of the Entomological Society of Canada

Bulletin

Vol. 4, No. 2, June, 1972

THIS ISSUE

D. P. Pielou — Editor (Society Publications)
D. C. Eidt — Assistant Editor (Bulletin)

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Editor:	D. P. Pielou, Dept. of Biology, Dalhousie University, Halifax

NEW APPOINTMENTS

Chairman of the Science Policy Committee: W. F. Baldwin has replaced A. S. West

APPOINTMENT OF SECRETARY

Professor Douglas M. Davies, Department of Biology, McMaster University, Hamilton, Ontario has accepted the appointment as Secretary of the Entomology Society of Canada, in succession to Mr. D. G. Peterson who resigned at the end of 1971.

Philip S. Corbet
President

Contributions and correspondence should be sent to: D. C. Eidt, Editor, Bulletin of the Entomological Society of Canada, P.O. Box 4000, Fredericton, New Brunswick. Inquiries about subscriptions and back issues should be refered to the Treasurer, Entomological Society of Canada.

The deadline for the next issue Vol 4, No. 2 for June 1972 is 15 May.

of the Entomological Society of Canada

Bulletin Vol. 4, No. 2, June, 1972

Editorial

Having no editorial pontifications, and having no little spaces for those passages from the Canadian Entomologist of 100 years ago, we offer the following thrilling passage on a usually dry subject.

> It was our good fortune to have a special train rom the Platte river to Omaha, and as the novelty of riding in the cabin of the locomotive had long since worn off, the cow-catcher was next resorted to, and with results that had not been anticipated. Sitting carelessly on the beam that supports the iron framework, "nursing one leg," I was suddenly struck in the face by some small object that decidedly made an impression; others came in quick successi n, and before I could solve the problem, a large grasshopper, *Aedipoda Haldemanni*, Scudd), struck my boot, glanced and rolled into my lap. Having no bottle at hand, I immediately secured it in a leaf from a railroad land document that had been handed me, and placed it in my pocket. By this time we were running at 40 miles an hour, and grasshoppers pelted us like driving sleet. They seemed to fly or jump up from the track at our approach, but not in sufficient time to get out of the way, and so we literally ran into them. Those that struck the engine were generally injured—in some cases completely *smashed*—and blown off at either side, and it was only those that happened to strike on our clothing that were worth preserving. Occasionally a stray dragon fly, or an unlucky wasp would get in the way, and even tiger beetles flew into the trap; now and then a large wingless *Brachypeplus*, with its coarse spines, would make its presence felt; but all were fish that came to the net, and soon the leaves of my pahphlet were exhausted, all my pockets filled, and by the time the station was reached, I was only too glad to return to the car and bottle my treasures. In less than half an hour I took more insects than I had room for, and what was still better, found two new species. — Charles R. Dodge, Can. Ent. 4:15.

Contributions and correspondence should be sent to: D. C. Eidt, Editor, Bulletin of the Entomological Society of Canada, P.O. Box 4000, Fredericton, New Brunswick. Inquiries about subscriptions and back issues should be refered to the Treasurer, Entomological Society of Canada.

The deadline for the next issue, Vol. 4, No. 3 for September 1972 is 15 August.

LETTERS TO THE EDITOR

POPULATION LIMITATION

Sir:

It will not surprise you that I was much interested in the article on "The Population Problem". Very appropriate for the Society to back up Dr. Solandt's statement. The need was evident from the reply of the Prime Minister's Assistant Deputy Minister, Welfare Research, Planning and Development who thinks the problem might be one of underpopulation! Corbet and LeRoux did well to challenge this notion on behalf of scientists qualified to express an opinion.

R. E. Balch
Fredericton, N. B.

PESTOLOGY CENTRE POSTGRADUATES

Dear Sir:

You may be interested in the enclosed list of graduates in Entomology from the Pestology Centre at Simon Fraser University for publication in the Bulletin. Of 16 graduates who have been under the advisorship of members of the Centre, 13 (12 M.Sc.'s and 1 Ph.D.) have written theses in the area of entomology.

At present there are 30 graduate students in course at the Centre (17 in the M.Sc. and 13 in the Ph.D. programme). Of these, 20 (12 M.Sc.'s and 8 Ph.D.'s) are doing thesis research in entomology or closely related areas.

