

Proceedings of the Thirty-Sixth Annual Meeting of the



Entomological Society of Alberta

**September 29-October 1, 1988
Medicine Hat Community College
Medicine Hat, Alberta**

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PROCEEDINGS OF THE
36TH ANNUAL MEETING
OF THE
ENTOMOLOGICAL SOCIETY OF ALBERTA

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OFFICERS - 1987

President..... B. K. Mitchell
Vice President..... C. R. Hergert
Past President..... R. H. Gooding
Secretary..... A. McClay
Treasurer..... G. J. Hilchie
Editor..... E. A. Mengersen
Directors..... J. Ryan (1987); B. D. Schaber (1988); P. Scholefield (1989)
Regional Director to Entomological Society of Canada..... J. R. Spence

Officers - 1988

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PRESIDENT'S REPORT

I, together with the other members of the executive committee, would like to wish you a sincere welcome to the 36th Annual Meeting of the Entomological Society of Alberta. This meeting, located in the fine facilities graciously provided by the Medicine Hat College, is the Society's first meeting ever to be held in Medicine Hat. I would also like to extend a welcome to Dr. Paul Riegert of the Entomological Society of Saskatchewan and to Dr. Ed Becker of the Entomological Society of Canada, who chose to join us here in Medicine Hat. Another first for an Annual Meeting will be the opportunity to join in a field trip to nearby Cypress Hills. I hope those who seldom visit this far corner of the province will take advantage of the trip to see one of the unique geological features of S.E. Alberta and S.W. Saskatchewan. I would like to thank Dr. Bob Mutch who flawlessly organized the local arrangements including the field trip, Pat Scholefield for an excellent Scientific Program and Dr. Gordon Pritchard as meeting trouble shooter.

It has become traditional for the outgoing president to present a report of the Society's activities for the past year. I shall not disappoint you!

The year has been largely business as usual and for this I would like to thank those members of the executive committee for their valuable time, effort and commitment and who allowed me to be what amounts to a figurehead president. We are still in a fairly healthy financial position. I anticipate that we will be able to maintain this position now that the dues more closely match expenses. The quiet year for the Society is perhaps because of the many conflicting duties we make for ourselves, or have thrust upon us! Perhaps, the year was quiet because those fortunate among us were privileged to attend the International Congress of Entomology in Vancouver. The Congress allowed us to rub shoulders with superiors, with peers, or perhaps with inferiors! ... but never-the-less broadened our horizons in many areas. Perhaps the quiet year can be compared to the calm before the storm., the storm of activity that is associated with the effort and time required to host the 1990 joint meeting with the Entomological Society of Canada to be held in Banff. The quiet year is also reflected in our proceedings printing: as you have probably noticed, we are behind in the production of the proceedings; this, I assure you, will be rectified before year end.

It has been a pleasant honour to serve as president in 1988. I would like to thank all who continue to support and contribute to the smooth functioning of this Society. I look forward to seeing you all at our next first, the 1989 meeting in Athabasca. I am sure we will all provide our continued support and commitment to Gordon Pritchard and the incoming executive as we prepare for the joint meeting.

Colin R. Hergert
President, 1988

ABSTRACTS OF SUBMITTED PAPERS

FLUID FLOW AND DISPERSION PATTERNS OF BLACK FLY LARVAE (DIPTERA: SIMULIIDAE).

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All of the filter-feeding black fly larvae in an aggregate establish themselves on a stream bottom in a characteristic location relative to their immediate neighbours. This characteristic location results in one of three dispersion patterns; spaced, clumped, or banded. Observations in the field show that species and species groups of black fly larvae can be divided into three categories according to the dispersion patterns exhibited: 1) Larvae of *Simulium venustum/verecundum* (complex), *Prosimulium onycodactylum* (complex), *S. hunteri*, and *S. piperi* were found only in spaced dispersion patterns. 2) Larvae of *Cnephia dacotensis*, and *S. deccorum* (complex) were found in bands at lower velocities and in clumps at higher velocities. *S. vittatum* were also found in clumps and bands as well as in spaced dispersion patterns; however, no clear relationship with water velocity was found. 3) *S. virgatum* (complex), and *S. canadense* were found in spaced dispersion patterns at lower velocities and clumped at higher velocities. Examinations of body forms revealed that species and species groups can be divided into three categories which correspond with the three categories based on dispersion patterns. It was also found that flow around larvae in a banded dispersion pattern is directed away from the substrate and results in the upright posture of larvae in bands.

rarely observed or collected. In Canada the species in univoltine with a mid-larval summer diapause.

