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ENTOMOLOGICAL SOCIETY OF CANADA

Bulletin



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Editorial

It has been several months since the first issue of the Bulletin appeared and we apologize. Like other fledgling publications we have our problems, not the least of which is the cost of the first issue. We have managed to improve the situation and if a supply of good material is maintained issues should appear regularly.

The Board of Directors studied the Bulletin in detail and at their meeting at Guelph, 29 August 1969, they decided the Bulletin should be published quarterly. They appointed D.C. Eidt, Fredericton, as Bulletin Editor, answerable to Dr. D. P. Piellou who remains Editor of the Society's publications. This move was taken to reduce the load on Dr. Pielou who already has the Canadian Entomologist and the Memoirs of the Entomological Society of Canada to publish.

The editorial policy of the Bulletin was stated very well by Dr. Pielou in issue No. 1, and we would only add that its success depends on the contributions of the members. Because it is about entomologists, not entomology, there will be many names mentioned, but addresses will be omitted unless they are not in, or differ from those in, the latest (1969) membership list.

CONTRIBUTIONS

Articles and notes relevant to entomology in Canada, and about members, are solicited from our readers. Some of the topics of interest are:

- Society news
- Committee announcements
- News of members
- Biography
- News of regional societies
- News of other Canadian and foreign societies
- General biological dialogue
- Articles (philosophical, descriptive, travelogue)
- Outstanding photographs
- Book reviews or notices of appearance
- Clippings from other publications
- Light material (prose, poetry, cartoons)
- Illustrations relevant to any of the above

Send all copy to D.C. Eidt, Editor, Bulletin of the Entomological Society of Canada, P.O. Box 4000, Fredericton, N.B. If in doubt, send it anyway, and we will decide for you.

PRESIDENT'S ADDRESS
A CHALLENGE TO ENTOMOLOGISTS
A.S. West

Presidential Address
given at the 19th Annual Meeting of the Entomological Society of Canada
Guelph, Ontario
August, 1969

During the 18 years of the existence of the modern Entomological Society of Canada it has not been a regular custom that your President should deliver an address at the Annual Meeting, other than reporting on the state of the Society. However, we are living in a time of change. One aspect of this change is that whether we wish it or not scientists (and in our case entomologists) are going to become involved — more involved with policy, more involved with politicians, and more involved in interpreting science to society.

A change then in the charge to your President should not be a startling thing. I have, perhaps boldly, ventured to suggest that one charge should be that it is incumbent upon the President to deliver an address which deals with some aspects of the present state and future course of entomology in Canada. In initiating this charge I am well aware of my own limitations. It is my hope that my modest attempt to discharge this duty will at least be received in principle, and that my successors will accept the challenge to lead us in what will be a more active role for entomologists in determining not only the fate of our discipline, but also the application of the results of our work to the solution of problems with which we are peculiarly suited to deal. The title of today's symposium — "Pollution and the Entomologist" — certainly emphasizes one of the areas in which we must become increasingly more active — not just in grinding out basic research, but in applying our knowledge, taking the lead, making recommendations, insisting on the implementation of our recommendations, and in cooperating with our fellow scientists for the betterment of society. To this end we must act not as we have in the past, as government, industry or university staff, but as members of one of the oldest and largest scientific societies in Canada. Entomology in Canada has had its 100th birthday. Surely it is time we acted with the maturity which we have tended to repress, ignore and avoid.

The challenge is one which we must meet if entomology is to survive as a distinct discipline, if we are not to be submerged in the developing revolution in the relation of science to society, and if we wish to make a more effective contribution, as we know we can, to the betterment of life for Canadians in particular and mankind in general. Most of you will be aware that recently and currently there has been and is developing a growing interest of the general public in the aims and purposes of science, and an increasing willingness of the mass media to report the deliberations of scientists, particularly when these deliberations seek to interpret science to the public. It is doubtful if entomologists have been as active in this regard as have some of our colleagues in other areas of scientific activity.

You are also aware that a number of surveys of science, all of which to a varying degree will affect the future of entomology, have been or are being conducted. Report No. 4 of the Science Council — "Towards a National Science Policy for

Canada" — was published less than a year ago. The Macdonald report on the role of the federal government in support of research in Canadian universities appeared a few months ago, as did a report on water resources research. Studies of fisheries and wildlife, forestry, marine sciences and technology are underway. Within the next few months reports of surveys of agricultural research and basic biology, and that of the Special Committee of the Senate on Science Policy (Lamontagne Committee) will be completed. A number of you will have been involved in the preparation or presentation of briefs to one or more of these study groups.

I do not pretend to have any detailed knowledge of the recommendations which will be made in the forthcoming reports, but I am convinced that changes in Canadian science policy will emerge, and that these changes may in a large measure affect Canadian entomology and entomologists.

I have had the advantage of lengthy discussions with Dr. B.N. Smallman who is chairing the group reviewing agricultural research in Canada, of chairing a panel on invertebrate physiology to produce one of 31 sections of the Basic Biology Study report, and of attending in Ottawa recently a National Science and Engineering Conference at which Senators Lamontagne, Cameron and Grosart spoke.

Let me first tell you something about this Conference, at which a challenge to all scientists was presented, and then move on to a short analysis of ourselves and a spot of crystal ball gazing, together with a few comments on what I feel is the nature of the developing challenge to Canadian entomologists.

The Conference was sponsored by the Chemical Institute of Canada, The Canadian Association of Physicists and the Engineering Institute of Canada. With few unintentional omissions all Canadian national scientific and engineering societies were invited to send delegates. I attended as a representative of the Entomological Society of Canada; Dr. LeRoux represented both our Society and the Biological Council of Canada.

The challenge presented was "How can the scientific community make its maximum contribution to national decisions?". Senator Grosart expressed this challenge by stating that "the science community should organize itself to influence national science policy, instead of merely complaining that it is not consulted by the government", and added a comment by one authority that "the winds of change in the relationship between government and science have taken the science community by surprise and found it totally unprepared for its new role in national policy decisions". As entomologists, a component of this community, we certainly must plead guilty to being unprepared for this new role.