J. H. Borden
Burnaby, B.C.

COMPLETE LIST OF M.Sc. AND Ph.D. STUDENTS TO APRIL 1972

J. V. Richerson, Ph.D. January 1972. Dissertation: Host finding mecha isms of *Coeloides brunneri* Viereck (Hymenoptera: Braconidae). Supervisor: J. H. Borden. Postdoctoral Fellow Dept. of Entomology, Penns lvania State Universit , College Park, Pennsylvania, U.S.A. Working on Gypsy Moth Pheromone with Dr. E. A. Cameron.

R. B. Bennett, M.Sc. January 1971. Dissertation: Scolytid flight response to olfactory stimuli, with special reference to *Dendroctonus pseudotsugae* Hopkins (Coleoptera: Scolytidae). Supervisor: J. H. Borden. Now studying at Imperial College, London. May return to SFU to complete a Ph.D.

R. A. Ellis, M.Sc. August 1969. Dissertation: Laboratory and field studies on *Notonecta undulata* Say (Hemiptera: Notonectidae), a predator of mosquito larvae. Supervisor: J. H. Borden. Now working on Ph.D. at University of Manitoba with Dr. R. A. Brust.

G. J. Fields, M.Sc. April 1971. Co-existence of 3 species of *Anthocoris* (Hemiptera: Anthocoridae) in pear orchards in the Okanagan Valley of British Columbia. Supervisor: B. P. Beirne. Now at Mid Columbia Experiment Station, Hood River, Oregon, U.S.A.

C. E. Fockler, M.Sc. March 1972. Dissertation: Some aspects of the behavior and physiology of sexual activity in *Trypondendron lineatum* Olivier (Coleoptera: Scolytidae). Supervisor: J. H. Borden. Now working part-time for Dr. J. M. Webster on a book.

G. W. Gilgan, M.Sc. March 1971. Dissertation: Influence of physiological and physical factors on the radiosensitivity of the codling moth: *Laspeyresia pomonella* (L.). Supervisor: K. K. Nair. Lecturer, Douglas College, Vancouver, B.C.

W. B. Hudson, M.Sc. April 1970. Dissertation: Control of Orchard Mites with Overtree Sprinkler Systems. Supervisor: B. P. Beirne. County Extension Agent, Yakima County Cooperative Extension Service, Yakima, Washington, U.S.A.

D. R. Kearns, M.Sc. June 1970. Dissertation: Physiological effects of an alkylating agent, tepa, on the desert locust *Schistocerca gregaria* Forskal. Supervisor: K. K. Nair. Lab Instructor, SFU, Dept. of Biological Sciences.

A. B. Q. Lam, M.Sc. December 1970. Dissertation: Effect of some nematodes and microorganisms on the leatherjacket *Tupula paludosa* Meig. larvae, and their potential use as biological control agents. Supervisor: J. M. Webster. Now teaching at Notre Dame Academy, Waterdown, Ontario.

P. Muthigani, M.Sc. August 1971. Dissertation: Impact of defoliating insects on growth of red alder (*Alnus rubra*). Supervisor: A. L. Turnbull. Now in Kenya.

K. R. Penner, M.Sc. October 1970. Dissertation: Metabolism of fatty acids in *Ips paraconfusus* Lanier (Coleoptera: Scolytidae) *in vivo* synthesis of fatty acids from acetate-1-^{14}C in freshly emerged females. Supervisor: J. S. Barlow. Now at the Crime Lab., R.C.M.P., Vancouver, B.C.

S. N. Thompson, M.Sc. March 1970. Dissertation: Aspects of fatty acid metabolism in *Galleria mellonella* (L.) (Lepidoptera: Pyralidae): Isolation of the elongation turnover rates of octadecenoic and 9-octadecenoic acids. Supervisor: J. S. Barlow. Presently working on Ph.D. at SFU under Prof. Barlow.

H. Vlug, M.Sc. April 1972. Dissertation: The effects of logging and slash burning on soil acari and Collembola in a coniferous forest near Maple Ridge, British Columbia. Supervisor: J. H. Borden. Now teaching at Jericho Hill School for the Deaf, Vancouver, B.C.

IN THE COMING DECADE, MUST MAN, CAN MAN, WILL MAN CONTROL HIS ENVIRONMENT

The last decade stressed the conquest of space, an objective which seemed utopic one hundred years ago. By his astronomic feats, man has shown that he is capable of reaching an objective, of investing the necessary money for the purpose and of tapping the required sources of intelligence. Unfortunately, this extra-terrestrial conquest has been motivated more than anything else by prestige, military and political considerations.