A NEW APHID PEST IN CANADA: RUSSIAN WHEAT APHID (*DIURAPHIS NOXIA*) (MORDVILKO))

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and

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Russian wheat aphid (RWA) is a serious pest of cereals in the Western Great Plains where it was first discovered in Muleshoe, Texas in late March, 1986. By the fall of 1987, it had spread as far north as the southern edges of Montana, Idaho and Washington states where it successfully overwintered. Losses to the United States small grains industry were estimated to exceed \$50,000,000 in 1987. RWA was first detected in Canada near Aden, Alberta in late July, 1988.

GRAMMIA BLAKEI (LEPIDOPTERA: ARCTIIDAE) - AN OCCASIONAL PEST OF NATIVE RANGE PASTURES IN SOUTHERN ALBERTA

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The woolly-bear caterpillars of *Grammia* (= *Apantesis*) *blakei* (Grt.) are sometimes abundant on native range pastures in the short grass region of southern Alberta and southwestern Saskatchewan and occasionally invade adjacent cultivated crops. The larvae overwinter as mid- to late instars in protected sites on the soil surface and begin feeding in the spring as soon as new plant growth is available. They are general feeders on both mono- and dicotyledonous plants. Larval densities exceed 10 per m² were found at several locations from 1982 to 1985 and historical records indicate that densities sometimes exceed 50 per m². The moths are present in late May through June but are

BASILINE RESISTANCE OF *LYGUS* SP. TO THE ORGANOPHOSPHATE INSECTICIDE DYLOX IN SOUTHERN ALBERTA

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Lygus sp. are often the first to become resistant to insecticides in crops which are treated often. Using FAO methods for the detection and measurement of resistance, *Lygus* sp. from alfalfa seed fields in the County of Newell, Alberta, were determined to be susceptible to Dylox. This lack of resistance in part may be attributable to 10 years of management of a majority of the alfalfa seed crop under an IPM program.

SITONA WEEVIL ATTACKS CICER MILKVETCH

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Cicer milkvetch is a forage legume suitable for use on rangeland, pasture, and disturbed land. It is a long-lived, perennial herbaceous legume with a vigorous, creeping root system and is not known to cause any physiological problems such as bloat in animals. During the past few years, some forage seed producers have noticed delayed spring emergence. The delay in spring emergence in some cases has been caused by the feeding in spring on developing shoots at the soil interface by the adults of the alfalfa root curculio, *Sitona scissifrons* Say. The biology and some aspects of control will be discussed.

MALE FACTOR: A SUBSTANCE WHICH HASTENS SALIVARY GLAND DEGENERATION IN THE FEMALE TICK *AMBLYOMMA* *HEBRAEUM*.

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In the female tick, *Amblyomma hebraeum*, salivary gland degeneration is triggered by the release of an ecdysteroid, provided that the tick is above a critical weight (approx. 300-400 mg). If the female is mated, complete salivary gland degeneration occurs within 4 days of removal from the host. If the female is virgin, degeneration does not occur until day 8. This study indicates that a chemical substance ('Male Factor'; MF), which hastens salivary gland degeneration, is transferred to the female during copulation. Thus, injection of genital tract homogenate from fed males into virgin females results in salivary gland degeneration by day 4. Genital tract homogenates from unfed males have only a slight MF effect. The synganglion (=CNS) of fed males also shows some MF activity. MF activity of genital tract homogenates is destroyed by boiling them for 5 minutes.

PLANT SPECIFICITY IN THE ALFALFA LEAFCUTTER BEE (*MEGACHILE ROTUNDATA* (FABRICIUS))

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Plant specificity has been observed to varying degrees in the foraging behaviour of bees. With most bees plant specificity is limited to flower constancy, since these insects utilize pollen and nectar as their raw food resources. In the *Megachile*, plant specificity is not limited to food gathering alone but also applies to the collection of nesting material. Unlike other bees, megachilids utilize leaf and/or petal cuttings for cell construction and hence are commonly referred to as leafcutter bees. This preference or specificity for certain plants from which to collect nesting materials has been observed in the alfalfa leafcutter bee, *Megachile rotundata*. The degree of specificity exhibited by this bee when exposed to 11 forage crops will be discussed.

THE HYMENOPTERA OF THE WAGNER NATURAL AREA A PEATLAND WEST OF EDMONTON

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The Wagner Natural Area, located just west of Edmonton, is a series of rich calcareous spring fed string fens graduating into surrounding bogs. This habitat was sampled for terrestrial fauna using a continuous trap-based sampling protocol supplemented by intermittent sweep samples for the duration of the season of arthropod activity. Material collected will be used as baseline data for comparison with other habitats or with future arthropod studies at the Wagner site. The samples have produced a rich assemblage of species: HIRUDINEA - 1 species, GASTROPODA - 10 species, CHILOPODA - 2 species, DIPLOPODA - 1 species, PSEUDOSCORPIONIDA - 2 species, OPILIONES - 2 species, ARANEAE - 59 Species, ODONATA - 8 species, THYSANOPTERA - 21 species, HOMOPTERA - 79 species, COLEOPTERA - 335 species, NEUROPTERA - 1 species, DIPTERA - 101 species, HYMENOPTERA - 965 species. Total species at Wagner - 1,587 as of September, 1988.

