrès de leur propre recherche. C'est ainsi que nous nous maintiendrons à la fine pointe de la technologie contemporaine et que nous contribuerons à sa progression. Cette attitude a toujours été la clé de notre succès.

L'exemple qui illustre le mieux l'importance de développer notre propre technologie au Canada est la création d'une huile comestible que nous avons obtenue en modifiant nos cultures de colza traditionnelles. Au cours des deux dernières décennies, cette nouvelle huile Canola a permis au Canada de conquérir un marché d'un milliard de dollars. C'est, je pense, un exemple éloquent de la nécessité d'avoir nos propres chercheurs travaillant à résoudre nos problèmes particuliers.

Science et leadership

Enfin, laissez-moi vous confier ma dernière préoccupation et non la moindre. Je pense qu'il est très important pour les chercheurs du secteur alimentaire d'avoir des gestionnaires qui soient en mesure de bien remplir leur mandat. Nos programmes de recherches en production alimentaire doivent être effectués et dirigés par les chercheurs. Les gestionnaires doivent avoir une formation en science. Sinon, il leur sera impossible de prendre les décisions qui s'imposent.

Le premier directeur des services de recherches d'Agriculture Canada créés il y a cent ans était un scientifique, à l'esprit créateur. Il a mis sur pied un système de stations de recherches qui a permis la création du réseau national que nous connaissons aujourd'hui. Malheureusement, avec les années, la gestion de la recherche en production alimentaire a quelque peu échappé aux chercheurs au fur et à mesure que la société est devenue plus complexe. C'est une tendance qu'on doit déplorer car la collectivité scientifique doit être bien dirigée et doit être en mesure de travailler dans un climat de liberté et de compréhension pour faire progresser l'industrie agro-alimentaire.

Conclusions

Quelle vue d'ensemble peut se dégager des sept préoccupations que je viens de vous exposer? D'abord, étant donné que la recherche scientifique exige beaucoup de temps et de travail, il lui faut des sources financières stables et sûres. De plus, il faut résister à la tentation de sacrifier la recherche fondamentale, indispensable à la prospérité économique du secteur de production et de transformation des aliments.

Nos sept "préoccupations" nous révèlent aussi que notre esprit national, notre vigueur culturelle, notre santé économique, notre maturité démocratique et notre indépendance technique en tant que nation sont intimement liées au système alimentaire basé sur la science. Ces préoccupations nous disent que les efforts consacrés à la science dans le domaine alimentaire dépendent jusqu'à un certain point de deux facteurs importants. Premièrement, les programmes de recherches doivent être en harmonie avec les buts que poursuivent les chercheurs et la philosophie qui les anime et non être téléguidés de l'extérieur. Deuxièmement, les travaux doivent s'effectuer sous la direction de gestionnaires choisis au sein même de la collectivité des chercheurs, donc des gestionnaires qui ont, il va sans dire, une formation scientifique et qui oeuvrent dans la recherche agro-alimentaire.

Les chercheurs devraient donc jouer un rôle de toute première importance dans l'élaboration de lignes directrices destinées à régir la recherche agro-alimentaire. Heureusement, les chercheurs sont capables de dialoguer pour en arriver à des ententes et à prendre des décisions. Et puisque ce sont eux qui "créent" les inventions qui ont transformé notre système alimentaire, ils devront assumer une plus grande part de responsabilité dans l'élaboration de notre futur système de recherche agro-alimentaire.

Le gouvernement fédéral se trouve au coeur de la création d'un consensus national sur l'avenir de la recherche en alimentation. Il a toujours joué un rôle de premier plan dans le domaine de la recherche agro-alimentaire. Sans sa participation pleine et entière, on ne pourra jamais en arriver à un plan d'ensemble pour tout le pays. Le gouvernement et les chercheurs ont toujours formé une bonne équipe depuis un siècle. Ensemble, nous sommes capables d'élaborer les lignes directrices qui vont guider et inspirer le secteur de la recherche agro-alimentaire. Les trois principaux bénéficiaires seront, sans nul doute, notre système de production alimentaire, notre recherche agricole et finalement le pays tout entier.

HERITAGE LECTURE

by

E. J. LeRoux

What a wonderful moment in the history of our country to deliver this heritage address. It comes towards the end of a year in which Agriculture Canada has mounted a vigorous celebration of a century of accomplishment by the Research Branch of our federal department of agriculture. Much of the science heritage of our country is bound up in these 100th birthday celebrations.

Our research centennial commemorates much more than 100 years in the life of a section of the federal civil service. It marks the beginning of the application of formal science on a serious scale to Canada's agricultural industry. It marks the growth and development over the succeeding century of a hugely successful science community in government and outside devoted to the support of our food production system.

It is difficult to imagine that Canada could have emerged as a strong and politically united country without the companion development of a powerful food production system. But the food system did grow with the country and indeed helped make the country to a large degree. Behind that success story through the years were the efforts of thousands of research scientists.

As entomologists we can be proud of the fact that the founder of the Agriculture Canada research institution was one of us. William Saunders was an entomologist by avocation in the days when formal training was not available. We must recall that in the mid-19th century entomology in Canada was a hobby of naturalists attracted to insects.

There were no reference collections available to them to help identify insects, beneficial or destructive. Much information was exchanged by correspondence with people of like mind, often in other countries. Scholarly papers on insects were carried in naturalist journals. This then was the world where William Saunders and a few contemporaries like L'Abbé Léon Provencher, a Roman Catholic priest were already at work defining Canada's flora and fauna.

William Saunders was born in 1836 in Devon, England, the son of a shoemaker who was also a lay preacher in the Methodist Church. Saunders came to Canada with his family as a boy unaware he would one day launch a publicly-operated research organization that helped dictate the future of the country. That day came in 1886, 50 years after his birth, with the passage of the Experimental Farm Station Act by the federal Parliament.

All our lives are dictated to some degree or other by great men and women and William Saunders was indeed a great man by any definition. He became a pharmacist by apprenticing to a druggist in London, Ontario where the family had settled. He had his own drugstore at 19. He bought farmland and grew tree and small fruits. On his own, he began applying the scientific method in his own natural environment and he emerged as a competent scientist.

His interest in the pharmaceutical value of plants led him down the road to entomology. He spoke and wrote widely on the subject and his many forums included the Canadian Entomologist which he established.

It is clear that Saunders was one of those restless and constructive spirits who started things. Obviously, he also knew the value of organizations to get things accomplished. So, it was entirely in keeping that he and a lifelong friend, the Reverend Charles Bethune, started the Entomological Society of Canada in 1863.

Bethune, an ordained Anglican minister, was another of those talented amateurs who laid the groundwork in Canada for the growth and development of entomology into a professional discipline. It is not too far off the mark to say that Bethune and Saunders are two very human reasons why we are all here today.

It is said that Bethune was the first to suggest that parasites be imported into Canada for biological control. It was a prescient thing to suggest, bearing in mind the difficulty of pursuing the study of entomology at the time. Books were scarce and Bethune and Saunders wrote constantly to each other sharing information and ideas. Each summer the two friends got together for several days to compare notes, study and collect specimens.

It is on the basis of such personal commitment that great events are built. Whether he had a notion or not of the future, Saunders was preparing for what might be called his greatest task. That was the launching and early stewardship of the federal government's Experimental Farm System.

When the federal government became concerned about the state of agriculture in Canada, particularly about its development in the west, it turned to Saunders for advice. He studied the question of scientific support for agriculture and concurred with the idea of an experimental farm system along the lines of those developed in other countries.

The fact is Canada was well behind such European countries as England, France and Germany in applying formal science to agriculture. All these countries had a well-developed experimental farm system in place when Saunders was brought in for advice. In any event, the Canadian Parliament in 1886 made one of the most discerning and far-reaching decisions ever made by our national government. It decided to create those first five experimental farms across the country primarily to lift the farmer to higher levels of production efficiency.

That decision came when Canada was less than two decades old as an independent country, trying to find a national identity and a future with scarcely any past. Half the adult population lived on farms then compared with less than four per cent today.

That decision set the tone and path for agri-food research in the country for the succeeding century. That decision almost immediately made the federal government the dominant force in the application of science to food production. That situation obtains today.

Those first five experimental farms grew into Agriculture Canada's Research Branch, which took on its present name in 1959. We in this branch see ourselves as partners with the universities and all the other institutions in the research field dedicated to food production and processing and distribution. Our centennial celebration this year is as much theirs as ours. They are, like us, the keepers of the heritage tied so closely to the love of an English immigrant pharmacist for science and what it could do for his fellow humans.

I must say I have a strong sense of kinship with Saunders. I admire the doers of this world who also serve. He was both. In addition to everything else he did and was, he was a founder of the Ontario College of Pharmacy of which he was president for two years. He was a professor at Northwestern University in London. In addition to contributing articles to the Canadian Entomologist, he was also editor for a time.

I take a great deal of personal pride in the fact that for a time in our history as a nation I was able to lead the research organization that Saunders began. Including Saunders there have been fourteen men who have led the organization in different conformations. I am the fourteenth.

At this point, I have no idea who the 15th will be. But I hope that my successor will honour the traditions that have been established over the past century. Honourable tradition is the handmaiden of scientific achievement. The scientist who follows me in this post will have one hundred years of honourable tradition to help find new roads to accomplishment.

The remainders of our research heritage are all around us. One of the five original experimental farms is not far from here in this province, the Brandon Research Station. My office is in the Agriculture Canada headquarters building on the historic Central Experimental Farm in Ottawa. That of course is another of the five original farms at the beginning. On the central farm a short walk away from my office is the William Saunders Building, named after the man himself.

It sits on the site of the house he occupied for many years when he headed the early research organization. That elegant reminder of an earlier age was torn down in the early 30s, but the name of the occupant lives on in the present building. I might point out right here that I wasn't treated nearly as handsomely by the federal government as Saunders was. I had to build or buy any house I ever lived in.

My preoccupation with Saunders should not detract unduly from all the scientists who made the Research Branch of my department the organization it is today. Many of these of course were entomologists. I think of the English immigrant, James Fletcher, another one of those talented amateurs of the early days.

After he came to Canada, he was a bank clerk and library worker, but his real interest was entomology and botany which he studied in his spare time and he became the first chief of the entomology and botany division. Fletcher's personal insect collection became the donated foundation of the branch's national collection in Ottawa. Seventeen species of butterfly bear Fletcher's name.