Senator Grosart quoted two statements which I feel are worth repeating. The first was an O.E.C.D. observation about Canadian scientists:

"This situation may well be due to the lack of ambition of the learned societies of Canada to aspire to collective statesmanship of science which can fully reflect the opinion of the scientific community and at times provide a 'second opinion' to that given by the advisory organs of the establishment".

The second quotation was from the Financial Times Special Section on Research and Development, July 7, 1969:

"There is no single body through which working scientists can make their views known to the Government; the Science Council is not supposed to be a spokesman for the Science lobby".

Senator Grosart commented on the generally repugnant reactions to the term "lobby", but pointed out that lobbying groups are commonly a welcome source of information in government circles.

We are inclined to think, as Senator Grosart suggested, that there are already a number of spokesmen for science in the various agencies of the science policy establishment — such as the N.R.C., M.R.C., Canada Council, the Science Council, the Science Secretariat, and various agencies and crown corporations supporting research and development. Since these bodies are organs of the government, they cannot be official spokesmen for science. The science community as a whole must develop its own voice.

I must admit that I went to the National Science and Engineering Conference in a mood of skepticism, as I am certain that many others did. I came away convinced that progress had been made in that perhaps for the first time scientists from practically all areas of scientific endeavour had a chance — and made the most of it — to get to know one another. The physicists were interested in the opinions of biologists; the entomologists did learn from listening to the medical people, and perhaps surprisingly there was general although not unanimous agreement that the science community must include the social scientists.

You may share with me some doubt as to the possibility of organizing the science community so that it can inform the public and advise governments regarding national science policy. However, an attempt is going to be made. The degree of success will depend not only on the cooperation of numerous societies, but on the convictions of individuals, including entomologists, that the science community must develop a voice.

My personal opinion, and that of some others, is that the development of an "umbrella" organization may be and perhaps should be slow, but at the Ottawa conference it was evident that "the young turks" will clamour for a rapid development of a voice for the science community. It appears that even in science we may have a generation gap, and that it may be easier for the older physicist to communicate with the older biologist, for example, than it is for the generation gap to be bridged within any particular discipline.

As Senator Lamontagne has stated, the scientific community has not only an obvious right to make representations and give advice to the government regarding science policy, but has an obligation and a duty to do so. As entomologists we must speak up, must join in this common voice, and must forsake what for many of us has been our isolated haven.

I quote once more from Senator Grosart's remarks at the National Science and Engineering Conference.

"With federal government science funding of more than half a billion dollars today and much more in the future, you are going to have politics in science, whether you like it or not. The best way, as the kids say, to do your own thing about it, is to match politics in science with the heaviest dose you can concoct of science in politics."

To this end I have suggested to your Board of Directors that our Society should establish a continuing committee to consider entomology in relation to national science policy, and to be prepared to speak for entomology, since very shortly we shall be called on to do so. Such a committee will be effective only to the extent that we as individuals make our opinions known.

As individuals we have perhaps tended to be self-centred in our interests, to have little if any concern with interpreting our work to the public, with considering its position in the overall entomological effort and in the national scientific effort, or interest in attempting to cooperate with fellow scientists with a view to contributing toward the solution of problems of regional or national importance.

As I have already suggested, the change is imminent. We must recognize our shortcomings, adapt to changing conditions, bridge the "generation gap", and grow in stature.

I shall mention only several of our shortcomings, and definitely these are not peculiar to entomologists. Both in government and university service it has not been uncommon that a new Ph.D. is hired, settles into his new position and proceeds to do research which is only an extension of his Ph.D. thesis project. Direction from above has been lacking in many situations. Particularly in government laboratories, programs have sometimes developed from the whims and inclinations of individuals, rather than by mission orientation with direction from above. This trend over a period of years may have resulted in deviation of too much of the government laboratory effort to basic research without some orientation. Many of you will be aware, I know, that recently an effort is being made, at least in some quarters, to reduce the number of non-mission orientated projects, and to place greater emphasis on the justification of research projects in terms of national and regional needs.

I am not suggesting that basic research does not have a place in government laboratories, but rather that greater emphasis should be placed on development studies. By the same token some university entomologists have tended to hold the view that the university should be the seat of only "pure" basic research. I cannot agree with this view, and am encouraged that in recent years it appears that this view may be less commonly held.

One of our greatest weaknesses is the lack of a sufficient degree of cooperation between university and government researchers in entomological areas. On one hand researchers in government organizations are too unfamiliar with the academic atmosphere of which they were once a part, and which has undergone a rapid

evolution in recent years; on the other hand university staff have too little knowledge of government organizations, although they are supposedly training some of their students to become a part of such organizations.

In both government and university organizations we have perhaps tended insufficiently to develop interdisciplinary research, although there are encouraging signs of an increasing trend in this direction. The major biological problems of today, of which surely pollution must be regarded as a paramount one, require cooperative, interdisciplinary approaches. In entomology today the taxonomist, the ecologist, the toxicologist, the geneticist, the forest entomologist, etc., can no longer work in what in the past has been comparative isolation.

We have other weaknesses, but enough of this self denigration. We have our strengths as well, and I firmly believe that individually and collectively we have the ability to cope with the changing scene in Canadian science, with the developing demands of an enlightened public, with the need to take a strong position in the development of a science policy for Canada. Those of us who are approaching retirement have, I hope, the desire to attempt to bridge the "generation gap" and the resignation to recognize that the future belongs to the young.

Now for that brief gaze into the crystal ball. As indicated earlier, the mood of change is in the wind. Policy in the future will allow (if not demand) a greatly increased cooperation of government and university personnel, to be fostered possibly by short term sabbatical leaves and transfers of work — in both directions.

Government entomologists will play a greater role in the training of the next generation, helping to train students to become problem solvers rather than highly competent specialists in relatively circumscribed areas.