There are 3 other studies which could be considered extensive enough to provide baseline data on peatland sites. Only one site, that of Wicken Fen in England, has a fauna that exceeds that of the Wagner site. The other two studies suffer from lack of a trap-based continuous sampling protocol and have produced species counts amounting to fractions of those at Wicken or Wagner.

The 965 species of Hymenoptera represent determinations of 36% of the 34,000 specimens of Hymenoptera mounted for study from the Wagner samples. At present about 40% of the fauna can be named to species level, a situation reflecting lack of identification guides for most of the fauna. The inclusion of 18,500 specimens of egg parasitoids will significantly reduce the percentage of named species.

In an analysis of trophic levels the Hymenoptera are divisible into two primary levels, herbivore and carnivore. Herbivores can be subdivided into pollen foliage, seed, stem and gall feeders. The carnivorous Hymenoptera are divisible into two subdivisions, ectoparasitoids and endoparasitoids, with the predators and carnivorous cleptoparasitoids considered as extremes of ectoparasitism. At the Wagner site the hymenopterous fauna show a preponderance of endoparasitoids.

An analysis of the host groups utilized by Hymenoptera at the Wagner site indicates a preference for holometabolous insects particularly Diptera larvae, Lepidoptera larvae and those Hymenoptera with a lepidopterous-like larva, the sawflies.

Using figures on host utilization available on a Nearctic scale for Hymenoptera, it is possible to arrive at a rough approximation of the fauna of insects and spiders which could be expected at the Wagner site. That figure, based on an incomplete analysis of the Hymenoptera, suggests that between 6,000 and 8,000 species could be expected at the Wagner site.

A WHOLE IN ONE AND ONE IN THE HOLE

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Antroforceps bolivari Barr (1967) is a northeastern Mexican cave-inhabiting scaritine carabid beetle species and the only known species of this genus. Originally assigned to the subtribe FORCIPATORINA, the attributes of a scaritine species of the subtribe CLIVININA recently discovered in southeastern Oklahoma, indicate that *Antroforceps* is not only a member of the Clivinina but is congeneric with the genus *Clivina*. The stock that was ancestral to this new species and to *A. bolivari* probably inhabited the surface area that is between the ranges of its two extant descendants.

THE TAXONOMIC STATUS OF THE BUMBLE BEES *BOMBUS MELANOPYGUS* AND *B. EDWARDSII* (HYMENOPTERA: APIDAE)

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The bumble bees *B. melanopygus* Nylander and *B. edwardsii* Cresson have traditionally been regarded as "good" distinct species. However, Owen and Plowright (1980, J. Hered. 71: 241) found that the colour of the pile on abdominal tergites 2 and 3, which is the major character used to distinguish the species, was inherited as a simple Mendelian gene with two alleles. This suggests that the forms are either conspecific colour morphs or that hybridization between two distinct species is occurring. In order to investigate these possibilities we compared bees from populations in California, Oregon and Alberta using starch gel electrophoresis. The mobilities of the most common electromorphs were identical in *melanopygus* and *edwardsii* at all 16 loci examined. Moreover, *melanopygus/edwardsii* were separated distinctly from 10 other species. These results strongly support the idea that *melanopygus* and *edwardsii* are conspecific colour morphs showing clinal variation in frequency.

THE OPERATION OF THE LABIUM IN LARVAL DRAGONFLIES

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The operation of the larval labium in dragonflies is reviewed and compared with other fast actions in arthropods. The dragonfly labium is similar to most of these in that a locking mechanism allows energy storage prior to the action, but differs in that its successful operation requires coordinated and rapid operation of two joints, not just one. The locking mechanism resides in the primary flexor muscle of the labium, which alone appears to allow energy for the operation of both joints to be stored and prevents the labium from being protracted during jet propulsion.

