

Proceedings of the
Twenty-First Annual Meeting
of the
ENTOMOLOGICAL SOCIETY
of
ALBERTA

held jointly with the
Entomological Society of Canada



Banff Centre
October 1 - 5, 1973
Banff, Alberta, Canada

February, 1973

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Vice-President..... B. S. Heming

Secretary-Treasurer..... A. M. Harper

Editor..... H. R. Wong

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G. Pritchard - Calgary
L. K. Peterson - Edmonton

Regional Director..... W. O. Haufe

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The Twenty-first Annual Meeting of the Entomological Society of Alberta was held jointly with the Twenty-third Annual Meeting of the Entomological Society of Canada. The meeting was held at the Banff School of Fine Arts, October 1 to 5, 1973.

JOINT MEETING COMMITTEES

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Wives of committee members

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PHOTO SALON

R. A. Brust (Chairman)
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S. Zettler

PHOTOGRAPHER

E. T. Gushul

TABLE OF CONTENTS

	Page
PRESIDENT'S REPORT - Kathleen E. Ball	1
PROGRAM SYNOPSIS	2
GOLD MEDAL ADDRESS	
Colloidal Suspense - Brian Hocking	5
ABSTRACTS OF SUBMITTED PAPERS BY MEMBERS OF THE ENTOMOLOGICAL SOCIETY OF ALBERTA	
Some Teaching Aids for Entomology - B. Hocking	8
A Quantitative Feeding Study of <i>Pieris rapae</i> L. on <i>Brassica oleracea</i> L. (Lepidoptera:Pieridae) - J. K. Ryan	8
The Life Cycle and Ecology of Angle-Wing Butterflies (Polygonia:Nymphalidae) - J. Belíček	
Seasonal Biology of <i>Anopheles</i> , <i>Culex</i> and <i>Culiseta</i> at George Lake, Alberta - J. E. Hudson	9
Ingestion Studies of the Larva of the Blackfly, <i>Simulium vittatum</i> Zett. (Diptera:Simuliidae) - Mary M. Chance	9
The Zoogeography of Alberta Dytiscidae (Coleoptera) - D. J. Larson	9
The Role of Aquatic Insects in the Breakdown of Allochthonous Detritus in a Beaver Pond Ecosystem - I. D. Hodgkinson	10
Fine Structure of Labral Sense Organs of Mosquitoes - R. Lee	10
Scanning Electron Microscopy of Sense Organs on Horse Fly Antennae - Ruth Lynn Hooper	11
Population Metabolism and Biology of Oribatid Mites (Acari:Cryptostigmata) in an Aspen Woodland - M. J. Mitchell	11
Radioecology of Certain Soil Invertebrates of an Aspen Woodland Ecosystem - A. Carter	11

Pheromones of Male Noctuids - Development and Physiological Interaction of Stobbes Gland and the Hair Pencil - J. R. Clearwater	12
Air Flow and Moth Flight - M. Chance	12
PHOTOGRAPHIC HIGHLIGHTS	13
MINUTES OF EXECUTIVE MEETING - May 4, 1973	16
MINUTES OF EXECUTIVE MEETING - October 1, 1973	19
MINUTES OF THE 21ST ANNUAL BUSINESS MEETING - October 4, 1973.	22
BUDGET - ESA-ESC JOINT MEETING - J. B. Gurba	26
FINANCIAL STATEMENT 1973 - A. M. Harper	27
REPORT OF THE REGIONAL DIRECTOR - W. O. Haufe	29
REPORT OF THE INSECT COLLECTION COMMITTEE - H. Goulet	30
THE ENTOMOLOGICAL SOCIETY OF ALBERTA OFFICERS AND BANQUET SPEAKERS 1953-1973	32
CONSTITUTION	33
MEMBERSHIP LIST	37

PRESIDENT'S REPORT

The year 1973 was a most successful one for the Entomological Society of Alberta, culminating in the joint meeting of the Entomological Society of Canada and the Entomological Society of Alberta at the Banff Centre, October 1-5.

The Entomological Society of Canada medal for outstanding achievement in Canadian entomology was again awarded to one of our past presidents, this year to Brian Hocking, who, despite ill health, attended the opening sessions and delivered a stimulating address, found elsewhere in these pages.

Registration for the meetings was 198. The lieutenant governor of Alberta, the Honorable J. Grant MacEwan, addressed the banquet with wit, humour and history, regaling us with tales of early Alberta pioneers, plus a quote from that evening's newspaper concerning grasshoppers which left members searching for the local paper.

Our treasury was advanced by about \$1,000, and at the time of this writing it is planned to use some of this money to publish at least a part of the excellent symposium "Systems Approach to Pest Management" in *Quaestiones Entomologicae*.

I express warm thanks to the council of the Entomological Society of Alberta and to the steering committee under the able leadership of Gordon Pritchard. The capable and conscientious manner in which they conducted their various responsibilities was the principal source of our accomplishments.

"If we look, however, at entomology and its objects alone, we cannot fail to see at once that it is practically without limit - that there is work enough for thousands of investigators for almost innumerable generations to come". So wrote the president of the Entomological Society of Ontario in 1874. So must a society such as ours look to the future, beyond the graphs and environments of today to new horizons, where entomology is but one element in the scheme of all nature.

Kathleen E. Ball

PROGRAM SYNOPSIS

MONDAY MORNING

9:00 Entomological Society of Canada Board of Governors meeting

10:00 Registration

MONDAY AFTERNOON

1:00 Special Interest Group I

"Bertha Armyworm: Biology and Control"

3:00 Special Interest Group II

"Insecticides: Field Development"

5:00 Entomological Society of Alberta Executive meeting

8:00 Wine and cheese reception

TUESDAY MORNING

8:00 Registration continued

9:00 Opening Ceremonies

Gold Medal Award and Address

Presentation of Honorary Members

10:15 Feature Symposium

"Systems Approach to Pest Management"

TUESDAY AFTERNOON

1:45 Feature Symposium continued

3:15 Submitted Papers (two concurrent sessions)

6:00 Western Style Barbeque

WEDNESDAY MORNING

9:00 Discussion Group I

"Place of Systems Analysis in Insect Control"

9:00 Submitted Papers

WEDNESDAY AFTERNOON

1:30 Discussion Group II

"Prediction and Sampling Insect Outbreaks"

1:30 Submitted Papers (two concurrent sessions)