Greater cooperation in research, both between government and university entomologists, and interdisciplinary cooperation, for example in areas such as bio-engineering, will not mean the development of a complete team research organization. It will mean an integration of effort for the attainment of solutions to major problems confronting Canadian society. All entomologists will be called on to view their work in a wider perspective, and to relate their objectives to these problems — and again I stress pollution.

The significance of developmental and applied research will be more emphasized in the future, and the scientific stature of the applied researcher as a full equal of the basic researcher will be re-established. The bandwagon of molecular-biochemical-physiological biology will be placed in perspective and more equal recognition will be accorded all areas of entomological endeavour, providing these programs have goals relating to needs as defined by a Canadian Science Policy. This does not mean that research for knowledge for its own sake will be abandoned. Rather greater thought will be given to the significance and possible application of new knowledge arising from "pure" research.

It is probable that there will be changes in the present methods of funding research, with more priority being accorded projects related to such broad challenges as population problems, food supply, health and pollution.

These and other changes affecting entomology will not result merely from the definition of a science policy for Canada, nor by pronouncements from the Privy Council or directives from deputy ministers. Rather implementation and full realization of the possible scope and effect of these changes will have a grass roots origin, which if I am not mistaken is already underway.

This then is the challenge I give to you. Entomologists awake, arise, play your proper role in the development of a science policy for Canada, your role in co-operating with your fellow scientists towards a solution of the important biological problems facing us, and give the lie to those prophets of doom who would have us believe that we are on a nonreversible downward path.

This has been a serious address without much leavening in a lighter vein. In completing what I have regarded as a charge to your President I can now relax and smile. You may recall the story of the lad who worked as a bread slicer, and was paid by the loaf. Being ambitious he purchased a longer knife with which he could cut two loaves at once and soon was earning twice as much money. Not satisfied, he considered the possibility of a blade which would cut three loaves at one time, and accomplished this goal by finding a sabre in an antique shop, and again his earnings increased. Still not satisfied, he yearned for an implement which could handle four loaves. One day, after a long search, he spotted a huge cleaver in a butcher shop, managed to buy the cleaver, had it wrapped and was walking down the street smiling gayly. Our slicer met a friend who enquired as to the cause of his happiness. "Oh", replied the youngman, "this is my lucky day; I found a four loaf cleaver."

In my professional career, I found my "four loaf cleaver" when I joined Canadian entomology 30 years ago this week, and my "lucky day" has culminated in the honour and privilege of serving as your President during the past year. Canadian entomology has a bright future; my role will be a lessening one, but I know that those who follow me will meet the challenge the future holds.

REPORT OF THE PRESIDENT
TO THE NINETEENTH GENERAL MEETING
Guelph, Ontario
28 August 1969

MEETINGS OF THE BOARD OF DIRECTORS

The Board met on August 29, 1968, at Saskatoon, Saskatchewan, and prepared for the conduct of the Society's business in 1968-69.

A two-day meeting of the Board was held in Ottawa in January, 1969. The value of this innovation in the more efficient operation of the Society was well established.

The Board held its third meeting on August 25, 1969, and received the reports of Officers, Boards, Committees, Working Parties, and representatives to the B.C.C. and other organizations.

BY-LAWS

The Board, on January 31, 1969, approved the revision of the By-Laws that were recommended by a Committee after a study of several years. The revision was approved by the members in the mail ballot completed on July 15, 1969, by a vote of 470 to 11. The Department of Consumer and Corporate Affairs has been requested to approve the amendments which constitute this general revision.

The amendments require some changes in the Standing Rules and Regulations which the members will be asked to approve at the next General Meeting.

EXTRA-MURAL ACTIVITIES

The Society became a member of the Canadian Committee of the International Committee on Water Pollution Research, and is represented by J.A. Downes, Ottawa.

The Society continued its active participation in the Biological Council of Canada through its delegates, E.J. LeRoux, B.N. Smallman and E.C. Becker. Dr. Becker, an alternate delegate, agreed to complete the term of A.W.A. Brown who was to serve as a delegate until the meeting of the Council in the Spring of 1970, but asked to be relieved of this responsibility when he joined W.H.O. in Geneva, Switzerland. Dr. LeRoux was elected Vice-President of the Council for 1969-70.

The Society, at the request of the B.C.C., prepared a statement which was incorporated into the Council's brief to the Special Senate Committee on Science Policy. Our statement concentrated on pesticides, ecology and university training.

Dr. E.C. Becker represented the Society at a meeting of "learned societies" which was called by the Royal Society of Canada to consider ways and means of coordinating dates of meetings as well as themes of mutual interest.

The Society was represented by A.S. West and E.J. LeRoux at a National Science and Engineering Conference held in Ottawa on July 31 and August 1, 1969. The Conference considered ways and means of developing a voice for science in Canada. It appointed a steering committee that will consider the possibility of developing some type of "umbrella" organization for Canadian science. The Society needs to establish a committee to deal specifically with science policy matters and to liaise with other scientific organizations.

INTRA-MURAL ACTIVITIES

PUBLICATIONS

The Editor reported to the Board that the number of submitted manuscripts continues to increase with a resultant backlog. However, the Board accepted his recommendation that a second journal should not be considered at the present time. The Board noted, with pleasure, that there had been an increase in the number of Memoirs published and that twelve are in the process of publication.

The first issue of the Bulletin was published. Since the cost was greater than anticipated, further issues were postponed. The Board has appointed a committee to prepare terms of reference for the Bulletin and to make recommendations on the appointment of an editor of the Bulletin.

COMMON NAMES

The Committee on Common Names has continued to be active. A proposal for a joint E.S.A.-E.S.C. committee was rejected by the E.S.A.; however, a Canadian has been elected to that Society's committee.

Laxity by Canadians in the use of approved common names is a source of concern. The Society needs to take steps to give wider circulation to the E.S.A. approved list.

HONORARY MEMBERSHIP

Under the chairmanship of J.J. Cartier, the restructured committee, involving regional representation and revolving membership, has become functional. The proposal of one member for honorary membership was accepted in the recent mail ballot.