Fletcher found a kindred spirit in Norman Criddle, whom he met in 1900 on a visit to Manitoba during a grasshopper outbreak. Criddle grew up on a Manitoba farm and many of you will know it was his efforts which were the foundation for much of the later grasshopper control work in Canada.

Criddle was another of those gifted amateurs of the early days of the application of science to food production. He was a self-taught naturalist and a skillful painter of trees, shrubs and flowers and was later brought into the experimental farm system as an entomologist.

The 20th century gradually brought professionally-trained entomologists into the science picture at Agriculture Canada and elsewhere. Through the years, entomology took its rightful place in the sun in the Agriculture Canada research arm in various organizational arrangements. There were many names important to entomology in Agriculture Canada.

I won't go into detail about them. There is something very special about those in at the very beginning like Fletcher. But later, various people like Arthur Gibson, Gordon Hewitt, Robert Glen, Beverley Smallman and many others played important leadership roles.

Agriculture Canada did many things this year to celebrate the research centennial. There were open houses at research stations. Some of you may have attended the big birthday party we held on the lawn outside the William Saunders Building on the Central Experimental Farm last June 2nd. That was a very special event indeed. For June 2nd was the precise day when the legislation to set up the experimental farm system became law 100 years before.

I hope all of you have received a copy of our centennial brochure, *In Search of Plenty*. We also want to considerable effort to prepare a history of the Research Branch. It was written by Tom Anstey, who spent most of his adult life in the Agriculture Canada Research Branch before retiring. His book, *One Hundred Harvests*, is available through bookstores which act as agents for the distribution of federal government publications. I commend it to you for it is in part the story of a nation as well as of science.

It tells the story of the Research Branch as only somebody can who was deeply involved with it for so many years. Naturally, entomology is dealt with in some detail. It is important to read and know about the people and events and conditions that preceded this meeting here today and in a real sense brought us here together.

One centennial aim was to remind all those with an interest in agri-food research to look at the past and prepare for the future. We have many tasks ahead in many fields. We must continue building our data base in the whole field of molecular biology. That area in particular is crucial to our agri-food economy dealing as it does with the creation and protection of new plants and the improved performance of livestock.

Clearly we must tackle more vigorously the problem of soil degradation in Canada. Loss of organic matter, salinity and erosion by wind and water remain particular problems. We need sharp leaps ahead in our research capacity to create new products and processes in the food processing field. Our new food research institute at Saint-Hyacinthe near Montreal will expand the excellent work of the Food Research Institute at Ottawa.

At the same time, we must effectively deal with the hundreds of other small and big problems that besiege the agri-food industry in Canada. One of the big ones is pesticide use and misuse. We must continue the historic task of moving the nation towards a more judicious, limited and intelligent use of these chemicals, yet maintain cost-effective production.

Cost-effective is a very important double word in our scientific vocabulary. As scientists we must continue to develop the technology to improve the economic position of the Canadian farmer. That too is part of our heritage, made all the more important now because of the price and market crisis afflicting some of our farm community.

Our kind of science can do many things on the economic front, now as in the past. Our entomologists and other scientists must continue to contribute the knowledge needed to deal with insects, weeds and plant disease more cheaply than the exclusively chemical route. Some day, courtesy of entomology and genetic manipulation, we will have commercial crops that produce their own insecticides. That will be much cheaper than spraying, I assure you. Some day I trust we will have a range of commercial crops capable of obtaining their nitrogen requirements from the air rather than from the fertilizer store.

We can accomplish these things and many more because we have the tradition and experience behind us to make it happen. But future success will also depend on the continued support and understanding of our patrons of research into food production. That interest is also part of our national heritage, something to be treasured and nurtured.

Our heritage is many things. One of those things is what the social historian, James Gray, in his book, *Men Against the Desert*, called one of the greatest Canadian success stories of all times. He refers to the massive campaign that, in his view, prevented the reduction of much of the southern Prairies to a virtually uninhabitable desert in the 30's.

The fight to save the Palliser Triangle from drought, dust storms, grasshoppers, sawflies, hail and rust was led in large part by our experimental farms. Gray is almost overwhelming in his praise of the work of our scientists. It was them, he said, who provided so much of the hands-on knowledge, physical help and leadership that brought the Palliser Triangle back from the brink of destruction. Without the experimental farms, he says, nothing would have been possible.

Gray singled out the entomologists for their contribution. Let me quote: "Nor was the advice of any of the scientists sought after more frequently than that of the entomologists".

With great eloquence, Gray argues that the return of the rains to the Palliser in the fall of 1937 could not alone have saved the dry lands. The other essential ingredients were the great reclamation projects like community pastures, new farming and ranching techniques, specialized machinery and a revived people who were not left to self-destruct. Behind the survival of those desperate farmers of the 30's were the agricultural scientists who saved the day.

One quarter of all the arable land in Canada was threatened in those terrible, yet inspiring years. Gray's conviction was that Canada could not have survived economically or politically if that battle of men against the desert had been lost. Ladies and gentlemen, all that is part of our heritage. And what a heritage it is!

If we honour our heritage, then the future will honour us. Science is not a transient activity to be called into action from the shadows by our country only in times of seeming crisis. Unless science is sufficiently supported on a continuing basis in good times and bad, it won't be able to deal with crisis.

An effective and responsive scientific community cannot be cranked up overnight on demand. That kind of powerful instrument is the result of generations of development by generations of scientists like yourselves here today. Like Saunders. Like his son Charles who discovered Marquis wheat with the help of his father for the benefit of the economic development of the west. Like Fletcher and Criddle. Like J. H. Craigie who did such important foundation work on rust control in grain here at our Winnipeg Research Station. Dr. Craigie, by the way is 98 years old and living in Ottawa.

Properly nurtured over time, science can do its best work by preventing crisis altogether or mitigating its worst effects. Science is primarily a before activity, not after. Support for science is both investment and insurance.

Honourable science is part of the great continuum of human progress on this planet, despite the science applied to war machines and other foolishness. In Canada, it helped create our elaborate food production system, a necessity for and a monument to an advanced civilization.

Let me sum up my feelings about the role of science in our country. I have said before and say again that as a highminded nation, we pursue such central ideals as justice, equality and freedom for all. Their attainment comes in many ways, not the least of which is through science. For science gives substance to our dreams. My thanks for giving me this opportunity to say these words at this time, in this place, to this group.

E.S.C. MEETING, 1986



President-elect G.G.E. Scudder presenting Out-going President H. F. Madsen with a memento of office; Winnipeg, October 5, 1986.



Board of Directors, Entomological Society of Canada, 1986.

L. to R.: R. A. Cannings, J. C. Conroy, J. S. Kalleher, P. W. Riegert, H. F. Madsen, L. S. Thompson, R. B. Aiken, G.G.E. Scudder, R. Gooding, S. B. McIver, R. F. Shepherd, R.G.H. Downer, D. A. Craig, C. Cloutier, E. C. Becker, A. B. Ewen, J. A. Shemanchuk, D. E. Bright; Winnipeg, October 4, 1986.



President-elect G.G.E. Scudder presenting E. C. Becker, who was Treasurer of the Society for 25 years, with a memento of office; Winnipeg, October 5, 1986.



President H. F. Madsen presenting prize to Susan I. R. Fraser for the best student paper presented at the 36th Annual Meeting of the Entomological Society of Canada, Winnipeg, 7 October 1986.

NOMINATIONS

E.S.C. 1987 Election

Second Vice President:

J.P.M. Mackauer
Department of Biological Sciences
Simon Fraser University
Burnaby, British Columbia
V5A 1S6

J. McNeil
Département de Biologie
Faculté des Sciences
Université Laval
Québec, P.Q.
G1K 7P4

Director-at-Large:

N. Angerilli
Agriculture Canada, Research Station
Summerland, British Columbia
V0H 1Z0

G. Gerber
Agriculture Canada, Research Station
195 Dafoe Road
Winnipeg, Manitoba
R3T 2M9

R. P. Jaques
Agriculture Canada, Research Station
Harrow, Ontario
N0R 1G0

Fellowship Selection Committee:

P. Harris
Agriculture Canada, Research Station
P.O. Box 440
Regina, Saskatchewan
S4P 3A2

J. S. Kelleher
Research Program Services Section
Agriculture Canada, Central Experimental Farm
Ottawa, Ontario
K1A 0C6

R. D. McMullen
Agriculture Canada, Research Station
Summerland, British Columbia
V0H 1Z0

Additional nominations from members must be submitted not later than **30 April 1987** to the Secretary, Mr. J. A. Shemanchuk, Research Station, Agriculture Canada, P.O. Box 3000, Lethbridge, Alberta T1J 4B1

P. J. Albert
A. R. Forbes
H. F. Madsen (Chairperson)

ANNUAL REPORTS FROM OFFICERS, TRUSTEES AND COMMITTEES (1986)

Report of the Secretary

During the past year I have recorded the minutes of the Executive Council and the Governing Board, prepared agendas for these meetings as required to the Executive, Directors, and Trustees of the Society. I have maintained files of the Society, prepared the ballots for election; notified nominees of meetings and of Society affairs for the Bulletin; provided liaison between committees of the Society and the Governing Board and between the Society and Affiliate Societies. Much of the time spent on Society business involved taking care of correspondence and day-to-day affairs of the Society.

I would like to thank the Executive Council, Trustees, and Directors for their help and advice during the past year.

J. A. Shemanchuk

Finance Committee

Members of the Finance Committee (FC) are: D. Barnes, V. M. Behan-Pelletier, D. E. Bright, R. A. Cannings, H. V. Danks, A. C. Schmidt, H. J. Teskey.

The Committee met in Ottawa on February 25 and August 21, 1986. The following recommendations were presented to the Executive and Governing Board.

1. The FC recommended that a decision be deferred to acquire a photocopier as requested for the ESC office, since there is no financial benefit in doing so. The FC recommended that a year's records should be obtained of the copying done and of any difficulties caused by the inconvenience of not having an in-house copier before a final decision is made.
2. The FC recommended against acquiring a computer for the Scientific Editor's office.
3. The FC recommended that suitable word-processing software be acquired for the ESC office, once the computer system is stable.
4. The FC continued to be concerned with the high cost of GB meetings; it urged all Board members to reduce expenses as far as possible, especially by booking cheaper advance air fares. Other possibilities for reducing costs are being investigated.
5. The budget for 1986 (reviewed by the FC and recommended to the Governing Board) forecasts a substantial deficit. The FC recommended that Society receipts and expenditures be followed very carefully in the near future, as a pattern seems to be developing of decreasing income (smaller membership, smaller journal issues reducing the page charges received) and rapidly increasing expenditures (printing costs for journal and Bulletin, editorial expenses, cost of meetings, office staff salaries). However, some of these elements might change, so that the FC recommended that no drastic action (such as an increase in fees) be taken immediately.
6. The FC recommended that reprint prices be reviewed and that potentially cheaper printing for the journal and the Bulletin continue to be investigated.