**SAMPLING PROCEDURES FOR WESTERN
FLOWER THRIPS, *FRANKLINIELLA*
OCCIDENTALIS (PERGANDE)
(THYSANOPTERA: THRIPIDAE) AND ITS
PREDATOR *AMBLYSEIUS CUCUMERIS*
(OUDEMANS) (ACARINA: PHYTOSEIIDAE) IN
GREENHOUSE CUCUMBERS.**

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The western flower thrips has been a major pest of greenhouse cucumbers in Alberta since 1983. An ongoing study is aimed at including this pest in an integrated control program, with a necessary requirement being the development of sampling procedures for western flower thrips and its predator, *Amblyseius cucumeris*, and the establishment of economic threshold levels. Studies to date indicate that middle strata leaves are better sampling units than upper or lower leaves, and that the distribution of both adult and larval thrips and *A. cucumeris* can be described by Taylor's power law, with aggregation coefficients of 1.31, 1.62 and 1.31 respectively. Using this relationship, correlations are demonstrated for comparing presence-absence sampling with actual population estimates obtained by both visual inspection and leaf washing. Damage to new fruit was poorly correlated with presence or numbers of western flower thrips on leaves. The difficulties in establishing economic threshold levels are discussed.

**OBSERVATIONS FROM THREE YEARS OF
STRUCTURAL PEST CONTROL IN SOUTHERN
ALBERTA**

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A brief, non-statistical review of the types of pest problems occurring in and near buildings of Southern Alberta is presented. Seasonal and yearly changes are noted as well as observations on the changing status of various pests. Notes on the status of the pest control industry and its future are made.

**THE LIFE CYCLE AND FACTORS AFFECTING
TRANSMISSION OF DOG HEARTWORM
DISEASE**

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Dog heartworm disease is caused by *Dirofilaria immitis* (Leidy), a filarial nematode. The only known vectors are mosquitoes and at least seventy species worldwide have been incriminated as potential vectors. The adult worms live in the heart of the host and when sexually mature they produce microfilariae which circulate in the blood of the host for up to nine months. Under optimum conditions, development in the vector takes ten to eleven days; in the host, primarily dogs, development to mature adults takes six or seven months. Transmission of *D. immitis* depends on a number of factors. These include biology, physiology, strain differences, and tolerance to parasite burden of a mosquito species and environmental factors. The most detrimental environmental factor is temperature. Comparing results of past studies on temperature requirements for complete development of *Dirofilaria immitis* in the vector with daily mean and minimum temperatures for Calgary, Alberta, shows transmission to be unlikely in the Calgary area unless *Dirofilaria immitis* becomes tolerant of developing at low temperatures.

**THE ORIGIN OF THE PEACE RIVER
GRASSLANDS**

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Botanical and palynological investigations have failed to resolve the origins of the grasslands along the Peace River valley. These grasslands support a butterfly fauna which includes 12 disjunct populations and seven endemic forms. The disjunct populations show four types of distribution patterns all having, in common, populations in southern Alberta. The endemic forms have sister taxa in southern Alberta; the seventh may have been derived from Alpine populations to the north west, or from southern Alberta. These data suggest that the Peace River grasslands originated in a major prairie extension from southern Alberta to the Peace River valley during the hypsithermal 6000 - 8000 YBP. The application of butterfly distributions to biogeographical problems is therefore capable of resolving questions which more traditional data bases cannot.

MINUTES

ENTOMOLOGICAL SOCIETY OF ALBERTA

EXECUTIVE MEETING

Date: Saturday, August 27, 1988

Place: Calgary Parks and Recreation, 111-17 St. S.E.

Present: C. Hergert (Chair), J. Acorn, A. Finnamore, G. J. Hilchie, B. K. Mitchell, G. Pritchard, B. Schaber.

1. Call to order.

Meeting called to order at 10:09.

2. Approval of agenda.

The agenda was approved as circulated.

3. Adoption of executive meeting minutes (October 15, 1987).

MOTION: That the minutes of the executive meeting of October 15, 1987 be adopted as circulated. Hergert-Hilchie. CARRIED.

4. Review of annual meeting minutes.

Mitchell suggested two corrections to the minutes: first, Manfred Zimmerman's first name should be inserted in place of "?"; second, replace "St. John, Newfoundland" with St. John's, Newfoundland." Acorn agreed to communicate these changes to Mengersen, for inclusion in the proceedings.

5. Business arising from previous meetings.

5.1. Profiles of Alberta Entomologists.

Hergert reported that this project was in the final stages, needing only a few profiles, and a larger number of photographs.

5.2. Joint meeting with the E.S.C., in Banff.

At the annual meeting Pritchard will report on organizational needs for the joint meeting, and the society will appoint a chairman, and strike committees. The nature of the committees required was discussed, as was the question of whether our program will be independent of the Entomological Society of Canada program, which it will. Suggestions were made for appropriate people to sit on the various committees, and Hilchie expressed some interest in the program committee. Finnamore raised the possibility of obtaining National Parks collecting permits for the group, and Pritchard added that this had been done by the Odonatological Congress in 1983.

5.3. Checklist status.

Hergert reminded the executive to insure that a list of relevant duties and contacts be put on file, to be given to incoming executive members.