Now *Homo sapiens* finally has to face the fundamental problem of his survival. This is not a new problem since, from his first appearance on the planet, and as an integral part of the ecosystem, man has had to struggle for his survival — but as individuals. Like any organism, prehistoric man had one basic goal, and not an easy one: to survive and successfully reproduce. That one crucial goal has been so well fulfilled that today over three billion people inhabit the Earth. From Alaska to Tasmania, from Patagonia to Siberia, no territory escapes from temporary or permanent settlement.

The populating of the Earth has necessarily been irregular because of climate diversity, availability of resources, proliferation capabilities of ethnic groups, resistance to epidemics and other natural population-regulating processes, and of course political events. Moreover, the industrial revolution and modern technology have accentuated the absence of equilibrium in the moral and material ways of nations. Man has consequently gradually changed his immediate surroundings and, therefore, has always maintained an increasing pressure on the environment. This pressure, which is by no means a form of control like some people would want us to believe, being unconscientious and unplanned, has led humanity into a state of precatastrophe. As if natural catastrophes — earthquakes, avalanches, cyclones, epidemics — were not enough, man has prepared, without being aware of it, a situation which could lead to the greatest of catastrophes: the creation of an unlivable environment. Does he want to live in a universe of concrete, aluminum and glass or quiet and forested countrysides which are the batteries of life, providing necessary oxygen through their vegetation? Man is actually a victim of his own arrogance, on top of his proverbial pride and egotism, in his constant appetite for material things, particularly in countries which like to qualify themselves as "civilized".

Of the three questions set forth in my title the first one provides its own answer. Man has no choice. If the human species is to survive he must exercise a control of the environment, and a positive one. What is harder to answer is what is he prepared to do to exercise such a control. In his research for this modality he will probably discover if he will do what can and must be done. Man has to tackle not only the problem of the perpetuation of the human species but also that of practically all forms of life on *this* planet. How many species of birds, mammals, fishes have already disappeared, or are in the process of disappearing, from his environment as a result of man's impact on the biosphere? Many reports have been written on this extraordinary capacity of man to suppress directly or indirectly other forms of life with which he is not in direct conflict. He should not forget too the many genocides which are responsible for the disappearance of some peoples. In searching for a positive form of control of the environment, man must rise above, not to say eliminate, his appetite for destruction.

The Growth of Populations

Each individual on this planet needs a minimum surface area and biosphere volume in which to live. The world is therefore directly affected in its three dimensions every time another human being is born and adds himself to the already existing billions. Control over the environment must necessarily deal with the problem of overpopulation (Ehrlich and Holdren, Science 171: 1212-1217, 1971). This problem has existed for years in Taiwan, the Mascarene Islands, the Indian subcontinent, and other areas of the world.

Since man is constantly creating new needs, his vital space is larger if he has a higher standard of living or if he lives in an area of "avant-garde" technology. Thus the economically poor North American has access to far more things than his Chinese or African equivalent. Every country has therefore, two problems to solve simultaneously if it wants to maintain or provide an adequate and healthy environment for its inhabitants: to meet the basic needs of people for food, water, clean air, clothing and shelter; and to provide the necessary elements for work, education, transportation and leisure. A satisfactory control of the environment cannot by-pass these two aspects of human life. How is it possible to maintain simultaneously an unpolluted atmosphere and the concentrations of vehicles and factories which are part of a technological standard of living? How is it possible to maintain water quality and efficiently dispose of sewage? How is it possible to keep rivers or lakes intact and have power plants, irrigation systems, and pulp and paper mills? These are some of the problems Man of the 1970's must solve if he really wants to improve the quality of the environment.

Not only must he stop pollution of air and water and stabilize human population, but he must also repair damage already done to the environment: the effects of strip mining, overgrazing, eutrophication, oil spillage, phytocides and radioactive wastes. All these unfortunate effects are the direct result of human ambition, of his "insouciance", and are linked to the needs of growing populations with rising standards of living. More people, more mouths to be fed, so more intensive and extensive cultivation of land that must be depleted of perennial, natural vegetation, an important link in water conservation. True, there are forest plantations, but do they compensate for natural stands? The creation of one-crop areas, or of one-species plantations has definitely opened up the door to insects which earlier were not pests (Berland, Les insectes et l'homme. P.U.F. Paris, 1962).

A population policy is necessary not only where overpopulation is already a threat, but in every country of this planet, as part of our effort to save the environment. Overpopulation is also a threat where density is low but standard of living is high. It is not possible to work with one hand for the betterment of mankind and with the other to waive other stresses through daily additions to the existing population. Some people like to believe that the tapping and exploitation of new resources and in particular the oceans will alleviate present problems. We now know that no natural resource is limitless, and increased exploitation would create new environmental problems.

