

Proceedings of the Thirty-Fifth Annual Meeting of the



Entomological Society of Alberta

October 15-17, 1987
Tyrell Museum of Palaeontology
Drumheller, Alberta

PROCEEDINGS OF THE
35TH ANNUAL MEETING
OF THE
ENTOMOLOGICAL SOCIETY OF ALBERTA

October 15-17, 1987

Tyrell Museum of Palaeontology
Drumheller, Alberta

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TABLE OF CONTENTS

President's Report

ESA - B. Mitchell	1
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Abstracts of Submitted Papers

The brown wheat mite: A new pest of barley in southern Alberta. J. R. Byers	3
Use of a geographic information system for analysis of grasshopper outbreak patterns. D. L. Johnson	3
Timing application of <u>Nosema locustae</u> bait to increase infection of grasshoppers. D. L. Johnson	4
Courtship behaviour of <u>Dolomedes triton</u> (Araneae: Pisauridae): Variations on a theme. J. P. Wojcicki	4
Crossvein position as an aerodynamic adaptation in the Siphonini (Diptera: Tabanidae) J. E. O'Hara	5
Metabolism of "Excess tryptophan" by adult female tsetse flies. R. W. Gooding & B. M. Rolseth	5
Effect of insect and vertebrate steroids on salivary gland degeneration in the Isodid tick, <u>Amblyomma americanum</u> L. Paul J. Lindsay & W. R. Kaufman	6
Comparative feeding behaviour of three <u>Leptinotarsa</u> Species (Coleoptera: Chrysomelidae) Janet L. Haley	6
Gamete production by males of <u>Hebrus ruficeps</u> Thomson and <u>H. pusillus</u> (Fallen) (Heteroptera: Hebridae) K. E. Heming-van Battum & B. S. Heming	7
<u>Patrobis fossifrons</u> and <u>P. stygicus</u> in Western Canada: A test of taxonomic status (Coleoptera: Carabidae: Patrobini) Greg R. Pohl	8
The Life cycle of <u>Unionicola crassipes</u> (Muller) in a foothills pond (Acari: Unionicolaidae) Heather C. Proctor	8

Thrips: Pests in Central Philippines	
Cecilia P. Abecia	8
The oogenesis-flight syndrome in three Nearctic <u>Gerris</u> species.	
J. R. Spence	9
Turret construction by females of the alfalfa weevil predator,	
<u>Odynerus dilectus</u> .	
B. D. Schaber	9
Thrips and predators monitoring program on greenhouse cucumbers.	
M. Steiner	10
Photographic Highlights (W. A. Nelson)	12
Minutes of the Executive Meeting, August 29, 1987	17
Minutes of the Executive Meeting, October 15, 1987	19
Minutes of the Annual Meeting, October 17, 1987	21
Financial Statement - ESA - 1986	26
List of Members	28

ENTOMOLOGICAL SOCIETY OF ALBERTA

President's Report for 1987

The executive met twice during the year, once in August and again at the Annual Meeting in Drumheller. The Profiles of Alberta Entomologists was the major item of business, and during the year we moved toward completion of the project. At the time of the annual meeting, information from some tardy members was all that remained of the data collection phase. As a Society, we thank Dr. Paul Riegert for the time he has devoted to this project, and for his encouragement and guidance to the Society over the protracted time required to assemble the data. In 1987, we also decided to raise the membership fee in 1989. This will be the first increase in fees in fifteen years. Other business concerned the initial stages of planning for the joint meeting with the Entomological Society of Canada to be held in Banff, Alberta in 1990.

During the past two years, the Society had the good fortune of being hosted by two museums, namely, the Provincial Museum in Edmonton and, this year, the Tyrrell Museum of Paleontology, Drumheller. These institutions and the members and non-members involved in arrangements have provided exceptional venues for our meetings. The choice of the Tyrrell was also made with the idea in mind that the Society could benefit from meeting in smaller centres from time to time. This trend continues with the Medicine Hat meeting in 1988 and the 1989 meeting in Athabasca. I would encourage the Society to continue to seek opportunities to meet in some of our less often visited places.

Finally, I wish to express my appreciation for the opportunity to serve the Society as President. I also thank the other members of the Executive for their valuable efforts on behalf of the Society and for their spirit of cooperation.

B. K. Mitchell
President, 1987

ABSTRACTS OF SUBMITTED PAPERS

THE BROWN WHEAT MITE A NEW PEST OF BARLEY IN SOUTHERN ALBERTA

J. R. Byers

Agriculture Canada Research Station, Lethbridge, AB

The brown wheat mite, Petrobia latens, is worldwide in distribution and is a pest of small grains in many countries. In North America it has sometimes been a pest of minor importance on winter wheat in Kansas, Oklahoma, Colorado and Utah. Damage is most likely to occur in dry years; usually after a succession of dry years. The brown wheat mite has recently become abundant in southern Alberta in fields continuously cropped to cereals. In both Montana and Alberta the mite is associated with a newly described disease of barley called "barley yellow streak mosaic". Various aspects of this association are discussed.