6. Treasurer's report.

Hilchie reported that our bank balance is presently high (\$5547.99), but that we still have two years of unfinished proceedings to pay for. The year end financial report has been sent to the auditors and should be ready before the annual meeting. He also mentioned that he anticipates changes in membership numbers, caused by increases in the membership fees.

7. Secretary's report.

John Acorn reported no significant correspondence.

8. Editor's report.

Mengerson was not present. Hergert summarized the situation: we are two years behind in publication of the proceedings. Hergert has called Mengersen, but has not yet received a reply. As well, Nelson has written to Hergert to say that he will not continue to act as photographer for the proceedings until and unless the work he has already done goes to press. Mitchell offered the services of his department to help publish the proceedings.

9. New business.

9.1. Annual meeting preparations. Pritchard reported that local arrangements, coordinated by Mutch, were proceeding well. Hergert expressed concern that the support of Medicine Hat College was uncertain, due to a recent change in presidency. Hergert had no information on the number of papers submitted so far, or on the status of the field trip. Pritchard said he and Scholefield will recruit papers by telephone if the number is insufficient. Mitchell then added that he and the nominations committee will work on nominations for editor, directors, and vice president.

9.2. Other business.

9.2.a. Additional photos for inclusion in proceedings.

Schaber suggested that a photograph of the winner of the entomological prize in the Lethbridge Science Fair could be included in the proceedings of our annual meeting. Acorn suggested that the winners of the Insect Collection Competition could be included as well. Discussion followed, with general agreement reached on these points.

9.2.b. Thanks for the snacks.

Pritchard, on behalf of all present, extended thanks to Hergert for the bountiful snacks made available to the executive. Hergert replied that the credit largely went to his wife, and general agreement was reached to thank her as well.

9.2.c. Photo Salon for the Athabasca meeting in 1989.

MOTION: That the nominations committee find someone willing to organize a photo salon for the 1989 annual meeting. Finnermore-Acorn. CARRIED.

10. Adjournment.

The meeting was adjourned at 11:20.

MINUTES

ENTOMOLOGICAL SOCIETY OF ALBERTA

ANNUAL MEETING

Date: Saturday, October 1, 1988

Place: Medicine Hat College, Medicine Hat

Call to order: The meeting was called to order at 10:04 by C. Hergert, with 24 members present.

1. Approval of agenda.

Hergert suggested three minor changes to the agenda. MOTION: That the agenda of the 1988 annual meeting be approved as amended. Gooding-Becker. CARRIED.

2. Adoption of minutes of 1987 annual meeting.

One correction was suggested (delete second "fee" in section 6.1). MOTION: That the minutes be adopted as amended. Philip-Spence. CARRIED.

3. Greetings from the Entomological Society of Canada.

Becker extended greetings to the society on behalf of D. C. Eidt, President of the Entomological Society of Canada.

4. Reports of the Officers.

4.1. Treasurer's report.

Acorn presented the Treasurer's report on behalf of Hilchie, who was unable to attend. The financial statement for 1987 was circulated. The statement has been returned from the auditors. The society's bank balance as of Sept. 15, 1988 was \$5478.53. MOTION: That the treasurer's report be accepted. Gooding-Ball. CARRIED.

4.2. Editor's report.

Hergert presented the Editor's report on behalf of Mengerson, who was unable to attend. The 1986 Proceedings have been printed and were circulated during the meetings. The 1987 proceedings will be printed soon. MOTION: That the Editor's report be accepted. Spence-Heming. CARRIED.

4.3. Meeting Committee's report.

Scholefield reported that he and Pritchard received 15 submitted papers. They wished to thank Mutch for his help with the meetings, and added that future meetings should be aware of the dangers of last minute preparation of the scientific programme. MOTION: That the meeting committee's report be accepted. Heming-Jones. CARRIED.

4.4. Secretary's report.

Acorn reported no significant correspondence. MOTION: That the Secretary's report be accepted. Spence-Shimanchuk. CARRIED.

4.5. Regional Director's report.

Spence reported on developments arising from the Vancouver general meeting of the Entomological Society of Canada held in July. The ESC has purchased a house for its office space, to avoid increasing rental costs in the former space. The ESC is also changing its fee structure, increasing the costs of all categories of membership, in an attempt to lower page charges for The Canadian Entomologist. MOTION: That the Regional Director's report be accepted. Ball-Scholefield. CARRIED.

