

Proceedings of the
Thirty-first Annual Meeting
of the

ENTOMOLOGICAL SOCIETY

of

ALBERTA



held jointly with the



Entomological Society
of British Columbia

October 20-23, 1983

The Delta Lakeside

Penticton, British Columbia

Volume 31

March, 1984

PROCEEDINGS OF THE
31ST ANNUAL MEETING
OF THE
ENTOMOLOGICAL SOCIETY OF ALBERTA
HELD JOINTLY WITH THE
ENTOMOLOGICAL SOCIETY OF BRITISH COLUMBIA

October 20-22, 1983

The Delta Lakeside
Penticton, British Columbia

Editor

W. A. Charnetski

ISSN #0071-0709

For Citation Only by Author's Permission

OFFICERS - 1983

President	B. W. Taylor
Vice-President	M. Y. Steiner
Past President	M. G. Dolinski
Secretary/Treasurer	R. Butts
Editor	W. A. Charnetski
Directors:	W. A. Nelson
	R. G. Holmberg
	G. Pritchard
Regional Director	J. A. Shemanchuk

OFFICERS - 1984

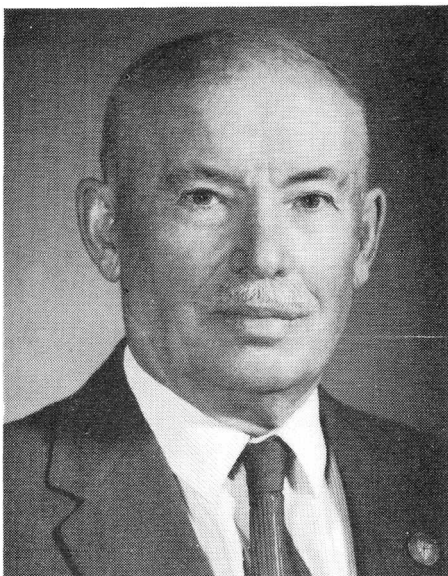
President	M. Y. Steiner
Vice-President	J. Drouin
Past President	B. W. Taylor
Secretary/Treasurer	R. G. Holmberg
Editor	W. A. Charnetski
Directors:	W. A. Nelson (1985)
	J. Ryan (1984)
	C. Hergert (1986)
Regional Director	D. Craig

TABLE OF CONTENTS

Obituary - R. M. White (1888 - 1983)	1
Presidents' Reports	
ESA - B. Taylor	2
ESBC - J. McLean	3
Abstracts of Submitted Papers:	
Factors Affecting Lygus Bug Populations and Damage in Alfalfa Seed R. Butts	5
The Use of Safer's Insecticidal Soap Alone and in Conjunction With Other Pesticides in the Control of Insects and Mites M. D. Gaudet	5
The Commercial Development of Biological Control in Western Canada D. Elliott	6
Mass Production of <u>Typhlodromus occidentalis</u> on Soybeans for Improved Integrated Mite Control on Apples in the Okanagan Valley L. Dale, N. Angerilli, and D. Elliott	6
Codling Moth Control in Apple Orchards and on Apples for Export V. A. Dyck and A. P. Gaunce	7
Distribution and Behaviour of <u>Campylomma verbasce</u> , a Sporadic Pest of Apples, in B. C. Fruit Orchards H. M. A. Thistlewood, J. H. Borden, and R. D. McMullen	7
The Yukon Insect Project R. A. Cannings	8
Beringian Butterfly Biogeography F. A. H. Sperling	9
Cold Tolerance in Arctic and Alpine Insects R. A. Ring	10
Night Life on the Glacier J. Edwards	11
Production of Winged Insects at Truelove Lowland (76°N), Devon Island J. K. Ryan	11
Salinity as a Limiting Factor in the Distribution of Three Chironomid Species in Brackish Lakes R. W. Sargent	12

The Emergence and Adult Habitats of the Anisoptera of a Southern Alberta Pond C. Nimz	12
Pine Oil as a Repellent of the Sitka Spruce Weevil J. A. Carlson	13
Evaluating Western Spruce Budworm Pheromones in the Field J. D. Sweeney and J. A. McLean	13
Detection of Spruce Beetle (<u>Dendroctonus rufipennis</u>) Infestations Using Aerial Photography J. J. Churcher	14
Seasonal Occurrence and Damage of Three Species of <u>Proteoteras</u> Attacking Shoots of Boxelder (Lepidoptera: Tortricidae) in Alberta J. A. Drouin	14
The Scent Glands of Opiliones: A Review of Their Function R. G. Holmberg	15
The Reproductive Ecology of a Communal Orb-Weaving Spider, <u>Metepeira spinipes</u> (Aranoidea: Araneae) M. J. Benton	15
Incidence of Swine Mange, <u>Sarcoptes scabiei suis</u> (De Geer), in Alberta H. G. Philip and M. J. Herbut	16
Electrostatic Sprayer for Application of Pesticides to Cattle - A New Use of an Old Principle J. A. Shemanchuk	16
Cytological Identification and Characterization of IIS-10.11 <u>Arcticum</u> Populations from the Athabasca Area Using Larval and Adult Polytene Chromosomes W. S. Procunier, J. A. Shemanchuk, and W. B. Barr	17
Biochemical Basis for Salmon Colored Eyes in the Tsetse Fly (<u>Glossina morsitans morsitans</u>) R. H. Gooding and B. M. Rolseth	17
Temperature Preference and Activity Thresholds of the Coenagrionid <u>Argia vivida</u> (Odonata) M. A. Leggott	18
Identification of Africanized and European Honey Bees Using Extracted Hydrocarbons D. A. Carlson and A. B. Bolten	18
<u>Somatochlora sahlbergi</u> Trybom (Odonata: Corduliidae): Hybridization in Beringia S. Cannings	19

Zoogeographical Affinities of Northwestern Low Arctic Caddisflies (Trichoptera) and Their Post-Glacial Origin N. N. Winchester and R. A. Ring	19
Mechanisms of Overwintering in Arctic Hymenoptera L. M. Humble and R. A. Ring	20
Phenotypic Variation in the Butterfly <u>Parnassius phoebus</u> (Papilionidae) C. Guppy and H. Epstein	21
How Crane-fly Larvae Move G. Pritchard	21
Photographic Highlights (W. A. Nelson)	22
Insect Collection Competition Report	26
Minutes of Executive Meeting, March 21, 1983	27
Minutes of Executive Meeting, July 11, 1983	29
Minutes of Executive Meeting, October 20, 1983	31
Minutes of Annual Meeting, October 21, 1983	33
Report of the Committee to Review ESA Prizes	36
Financial Statement - ESA - 1983	39
Report of Regional Director	40
Report of Representative of the Environment Council of Alberta	44
By-Laws - Entomological Society of Alberta	46
Rules and Regulations - Entomological Society of Alberta	49
List of Members	50



I N M E M O R Y

O F

R O Y M A S O N W H I T E

(MM and Bar, B.Sc., M.Sc.)

1888 - 1983

R. M. (Sam) White died February 4, 1983, in Penticton, British Columbia. Sam was a prominent entomologist in the Canadian Prairie Region from 1922-1948. He was the third Honorary Life Member of the Entomological Society of Alberta, being elected in 1960 at the 8th Annual Meeting.

Sam was born near Darlingford, Manitoba, on December 15, 1888, and attended school at Morden, Manitoba. He served in the First World War with the 27th Battalion of the Canadian Expeditionary Force from 1914-1918, and participated in the battles at St. Eloi, the Somme, Vimy Ridge, Hill 70, Passchendale, Amiens, and Cambrai. During much of the war, Sam was a sniper. He was wounded three times and won the Military Medal and Bar.

Sam graduated with a B.S.A. from the Manitoba Agricultural College in 1924, and with an M.Sc. from MacDonald College in 1927. He began his entomological career with Norman Criddle at Treesbank, Manitoba in 1922. He joined the staff of the Field Crops Insect Laboratory in Lethbridge in 1932 and remained there until his retirement.

At Lethbridge, he was in charge of grasshopper investigations and contributed greatly to knowledge concerning biology, ecology, distribution, and population forecasting of economic species.

Sam's work was always carefully done and has stood the test of time, as Smith and Holmes (1977) publish a paper on abundance and distribution of grasshoppers 1918-1975, which was partly based on Sam's work, and Hardman and Smoliak (1980) published a paper on the potential economic impact of grasshoppers based on annual samples of grasshoppers collected and identified by Sam from 1928-1944. Besides Orthoptera, Sam maintained an interest in Coleoptera, Botany, and Ornithology.

In July 1948, Sam and his wife moved to Summerland, British Columbia, where he continued his hobby of flower growing, especially irises, gladioli, and dahlias. He produced many new varieties of irises and was well known in this field in Canada and the United States.

Sam was a dedicated scientist, an ardent horticulturist, and an energetic and enthusiastic naturalist.

L. A. Jacobson
A. M. Harper
Agriculture Canada Research Station
Lethbridge, Alberta

PRESIDENT'S REPORT
Entomological Society of Alberta

My last official act as outgoing President of the Entomological Society of Alberta is to report to you the highlights of our activities for 1983. Before doing so, I take the opportunity to extend my appreciation to the other members of the Executive for their valued participation in support of our Society. Without wishing to embarrass him to greatly, I must applaud the personal contribution and continued devotion of W. A. Charnetski--those of use who have served on recent Executives can attest to Bill's tireless efforts for the well-being of the Society. Thank you from all of us, Bill!

Perhaps the most significant action taken by the Society during 1983 was the donation of \$1,500.00 to the ESC Scholarship Fund. The donation was presented to the ESC by Dr. G. Ball during his term as President of the ESC. Let us hope that graduate students in Alberta universities can benefit fully from the ESC Scholarship Fund and the generosity of the membership of this Society.

Of special note during 1983 was the review of the Entomological Society of Alberta Student Prize format. The studied recommendations put forward by R. Gooding and G. Pritchard were approved in principle by the Executive and ratified by the general membership at our annual meeting.

Colin Hergert deserves a vote of thanks for this efforts related to the Insect Collection Competition. Colin has prepared a judging sheet which will be most useful to students and amateur entomologists during preparation of their insect collections.

Of historical significance, 1983 can be remembered as the first occasion that the Entomological Societies of Alberta and British Columbia have met jointly for an annual meeting. I'm sure that I speak for all (who were fortunate enough to attend!) when I say that the location, meeting program, and hospitality were enjoyed to the utmost by our membership. To Dr. J. McLean and the ESBC Executive and to Dr. N. Angerilli and the local arrangements committee, we extend a hearty thank you.

Further, a word of commendation to the graduate students of our Society for their excellent presentations during the joint meeting. In all, the exchange of thoughts and information at the meetings was most fruitful and enjoyable.

Members of this Society were saddened to learn of the passing of R. M. (Sam) White, late of West Summerland, British Columbia. As most of you are aware, Sam was an honorary member of the ESA; his contribution to the society, and to entomology, is much appreciated.

In closing, I should like to wish Marilyn Steiner and the new Executive the best of luck in their endeavours. I encourage the Executive to explore new avenues for the promotion of entomology through the educational curricula and through amateur entomology in general. In order to meet the objective of this Society - to foster the advancement, exchange, and dissemination of the knowledge of insects - Society members must be prepared to sacrifice a small portion of their own time and to share their expertise in entomology with those who wish to learn.

PRESIDENT'S WELCOME
Entomological Society of British Columbia

It is with great pleasure that I report to you on the current activities of our Society. We are now legally reinstated with the Registrar of Societies, for a sum of \$432.00, and you have a solemn undertaking by the executive that we shall file our AGM minutes and financial statements annually in order to maintain this status. On your behalf, I have sent a letter to Les Safranyik and Imre Otvos thanking them for their extensive efforts on our behalf.

The Society continues to be well served by many active members. Mac McCarthy has willingly continued with the task of Editor of our Journal. He reports that Volume 80 is presently with the printers and will contain nine, perhaps ten, papers if the last manuscript is returned on time. The Editorial Board is presently seeking quotes from other printers for production of the Journal. On your behalf, I extend our thanks to Dr. MacCarthy and his editorial board of Ron Forbes and Richard Ring for continuing to maintain the production and standards of the Journal. We are presently evaluating the status of our exchanges with some 95 different organizations, and when this review is completed, a list of these organizations, and their exchange publications, will be published in BOREUS. BOREUS continues to be edited by Ron Cannings and our thanks to him for an interesting and vital communication among our members. If you have any items of general interest, please pass them along to Rob.