H. V. Danks
Chairman

Joint Annual Meeting Committee

The Annual Meeting will be held at the Holiday Inn South, Winnipeg, from 6-8 October 1986. In addition to the Heritage Lecture and the Plenary Lecture, there will be two symposia, "Insect-plant relationships" and "Current topics in insect physiology". A total of 35 papers have been entered in the student competition and 54 papers will be given in submitted papers sessions; there are also poster papers, commercial exhibits, and a special interest group. There will be a reception at the Winnipeg Art Gallery on 6 October, and the Annual Banquet at the Holiday Inn South on 7 October.

Programmes are to be sent out to all members in advance of the meeting. Abstracts will not be included in the programme but will be available at the meeting.

Substantial financial support has been received from the Natural Sciences and Engineering Research Council, Agriculture Canada and the Manitoba Department of Agriculture, and over \$2000 has been obtained from corporate donations.

N. J. Holliday
General Chairperson

By-Laws, Rules and Regulations Committee

The By-Laws, Rules and Regulations Committee considered two matters referred to it by the Governing Board since the 1985 Annual Meeting.

1. *Times of Annual Meetings*

The Board asked the Committee to examine the Standing Rules and recommend amendments, so that Annual Meetings of the Society could be held at any time of the year in conjunction with other meetings.

The Committee examined both the Standing Rules and By-Laws of the Society and concluded that the Society is not restricted to any particular time of the year for its Annual Meeting. Therefore, no *general* changes are needed in either the Standing Rules or By-Laws to enable the Society to meet at other times of the year. There also appears to be no restriction on meeting with other Societies. However, *specific* changes may be required on each occasion that the Society decides to hold its Annual Meeting outside the September 15-October 31 interval in which these meetings usually are held; these changes would ensure that the Society's business is managed satisfactorily. The changes required in each such instance will depend on the time of the year in which the meeting is to be held.

2. *Payment of Membership Dues*

The Board asked the Committee to recommend changes to the By-Laws that would ensure that "payment of any year's membership should be required by January and not by April, as is currently set out in the By-Laws, and that an administrative fee of \$5.00 be applied for late payment".

The Committee found no reference in the By-Laws to membership payment in April, so is unable to recommend a change to the By-Laws in line with the Board's request. However, the Committee feels that the Board's intent would be met by changing Standing Rule II, which states in part that "if dues are not paid by the last day of April, the rights and privileges of membership shall be suspended and the member's name shall be removed from the mailing list". Therefore, the Committee recommends that the Governing Board consider the following revised wording for Standing Rule II (changes are in *italics*):

- 1) Annual dues for direct Regular Membership shall be forty-five dollars (\$45.00) *if paid by January 1, or fifty dollars (\$50.00) if paid later.* (1 January, 1984).
- 2) Annual dues for Student Membership shall be twenty dollars (\$20.00) *if paid by January 1, or twenty-five dollars (\$25.00) if paid later.* (1 January, 1984).
- 3) Annual dues for Sustaining Members shall be one hundred dollars (\$100.00). (1 January, 1978).
- 4) (a) If dues are not paid by the *first day of January*, the rights and privileges of membership shall be suspended and the member's name shall be removed from the mailing list.
(b) Reinstatement may be effected by paying the dues by the end of December of the same year.

Recommendations:

The Committee's recommendation re the times of Annual Meetings, and the proposed changes to the Standing Rules were submitted to the Executive Council at its April, 1986 Meeting for consideration, and were accepted and approved by the Executive Council. The By-Laws, Rules and Regulations Committee is now submitting its recommendations on the two matters to the Governing Board for its consideration and approval. If the proposed changes to the Standing Rules are approved, the changes will have to be submitted to the 1986 Annual General Meeting for approval by members of the Society.

G. K. Bracken
M. M. Galloway
H. G. Wylie (Chairman)

The Scientific Editor

The scientific editorial duties are now run from Saskatoon and all manuscripts are submitted directly to this office. Drs Stephen Smith and Doug Eidt were of tremendous help during the transition and I want to take this opportunity to express my sincere thanks to each of them.

The cost to the Society of running the editorial office has increased markedly over previous years, because office supplies and services are no longer donated to the Society. From Nov. 1, 1985 to Aug. 15, 1986, these services and supplies cost the Society approximately \$6300. These expenses are part of the cost of doing business and I think it is very unlikely that Agriculture Canada or any university or other agency will be willing to donate the services and supplies as they did in the past.

There are now two Assistant Scientific Editors (Harvey Craig and Mukul Mukerji) and a board of 18 Associate Editors, nine of whom are new. Their names are listed on the inside front cover of each issue of the journal. These are the people who do the dog work and if the editorial process works, they are the reason that it does. They deserve the gratitude of the Society — they certainly have mine.

Since taking over last November, I have been impressed with the job done by Barbara Patterson as Managing Editor. She does her job well. In hindsight, I am amazed at her friendliness and patience in dealing with editors (and probably authors) who might appear dim-witted, at best.

I also want to express my sincere thanks to the many anonymous reviewers, who willingly give of their time and expertise. Most are prompt, courteous and thorough and they supply the Society with a service that could never be bought.

Manuscripts

In the 41-week period (Nov. 1, 1985 to Aug. 15, 1986) 163 manuscripts (3.97 per week) were received. The disposition of these was:

In review	25
To authors for revision (A)	36
Combined with others	0
Withdrawn (B)	4
Accepted (C)	60
Rejected (D)	38
Total	$(D + B)$ 163
Rejection rate	$\frac{(A + B + C + D)}{(A + B + C + D)} = 30.6\%$

Manuscripts that were in review or revision before Nov. 1, 1985 (and for which I was responsible) are NOT included in this table.

Time in Review

For the 138 manuscripts that have been through the review process during the past 41 weeks, time in review was (no. of manuscripts in parenthesis): 0-2 weeks (8); 3-4 weeks (18); 5-6 weeks, (38); 7-8 weeks (36); 9-10 weeks (19); 11-12 weeks (15); 13 weeks plus (4).

Size of the Society's Publications

Although there will be a reduction in the number of pages in *The Canadian Entomologist* in 1986 (1400 est.), there will be an increase in the number of *Memoir* pages (1000 est.), with the result that the overall total should be the second highest in recent years.

Recommendation

The Managing Editor is not able to keep up-to-date with copy-editing of the *Memoirs* this year. I believe that authors submitting *Memoirs* should receive the same service (or as close as we can to that) that journal authors receive; they should not have to wait for 18 months, or more, after acceptance for their work to appear in print.

My recommendation is that the Society hire an editor on a contract basis in order to bring copy-editing of the *Memoirs* up-to-date. Three accepted *Memoirs* (ca. 1700 typescript pages) should be contracted out right now; Barbara has determined that this would cost the Society about \$4800. (at \$18. per hour). I suggest that the Society must be prepared to contract out copy-editing of *Memoirs* in the future, should a backlog occur again. So, I recommend further that periodic expenditures for contract copy-editing should be made when necessary.

I thank you for the privilege of serving the Society for the past year (almost). I am willing

to continue, but you have my offer to resign should you find a better appointee at any time. I strongly agree with previous editor Dr Doug Eidt in believing that the dissemination of scientific information is the most important task this Society performs.

Respectfully submitted,
Al B. Ewen
Scientific Editor

Bulletin Editor

I took over as Bulletin Editor on January 1, 1986. At the writing of this Report, three issues (18:1, 18:2 and 18:3) have been prepared.

A major problem has been the delay in the issues of the Bulletin being published. The delays are a result of (1) a new Editor, (2) late submission, and (3) submissions not translated into French. I have received from the printer an accounting of time spent on the publication process. This report indicates that there has been an increase in the time taken to process manuscripts but that this is decreasing with each issue. Our printer, Hignell Printing Ltd. of Winnipeg continues to give excellent service.

R. Aiken
Bulletin Editor

Publications Committee

Members of the Publications Committee during 1985/86b are: G.C.D. Griffiths, D. Lafontaine, M. Mackauer (Chairman), A. Maire, D. R. Oliver, A. J. Thomson, and W. J. Turnock.

1. *Editorial Appointments*

In 1985, the Board filled all senior editorial offices by new appointments: Dr. A. B. Ewen as Scientific Editor; Drs. C. H. Craig and M. K. Mukerji as Assistant Scientific Editors; and Dr. R. B. Aiken as Bulletin Editor. Dr. B. K. Mitchell continued as Assistant Bulletin Editor, and B. Patterson as Managing Editor.

In response to the greatly increased editorial needs in some areas, nine new Associate Editors (H. F. Cereske, J. C. Cunningham, J. M. Hardman, J. E. Henry, F. Gould, B. D. Roitberg, C. J. Sanders, R. E. Stinner, and M. L. Winston) were appointed, bringing the total to 18.

Dr. I. M. Smith submitted his resignation as Associate Editor, to be effective as soon as a replacement can be found.

The Committee reviewed the terms of office of associate editors. The term of office is three years, ending on 31 December of the third full year. Associate editors may be reappointed by the Publications Committee to additional three-year terms on the recommendation of the Scientific Editor.

2. *Waiver of page charges*

One application was received; the application was rejected because it did not satisfy the guidelines.

3. *Reviews*

A total of 24 book reviews and notices were published in the four most recent issues of the Bulletin to Vol. 18 (2), 1986.

4. *C. P. Alexander Fund*

The Committee developed guidelines for the use of the C. P. Alexander Fund. On the recommendation of the Scientific Editor, the Publications Committee will issue annually invitations for one to three reviews of topics of current significance to Canadian entomology. The reviews will be published in the Canadian Entomologist, with publication costs to be paid from the C. P. Alexander Fund. Topics for the first reviews are currently being selected.

5. *Guidelines for authors*

The Committee approved several minor changes of the Guidelines, but postponed action on a more general review on the advice of the Scientific Editor.