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USE OF A GEOGRAPHIC INFORMATION SYSTEM FOR ANALYSIS OF GRASSHOPPER OUTBREAK PATTERNS

D. L. Johnson

Agriculture Canada Research Station, Lethbridge, AB

A geographic information system (TYDAC SPANS) with statistical and modelling capabilities is used in the analysis of the distribution and abundance of grasshoppers in Alberta. It allows the production of contour maps, the rapid mapping of population and weather data, and a method of measurement of association between geographic variables. New methods for choosing initial contour map weighting parameters have been from spatial autocorrelation correlograms. The Alberta grasshopper application consists of 17 years of roadside and field survey data, and will eventually include heat accumulation, rainfall, soil attributes and insecticide usage patterns.

Ecological analysis of changes in distribution and abundance is made possible by the system's ability to build models with maps as variables, and to construct maps of calculated variables such as population growth rate. The system will be used for assessment of insecticide spray programs, grasshopper sampling methodology and forecasting.

**TIMING APPLICATION OF NOSEMA LOCUSTAE BAIT
TO INCREASE INFECTION OF GRASSHOPPERS**

D. L. Johnson

Agriculture Canada Research Station, Lethbridge, AB

As part of a study aimed at increasing the proportions of treated grasshopper populations infected with the entomo-pathogen Nosema locustae, I compared early application (June 26, 2.9% adult), late application (July 16, 84% adult) and double application (early and late). Four randomized blocks of rangeland in Alberta, Canada were divided into four 40-acre plots each, and treated with wheat bran bait at a rate of 2.5 kg/ha, equivalent to 3×10^6 spores/ha. Population density was monitored by weekly counts in permanent 0.25-m steel quadrats. Infection rate on a given sampling date was determined by individually grinding 60 grasshoppers from each of the 16 plots and classifying the degree of infection according to the incidence of spores found in hanging drops suspensions at 400 Mag.

Reductions in grasshopper abundance (adjusted against changes in abundance in the control plots) of ca. 30% were observed over 9 weeks following the early application (orthogonal contrasts, $P > 0.1$). The late treatment and double treatment resulted in significantly higher proportions of the grasshoppers becoming infected, and in higher frequencies of heavy infections. Adult female Melanoplus infantilis collected from the late treatment and double treatment plots were commonly found to be heavily infected. Conclusion: If attempts at effecting significant grasshopper mortality with N. locustae are abandoned in favor of maximizing the rate of infection, then later application, or double treatment, should be adopted.

=====

**COURTSHIP BEHAVIOUR OF Dolomedes triton
(ARANEAE: PISAUROIDAE): VARIATIONS ON A THEME**

J. P. Wojcicki

Department of Entomology, University of Alberta, Edmonton, AB

Four aspects in the courtship of the fishing spider Dolomedes triton were observed in the field and recorded on videotape. These aspects are: 1) males actively search for, and cohabit with sub-adult females, 2) males do not exhibit any intermale aggression over mates, 3) the courtship behaviours of these study populations differ from those described for other populations and 4) cannibalism on males by females appears to be prevalent. The importance and function of these aspects is mentioned.

**CROSSVEIN POSITION AS AN AERODYNAMIC ADAPTATION
IN THE SIPHONINI (DIPTERA: TABANIDAE)**

James E. O'Hara

Department of Entomology, University of Alberta, Edmonton, AB

The Siphonini comprise a monophyletic tribe of about 300 described and many undescribed species. Position of crossvein dm-cu, expressed as the ratio of distal length of vein CuA : proximal length of CuA , was calculated for 304 species in 18 Siphonine taxa. Means of dm-cu position along vein CuA were plotted against means of vein CuA length for each of these 18 taxa. A positive correlation was found (linear regression line with slope of -0.7), with large Siphonines (ca. 5mm in length) having crossvein dm-cu relatively near the wing margin and small Siphonines (ca. 2mm in length) having dm-cu displaced towards the middle of the wing. It is speculated that the latter (derived) condition is aerodynamically more efficient for flight in smaller Siphonines.

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**METABOLISM OF "EXCESS TRYPTOPHAN"
BY ADULT FEMALE TSETSE FLIES**

R. H. Gooding and B. M. Rolseth

Department of Entomology, University of Alberta, Edmonton, AB

In normal adult Glossina morsitans morsitans, the head contains about 40 micrograms of zanthommatin. This is synthesized from tryptophan while the pharate adult is in the puparium. The ability to metabolize tryptophan, at least as far as kynurenine, is retained in adult flies and kynurenine appears to be a normal excretory product. The two enzymes involved in production of kynurenine, tryptophan oxygenase (TO) and kynurenine formamidase (KFA), have been demonstrated in post-teneral flies. Levels of TO and KFA undergo cyclic changes in females fed daily during the second larviposition cycle. A similar cycle occurs when females are given a single blood meal 24-48 hours after depositing their first larva. Up to eight days after a single blood meal, in the second larviposition cycle, the levels of KFA, and to a lesser extent TO, are correlated with the weight of the fly, at the time of the assay, and with the weight of the blood meal.