MEMBERSHIP

The Committee, under the chairmanship of L.A. Roodhouse, made a detailed regional survey and has concluded that the "saturation" point has been reached. There is no major untapped source of new members. It is expected that membership will continue to increase by 5 to 7 percent annually.

Approximately one-third of our members reside in the United States. The recent election of one of these to the Board is welcomed.

ARCHIVES

Dr. O'Neil continued his excellent work in organizing material received for the Archives which are housed at the University of Sherbrooke.

STUDENT ENCOURAGEMENT

Under the chairmanship of F. O. Morrison, the Working Party is continuing to explore ways and means of encouraging students in Entomology. For 1969, it was decided that students attending the Guelph meetings would be eligible to apply for a grant to cover part or all of expenses, \$1,000 having been budgeted for student encouragement. In spite of the availability of funds having been announced, no applications for assistance have been received.

TRAINING OF TECHNICIANS

Under the chairmanship of H. E. Welch, a detailed survey was made and a thorough report has been submitted. Terms of reference of the Working Party included a review of certification processes in other scientific areas and training syllabi in Institutes and Colleges of Technology. None of the institutes surveyed provide specific training opportunities for entomological technicians, and the opportunities for training in the broader area of biology are limited.

The Working Party has recommended that the Society appoint a Committee on Technician Training. Competent technicians are needed. Working with existing Institutes and Technical Colleges, encouragement for more Biology (and possibly Entomology) training opportunities could be developed.

FINANCES

The audited financial statement for 1968 was accepted by the Board and is available for examination by members. An interim financial statement for the period of 1969 to July 29 is also available. The financial position of the Society is satisfactory but costs are mounting and it is necessary to increase revenue. Whereas the budget for 1969 was \$62,000, that for 1970 is \$74,000.

A Finance Committee, chaired by E. G. Munroe and with D. G. Horcourt, E. J. LeRoux, E. E. Lindquist and B. M. McGugan as members, was appointed in September, 1968, to advise the Board on investments, to review the financial status of the Society in the light of mounting costs, and to recommend on expenditures and revenues for at least the next five-year period. The Committee submitted a 14-page report which was accepted by the Board in January, 1969. The Committee performed an excellent service for the Society. The Board is duly grateful and intends to continue the Committee.

The following points in the Committee's report are brought to the attention of all members of the Society:

1. A modest surplus of \$4,000 in 1968 resulted from an unusually large sale of back issues and some favourable exchange transactions. These events are unlikely to be repeated.
2. If no new activities are undertaken, deficits will soon result from rising costs unless revenues are increased. Needs for increased revenues must be anticipated since changes cannot be made overnight.

3. Increased expenditures will result from:
 - (a) Increased costs of existing activities; salaries, publications (quite probably a sharp increase in the near future), Directors' expenses for attendance at Board meetings.
 - (b) New Activities; Bulletin, Second Journal, Biological Council of Canada, Student Encouragement, International Association for Water Pollution Research, Professional Auditing, AND by 1974 an estimated \$7,000 for replacement of "free" services.
4. Estimates of new revenues needed:
 - (a) 1969 — \$13,100
 - (b) 1974 — \$75,000 (including for example the salary of an Executive Secretary).
5. A reserve of \$100,000 would be advisable.
6. While the Society should continue to take a positive attitude to useful activities and improved management systems, it should guard against developments directed towards aggrandizement of the Society rather than towards benefit of the members, against undue proliferation of executive and official staff and expenditures and against all similar Parkinsonian manifestations. Restraint by the Board and work and interest from both officers and members will be necessary if the Society is to remain in a healthy condition.

The Committee's recommended new scale of charges was adopted by the Board and has been distributed at these meetings. The members will be asked to approve this new scale covering dues, subscriptions, page and reprint charges and Memoir overhead charge.

The Board adopted the Committee's recommendation of a new scale of charges and you will be asked to approve the necessary changes in the Standing Rules and Regulations concerning dues, subscriptions, page and reprint charges, and overhead charges for Memoirs.

The Society has had, I believe, an active and forward moving year. I have every confidence that this trend will continue under the able direction of your incoming President and his competent officers and governing board.

A.S. West

Dues and Prices Increase

The nineteenth general meeting at the University of Guelph, 28 August 1969, approved rises in the membership dues and publication costs. The changes result from recommendations of the Finance Committee which reviewed the financial status of the Society and prepared a five-year projection of costs. A summary of the Finance Committee's report is in the Report of the President found elsewhere in this issue.

The following fees and prices are effective January 1, 1970:

1. Annual membership dues:
 - (a) Direct — \$18.00.
 - (b) Through an affiliated society — \$16.00 plus the dues of the affiliated society.
2. Annual student membership dues — \$8.00.
3. Annual subscription rate for the *Canadian Entomologist* (including the *Memoirs*) — \$30.00.
4. Page charges for the *Canadian Entomologist* — \$25.00/page.
5. Reprints:

	1-4pp	5-8pp	9-12pp	13-16pp
First 100	\$ 33.00	\$ 46.50	\$ 63.00	\$ 82.50
Add'l. 100	9.00	12.00	15.00	18.00
	17-20pp	21-24pp	25-28pp	29-32pp
First 100	\$105.00	\$130.50	\$159.00	\$190.50
Add'l. 100	21.00	24.00	27.00	30.00
6. Overhead charges for publication of *Memoirs* — 25 percent.

Members and subscribers will continue to receive the *Canadian Entomologist* and the *Memoirs*.

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Insect Taxonomy in Canada

In a recent article entitled "Insect Taxonomy — is it dying in Canada?", W.R.M. Mason (1969, Bull.ent.Soc.Can. 1, pp. 15-17) has again directed attention to a serious situation facing us today, but the problem would seem to be rooted in a lack of support for insect taxonomy in universities, rather than a shortage of potential taxonomists. While I agree with much of what Dr. Mason has said, it would seem that the problem is not exclusively Canadian, nor is it necessarily due to a lack of interest on the part of students or university staff. If there be such a lack it may be partly as a result of general university policies, but it can scarcely be blamed on the few entomology departments in Canadian universities, certainly not on those (even fewer) that manage, against other pressures, to maintain a major interest in taxonomy.