6. *Other items*

Other issues considered by the Publications Committee and/or its Chairman included the publication of articles in the Bulletin, copyrights, and advertising in the Society's journals. M. Mackauer submitted a recommendation to the Board with regard to a proposal, received from the Canadian Phytopathological Society, for the possible publication of a guide on insect pests and diseases of fruits and vegetables in Canada.

M. Mackauer
Chairman

Scientific Committee for the Biological Survey of Canada (Terrestrial Arthropods)

The Committee met in Ottawa on October 24-25, 1985 and April 24-25, 1986.

D. M. Lehmkuhl resigned from the Committee. Four members retired by rotation. Drs. Behan-Pelletier, Larson and Wiggins were reappointed for further 3-year terms. Drs. A. Finnamore and P. G. Mason joined the Committee.

A book on "Insect dormancy: an ecological perspective" by H. V. Danks was completed, reviewed, revised and sent to press. A publication grant was obtained by the Committee from NSERC.

Manuscripts from a symposium on "Aquatic insects of peatlands and marshes in Canada" were completed, reviewed and revised. They have now been submitted for publication as a Memoir.

A design by R. A. Cannings was accepted as the Survey logo with the approval of the National Museum.

The various scientific projects of the Survey were reviewed.

The 1986 annual report to the National Museum of Natural Sciences was prepared and submitted on time in June.

Additional editions of the Newsletter were issued.

G.G.E. Scudder
Chairman

Fellowship Committee

The Fellowship committee received two nominations for Fellow in 1986. Both were considered to be exceptional nominees, and their names were forwarded to the Executive for approval. The two new Fellows of the Entomological Society of Canada are: Dr. D. L. Struble and Dr. L. Safranyik.

J. H. Borden
Chairman

Science Policy Committee

The Science Policy Committee met in Ottawa on April 21, 1986.

The final report on Microbial Insecticides was received from the Chairman of the Special Committee, O. N. Morris. The Science Policy Committee recommended that the Society publish the report as soon as possible and circulate this widely (including all members of the Society). After editing by the Science Policy Committee Chairman, the report was submitted for publication, and appeared in June 1986, as a supplement to the Bulletin (Vol. 18, No. 2).

The Committee met with Dr. R. Trottier, Research Coordinator of Protection for Agriculture Canada, and discussed Agriculture Canada's interest in Pest Management. It was decided that a biological control policy workshop should be held in Winnipeg October 9-10. The ESC would be invited to nominate two participants: J. E. Laing and O. N. Morris were subsequently nominated.

The Dossier of Important Entomological Subjects in Need of Study was reviewed. Since

the mechanisms involved in the registration of Pest Control Products is being reviewed, this topic will not be pursued further. The problem of pesticide resistance was discussed and correspondence established with G. P. Georghion, Chairman of the Western Regional Coordinating Committee on Pesticide Resistance and Resistance Management.

Finally, the Committee considered the problem of Accidentally Introduced Insects, the BCC Congress and dues, and the extra-mural grant policy of Agriculture Canada.

G.G.E. Scudder
Chairman

Public Education Committee

To date three Regional Societies have submitted applications for Public Education Committee Grants and \$1400 have been dispensed in current, past and future years' grants. The ESA, although having a long history of sponsoring an annual Insect Collection Competition and offering encouragement to amateur entomologists, applied for a grant for the first time in many years. This grant, covering the last three years, is for awards to the winners of the Insect Collection Competition, to subsidize participation of amateurs at annual meetings, and provide supplies for a program of talks to amateur groups.

The SEQ applied for a grant to enable them to continue to provide tangible encouragement for the work and activities of the very active Association des Entomologistes Amateurs du Quebec. In the past year the ESC grant allowed the AEAQ "d'ameliorer la qualite d'impression et la couverture de leur revue FABRERIES et la reedition de deux documents, un abrege d'entomologie et un glossaire entomologique".

The ESS received a grant for the next three years towards their "travelling microscope", which is proving to be a considerable encouragement to amateur entomologists in the Province. This year the ESS will also provide a basic taxonomic library to accompany the microscope.

The exhibit on insects at Sudbury's SCIENCE NORTH, partially funded by the ESC, was officially presented to the public in mid-June. A news release was issued and the occasion received good coverage in the local media. In all cases the contribution of the ESC was acknowledged. A plaque announcing the contribution of the Society hangs at the exhibit.

As usual, most of the public education in entomology has come from the efforts of individual entomologists without the help of the PEC. I am attempting to collect information from Regional Societies on these individual efforts and will bring them to the Board's attention at a future date. In the meantime the PEC would like to thank those individuals who are involved with the public in this way.

Gordon Pritchard
Chairman

Scholarship Committee

Twelve applications for scholarships were received, one of which was declared ineligible. This was a larger response than we have previously received. Perhaps the doubling of the value from \$1000.00 to \$2000.00, stimulated more interest. Decisions were extremely difficult as all applicants were highly qualified. The winners were Susan Fraser, Dept. Biology, University of Waterloo, supervisor — S. Smith, and Sandra Graham, Dept. Zoology, University of Manitoba, supervisor — E. Heubner.

Total assets in the scholarship fund as of December 31, 1985 was \$50,658., an increase of over \$5000 in the last year. Interest income was \$4,642. which is about the same as last year, while donations increased dramatically from \$2,076 to \$7,713.

Eligibility dates were expanded to cover an 18 month period and thus allow greater flexibility for students applying during their first year of graduate work regardless of their beginning date.

Roy Shepherd
Chairman

Heritage Committee

The following articles were assembled and submitted to the Public Archives of Canada for inclusion in the collected holdings of the Entomological Society of Canada:

1. Research Report, 1951-1961, Chatham, Ontario
2. Descriptive Brochure, Entomology Laboratory, Belleville, 1955
3. Program, E.S.C. Annual Meeting, Ottawa, 1985
4. Gold Medal Winner Brochure, Ronald W. Stark, 1978
5. Gold Medal Winner Brochure, Ranendra N. Sinha, 1985
6. C. G. Hewitt Award Winner Brochure, Mark L. Winston, 1985
7. E.S.C. Brochure "Entomology in Canada", 1985
8. Newspaper Clipping, Fredericton Daily Gleaner, 21 January 1985, re: R. Balch
9. Photos: Governing Board 1983, Challenge Cup E.S.B.C., J.A. Beal, I. W. Varty, 2 of Chatham Laboratory Staff 1961
10. Banquet tickets, E.S.C. Annual Meeting, Ottawa, 1985
11. Brochure, Biosystematics Research Institute, 1886-1986

Although the above is only a modest contribution to our archival holdings in P.A.C., it nevertheless, represents contributions made by conscientious members of the Society, namely: Ron Aiken, Doug Eidt, Bob McClanahan, Owen Olfert, and Bill Turnock. Hopefully others in our Society will, in the future, make similar contributions, especially those who are retiring and do not know what to do with all the accumulated memorabilia.

Sorting, culling, and retention of archival material from past files of the Society, dating from 1970 to 1980, is continuing. Hopefully all worthy archival material from these files will be in the P.A.C. in 1987.

Work is in progress in compiling "Profiles of Entomologists" of members of the E.S.C. Synoptic biographical sketches have been prepared for 61 members of the E.S.B.C., 9 members of the E.S.A., 51 members of the E.S.S. and 26 members of the E.S.M. This comprises about 40% of the entomologists of Western Canada; sketches of the remaining 60% are incomplete.

P. W. Riegert
Chairman

Insect Losses Committee (Part II)

The original objectives of the study were to document losses due to insects in wheat, corn and canola in Canada for the period of 1965-1984. The Study Team determined that this was not possible, because the amount of data available for the period 1965-1979 is very scant and fragmentary. Consequently, the study covers only the period from 1980-1985. In March 1986, it became evident that the study couldn't be completed by 30 June 1986. I then contacted Supply and Services Canada to obtain a 4-month extension for the study; this extension was granted. The Scientific Committee currently is examining the first draft of the report. The final draft of the report will be in the hands of the Scientific Authority for the Government (i.e. in my hands) by 31 October 1986, the new deadline for completion of the study.

George H. Gerber
Chairman

Insect Common Names and Cultures Committee

"With the SCIENTIFIC NAMES of insects in perpetual chaos, due to the application of the law of priority, the splitting of species and generic concepts, and the endless shuffling of species from one genus to another, common names have come to have much more significance and importance than formerly. Indeed many of the good old common names are a better index to the species under consideration than the scientific name."

C. L. Metcalf in J. econ. Entomol. 35

It is over 40 years since this statement was made and many members of the Common Names Committee think that, if anything, things have got worse. Consequently, the Entomological Society of Canada is in the process of producing a new list of common names of insects in both French and English. It is hoped that it will soon be possible to divide the common names into family groupings at which time the ICNCC will be most grateful for the help of Society members in checking the accuracy of both the scientific and common names. Watch the Bulletin for an announcement that we are ready and, if you possibly can, please offer to check the names in your area of expertise so that we can get the list to the publisher as soon as possible — before the scientific names change? This is a good time to add new common names that you believe are needed. Please use a Proposal form, obtainable from the undersigned, which will simplify their consideration by the Committee.