Our relationships with the national Society continue to develop strong links. Harold Madsen was elected second Vice-President this year and Roy Shepherd was elected as a Director-at-Large. I am also a Director-at-Large so that when our new Regional Director, Rob Cannings, is installed, we will have four members on the Board. Other ESBC members serve our profession faithfully on ESC committees. Elspeth Belton is on the Common Names and Cultures Committee; Bernie Roitberg has agreed to take over from Harold Madsen on the Membership Committee; Les Safranyik is serving a second year on the Scholarships Committee, John Borden is on the Fellowship Committee; Harold Madsen serves on the Achievement Awards and Science Policies Committee; Rene Alfaro has agreed to serve on the Public Education Committee; and I serve on the Finance Committee.

As you know, the ESBC presents two awards to the two graduates each year who give the best presentation at their meeting. The money to fund this comes directly from the ESC Public Education Committee. The grant will double next year if we have projects on which we can spend this money. I'm sure the executive will think of something. A pet project of mine that has been progressing steadily over the last 18 months has been the gathering of the Entomological Resource Material for use by Secondary school teachers as a way of encouraging Entomology at this level. The B. C. Science Teachers Federation Science Newsletter Editor has agreed to publish this material and I hope that the task can be completed in the near future. I thank all members of the Society who have provided information for this project.

We received an interesting letter from George Ball earlier this year, when he was president of ESC, concerning Provincial support of University Research

in Entomology in B.C. Your President canvassed the entomologists at the three provincial universities and found that five of the eight respondees enjoyed varying levels of support from provincial agencies. A tally of operating grants from the Science Council of B.C., GREAT awards to students from the same Council, grants from the B.C. Ministries of Forests, Agriculture and Labour showed that we had received between \$100,000 and \$200,000 per year for support of research. The level of funding apparently reflects in the part the willingness of the academic to take on the more applied research.

An offshoot of the registration process was the stimulation of a search for our "roots", as it were. We rediscovered a revised constitution that was never forwarded to the Registrar of Societies. We will do this immediately we receive your endorsement later in the meeting. Rene Alfaro carried out a search of minutes for Honorary Members and compiled a list of whom few are still alive. We would like to reactivate this class of membership and encourage you to consider those whom you would honour by nominating them. You will need five signatures from active members and majority approval of the executive and the membership at the AGM. Our thanks to Rene Alfaro for his work here and for digging up interesting historical material which was published in BOREUS. I might add that Gordon Miller also helped a great deal in ordering our records - thanks Gordon.

The promotion of Entomology in this province is very much a collective activity for all members of our Society. Some of our members participate through their professions by being with vegetable farmers, the orchardists, and the foresters. Other practice their profession in structural and domestic pest control. Still others promote entomology in the lecture halls and classrooms. Many members have been at the forefront of public debates on control plans for budworms, tussock moths, and gypsy moths. Some offer their expertise by Television and I would like to congratulate Mark Winston on his excellent series on Bee Keeping. Congratulations also to Peter Belton on the publication of his book on Mosquitoes. By dealing with the general public, we sustain their, the voters', interest. Hopefully, some of us can also interact with the politicians in an effective manner to ensure that entomological issues receive their due support.

I thank you all for your support which has been so freely given whenever it was requested over the last year and I encourage you all to keep up the good work.

John McLean, President
Entomological Society of British Columbia

FACTORS AFFECTING LYGUS BUG POPULATIONS AND DAMAGE IN ALFALFA SEED

R. Butts

Regional Crops Laboratory, Alberta Agriculture, Fairview, AB

Twenty-one alfalfa seed fields across the Peace River Region of Alberta were monitored weekly from 1980-1983. For every lygus damage unit (L.D.U.) accumulated, 0.5 pounds of alfalfa seed was lost per acre. Loss per L.D.U. was modified under conditions of drought, excessive vegetative growth or high weed populations. Sprays applied as soon as the adults migrated into the field achieved season long control.

=====

THE USE OF SAFER'S INSECTICIDAL SOAP ALONE AND IN CONJUNCTION WITH OTHER PESTICIDES IN THE CONTROL OF INSECTS AND MITES

M. D. Gaudet

Safer Agro-Chem Limited

Fatty acid salts (soaps), the oldest insecticide used by man, are once again being utilized in pest management programs for the control of insects and other pests. As more emphasis is placed on human and environmental safety and the concept of pest eradication shifts to pest control, the soaps, like the pyrethroids become attractive alternatives to the conventional petrochemical pesticides.

Safer Agro-Chem Limited (a privately owned Canadian company) specifically selects fatty acid salts that are pesticidal and formulates them into products. One such product formulated for the control of insects and mites is known as Safer's Insecticidal Soap (SIS). In general, soft bodied insects such as aphids, adelgids, mealybugs, whitefly and pear psylla are the most sensitive and experience high mortality (80-100%) when topically treated with SIS. Lepidopteran defoliators are less affected, while the beetles are the least affected.

This variation in toxicity has made Safer's Insecticidal Soap an excellent candidate for integration with biologicals in pest management programs. SIS is an effective pesticide for the greenhouse whitefly, Trialeurodes vaporariorum (Westwood) and can be integrated (at the 0.5% ai) with the whitefly parasitoid Encarsia formosa Gahan. As well as compatibility with biologicals, increased control was obtained using a treatment consisting of the entomogenous fungus formulation, Mycotal^R suspended in a 0.2% ai SIS than that provided by Mycotal or SIS treatments alone.

=====

**THE COMMERCIAL DEVELOPMENT OF BIOLOGICAL
CONTROL IN WESTERN CANADA**

D. Elliott

Applied Bio-Nomics Limited, Sidney, BC

In 1980, a biological control production facility was established in British Columbia by Applied Bio-Nomics Limited. This facility currently rears and markets a predatory mite and a whitefly parasite for use in commercial greenhouses. With the availability of these biological control organisms the majority of greenhouse cucumber growers in western Canada have come to use these as their primary method of pest control.

=====

**MASS PRODUCTION OF TYPHLODROMUS OCCIDENTALIS ON SOYBEANS FOR
IMPROVED INTEGRATED MITE CONTROL ON APPLES IN THE OKANAGAN VALLEY**

L. Dale and D. Elliott

Applied Bio-Nomics Limited, Sidney, BC

and

N. Angerilli

Agriculture Canada Research Station, Summerland, BC

Integrated mite control as presently implemented in apple orchards in the Okanagan Valley relies on the organophosphate-resistant phytoseiid mite predator Typhlodromus occidentalis. The impending use of carbamates and pyrethroids to control orchard pests in the Okanagan would jeopardize the integrated mite control program and necessitate an increased use of miticides for the control of phytophagous mites. To prevent this, we hope to strengthen the existing program by mass producing and releasing a carbaryl-OP-sulphur resistant strain of T. occidentalis, and an OP resistant strain of Typhlodromus pyri.

T. occidentalis was reared on two-spotted mite infested pinto beans in a greenhouse and a two-spotted mite infested 0.5 ha field plot of soybeans. After the predator population had experienced a 3-fold increase, the soybeans with associated mites were placed into apple trees. We are now measuring the ability of the mass-reared imported T. occidentalis to overwinter in our area.

=====

CODLING MOTH CONTROL IN APPLE ORCHARDS AND ON APPLES FOR EXPORT

V. A. Dyck and A. P. Gaunce

Agriculture Canada Research Station, Summerland, BC

A model for predicting suitable times to spray insecticides for codling moth control was tested in several orchards. Initial observations showed that the model made good predictions. A procedure whereby growers would time insecticide applications according to pheromone-trap catches and degree-day accumulations is being developed.

To export apples to Japan, a treatment to harvested apples that would guarantee the absence of live codling moths must be carried out. The insect life stage most difficult to kill is the diapausing larva. Treatment with the fumigant methyl bromide and a period of cold storage may kill this stage on apples without damaging the fruit.

=====

DISTRIBUTION AND BEHAVIOUR OF CAMPYLOMMA VERBASCI, A SPORADIC PEST OF APPLES, IN B.C. FRUIT ORCHARDS

H. M. A. Thistlewood, J. H. Borden and R. D. McMullen

Centre for Pest Management, Simon Fraser University, Burnaby, B.C.

The seasonal fluctuation and biology of C. verbasci was studied in 12 orchards during 1982 and 1983. The distribution of C. verbasci on summer plant hosts was examined and the common mullein plant (Verbascum spp.) were found to support most of the summer population.

The visual and olfactory cues used in host selection and mate finding were analysed in trapping experiments. Visual traps of painted cardboard and olfactory traps containing insects and/or plant parts were utilized. The results are discussed with respect to the current limb-tap sampling method.

=====

THE YUKON INSECT PROJECT

R. A. Cannings

B. C. Provincial Museum, Victoria, BC

This outline stresses the origins, activities and direction of the Yukon Insect Survey. A brief overview of results to date is included, but analysis of material remains incomplete.

The Yukon Insect Project is an undertaking of the Biological Survey of Canada (Terrestrial Arthropods). The Biological Survey was initiated by the Entomological Society of Canada in 1977 to promote and coordinate faunistic research on the terrestrial arthropods of Canada. The Survey has since become associated with the National Museum of Natural Sciences where it is hoped its entomological activities will serve as a model for the participation of other disciplines.

The Yukon Insect Project is a good example of how the Biological Survey can coordinate the work of individual researchers and direct the results towards a final, published conclusion. Although entomological interest in the Yukon pre-dates this project, the project coalesced in 1980 when Dr. G. G. E. Scudder (U.B.C.) and Dr. G. B. Wiggins (Royal Ontario Museum) received a five year NSERC co-op grant to undertake fieldwork in the region. Other involvement has come from various personnel of the Biosystematics Research Institute (Agriculture Canada), Geological Survey of Canada, University of Alberta, and the B. C. Provincial Museum.

The main effort has been the definition of the origins of the Yukon insect fauna, especially with respect to the patterns of Pleistocene glaciation. The existence of an ice-free "Beringian" link with Eurasia is at the centre of many of these zoogeographic relationships.

Work has been concentrated in three major habitat types - the arctic/alpine, the pockets of dry grassland and Artemesia-dominated slopes, and aquatic systems.

In general, the Yukon fauna is composed of insects from two main origins - the Beringian fauna that persisted in unglaciated refugia in northern and central Yukon, Alaska, and eastern Siberia, and a southern fauna that re-established itself in the region after the ice retreated. "Amphiberingian" distributions are now known to be common and typical. In some cases, these species have become distinct from related forms once cut off to the south by the ice sheet, while in others the temporal separation apparently has not resulted in speciation. The arctic/alpine fauna shows evidence of endemism and peculiar adaptations to a harsh environment. The grassland/Artemesia habitat has revealed numerous examples of insects with strong southern relationships. Some genera and species have their nearest relatives on the southern prairies, in southern B. C., or even in the southwestern U.S. Relict populations with even more distant affinities also occur here, and endemism is apparent.

Yukon Insect Project fieldwork will end in 1985 and a manuscript summarizing the project's results will be completed in 1986. The book, to be published under the auspices of the Biological Survey, will contain information on the history of Yukon entomological work, the geological and glacial background, the present climatic and vegetational setting, as well as annotated faunal lists and zoogeographic analyses.

=====

BERINGIAN BUTTERFLY BIOGEOGRAPHY

F. A. H. Sperling

Department of Entomology, University of Alberta, Edmonton, AB

Beringia is well known for its role as a biotic refugium during the last glacial maximum, about 18,000 BP. The existence of this refugium is well supported by paleontological evidence and hence its present species composition can be examined to test various biogeographic conventions. These include assumptions generally used in some faunistic studies to indicate refugia which may not be well established on paleontological grounds. The distributions and habitat associations of the 80 resident species present in Alaska and Yukon are used a database.

A primary assumption necessary to allow the reconstruction of the past ranges of species is that habitat associations have not changed during the holocene. Since a large proportion of the butterfly species examined had habitat associations which varied geographically, even within previously glaciated areas, a significant degree of more recent regional adaptation is indicated.

Another common exercise is to consider a species to have survived glaciation in a single refugium, if only one part of its present range was unglaciated in the past. Several examples can be found, however, where a sufficient amount of differentiation has occurred to suggest that these species survived both in Beringia and south of the continental ice. Here the southern population may have followed the melting ice northward to recontact the northern one and form a present range which superficially suggests dispersal outward from a single northern refugium.

These considerations are further complicated by the fact that about 30% of the boreal forest associated species in Alaska and Yukon have widely recognized subspecies which are generally restricted to the Beringian region. Since recent paleoecologists are in agreement that forests were virtually or completely absent from late glacial Beringia, at least some of these subspecies must have differentiated from more recent dispersalists into the region. Thus, the assumption that morphoclines indicate dispersal from separate refugia is not always reasonable either.