EFFECT OF INSECT AND VERTEBRATE STEROIDS ON SALIVARY GLAND
DEGENERATION IN THE IXODID TICK, AMBLIOMMA AMERICANUM L.

Paul J. Lindsay and W. R. Kaufman

Department of Zoology, University of Alberta, Edmonton, AB

In female ixodid ticks, autolysis of the salivary gland after the bloodmeal is triggered by a 'tick salivary gland degeneration factor' (TSGDF), which is probably an ecdysteroid. The following ecdysteroids (all at 1 g/ml) induce salivary gland degeneration after 4 days in culture with TC medium 199: cyasterone, ecdysone, 20-hydroxyecdysone, muristerone A, polypodine B, ponasterone A, ponasterone C. Vertebrate steroids (cortisol, B-estradiol, progesterone, testosterone) and 2-deoxyecdysone (all at 1 g/mL) did not induce salivary gland degeneration. Rather, they all significantly improved fluid secretory competence. Structural requirements for causing salivary gland degeneration in Amblyomma americanum appear similar to those generally required for ecdysteroid activity in insects.

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COMPARATIVE FEEDING BEHAVIOUR OF THREE LEPTINOTARSA SPECIES
(COLEOPTERA: CHRYSOMELIDAE)

Janet L. Haley

Department of Entomology, University of Alberta, Edmonton, AB

Leptinotarsa decemlineata, L. haldemani and L. texana are oligophagous for the plant family Solanaceae. Behavioural responses of beetles to intact leaves is used to rank leaf preferences for species of beetle. Each beetle was directly observed on each of four solanaceous plants: Solanum tuberosum, S. dulcamara, S. eleagnifolium and Lycopersicon esculentum. Time to approach the leaf was characteristic for species of beetle and did not vary for species of plant. Time spent exploring the leaf decreased and number of bites increased on preferred plants. L. decemlineata prefers S. tuberosum and S. dulcamara to S. eleagnifolium and L. esculentum. L. haldemani prefers S. tuberosum, S. dulcamara and L. esculentum to S. eleagnifolium. L. texana prefers S. eleagnifolium to S. tuberosum, S. dulcamara and L. esculentum. This information will be used in interpretation of electrophysiological responses of these beetles to plant saps.

**GAMETE PRODUCTION BY MALES OF Hebrus ruficeps THOMSON
AND H. pusillus (FALLEN) (HEMIPTERA, HEBRIDAE)**

K. E. Heming-van Battum and B. S. Heming

Department of Entomology, University of Alberta, Edmonton, AB

Males of these bugs are only 1.2 to 1.9 mm long but produce sperm over 2 mm long. These develop in 2 large testes of 2 follicles each. Two to 5 stem spermatogonia in the germarium of each follicle periodically divide mitotically to yield a single definitive spermatogonium and a replacement stem cell. Each definitive spermatogonium is surrounded by 2 mesodermal cyst cells derived from the inner sheath of the follicle and subsequently divides by synchronous mitosis to yield a cyst of 8 primary spermatocytes. These greatly enlarge (by 79-fold in cysts of *H. ruficeps* and by 43-fold in those of *H. pusillus*) and undergo 2 synchronous meiotic divisions to yield a clone of 32 interconnected spermatids. As these undergo spermiogenesis, the lengthening spermatid bundle gradually assumes a circular orientation about the periphery of the follicle at its base where its sperm mature. It is soon joined by many others.

In mid-August, individual sperm bundles begin to coil at the base of the follicle adjacent to the opening of the vas efferens. A circular muscle about this exit duct relaxes and each bundle enters the duct head-end-first and ruptures, its spermatozoa entering the duct individually and its cyst cells degenerating.

By mid-November most spermatozoa have moved out of the follicle, down the vasa deferentia and into the seminal vesicles where they are stored until the following spring. Stem spermatozoa and a few young spermatocyte cysts remain behind in the germarium of the follicle but cysts of older spermatocytes and of spermatids degenerate. Later in spring, stem spermatogonia are re-activated in follicles of both bugs to produce a new generation of sperm bundles.

The development of the testis in juveniles is described and the significance of long sperm is discussed in terms of sexual selection theory.

PATROBUS FOSSIFRONS AND P. STYGICUS IN WESTERN CANADA: A TEST
OF TAXONOMIC STATUS (COLEOPTERA: CARABIDAE: PATROBINI)

Greg R. Pohl

Department of Entomology, University of Alberta, Edmonton, AB

Patrobus fossifrons Eschscholtz and P. stygicus Chaudoir are two closely related carabid species which occur in sympatry in southwestern Canada. The competing hypotheses of Darlington (1938), that P. stygicus is a subspecies of P. fossifrons, and Lindroth (1961), that both are distinct species, were tested. Based on morphometric differences and evidence of a barrier to hybridization between P. fossifrons and P. stygicus, the conclusion of Lindroth is upheld.