3:30 Entomological Society of Canada Business meeting

6:00 Cocktails

7:00 Banquet

THURSDAY MORNING

9:00 Discussion Group III

"Aquatic Fauna, Sampling, and Relation to Environmental Quality"

9:00 Submitted Papers

THURSDAY AFTERNOON

1:30 Discussion Group IV

"Mountain Fauna"

1:30 Submitted Papers (two concurrent sessions)

3:30 Report from Discussion Groups (open to all conferees)

6:00 Entomological Society of Canada Board of Governors meeting

7:15 Entomological Society of Alberta Business meeting

8:00 Natural History of Banff National Park

FRIDAY MORNING

9:00 Special Interest Group III

"Soil Fauna"

9:00 Special Interest Group IV

"Biting Flies: Biology and Control"

FRIDAY AFTERNOON

1:00 Field Trip

1:00 Entomological Society of Canada Board of Governors meeting

LADIES PROGRAM

MONDAY EVENING

8:00 Wine and cheese reception

TUESDAY MORNING

10:00 Visit to the Luxton Museum

12:00 Luncheon at the Rimrock Hotel

and

Visit to Upper Hot Springs

TUESDAY EVENING

6:30 Western Style Barbeque at Banff Indian Grounds

WEDNESDAY EVENING

6:00 Cocktails

7:00 Banquet

GUEST SPEAKER

The Honorable J. Grant McEwan
Lieutenant Governor of Alberta

on

"Pioneer Personalities"

GOLD MEDAL ADDRESS

COLLOIDAL SUSPENSE

Brian Hocking
University of Alberta, Edmonton, Alberta

I think by now it goes without saying that a recipient of the ESC gold medal achievement award recognizes this as a signal honour and is correspondingly flattered. I am flattered - and I use that word deliberately - because this year I was backing another and in my view a more worthy horse, for this honour. I am particularly appreciative when I look down the list of previous medallists, all but two of whom I have had the pleasure of being associated with in some capacity or other. Indeed a goodly company of twelve. What to talk about on an occasion such as this is a sticky problem; one's own work? - enough is said in the citation; take a snap at the hand that feeds and criticize the Society? or praise it for a wise choice? Surely not. Yet there are precedents for all these things, and a title was needed weeks ago. My reputation for revealing nothing in my titles thus remains, I hope, unimpaired. Speaking of citations: had I been more alert when I read, some months back, a draft of what I believe appears on the sheets of paper fluttering among my audience, I would have made more changes. Specifically I should have made it plain that nearly a third of whatever the number of publications referred to is, were co-authored; many by people in this room. From Marcus Aurelius to those who advocate the abolition of today's goals, men of nous recognize that a man's accomplishments stem from those he associates with. In this sense, this medal should have been awarded also to my co-authors wherever they may be, and perhaps especially to my colleagues and co-workers at the University of Alberta, students and staff at all levels. This is hardly practical, but I should be remiss if I failed to devote a moment of the free time which comes with this medal to thanking these people for the pleasure I have had from their cooperation. I am happy to share the credit for this medal with them and to accept it on their behalf as well as my own. Behind every success, too, there is a woman; I need say no more.

So much for the present; I would like now to look briefly into the past and then into the future. It is said by some chemists that papers in that field of science can be ignored if they are over ten years old. This denial of history raises a double danger. Firstly, history only repeats itself precisely if it is ignored - and repeating chemical history is expensive. And secondly, only if we know what has passed can we hope to foresee and to mold what is to come. The coherent, colloidal, stickiness of biology as compared with the physical sciences arises necessarily, as a part of that advancing panoply of togetherness which we call evolution. It is not repetitious. Firstly then, a word about an earlier goodly company of entomologists. In the early history of this science in Canada there were giants among entomologists: James Fletcher, Léon Provancher, William Saunders, Norman Criddle, E. M. Walker - we could all add to the list. And great entomologists elsewhere have also

influenced Canadian entomology. To award medals to such men would profit neither them nor us. But should we not copy, naturally with improvements of our own, the Founders' Memorial lecture of our friends south of 49? Pick each year a good speaker, instruct him to talk about the work of such a man and to trace its influence on this successors. H. T. Pledge (Science since 1500, HMSO, London, 1939) has shown how important the influence of teacher on student has been in the history of science. Shall we profit from this, or are we content to emulate the chemists?

If we wish to ensure that we have further goodly companies of entomologists in the future, we should be doing something about it now. The first requirement for the evolution of social life was a parent who lived long enough to take an interest in her offspring. Further, the survival of any species or even population, depends on the effectiveness of its concern for the next generation. This is why the current anti-education wave in North America is so deplorable. All of us, even if we have never held an academic appointment, are teachers. This is what publication is all about. We must all concern ourselves about the next generation. Of course we have had our programs to encourage young entomologists, but these mostly stop when they are most needed: they are too little and too early. The obvious next step is prestigious graduate scholarships. We have said in the past, I know, that we can't afford it; this is like the man with two cars and a snowmobile and trail bike for each member of the family who can't afford to pay his taxes. I would like to indicate two ways in which we might afford it.

A colleague of mine has calculated that with two coffee breaks a day at 15¢ he spends \$75 p.a. Can we not afford to invest a similar amount in a future distinguished entomologist? With 816 members at \$75 this might yield \$60,000 - almost enough for a dozen prestigious scholarships.

For a second approach, I offer the following. I enjoy a free cocktail hour as well as the rest of you; but I do believe that most of us have reached a stage where we can afford to buy our own drinks and perhaps even some for our colleagues who can't. I appreciate the men who each year go, cap-in-hand, to our members from industry (and to non-members) and ask - on our behalf - for the price of our drinks. But I think this does less than nothing for our internal cohesion (or colloidal success) and still less for our public image. I will even rashly suggest that our sponsors might give twice as much, (or at least give it half as unwillingly) if the cause we asked them to support was a future distinguished entomologist.

These are just two suggestions. I would like to see a note in every future issue of our publications saying that the Treasurer welcomes contributions to a scholarship fund for future entomologists. This might be all it would take. The survival of societies, like that of species, may well depend on the effectiveness of their concern for the next generation. The Entomological Society of Canada has made a good start with honouring present workers; but just think of the names that might have graced the list, had we started ten years earlier. Let us not delay

and miss out on too many great names for the future. It seems to me that we should now bring in history and look to the future.