The overriding effect of present ecological conditions can be seen in that species with "endemic" distributions form about 20% of the total diversity of each of 3 separate tundra habitat types, despite the probable predominance of dry tundra in the past. In particular the sage slopes often cited as being remnant analogs of steppe tundra have virtually no present indication of butterfly endemism.

Overall, there is low correspondence between observed butterfly distributions and those which would be expected on the basis of common biogeographic assumptions, coupled with well corroborated paleoecological information. I believe that this gives reason to regard the application of these assumptions in biogeography with considerable caution.

=====

COLD TOLERANCE IN ARCTIC AND ALPINE INSECTS

R. A. Ring

Biology Department, University of Victoria, Victoria, BC

Nine species of insects from three different geographical regions of Canada (Tuk, N.W.T.; Rocky Mountains; Victoria area) were examined for freezing tolerance, supercooling capacity, water content, and changes in biochemical characteristics during acclimation to subzero temperatures for varying periods of time. The major conclusion that can be drawn from this comparative study is that different species have different adaptations to low temperature survival even if they fall within one or other of the two major overwintering strategies. It seems that the physiological and biochemical basis of cold hardiness in insects is based on a number of interacting factors, although the correct combination of such factors and complexity of the process are still obscure. The marked differences that exist in the overwintering responses of some species that are closely related phylogenetically would indicate that cold tolerance mechanisms have evolved independently on a number of different occasions. The contentions of some authors that (i) only species which hibernate predominantly above the snow level have the ability to accumulate polyols in winter and (ii) freezing tolerance develops particularly in species hibernating in extremely cold environments, are not supported by these results. Further research into the role of "bound" water, the presence or absence of nucleating agents and thermal hysteresis proteins, and the comparative biochemistry of carbohydrate and lipid metabolism should help elucidate the basic mechanisms of cold tolerance in insects.

=====

NIGHT LIFE ON THE GLACIER

J. Edwards

Department of Zoology, University of Washington, Seattle, WA

Snowfields throughout the temperate, tropical, and subarctic regions are frequently strewn with arthropods, the vast majority of which have been borne on the wind and deposited there as an arthropod fallout. The majority of the fallout is composed of insects belonging to highly dispersive groups such as Homoptera, Heteroptera, Diptera, and Coleoptera. Hymenoptera, notably ants and parasitoids, are also well represented, as are ballooning spiders. Having been deposited on the snow surfaces the insects remain too cold to develop sufficient power for flight and accumulate there, to provide a resource base for birds by day and rival arthropods by night. The volcanos of the Pacific Northwest are alpine islands surrounded by productive lowlands, and provide ideal sites for quantitative studies of such communities. On Mt. Rainier a grylloblatlid, a phalangid, and several carabids appear on snowfields up to 3,000 m about one hour after sunset, reaching a peak about midnight, returning to fractured rock sites by about 4 a.m. in summer. They scavenge the fallout, apparently locating prey by direct contact during random walks.

Current studies in the blast region of Mt. St. Helens indicate that arthropod fallout may also provide a significant source of nutrients for pioneer colonising plants. Carabids (*Bembidion* sp.) and spiders are the pioneer arthropod colonists of the blast zone, where they subsist on arthropod fallout.

=====

PRODUCTION OF WINGED INSECTS AT TRUELOVE LOWLAND (76°N), DEVON ISLAND

J. K. Ryan

Ryan & Hilchie Biological Consultants Ltd., Edmonton, AB

Traps collected winged insects emerging $m^{-2}yr^{-1}$ at Truelove Lowland in 1972, and at Ft. McMurray (54°N) in 1979. Truelove traps were in (28) meadow and (7) raised beach locations. Mean m^{-2} totals were 372 insects of which 370 were dipterans (364 chironomoids) with 1 tenthredinid and 1 ichneumonid wasp. Total biomass (dry wt.) was $32.6 mg m^{-2}$, with lepidopterans accounting for 0.1 mg, chironomoids 20.1 mg, muscoids 9.9 mg, tenthredinids 0.6 mg, and ichneumonoids 0.4 mg. The emergence period lasted 39 days in 1972 versus 49 days in 1971. At Ft. McMurray, 424 insects weighing 627 mg emerged m^{-2} (season = 131 days) from 6 traps in aspen, spruce, and mixed forest sites. Coleopterans accounted for 66 mg, lepidopterans 80 mg, bibionid flies 152 mg, and ants 89 mg.

=====

SALINITY AS A LIMITING FACTOR IN THE DISTRIBUTION OF THREE CHIRONOMID SPECIES IN BRACKISH LAKES

R. W. Sargent

Biology Department, Medicine Hat College, Medicine Hat, AB

Chironomus anthracinus Zetterstedt, C. athalassicus Cannings, and C. tentans Fabricius (Diptera: Chironomidae) coexist in pothole lakes in central B.C. where conductivity is below 4,500 $\mu\text{mhos/cm}$ at 25°C, but C. athalassicus alone inhabits lakes of higher conductivity (as high as 12,000 $\mu\text{mhos/cm}$ at 25°C).

In the laboratory only C. athalassicus survives in conductivities above 9,000 $\mu\text{mhos/cm}$ at 25°C when maintained at temperatures of 5°C, 15°C, and 23°C. The physiological mechanisms responsible for this difference in survival appear to be related to the ability of each species to osmoregulate during larval development. All three species maintain a stable hyperosmotic haemolymph at conductivities under 9,000 $\mu\text{mhos/cm}$ at 25°C, but C. athalassicus can also hyperregulate up to a conductivity of 15,000 $\mu\text{mhos/cm}$ at 25°C.

This indicates that the reason C. anthracinus and C. tentans are limited in their local distribution is physiological instead of a mechanism such as interspecific competition.

=====

THE EMERGENCE AND ADULT HABITATS OF THE ANISOPTERA OF A SOUTHERN ALBERTA POND

C. Nimz

Department of Biology, University of Calgary, Calgary, AB

Collections and observations at Bradshaw's Pond near Bragg Creek, Alberta, Canada, revealed that the Anisopterans found there were segregated by location and time of emergence and by mating sites and flight season.

Early in June Cordulia shurtleffi emerged on rocks and vegetation away from the water. After the peak of C. shurtleffi emergence, Somatochlora hudsonica emerged in the same areas. At the same time two Leucorrhinia species' exuviae were found on emergent woody vegetation and emergent grasses. When mature adults returned to the pond C. shurtleffi males were found flying over the shallow open water of the pond, S. hudsonica was located at the edge of the water patrolling over the shore, and Leucorrhinia spp. perched in sunny open areas near the water.

The early species were replaced by Aeshna eremita, Aeshna palmata, and Sympetrum spp. in late July and early August. The exuviae of both Aeshna species were found on emergent woody vegetation and sturdy plants, while the Sympetrum species had emerged on grasses away from the water. Mature adults C. shurtleffi were replaced by A. eremita, S. hudsonica by A. palmata, and Leucorrhinia spp. by Sympetrum spp. These later species continued to fly until early September.

=====

PINE OIL AS A REPELLENT OF THE SITKA SPRUCE WEEVIL

J. A. Carlson

Faculty of Forestry, University of British Columbia, Vancouver, BC

Two versions of pine oil, one unaltered and the other partially refined, were field tested to determine their ability to limit attack by the Sitka spruce weevil, Pissodes strobi Peck on juvenile Sitka spruce at two locations on Vancouver Island. Topical application of pine oil directly to the terminal leaders reduced the number of successful attacks from the previous year by 78% and 92% for the refined and unaltered versions, respectively. Pine oil volatiles from slow release devices evenly spaced at 5 per 400 m² plot showed attack reductions of 23% and 44% for refined and unaltered pine oil. The number of successful attacks in plots with a single slow release device did not differ appreciably from the controls which had a 9% increase in attack frequency. Some mortality occurred with topical application of refined pine oil. It was concluded that although pine oil shows some repellency to P. strobi the amount required to effectively reduce attack is not at present practical for operational control.

=====

EVALUATING WESTERN SPRUCE BUDWORM PHEROMONES IN THE FIELD

J. D. Sweeney and J. A. McLean

Faculty of Forestry, University of British Columbia, Vancouver, BC

We compared catch of male western spruce budworm, Choristoneura occidentalis Free., in the Oregon Jack Creek Valley, using two trap designs baited with various pheromone blends. Mean trap catch was improved significantly when 3% of the Z isomer was added to E-tetra-decenal (E,Z 11-14:ALD). The secondary pheromone components, 89,11 11-tetradecenyl acetate (89,11 11-14:AC) and 85,15 11-tetradecenol (85,15 11-14:OH), were unattractive by themselves but the former appeared to synergistically increase long range attraction when combined with 92,8 11-14:ALD. Trap catch was unchanged by adding 85,15 11-14:OH to either 92,8 11-14:ALD or a combination of 92,8 11-14:ALD and 89,11 11-14:AC. Attractancy of virgin female C. occidentalis, relative to synthetic blends was apparently affected by trap design. Virgin females had the highest catches of any treatment in funnel trap bioassays but caught significantly fewer males than the synthetic blends did in sticky traps. Possible reasons for this anomaly, centered around differences in trap design, are discussed. We recommend further observations of close range behaviour and trap efficiency in the field and in the laboratory wind tunnel in order to elucidate the sexual communication system of C. occidentalis.

=====

**DETECTION OF SPRUCE BEETLE (DENDROCTONUS RUFIPENNIS)
INFESTATIONS USING AERIAL PHOTOGRAPHY**

J. J. Churcher

*Forest Entomology, Faculty of Forestry,
University of British Columbia, Vancouver, BC*

Normal colour (Kodak 2448) and colour infrared (Kodak 2443) aerial photographs (1:2000) of white spruce trees infested with the spruce beetle (Dendroctonus rufipennis) were obtained during the summer and fall of 1982. The study site was located southeast of Prince George, B. C., on the north shore of Narrow Lake.

Images of healthy, strip-attack, 1981-attack, and dead trees were compared by visual analysis and also by discriminant analysis of densitometric data. High degrees of accuracy were obtained with visual analysis using both film types. Results of densitometry were no better than the visual analysis. Further research is required to determine if newly attacked trees can be detected on these films.

=====

**SEASONAL OCCURRENCE AND DAMAGE OF THREE SPECIES OF PROTEOTERAS ATTACKING
SHOOTS OF BOXELDER (LEPIDOPTERA: TORTRICIDAE) IN ALBERTA**

J. A. Drouin

Canadian Forestry Service, Northern Forest Research Centre, Edmonton, AB

Only one species of Proteoteras (P. willingana) was originally thought to cause the spindle-shaped galls on the shoots of boxelder (Acer negundo L.) (Can. Ent. 1958). Recent studies indicate three species (P. willingana, P. crescentana, and P. aesculana) were involved (Can. Ent. 1983).

Specific baits for the adult males of the three species in four separate locations in Alberta show that the peak occurrence of these species differed. Adults of P. aesculana were the first to occur from mid-May to late June, followed by P. willingana from late June to mid-August, and P. crescentana from mid-June to late August. The latter species was the most abundant. The manner of attack and the galls produced by the three species also differed.

=====

THE SCENT GLANDS OF OPILIONES: A REVIEW OF THEIR FUNCTION

R. G. Holmberg

Athabasca University, Edmonton, AB

Opilionids are unique among the arachnids in that they possess a pair of glands that open dorsally near the lateral edge of the prosoma. These glands are variously called scent, odoriferous, repugnatory, or stink glands and generally have been considered as a defensive mechanism against predators. Theoretically, the glands may function in several other ways including: protection from micro-organisms, repulsion of parasites, intraspecific recognition, and sexual, alarm and aggregation behaviors. In actuality, only the predator defense function has been proven. The chemical constituents of the secretions include various quinones, phenols, ketones, and alcohols. Several of these compounds have been found in other arthropod secretions including those that are ant alarm pheromones.

NOTE: This paper was originally presented at the IX International Arachnology Conference, Panama, August 1983.

=====

THE REPRODUCTIVE ECOLOGY OF A COMMUNAL ORB-WEAVING SPIDER,

METEPEIRA SPINIPES (ARANOIDES: ARANEAE)

M. J. Benton

University of Calgary, Calgary, AB

Metepeira spinipes is a communal orb-weaving spider found in central and south-central Mexico. Web colony size increases and nearest-neighbor distance decreases over its habitat range from central desert grasslands to gulf slope rain forests.

Reproduction data from the desert and the rain forest populations were gathered from 1978 to 1982. Although no significant differences were found in the size of females or their clutches, desert eggs were found to be 20% larger. Paradoxically, the larger desert eggs gave rise to significantly smaller but more starvation and dessication resistant spiderlings.