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THE LIFE CYCLE OF UNIONICOLA CRASSIPES (MULLER)
IN A FOOTHILLS POND (ACARI: UNIONICOLIDAE)

Heather C. Proctor

Department of Biological Sciences
University of Calgary, Calgary, AB

Unionicola crassipes (Muller), a common holarctic water mite, has an exceedingly complex life cycle. It has been reported to exhibit two generations per year in Europe, but most North American populations seem to be univoltine. U. crassipes was studied in a pond near Bragg Creek, Alberta. Overwintering stages are primarily nymphs and fertilized females. In early spring, females lay eggs in the tissues of freshwater sponges, and nymphs seek out this same refuge to undergo development to adults that will mate in the fall. Sex ratio of these overwintered adults is female-biased. Larvae hatching from the eggs parasitize chironomid adults, then return to the pond to develop into overwintering nymphs. In the adult stage, there appears to be growth of sclerotized structures. I conclude that U. crassipes has a semi-voltine (2 year) life cycle from egg to ovipositing female in this study pond.

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THRIPS: PESTS IN CENTRAL PHILIPPINES

Cecilia P. Abecia

Department of Entomology, University of Alberta, Edmonton, AB

Early records of thrips in Central Philippines show thrips had been collected sporadically from plantation crops such as sugarcane and mango. Visits to these plantations this year showed that these little known insects have become pests of plantation crops. Annuals such as watermelons, legumes and solanaceous crops also suffer from infestation of thrips. The damage is quite severe which has sparked the enthusiasm of local entomologists to study the life history of thrips.

THE OOGENESIS-FLIGHT SYNDROME IN
THREE NEARCTIC GERRIS SPECIES

J. R. Spence

Department of Entomology, University of Alberta, Edmonton, AB

Proportion of summer generation progeny electing to breed without diapause decreases with permanence of habitat among the three Gerris species common on prairie ponds. In G. buenoi and B. pingreensis there was no significant difference in total fecundity or survival between dispersal and flightless morphs of the same generation. However, in both species flightless females had significantly shorter preoviposition periods than fully winged females leading to significantly greater egg production in the first ten days of adult life. Gerris pingreensis, which occupies the most permanent habitats, is the only species in which flightless individuals regularly enter diapause. Determination of wing morph in G. pingreensis has a genetic basis, but it is not based on simple Mendelian inheritance. In G. buenoi and G. comatus, which occupy habitats of intermediate permanence, wing dimorphism is determined entirely by an environmental switch mechanism and the flightless morph is almost exclusively found among summer generation reproductives. Diapause induction and wing morphism are only loosely associated. All three species are partially bivoltine in central Alberta. Diapause is apparently induced by photoperiod changes occurring after the summer solstice, but there is considerable variation in sensitive stage in all species. It is suggested that some genotypes are exclusively univoltine in G. pingreensis.

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TURRET CONSTRUCTION BY FEMALES OF THE
ALFALFA WEEVIL PREDATOR, ODYNERUS DILECTUS.

Burton D. Schaber

Agriculture Canada Research Station, Lethbridge, AB

A search is being conducted to determine the indigenous parasites and predators of the alfalfa weevil, Hypera postica (Gyll.), in Alberta. Observations were made at a study site in a seed alfalfa field located about 48 km southeast of Brooks, Alberta. Flight activity of adults in southern Alberta commenced in early June (males 4-11, females 7-20) and ended the third week in August. Activity in the nesting areas increased dramatically after emergence of females about 11:00 a.m. Females of Odynerus dilectus construct turrets that can vary in height from 1.25 cm to 3.00 cm, but they can be of 4 different shapes. A total of 1095 turrets were examined on a single day in late July. The results showed that 81% of the turrets constructed were straight, 11% were curved, 7% were pipe-shaped and 1% were horseshoe-shaped. The straight turrets were always perpendicular to the ground, even on angular surfaces.

THRIPS AND PREDATORS MONITORING PROGRAM ON GREENHOUSE CUCUMBERS

Marilyn Steiner

Alberta Environment Centre, Vegreville, AB

Don Elliott

Applied Bio-Nomics, Sydney, B.C.

Art Tellier

A. S. C. H. R. C., Vegreville, AB

A monitoring program was undertaken to determine the efficacy of a predatory mite (Amblyseius cucumeris) in reducing populations of western flower thrips (Frankliniella occidentalis) and lowering the percentage of scarred fruit on greenhouse long English cucumbers. Preliminary results indicate that A. cucumeris will establish itself and reduce the level of scarred fruit to <10%. In the greenhouses where no insecticides were applied, native predators were present in noticeable numbers, e.g., damsel bug, Nabis sp., and minute pirate bug, Orius sp. These two species are presently being observed for the possibility of mass rearing. Monitoring consisted of washing 25 cucumber leaves per 20,000 sq. ft. of greenhouse space and counting the number of A. cucumeris and thrips larvae to determine an acceptable ratio. Studies will be continued on the fall 1987 crop and for the spring and fall crops of 1988.