As long as the nations of this world are not ready to use all the brains and means at their disposal to establish a universal policy of population regulation, we cannot hope to live in a better environment. On many fronts this battle is rather lost than won. In this second half of the twentieth century people are already dying through overpopulation (Hardin, Science 171:527, 1971). Fighting overpopulation is also fighting famine, preventing wars of hunger, and ensuring a better environment for future generations. Who has not enjoyed

walking on a deserted beach or in the countryside? Why should the coming generations be denied this pleasure? Should we not preserve what we have enjoyed for these who will, more quickly than we like to think, replace us in this world?

In the Meantime . . . .

While and if demographers, ecologists, economists and politicians accept the challenge to devote all their energies to finding ways and means to solve the fundamental population-growth problem, other problems have to be tackled. Because these do not affect humans directly, man's response to them will prove whether or not he wants to or can control the environment in the coming decade.

The modern metropolis, wherever it is, is plagued with many forms of pollution (Bazell, Science 174:1005-1006, 1971). Garbage disposal, noise and air pollutants are major problems for urban administrators and concerned citizens. The automobile industry is already trying to build a less-polluting vehicle. The aircraft industry has not solved the problems of noise and exhaust gases. With the British-French Concorde and the Russian supersonic Tupolev coming on the market soon, more trouble lies ahead.

Transportation would be simpler, more efficient, and less polluting if more people were given the means of moving about collectively. Urban and intercity transport has to be rethought. Even if the U.S. is trying to give trains another chance, one wonders whether profit-oriented politicians will be patient enough to let AMTRAK, the new passenger-train system, take its appropriate place in that too automobile-minded country. The fact is that the number of intercity trains today in the U.S. and Canada is less than it was ten years ago, while the number of cars and planes (private and commercial) is much greater. In his constant desire for independence, man does not realize that every time he drives his car to work or downtown while he could take the bus or subway, he contributes to environmental deterioration. And since urban (or other forms of government for that matter) do not always provide adequate mass transportation systems, the town dweller has often no alternative but drive every morning in a vehicle which could carry four to five other passengers. Many cities have already reached the point of too much transport for too few people. The result: traffic jams, noise, more roads and expressways, fewer planted areas, more accidents and deterioration of human health. What will all these tired brains be able to do tomorrow? Will they still have the necessary energy and composure to consider controlling the environment? One can hardly believe that it was in 1898 that John Muir was already writing about the thousands of tired, nerve-shaken, overcivilized people looking to wilderness as a necessity!

Man must without delay provide urban areas with transportation facilities adapted to large population concentrations. He must also give back to agglomerations their lungs: the planted areas. Plantings are also important because there has already been more than one generation of children who do not know what it is like to play elsewhere than in the streets. Why should a citizen of Vancouver have more parks at his disposal than his counterpart in Milwaukee or Marseille?

The Determination of Man

Just a few years to set things right, when he has taken so many centuries to produce a chaotic situation seems far too short a time. We have to call on man's determination. Sections of humanity have shown on many occasions what they are capable of doing. Man walked on the Moon, man-made

satellites went to survey Mars or Venus. Where are the priorities, the Moon or the terrestrial environment? Even if the conquest of space contributed to the material well-being of mankind by the inventions stemming from this endeavour, one cannot decently accept the glaring fact that the countries which decided to put so much effort into getting off the Earth, managed to thoroughly neglect far more urgent problems affecting life on this planet. The U.S. and Russia are among countries with the most serious environmental problems, and Russia, in spite of the omnipresent control of its government, cannot say it has any better a solution than the U.S.

Man has the potential to help salvage the environment. Between the autocidal control of insects and the revival of the giant kelp forests off southern California, there are many examples where more serious attempts could be made to revive whole ecosystems. But man's effort is applied too often where there is no urgency or where more problems are created than solved. There is too much determination setting up meetings, symposia, conferences and other gatherings and not enough in acting on the recommendations of these meetings. Too much effort is spent in protecting our way of life, our nationalism, our prestige. Not enough is spent in trying to be universal human beings seriously preoccupied with the betterment of human life, wanting truly to share with others and to build with them a better environment.

Man must manage his environment, and quickly. He will be able to achieve this if he rids himself of his arrogance, selfishness, and prejudice. If not, man will be destroyed by man.

Bernard J. R. Philogène

FORTHCOMING CONFERENCES

XVIII Congrès International de Zoologie, Monte Carlo, Monaco. 24-30 September 1972.