Dr. E. M. Belton
Biological Sciences
Simon Fraser University
Burnaby, B.C., V5A 1S6

Association for the Advancement of Science in Canada

The following is based on recent AASC publications and discussions at AASC meetings:

1. Canadians are aggressive consumers of technology but reluctant supporters of scientific research and development.
2. Rather Canadians seem to be under the illusion that we can continue to balance the books by exporting natural resources.
3. Unless this attitude can be changed, and unless science and technology (S&T) can be given a higher profile within our culture, we will be left behind in the transition that is already underway towards a post-industrial, knowledge based society.
4. Such a change requires a wider and deeper understanding of S&T among both the public and politicians.
5. The public awareness programs of the Science Council of Canada and the Ministry of State for Science and Technology have had only limited success; most national leaders have been ambivalent in their position on S&T; and the mass media continue to regard science as a low priority topic, (interestingly this is less the case in the francophone community).
6. The key according to AASC is the establishment in Canada of a large (over 100,000 and eventually, 1 million members strong) voluntary organization dedicated to "foster understanding of the significance of science, technology and engineering to Canadian Society", and this is AASC's single objective.
7. AASC plans to achieve this by expanding its membership, partly by joining together with other groups (it has already grown from 300 in 1984 to over 1,000 through amalgamation with the Ontario based Friends of Science, Science Focus, Scientists and Engineers for Energy and Environmental Security, and the Ottawa based Association for Science in Society) and it is currently negotiating a link with the magazine *Equinox*, which since its appearance in 1981 has grown so rapidly that it now has a paid subscription of 170,000. Publication of AASC's magazine *Access* has been temporarily suspended while these negotiations are taking place, and subscribers are instead receiving issues of *Equinox*, with an insert letter to members.
8. AASC and *Equinox* are currently conducting, with ESC support, a market survey to see if both subscribers and potential subscribers would favour a joint subscription/membership scheme at a slightly higher cost and with some additional benefits. These would include more extensive coverage of science, technology and society (STS) issues and activities in Canada (in both languages), and reduced rates for entry to most of Canada's Science Centres and Museums.
9. Economically this will give AASC, at \$5.00 per subscription/membership, financial independence and enable it to undertake more ambitious projects and thereby achieve its goal of ensuring the health of science and technology in Canada.
10. AASC is involved in similar negotiations with the francophone science media, particularly *Quebec Science* (25,000 subscriptions).
11. Plans are also underway within the National Museum of Science and Technology (NMST) in Ottawa, ambitious theme displays that will tell the story of aviation, agriculture, communication and space from the Canadian perspective. This will involve a

cooperative effort between industry and the three levels of government, and will be accompanied by the publication of associated educational books and pamphlets, and the staging of various media events.

12. Dr. J. William McGowan, President of AASC and Director of NMST, has already presented the above ideas to the newly appointed House of Commons Standing Committee on Research, Science and Technology. His presentation and brief were well received by the chairman, Dr. Bill Tupper, and his seven-member committee.
13. In addition to the above, AASC has maintained its usual range of activities. It held its 1985 Annual Meeting in Conjunction with the Learned Societies at the University of Montreal, and its 1986 Annual Meeting at the University of Alberta in conjunction with WISEST, Women in Scholarship, Engineering and Science. This very successful two-day event was attended by 250 people including your representative, who gave a presentation on Agroecosystem Design and Management for Sustainability and Pest Prevention. In 1987 it will hold its Annual Meeting in Ottawa in conjunction with ACFAS, l'Association Canadienne — française pour l'avancement des sciences.
14. In June, AASC was a major player in the National Science and Technology Policy Forum in Winnipeg, organized by the Science Council under the sponsorship of the Minister of State for Science & Technology.
15. AASC remains active on COPSE, the Committee of Parliamentarians Scientists and Engineers. Planned activities include a day long inaugural conference, a regular luncheon program and, on an ad hoc basis, invited representation to the House of Commons Standing Committee on Research, Science and Technology.
16. AASC has also continued, with the financial support of CIDA, the Canadian International Development Agency, to work with Interscencia, a Pan-American science journal, and has played an active role in several projects within the region, including the establishment of a small industry in Guatemala for the production and processing of medicinal plants.
17. AASC is in a critical transitional period. It requires the continuing support of ESC, and the other 47 institutional members, and as many individual members as it can attract. If it is successful in finalizing its agreement with *Equinox*, Canada will have its first widely read anglophone science magazine, and we can expect an improvement in the support of S&T in Canada. Without this, or another innovative development, the downward spiral can only be expected to continue, for until the levels of S&T awareness can be raised among the general public the political will will remain weak.
18. In its association with AASC and *Equinox*, ESC can benefit both through the general stimulation of science, and by having an outlet for popularizing the study of insects, and accurately explaining the issues involved where entomology interacts with society.
19. AASC is anxious to hold open forums at society meetings to which the public would be invited to meet face to face with the professionals, and so narrow the gap between these two groups. They are anxious to collaborate with ESC in organizing such a forum.
20. AASC is now located (free of charge) in the administration building of the National Museum of Science and Technology. Write them or phone them to let them know your opinions on the above topics, or to find out more information. It is only through participation that a membership organization can function. AASC, 2380 Lancaster Rd., Ottawa, Ont. K1B 3W9 (613) 521-2556.

Stuart B. Hill
AASC Observer

Committee of Parliamentarians, Scientists and Engineers (COPSE)

COPSE was developed as a non-partisan approach to building a bridge of understanding between parliamentarians and the scientific and engineering communities of Canada. Its constituent organizations are the Royal Society of Canada, the Canadian Council of Professional Engineers, the Science Council of Canada, and the Association for the Advancement of Science in Canada, which administers COPSE. Membership of COPSE comprises all members of both houses of parliament, and representatives of about two dozen supporting scientific and technological societies, including the ESC.

COPSE held no formal activities during 1985 as a result of the change in government, but a limited programme was organized in 1986, providing the foundation for increased future activities which are being developed by a programme committee with both parliamentary and scientist-engineer members.

Two luncheon meetings were held during the early part of 1986. At the first, Dr. John Evans, of Allelix, spoke on the economic importance of biotechnology for Canada. At the second, Dr. Donald Chant, Chairman of the Ontario Waste Management Corporation, discussed the management of toxic wastes. Each presentation engendered lively discussion from an audience of about 45 people, including about a dozen parliamentarians. Following the second luncheon, an information meeting for the Scientists and Engineers group of COPSE was held.

Given clear interest among parliamentarians, as well as among the scientists and engineers, the COPSE programme will continue with renewed vigour (after the 1985 hiatus) now that appropriate contacts and discussions with the new government have been made. Provisional plans are to hold an inaugural conference, open to the press; to continue the series of luncheon meetings to address topics of interest; and to contribute invited representatives to the parliamentary Standing Committee on Research, Science and Technology.

H. V. Danks
Representative

XVIII International Congress of Entomology Organizing Committee

1. A Logo for the Congress has been selected.
2. Listing of the Congress has been arranged in "World Meetings Publications", Professional Books Division, Macmillan Publ. Co., New York.
3. Venue West has been appointed as Congress organizer.
4. Application has been made to the Federal Ministry of Industry and Small Business Development for International Market Development and Tourism Incentive Program funds.
5. Budget data were obtained for the completed XXX International Congress of Physiological Sciences which had 4000 participants and was held at UBC in 1986. The proposed budget for the 1987 International Union of Geodesy and Geophysics at UBC is also available for comparison and guidance.
6. A tentative budget for the Ent. Congress has been drawn up after consultation with Venue West. The estimate is \$898,250 for 3000 participants.
7. CP Air and Air Canada have been appointed joint Official Carriers.
8. Hotel and Student residence space has been booked.
9. Opening and Closing Ceremony speakers have been selected. The Opening Ceremony speaker has accepted.
10. Program structure has been settled. There will be 3 Plenary Symposia, about 5 Plenary Lectures, and 14 Sections.
11. Canadian convenors for most Sections have been approached. Foreign convenors will be appointed.
12. To date 21 suggestions for contributed Symposia have been received.
13. The First Circular and notices to journals will be sent out before Xmas. A mailing list has been requested from the previous Congress organizers. A computerized mailing list for all participants at the last Congress has been completed.
14. The Second Circular with details on program, Registration, Accommodation and Contributed Paper forms will be sent in June 1987.
15. The Committee has additional meetings arranged for October 6-7, 1986.

G.G.E. Scudder

VIGNETTES OF ENTOMOLOGY

Locust Control in Saskatchewan in 1828^a

by

Paul W. Riegert

It was Sunday, the 24th of June, 1827. Fort Carlton — formerly Carlton House — on the North Branch of the Saskatchewan River, lay in undisturbed isolation; somnolent amid the vigour of early summer. The day had dawned bright and clear, promising a wealth of sunshine and warmth. J. P. Pruden, the Chief Factor of Fort Carlton, ten other employees of the Hudson's Bay Company, the many attendant Indian workers, their families, and the itinerant native bands, were going about their daily chores. All the spring planting had been completed; the cereal crops and gardens greened the tilled land. More than ten acres had been planted on the river flat south and west of the Fort (see Fig. 1), most of it to oats, barley, wheat, and potatoes. The kitchen garden, on the east side of the Fort, contained almost 4,000 transplanted cabbage plants, along with maize, onions, melons, parsley, and some tobacco. The fertile soil and the good growing weather foretold of a bountiful crop at harvest time.

About noon an ominous silence seemed to pervade the tiny settlement. The air stirred faintly; a mild breeze sprang up, cascading over the crest of the valley from the south-west. Then it happened! Locusts^{*}, riding the breeze, came plummeting down to earth like so many hailstones. Soon the ground was littered with the winged marauders, swarming over the green fields and gardens, devouring the leafy growth at a calamitous rate. All who witnessed the event were certain that their plantings were doomed.

Fortunately, it had been an early spring. Some seeding of wheat and maize, and the planting of cabbages and onions, had begun on 28 April. Temperatures had soared to the mid-eighties, and growth proceeded unabated. By the time the locusts arrived the barley was in the shot-blade stage of growth and all other crops were equally well advanced. Although the grasshopper damage appeared to be ruinous, serious destruction did not occur. By 2 August all the grasshoppers had disappeared; the field crops and the garden vegetables appeared quite normal and yielded a satisfactory return.

No one considered the locusts again until about mid-May the following year, 1828. The insects did not arrive from some far-away lands, but suddenly appeared as tiny 'hoppers' in the gardens and hot-beds of the Fort. By 17 May, Mr. Pruden was aware that the young locusts, the progeny of the unwelcome visitors of 1827, had eaten most of the young plants that were being readied for transplant into the garden. How could the insects be vanquished?