It is believed that the larger desert egg is an adaptation to the temperature and humidity extremes of that habitat. The smaller rain forest egg does not require such insulation from its more benign environment. Desert spiderlings are better adapted to a lengthy dispersal under rigorous conditions in search of relatively scarce web sites, while the rain forest spiderlings, which do not disperse, are better adapted to remain on the parental web colony and compete for food and space. Their larger size and lower ability to withstand starvation and dessication may be adaptations to high competition for prime web sites in a more prey-rich habitat.

=====

INCIDENCE OF SWINE MANGE, SARCOPTES SCABIEI SUIS (DE GEER), IN ALBERTA

H. G. Philip and M. J. Herbut

Alberta Environmental Centre, Vegreville, AB

To document the current pest status of swine mange and producer control procedures, a province-wide survey of farrow-to-finish hog operations was conducted from December, 1982, to the end of April, 1983. The presence and severity of mange mites was determined by collecting and examining ear scrapings from sows and gilts. Information on mange control procedures was collected from questionnaires completed by the owners. Owners were divided into 4 categories based on the number of hogs marketed during 1982 (minimum 200 hogs). Of the 141 farms surveyed, 70% had mange infestations, and 14% of the 2,544 animals sampled had mange in varying degrees of severity. Most producers (>70%) in all categories carried out mange control, primarily by applying whole-body sprays of lindane (>70%) to sows or to sows and weaner pigs. Disinfection of pens and alleys was carried out by about half of the producers. Mange was considered the most important pest of swine by the smaller producers, (200-500 hogs), whereas larger producers (500+ hogs) considered mange and house flies of almost equal importance. Further details of the survey are discussed.

=====

**ELECTROSTATIC SPRAYER FOR APPLICATION OF PESTICIDES TO
CATTLE - A NEW USE OF AN OLD PRINCIPLE**

J. A. Shemanchuk

Agriculture Canada Research Station, Lethbridge, AB

The electrostatic charging of particles and droplets is an old principle used in situations such as dust suppression in foundries, factories, mineral mines, processing of mineral ores, painting of car bodies and machinery parts. In these processes the unique properties of electrostatic forces are used to collect, direct, deposit, separate, or select the very small or light weight particles.

A sprayer using the principle of electrostatic charging was developed by the Faculty of Engineering Science, University of Western Ontario, for the application of pesticides to cattle. Bioassay results indicated that this sprayer applies the pesticide to all parts of the animal's body independent of the direction of the spray application. This sprayer has the further advantage that very small amounts of spray are required to cover the animal's body.

=====

**CYTOLOGICAL IDENTIFICATION AND CHARACTERIZATION OF IIS-10.11 ARCTICUM
POPULATIONS FROM THE ATHABASCA AREA USING LARVAL AND ADULT
POLYTENE CHROMOSOMES**

W. S. Procunier, J. A. Shemanchuk, and W. B. Barr
Agriculture Canada Research Station, Lethbridge, AB

Cytological descriptions of populations of IIS-10.11 arcticum from the Athabasca River are given. Pest status of these populations is confirmed by showing blood-fed adults around cattle have identical chromosome patterns to that of the larvae. A new sibling, IIS-4 arcticum, is also described. Distributional and successional data indicate sibling habitat preference seems to occur.

=====

**BIOCHEMICAL BASIS FOR SALMON COLORED EYES IN THE TSETSE
FLY (GLOSSINA MORSITANS MORSITANS)**

R. H. Gooding and B. M. Rolseth
Department of Entomology, University of Alberta, Edmonton, AB

The lesion caused by the pleiotropic allele salmon in Glossina morsitans morsitans Westwood was investigated biochemically. The heads of wild type flies have approximately 40 times as much xanthommatin as do those of salmon flies. Kynurenine is found in the excrement of wild type flies while tryptophan occurs in that of salmon flies. Tryptophan oxygenase, the first enzyme in the pathway for the metabolism of tryptophan to xanthommatin, is found in wild type, but not in salmon, G. m. morsitans. Kynurenine formamidase, the second enzyme in the pathway, occurs in both phenotypes. Wild type phenocopies were produced by administering kynurenine and formylkynurenine to pharate adults (which were genetically destined to have salmon colored eyes) in 20 to 22 day-old puparia.

=====

**TEMPERATURE PREFERENCE AND ACTIVITY THRESHOLDS OF THE COENAGRIONID
ARGIA VIVIDA (ODONATA)**

M. A. Leggott

Department of Biology, University of Calgary, Calgary, AB

Argia vivida is found throughout Western North America as far north as British Columbia and Alberta. It is found in both geothermally heated streams with constant temperature regimes and "cool" streams with fluctuating regimes. Populations from both types of habitat were examined to determine if adaptation to temperature has taken place. Both populations displayed a distinct temperature preference of around 28°C; however, individuals from the thermal spring showed a second less pronounced "preference" around 13-15°C. It was postulated that this population has experienced a reduction in the ability to detect spatial differences in temperature, as this mechanism would no longer be of use in a constant temperature regime. This leads to an increase in activity, causing individuals to "get caught" in the lower temperature end, creating the second peak at 13-15°C. Three activity thresholds were also determined for populations from the two types of habitat: escape temperature, critical thermal maximum, and lethal temperature. There was essentially no difference between the populations with respect to these thresholds. Thus, it was concluded that adaptation to temperature, with respect to these four parameters, has not occurred.

=====

**IDENTIFICATION OF AFRICANIZED AND EUROPEAN HONEY BEES
USING EXTRACTED HYDROCARBONS**

D. A. Carlson

*Insects Affecting Man and Animals Research Laboratory, USDA, ARS,
Gainesville, Florida*

and

A. B. Bolten

Department of Zoology, University of Florida, Gainesville, Florida

Hydrocarbons extracted from whole bodies of Africanized and European honey bees from Venezuela and European honey bees from the U.S.A. were analyzed by gas chromatography. Results showed significant differences between Africanized and European bees with respect to the relative importance of 9 peaks. Particularly striking was a homologous series of 35-, 37-, 39-, and 41-carbon alkenes and another of alkadienes that totaled 20.2% of the hydrocarbons extracted from Africanized samples, but totalled only 2.8% and 1.1% of hydrocarbons extracted from European bees collected in Venezuela and Florida, respectively. Several ratios between peak intensities were calculated that allowed identification of samples without the necessity of measuring every peak. The use of extracted hydrocarbons to distinguish between Africanized and European honey bees appears to have great promise.

=====

SOMATOCHLORA SAHLBERGI TRYBOM (ODONATA: CORDULIIDAE):

HYBRIDIZATION IN BERINGIA

S. Cannings

Department of Zoology, University of British Columbia, Vancouver, BC

The biology of the Holarctic dragonfly S. sahlbergi is discussed. There are indications that extensive hybridization is occurring between this species and its Nearctic congener, S. hudsonica, where the ranges of the two species overlap in northwestern Canada. The historical relationships of these species are speculated upon in light of this hybridization.

=====

**ZOOGEOGRAPHICAL AFFINITIES OF NORTHWESTERN LOW ARCTIC CADDISFLIES
(TRICHOPTERA) AND THEIR POST-GLACIAL ORIGIN**

N. N. Winchester and R. A. Ring

Department of Biology, University of Victoria, Victoria, BC

This study was conducted 16 km NE of Tuktoyaktuk, North West Territories (62°29'N; 132°35'W), and examined 21 species (6 families) of low arctic tundra Trichoptera. The post-glacial origin of this fauna is composed of three elements that include: Trichoptera that spent the glaciation in Beringia, south of the ice sheets, or in both areas.

The Beringian element can be subdivided into 3 groups based on species distributional patterns. Group one is found only in Beringia in North America, e.g., Limnephilidae gen. et sp. nov., Grammotaulius subborealis Schmid. Nemotaulius hostilis (Hagen) is part of a second group of species that is Beringian and widespread in North America but does not occur in the Palearctic. The third group includes amphi-Beringian species with Nearctic and palearctic distributions, e.g., Limnephilus picturatus McLachlan and Grensia praeterita (Walker).

Trichoptera from south of the ice sheets exhibit three dispersal patterns. The first includes all of North America south of the ice sheets and is represented by Arctopora pulchella (Banks). The second group is dispersed through the Central Plains of North America and is represented by Limnephilus secludens (Banks). Those species which spread from Eastern North America to Northwestern North America comprise the third group, represented by Limnephilus argenteus (Banks).

Species that may have spent the glacial maximum in both of the above areas include Asynarchus lapponicus (Zetterstedt) and Branchycentrus americanus (Banks).

In conclusion, the present Trichoptera fauna of Tuktoyaktuk has species which are derived either post-glacially from Beringia (54%), south of the ice sheets (23%), or from both areas (25%). Nine species (43% of the total fauna) are as yet undetermined.

=====

MECHANISMS OF OVERWINTERING IN ARCTIC HYMENOPTERA

L. M. Humble and R. A. Ring

Biology Department, University of Victoria, Victoria, BC

The overwintering biology of two gall-making sawflies (Pontania spp.), one catkin-feeding sawfly (Amauronematus sp. nr. amentorum) and their associated parasitoids is discussed. All three sawfly species are freezing-tolerant, freezing at high sub-zero temperatures (-5°C to -9°C) and overwintering frozen. The initial site of ice nucleation is the hindgut. Desiccation resistance varies greatly between sawfly species, apparently being correlated to the severity of the overwintering habitat. Water loss through desiccation is less severe in sawfly prepupae overwintering frozen (-10°C) than those overwintering thawed (-5°C).

The internal parasitoids of Pontania sp. and Amauronematus sp. nr. amentorum, Ichneutes sp. (Braconidae) and Lathrostizus sp. and Syndipnus n. sp. (Ichneumonidae) freeze by inoculation within their hosts at the time the host freezes. When removed from their hosts all three species supercool to approximately -20°C . Desiccation resistance of endoparasitized sawfly larvae is similar to that of non-parasitized prepupae.

Three of the four external parasitoid species examined, Bracon sp. (Braconidae), Trichomalus sp. (Pteromalidae) and Scambus vesicarius euurae (Ashmead) (Ichneumonidae) are freezing-intolerant, spontaneous freezing being fatal to the larvae. Bracon sp. depresses its freezing-point to -25°C , while both Trichomalus sp. and S. v. euurae supercool to -40°C . Temperatures within the overwintering microhabitat do not go below -12°C . The fourth ectoparasitoid, Adelognathus sp. (Ichneumonidae) is freezing-tolerant. However, unlike the sawfly species, Adelognathus sp. overwinters in a supercooled state, as the temperatures required to freeze it (-25°C) are not encountered in the overwintering microhabitat. All four external parasitoids are desiccation resistant at overwintering temperatures of -10°C .

Overwintering mechanisms are shown to vary greatly within the Hymenoptera. Tenthredinidae are freezing-tolerant. All parasitoid species examined are able to supercool, however, internal parasitoids are freezing-tolerant, with their freezing being initiated by host freezing. The external parasitoids examined overwinter in a supercooled state and are freezing-intolerant in general. One species of ectoparasitoid is shown to be freezing-tolerant.

=====

PHENOTYPIC VARIATION IN THE BUTTERFLY PARNASSIUS

PHOEBUS (PAPILIONIDAE)

C. Guppy and H. Epstein

Zoology Department, University of British Columbia, Vancouver, BC

The butterfly Parnassius phoebus inhabits a wide range of habitats and elevations in Europe, Asia, and North America. Over this holarctic area a large degree of phenotypic variation occurs, both within relatively small areas and over its entire range. Correlations with life-history and ecological differences suggest that Parnassius phoebus, as presently understood, may actually comprise 2 or 3 species: 1 in Eurasia, 1 in western North America, and possibly 1 in Alaska.

=====

HOW CRANEFLY LARVAE MOVE

G. Pritchard

Department of Biology, University of Calgary, Calgary, AB

Larvae of Tipula commiscibilis Doane crawl, burrow, and swim by waves of muscular contractions that start at the posterior end of the body and pass forwards. During crawling and burrowing, contraction of the dorsal muscles of the body wall immediately precedes contraction of the ventral muscles of the same segment. During swimming, a wave of dorsal contraction passes completely along the body before the wave of ventral contraction starts.

=====

BEAUTIFUL			THE DELTA LAKESIDE			BRITISH COLUMBIA		
D. Elliot	L. Dale	A. Dyck	H. Thistlewood	F. Banham	M. Gaudet L. Harris	J. Churcher D. Elliot J. Carlsen G. Salloum		
W. Nelson B. Taylor R. Butts			L. Humble J. Arrand L. Peterson			K. Ball M. Nelson		
M. Dolinski M. MacCarthy		M. Dolinski S. Gooding R. Gooding H. Philip			'LONG LIFE'		G. Pritchard U. Soehngen R. Butts	
Registration			R. Ring		R. Cannings	F. Sperling	J. Edwards	J. Ryan
S. Cannings	M. Benton	'TOUGH SESSION'			R. Holmberg		Harvestman 'on ice'	W. Procunier
W. Procunier	R. Gooding	P. Belton E. Belton		SiO ₂	WHICH WORKSHOPS ?			