A number of taxonomists have graduated from such departments in recent years, but have not found employment in Canada, or at least not in taxonomy. This has not been on account of inadequacy of training or lack of interest or ability on the part of the graduate, but because of a lack of job opportunities. These are much fewer than Dr. Mason seems to imply — only one per year over the last decade in Ottawa. That the institute to which Dr. Mason belongs has found it necessary to recruit a fair proportion of its excellent taxonomists from outside Canada may be merely a reflection of conditions of employment for a proportionally diminished world pool of taxonomists coupled with inappropriate timing.

When vacancies have existed, trainees (in the specialties desired) have not been ready. It takes a long time to make a good taxonomist. Further, although it is true that a competent taxonomist in one group can rapidly learn to apply his skills to other groups, he is generally reluctant to do so (having devoted so much time to his own area of specialization), and, similarly, the employer is less likely to hire him if the services of a specialist from another country, who already has the expertise sought after, can be obtained. There are only just so many available specialists in the world for any given group.

Let us face also the fact that there is not the demand for a steady supply of taxonomists that there should be, as distinct from the need for them that is self-evident to all taxonomists but not, apparently, to others. Dr. Mason confuses "demand" with "need". Without a demand (again as distinct from a need), there is little incentive to make a special effort to create (or to become part of) a supply. There are undoubtedly more potential taxonomists than would at first seem to be the case, but even taxonomists must eat and so, job opportunities being what they are at present, many may be lost to other more glamorous (?) and often less exacting branches of biology. The shortage is probably not so much one of would-be taxonomists, but of funds to support those who would risk specializing in this fashion with limited expectation of their special training proving useful to them in finding employment.

Another difficulty with taxonomy is that the time taken for a person to become really competent with a given group is generally considerably longer than it takes to obtain a Ph.D. degree. Born taxonomists there have always been, but they are rather rare. They are probably no more rare now than previously, although there

are more areas of research open that may divert them from their true calling. The theoretical taxonomist is even rarer, and without an area of special competence, is probably unemployable as a taxonomist, except in universities! Not much encouragement is given today by universities for more than a very few taxonomists of any kind, when there are so many other demands to be met. Students know that as well as anybody and they are again dissuaded from following a career in systematics which they might otherwise adopt. It should also be borne in mind that departments of Entomology are also concerned with many aspects other than taxonomy (far more than in the days of the venerable professor referred to by Dr. Mason — and others that should have been mentioned), and a good university department must be a balanced one — not one that puts most of its eggs in one basket, be it physiology, toxicology, ecology, morphology or taxonomy. Departments of Entomology in Canadian universities, also, are few and understuffed, and, even where taxonomy is one of the major interests, as at McGill, there is a limit to what can be done with available resources.

Funds to support graduate students in taxonomy are not easy to obtain. The National Research Council does support a few such students, but few if any other agencies do so. The Canada Department of Agriculture, which, according to Dr. Mason, needs taxonomists, does not. When the stipend of a graduate student is paid, there is little left to cover the cost of necessary extensive field trips, visits to distant museums or protracted periods of residence at other institutions. One or two taxonomists in any one department (each taking 3 or 4 years to train) is all that present funds will support. Although equipment and space for an individual piece of research may not be great, the housing of adequate collections occupies considerable space and the curating of such collections needs highly qualified staff. University administrations and granting agencies seem to be blissfully unaware or blatantly complacent about such matters — or dismiss them as luxuries they cannot afford or as being outside their area of interest. The Lyman Entomological Museum at Macdonald College of McGill University is a case in point. It has the largest collection of terrestrial arthropods of any university in Canada (and one of the best on the continent); it is admirably suited for the training of arthropod taxonomists in association with the Department of Entomology that has fostered it; it is sufficiently near to the national insect collection in Ottawa with its numerous specialists to enlist expert assistance; and it has ready access to computers and all the modern paraphernalia necessary for the most sophisticated taxonomic procedures, as well as the traditional ones. It could turn out a steady stream of insect and orachnid taxonomists if the demand were there, but it sadly lacks resources in terms of staff, space, funds and general sympathy in a world of politics that is more impressed by more spectacular achievements than those of the patient taxonomist, and that bases its concepts of university financial needs on the number of undergraduates in every field that can be squeezed into each cubic foot of space. Is it any wonder that interest in taxonomy among students is being stifled?

I believe Dr. Mason's criticism of those few who are able to teach taxonomy is somewhat undeserved (judging by the enthusiasm shown even by some non-entomologists in at least some parts of our uninspiring courses!). There may undoubtedly be a failure of the community at large and of the universities in general, but not of the handful currently teaching taxonomy, "to appreciate the new life and excitement that presides in the study of taxonomy", even if one admits their

ineffectiveness "in communicating this interest to their students". Perhaps "the new wave of molecular biologists....are a more inspiring and exciting group" (it is easier to be exciting when you are on a well loaded band wagon), but anything new tends to have more appeal for a while until it, too, is partially displaced by something newer. It is easier to sing the praises of a glamorous young girl and to convince an audience of her desirability than it is to do the same for a more mature woman, no matter how fair she be, or what exciting new fineries you may clothe her in, and no matter how much more worthy of admiration or necessary for a fuller life she may be!

May it not be that others are quite as much to blame for the decline in Canadian-trained taxonomists (if such there be) as are the teachers? If the demand is so acute, why is there so little effective noise made about it in the places that count? We are well aware of the need, but the demand must be created; and, it is consumers, not producers, who create and sustain a demand. If there be the demand, the latent interest in taxonomy as a career will, I am sure, revive; interest in taxonomy per se is not dying, although a smaller proportion of biologists, in a hugely expanding volume of scientists in all new fields, may wish to devote their lives to its study. Besides postgraduates, I could name several Canadian students who have graduated with bachelors' degrees in recent years from our Department who were keenly interested in taxonomy and who have been encouraged to widen their horizons in this field elsewhere. We would have liked them as graduate students ourselves, but diversity of training is better perhaps, and our resources could not have coped at the time. I sincerely hope that the situation will be such that when they are ready, they may find employment in Canada — and in taxonomy!