Pacific Branch E.S.A., Empress Hotel, Victoria, B.C. 20-22 June 1972.

International Union of Biological Sciences, 13 international Congress of Cell Biology, England, July.

International Congress of Entomology, Canberra, August.

BOOK NOTICE

Recently brought to our attention is a Bibliography of Artificial Diets for Insect and Mites by Pritam Singh, which was published in 1972 as Bulletin 209, New Zealand Department of Scientific and Industrial Research. It will especially interest anyone who wishes to be aware of developments in insect dietetics. Listed in its 75 pages are 980 references to published articles concerning diets and techniques as well as to pertinent general reviews that have appeared in about 170 different periodicals up to 1970; the earliest cited bears the date 1907. It appears to be a very comprehensive if not complete list of papers on the subject. Therefore, it will serve well as a ready reference for teachers, students, and researchers likely to be engaged in rearing insects and mites on synthetic diets or in the nutritional physiology of these arthropods. Helpful indices are included. The bulletin can be obtained from A. R. Shearer, Government Printer, Wellington, New Zealand, for 80 cents.

On some larger, apose
Acridoid
(Perpetrated, with certain 'po

The *Stinkspringhaan's*,
So called on faa'ms,
In Afrikaans –
Vernacularly –
Although they may
Often display
Their pigments gay –
Spectacularly –
When untrammelled by exuvia(e),
To ensure that they removë ya,
Produce obnoxious effluvia –
Ejacularly!

Their reds and blues
And yellowish hues,
To warn, they ues –
Defensively –
But, when annoyed,
The phymateoyd
Has oft emplo ed –
Extensively –
What his enemy gen'rally thinks
Of as most abominable stinks
Squ'irted out through abdom'inal chinks –
Offensively!

Phymotcus leprosus
And *P. morbillosus*
(Syn. *verrucosus*) –
Contrarily,
As one supposes –
Assail our noses
With halitoses.
Treat warily!
P. viridipes' wings are brilliant;
From aggression he is resilient;
And his odour is just as vir'lent –
Yea, varily!

SPRINGHAAN

phid bush hoppers,
Africa
ile convalescing, Dec. 1971)

Verrucophorous
Dictyophorus
Is spumophorous –
Froths vigorously –
He smells fuggish,
Appears buggish,
And moves sluggish';
But rigorously,
To meet a predator attack,
Either from the front or from the back,
Ev'ry internal glandular sack
Works triggerously !

The *Taphronota*
Cares not one jot;
Emits her quota –
Less vociferously.
The genus *Maura*
Another show'er
Is even sourer –
Odoriferously !
Called, by some, Elegant Grasshopper,
Zonocerus' name might seem proper.
That is, till the pest pulls the stopper –
Nasty-whifferously !

Species various
From other areas
Are nef rious –
Aromatically !
Likewise, as well,
They also smell
Like bloody hell –
Emphatically !
But pyrgomorphs of the smaller kind
Are, for the most part, lesser inclined
To make themselves so easy to find –
Olfa'tically !

D. Keith McE. Kevan

1972 ANNUAL MEETING

Joint Meeting

ENTOMOLOGICAL SOCIETY OF AMERICA
ENTOMOLOGICAL SOCIETY OF CANADA
ENTOMOLOGICAL SOCIETY OF QUEBEC

Queen Elizabeth Hotel, Montreal
27 - 30 November 1972

PROGRAM HIGHLIGHTS

Prologue Session

Sunday afternoon and evening, 26 November
- Acarology Society of America (The Acarology Society of America is petitioning the governing board of the ESA for section or sub-section status.)
- Photo salon
- Informal conferences

Opening Sessions

Monday morning, 27 November
- Welcome
- Presidential address, Entomological Society of America — W. C. Eden
- Presidential address, Entomological Society of Canada — P. S. Corbet
- Presidential address, Entomological Society of Quebec — J. L. Auclair
- Gold Medal Award
- Founders' Memorial Lecture
- Preliminary Business Meeting — ESA

General Sessions

Monday afternoon, 27 November
- Sectional meetings
- Sectional and sub-section business meetings

Monday evening, 27 November
- Photo salon
- Informal conferences

Tuesday morning, 28 November
- Plenary Symposium — Pest Control Strategies Ten Years Hence
  - Moderator: C. E. Palm
    - Malaria — A. W. A. Brown
    - Cotton — P. L. Adkisson
    - Spruce budworm — J. R. Blais

Tuesday afternoon, 28 November
- Sectional meetings

Tuesday evening, 28 November
- Entomologists' mixer
- Banquet

Wednesday morning, 29 November
Final section and sub-section business meeting
Sectional meetings

Wednesday afternoon, 29 November
Sectional meetings
Business meeting – Entomological Society of Canada

Wednesday evening, 29 November
Sectional symposia
Informal conferences

Thursday morning, 30 November
Final business meeting – Entomological Society of America
Sectional meetings

Thursday afternoon, 30 November
Sectional meetings

SECTION SYMPOSIA

In program planning for the 1972 meetings special emphasis has been given to symposia. Section Chairmen expect to be given program preference to these to improve attendance. The following symposia are being planned.