ENTOMOLOGICAL SOCIETY JOINT MEETING 1983 **31st ALBERTA - 82nd B.C.**

R. Butts B. Taylor		A. Dyck M. Mackauer Ms Mackauer		C. Hergert A. Hergert		D. Carlsen
F. Banham W. Procnier J. Shemanchuk L. Peterson			A. Dyck H. Liu R. Butts		G. Ball K. Ball J. Edwards	
J. McLean	G. Ball	H. Madsen	M. Leggott J. Grant S. Cannings	H. Cerezke	T. Kluge B. Taylor	
M. Leggott S and R. Cannings G. Pritchard M. Benton		R. Butts B. Vernon B. Roitberg R. Holmberg A. Dyck			P. Belton E. Belton	
B. Anderson D. Currie K. Fennie C. Guppy		J. McLean	M. Leggott	---- and Activity Thresholds		D. Carlson
Parnassius phoebus		C. Guppy	'Locomotory Crane Art'		G. Pritchard	M. Steiner
N. Winchester	L. Humble	R. Sargent		C. Nimz	G. Byrtus J. Shemanchuk	



PENTICTON, BRITISH COLUMBIA

INSECT COLLECTION COMPETITION REPORT

Colin Hergert, Chairman
Insect Collection Competition Committee

For the 1983 competition the insect collections were judged at Olds College. The large number of collections entered, and the travelling distance involved to transport the collections to the annual meeting at Penticton, B. C., were considered too great to be undertaken this year. The judging was done by Ernest Mengerson, Buck Godwin, and Colin Hergert. Thirty-one very fine collections were entered in 1983, again making judging very difficult, however, the following were determined to be the winners:-

First place:	Debbie Reich
Second place:	Lori David
Third place:	Chuck Leacock
Honourable mention:	Janet Schega
	Derrick Whyte
	Tammy Young

Every effort will be made to show these collections at the 1984 meeting.

ENTOMOLOGICAL SOCIETY OF ALBERTA

Executive Meeting

March 21, 1983

1.0 Call to Order

The meeting was called to order at 2:30 p.m.

2.0 Adoption of Minutes

Accepted as read - moved by R. Butts. Seconded by B. Charnetski.

3.0 Business Arising from Minutes

3.1 Honorarium for Accountant. No honorarium has been awarded to the accountant, Rex Little. B. Charnetski suggested that we wait until the accountant's covering letter arrives.

3.2 ESA Prize. R. Gooding and G. Pritchard looked into awards and mechanics of their implementation. B. Taylor will contact them concerning the details.

3.3 Gold Medalist. Both awards were considered and B. Charnetski will submit a report, by August 1, concerning the progress of getting someone to write up a submission.

3.4 Collection Contest Guidelines. C. Hergert had guidelines drawn up for collection judges. He did not submit these to the executive so the discussion was deferred to next meeting.

4.0 Financial Report

\$1,500.00 was donated to the Entomological Society of Canada scholarship fund.

5.0 Membership

110 members, 47 paid, 4 honorary.

6.0 Editors Report

B. Charnetski reported that the proceedings would be out within six weeks.

7.0 Correspondence

- 7.1 M. Dolinski received a request from the Science Council of the Alberta Teachers' Association to make a presentation at their annual meeting in Red Deer on October 14-16. The teachers are prepared to offer \$100.00 honorarium.

M. Steiner will be asked to give the presentation on behalf of the Society. E. Mengerson will be asked to give a presentation on techniques for collecting. R. Butts will contact M. Steiner and E. Mengerson.

- 7.2 Thanks from G. Ball for \$1,500.00 donation to ESA scholarship fund.

- 7.3 British Museum of Natural History has requested back issues of the proceedings of ESA. Should we send back issues to the new library free of charge?

B. Charnetski will find out what the inventory of back issues is like but suggested that if the inventory was adequate, we should let new library members receive the back issues free of charge.

8.0 New Business

- 8.1 Annual Meeting. The B.C. Entomological Society liked the idea of a joint meeting. B. Taylor will look into the details of the meeting.

Universities may be able to provide vans for transportation to the meeting.

B. Taylor suggested that the Society may be able to subsidize students going to the meetings.

9.0 Adjournment

The meeting adjourned at 4:30 p.m. - moved by B. Charnetski. Seconded by R. Butts.

ENTOMOLOGICAL SOCIETY OF ALBERTA
Executive Meeting
July 11, 1983

1.0 Call to Order

The meeting was called to order at 9:45 a.m.

2.0 Adoption of Minutes

Accepted as read - moved by B. Charnetski. Seconded by R. Butts.

3.0 Business Arising from Minutes

3.1 ESA Prize. B. Taylor has not contacted R. Gooding about the prize.

3.2 Gold Medalist. B. Charnetski was unable to get someone to write up a submission. M. Steiner suggested we should get someone to write up on someone by means of an official letter from the Society. B. Charnetski said he will contact someone and possibly an official request will be sent by B. Taylor.

Hewitt Award. B. Charnetski will pin it down to a name first and carry on later.

3.3 Collection Contest Guidelines. C. Hergert will be contacted by R. Butts to get the guidelines for judging collections and the executive will review it.

3.4 Teachers' Meeting (Red Deer, October 14-16). M. Steiner suggested that she was not the most suitable candidate to do the workshop at the teachers' meeting. B. Taylor suggested that the new person at the museum would be a good choice. M. Dolinski is contact - should be notified by R. Butts that he should do something and let the executive know.

4.0 Correspondence

4.1 Nominations for Entomological Society of America Awards. Copies will be sent to G. Ball and G. Pritchard in order that they may prepare for 1984.

4.2 Student Awards. R. Gooding and G. Pritchard will be contacted by B. Taylor to see whether or not they have been working on the implementation of a new system for the allocation of awards.

4.3 Consumer Affairs Confusion over the Address. B. Taylor has submitted rebuttal to statement that addresses were not complete.

- 4.4 Acid Deposition Research Program. Want an ESA voting member to attend these meetings and nominate a member at Rocky Mountain House to represent our views.

B. Charnetski suggested the Alberta Society of Professional Biologists should be represented.

We don't have a mandate to serve as a public environmentalist group. We are concerned but we could be better represented by the Alberta Society of Professional Biologists.

Bruce will follow up on this correspondence.

5.0 New Business

- 5.1 Proceedings. B. Charnetski said they will be printed up by the end of July.

- 5.2 B.C. Meeting. Nello Angerilli was phoned about the agenda. R. Butts will contact him again for further details.

A subsidy of a maximum of \$1,000.00 will be arranged by the ESA. G. Ball and G. Pritchard will be contacted to see what they are subsidising.

6.0 Adjournment

The meeting adjourned at 12:25 p.m. - moved by M. Steiner.

ENTOMOLOGICAL SOCIETY OF ALBERTA
Executive Meeting
October 20, 1983

1.0 Call to Order

The meeting was called to order at 4:13 p.m.

2.0 Adoption of Minutes

Accepted as read - moved by R. Butts. Seconded by M. Steiner.

3.0 Business Arising from Minutes

- 3.1 ESA Prize Recommendations. J. Shemanchuk suggested that Recommendation No. 4 should be accepted with a change in wording. It should not read "G. Pritchard" will present the prize but rather as a "representative from the biology department" will present it. Based on the report, the executive will ask for approval to offer two prizes and then will seek approval for an amount.

Motion No. 1 - R. Holmberg moved that the executive accept in principle the report to review the ESA prize by R. Gooding and G. Pritchard. Seconded by J. Shemanchuk. Carried.

- 3.2 Gold Medalist. No names have been submitted by B. Charnetski. There has been some difficulty in getting a person to write the proposal for an award.
- 3.3 Collection (B. Taylor). In a phone conversation, C. Hergert suggested that rather than take the collections to Penticton, they would be accumulated and judged at Olds. C. Hergert will be asked for a report at the general meeting.
- 3.4 Teachers' Meeting (M. Dolinski). Due to the time frame problems, no action was taken, however, they will be approached for 1984.

M. Dolinski will write the Teachers' Association and express our interest and suggest that G. Ball will be the contact person (provided G. Ball agrees).

- 3.5 Acid Deposition. B. Taylor reviewed the fact that he had contacted the committee suggesting the Professional Biologists would better represent our interests.

4.0 Reports of Officers

- 4.1 Treasurer. Moved to be accepted as read - R. Butts. Seconded by M. Steiner. Total assists - \$6800.09.
- 4.2 Regional Director. Will read report at the general meeting.
- 4.3 ECA Report. J. Shemanchuk will present a brief on blackflies at ECA hearings.
- 4.4 Membership. Not tabulated yet. Report will be read at the general meeting.
- 4.5 Nomination Committee Report.

President	- M. Steiner
Vice-President	- Nominations from the floor
Secretary-Treasurer	- R. Holmberg, J. Ryan, F. Leggett
ESC Regional Director	- H. Liu and D. Craig
Auditors	- H. Cerezke and J. Drouin
Resolutions Committee	- L. Peterson and G. Byrtus
Director from Calgary	- C. Hergert
Interim Director for Edmonton	- Nominations from the floor
Editors	- W. Charnetski and E. Maw

5.0 New Business

- 5.1 Publications Proceeding. N. Angerilli will provide photocopies of the abstracts of each paper to be included in proceedings.
- 5.2 Agenda for General Meeting. R. Butts will prepare.
- 5.3 1984 Annual Meeting Location (Southern Alberta). Calgary possibly. This will be discussed at the general meeting.

6.0 Adjournment

The meeting was adjourned at 5:30 p.m. - moved by M. Steiner. Seconded by B. Charnetski.

ENTOMOLOGICAL SOCIETY OF ALBERTA
Annual Meeting 1983 - Penticton, B.C.
October 21, 1983

1.0 Call to Order

The meeting was called to order at 3:00 p.m by B. Taylor.

2.0 Adoption of Minutes

Accepted as read - moved by R. Gooding. Seconded by H. Cerezke. Carried.

3.0 Business Arising from Minutes

3.1 Report of the Committee to Review ESA Prizes (report enclosed)

Motion No. 1 - R. Gooding moved that the six recommendations of the committee to review the ESA prizes be accepted in principle. Seconded by G. Pritchard. Carried.

Motion No. 2 - R. Gooding moved that Recommendation No. 1 be carried. Seconded by G. Pritchard. Carried.

Motion No. 3 - R. Gooding moved that Recommendation No. 2 be carried. Seconded by G. Pritchard. Carried.

Motion No. 4 - R. Gooding moved that Recommendation No. 3 be carried. Seconded by G. Pritchard. Carried.

Motion No. 5 - R. Gooding moved that Recommendation No. 4 be carried. Seconded by G. Pritchard. Carried.

Motion No. 6 - R. Gooding moved that Recommendation No. 5 be carried. Seconded by G. Pritchard. Carried.

Motion No. 7 - Gooding moved that Recommendation No. 6 be carried. Seconded by G. Pritchard. Carried.

3.2 Gold Medalist and Hewitt Award. B. Charnetski asked that members submit names to him so that a submission can be prepared for mid-November. H. Phillip reminded the chairman that the guidelines were in the bulletin published in June.

3.3 Insect Collection Guideline. C. Hergert had the guideline but he wished to present them to the executive to review them first. A discussion was held on whether or not the collections could be judged at Olds this year and still be awarded prizes from the Society.

Motion No. 8 - J. Shemanchuk moved that we offer the collection prize this year. Seconded by H. Philips. Carried.

Motion No. 9 - J. Shemanchuk moved that we accept the Olds collections that were about to be judged at the school. Seconded by R. Butts. Carried.

- C. Herget is chairing the committee. E. Mengerson and B. Godwin will serve on the committee (if they agree). L. Peterson agreed to volunteer as an alternate.

Motion No. 10 - H. Philip moved that the members of the Insect Collection Committee be provided with incidental expenses. Seconded by R. Gooding. Carried.

- 3.4 Teachers' Workshop. M. Dolinski proposed that we need a volunteer(s) to work with teachers for a 2-3 hour workshop on October 1984. M. Dolinski felt the next executive should look into getting a member to organize the presentation. Members felt that more information was necessary in order to make a decision about who would do it and whether or not a honorarium was necessary. The executive will act on this issue and report back next year.

4.0 Reports of Officers

- 4.1 Treasurer's Report. R. Butts presented an interim Treasurer's Report. The Society had \$6800.09 in the account as of October 1.

Motion No. 11 - R. Butts moved that the Treasurer's Report be accepted as presented. Seconded by J. Drouin. Carried.