The

way

we

were

October 1987

Photos by W. A. Nelson

Heading North	As it was	Tyrrell	Some spread!		
T. Pike R. Holmberg S. Schaaf	J. Haley A. Schaaf J. Jones	J. Spence J. Zloty	J. Acorn R. Gooding	Tell us too! R. Gooding A. Hergert C. Hergert	
J. Jones J. Shemanchuk R. Byers A. McClay	A. Tellier B. Schaber	J. Jones R. Gooding	P. Riegert B. Schaber B. Riegert	No?	
C. Hergert G. Hilchie	B. Mitchell	B.G. Naylor Museum	J. Byers	D. Johnson	squashed
J. Wojcicki	Tachinid	Xiphactinus		G. Griffiths	J. O'Hara
D.C. Wightor	R. Gooding	P. Lindsay	M. Zimmerman	B. Heming	J. Haley Family
G. Pohl	H. Proctor	C. Abecia	J. Spence	Albertosaurus Carnivore	Trilobite



35TH ANNUAL MEETING - DRUMHELLER

Edmontonia grubbing in the foliage		Dinner B. Schaber B. Byers P. Riegert R. Byers B. Riegert		Gerrid	Etc.
B. Mitchell introduc- ing	S. Andrews	J. Acorn	The Prize		Ammonites and things
A. Tellier	C. Darwin	B. Schaber	Coffee		B. Mitchell A. McClay G. Hilchie
Take care!		Time to relax		C. Hergert	Paleodictyoptera
P. Riegert	Attentive	But I was saying		Joe's Report	The one that got the one that got away
Its done with mirrors!		P. Scholefield	Row on row	W. Barr	S. Gooding R. Gooding G. Pritchard V. Preuter
M. Dolinski	Crinoids		Clara & Joe		A last look

MINUTES

ENTOMOLOGICAL SOCIETY OF ALBERTA

EXECUTIVE MEETING

Date: Saturday August 29, 1987.

Place: Room 2-27C, Earth Sciences Building, University of Alberta

Present: Bev Mitchell (Chair), Ron Gooding, Colin Hergert, Gerry Hilchi, Alec McClay, Jim Ryan, Burt Schaber, John Spence.

1. Call to order
 - meeting called to order at 12:35 p.m.
2. Approval of agenda
 - MOTION:** That the agenda be approved as circulated with the addition of two items by the President.
 - Gooding - Hergert **CARRIED.**
3. Adoption of minutes.
 - MOTION:** That the minutes of the executive meeting of November 6, 1986 be adopted as circulated.
 - Hilchie - Hergert **CARRIED.**
4. Review of minutes of Annual Meeting of November 7, 1986.
 - no changes were suggested for these minutes.
5. Business arising from previous meetings.
 - 5.1 Profiles of Alberta Entomologists
 - Mengersen has circulated a request for biographical information for this project. So far responses have been slow.
 - 5.2 Arrangements for annual meeting.
 - Mitchell reported that these were well in hand. Ted Pike is in charge of local arrangements. He has arranged for meeting facilities at the Tyrrell Museum of Palaeontology and the reception will be at his home. The banquet will be held at a local school. The scientific program committee has been constituted by Jim O'Hara and John Acorn with assistance from Hilchie. The call for papers has been mailed out. It was agreed that it would be appropriate to invite a guest speaker on a theme related to insect palaeontology, and that this talk should be open to the public. Some names were suggested.
 - MOTION:** That the scientific program committee be authorized to invite a guest speaker from within North America, with payment of expenses.
 - Schaber - Spence **CARRIED.**
 - A further mailing will be made with details of accommodation, address for the reception, the photo salon and registration costs.
 - 5.3 Photo salon.
 - it was agreed that a non-competitive photo salon be held as last year. It was also suggested that members might provide insect fossil material for display at the meeting.

- 5.4 Grant to International Congress of Entomology.
Hilchie reported that a cheque for \$2000.00 had been sent to the International Congress.
6. Treasurer's report.
- Hilchie reported that the balance in the Society's account was \$6698.35.
MOTION: That the treasurer's report be accepted.
Ryan -Spence. **CARRIED.**
7. Secretary's report.
- There was no significant correspondence to report other than that dealt with elsewhere in the meeting.
8. New business.
- 8.1 Gold Medal and Hewitt awards.
- Mitchell read a letter from Doug Eidt, Chairman of the E.S.C. Achievement Awards Committee requesting that E.S.A. consider nominating candidates for these awards. Gooding reported that as chairman of the E.S.A. Awards Committee he was soliciting nominations. It was agreed that this committee was fully responsible for making these nominations and submitting them to E.S.C. McClay will reply to Eidt that this is in hand.
- 8.2 Correspondence from E.S.C.
- Mitchell read a letter from Ed Becker, incoming president of E.S.C., to the effect that he will be unable to attend E.S.A.'s annual meeting because of overlap with the Entomological Society of Ontario's meeting.
- 8.3 E.S.C. committees.
- A request has been received from E.S.C. for E.S.A. representatives to serve on the Common Names, Public Education, Membership and Scholarship committees. It was agreed that as Regional Director to E.S.C., John Spence would represent E.S.A. on all these committees. McClay will inform the president of E.S.C. of this decision.
- 8.4 Promotion of Entomology.
- The City of Lethbridge has requested information on the Society's activities for inclusion in their Adult Leisure Activity Guide. Schaber will respond.
- 8.5 Council members checklists.
MOTION: That each council member make a checklist, for the use of his or her successor, of annual duties, the times at which they should be carried out, and names and addresses of people to whom they have obligations connected with their Society responsibilities.
Gooding - Spence. **CARRIED.**
9. Next executive meeting.
- It was agreed to hold the next executive meeting on Thursday, October 15, at 5 p.m. in the Drumheller Inn.
10. Adjournment.
- Meeting was adjourned at 3:15 p.m. on a motion by Spence.