I would submit that what is lacking is not interest in taxonomy, but liaison between potential employers and taxonomically oriented entomology departments in Canada, funds to support graduate students while in training and adequate assurance of employment in their chosen field. If we knew well in advance what requirements were likely to be, we could doubtless interest and train all the taxonomists required, given the necessary financial support. A return to the former practice of pre-doctoral employment by the Federal Government with study-leave privileges, might perhaps also go some way toward rectifying matters. As it is, employers now, erratically and at long intervals, want finished Ph.D.'s with specialist training in this or that group. University departments without adequate support are being blamed for not producing or encouraging the production of these tailor-made employees.

D.K.McE. Kevan

INSECT TAXONOMY TRAINING IN CANADA WHY NOT HELP INSTEAD OF BLAME THE UNIVERSITIES?

In a recent article in this Bulletin (1, pp. 15-17), Dr. W.R.M. Mason has noted the lack of students interested in insect taxonomy. It is true that few students these days seem interested in this aspect of entomology. Thus, while I can agree with this statement, I cannot agree with some of the other opinions expressed in the article. In particular, are the following:

"Thus it appears that this situation is caused by Canadian universities, not by the hiring policies of the Entomology Research Institute."

"It seems that the professors currently teaching students in Canadian universities fail to appreciate the new life and excitement that presides in the study of taxonomy or, if they do appreciate this, they are singularly ineffective in communicating this interest to their students. I can only conclude that the new wave of molecular biologists now teaching in Canadian universities are a more inspiring and exciting group."

"So, therefore, may I urge the professors in Canadian universities at least not to discourage students who have an interest in insect taxonomy."

The situation in my opinion is not caused by the universities; we do not fail to recognise the "new systematics" and the newer numerical and biochemical systematics and we certainly do not discourage students!

I have counselled students for a number of years and I find that there are two main factors involved when a student decides what field he wishes to follow. These are: 1) past experience, and 2) future job possibilities.

The changes that have taken place recently in the high school and university curricula in biology do not seem to be comprehended outside of the teaching institutions. Whether we like it or not, we are now in an age of molecular, physiological, ecological and community biology. Biology is no longer taught at the organismic or systematic level. We see in the modern high school and early university courses, the stressing of the unity and similarities of all living organisms; the differences between organisms, although just as fundamental, are not given equal weight. The early exposure is to these so-called "more exciting" and "in depth" approaches to living organisms; the so-called "systematic survey courses" are said to be "superficial" and not so exciting. To be up to date in the high schools and beginning university courses is to teach the "new biology".

The student is thus exposed to the organismic or systematic approach only late in his education. By this time, it is true, that this initial exposure has "turned him on". I question that it is the inspired and excited molecular biologists that have done it all: they often do not teach the beginning undergraduate courses!

So the undergraduate hears molecular biology, but he also reads molecular, cellular and population biology. The "popular press" and "touring" lecturers are all concerned with these fields. Survey the past five years of Scientific American and count the proportion of articles on animal taxonomy and systematics; count the number of good lectures you have heard recently on this topic. Therefore, a student knows these "new" areas and is interested in them; he would not be a good student if he failed to be inspired by what he had heard and read.

I have mentioned above that the second thing that influences a student is the availability of posts. It is stated that insect taxonomy positions are available, but I have seen no documentation as to how many posts are now or are to be made available in Canada. It is no good anticipating vacancies, the student wants to be sure, especially now that Canada in 1970 will produce more graduates than it can hope to employ. Students like to be sure that they will find a job at the end of their education and so most "play safe". Until now, this has been to get qualified for high school and university teaching, since neither Government nor Industry takes many graduate students in Canada. I note that the Entomology Research Institute in the period 1958-1967 hired 10 officers in insect taxonomy: on average of 1 a year. This number will not encourage students to turn to such employment.

I agree that soon we will be without the systematists to carry out the determinations that will have to be made; we are short right now. I agree that we are not doing much effectively to overcome this shortage. But, I do not agree that all the fault lies with the universities. Until more positions in this area are made available, are funded and announced well in advance, little change will be forthcoming. There must be a vast expansion of employment possibilities in taxonomy, before students will turn to this area of endeavour.

I see two additional aspects that deter students from entering the insect taxonomic field. One is the lack of adequate keys and monographs to groups, and the other is the lack of adequate working collections.

On the first point, students in ichthyology, ornithology and mammalogy can pick up and get into these groups relatively easily with the aid of excellent modern monographs. This is not possible in the insects. As Dr. Mason rightly points out, we do not have adequate well-illustrated and general comprehensive monographs for the Insecta. We do not even have up-to-date ones for the relatively well-known *Macrolepidoptera*. Until such works are available, most students will continue to flounder and be discouraged.

On the second point, until accurately named reference material is made available to high schools and universities, little work can be started to rectify the present situation. Collections are centred in Ottawa and these no doubt could assist schools and universities in that area. However, they do little to help establishments elsewhere. Admittedly, it is theoretically easy to get to Ottawa to study the named specimens, but this requires funds and time. We do not have funds, and students do not have time for such trips while an undergraduate which is when most decide on a career.

My plea is thus for more insect taxonomic positions and early forecasting of such vacancies. More effort should be put into the production of up-to-date monographs on our insect fauna, and an attempt should be made to build up, across the country, adequate reference collections for teaching and research.

Finally, more funds must be made available to support taxonomic research in the universities. While more funds are needed to support the research itself, funds are also required for student scholarships. If the Society is really interested in trying to encourage taxonomic training at the universities, why not set up scholarships at the universities for this purpose?

G.G.E. Scudder



WILLIAM L. PUTMAN RETIRES AT VINELAND

A first-rate writer and editor, exceptionally able and productive entomologist, outstanding naturalist — that is how William L. Putman is described by officials of the Vineland Research Station, Canada Department of Agriculture.