ABSTRACTS OF SUBMITTED PAPERS BY MEMBERS OF
THE ENTOMOLOGICAL SOCIETY OF ALBERTA

SOME TEACHING AIDS FOR ENTOMOLOGY

B. Hocking
University of Alberta, Edmonton, Alberta

A number of aids other than lantern slides, charts, models, and drawings commonly used in the teaching of entomology will be described. The use of some of these aids will be demonstrated and details of their construction given where necessary.

A QUANTITATIVE FEEDING STUDY OF *PIERIS RAPAE* L.
ON *BRASSICA OLERACEA* L. (LEPIDOPTERA:PIERIDAE)

J. K. Ryan
University of Alberta, Edmonton, Alberta

A quantitative feeding study of *Pieris rapae* L. on *Brassica oleracea* L. was made at 23°C. The efficiency of conversion was 17% for ingested food to animal tissue and 52% for digested food from third instar larvae to pupal stage. Applied to a life table study of this insect on 100 cabbage plants in Ontario, the data indicate that 10.2 grams of dry *Pieris* tissue were produced from the consumption of 2.0 pounds of fresh cabbage. Based on CO₂ production/gram dry weight, respiration rates and calculated body weights metabolized are presented.

THE LIFE CYCLE AND ECOLOGY OF ANGLE-WING
BUTTERFLIES (POLYGONIA:NYMPHALIDAE)

J. Belíček
University of Alberta, Edmonton, Alberta

The seven North American and four Eurasian species of angle-wing butterflies (genus *Polygonia*) are remarkably adapted for a short growing season, typical of alpine or periglacial environments. Like the members of closely related genera *Vanessa* and *Nymphalis*, angle-wing butterflies overwinter as adults. This unusual shift in the life cycle enables the females to deposit their eggs at the base of leaf buds long before they open. The larvae hatch simultaneously with leaves coming out, and feeding in synchrony with leaf growth. Similar to some arctic butterflies, the angle-wings are strongly heliotropic, orienting their bodies toward the sun when at rest. The adults rarely visit flowers and feed on tree sap and other sources of sugar. These and other adaptations discussed suggest that angle-wing butterflies probably evolved with the onset of the last glaciation in the Northern Hemisphere where they persisted till the present.

SEASONAL BIOLOGY OF *ANOPHELES*, *CULEX* AND
CULISETA AT GEORGE LAKE, ALBERTA

J. E. Hudson
University of Alberta, Edmonton, Alberta

An account of observations made on *Anopheles earlei* Vargas, *Culex territans* Walker, *Culiseta inornata* (Williston) and *Culiseta alaskaensis* (Ludlow) (Diptera: Culicidae) at George Lake (40 miles NW of Edmonton) between May 1972 and September 1973. Overwintering females of most species were found in rockpiles, logpiles, and culverts, however, only *A. earlei* were located in empty buildings and *C. inornata* in both empty buildings and badger burrows.

Animal sheds did not yield any overwintering mosquitoes. Light trap captures and larva searches during 1973 support the view that *C. inornata* and *C. territans* are multivoltine and *C. alaskaensis* is univoltine but the status of *A. earlei* is uncertain. Females of *C. inornata* and *C. alaskaensis* were rarely caught off human bait but were abundant on cattle. All four species were observed feeding on flowers, especially goldenrod (*Solidago*) and yarrow (*Achillea*).

INGESTION STUDIES OF THE LARVA OF THE BLACKFLY,
SIMULIUM VITTATUM ZETT. (DIPTERA: SIMULIIDAE)

Mary M. Chance
University of Alberta, Edmonton, Alberta

The filter-feeding behaviour of blackfly larvae of a local population of *Simulium vittatum* Zett. is examined under laboratory conditions. Ingestion rates of larvae exposed to different concentrations of a substitute food particle over a range of water velocities increases with age of larva. Small larvae feed more readily in slower velocities. Parasitized larvae feed more readily and at a higher rate of ingestion than do healthy ones.

THE ZOOGEOGRAPHY OF ALBERTA DYTISCIDAE
(COLEOPTERA)

D. J. Larson
University of Calgary, Calgary, Alberta

Alberta possesses the richest dytiscid fauna of any comparable area of North America. This fauna is comprised largely of species with transcontinental boreal distributions, but important elements are derived from the western Cordilleran fauna, an eastern temperate fauna, and a northern Great Plains fauna. A few species with high arctic or Great Basin affinities are present, but these constitute only a minor portion of the provincial fauna. Two distinct faunal assemblages exist within the province: a prairie assemblage, and a forest assemblage. The

forest assemblage has a dual composition, a boreal component and a Cordilleran component. The Cypress Hills fauna is derived chiefly from that of the surrounding prairies, augmented by a complement of Cordilleran species and a few boreal isolates.

The diversity of the Alberta fauna is related to the transitional nature of the province. The central Alberta foothills, which constitute a transitional zone between the prairie, montaine, and boreal regions, possess over eighty per cent of the species recorded from the province. Faunal diversity decreases in all directions from this area.

THE ROLE OF AQUATIC INSECTS IN THE BREAKDOWN OF ALLOCHTHONOUS DETRITUS IN A BEAVER POND ECOSYSTEM

I. D. Hodkinson
University of Calgary, Calgary, Alberta

Insects involved in the breakdown process are classified into functional groups (shredders and small particle feeders) after the manner of Cummins (1973). Minor components of the gut contents such as mineral particles and diatoms can give a good indication to which functional group an insect belongs. This is illustrated by comparison of gut components of *Ptychoptera lenis* (a shredder) and *Stratiomys barbata* (a small particle feeder). Small particle feeders exhibit much greater growth rates in the presence of micro-organisms than on sterilized substrates.

FINE STRUCTURE OF LABRAL SENSE ORGANS OF MOSQUITOES

R. Lee
University of Alberta, Edmonton, Alberta

The labral sense organs of both sexes of 23 species of mosquitoes belonging to 8 genera were studied by scanning electron microscopy. Females have two groups of apical sensilla, and a pair of subapical sensilla, as has been previously reported. In males, only the two subapical sensilla are present. The subapical sensilla of female *A. aegypti* are campaniform sensilla as shown by transmission electron microscopy. The relative positions of the labral sense organs in different species of mosquitoes are compared, and their probable function is discussed.