Section A

1. Holarctic Zoogeography
2. New Approaches to Taxonomy
3. New Perspectives in the Biology of Hymenoptera

Section B

1. Steroid Synthesis and Metabolism in Insects

Informal Conferences

1. Insect Management Involving Chemosterilants and Hormonal Agents
2. Physiology of Insect Parasitoid-Host Relationships
3. Insect Development, Maturation and Senescence

Section C

1. Pheromones of Social Insects
2. Predation
3. The Organization of Plant-Arthropod Associations

Informal Conference

1. Bionomics and Management of North American Tephritids

Section D

1. Available Options for Control of Medical and Veterinary Insects

Section E

1. Pest Management in Action
2. Entomophobia
3. North American Forests: Pest Problems, Progress and Outlook
4. New Advances in Pest Survey Techniques
5. Are Training Standards and Licensing Procedures Needed for Persons Making Pest Control Recommendations? — Proposals
6. Benefits and Costs of Pest Control
7. Mechanics and Physics of New and Modified Spraying Systems

Section F

1. Pest Management Systems for Deciduous Fruits
2. Turf Grass Entomology
3. Developing New Pesticides — The Role of University and Official Entomologists

Program Committee:

E. C. Bay, College Park, Maryland
S. B. Vinson, College Station, Texas
R. A. Morse, Co-Chairman, Ithaca, New York
J. L. Auclair, Co-Chairman, Montreal, Quebec

THE BALDUF RESEARCH AWARD

Professor Joseph R. Larsen, Head of the Department of Entomology, at the University of Illinois, announced on Friday, May 12, the winner of the first Balduf Research Award is Dr. David L. Denlinger. This award, to be offered annually, was established to encourage excellence in entomological research and publication among graduate students in the Department. It consists of a certificate and cash prize of $100 and the opportunity to present the winning entry at a special departmental seminar. The award is made for the best scientific paper submitted to the Selection Committee by a graduate student, either published in a journal during the past year, or a manuscript ready for submission.

This first Balduf Award goes to Dr. Denlinger for his scientific publication "Induction and termination of pupal diapause in *Sarcophaga* (Diptera: Sarcophagidae)" printed in the Biological Bulletin 142, pages 11-24. The paper describes how three species of fly differ in the way they are prompted into physiological changes that permit them to endure winter cold, and their response to spring conditions. The paper makes a significant contribution to our understanding of the complex interactions between insects and their physical environment. The three reviewers who judged Dr. Denlinger's contribution all remarked on the high quality of his work.

Dr. Denlinger will be unable to receive the award personally from Dr. Larsen as he is now stationed in Africa. Since graduating with a Ph.D. in entomology in the spring of 1971 he has distinguished himself and the University by gaining two fellowships to study in laboratories of international reputation. First he went to Wageningen, the Netherlands, to study with Dr. J. deWilde,

the well known insect physiologist. He recently moved to the International Centre of Insect Physiology and Ecology, Nairobi, Kenya. There he will concentrate his studies on one of man's most serious pests in Africa, the tsetse fly, carrier of sleeping sickness. The International Centre was established in 1970 for the conduct of basic research which may lead to new methods of insect control, and to promote growth of the scientific community in Tropical Africa.

The award was named after Professor Walter Valentine Balduf who made outstanding contributions to the Department of Entomology and the University of Illinois. He was a professor from 1922 to 1958 and an emeritus professor and member of the University Senate for 13 years. He published extensively on the ecology and natural history of insects, including three books and some 70 scientific papers. Those who knew him remember well the enjoyment he obtained both from the students and the subject matter he taught. They have written "Dr. Balduf was an inspiration not only to his students but to his colleagues". It is indeed appropriate to remember this fine gentleman and scholar by offering the Balduf Research Award to such a worthy young scientist.