- 4.2 Membership Report. R. Butts reported that we have 99 regular members, 10 library members, and 4 honorary members. Thirteen people were removed from the mailing list for defaulting on paying dues. Nominations for an additional honorary member will be accepted by the Executive up to September 1984.

- 4.3 Report ESC Regional Director. J. Shemanchuk presented his report which will be included in the proceedings.

G. Ball added that the ESC is looking for an editor and a secretary.

The International Congress of Entomology 1988 - ESC is going to invite the congress to come to Canada. A steering committee is being struck. If the Entomological Society of Alberta wants to have it in Alberta, the boards of Governors of ESC should be notified.

Motion No. 12 - J. Shemanchuk moved that the Alberta Society should advise the National Society that the International Congress of Entomology be held in Alberta in 1988. Seconded by R. Gooding. Carried.

B. Taylor informed G. Ball that the ESA was interested in holding the International Congress in Alberta in 1988.

4.4 ECA Report. J. Shemanchuk presented the report which will be included in the proceedings.

4.5 Nominations Committee. M. Steiner and D. Craig.

President	- M. Steiner
Vice-President	-
Past-President	- B. Taylor
Secretary-Treasurer	- R. Holmberg, J. Ryan, F. Leggett
ESC REgional Director	- H. Liu, D. Craig
Director for Central	- C. Hergert
South	- B. Nelson
North	-
Interim Director	- J. Ryan if R. Holmberg is elected Secretary-Treasurer
Editors	- B. Charnetski, E. Maw
Auditors	- J. Drouin, H. Cerezke

M. Steiner called for other nominations from the floor. H. Philips nominated J. Drouin for Vice-President. Seconded by G. Ball. Moved nominations cease - M. Dolinski. Seconded by B. Nelson.

R. Holmberg elected Secretary-Treasurer; D. Craig elected ESC Director; and B. Charnetski elected Editor. J. Ryan assumed position of Interim Director for the north. Moved acceptance of nominations slate - B. Mitchell. Seconded by R. Gooding.

5.0 Correspondence

5.1 Acid Deposition Committee. B. Taylor summarized what the executive had decided.

Motion No. 13 - J. Shemanchuk moved that we table the Acid Deposition correspondence. Seconded by D. Craig.

5.2 ESC Contribution. B. Taylor read a letter from G. Ball thanking the Society for their donation to the ESC scholarship fund.

6.0 New Business

6.1 Proceedings - 1983. B. Taylor indicated that photocopies of all the abstracts from the British Columbia/Alberta Entomological Society meetings would be provided by Dr. N. Angerilli.

6.2 1984 Annual Meeting. C. Hergert and G. Pritchard invited the Society to Calgary for the 1984 meetings. Members present agreed with this choice of location.

7.0 Adjournment

The meeting adjourned at 5:30 p.m. - moved by R. Gooding. Seconded by R. Holmberg.

REPORT OF THE COMMITTEE TO REVIEW ENTOMOLOGICAL SOCIETY OF ALBERTA PRIZES

1. In early September, 1983, the Entomological Society of Alberta executive appointed G. Pritchard and R. Gooding as a committee to consider all aspects of the prizes awarded by the Society to students at the University of Alberta and at the University of Calgary. The need for such a study arose, in part, because the Student Award's Office at the University of Alberta does not wish to be bothered administering awards of less than \$200.00 but is prepared to list such awards in the university calendar provided that they are administered by the donor.

2. Present situation at the University of Alberta

The calendar description is:

The Entomological Society of Alberta Prize

Value: \$110.00

Conditions: Offered to a student majoring in Entomology, in any of the first three undergraduate years, who obtains a high standing in one or more courses in Entomology. The award is conditional on a satisfactory general record.

The Entomological Society of Alberta puts up \$50.00 of this award, the remainder is contributed by the Faculty members. The decision to award the prize is made at the Department meeting in May. Since 1970, the prize has been awarded eight times; no awards were made in 1983, 1981, 1979, 1978, and 1975. The decline in the frequency with which the award has been made lately appears to be related to the desire of the faculty at the University of Alberta to make the award only to Entomology majors in their first three years at university.

3. The situation at the University of Calgary

The prize is not listed in the calendar. When G. Pritchard identifies a student whose interest in Entomology would be sustained and perhaps encouraged by the awards, he recommends to the President of the Society that the award be made to that student. The scroll and cheque for \$50.00 are presented at the Annual Meeting or mailed later. Since 1971, the award has been made seven times; six times to students at the University of Calgary and once to a Lethbridge student.

4. In addition to reviewing the situation regarding the prizes, the committee considered the following questions:

- 4.1 Should the Society continue to offer one or more prizes?
- 4.2 What should be the value of the prize(s)?
- 4.3 Should the Society administer the prize(s) or should the University do this?
- 4.4 How should the Society fund the prize(s)?

5. The overall conclusions of the committee were that the interests of the Society are served by awarding prizes at the University of Alberta and at the University of Calgary and that only minor changes need to be made to the present methods of doing this.
6. The committee makes the following recommendations to the Executive of the Entomological Society of Alberta. (The rationale for each recommendation is given in parentheses.)

Recommendation 1: That the Society continue to offer two prizes, one at the University of Alberta and one at the University of Calgary.

(Such awards are entirely consistent with the objectives of the Society and no further justification is needed.)

Recommendation 2: That the description in the University of Alberta calendar remain unchanged except for any adjustment to the value of the prize.

(The description is given in No. 2 above.)

Recommendation 3: That the description in the University of Calgary calendar be as follows:

The Entomological Society of Alberta prize is offered to undergraduate students obtaining a high standing in one or more courses in Entomology. The award is conditional on a satisfactory general record. Each prize consists of a scroll and a cash award.

(This is less restrictive than for the prize at the University of Alberta and this is appropriate considering the differences in the number of courses at the two universities, the differences in course enrollment, and lack of an entomology program at the University of Calgary.)

Recommendation 4: That the prize be administered by the Society, and that the recommendations to the President of the Society be made by Dr. E. Stevens of the Department of Biology, University of Calgary (for the prize at the University of Calgary) and by the Chairman, Department of Entomology, University of Alberta (for the prize at the University of Alberta).

(This would perpetuate the situation at the University of Calgary and relieve the Student Award's Office at the University of Alberta of the task of handling a minor award. It is assumed that the President would accept the recommendations made to him but since this is a prize offered by the Society, it seems appropriate that the authority and responsibility for administration of the award lie with the Society.)

Recommendation 5: That beginning in 1984, each prize consists of a scroll and a cheque for \$100.00.

(The value of the prize is probably less significant than is the honor of being recognized by the Society, thus the committee is not strongly

inclined toward recommending a major increase in the value of the prizes. In view of the recent pattern in awarding the prize, it seems likely that the Society will be called upon to donate only \$100.00 each year, although in some years the cost to the Society will be \$200.00.)

Recommendation 6: That the prizes be financed from the general revenues of the Society and that, if necessary, the annual membership dues be adjusted to provide the necessary funds for these awards.

(Based on present membership, an increase of \$1.00 per year in membership dues would approximately offset the cost of increasing the value of the prizes.)

ENTOMOLOGICAL SOCIETY OF ALBERTA

Financial Statement for 1983

	<u>Subtotals</u>	<u>Totals</u>
Bank balance held in Fairview Account	8.026.16	
January 1, 1983	<u>8.07</u>	
Petty cash	8,034.23	8,034.23
Membership sales		
1980 2 at \$4.00	8.00	
1981 2 at \$4.00	8.00	
1982 5 at \$4.00	20.00	
1983 8 at \$4.00	32.00	
1984 18 at \$4.00	72.00	
1985 2 at \$4.00	<u>8.00</u>	
	148.00	148.00
Remainder of funds allocated to H. Philips for income tax resulting from bonds		480.78
U.S. exchange credit		<u>.88</u>
Total receipts for 1983		8,663.89
ESA Annual Meeting 1982 - meeting room		453.00
Cheques deducted from wrong account November 1982 and corrected February 1983		171.52
Insect collection prizes 1983		110.00
Honorarium - G. Hilchie		100.00
Printing of Proceeding - 1982	412.71	
	<u>6.19</u>	
	418.90	418.90
Printing of Proceeding - 1983		447.28
Donation to Entomological Society of Canada scholarship fund		1,500.00
Postage and photocopying		108.65
Science Fair prize - Lethbridge		<u>22.72</u>
Total disbursements		3,332.07
<u>BALANCE SUMMARY</u>		
Total receipts		8,663.89
Total disbursements		<u>3,332.07</u>
		5,331.82
Bank balance - December 31, 1983		5,233.75
Petty cash on hand		<u>8.07</u>
		5,331.82

Prepared by: R. A. Butts
Secretary-Treasurer

Approved by ESA Auditors:
J. A. Drouin
H. F. Cerezke

REPORT OF THE REGIONAL DIRECTOR

As Regional Director, I attended the Entomological Society of Canada Governing Board Meetings on October 1 and 2, and October 5, 1983, held at the Sheraton Centre, Regina, Saskatchewan.

Annual Meeting

The Annual Meeting of the Entomological Society of Canada was held jointly with the Entomological Society of Saskatchewan. Approximately 170 registered for the meeting. Fifty-three excellent papers were presented. There were five poster displays. This meeting was unique in that there was only one concurrent session, thus providing a high level of attendance at the sessions.

Future Meetings

1984 - Entomological Society of Canada and the Acadian Entomological Society, St. Andrews, New Brunswick, October 1-5, 1984.

1985 - Entomological Society of Canada and the Entomological Society of Ontario in Ottawa. This meeting will be arranged jointly by the Executive of the Entomological Society of Canada and the Entomological Society of Ontario. The Committee, consisting of Don Bright, Ann Hudson, and Hugh Danks, has been named to coordinate the planning of this meeting.

The Entomological Society of Canada will have input to the meeting of the Biological Council of Canada to be held June 23-29, 1985, at the University of Western Ontario, London, Ontario. Dr. Glen Wiggins is coordinating the Entomological Society of Canada input. This input is in a form of seminars on topics of Integrated Pest Management dealing with Forestry, Agriculture, and Community.

1986 - Entomological Society of Canada and Entomological Society of Manitoba. The place, dates, and program to be announced.

Finances

A budget with a slight deficit has been approved by the Board. The Finance Committee recommended that the expense of Board members be paid but every effort be made to be economical. The Finance Committee, along with the Treasurer, has been authorized by the Board to investigate and procure a computer word processor, the cost in the range of about \$15,700.

Membership Fees

There is no change in the membership fee and page charge structure. The charge for reprints has been increased by 60%.

Bequests

The Finance Committee has been instructed to formulate a policy to deal with bequests. At present, bequests are kept in the General Fund. There could be a need for a separate fund at some future date.

Annual Grants to Regional Societies

The Annual Grants to Regional Societies were approved. The Entomological Society of Alberta is the only Regional Society not taking advantage of this. This fund is meant to be used to promote entomology.

Liability Insurance and Safe

The Governing Board approved the purchase of a safe and liability insurance as recommended by the auditors.

Publications

Canadian Entomologist

Dr. D. C. Eidt has requested that he be replaced as Editor of the Canadian Entomologist. The increased responsibilities in his occupation is the reason for the request. A Search Committee has been appointed and a short list of 9 persons has been compiled. These people are being contacted.

A change in standing rules has been approved to provide for the publication of Abstracts in the two official languages and a third language if the circumstances require it.

The publications record for the Canadian Entomologist for the 48-week period ending 19 August 1983 is as follows:-

Under Review	48
Rejected	35
Withdrawn	3
To Authors for Revision	42
Accepted	84
Published	29

There has been a substantial growth in the size of the Canadian Entomologist in 1983. The Manuscript 6666, The Fleas of Canada, Alaska, and Greenland by George P. Holland should appear as a Memoir in 1984.

Entomological Society of Canada Bulletin

There were no problems with the publication of the Bulletin. The major problem is to get the Bulletin out to members at the right time.

Scholarships

There were two scholarship winners. They are: Mr. Richard J. Martin, University of Waterloo and Mr. Yves Bouchard, Laval University.

Biological Council of Canada (BCC)

This is an umbrella organization for seven societies of which the Entomological Society of Canada is one. The Entomological Society of Canada contributes \$7/member to this organization. There is some mixed feeling among members of the Governing Board as to its usefulness and purpose.

Association for Advancement of Science in Canada (AASC)

The Association for Advancement of Science in Canada is a new name for SITEC. This organization is soliciting individual memberships. They publish a journal named ACCESS.

Membership

The membership in the Entomological Society of Canada is on a very gradual decline. The Membership Committee is working at trying to correct this. Emeritus membership is being reviewed.