SCANNING ELECTRON MICROSCOPY OF SENSE ORGANS ON HORSE FLY ANTENNAE

Ruth Lynn Hooper
University of Alberta, Edmonton, Alberta

Sense organs on the antennae of 4 genera of tabanids (*Hybomitra*, *Tabanus*, *Haematopota*, and *Chrysops*) were examined by scanning electron microscopy. All antennae examined have at least 3 morphologically different basiconic sensilla distinguishable by length and shape of hair and by size and distribution of pores. Pore sizes in the basiconic sensilla range from 250 Å to 400 Å. Coeloconic and styloconic sensilla are found on the antennae of all 4 genera examined. Both coeloconic and styloconic sensilla are localized at the tip of the antenna and on the lateroproximal surface of the basal subsegment. Differences in types and numbers of sense organs present on various species may be related to host-finding behaviour.

POPULATION METABOLISM AND BIOLOGY OF ORIBATID MITES (ACARI:CRYPTOSTIGMATA) IN AN ASPEN WOODLAND

M. J. Mitchell
Environmental Science Centre
Seebe, Alberta

A microrespirometry technique using gas chromatography employing a helium-ionization detector is described. This method is used to determine the respiration rates of several oribatid species. The respiration data are applied to an adult *Ceratozetes* sp. to determine its metabolic role in an aspen (*Populus tremuloides* Michx.) woodland soil. Life history features and quantitative estimates of seasonal fluctuations for the *Ceratozetes* sp. are also given.

RADIOECOLOGY OF CERTAIN SOIL INVERTEBRATES OF AN ASPEN WOODLAND ECOSYSTEM

A. Carter
University of Calgary, Calgary, Alberta

Soil fungi, a sterile dark form and a *Phoma* species, were cultured in soil extract media with ^{45}Ca or ^{35}S . Labelled mycelia of the fungi were inoculated into field sites, within metal enclosures, in an aspen woodland ecosystem in the Kananaskis valley in 1973. Soil cores, which included the inoculation sites, were taken at intervals and organisms extracted from the cores by Tullgren funnels were counted for radioactivity.

Of the organisms with early uptake of labelled fungi, certain millipedes had by far the greatest body burdens per μg of dry weight, followed by Diplura, all Collembola examined, microstaphylinid adults and larvae, and an oribatid mite. Large staphylinids and carabids fed to a small extent on the labelled fungi.

PHEROMONES OF MALE NOCTUIDS - DEVELOPMENT AND
PHYSIOLOGICAL INTERACTION OF STOBES GLAND AND
THE HAIR PENCIL

J. R. Clearwater
University of Alberta, Edmonton, Alberta

The structure of the system is described in detail. The two major components, the stobes gland and the hair pencil first appear as two small groups of cells from the epidermis of a large invagination on each side of the second abdominal sternite the cells of the incipient stobes gland grow larger developing a large extracellular space, which fills with vesicles shortly before eclosion. Like the stobes glands the developing hair pencil cells produce long fine scales but at a much greater rate. The complex microsculpture of these scales begins to form as soon as the scales reach their final length. A narrow strip of the epidermis sclerotizes forming a supporting lever. From the time vesicles begin to form in the gland, glycosides can be obtained from aqueous extracts of these cells. These compounds were identified as phenylethyl- and benzyl- β -glycosides from *Mamestra configurata* and *Pseudaletia separata* respectively. Cells at the base of the hair pencil scales appear to be producing a β -glycosidase responsible for releasing the active pheromones--phenylethanol and benzaldehyde.

AIR FLOW AND MOTH FLIGHT

M. Chance
University of Alberta, Edmonton, Alberta

The flight abilities of tethered specimens of the red-backed cutworm adult, *Euxoa ochrogaster* (Guenée), were observed in stationary and in flowing air. Forward speed in level flight was estimated from measurements of air flow induced by individuals which flew in otherwise stationary air, and measurements of the parasite drag on their bodies. A wind tunnel and flight balance were used to verify these estimates. They were also used to determine the in-flight climbing ability and for a small number of specimens, the flight range of this species.

Mt. Rundle	Margaret Greenham Theatre Complex				The Balls		Registration	
There's snow on dem trees!	Donald Cameron Hall							
	Road to Banff Centre	Main Residence Banff Centre	Lois Swailes		A. Harper		Did you hear about?	
K. Ball B. Hocking	Gold Medal Presentation		The Hockings		D. K. McE. Kevan		J. R. McLintock D. M. Davies	
	D. K. McE. Kevan	B. Hocking						
H. Koenig	G. T. Harvey	Honorary Membership Presentation D. K. McE. Kevan G. P. Holland	G. Pritchard	G. T. Harvey J. R. McLintock B. Hocking	R. M. Peterman	D. L. Haynes	D. M. Davies	
S M O K E R S								
Field Trip		General Meeting					L. A. Jacobson	
Breakfast	C.D.F. Miller		D. L. Haynes		H. G. Philip	W. J. Turnock		J. Gurba
	M. L. Saini		M. Jones					



E SA-TWENTY-FIRST ANNUAL MEETING-BANFF 1973

M. M. Furniss	A. Carter	M. D. McGregor	L. M. Gardiner	G. E. Daterman	J. Gurba	R. Harmsen	R. Gooding	A.E.R. Downe	J. Belíček
M. J. Mitchell	S. McDonald	M. G. Dolinski	G. Ball	B.	B. Heming	D. Rosenberg			
J. Ryan	D. Larson	J.L. Clearwater	I.D. Hodkinson	R. E. Stinner	N. Angerilli	J. E. Hudson			
V. R. Vickery	D. K. McE. Kevan	G. Pritchard	P. S. Corbet	D. Parkinson	M. Chance	N. H. Anderson	G. McLeod		
M. A. Ashraff	L. K. Peterson	J. A. Drouin	J. H. Mundie	H. Cerezke	G. P. Holland	W. A. Charnetski	R. H. Burrage	W. Y. Watson	J. Shorthouse
Ann Hudson	Mary Chance	Jean Percy	Ultrastructure of sex pheromone gland.	Ruth Lynn Hooper	Sense organs on horse fly antennae.				
A. R. Hastings	J. A. Downes	R. Lee	W. M. Ciesla	M. L. Saini	P. C. Nigam	C. E. Russell	L. A. Carruth		