WESTERN FOREST INSECT WORK CONFERENCE

Close liaison between American and Canadian forest entomologists has existed for a number of years. This is due in great part to the Northeastern, Central and Western Forest Insect Work Conferences. The Twenty-third Western Conference was held at Edmonton, Alberta from March 6 to 9, 1972, and attracted eighty-five forest entomologists from four provinces and fifteen states.

The program committee consisting of Dr. L. Safranyik (Chairman), Dr. H. F. Cerezke, W. C. H. Ives, J. A. Muldrew, R. E. Stevenson, and Dr. H. R. Wong developed a program around the general theme, "Environmental and Insect Problems Specific to the Boreal Region". Four panels were held: Environmental protection needs in boreal resource development, Epicenter concept in forest insect control, Stress-physiology of conifers with emphasis on insect attack and moisture stress, and Cost-benefit analysis of research. The concurrent workshops ranged from various studies on bark beetles, weevils, wood borers, and cone and seed insects, to insecticide appraisals for effect on non-target organisms in the forest environment, working toward an ideal relationship between ecologists and taxonomists, climatic effects on insects in the boreal forest, remote sensing in forest pest surveys, biotic control factors, degree-days in relation to insect development and abundance, primary attractions and host selection by forest insects, and evaluating growth impact.

Colour is added to the Western Forest Work Conference by the Ethical Practices Committee, which annually selects a delegate for his nonethical activities during the meeting. The new executive of the Western Forest Insect Work Conference is Dr. R. E. Stevens, Fort Collins, Colorado (Chairman); Dr. D. C. Wood, Berkeley, California (Immediate Past-chairman); Dr. M. E. McKnight, Bottineau, North Dakota (Secretary-Treasurer); Dr. W. E. Cole, Ogden, Utah (Councillor); Dr. B. E. Wickman, Corvallis, Oregon (Councillor) and W. C. H. Ives, Edmonton, Alberta (Councillor). The 1973 meeting will be held at Tucson, Arizona.

Further information on the Twenty-third Forest Insect Work Conference may be obtained by writing to the Secretary-Treasurer.

ECONOMIC DEVELOPMENT AND HUMAN SURVIVAL

Abstract and summary of recommendations from Occasional Paper No. 3, Canadian Commission for Unesco, 151 Sparks St., Ottawa, K1P 5E3. Copies of the paper, in both English and French, are available on request to the Commission.

Environmental systems, on which all life depends, are coming under increasing stress throughout the world as a result of human population growth, contemporary forms of social organization, and the use of certain technologies. Despite its past successes, the prevailing development model, established through experience of present industrialized countries, contributes to environmental stress and is incapable of indefinite continuation or universal application. Other models, incorporating the concept of a "no-growth" state, must accordingly be sought.

These considerations support the following recommendations and conclusions:

1. *Population Policies*

Highly industrialized nations must adopt consistent policies to reverse their population growth trends. This is a prerequisite for progress on a global scale (Sec. IV-2).

2. *Economic Imperatives*

The industrialized nations must make the requisite changes in their own social and economic systems and not just talk about the need for others to do so. This will involve moving towards the realization of the "no growth" state (IV-3).

3. *Alternate Development Models*

(a) Highly industrialized nations should now make the less developed nations aware of the nature and extent of the environmental damage which they have experienced, so that third world nations may gain advantage from past mistakes.

(b) It is essential to identify new development models as a basis for viable policy both in present industrialized nations and in the third world (IV-4).

4. *International Standards*

The establishment of international standards for environmental quality should be accorded a high priority. International agencies, and particularly the organizations of the United Nations system, have the competence, experience, and universality to undertake this responsibility (IV-5).

5. *Development Programmes*

When development projects are being planned, more thorough attempts should be made to foresee the problems that may arise. Especially stringent standards should be expected of industrialized countries (IV-6).

6. *Aid Programmes*

We recommend that governments look to the intergovernmental agencies, and especially to the United Nations system, for leadership in establishing environmentally acceptable development policies and programmes. As a necessary corollary, we also recommend that these same governments, in their role as "Member States", both support and insist upon high international programme standards.

EMPLOYMENT

The Entomological Society of Canada will maintain a list of employment opportunities in Canada for entomologists, and establish an employment office at annual meetings of the Society where prospective employers and employees may contact one another and conduct interviews. Up-to-date listings of positions available and positions wanted will be published in this and future issues of the **Bulletin.** Listings will appear in one issue only unless otherwise requested. Blank forms designed for use by prospective employers and candidates for employment are available on request. The employment committee will not publish names unless expressly requested by individuals concerned. All resumes received will be accessible to interested persons at the placement office at annual meetings unless otherwise instructed by applicants.