Awards

Gold Medal - Dr. Freeman L. McEwen
C. Gordon Hewit - No awards this year

Fellowships

Dr. A. E. R. Downe
Dr. J. E. McFarlane
Dr. R. D. McMullen
Dr. M. J. Tauber
Dr. H. K. Townes

Officers

Past President - Dr. G. E. Ball
President - Dr. Ray F. Morris
First Vice-President - Dr. Susan McIver
Second Vice-President - Dr. H. F. Madsen
Treasurer - Dr. E. C. Becker
Secretary - Dr. H. G. Wylie

International Congress of Entomology

The 17th International Congress of Entomology will be held at Hamburg, Germany, August 20-26, 1984. The Executive is to select a delegate to represent ESC.

A motion was passed at the General Meeting of the Entomological Society of Canada to invite the 18th Congress of Entomology to Canada in 1988.

Losses Due to Destructive Insects

A proposal has been prepared for submission to the Canada Department of Supply and Services for funding to conduct an investigation into losses caused by insects to wheat, corn, and canola.

Insect Common Names

The Governing Board approved the list of common names as produced by the Common Names Committee.

Submitted by: J. A. Shemanchuk

REPORT OF REPRESENTATIVE TO THE ENVIRONMENT COUNCIL OF ALBERTA

As the representative for the Entomological Society of Alberta, I was elected chairman of the Coordinating Committee for the Public Advisory Committees (PAC) of the Environment Council of Alberta. I attended 11 meetings of the Coordinating Committee and 4 meetings of the Pollution Study Group. Many varied issues were brought before the Coordinating Committee by the Study Groups, Science Advisory Committee, Environment Education Advisory Committee, and concerned citizens.

Some of the highlights of the year's activities were:

1. Met with the Minister of Environment, Honorable Fred Bradley, in January and in June. Very informative and frank discussions took place on topics dealing with Hazardous Waste Plant Site, Agricultural Land Base Hearing, Lodgepole Blowout, Contingency Plans for Future Gas Well Blowouts in Alberta, Slave River Hydroelectric Project, The Water Resources Commission, Noise Hearings, Environment Advertising, Possible Hearings on Air Pollution, The Procter and Gamble Licence, and the Environmental and Wildlife Impacts on Mount Allen. The Minister responded to all of the resolutions of 1982 and has indicated that he would attempt to meet with the Coordinating Committee on a regular basis.
2. Mr. Henry Kroeger, Chairman, Water Resources Commission, met with the Coordinating Committee in March. He outlined the function and purpose of the Water Resources Commission and stated that he wanted to keep avenues of communication open between the Public Advisory Committees and the Commission and requested that a contact person be assigned by PAC for this purpose. The Coordinating Committee named the PAC Secretariat as the contact channel to provide continuity from year to year even though members on the Coordinating Committee change. At this meeting all of the members to the Commission have not been named and the Coordinating Committee suggested that the Commission consider a representative named by PAC. The meeting with Mr. Kroeger was very informal, informative, and frank.
3. Mr. Bob Cronkhite, Executive Director, Water Resources Commission, met with the Coordinating Committee in August. He outlined the make up of the Water Resources Commission as follows:-

SECRETARIAT

Chairman: Mr. Henry Kroeger - MLA

Executive Director: Mr. R. H. Cronkhite

Past Deputy Minister, Transportation

Director of Research: Mr. Rick Mills

MEMBERS

Dr. R. Elliot - MLA

Mr. Robin Ford - ADM, Municipal Affairs

Mrs. Margaret Lounds - Citizens Advisory Committee

Mr. Kim MacKenzie - Consultant

Mr. Peter Melnychuk - ADM, Alberta Environment

Hon. M. M. Porter - Retired Judge

Dr. Brian Sullivan - ADM, Economic Development

Mr. Cronkhite informed the Coordinating Committee that the Water Resources Commission is strictly an advisory commission reporting to the Executive Council, but can provide minimal funds for investigations into Water Management Problems. The Commission will be investigating the development of Province-Wide Inventory of Wetlands, Development of a Program to look at Irrigation, Water Quality, Irrigation Allocation, and a possibility of Public Hearings on Water Quality, Quantity, and Management.

4. A submission was made to the Lodgepole Blowout Inquiry. This comprehensive, thoroughly investigated, and well presented document made a significant contribution to the inquiry.
5. Eight resolutions were reviewed for presentation at the Annual Joint Meeting.
6. The Earle L. Snider Report on the Twin Butte Health Study and the Sage Analysis Report have been received and transmitted to the appropriate Study Groups for study.

The Public hearings into maintaining and expanding agricultural land base in Alberta are progressing well and a report should be ready by October 1984.

To date, there has been no decision made on the location of hazardous waste plant.

Submitted by: J. A. Shemanchuk
ESA Representative

BY-LAWS

ENTOMOLOGICAL SOCIETY OF ALBERTA

Article I

Title

This Society shall be known as the Entomological Society of Alberta in affiliation with the Entomological Society of Canada.

Article II

Object

The object of the Society shall be to foster the advancement, exchange, and dissemination of the knowledge of insects in relation to their importance in agriculture, horticulture, forestry, public health, industry and, for its own sake, among the people of the Province of Alberta.

Article III

Membership, Dues, and Expenditures

- a. Any person interested in entomology may become a Full Member by submitting a completed membership application form and membership fee payment to the Secretary of the Society.

Honorary Life Membership may be conferred on anyone who has performed long and distinguished service in the field of entomology. The total of Honorary Life Members shall not exceed five percent of the total membership at the time of election. An Honorary Life Member will enjoy all the rights and privileges of Full Members but will be exempt from payment of dues. All Full Members are entitled to propose the name of prospective Honorary Life Members provided each such proposal is supported by two other Full Members and documentation is submitted in writing to the Secretary at least one month prior to the Annual Meeting. Such Honorary Life Members will be elected at an Annual Meeting.

- b. A member may withdraw from the Society upon giving notice to the Secretary.
- c. An annual fee necessary for the operation of the Society shall be levied from each member as provided for in Section 1 of the Rules and Regulations.
- d. The Executive shall have power to meet expenses required in the normal operation of Society business. Such expenditures shall be subject to subsequent ratification at the Annual Meeting by the majority of the members present.
- e. A member who neglects to pay the annual fee for two consecutive years shall automatically cease to be a member.

Article IV

Meetings

Meetings may be called each year by the President at times and places suitable to the majority of the members. The fall meeting normally shall be considered the Annual Meeting and shall be held in the locality decided upon at the preceding Annual Meeting. One-quarter of the total paid-up membership shall constitute a quorum.

Article V

Officers

The Officers of the Society shall consist of a President, Vice-President, Secretary-Treasurer, and Editor. These officers shall constitute the Executive of the Society with full power to act on behalf of the Society within the bounds of the Rules and Regulations, and to appoint committees as necessary.

Article VI

Council

The Council shall consist of the four Officers, the immediate Past-President, a Regional Director to the Entomological Society of Canada, and three Ordinary Directors. The Ordinary Directors shall represent the various fields of entomology and the geographical areas of Alberta as widely as possible.

Article VII

Elections

Elections shall be held once a year at the Annual meeting, and Officers so elected shall take office at the beginning of the following calendar year and remain in office for a term of one year.

The office of President shall not formally be held by the same person for two consecutive years. The Vice-President shall normally follow his/her term of office with a term as President. The Secretary-Treasurer and Editor shall be eligible for immediate re-election.

The Directors shall also take office at the beginning of the calendar year following their election.

The Regional Director shall be elected for a period of two years and shall then be immediately re-eligible for one more term.

The term of office of each Ordinary Director shall be three years, with one Director replaced in each year. Ordinary Directors are not immediately eligible for re-election.

Article VIII

Vacancies

Vacancies in any office (except that of President) on the Council between elections shall be filled by appointment by the President, with the concurrence of Council, the tenure of such co-opted members to terminate at the end of the calendar year during which the appointment is made. A vacancy in the office of President shall be filled by the Vice-President who will then serve his normal term as President.

Members elected at the Annual Meeting to fill vacancies on Council shall complete the period of service of the Council members whose places they have taken. On completion of this term they shall be eligible for re-election only if their period of service (co-opted and/or elected) has not exceeded 18 months.

Article IX

Duties of Officers

The President shall preside at all meetings and act ex-officio on all committees.

The Vice-President shall, in the temporary absence or disability of the President, perform the duties and exercise the powers of the President, and shall perform such other duties as shall from time to time be imposed upon the Vice-President by the Council.

The Secretary-Treasurer shall maintain a record of all meetings and act as custodian of minute books and current correspondence, and forward appropriate material to the University of Alberta for storage in the Society's archives. This person shall also receive and disburse all funds and prepare the annual financial statement.

The Editor shall receive and record reports and publications on behalf of the Society and act as editor of the Proceedings.

Article X

Signing Officers

The two signing officers of the Society shall be the President and the Secretary-Treasurer.

Article XI

Alteration of the By-Laws

The By-Laws may be altered or amended at any Annual Meeting of the Society with the approving vote of three-fourths of the members present and in good standing. Such alterations must be made by notice of motion, which shall have been sent to the Secretary and a copy of such forwarded to all members at least two weeks before the Annual Meeting.

RULES AND REGULATIONS - ENTOMOLOGICAL SOCIETY OF ALBERTA

1. a. The annual fee for full membership shall be \$4.00.
b. The fiscal year of the Society shall coincide with the calendar year; fees are payable in advance, at the time of the Annual Meeting.
 2. a. An interim financial statement shall be presented by the Secretary- Treasurer at the Annual Meeting and the final, year-end statement at the first general meeting following the end of the fiscal year.
b. Two auditors shall be appointed at each Annual Meeting to examine the accounts of the current year and the annual financial statement.
 3. Registration fees for student members of the Entomological Society of Canada attending the Entomological Society of Canada meetings shall be reduced when these meetings are held in Alberta with the Entomological Society of Alberta as host.
 4. The following standing committees shall exist to assist the ESA Council achieve the objectives of the Society:-
 - a. Achievement Awards Committee (to the ESC) - members: ESA Council.
 - b. Awards Committee (to the ESA) - members: three elected Society members.
 - c. Environment Council of Alberta - one ESA member shall be elected to represent the Society.
 - d. ESA-ESC Joint Meeting Committee - to be established a year preceeding any joint meeting of the Entomological Society of Canada and the Society; members to be selected from Society membership.
 - e. Insect Collection Competition Committee - members: one elected member plus two other members appointed by the elected member at each Annual Meeting of the Society.
 - f. Nomination Committee - members: the Past President, Vice-President, and one member in good standing shall prepare a nomination slate prior to each Annual Meeting and the Vice-President shall present the slate of nominated Executive Council members at the Annual Meeting.
 - g. Resolutions Committee - members: two Society members shall be appointed immediately preceding each Annual Meeting.
 - h. Science Fair Liaison Committee - members: one elected Society member; other members to be appointed as necessary by the elected member.
- All elections and appointments are not to exceed one year unless otherwise approved by the Society.
5. The Rules and Regulations may be changed by a motion approved by the majority of the members present at any general meeting.

October 8, 1981

LIST OF MEMBERS

Honorary Members

Mr. J. B. Gurba
9415 - 144 Street
EDMONTON, AB
T5R 0RB

Mr. E. T. Gushul
1714 - 15 Avenue South
LETHBRIDGE, Alberta
T1K 0W9

Mr. L. A. Jacobson
1011 - 14 Street South
LETHBRIDGE, AB
T1H 2W3

Dr. Ruby I. Larson
2503 - 12 Avenue South
LETHBRIDGE, AB
T1K 0P4

Members

Dr. G. E. Ball
Department of Entomology
University of Alberta
EDMONTON, AB
T6G 2E3

Dr. Kay Ball
8108 - 138 Street
EDMONTON, AB
T5R 0C9

Mr. W. B. Barr
Box 952
VERMILLION, AB
T0B 4M0

Dr. M. Benn
Department of Chemistry
University of Calgary
CALGARY, AB
T2N 1N4

Mr. R. Butts
Alberta Agriculture
P. O. Box 7777
FAIRVIEW, AB
T0H 1L0

Mr. G. Byrtus
16531 - 114 Street
EDMONTON, AB
T5X 3V6

Mr. J. L. Carr
24 Dalrymple Green, N. W.
CALGARY, AB
T3A 1Y2

Dr. H. F. Cerezke
Northern Forest Research Centre
Environment Canada
5320 - 122 Street
EDMONTON, AB
T6H 3S5

Dr. W. A. Charnetski
Research Station
Agriculture Canada
LETHBRIDGE, AB
T1J 4B1

Mr. Michael Cheeseman
c/o Biology Department
University of Calgary
CALGARY, AB
T2N 1N4

Dr. H. Clifford
Department of Zoology
University of Alberta
EDMONTON, AB
T6G 2E3

Mr. Doug Colter
Box 415
FALHER, AB
T0H 1M0

Dr. D. A. Craig
Department of Entomology
University of Alberta
EDMONTON, AB
T6G 2E3

Mr. R. Cuny
Department of Biology
Indiana University
138 Jordan Hall
BLOOMINGTON, Indiana 47405
U. S. A.