ESC-ESA JOINT MEETING-BANFF 1973

Collection Competition		Photo salon winner E.T. Gushal D. K. McE. Kevan		Beefly by E.T. Gushal Surfing by E.J. Ford		R. Brust		D. J. J. Larson Shorthouse K. W. Richards		Ruby Larson	
S. R. Loschiavo	Attentive Audience	D. L. Struble	S C I E N T I F I C S E S S I O N					G.C.D. Griffith	L. K. Peterson		
J. C. Guppy	K. W. Richards	E. C. Becker	A. J. Thorsteinson	R. C. B. Hartland-Rowe	Marilyn Steiner	The Richards	N. S. Church	The Goulets			
D. C. Eidt J. Shemanchuk		What the well dressed Entomologist wears.		J. R. Anderson D. R. Depner		D. C. Eidt		Ruth Lynn Hooper		C.D.F. Miller	
The Gurbas		The Siddiquis		First one today!	The Mansons		Swing your partner.	What else do we know?		The Glens	
Barbeque		U.S. Visitors			E. T. Gushal	G. Rioux		The Shemanchuks		L.A. Jacobson E.T. Gushal	
Eric Harvey Theatre		What's up?		G. E. Ball	Officers and Governing Board - 1973-1974 Entomological Society of Canada						
G. E. Ball	Ruth Lynn Hooper	H E A D T A B L E A T B A N Q U E T			D. K. McE. Kevan The Hon. J. Grant McEwan			The Hon. J. Grant McEwan			



E SC-ESA JOINT MEETING-BANFF 1973

MINUTES OF EXECUTIVE MEETING

May 4, 1973 - 2.00 p.m.

Held at the home of Kay Ball, 8108 - 138 Street, Edmonton, Alberta.

Present: K. Ball (Chairman), A. M. Harper, W. A. Charnetski, L. K. Peterson, H. R. Wong, B. Heming, D. A. Craig, and G. Pritchard.

Reports given, items discussed, and decisions reached were as follows:-

1) Insect collection competitions.-- D. A. Craig reported:

- a) H. Goulet will be chairman of the Insect Collection Competition Committee for 1973 and he will be assisted by J. Belicek and G. A. Hobbs.
- b) The first notice about the insect collection competition was sent out by D. A. Craig in April and the second notice will be sent out by H. Goulet in August.
- c) Ninety insect collection boxes have been sold for \$2.50 each.
- d) W. A. Charnetski will look after publicity and send notices about the winners of the competitions to their home towns.

2) Correspondence.-- A. M. Harper, secretary-treasurer, reported on the correspondence as follows:-

- a) Notices of the annual meeting and a form for submitted papers were sent to all members of ESA.
- b) A letter from J. M. MacDonald concerning our participation in a Conference on Parks and Programs in Alberta to be held on May 4, 5, and 6 was sent to Kay Ball. It was decided that Kay was to try to find someone to go to this meeting and the Society would pay their registration fee.
- c) A questionnaire to obtain information about our Society was completed and returned to the Canadian Nature Federation. This information will be listed in the Conservation Directory for Canada.
- d) A questionnaire was completed so that our Society will be listed in the Directory of Associations in Canada.
- e) A report of the officers and committees of our Society was sent to D. M. Davies, secretary to ESC.

f) A financial statement and a list of officers was sent to the Registrar of Companies of Alberta.

- 3) ESA-ESC fees.--- K. Ball discussed correspondence from D. M. Davies concerning ESC collecting fees from ESA members who are also ESC members. A. M. Harper reported that approximately one-third of the ESA members belonged to both societies. After considerable discussion it was decided that the ESA continue to collect their own fees and that, by March 1 each year, we send the ESC a list of ESA members who have paid their fees.

K. Ball will notify D. M. Davies of our decision.

- 4) Treasurer's report.--- A. M. Harper reported that there is \$885.99 in the bank and \$6.06 in petty cash. There are outstanding bills for the Insect Collection Competition notices, printing and mailing the 1972 Proceedings, and \$100 for the scholarships. The outstanding bills total between \$275 and 300. Notices have been sent to all members who have not paid their ESA fees for 1970, 1971, 1972, or 1973.
- 5) Scholarship awards.--- It was decided that because of the cost the Society should not award a medal but that W. A. Charnetski and A. M. Harper should try to obtain certificates that could be given with the scholarship. It was agreed that we pay registration fees for scholarship winners at the annual meeting.
- 6) Location of next executive meeting.--- The next meeting of the executive will be held at the Banff Convention Centre at 5.00 p.m. on Monday, October 1, 1973.
- 7) Committee chairmen.--- H. Goulet was named head of the student encouragement committee. W. A. Charnetski was named head of the committee to publicize entomology.
- 8) New journal for ESC.--- The possibility of starting a new journal for ESC was discussed and all members of the executive were opposed. Several members indicated that the present journal covered a very limited field of entomological research in Canada. It was suggested that there needs to be a change in editorial policy to make interest in the journal more widespread before we establish another journal. It was suggested that the format of the journal could be changed and that the contents could be grouped under headings such as physiology, morphology, crop protection, ecology, behavior, toxicology, and taxonomy. It was also suggested that because of emphasis on taxonomy papers it was of limited interest to many of our members as only one-third belong to ESC.

- 9) ESA-ESC meeting at Banff.-- G. Pritchard gave a report of the progress of the ESA-ESC meeting.

The meeting adjourned at 6.15 p.m.

A. M. Harper
Secretary-Treasurer, 1973

MINUTES OF EXECUTIVE MEETING

October 1, 1973 - 5.00 p.m.

Held at the Banff Centre, Banff, Alberta.

Present: K. Ball (Chairman), W. A. Charnetski, A. M. Harper,
W. O. Haufe, B. Heming, and L. K. Peterson.

Reports given, items discussed, and decisions reached were as follows:-

- 1) Minutes of the last meeting.-- A. M. Harper, secretary-treasurer, read the minutes and they were approved on a motion by L. K. Peterson and seconded by W. A. Charnetski.
- 2) Correspondence.-- A. M. Harper reported on the correspondence as follows:-
 - a) A final notice of the annual meeting was sent to all ESA members.
 - b) A letter was read from Professor D. M. Davies, secretary of ESC, with suggestions for the Regional Societies concerning: the ESC Achievement Award, Honorary Members, Student Encouragement, Publicizing Entomology, Employment, Membership, Gift Subscriptions, and Common Names.
 - c) Letters of congratulations were sent to the two scholarship winners, Mr. Patrick Scholefield, U of C, and Mr. Wayne MacNicol, U of A.
 - d) Letters of appreciation for the scholarships were received from the two scholarship winners.
- 3) Treasurer's report.-- A. M. Harper reported that on September 30, 1973, there was \$664.55 in the treasury and there was one outstanding bill for approximately \$65 for paper and envelopes for the Society.
- 4) Certificates for scholarship winners.-- W. A. Charnetski reported that the certificates will be printed shortly.
- 5) Insect collection boxes.-- B. Heming reported that \$356.94 was received from the sale of insect collection boxes and will be sent to the treasurer.
- 6) Distribution of ESA proceedings to "non-members" of the ESA.-- A. M. Harper read a letter he had received from F. W. Faxon Company

Incorporated, a Library Magazine Subscription Agency, concerning subscription rate information for the ESA Proceedings. At present, the Proceedings is not sent to anyone who is not a member of the Society. It was decided that organizations could become members of the Society by paying the annual membership fee and would then receive the Proceedings.