Mr. Putman, a graduate of the Ontario Agricultural College and a Master of Science in Agriculture from the University of Toronto, officially retired July 6 after a distinguished career at Vineland that spanned a 37-year period.

He was born in North Grimsby, Ontario, 65 years ago. Always an outstanding student, he was top of his class at high school, a record he continued at OAC.

He first went to the Fruit Insect Laboratory at Vineland as a student in 1928. He joined the permanent staff four years later after graduating from OAC. He received his Master's degree in 1939.

As well as his prime interest in entomology, Mr. Putman carved for himself a reputation as one of Ontario's outstanding naturalists with a wide knowledge of plants and animals, especially birds of the district. His help in identifying plants, insects and animals has been sought over the years, not only by his associates at the Research Station but by horticulturalists, botanists, extension personnel, fruit growers and many's another.

As a writer and editor, Mr. Putman for many years, in addition to his own research work, edited all the scientific papers for the six fruit insect laboratories across Canada at the request of the chief of the Fruit Insect Unit, W.A. Ross.

Mr. Putman's entire career was spent at the old Fruit Insect Laboratory and later the Research Station at Vineland. Five summers he spent at the St. David's field station where he worked on biological control of the oriental fruit moth.

In the course of his entomological work, Mr. Putman wrote and had published more than 50 scientific papers. This brought him an international reputation and brought him into contact with entomologists of many countries, with whom he exchanged research findings. In 1967 he received the Centennial Medal for meritorious service.

His career was devoted largely to ecological investigations of pests and beneficial predators and parasites in peach orchards, with special reference to the effects of pesticides on the predators of the European red mite. Shortly after World War II he worked directly with many of the new insecticides such as DDT and parathion and helped hasten their development as controls for the oriental fruit moth, the codling moth and other dangerous fruit pests.

At Vineland, Mr. Putman worked under four station directors, W.A. Ross, G.G. Duston, Dr. D.A. Chant and Dr. W.B. Mountain. All have from time to time expressed appreciation for Mr. Putman's outstanding abilities and the help he freely gave to other members of the staff.

With retirement, his associates hope that Mr. Putman will transfer his interests in entomology and other phases of natural history to his new "headquarters" — his home on Livingston Avenue, Grimsby, Ontario.

- from the Vineland-Jordan Post

A.C. SHEPPARD, THE LAST OF A VANISHING BREED?

One of the last amateur entomologists in Canada, A.C. Sheppard, was recently appointed the Honorary Curator of the Lyman Entomological Museum, Macdonald College of McGill University.

Mr. Sheppard was born at Henley-on-Thames, Oxford, England, on August 4, 1902, but at the age of 5 came to Canada with his parents to live in Montreal. His former schooling was somewhat limited as he left school and started working at the age of 13. He was certainly not a school "drop-out", as he continued his education at night schools in order to prepare himself for life in the world of business. He was employed by the Canadian Import Company, Montreal, from February, 1920, until he retired in April, 1968, from the position of Chief Accountant.

Mr. Sheppard's interest in nature developed at an early age, largely as a result of Sunday morning walks with his father. At first, his main interest was in observation of birds and their habits, but, at the age of 9, he started his first insect collection.

Rather more intensive work on insects began in 1917. A small collection of butterflies was exhibited at a Y.M.C.A. Hobby Show, followed by similar exhibits of Boy Scout Hobby Shows. It was at one of the latter that he met Mr. A.F. Winn, who was then Curator of the Lyman Collection of Insects at the Redpath Museum, McGill University. This meeting resulted in Mr. Sheppard's membership in the Montreal Branch of the Entomological Society of Ontario in June, 1918. The meetings of the Society provided the opportunity to meet many entomologists of that time, both amateur and professional. From this association, his enduring interest in the Lepidoptera, particularly those of eastern Canada, developed and intensified.

During the past 50 years he has built up a collection of the Lepidoptera of Quebec. He discovered several new species of insects as follows:

LEPIDOPTERA

Incisalia lanoraieensis Sheppard, 1934, Can. Ent. 66: 141-142. Holotype, ♂: Canadian National Collection (C.N.C.); allotype, ♀: Sheppard Collection; paratypes: Sheppard Collection and Lyman Entomological Museum. Type locality: Lanoraie, Que.

Phlyctaenia sheppardi McDunnough [now Udeo sheppardi (McD.)] 1929, Can. Ent. 61: 267. Holotype, ♂: C.N.C.; paratypes: C.N.C., United States National Museum (U.S.N.M.) and Sheppard Collection. Type locality: Mount Royal, Montreal, Que.

Eupithecia sheppardata McDunnough, 1938, Can. Ent. 70: 171. Holotype ♂, No. 4379: C.N.C.; allotype ♀ and paratypes: C.N.C. Type locality: Montreal, Que.

Hyaloscotes sheppardi Freeman [= Hyaloscotes pithopoera (Dyar)] 1944, Can. Ent. 76: 186. Holotype ♂, No. 5547: C.N.C.; paratypes: C.N.C., Sheppard Collection and F.M. Jones Collection, Wilmington, Dela. Type locality: Shawbridge, Que. This species was placed in synonymy by Davis (1964), U.S.N.M. Bull. 244: 85.

HYMENOPTERA: ICHNEUMONIDAE

Allocota sheppardi Wolley, 1941, Can. Ent. 73: 165-166. Holotype ♀, No. 5194: C.N.C.; paratypes: C.N.C., U.S.N.M. Type locality: Shawbridge, Que.

As well as these, two additional species of Lepidoptera have been described, which include in the type series specimens collected by Mr. Sheppard. These are Crombus abnaki Klots, 1942, and Phlyctaenia quebecensis Munroe, 1954.

Mr. Sheppard has published, in addition to the paper listed above, first records of European species of Lepidoptera in Canada: Acentropus niveus Olivier from Montreal (1945), Can. Ent. 77: 55, and Caradrina morpheus Hufnagel, from Montreal and also from British Columbia (1959), J. Lepid. Soc. 13: 77. The record of C. morpheus was the first in North America. He also published a note on Mr. George A. Moore, (1959) Can. Dep. Agric. Res. Br., Entomology Newsletter 37 (10): 2-3.