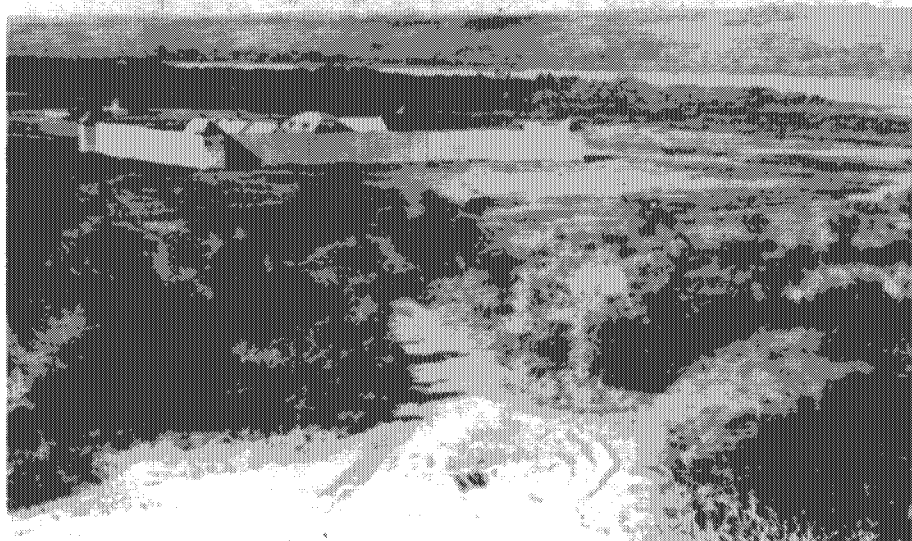
Mr. Pruden was ready to try most anything to protect his crops, kill the pests, and thus preserve the badly needed vegetable garden plants. He first tried ashes; sprinkling the nymphs with these had to effect. They continued to eat as before. Next, some rope-tobacco was steeped in water producing a vile-looking, brownish-black solution that could conceivably be as potent in killing 'hoppers' as it was in burning the tongue when the pungent leaves were smoked. The 'steep' was sprinkled over the nymphs but the insects were immune to its effects. Apparently the nicotine content was too dilute to be lethal.

Mr. Pruden decided that if wood ashes and nicotine would not, or could not, kill the 'hoppers, perhaps gunpowder would. This product was a potent weapon against all other adversaries; why not locusts? The thought of 'shooting' each of the 'hoppers' was not what he had in mind. Such a tactic would be impossible, and at worst, ludicrous. Pruden attempted to once again try a steep, or a slurry method of preparing an insecticide.

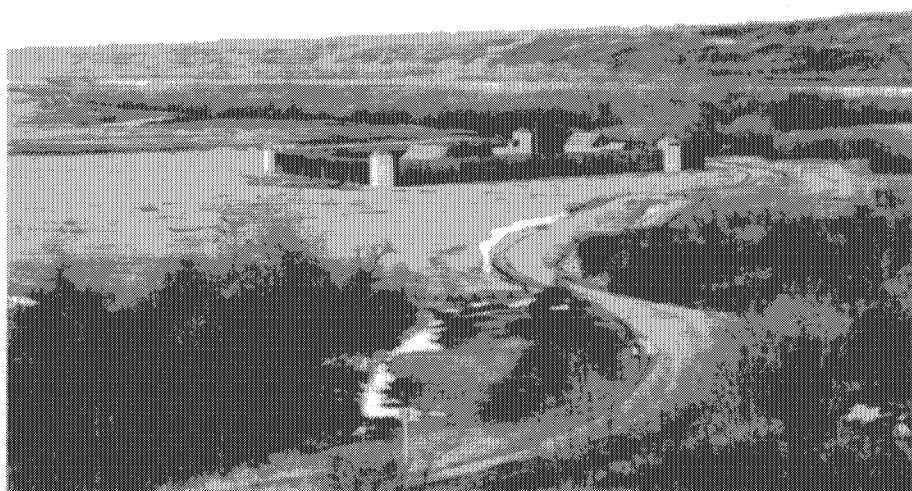
The solution of gunpowder was sprinkled over the foliage and the feeding insects. The experiment of last-resort was successful. When applied on 19 May 1828 the slurried gunpowder produced the desired effect; the grasshopper nymphs were killed and the plant seedlings were saved to eventually yield a bounteous harvest. This action by Mr. J. P. Pruden was perhaps the first successful experiment in attempting to control grasshoppers in Saskatchewan by chemical means.

^a Access to, and information contained in the *Carlton House Journals*, B.27/a/15 and B.27/a/16, in the Hudson's Bay Archives, Winnipeg, is hereby acknowledged.

* probably the Rocky Mountain Locust, *Melanoplus spretus* (Walsh).



Carlton House (Fort Carlton) in 1872. (Photo: Public Archives of Canada)



Fort Carlton (reconstructed) in May, 1984. (Photo: P. Riegert)

PERSONALIA

Retirement

Vernon Randolph Vickery

Vernon Randolph Vickery retired as Professor of Entomology at Macdonald College in September, 1986. Vic, as he is known to his friends, was born in 1921, on a farm near Yarmouth, and remains a proud Nova Scotian. He received his teacher's licence from the Nova Scotia Normal School in 1940, and taught briefly in a one-room school before enlisting in the Royal Canadian Air Force. He was detached to the Royal Air Force with which he saw active service in the U.K., North Africa and Italy.



V. R. (Vic) Vickery

After demobilization, he resumed studies, first at the Nova Scotia Agricultural College, then Macdonald College, graduating B.Sc. (Agr.), McGill, in 1949. Except for a brief period of Master's studies at Macdonald (M.Sc. McGill, 1957), he spent most of the next 12 years as a Provincial Government extension entomologist, and instructor based at the N.S.A.C. at Truro. There he was active in practical and research aspects of economic entomology, and he established himself as a grasshopper and cricket taxonomist. He also became involved in experimental apiculture and pollination. Indeed the pollen dispenser which he and a colleague introduced is still standard equipment, as illustrated in the latest international encyclopaedia of beekeeping.

Vic was one of the early workers in the field of Integrated Pest Management, and was partly responsible for acceptance of the program by Annapolis Valley fruit growers. He also rebuilt the N.S.A.C. insect collection to replace one destroyed by fire in 1946. It was because of this wide experience and competence in several fields that he was appointed as Assistant Professor in the Department of Entomology and Plant Pathology at Macdonald a quarter of a century ago. He was also appointed as the first academic curator of what was then known as the Lyman Entomological Collection, and his first task was to transfer that collection from Montreal to the Macdonald Campus (where it became the Lyman Entomological Museum after the incorporation of the Macdonald College insect collection in 1962). Seventeen years later, he again supervised the transfer of the collection, this time to the new Macdonald-Stewart building. It is no small tribute to his abilities that both moves were accomplished with alacrity and without loss.

In addition to his curatorial duties, Vic maintained an active research program and taught a full load of courses. He taught the first course in apiculture at Macdonald College, and developed a bee research program, which led among other things to the development of an economic method of over-wintering honey-bees in eastern Canada.

It is to Dr. Vickery that so much of the growth and development of the Lyman Entomological Museum and its associated Research Laboratory is due. He can be justly proud of its international renown as a centre of biosystematic (including cytogenetic) research and of its active public education program.

Dr. Vickery's publications are numerous, but perhaps the one that most reflects his work with the museum is that co-authored with Dr. Keith Kevan, the two-volume, 1400-page "Monograph of the Orthopteroid Insects of Canada and Adjacent Regions", published by the Museum. An abridged version is to be published by Agriculture Canada.

Among his many services, other than apicultural, to the scientific community, Vic was for some time Editor of "The Canadian Entomologist", and has been Vice-President and a Director of the Montreal Branch of the Entomological Society of Quebec. In the international field, he is widely acclaimed and is currently President of the world-wide "Orthopterists' Society" (formerly Pan American Acridological Society, of which he was a founder member). The Society now has members in 29 countries. In 1985, he was honoured by being elected a Fellow of the Entomological Society of Canada.

Vic also has interests other than entomological. He was for long active with the Boy Scouts of Canada. He is a philatelist and numismatist, and enjoys working with wood and stone in his well-equipped workshop. It is not expected that he will be idle in retirement. On 6 June 1986, his 65th birthday, he was designated Emeritus Curator of the Lyman Entomological Museum. He says he has a great deal of research he intends to complete, so fortunately, we will not be losing him from the Macdonald Campus.

NEWS OF ORGANIZATIONS

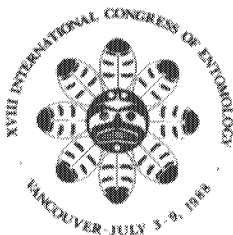
Council for International Congresses of Dipterology

This Council was established by resolution of the First International Congress of Dipterology in Budapest on Friday, August 22, 1986, for the purpose of providing continuity and direction for future International Congresses of Dipterology. The Council was instructed to adopt a constitution modelled on the constitution of the Council for International Congresses of Entomology within one year. The following members were appointed:

Dr. G.C.D. Griffiths (Canada)	— Chairman
Dr. M. Chvála (Czechoslovakia)	— Vice-Chairman
Dr. F. C. Thompson (USA)	— Secretary
Dr. I. Bock (Australia)	
Dr. D. J. de C. Henshaw (UK)	
Dr. I. M. Ipe (India)	
Dr. H. Kurahashi (Japan)	
Dr. L. Papp (Hungary)	
Dr. R. Rozkovsny (Czechoslovakia)	
Dr. C. W. Sabrosky (USA)	
Dr. H. Ulrich (West Germany)	
Dr. G. C. Unnithan (Kenya)	
Dr. V. Zaitzev (USSR)	

Canadian dipterists may communicate their concerns and suggestions regarding future congresses to me, as the Canadian representative. I will call a meeting of the Council in Vancouver during the 1988 International Congress of Entomology, for the purpose of discussing what direction regarding program content should be given to the organizers of the Second Congress to be held in Bratislava in 1990. The Czech Vice-Chairman, Dr. Milan Chvála, will provide liaison between the Council and the organizers.

Graham C. D. Griffiths
Chairman



The XVIII INTERNATIONAL CONGRESS OF ENTOMOLOGY, sponsored by the Entomological Society of Canada, will be held in Vancouver, British Columbia, July 3-9, 1988. Facilities for the Congress will be provided by the University of British Columbia. All scientific sessions will be held on the campus.

Scientific Program. The Scientific Program will include plenary lectures and symposia, section symposia, workshops and special-interest group meetings, as well as contributed paper and poster sessions. Except for the plenary events, the program will probably be divided into the following sections:

- * Systematics, Zoogeography and Palaeontology
- * Morphology and Development
- * Cell Biology, Physiology and Biochemistry
- * Genetics and Speciation
- * Ecology
- * Behaviour
- * Social Insects and Apiculture
- * Insect Pathology and Biological Control
- * Medical and Veterinary Entomology
- * Agricultural Entomology and Pest Management
- * Forest Entomology and Pest Management
- * Stored Products and Structural Insects
- * Toxicology, Pure and Applied
- * Pesticide Development, Management and Regulation

The Plenary lectures and plenary symposia will be sponsored by the Congress, but all other scientific program events must be self-supporting. Entomologists wishing to propose sectional symposia, special-interest group meetings or workshops should write to the Secretary-General, Dr. G.G.E. Scudder, with details.