- 7) Location of 1974 meeting.-- It was decided that Edmonton would be the site of the 1974 meeting.
- 8) Honorary members of ESA.-- Kay Ball suggested we should consider new appointments to honorary membership in our Society. According to our constitution not more than 5% of our membership can be honorary members. At present, we have four honorary members and 80 paid-up members, so we cannot appoint any new honorary members.
- 9) Donation to Zoological Record.-- A. M. Harper recommended that we give a \$10.00 donation to Zoological Record. Everyone agreed with this proposal.
- 10) Publication of list of past executives and constitution.-- A. M. Harper recommended that the list of past executives prepared by Kay Ball and a copy of the constitution should be published in the Proceedings. All agreed with this proposal.
- 11) Constitution change re reduced student fees for ESA-ESC meetings.-- It was decided to leave the constitution unchanged so that when there is a joint ESA-ESC meeting in Alberta student members of ESC will receive a reduced registration fee at the meeting.
- 12) Publicity for scholarship and insect collection winners.-- W. A. Charnetski will look after this publicity.
- 13) New journal for ESC.-- W. O. Haufe reported that for the present ESC will not produce a new journal.
- 14) Appointment of auditors.-- J. A. Shemanchuk and D. L. Struble were appointed as auditors.
- 15) Appointment of ESA committees for meeting.--
 - a) Resolutions - R. Gooding (Chairman) and N. D. Holmes
 - b) Nominating - B. Heming (Chairman), S. McDonald, and M. Dolinski
 - c) Insect collection - H. Goulet (Chairman), D. A. Craig, and G. A. Hobbs

16) Appointment of representatives to ESC committees.--

- a) Honorary membership committee - ESC Regional Director
- b) Committee publicizing entomology - W. A. Charnetski
- c) Student encouragement committee - D. A. Craig (H. Goulet)
- d) Employment committee - B. Heming
- e) Membership committee - Secretary-Treasurer
- f) Common names committee - G. Ball

L. K. Peterson moved the meeting adjourn. The meeting adjourned at 6.10 p.m.

A. M. Harper
Secretary-Treasurer, 1973

MINUTES OF THE 21ST ANNUAL BUSINESS MEETING

October 4, 1973 - 7.15 p.m.

The 21st annual meeting of the Entomological Society of Alberta was held jointly with the Entomological Society of Canada at the Banff Centre, Banff, Alberta, October 1-5, 1973. The annual business meeting was opened by the President, Dr. Kay Ball.

- 1) The minutes of the 20th annual meeting were adopted as published in the 1972 Proceedings on a motion by N. D. Holmes and seconded by W. A. Charnetski.
- 2) The following committees submitted by the executive were appointed:--
 - Nominating - B. Heming
 - S. McDonald
 - M. Dolinski
 - Resolutions - R. H. Gooding
 - N. D. Holmes
 - Insect Collection - H. Goulet
 - D. A. Craig
 - G. A. Hobbs
 - Auditing - J. A. Shemanchuk
 - D. L. Struble
- 3) Kay Ball reported that the executive had appointed the following members to ESC committees:--
 - a) Honorary membership committee - ESC Regional Director
 - b) Committee publicizing entomology - W. A. Charnetski
 - c) Student encouragement committee - D. A. Craig
 - d) Employment committee - B. Heming
 - e) Membership committee - ESA Secretary-Treasurer
 - f) Common names committee - G. E. Ball
- 4) Kay Ball indicated that the executive had decided not to give scholarship winners a silver medal but would instead present them with a certificate and that W. A. Charnetski was having the certificates prepared.
- 5) G. Pritchard, Chairman of ESA-ESC joint meeting committee, reported that 198 people registered for the meeting including 8 honorary members, 45 ladies, and 12 student members of ESC.

- 6) Kay Ball reported on the correspondence with ESC about collecting ESA and ESC fees jointly. The executive decided we would collect our own ESA fees; Dr. Becker, treasurer of ESC, has been informed of this decision. The ESA secretary-treasurer will send Dr. Becker an up-to-date list of ESC members who have paid their ESA fees after our meeting and on March 1.
- 7) The treasurer's report for 1972 was adopted as published in the 1972 Proceedings on a motion by W. A. Charnetski and seconded by J. B. Gurba.
- 8) The 1973 interim treasurer's report read by A. M. Harper indicated that on September 30, 1973, there was \$644.55 in the treasury and there was an outstanding bill for approximately \$65.
- 9) Kay Ball read a letter from Professor D. M. Davies, secretary of ESC, who gave information and made suggestions for Regional Societies concerning: the ESC Achievement Award, Honorary Members, Student Encouragement, Publicizing Entomology, Employment, Membership, Gift Subscriptions, and Common Names.
- 10) B. Heming, chairman of the nominating committee, presented the following slate of officers for 1973:--

President - L. K. Peterson
 Vice-President - A. M. Harper
 Secretary-Treasurer - H. F. Cerezke
 Editor - H. R. Wong
 Directors - W. A. Charnetski
 - W. B. Porter
 - R. H. Gooding
 Regional Director - W. A. Charnetski

B. Heming moved and S. McDonald seconded that the report be accepted.

N. D. Holmes moved and G. E. Ball seconded that nominations cease.
 Carried.

Kay Ball declared the above slate elected.
- 11) R. H. Gooding presented the report of the resolutions committee:--

Whereas the success of the 21st annual meeting of the Entomological Society of Alberta can, to a large extent, be attributed to the following, be it resolved that letters of appreciation be sent to:-

 - a) His Honor the Lieutenant-Governor of Alberta, Dr. J. W. Grant McEwan, for his witty, wise, and thought-provoking talk,

"Pioneer Personalities".

- b) The Banff Centre for accommodations and services during the meetings.
- c) Mrs. B. Hocking, who with the assistance of her husband, Dr. B. Hocking, provided mead, pickles, and refreshments for the wine and cheese party.
- d) Ladies, particularly Bev Holmes and Lois Swailes, who assisted in running the ladies' program.
- e) The Government of the Province of Alberta for the banquet they provided.
- f) The organizations listed on the back of the program for their generous contributions.
- g) Mr. E. T. Gushul, who took leave to come to the meetings to take the traditional pictures.