Mr. Sheppard was Secretary-Treasurer of the Montreal Branch of the Entomological Society of Ontario during the years 1937 and 1946-49, and Treasurer in 1950. Following the revival of the Entomological Society of Quebec, he was Treasurer in 1951 and then Treasurer of the Montreal Branch for the period 1952-54. His association with the entomological societies in Canada is now in its 52nd year, and must be one of the longest of such associations in Canada.

He is a charter member of the Lepidopterists' Society (1947), has been a member of the Province of Quebec Society for the Protection of Birds since 1935, and was a member of the Southern California Academy of Sciences from 1938 to 1947.

Mr. Sheppard was appointed a member of the Lyman Entomological Committee in 1963. His appointment as Honorary Curator of the Lyman Entomological Museum in 1968, now allows him to devote as much time as he wishes to his study of the Lepidoptera. He is at present reorganizing the Lepidoptera section of the Museum.

V.R. Vickery, Curator
Lyman Entomological Museum

THE 22nd INTERNATIONAL APICULTURAL CONGRESS
Munich, Germany
August 1-7, 1969

The Congress began on Friday, August 1, with scientific sessions devoted to the specific and complicated interaction of aphids and bees in the production of honeydew honey in the forests of Central Europe. The role of endosymbionts, the overall biology of the aphids, and control of aphid predators were among the subjects discussed. Honeydew is an important source of sugars for bees and for "honey" production in that part of Europe, although it is considered a contaminant in most North American honeys.

The second session on Friday afternoon dealt with general subjects including physiology, some aspects of honey bee genetics, papers on the chemistry of the hemolymph isozymes and electrophoretic protein bands, and a taxonomic paper on the morphology of the African honey bee. Papers were presented on embryological studies of the developmental blocks in interspecies hybrids, which, for example, prevent crossing of Apis mellifera and Apis cerana, and on the biochemical lesions which block ommochrome formation in the various eye color mutants of the honey bee. An entire session in the morning of August 2 was devoted to language, orientation and behavior in bees. Karl v. Frisch's dance hypothesis for orientation of flight of untrained bees had recently been challenged by Wenner, and a number of papers were concerned with this problem. The molecular basis of odor perception in the bee was discussed. Most papers supported the thesis that recruitment of naive bees to a feeding station is directed by the dance.

A long session on Saturday afternoon was devoted to aspects of bee pathology. Papers were presented on methods for rapid diagnosis by immunofluorescence of bee pathogens in contaminated material, on fine structure of bee pathogens, on strain variation within species of pathogens, on the properties of viruses of the honey bee, on effects of insecticides on bee behavior, and on the analysis of bees for specific insecticides.

The general sessions of the Congress opened on Sunday morning, August 3. The main lecture was by Prof. Karl v. Frisch, who summarized much of what is known about behavior and orientation of foraging bees. He presented data to show that when successful foragers danced on a horizontal comb (thus eliminating gravity as a direction indicator) and when it was covered to prevent orientation by the sun, the resulting flights by recruited bees were randomly oriented. If sun or skylight was available to the bees on the horizontal comb during the dance, the recruits were subsequently concentrated at the feeding dish indicated by the dance.

Other scientific papers spilled over into the general sessions, including studies on the behavior of worker bees toward queens whose mandibular glands were extirpated and thus theoretically devoid of "queen substance", and a further report on the biochemistry of caste formation in the honey bee.

A paper of interest to our laboratory was given by Dr. O. Wahl on the chemical attractant extractable from pollen. His results show that the attractant greatly stimulates honey bee consumption of substitute protein when added to the latter, and he speculated that the attractant could be an essential nutrient in the food of honey bee larvae.

The sessions were generally well organized with capable and efficient chairmen, and the simultaneous translation provided (English, French, German and Russian) was of high quality.

On Sunday night, an evening of Alpine folk dances and folk music including the well-known Schuhplattler dances, a "yodelling queen", and Alpine horn music was provided.

The opportunities to visit laboratories in association with the Congress were many; I visited the University of Utrecht and the Agricultural University, Wageningen, in The Netherlands. Dr. R. Boch visited the University of Munich, where he took his doctorate, and research stations in Oberursel, Erlangen, and Seewiesen among others in Germany. Dr. Koissling, at Seewiesen, has shown by electrophysiological means the strong response of antennal receptors in bees to some of the bee pheromones, and this work will have increasing importance as research in this area develops.

T. A. Gachnauer
Entomology Research Institute
Canada Department of Agriculture
Ottawa



NOTICE OF CONFERENCE ON PEST MANAGEMENT

The Institute of Biological Sciences at N.C. State University and the Entomological Society of America announce a conference devoted to the fundamental and practical aspects of pest management to be held in Raleigh, N.C., March 25-27, 1970. Topics will include ecologic and economic principles of pest management, life systems and life tables, systems analysis, predictions through bioclimatic studies, several topics dealing with practical use of pest management, and suggested training programs for future students in this field of research. Speakers will be drawn from Canada, England, Philippine Islands, and Australia as well as from the U.S. The conference will be supported in part by the Rockefeller Foundation.

Although it is expected that the majority of the participants will provide their own support, a limited number of travel stipends have been requested for research entomologists and advanced graduate students who may not have their own support. These latter funds are dependent upon approval of a proposal to a granting agency which has not yet approved our request.

Application forms and more complete details of the program may be obtained by writing to Pest Management Conference, Department of Entomology, N.C. State University, Raleigh.

FEATURE

PHOTOGRAPH



Suspected chemoreceptors and surface sculpturing of cuticle on an antenna of a female moth of spruce budworm, *Choristoneura fumiferana* Clemens 1820.
Scanning electronphotomicrograph by W.D. Seabrook and A. Wilkes.

(Outstanding photographs for future issues are welcomed. Editor)

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(Continued from inside front cover)

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