ENTOMOLOGICAL SOCIETY OF ALBERTA

EXECUTIVE MEETING

MINUTES

Date: Thursday October 15, 1987

Place: Boardroom, Tyrrell Museum of Palaeontology, Drumheller

Present: Bev Mitchell (Chair), Ron Gooding, Colin Hergert, Gerry Hilchie, Alec McClay, Jim Ryan, Burt Schaber, Pat Scholefield, John Spence and Ted Pike.

1. Call to order.

- meeting called to order at 17:15

2. Approval of agenda.

MOTION: That the agenda be approved as circulated.

Spencer - Schaber. **CARRIED.**

3. Adoption of Minutes.

MOTION: That the minutes of the executive meeting of August 26, 1987 be adopted as circulated.

Hilchie - Hergert. **CARRIED**

4. Business arising from previous meetings.

4.1 Profiles of Alberta Entomologists

- Mitchell presented a report submitted by Mengersen. 105 letters had been sent out with the biographical data forms and 35 responses had been received. Mitchell will examine this material and discuss arrangements for production of the booklet with Paul Riegert who will be here for the Annual meeting.

MOTION: That the scope of the booklet be limited to those who have practiced entomology in Alberta within the past 5 years.

Spence - Gooding. **CARRIED**

4.2 Arrangements for annual meeting.

- Ted Pike presented an update on arrangements for the meeting. There was some discussion of costs and it was concluded that the \$15 registration fee would cover the costs of the reception and banquet but not honoraria for speakers, etc. In the Society's present good financial health, this was not felt to be a problem.

5. Treasurer's report.

- The audited financial statement for 1986 was circulated by Hilchie.

MOTION: That the financial statement be received.

Hilchie - Gooding. **CARRIED**

- Hilchie also presented a verbal interim report. The Society's balance at September 30, 1987 was \$6,634.34. There was a negative cash flow during the year due mainly to the \$2,000 donation to the International Congress of Entomology and the expenses for the visiting speaker at the 1986 meeting.

- The society's membership fee was discussed.

MOTION: That Council recommend to the Annual Meeting that the membership fee be raised to \$10, effective in calendar year 1989.

Hilchie - Gooding

Hilchie pointed out that this increase was necessary to cover the cost of printing the Proceedings, and that the last increase in the fee had been in 1973. Gooding argued that the Society's funds would be better used for other purposes than subsidizing the printing of the Proceedings.

AMENDMENT: That the membership fee for students be set at \$5.

Spence - Hergert. **CARRIED AS AMENDED**

6. Secretary's Report

- There was no significant correspondence.

7. Editor's Report

- Mitchell presented a report on behalf of Mengersen who was unable to attend the meeting. The 1986 Proceedings have not been produced because of a number of problems including the loss of the copy from the word processor at Olds. Possible means of solving these problems were discussed. It was agreed that if necessary the Society could hire a person to re-enter the copy into the word processor.

MOTION: That the editor's report be received.

Gooding - Spence. **CARRIED.**

8. New Business.

8.1 Joint Meeting with Entomological Society of Canada

- Spence reported that as E.S.C. had pulled out of the joint meeting with the Biological Council of Canada in 1990, this year was now available for a joint meeting with E.S.A. 1990 was the year in which we had originally offered to host the joint meeting. Mitchell reported that the Banff Centre was available from October 6 to October 10, 1990, and that a \$1,000 deposit would be needed in the near future to secure the reservation.

MOTION: That E.S.A. host a joint meeting with E.S.C. at the Banff Centre, October 6-10, 1990.

Mitchell - Schaber. **CARRIED**

8.2 Awards Committee

- Gooding reported that a nomination for an E.S.C. award is being prepared for submission to E.S.C.

8.3 Science Fair Council

- Hergert reported that the Science Fair Council had suggested that E.S.A. might consider sponsoring a Science Fair prize. The cost would be \$100 for a "floor award" or \$250 for a "major award". At present Science Fairs are organized on a regional level and the organization of a provincial Science Fairs Council is in its early stages. It was agreed to wait until the provincial organization was in place before making any commitment to sponsor a prize.

9. Adjournment.

- Meeting adjourned at 19:00

MINUTES

ENTOMOLOGICAL SOCIETY OF ALBERTA

ANNUAL MEETING

Date: Saturday, October 17, 1987.

Place: Auditorium, Tyrell Museum of Palaeontology, Drumheller

1.0 Call to order.

- The meeting was called to order at 11:25 a.m. by B. Mitchell. There were 29 members present.