Be it further resolved that a vote of thanks be tendered to the executive, the convenor, and his committee who were involved in the preparation of the meeting and program.

- 12) H. Goulet presented the report of the annual insect collection committee:--

There were six collections received this year and entries were received from Edmonton, Calgary, Olds, and Crossfield.

Prizes were awarded as follows:--

Special collection: 1st - Miss Kate A. Shaw (Edmonton)

General collection: 1st - Mr. John Acorn (Edmonton)
2nd - Mr. Hugh Godwin (Olds)

Junior: 1st - Mr. Mike Chrustawka (Edmonton)
2nd - Miss Leisa Murdock (Crossfield)
3rd - Mr. Zenon Trylowsky (Calgary)

Judges: H. Goulet, J. Bělíček, and J. Shorthouse

- 13) W. A. Charnetski, publicity chairman, reported that he had arranged for the publicity for the meeting.
- 14) N. D. Holmes gave a report on the possibility of publishing the symposium papers in the Proceedings or Quaestiones Entomologicae. He stated that we cannot get them published in the Canadian

Entomologist and he was not sure about Quaestiones Entomologicae. G. E. Swailes moved and W. A. Charnetski seconded that the program committee be empowered to get the symposium papers published in Quaestiones Entomologicae.

L. K. Peterson moved an amendment and G. E. Ball seconded that the following be added to the motion "if the executive decides we can afford it". Both the amendment and the motion were carried.

- 15) G. E. Ball moved and J. Belicek seconded that we donate \$10.00 to Zoological Record. The motion was passed.
- 16) G. E. Swailes moved and W. A. Charnetski seconded that the auditors for 1973 also audit the financial statement of the financial committee for the joint ESA-ESC meeting. Motion carried.
- 17) Kay Ball, President, extended congratulations on behalf of the Society to Dr. B. Hocking on being the ESC Gold Medal winner for 1973. She also congratulated our Entomology Prize winners for 1973, Wayne MacNicol, University of Alberta, and Patrick Scholefield, University of Calgary.
- 18) Kay Ball informed the members that we would be publishing in the 1973 Proceedings a list of past officers of the ESA and also our revised constitution.
- 19) It was decided to hold the 1974 meetings in Edmonton.

S. McDonald moved the meeting adjourn. The meeting adjourned at 8.10 p.m.

A. M. Harper
Secretary-Treasurer, 1973

BUDGET

ESA-ESC JOINT MEETING

Banff, Alberta - October 1-5, 1973

<u>Revenue</u>	<u>Budgeted</u>	<u>Received</u>
ESC annual meeting fund.....	\$1,500.00	\$1,500.00
Registration (est. 200 @ 15.00).....	3,000.00	2,790.00
U of C contribution.....	200.00	200.00
U of A contribution.....	1,000.00	984.61
Alberta Gov't (banquet grant).....	1,000.00	787.50
Industry contributions.....	1,800.00	1,780.00
Interest on bank deposit.....	0.00	24.30
Total	\$8,500.00	\$8,066.41

<u>Expenses</u>	<u>Budgeted</u>	<u>Spent</u>
Program speakers.....	\$1,200.00	\$1,006.65
Banquet - dinner (Alberta Gov't) 1,000.....		1,023.75
- entertainment (gratuities) 200.....		200.00
- refreshments 300.....		403.40
- extra costs 500.....	2,000.00	99.63
Barbeque - food, buses, entertainment.....	1,800.00	1,737.00
Programs, abstracts, etc.....	400.00	442.80
Meeting rooms, Banff expenses, transport.....	300.00	186.93
Publicity, arrangements, telephones.....	200.00	248.55
First night hospitality.....	500.00	453.80
Ladies program, buses, etc.....	200.00	198.85
Coffee during meetings.....	200.00	186.75
Committee members travel, meals, etc.....	200.00	91.60
Stationery, mailing, stenos.....	300.00	513.16
Photographer (expense honorarium).....	100.00	100.00
Steno assistance Banff registration.....	100.00	65.50
Miscellaneous, contingency.....	500.00	0.00

Surplus transferred to ESA general fund.....		\$1,108.04
Total		\$8,066.41

J. B. Gurba, Chairman
 Finance Committee
 January 8, 1974

FINANCIAL STATEMENT 1973

	<u>Subtotal</u>	<u>Total</u>
<u>Receipts</u>		
Bank balance - January 1, 1973.....	\$820.73	
Petty cash on hand.....	10.62	
Total cash in treasury - January 1, 1973.....		\$831.35
Membership fees 1969-1974.....		222.00
Bank interest - April 30.....	11.26	
- October 31.....	<u>9.94</u>	
Total bank interest.....		21.20
Donations from ESA-ESC joint meeting committee.....		1,108.04
Sale of insect collection boxes.....		<u>338.67</u>
		<u>\$2,521.26</u>
<u>Disbursements</u>		
Entomological Society of Alberta prizes:-		
University of Alberta.....	50.00	
University of Calgary.....	<u>50.00</u>	100.00
Proceedings of ESA (1972):-		
Covers and photos.....	62.60	
Printing.....	58.80	
Postage.....	<u>5.94</u>	127.34
Contribution to Zoological Record.....		10.15
ESA stationery (paper and envelopes).....		65.60
Receipt books, stamps, and miscellaneous expenses.....		<u>29.05</u>
Total disbursements.....		<u>\$332.14</u>

	<u>Total</u>
Total receipts.....	\$2,521.26
Total disbursements.....	<u>332.12</u>
Bank balance.....	<u>\$2,189.12</u>
Bank balance.....	1,842.88
Cash in insect collection box fund.....	338.67
Petty cash on hand.....	<u>7.57</u>
	<u>\$2,189.12</u>
Loan to Insect Collection Competition Committee.....	561.33
Value of insect collection boxes held by Insect Collection Competition Committee.....	561.33

A. M. Harper
Secretary-Treasurer

Approved by ESA auditors:-

J. A. Shemanchuk
D. L. Struble

REPORT OF THE REGIONAL DIRECTOR

During the last two years, the Editor of the Bulletin of the Entomological Society of Canada has developed a system of reporting all activities of interest to members of both the regional and national societies of entomology. In 1973, this reporting in the three issues of Volume 5 of the Bulletin has been complete in covering all activities in the Entomological Society of Canada, including actions of the Governing Board, reports of committees, and relations with special organizations such as the Biological Council of Canada. It seems redundant, therefore, to repeat the same information in a report for the members of the Entomological Society of Alberta.