4.6. Report from the Entomological Society of Canada.

Becker, in his report, added that the new house is located on Merivale Road in Ottawa, and cost the Society \$109,000.00, paid in cash. He also reported that the Biological Council of Canada Congress has been cancelled, and that the organization is likely to disband soon. Heming asked Becker if the critique prepared by Eidt of the Agriculture Canada Research Grant Strategy has had any political impact, and Butts asked whether the Society has a media strategy prepared with respect to this issue. Becker responded that no such strategy is in place, and Shemanchuk added that Eidt plans to use the critique in a public education capacity.

4.7. President's report.

Hergert reported that the only real problem arising from the events of the last year has been the publication of the Proceedings. He expressed thanks to the executive and membership for their support of the Society, and to the Medicine Hat College, and to Mutch, Scholefield, and Pritchard. He noted that the Medicine Hat meeting is a first for the Society, as is the Cypress Hills field trip, and the upcoming meetings in Athabasca next year. MOTION: That the President's report be accepted. Hergert-Gooding. CARRIED.

5. Reports of the standing committees.

5.1. Awards Committee.

In Mitchell's absence, Gooding confirmed that the committee is active, but gave no formal report. Shemanchuk added that the ESC awarded two scholarships this year, at \$2000.00 each, and suggested that these and the ESC's travel research grants for graduate students should be advertised in the ESA proceedings.

5.2. Representative to the Environment Council of Alberta.

Shemanchuk reported that he has attended six meetings of the council, but not the annual meeting. He is now on the Rural Environment Subcommittee, which is concerned with the sustainability of the rural environment for agriculture, recreation, and wildlife habitat. It is an unstable committee, with poor attendance. The committee has prepared a sector report which, with the reports of other sectors, will be incorporated into the Alberta Conservation Strategy.

5.3. Insect Collection Competition.

Zloty, with Pike's help, judged the three insect collections submitted to this year's competition. All were considered worthy of prizes, and all were from Olds College. First prize (\$50.00) went to Al Rodermond, second (\$30.00) to Carolyn Shuhyta, and third (\$10.00) to James Brincat. MOTION: That the Insect Collection Competition Committee's report be accepted. Heming-Schaaf. CARRIED. A lengthy discussion ensued, focussing on the need for better advertising to encourage participation in the competition. Steiner noted that a general mailout to schools was unsuccessful in the past, and was discontinued. Butts reported that he has received numerous requests from high schools regarding information on entomology as a career. Phillip has been sending a pamphlet to these schools, and he agreed, at Gooding's suggestion, to include a sheet about the contest with this pamphlet. Hergert also expressed concern that the Insect Collector's Guide is now in short supply, and should be reprinted. Pritchard replied that he still has a few hundred left, which he distributes upon request. Spence added that the Provincial Museum of Alberta is beginning a junior entomologist programme, which may find a use for the Guide, and could be approached when the time comes to reprint it.

5.4. Resolutions committee

MOTION: Whereas the success of the 36th Annual Meeting of the Entomological Society of Alberta can, to a large extent, be attributed to the following, be it resolved that

- a) a letter of appreciation be sent to Mr. Charles Meagher, President of Medicine Hat College, for providing facilities of the college in which the meeting was held,
- b) a letter of appreciation be sent to Evelyn Kleis, alias "Dr. Natasha Kleis," for her entertaining, enlightening, and inspirational after-dinner talk on "The Zen of Entomology,"
- c) a vote of thanks be extended to Dr. R. Mutch for the excellent job he has done in making the local arrangements and to his wife Cynthia for providing from her garden the flower arrangements which decorated the tables at the banquet,
- d) a vote of thanks be extended to W. A. Nelson for the many photographs he has taken during the meeting for inclusion in the Proceedings,
- e) a vote of thanks be extended to E. Becker, Past President of the ESC, for taking the time to honour our society with the National Presence,
- f) a vote of thanks be extended to Alberta Environment for publicizing the meetings,
- g) and finally that a vote of thanks be extended to P. Scholefield and G. Pritchard for organizing the scientific programme and to the section chairmen and participants in the programme.

Gooding-Byers. CARRIED.

5.5. Science Fair Liason Committee

Hergert reported that at present this is a moribund committee, waiting for some form of provincial coordination of science fairs.

5.6. Profiles of Alberta Entomologists

Paul Riegert reported that he has had a tremendous response, from 68 professional entomologists, and 28 amateur naturalists and collectors. He still needs response from seven professionals, and a copy of the ESA logo.

6. New Business.

6.1. Nominations Committee Report.

The Nominations Committee presented the following slate: President: Gordon Pritchard, Vice-President: Burt Schaber, Secretary: John Acorn, Treasurer: Gerald J. Hilchie, Editor: W. George Evans, Directors: P. Scholefield, Albert Finnermore, R. Butts, Regional Director to the ESC: John Spence, Insect Collection Competition: Jack Zloty, Environment Council of Alberta: J. A. Shemanchuk. MOTION: That the slate be accepted. Pritchard-Heming. CARRIED.