Program contributions may be in either of Canada's official languages, namely English or French: there will be no simultaneous translation.

Social and Accompanying Persons Program. There will be an Opening Reception and a Congress Dinner. An interesting program is planned for accompanying persons.

Tours. Day tours, as well as Pre- and Post-Congress tours, are planned. These will be of both scenic and scientific interest.

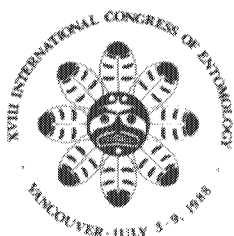
Exhibits. Commercial exhibits will involve equipment, books, illustrations and art.

Travel. Vancouver International Airport has connections to all parts of the world, and is within easy access to the University of British Columbia. Air Canada and CP Air have been appointed official joint carriers for the Congress. Local offices of these airlines will help with individual or group travel arrangements.

First Announcement. This First Announcement is distributed to institutions, societies, scientific journals and participants of the XVIII Congress. Persons wishing to receive the Second Announcement Brochure should so indicate by writing to the following before March 1, 1987:

Dr. G.G.E. Scudder, Secretary-General
XVIII International Congress of Entomology
Department of Zoology
University of British Columbia
Vancouver, B.C. V6T 2A9 Canada

Second Announcement Brochure. This will be forwarded direct to each respondent in June 1987. It will contain details of the program, registration, accommodation, tours, etc.



Le 18e Congrès international d'entomologie, parrainé par la Société entomologique du Canada, se tiendra à Vancouver, Colombie-Britannique, du 3 au 9 juillet 1988. L'Université de Colombie-Britannique fournira les installations et les services nécessaires à la tenue du Congrès. Toutes les sessions scientifiques auront lieu sur le campus.

Programme scientifique

Le programme scientifique comprendra des conférences plénières, des symposiums généraux, des symposiums spécialisés, des ateliers, des rencontres sur des groupes d'arthropodes d'intérêt particulier, des présentations de travaux, et des séances d'affichage. Sauf pour les activités générales, le programme sera divisé selon les domaines suivants:

- * Systématique, zoogéographie et paléontologie
- * Morphologie et développement
- * Biologie cellulaire, physiologie et biochimie
- * Génétique et evolution
- * Ecologie
- * Comportement
- * Insectes sociaux et apiculture
- * Pathologie des insectes et contrôle biologique
- * Entomologie médicale et vétérinaire
- * Entomologie agricole et lutte dirigée
- * Entomologie forestière et lutte dirigée
- * Insectes des denrées alimentaires et des charpentes
- * Toxicologie théorique et appliquée
- * Pesticides: fabrication, utilisation et réglementation

Le Congrès fournira les fonds nécessaires à la tenue des assemblées générales et des symposiums généraux mais les autres activités scientifiques devront être auto-suffisantes. Les entomologistes désireux d'organiser des symposiums spécialisés, des rencontres sur des groupes d'arthropodes d'intérêt particulier ou des ateliers sont priés d'écrire au secrétaire général G.G.E. Scudder pour lui communiquer les détails du projet.

On pourra participer au programme dans l'une ou l'autre des deux langues officielles du Canada, soit le français ou l'anglais, mais il n'y aura pas de traduction simultanée.

Activités sociales et conjointes. Il y aura un vin d'honneur à l'ouverture et un banquet durant le Congrès. On prépare actuellement un intéressant programmé d'activités pour les conjoints.

Visites guidées. On prévoit des visites guidées d'une journée avant, pendant et après le Congrès, visites qui présenteront un attrait touristique de même qu'un intérêt scientifique.

Expositions. Des stands commerciaux exposeront des pièces d'équipements, des livres, des photos et des créations artistiques.

Voyage. L'aéroport international de Vancouver a des correspondances avec toutes les parties du monde et est d'accès facile à partir de l'Université de Colombie-Britannique. Air Canada et CP Air ont été désignés transporteurs officiels pour le Congrès. Prière de communiquer avec les bureaux locaux de ces deux compagnies pour des réservations individuelles ou de groupe.

Premier avis. Un premier communiqué a été distribué aux institutions, sociétés, revues scientifiques et ex-participants au 17e Congrès. Les personnes désireuses de recevoir un faire-part devront écrire au secrétaire général avant le premier mars 1987:

Dr. G.G.E. Scudder, Secrétaire général
18e Congrès international d'entomologie
Department of Zoology
University of British Columbia
Vancouver, BC
CANADA
V6T 2A9

Deuxième avis. Le deuxième avis sera sous la forme d'un faire-part qui sera envoyé à chaque futur participant. On y trouvera des renseignements sur le programme, l'inscription, l'hébergement, les visites guidées, etc.

First International Congress of Dipterology

This Congress organized by the Biological Section of the Hungarian Academy of Sciences was held at the Horticultural University in Budapest, August 17-24, 1986 under the chairmanship of Academician Tibor Jermy, well known for his publications on insect/host plant relationships. There were 262 registered participants and 28 associates. I was able to meet many colleagues from Eastern bloc countries who do not normally travel to conferences in the West.

Following the opening ceremony on Monday, August 18, plenary lectures were delivered by myself ("Review of the major subgroups of the Diptera") and by Dr. Milan Chvála ("Mating swarms of Diptera, effective ethological isolating mechanisms"). The Congress then split into 15 sections and 12 workshops, covering a wide range of fields in basic and applied dipterology.

The Wednesday was left open for field trips and sightseeing. It happened to be Hungary's constitution day, so those interested in pomp and ceremony were treated to parades, flypasts, flotillas of gunboats on the Danube, speeches in Hungarian etc., followed by an evening fireworks display. It was possible to watch the action and collect at the same time on the citadel hill above the University.

The Congress was an outstanding success. The good attendance suggested that dipterological congresses should be held regularly at 4-year intervals (between International Congresses of Entomology). In the closing plenary session Dr. Ludovit Weismann of the Slovak Academy of Sciences was authorized to organize the Second International Congress of Dipterology in Bratislava in 1990. A Council for International Congresses of Dipterology was appointed under my chairmanship for the purpose of providing continuity and direction for future congresses (see below). Resolutions were also passed supporting the preparation of regional catalogs, monographs and faunal works, including the Flies of the Nearctic Region and the Manual of Nearctic Diptera; and deploring the considerable gaps in information on tropical Diptera.

Dr. Graham C. D. Griffiths
Chairman
Council for International Congresses
of Dipterology

International Commission on Zoological Nomenclature

ITZN 59

8 October 1986

The following Opinions, rulings of the International Commission on Zoological Nomenclature, have been published in volume 43, part 3, of the *Bulletin of Zoological Nomenclature* (6 October, 1986).

Opinion No.

- 1401 (p. 231) *Leucaspis* Signoret, 1869 (Insecta, Homoptera): conserved.
- 1405 (p. 239) *Aphelinus mytilaspidis* Le Baron, 1870 (Insecta, Hymenoptera): conserved.
- 1406 (p. 241) *Phalaena stagnata* Donovan, 1806 designated as type species of *Nymphula* Schrank, 1802 (Insecta, Lepidoptera).
- 1407 (p. 243) *Lamia aethiops* Fabricius, 1775 designated as type species of *Ceroplesis* Ser-ville, 1835 (Insecta, Coleoptera).

- 1408 (p. 245) *Hypocryphalus mangiferae* (Stebbing, 1914) given nomenclatural precedence over *Cryphalus inops* Eichhoff, 1872 and *Hypothenemus griseus* Blackburn, 1885 (Insecta, Coleoptera).
- 1411 (p. 251) *Drymus ryeli* Douglas & Scott, 1865 (Insecta, Hemiptera): neotype set aside.
- 1416 (p. 264) *Cnetha* Enderlein, 1921 and *Pseudonevermannia* Baranov, 1926 (Insecta, Diptera): type species designated; *Atractocera latipes* Meigen, 1804: confirmation of holotype.

ITZN 11/5

The following applications have been received by the Commission and have been published in volume 43, part 3, of the *Bulletin of Zoological Nomenclature* (6 October, 1986). Comment or advice on them is welcomed and should be sent c/o The British Museum (Natural History), London, England. Comments will be published in the *Bulletin*.

Case No.

- 2520 *Corixa albifrons* Motschulsky, 1863 (Insecta, Heteroptera): proposed confirmation of neotype designation.
- 2252 *Dexia* Meigen, 1826 (Insecta, Diptera): proposed designation of *Musca rustica* Fabricius, 1775, as type species.
- 2565 *Geonemus* Schoenherr, 1833 and *Brachyomus* Lacordaire, 1863 (Insecta, Coleoptera): proposal to maintain current usage by designation of a type species for *Geonemus*.
- 2524 *Phaulacridium vittatum* Sjöstedt, 1920 (Insecta, Orthoptera): proposed conservation by suppression of *Acridium ambulans* Erichson, 1842, *Trigoniza manca* Bolivar, 1898 and *Trigoniza australiensis*, Bolivar, 1898.
- 2528 *Phisis* Stål, 1861 and *Teuthras* Stål, 1874 (Insecta, Orthoptera (Grylloptera)): confirmation of *Listroscelis pectinata* Guérin [-Méneville] 1831 as type species.

P. K. Tubbs
Executive Secretary

BOOKS AND PUBLICATIONS

Laboratory Cultures of Insects and Related Arthropods in Canada

The 1985 revision of this list can be obtained from:

J. S. Kelleher
Room 1135, K. W. Neatby Bldg.
Biosystematics Research Centre
Agriculture Canada
Ottawa, Ontario
K1A 0C6

Phone (613) 996-1665

Criddle-de-diddle-ensis

Available shortly — Criddle-de-diddle-ensis, a biographical history of the Criddles of Aweme, Manitoba. Includes a biography of Norman Criddle, naturalist and entomologist. Price \$11.00 per copy, hard cover.

Contact: Alma Criddle,
19 - 303 Furby Street,
Winnipeg, Manitoba
R3C 2A8

MEETINGS

XVI International Congress of Genetics

The XVth International Congress of Genetics will be held at the Metropolitan Toronto Convention Centre, August 20-27, 1988. The Congress is sponsored by the International Genetics Federation, the Genetics Society of Canada, the National Research Council, the Royal Society of Canada and the Biological Council of Canada. The theme of the Congress will be 'Genetics and the Unity of Biology'. The program will consist of approximately 45 invited symposia emphasizing the most recent and exciting developments in genetics and allied sciences. In addition, there will be poster presentations, workshops, specialized pre- and post-Congress meetings, a large commercial exhibition and an interesting and varied social program. It is the aim of the Organizing Committee to make the Congress Program as ecumenical as possible. Thus, it should be of interest to a broad range of scientists whose primary interest may not be in genetics itself.