It is physically impossible for the employment committee to provide a personalized service to individuals requesting information about job openings. All information is prepared in classified ad f rm and printed in the **Bulletin** or is available at annual meetings of the Society. Requests by prospective employers for curriculum vitae are handled by the committee. **THE SERVICE PROVIDED BY THE COMMITTEE IS OPEN ONLY TO MEMBERS OF THE ENTOMOLOGICAL SOCIETY OF CANADA.** Those sending curriculum vitae to the committee are requested to indicate if they hold membership in the Society.

POSITION WANTED

Ph.D. seeks a teaching and/or research Position at a university, museum or government department. Major interest is Systematics and Biogeography. (38-30-72).

Please direct all inquiries and correspondence to:

S. R. Loschiavo, Chairman,
Employment Committee,
Entomological Society of Canada,
c/o Research Station,
25 Dafoe Rd.,
Winnipeg 19, Manitoba.

DO NOT direct inquiries to the Bulletin.

POSITION AVAILABLE

Position in limnology (ecology and management of fresh-water fauna) and/or agricultural entomology (chemosterilants, attractants, pheromones) at Université Laval. Minimum starting salary for Ph.D. is $12,000. Teaching in French is requirement. Candidates who do not know French, but are willing to learn are invited to apply. For details and information, apply directly to Dr. Lucien Huot, Departement de Biologie, Université Laval, Québec 10, Québec.

PERSONALIA

Alan Robinson, Ph.D. (Bristol) is studying radiation-induced sterility in the codling moth at the C.D.A. Research Station, Summerland, under an N.R.C. Postdoctoral Fellowship. His work is related to Dr. M. Proverb's program on codling moth control by the sterile male technique.

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Doug Miller of the C.D.A. Research Station, Harrow, visited research laboratories in several European countries in May to solicit cooperation in solving the spreading problem of cereal leaf beetle in North America.

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Bob Jacques of Harrow went to Western Europe in late May for a month-long visit to institutions conducting research in insect pathology. He is particularly interested in the use of bacteria and viruses to control insect pests.

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W. B. Mountain, Director of the Entomology Research Institute, Ottawa, Henry Hurtig, Research Coordinator, Environmental Quality, and D. G. Peterson, Research Coordinator, Crop Protection, have been selected by the Research Branch, CDA to participate in a French language training program of total involvement. The training continues until level 4 of proficiency is attained. David Hardwick, Head of the Lepidoptera and Trichoptera Section E.R.I., is appointed acting director in Dr. Mountain's absence.

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Pierre Ricard was recently appointed to the C.D.A. Research Station, St. Jean, P.Q. where he will study residues of pesticides applied to horticultural crops. He is interested in the degradation products both on the plants and in the soil.

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David Prec has joined the staff of the C.D.A. Research Station, Kentville, N.S., where he will carry out research on selective pesticides useful in the integration of chemical and biological control methods.

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F. O. Morrison has been appointed Head of the Department of Entomology of Macdonald College. He replaces D. K. McE. Kevan who stepped down 30 April 1972.

HERZBERG, ON EXCELLENCE IN SCIENCE

Dr. Gerhard Herzberg, of Ottawa, the 1971 Nobel Prize winner in chemistry, was guest speaker at a dinner in his honor co-hosted in Saskatoon by the Province of Saskatchewan, the City of Saskatoon, and the University of Saskatchewan.

He told the 200 guests at the dinner that pure science, like the performing arts, the fine arts, and literature, is an activity that "lifts us above a purely mercenary status". He stated that the building up of excellence in science, as anywhere else, is difficult and precarious, and once established should not be touched in any way even if the particular organization does not fit in with some preconceived idea of how science policy should run. He noted that scientific contributions often bring material benefits to mankind. However, he said that these can rarely be foreseen and are up to technologists to find on the basis of the work of pure scientists.

ADDRESSES OF SOCIETY MEMBERS TO BE RELOCATED FROM RESEARCH INSTITUTE, BELLEVILLE (EFFECTIVE 1 SEPTEMBER 1972)

A. P. Arthur R. E. Bellamy	Research Station, Canada Agriculture, University Campus, Saskatoon, Saskatchewan.
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J. S. Kelleher	Scientific Information Section, Canada Agriculture, Ottawa, Ontario K1A 0C6.
L. G. Monteith	Smithfield Experimental Farm, Canada Agriculture, Box 340, Trenton, Ontario.
B. C. Smith	Research Station, Canada Agriculture, Box 370, Harrow, Ontario.