6.2. Joint Meeting with the ESC.

MOTION: That Gordon Pritchard be appointed chairman of the organizing committee. Hergert-Shemanchuk. CARRIED.

6.3. Next Annual Meeting.

Holmberg extended an invitation to the society, to hold the next annual meeting at Athabasca University. MOTION: To accept this invitation. Shemanchuk-Ball. CARRIED. Holmberg suggested September 19th, 1989 as an appropriate date for the meeting.

6.4. Public Relations.

Pike made the suggestion that the society should have a director of public relations, given the concerns raised earlier about the insect collection competition. MOTION: That the executive look into the possibility and desirability of this idea. Shemanchuk-Pike. CARRIED. Ball added that the ESC has a committee concerned with this matter, with Spence as a member.

7. Adjournment.

MOTION: That the meeting be adjourned. Philip-Carr. CARRIED.

Financial Statement (Audited)

Gerald J. Hilchie, Treasurer

Credits

Bank assets, December 31, 1986		6489.83
Memberships		
1988 77 @ \$4.00	308.00	
1987 24 @ \$4.00	96.00	
1986 2 @ \$4.00	8.00	
exchange, one transaction	1.20	
Library subscriptions		
5 @ \$6.00 plus exchange	32.70	
	<u>445.90</u>	445.90
Annual meeting, 1987		
Registration and Banquet		
53 @ \$15.00	795.00	
Cash bar	87.00	
	<u>882.00</u>	882.00

Miscellaneous

Bank interest	331.41	
Bank credit adjustment	1.22	
	<u>332.63</u>	332.63
		<u>\$8150.36</u>

Expenditures

Proceedings 1986, no charges received

Proceedings 1987

Photography honorarium, 1987	150.00	
Photographic supplies	25.50	
	<u>175.50</u>	175.50

Annual Meeting 1987

Reception	190.10	
Banquet	509.00	
Bartender	25.00	
Liquor	172.65	
Keynote speaker, travel & accomodation	237.75	
Keynote speaker, honorarium	50.00	
Afterdinner speaker, gift	49.90	
Donation, Friends of the Tyrrell Museum	100.00	
Local arrangements	7.40	
	<u>1341.40</u>	1341.40

Executive Meetings

Travel claim	101.56	101.56
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Miscellaneous

Bank service charges	5.89	
Postage and Stationary	70.82	
Photocopy charges	28.64	
Reservation deposit, Banff Centre	1000.00	
Science Fair book prizes	45.90	
Insect collection book prizes	46.79	
	<u>1198.04</u>	1198.04

\$2816.50

Balance summary

Bank Assets (December 31, 1987)

Total Disbursements

\$5333.86
\$2816.50

Grand Total

\$8150.36

REGIONAL DIRECTOR'S REPORT

J. R. Spence

International Congress of Entomology The Congress, hosted by the Entomological Society of Canada, was held in Vancouver on the campus of the University of British Columbia in July. It was a great success. Dr. G. G. E. Scudder organized an exceptional Congress that our society can be proud to have contributed to.

Annual Meetings of ESC The 1989 annual meeting of the ESC will be hosted by the Acadian Entomological Society and will be held in St. John's, Newfoundland on October 1 - 4. In 1990 the ESC will meet with our Society. A tentative booking has been made with the Banff Conference Centre for 7-10 October.

Purchase of Office Space in Ottawa by the ESC Substantial rent increases for office space presently used by the national society and a burgeoning real estate market in Ottawa have prompted the ESC to purchase a house as permanent headquarters. The property is located at 959 Merivale Road and is priced at \$109,000. The Governing Board approved the purchase with the funds coming from ESC investments and savings.

Graduate Research -Travel Grants The Board approved a proposal to initiate a program to provide up to two research-travel grants to deserving graduate students each year, starting in the 1989-90 academic year. The grants are aimed at supporting students whose research project would directly benefit from a short - term visit to another laboratory. These grants are to be offered in addition to the ESC Scholarships.

ESC Fee Increase The finance committee undertook a detailed study of Society finances with particular reference to our publications and recent trends in membership. Many young scientists who have recently dropped out of the ESC have identified high page charges and unexciting publications as reasons for their decision to leave the Society. Thus, the committee recommended a series of sweeping changes to our financial structure aimed at improving our publications.

The following changes were recommended by the Governing Board and approved at the annual meeting of the ESC:

- a. regular membership fees to be increased to \$80 with optional purchase of the Memoirs for an additional \$20,
- b. sustaining membership fees increased to \$200,
- c. student membership fees increased to \$40 with an option to have the Memoirs for no extra charge,
- d. institutional subscriptions to be increased to \$170 (Canada), \$180 (USA) and \$190 (elsewhere),
- e. page charges for the Canadian Entomologist and the Memoirs to be reduced to \$25.