The program will be subdivided into four main areas as follows: —

- I. Genes and Chromosomes
- II. Genomes and Organisms
- III. Populations and Evolution
- IV. Genetics and Society

The President of the Congress is Dr. Robert H. Haynes (York University); the Secretary-General is Dr. D. B. Walden (University of Western Ontario). Other Congress officers are R. B. Church (Finance), K. J. Kasha (Program), J. A. Heddle (Local Arrangements), A. Nasim (International Coordinator) and Vice-Presidents as follows: R. C. von Borstel, P. Bourgaux, J. L. Hamerton, B. L. Harvey, E. Kafer, H. B. Newcombe, C. R. Scriver, D. T. Suzuki, R. M. Tanguay and M. W. Thompson. Dr. Louis Siminovitch will be Honorary President.

If you are interested in attending the Congress, and wish to have your name on the mailing list for Congress announcements, please write

Mr. Laurier Forget,
Office of Conference Services,
National Research Council of Canada,
Ottawa, Ontario, K1A 0R6

North American Benthological Society

The 35th annual meeting of the North American Benthological Society will be held June 2-5, 1987 on the campus of the University of Maine, Orono. The meeting will be hosted by the Department of Entomology and the Co-op Fish and Wildlife Research Unit, University of Maine, Orono, and the Maine Department of Environmental Protection. The theme of the plenary session will be: Mutualism among basic and applied benthologists — a foundation for advances in theory, knowledge and problem solving. The meeting will feature symposia and special sessions dealing with endangered invertebrate species research, Odonata ecology, water bird/invertebrate interactions, advances in invertebrate bioassays, functional measures of perturbation, and the role of benthic biology in environmental policy decisions. In addition to these areas, general contributed papers on aquatic and benthic organisms, communities and ecosystems are encouraged. The fourth annual Aquatic Biology Art Exhibit will be displayed in conjunction with the 1987 NABS meeting.

For more information contact:

Dr. Charles F. Rabeni
Co-op Fishery Research Unit
112 Stephens Hall
University of Missouri
Columbia, MO 65211

International Congress of Limnology on 8-14 February 1987 at Hamilton, New Zealand.
CONTACT: Convention Management Services, PO Box 3839, Auckland, New Zealand

9th International Plecoptera Conference on 18-24 February 1987 at Marysville, Australia.
CONTACT: Dr. I. Campbell, Water Studies Centre, Chisholm Institute of Technology, PO Box 197, Caulfield East, Victoria 2145, Australia

Society for the Study of Evolution, Annual Meeting on 21-24 June 1987 at Bozeman, Montana.
CONTACT: Dr. R. G. Harrison, Department of Biology, Yale University, New Haven, Connecticut, U.S.A. 06511-7444

The Biosystematics of Haematophagous Insects, an international symposium on 29 June to 2 July 1987 at the Liverpool School of Tropical Medicine. Registration fee £25, Students £10.
CONTACT: Dr. M. W. Service, Liverpool School of Tropical Medicine, Pembroke Place, Liverpool L5 5QA, England

XVI Pacific Science Congress at Seoul, Korea on 20-30 August, 1987.
CONTACT: Prof. Choon Ho Park, Secretary-General, Organizing Committee, XVI Pacific Science Congress, Seoul, 1987. K.P.O. Box 1008, Seoul 110, Korea.

Joint Annual Meeting of the Entomological Society of Canada, Entomological Society of British Columbia and Washington State Entomological Society on 28-30 September 1987 at the Delta Lakeside Hotel, Penticton, B.C.
CONTACT: Dr. N. Angerilli, Agriculture Canada, Research Station, Summerland, B.C. V0H 1Z0

XVIII International Congress of Entomology, at the University of British Columbia, Vancouver, B.C., on 3-9 July 1988.
CONTACT: Dr. G.G.E. Scudder, Secretary General, XVIII International Congress of Entomology, Department of Zoology, University of British Columbia, Vancouver, B.C. V6T 2A9. Telephone (604) 228-3168.

C. P. ALEXANDER FUND

The Entomological Society of Canada received a bequest from the estate of the late Dr. Charles P. Alexander, a noted taxonomist of crane flies. It was his wish that interest earned by the money be used in support of publications.

The Governing Board established the C. P. Alexander Fund and decided that a portion of the interest earned be used to support annually the publication of one or more invited articles or reviews. The following guidelines were prepared by the Publications Committee and approved by the Executive Council of the Board at its mid-term meeting on 22-23 April 1986:

"The Entomological Society of Canada may publish annually one to three invited reviews in *The Canadian Entomologist*.

Invitations to prepare a review will be issued by the Publications Committee on the recommendation of the Scientific Editor, who shall have final authority over the selection of topics. Preference will be given to reviews that broaden the scope of *The Canadian Entomologist* and/or to topics of current significance to Canadian entomology.

Review articles must conform to all relevant publication guidelines of *The Canadian Entomologist*, except that articles normally should not exceed 20 printed pages.

The Scientific Editor shall have the right to review, or have reviewed, an invited article and to demand changes in accordance with normal editorial standards. The Scientific Editor shall also have the right to withdraw an invitation if a potential author fails to meet an agreed-upon deadline for submission of the completed manuscript; however, in no case shall this deadline be less than 12 months from the date of the invitation.

The Entomological Society of Canada will provide each author (or joint authors) with 100 free reprints of the review and waive all page charges. Costs of the free reprints and all page charges will be paid from interest accrued in the C. P. Alexander Fund, as determined by the Treasurer.

Support from the C. P. Alexander Fund shall be acknowledged in a footnote to the title, or in some other suitable form.

The Publications Committee, on the recommendation of the Scientific Editor, may consider for support from the C.P. Alexander Fund uninvited articles and/or reviews that satisfy the above terms of reference."

Further information may be obtained from the Scientific Editor, Dr. A. B. Ewen, and the Chairman of the Publications Committee, Dr. M. Mackauer. Suggestions for review articles should be addressed to the Scientific Editor.

M. Mackauer
Chairman, Publications Committee

WORKSHOPS

The Biosystematics Research Centre will be holding a second workshop on the insect order Hymenoptera from August 20 to 28, 1987, in the K. W. Neatby Building on the Central Experimental Farm in Ottawa.

The major hymenopterous groups will be taught by the following B.R.I. taxonomists: H. Goulet (Symphyta), W.R.M. Mason (superfamilies of Hymenoptera, Aculeata), M. Sharkey (Ichneumonoidea, Braconidae), C. Yoshimoto and G. Gibson (Chalcidoidea and Cynipoidea), L. Masner (Proctotrupeoidea) and M. Sanborne (Ichneumonidae). Lectures will cover classification, diagnosis, identification, life histories and economic importance of these groups of Hymenoptera. In a special session, our enthusiastic Dr. Masner will cover modern sampling techniques, the preparation of specimens and the principles of curation.

Classes will begin at 8:00 a.m. and continue until 10:00 p.m. with lunch and supper breaks. Typically, the mornings and afternoons will include lectures and laboratory periods, but the evenings will be reserved entirely for laboratory work (catching up or attention to specific needs). Refreshments will be available. On the first evening, a complimentary dinner will be provided. This will afford an opportunity to meet the teachers and members of the class as well as other Ottawa entomologists.

Each participant will receive a syllabus containing the lecture material with illustrations, keys and pertinent literature. The syllabus will be forwarded to successful candidates at least one month before the beginning of the workshop. The course will be limited to 25 applicants and a fee of \$300.00 (CDN) will be charged. Candidates will be chosen on a first come first serve basis. (Overall reaction to the first Hymenoptera Workshop was very favorable).

Course application forms and further information may be obtained by contacting: Mike Sarazin, Biosystematics Research Centre, K. W. Neatby Building, Room 3135, C.E.F., Ottawa, Ontario, K1A 0C6, (Tel.: 613-996-1665).

EDITOR'S REMARKS

There are going to be a number of changes in the Bulletin in 1987 of which members of the ESC should be aware.

1. Starting with the March 1987 issue the Bulletin will be printed in a slightly smaller format. The present page size is $6\frac{1}{2} \times 10"$. It will be reduced to 6×9 saving printing costs.
2. I have been taking a number of measures to speed up delivery of the Bulletin to members. The change of most immediate interest is the changing of deadlines for submission of items for publication. Starting with the June issue, the deadlines for each issue will be 6 weeks before the publication date. Deadlines are presently 4 weeks. Consequently, beginning in June, 1987 the deadlines will be:

March	— January 15
June	— April 15
September	— July 15
December	— October 15
3. I would like to start a column devoted specifically to student interests and concerns. Any student who feels strongly about some issue is encouraged to write an article for the Bulletin. I will publish any of these articles as I receive them.

4. On the basis of some linguistic advice from Conrad Cloutier, the French title on the Bulletin will be changed from "Société Entomologique du Canada" to "Société des Entomologistes du Canada".
5. I'd like to re-design the cover of the Bulletin (see below).

Ron Aiken
Bulletin Editor

BULLETIN COVER CONTEST

Any successful, aspiring, putative etc. artists are encouraged to send in a submission for a re-designed cover for the Bulletin. Designs should have an entomological theme, contain the French and English names of the ESC and the word 'Bulletin' but are otherwise open. Submissions should be in pen and ink and the deadline is February 1, 1987. Send your design to R. Aiken, Dept. of Biology, Mount Allison University, Sackville, New Brunswick E0A 3C0. The winning designer will receive (in addition to fame, glory and his/her name on the back of every issue) a libation of his/her choice at the next Annual Meeting.

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Contributions and correspondence regarding the Bulletin should be sent to: R. B. Aiken, Department of Biology, Mount Allison University, Sackville, N.B. E0A 3C0. Telephone (506) 364-2509. Inquiries about subscriptions and back issues should be sent to the Entomological Society of Canada, 1320 Carling Avenue, Ottawa, Ontario K1Z 7K9.

Bulletin Deadline

The deadline for the next issue, Vol. 19, no. 1 is February 1, 1987.

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