2.0 Approval of agenda

MOTION: That the agenda be approved.
B. Heming - J. Shemanchuk. **CARRIED**

3.0 Adoption of minutes.

MOTION: That the minutes of the 1986 Annual Meeting be adopted.
J. Spence - C. Hergert. **CARRIED.**

4.0 Greetings from Entomological Society of Canada

- R. Gooding presented greetings to the society on behalf of Dr. Becker, president of the Entomological Society of Canada

5.0 Business arising from the minutes.

5.1 Profiles of Alberta Entomologists

- P. Riegert, who was present at the meeting, described the project which it is hoped will be complete in time for the International Congress of Entomology in July 1988. The booklet on Entomologists of Saskatchewan is complete, that for Manitoba almost so, and those for Alberta and B. C. are in preparation. He will compile the book from data provided by E.S.A. B. Mitchell announced that the executive had decided that the booklet would include entomologists practicing in Alberta within the past 5 years plus a selection of the major historical figures. Material should be sent to E. Mengersen by December 31 for inclusion in the booklet.

6.0 Reports of officers.

6.1 Treasurer's report

- G. Hilchie presented the audited financial statement for 1986 which will be included in the 1986 proceedings when they are available. An interim report through September 1987 was circulated.

MOTION: That the financial statement be accepted.
G. Hilchie - R. Gooding. **CARRIED.**

MOTION: That the fee for full membership be increased to \$5 for students and \$10 for all others, effective for the 1989

membership year.

- J. Ryan pointed out that this was necessary to cover the cost of printing the Proceedings which is now being subsidized out of the Society's assets.

G. Hilchie - W. Nelson. **CARRIED**

- G. Hilchie presented a membership report. The Society has 106 paid up members for 1986.

MOTION: That the treasurer's report be received.

B. Heming - P. Scholefield. **CARRIED.**

6.2 Editor's report.

- In the absence of E. Mengersen, B. Mitchell presented a report. The 1986 proceedings have not yet been printed because of a number of problems but should be available within a few months. The indices are still in computer form and will be prepared by C. Hergert.

MOTION: That the editor's report be received.

R. Gooding - B. Schaber. **CARRIED.**

6.3 Meeting Committee's Report

- J. Acorn reported that 16 papers had been received for the scientific program, fewer than in previous years. He thanked G. Griffiths, G. Hilchie, and M. Zimmermann for their assistance.

MOTION: That the report of the Meeting Committee be accepted.

J. Spence - B. Heming. **CARRIED.**

6.4 Secretary's Report

- A. McClay presented a brief verbal report.

MOTION: That the Secretary's report be accepted.

C. Hergert - W. Barr. **CARRIED**

6.5 Regional Director's Report.

- J. Spence presented his report.

The Entomological Society of Canada executive met at Penticton. The annual meetings for the next 4 years will be:

1988 - Vancouver, B.C., July 3-9, in conjunction with the International Congress of Entomology

1989 - St. John's, Newfoundland, October 2 - 4.

1990 - Banff, Alberta, October 6 - 10, with E.S.A.

1991 - possibly Montreal

The executive is concerned about declining membership in E.S.C. and the Employment Committee is being restructured as a Student Affairs Committee to attract more student members. It was pointed out that E.S.C. membership fees must now be paid before January 1, 1989 to avoid a \$5 surcharge.

It has been decided that E.S.C. will pull out of the joint meeting which as to be held with the Biological Council of Canada in Laval, Quebec, in 1991, and the question of E.S.C.'s continuing affiliation to B.C.C. is under discussion. There is concern about the late appearance of the Bulletin and the executive is looking for an associate editor based in Winnipeg to speed its production. The Bulletin will now be mailed separately from

the Canadian Entomologist.

Two scholarships have been awarded. The awarding of travel grants to allow students to spend time working in other laboratories is under consideration.

MOTION: That the Regional Director's report be accepted.

B. Schaber - G. Griffiths. **CARRIED.**

6.6 President's Report

- B. Mitchell reported that the executive had met twice during the year. There had been no spring meeting because of the travels of members of the executive. The Profiles of Alberta Entomologists had been the main business. He noted that the membership fee increase to take place in 1989 will be the first in 15 years. He concluded by inviting all members to visit the new facilities of the Department of Entomology at the University of Alberta.

MOTION: That the President's report be accepted.

B. Heming - A. Tellier. **CARRIED.**

- * Editor's Note - A complete text of the President's Report can be found elsewhere in these proceedings.

7.0 Reports of Standing Committees.

7.1 Awards Committee.

- R. Gooding reported that the Committee had been active and the results of this activity would be apparent in due course.

MOTION: That the report of the Awards Committee be accepted.

R. Gooding - J. Shemanchuk. **CARRIED.**

7.2 Representation to Environment Council of Alberta

- J. Shemanchuk reported that the number of meetings of the E.C.A. has been reduced due to budget cuts. He has been transferred from the Pollution Study Group to the Rural Environment Subcommittee. The final draft of the Conservation Strategy should be ready by the time of the Annual Meeting.

MOTION: That the report of the E.C.A. representative be accepted.