These changes bring our fee structure in line with those of other national and international professional societies and should make our publications more attractive and useful. I urge members of the Entomological Society of Alberta to support these changes.

REPORT OF REPRESENTATIVE TO THE ENVIRONMENT COUNCIL OF ALBERTA

J. A. Shemanchuk

The Rural Environment Sub-committee, of which I am a member, is responsible for studies on the sustainability of the rural environment for agriculture, residential and recreational use and the wildlife it supports. The Rural Environment Sub-committee is just completing its second year. As a new committee we had trouble in establishing a regular membership. A reduction in budget further reduced the effectiveness of the committee by reducing the number of meetings per year.

The main activity of the committee for this year was the completion of the sector report for the Alberta Conservation Strategy, dealing with agricultural considerations for to-day and to-morrow. Other sector reports prepared by other Sub-committees are as follows: Biological diversity, coal, environmental education, fish and wildlife, forestry, heritage resources, minerals, oil and gas, parks and outdoor recreation, renewable energy, tourism, urban environment, and wetlands. Each of these sectors represents an activity which utilizes some aspect of air, land and water and therefore these are not dealt with separately. The sector reports focus on the interaction between sectors in Alberta's Environment. The objective of the Alberta Conservation Strategy is to increase compatibility between sectors. The discussion papers on the various sectors have been printed and can be obtained from The Environment Council of Alberta office. Public Hearings on the Alberta Conservation Strategy are expected in 1989. Mr. Alistair Crerar, Chief Executive Officer of the Environment Council of Alberta accepted a post in Pakistan and, to date, a replacement has not been appointed.

EDITOR'S COMMENTS

W. G. Evans

Prior to being printed, a camera-ready copy of these Proceedings was produced entirely on a personal computer, (assisted by George Braybrook, Department of Entomology, University of Alberta) marking the end of an era of typewritten entries. Computer-produced copy is faster and easier to assemble and much more flexible in terms of formatting and graphics. Thus, we can expect improvements in the physical appearance of the Proceedings, such as the use of a mixture of fonts and sizes of fonts, multicolumn pages, and perhaps a smaller size. Members of the Society will also be freed of the restriction of the use of graphs and other figures, the need for which occasionally arises at annual meetings.

PHOTOGRAPHIC HIGHLIGHTS

insect art by Dale Beaven		Meeting site - 1988 Entomological Society of Alberta		Medicine Hat College landscape		
Paul Riegert Jim Jones Bob Byers		Rick Butts Bertha Carr John Carr		Gordon Pritchard John Carr Bert Carr		
R. Lancaster Hugh Philip Joe Shemanchuck		Jerry Weintraub Bob Mutch		Charles Meagher President - Medicine Hat College Gordon Pritchard		
Marcus Eymann Bob Byers		Bert Schaber Marjorie Horne		Mostly Old Guard		
Ed Becker Joe Shemanchuck		Lee Lomas Colin Hergert		Bert Fিন্নamore George Ball Robin Owen		
Bombus sp. courtesy of Robin and Judy Owen		Marilyn Steiner		Pat Scholefield Gordon Pritchard Bill Nelson - our esteemed photographer		



36TH ANNUAL MEETING — MEDICINE HAT

Pat Scholefield	Ron Linowski	Al Schaaf	Gordon Pritchard	theropod dinosaur- <i>Coelophycis?</i>
Margaret Nelson	Terry Thormin		Jessica Ernst	
Marjorie Horne	John Acorn		S. O'Neill-Whitehead	
	Greg Pohl		R. Lancaster	
	John Spence			
Jerry Weintraub	Bruce Heming	Bill Nelson	Gordon Pritchard	John Acorn
Joe Shemanchuk				
Pat Scholefield	Kay Ball	Ron Linowski	Evan Gushel	Hazel Gushul
Cynthia Mutch	Margaret Nelson			Joe Shemanchuk
				Jerry Weintraub
R. Lancaster	Margaret Nelson	Terry Thormin	Alan Schaaf	Margaret Nelson
Rick Butts	Paul Riegert		Clara Shemanchuk	Marilyn Steiner
Judy Owen	B. Riegert		Hugh Philip	Joe Shemanchuk
	Ed Becker			
Jessica Ernst	T. Pike	John Acorn		More old guard
		Colin Hergert		
tropical		Rick Butts		Gordon Pritchard -
tipulid	Ed Becker	Bert Finnermore	Jim Jones	a quiet break
		George Ball	baby Jones	
		Joe Shemanchuk		
		Paul Riegert		

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