Mr. Douglas C. Currie
3604 - 112 A Street
EDMONTON, AB
T6J 3L5

Dr. K. R. Depner
818 - 22 Street
LETHBRIDGE, AB
T1J 2L5

Mr. M. G. Dolinski
Crop Protection Branch
Alberta Agriculture
7000 - 113 Street
EDMONTON, AB
T6H 5T6

Dr. J. A. Drouin
Environment Canada
Northern Forest Research Centre
5320 - 122 Street
EDMONTON, AB
T6H 3S5

Mr. P. Ellis
Alberta Agriculture
P. O. Box 7777
FAIRVIEW, AB
T0H 1L0

Dr. W. G. Evans
Department of Entomology
University of Alberta
EDMONTON, AB
T6G 1V3

Ms. Carol Ewasedho
3611 - 117 Street
EDMONTON, AB
T6J 1V3

Ms. Donna J. Giberson
Department of Entomology
University of Manitoba
WINIPEG, MB
R3T 2N2

Mr. B. Godwin
c/o Olds Agricultural and
Vocational College
OLDS, AB
T0M 1P0

Mr. M. Goettel
Department of Entomology
University of Alberta
EDMONTON, AB
T6G 2E3

Dr. R. H. Gooding
Department of Entomology
University of Alberta
EDMONTON, AB
T6G 2E3

Dr. G. C. D. Griffiths
Department of Entomology
University of Alberta
EDMONTON, AB
T6G 2E3

Ms. Mary Jo Gurba
501 - 10405 Saskatchewan Drive
EDMONTON, AB
T6E 4R8

Dr. E. S. Hall
3423 Benton Drive N. W.
CALGARY, AB
T2L 1W7

Dr. J. M. Hardman
Research Station
Agriculture Canada
KENTVILLE, NS
B4N 1J5

Dr. A. M. Harper
Research Station
Agriculture Canada
LETHBRIDGE, AB
T1J 4B1

Dr. R. C. B. Hartland-Rowe
Biology Department
University of Calgary
CALGARY, AB
T2N 1N4

Dr. W. O. Haufe
Research Station
Agriculture Canada
LETHBRIDGE, AB
T1J 4B1

Dr. B. Heming
Department of Entomology
University of Alberta
EDMONTON, AB
T6G 2E3

Mr. C. R. Hergert
803 - 22 Avenue S. W.
CALGARY, AB
T2G 1N4

Mr. G. Hilchie
10948 - 89 Avenue
EDMONTON, AB
T6G 0Z5

Dr. B. D. Hill
Research Station
Agriculture Canada
LETHBRIDGE, AB
T1J 4B1

Mrs. J. Hocking
Box 232
SEBA BEACH, AB
T0E 2B0

Dr. R. G. Holmberg
Athabasca University
P. O. Box 10000
ATHABASCA, AB
T0G 2R0

Mr. T. Holter
1052 Lake Christina Way S. E.
CALGARY, AB
T2J 2R3

Dr. Ruth Lynn Hooper
58 Metropolitan Avenue
ASHLAND, MA 01721
U. S. A.

Mr. W. G. H. Ives
Environment Canada
Northern Forest Research Centre
5320 - 122 Street
EDMONTON, AB
T6H 3S5

Mrs. K. Jeming
10948 - 75 Avenue
EDMONTON, AB
T6G 0G9

Mr. Sant Kalirai
232 Knottwood Road North
EDMONTON, AB
T6K 1Y4

Dr. W. Kaufman
Department of Zoology
University of Alberta
EDMONTON, AB
T6G 0G9

Dr. B. A. Khan
Beef Cattle & Sheep Ranch
Alberta Agriculture
7000 - 113 Street
EDMONTON, AB
T6H 5T6

Dr. M. A. Khan
Research Station
Agriculture Canada
LETHBRIDGE, AB
T1J 4B1

Ms. Cathy Krause
P. O. Box 1724
FAIRVIEW, AB
T0H 1L0

Mr. Tomas Kveder
Research Station
Agriculture Canada
LETHBRIDGE, AB
T1J 4B1

Mr. Richard Lancaster
Research Station
Agriculture Canada
LETHBRIDGE, AB
T1J 4B1

Mr. David Lawrie
900 Riverdale Avenue S. W.
CALGARY, AB
T2S 0Y6

Mr. Robin Leech
10727 - 64 Avenue
EDMONTON, AB
T6H 1T1

Frances Leggett
Department of Entomology
University of Alberta
EDMONTON, AB
T6G 2E3

Ms. Janis Lemiski
319 - 23 Avenue S. W.
CALGARY, AB
T2S 0J3

Mr. C. E. Lilly
2314 - 10 Avenue South
LETHBRIDGE, AB
T1J 4B1

Dr. H. Liu
Entomology Section
Plant Science
Alberta Environment Centre
VEGREVILLE, AB
T0B 4L0

Mr. David McCorquodale
Department of Zoology
Australian National University
Box 4, G.P.O.
Canberra, ACT
AUSTRALIA 2600

Mr. S. McDonald
329 - 27 Street South
LETHBRIDGE, AB
T1J 3R7

Mr. A. J. McIntosh
Alberta Environment
2nd Floor, Deerfoot Square
2938 - 11 Street N. E.
CALGARY, AB
T2E 7L7

Mr. Eric Maw
Department of Entomology
University of Alberta
EDMONTON, AB
T6G 2E3

Mr. E. Mengersen
P. O. Box 2392
OLDS, AB
T0M 1P0

Dr. B. K. Mitchell
Department of Entomology
University of Alberta
EDMONTON, AB
T6G 2E3

Mr. B. H. Moody
Environment Canada
Northern Forest Research Centre
5320 - 122 Street
EDMONTON, AB
T6H 3S5

Mr. J. A. Muldrew
Environment Canada
Canadian Forestry Services
5320 - 122 Street
EDMONTON, AB
T6H 3S5

Mr. R. Mutch
Department of Biology
University of Calgary
CALGARY, AB
T2N 1N4

Dr. W. A. Nelson
1020 Fern Crescent
LETHBRIDGE, AB
T1K 2W3

Dr. A. Nimmo
Department of Entomology
University of Alberta
EDMONTON, AB
T6G 2E3

Mr. Hideji Ono
P. O. Box 763
VULCAN, AB
T0L 2B0

Mr. P. Pankiw
P. O. Box 395
BEAVERLODGE, AB
T0H 0C0

Mr. L. K. Peterson, Head
Pesticide Chemicals Branch
Alberta Environment
9820 - 106 Street
EDMONTON, AB
T5K 2J6

Mr. H. G. Philip, Head
Crop Protection Group
Alberta Environmental Centre
Bag 4000
VEGREVILLE, AB
T0B 4L0

Mr. D. Pledger
Pesticide Chemicals Branch
Alberta Environment
9820 - 106 Street
EDMONTON, AB
T5K 2J6

Dr. G. Pritchard
Biology Department
University of Calgary
CALGARY, AB
T2N 1N4

Dr. W. S. Procunier
British Museum (Natural History)
Cromwell Road
London SW75BD
ENGLAND

Mrs. Lynn Richards
2215 - 42 Street South
LETHBRIDGE, AB
T1K 4Y8

Dr. K. W. Richards
Research Station
Agriculture Canada
LETHBRIDGE, AB
T1J 4B1

Mr. J. Rickert
10475 - 143 Street
EDMONTON, AB
T5N 2S5

Dr. J. Ryan
10948 - 89 Avenue
EDMONTON, AB
T6G 0Z5

Dr. R. W. Salt
639 - 18 Street South
LETHBRIDGE, AB
T1J 3E9

Mr. Randall Sargent
379 Belfast Street S. E.
MEDICINE HAT, AB
T1A 2C0

Mr. Allan C. Schaaf
43 Willington Crescent
SPRUCE GROVE, AB
T0E 2C0

Dr. Burton Schaber
Research Station
Agriculture Canada
LETHBRIDGE, AB
T1J 4B1

Mr. P. Scholefield
Alberta Environment
2nd Floor, Deerfoot Square
2938 - 11 Street S. E.
CALGARY, AB
T2E 7L7

Ms. K. Shaw
2204 Main Mall
University of British Columbia
VANCOUVER, BC
V6T 1W5

Mr. J. A. Shemanchuk
Research Station
Agriculture Canada
LETHBRIDGE, Alberta
T1J 4B1

Dr. J. L. Shipp
Research Station
Agriculture Canada
LETHBRIDGE, AB
T1J 4B1

Dr. F. A. Siddiqui
Northern Alberta Institute
of Technology
11762 - 106 Street
EDMONTON, AB
T5G 2R1

Dr. J. Singleton-Smith
Department of Biology Science
Simon Fraser University
BURNABY, BC
V5A 1S6

Dr. U. Soehngen
Alberta Horticultural
Research Centre
BROOKS, AB
T0J 0J0

Mr. D. A. Soluk
A202, 5322 - 46 Street
VEGREVILLE, AB
T0B 4L0

Mrs. L. J. Soluk
Plant Sciences
Alberta Environment Centre
Bag 4000
VEGREVILLE, AB
T0B 4L0

Dr. J. Spence
Department of Entomology
University of Alberta
EDMONTON, AB
T6G 2E3

Mr. F. Sperling
Department of Entomology
University of Alberta
EDMONTON, AB
T6G 2E3

Ms. J. Stanger
P. O. Box 57
MUNSON, AB
T0J 2C0

Mrs. M. Steiner
Entomology Section
Alberta Environmental Centre
Bag 4000
VEGREVILLE, AB
T0B 4L0

Mr. D. B. Stewart
Pesticide Chemicals Branch
Alberta Environment
9820 - 106 Street
EDMONTON, AB
T5K 2J6

Dr. D. L. Struble
Research Station
Agriculture Canada
LETHBRIDGE, AB
T1J 4B1

Dr. James Sutcliffe
Department of Biology
University of Waterloo
WATERLOO, ON
N2L 3G1

Dr. G. E. Swailes
2011 - 13 Avenue South
LETHBRIDGE, AB
T1K 0S4

Ms. Dianne Szlabey
11110 - 86 Avenue, No. 55
EDMONTON, AB
T6G 0X2

Dr. B. Taylor
Pesticide Chemicals Branch
Alberta Environment
9820 - 106 Street
EDMONTON, AB
T5K 2J6

Mr. A. Tellier
General Delivery
OLDS, AB
T0M 1P0

Ms. Doreen Watler
32 York Street
KINGSTON, ON
K7K 1P5

Mr. J. Weintraub
Research Station
Agriculture Canada
LETHBRIDGE, AB
T1J 4B1

Mr. P. R. Wilkinson
405 Normandy Road
LETHBRIDGE, AB
T1J 3X9

Dr. H. R. Wong
Environment Canada
Canadian Forestry Service
5320 - 122 Street
EDMONTON, AB
T6H 3S5

Library Members -
Paid Subscriptions

Colorado State University
Libraries
Serials Section
FORT COLLINS, Colorado 80523
U. S. A.

The D. H. Hill Library
Acquisitions Department
North Carolina State University
P. O. Box 5007
RALEIGH, North Carolina 27650
U. S. A.

University of Wyoming Library
Continuations
Box 3334
LARAMIE, Wyoming 82071
U. S. A.

Pergamon Press Inc.
Maxwell House
Fairview Park
Elmsford, New York 10523
U. S. A.

Senckenbergische Bibliothek
Bockenheimer Landstr 134-138
6000 Frankfurt Am Main 1
WEST GERMANY

Library Members -
Free Subscriptions

Library
Agriculture Canada
Research Station
LETHBRIDGE, AB
T1J 4B1

Glenbow Alberta Institute
902 - 11 Avenue South West
CALGARY, AB
T2R 0E7

Provincial Museum and Archives
12845 - 102 Avenue
EDMONTON, AB
T5N 0M6

National Library of Canada
Canadian Acquisitions Division
and Legal Deposit Office
392 Wellington Street
OTTAWA, ON
K1A 0N4

University of Alberta
Library - Periodicals Section
EDMONTON, AB
T6G 2E3

Library
University of Calgary
CALGARY, AB
T2N 1N4

Library
University of Lethbridge
4401 University Drive
LETHBRIDGE, AB
T1K 3M4