J. Shemenchuk - P. Scholefield. **CARRIED.**

7.3 Insect Collection Competition Committee

- Only 2 student collections and 1 junior entry were received because of a change of requirements at Olds College. It was proposed that each entry receive a book prize.

MOTION: That the report of the Insect Collection Competition Committee be accepted.

C. Hergert - J. Ryan. **CARRIED.**

7.4 Resolutions Committee.

MOTION: Whereas the Organizing Committee of this meeting, though few in number, has put together a program that provided for an exchange of knowledge in entomology and a related field of palaeontology, be it **resolved** that the Society thank John Acorn and Jim O'Hara for their efforts;

and **whereas** local arrangements are always a very important component of a successful meeting, be it further **resolved** that the Society thank Ted and Betty Pike for their work in local arrangements, for making their home available for registration of delegates and for the reception, and also thank their sons for their help at the reception; and **whereas** the success of a scientific meeting depends on an interesting theme, be it further **resolved** that the Society thank Mr. Dennis Wighton for his very informative keynote address; and **whereas** the banquet at a meeting is a social highlight, be it further **resolved** that the Society thank Mr. Sid Andrews for his informative and entertaining after-dinner talk, Dr. H. Wescott, superintendent of the Drumheller School Division #62 for the use of the Cafeteria for the banquet, and the cafeteria staff for the delicious dinner; and **whereas** no meeting could be a success without very suitable facilities and surroundings, be it further **resolved** that the Society thank the Director and staff of the Tyrrell Museum of Palaeontology for the use of the auditorium, Mr. Sid Andrews for his projection services and all staff who provided tours of the museum for members; and **whereas** the annual meeting would not be complete without a photographic record, be it further **resolved** that the Society thank Dr. Bill Nelson for taking photographs at the meeting.

C. Abecia - J. Shemanchuk. **CARRIED.**

7.5 Science Fair Liaison Committee

- C. Hergert reported that the executive was considering sponsoring a Science Fair prize, but that no decision would be taken until the proposed new provincial organizing body for the Science Fairs was in place.

MOTION: That the report of the Science Fair Liaison Committee be accepted.

C. Hergert - B. Heming. **CARRIED.**

8.0 New Business

8.1 Election of Officers.

The Nominating Committee presented the following slate:

President	C. Hergert
Vice-President	G. Pritchard
Secretary	J. Acorn
Treasurer	G. Hilchie
Editor	E. Mengersen
Past President	B. Mitchell
Regional Director to ESC.	J. Spence
Ordinary Directors	B. Schaber (1988)
	P. Scholefield (1989)
	A. Finnamore (1990)

Environment Council

of Alberta J. Shemenchuk

Insect Collection Comp. . J. Zloty

As there were no other nominations, the slate was declared elected.

8.2 Joint Meeting with E.S.C.

MOTION: That the Society host a joint meeting in Banff with the Entomological Society of Canada, October 6-10, 1990, and that a deposit of \$1000 be paid forthwith to the Banff Centre for facilities.

R. Gooding - J. Shemanchuk.

CARRIED.

8.3 Next Annual Meeting

- G. Pritchard suggested Medicine Hat as a location for the 1988 meeting, and R. Holmberg suggested Athabasca for 1989. It was agreed that they would investigate the possibilities and report to the spring executive meeting. There was some discussion about the timing of the meeting. There was a consensus that early or mid-October was a better time than November because of better travelling conditions. However, care should be taken to avoid a clash with the Western Fourm meetings as occurred this year.

9.0 Adjournment.

The meeting adjourned at 12:25 p.m.

Entomological Society of Alberta

Financial Statement

January 1- December 31, 1987

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, 1 transactions	1.20
Library subscriptions (5@6.00, plus exchange)	<u>32.70</u>

Subtotal for memberships	445.90	445.90
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Annual Meeting 1987

Registrations and Banquet	
53 @ \$ 15.00	795.00
Cash Bar	<u>87.00</u>

Subtotal for Annual Meeting	882.00	882.00
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Miscellaneous

Bank Interest	331.41
Bank credit adjustment	<u>1.22</u>

Subtotal miscellaneous	332.63	332.63
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Total receipts		\$ 8,150.36
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Expenditures

Proceedings

1986, no charges received

1987

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

Subtotal for proceedings	175.50	175.50
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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 Tyrell Museum	100.00
Local arrangements	<u>7.40</u>

Subtotal for annual meeting	1,341.40	1,341.40
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Executive Meetings

Travel claims	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	1,000.00
Science Fair book prizes	45.90
Insect collection book prizes	<u>46.79</u>

Subtotal miscellaneous	1,198.04	1,198.04
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Total Disbursements		<u>\$2,816.50</u>
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Balance summary

Bank Assets (December 31, 1987)	\$5,333.86
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Total Disbursements	\$2,816.50
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Grand Total	<u>\$ 8,150.36</u>
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Gerald J. Hilchie
Treasurer

LIST OF MEMBERS

(Revised September 1987)

Honorary Members

Mr. J.B. Gurba,
9415 - 144 Street,
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Res.: 328-2426

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Res.: 488-1080

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