Entomologists who attended the joint meeting of the Societies at Banff in October undoubtedly sensed the success of both the program and the arrangements prepared by the local conference committee. It will be worthy of record in this report that high formal praise was expressed in the Board of Governors of ESC following the meeting for the organization and innovations in scientific program. It is significant that certain features such as discussion groups are being retained as part of the program planned for the joint meeting of the national and Acadian Societies in 1974.

W. O. Haufe
Regional Director

REPORT OF THE INSECT COLLECTION

COMMITTEE

Six collections were received from Edmonton, Olds, Crossfield* and Calgary. Prizes were awarded to the following in the Senior Challenge competition:

GENERAL COLLECTION

First Prize

John Acorn
14416 - 78 Avenue
Edmonton, Alberta

Second Prize

Hugh Godwin
Olds, Alberta

SPECIAL COLLECTION

First Prize

Kate Shaw
7816 - 148 Street
Edmonton, Alberta

The above collections were of high standard, clearly labelled and generally well identified even to the species level. Hugh Godwin's collection was rather an artistic display which was enjoyed by many visitors.

The three winners in the Junior Section competition were as follows:

GENERAL COLLECTION

First Prize

Mike Chrustawka
132 Laurier Drive
Edmonton, Alberta

Second Prize

Leisa Murdoch
Crossfield, Alberta

Third Prize

Zenon Trylowsky
401 Brae Glen Crescent
Calgary, Alberta

Mike Chrustawka presented a small but excellently identified collection ranking close to the quality of the Senior Collections. Leisa Murdoch presented a butterfly collection of mostly reared specimens, and Zenon Trylowsky a small beetle collection.

Henri Goulet, Chairman
Insect Collection Committee

THE ENTOMOLOGICAL SOCIETY OF ALBERTA

(formed November 27, 1952, incorporated February 19, 1953)

OFFICERS AND BANQUET SPEAKERS 1953 - 1973

PRESIDENT	VICE-PRESIDENT	SECRETARY	TREASURER	EDITOR-LIBRARIAN	DIRECTOR TO ESC	DIRECTORS-I-C-E	BANQUET SPEAKER
1953 E. H. Strickland	R. H. Painter	Jacobson	Hobbs	Salt	Salt	Hurtig, McGuffin, Kilduff	Kusch....forest surveys
1954 R. H. Painter	G. R. Hopping	Mann	Hocking	McDonald	Salt	Harper, Reid, McMullen	R. Larson...human ecology
1955 H. Hurtig	C. W. Farstad	Mann	Hopewell	McMullen	Farstad	Jacobson, McGuffin, Hocking	Glen...Changing scene
1956 G. R. Hopping	W. G. Le Maistre	Brown	McGuffin	Cumming	Farstad	Haufe, Russell, Hopewell	Atkinson...national parks
1957 C. W. Farstad	B. Hocking	Smith	Lilly	Weintraub	Farstad	Shemanchuk, Brown, Cumming	Cullen....
1958 C. E. Ball	C. E. Brown	Gurba	Brown	Shepherd	Hopping	Nelson, Swailes, Stark	Rempel...teaching
1959 C. E. Brown	L. A. Jacobson	Stark	Cook	McGuffin	Salt	Holmes, Hopping, Evans	McEwan...insects re dev't of west
1960 L. A. Jacobson	J. W. Edmunds	Harper	Blakeley	Church	Evans	Gushul, Van Veen, Gurba	Cousins...exploration in south Alberta
1961 J. W. Edmunds	N. W. Van Veen	Shore	Swindlehurst	Evans	Salt	Nummi, Cerezke, McFadden	Hocking...Africa
1962 N. W. Van Veen	N. W. Holmes	(McGuffin) Cerezke	Shepherd	Reid	Salt	McGinnis, Hartland-Rowe, Pritchard	Weir, Turcott
1963 N. W. Holmes	W. G. Evans	Lilly	Nelson	Blakeley	Hobbs	Harper, Cerezke, Gurba	McGregor...history
1964 W. G. Evans	R.C.B. Hartland-Rowe	(Swindlehurst) McDonald F.	Sharplin	Proctor	Jacobson	Weintraub, Stevenson, Shore	MacNeish...corn
1965 R.C.B. Hartland-Rowe	R. W. Salt	Burgess	Stevenson	Cerezke	Brown	Shorthouse, Carr, Freitag	Mitchell
1966 R. W. Salt	B. Hocking	Smith	Harper	Shemanchuk	Brown	Depner, Tripp, Gurba	Hocking
1967 B. Hocking	H. Tripp	Peterson	Ball K.	Chance, M. A.	Ball G.	Larson, R., Cerezke, Chiang	Cragg
1968 H. A. Tripp	J. A. Shemanchuk	Cerezke	(Blakeley) Lanier	Stevenson	Gooding	Swailes, McGheay, Rosenberg	Beckel
1969 J. A. Shemanchuk	J. Gurba	Nelson	Blakeley	Lilly	Haufe	Larson, R., Raske, Craig	Bond...north
1970 J. Gurba	G. Pritchard	Heming	Dixon	Craig	Haufe	McDonald, S., Larson, D., (Stringer)	Mitchell
1971 G. Pritchard	G. E. Swailes	Larson	Burgess Larson	Hartland-Rowe	Haufe	Safranyik, Struble, Godwin	Tyson...myths and moths
1972 G. E. Swailes	K. E. Ball	Harper.....	Nelson	Haufe	Struble, Porter, Peterson	MacEwan
1973 K. E. Ball	B. Heming	Harper.....	Wong	Haufe	Charnetski, Porter, Peterson	

CONSTITUTION
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, forestry, public health, and 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 on application in writing to the Secretary of the Society and on approval by the Executive. Such prospective members are to be notified of their election and are to pay their fees within six months of the date of their election, otherwise such election will become null and void.

Any person who is studying entomology at the college undergraduate or high school level and who is enrolled in a recognized educational institution may become a Student Member.

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 per cent 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 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 in writing 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 By-Laws.
- 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 Constitution, 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 normally 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 him 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. He 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 Constitution

The Constitution 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.

BY-LAWS

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 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 hosts.
4. The by-laws may be changed by a motion approved by the majority of the members present at any general meeting.

MEMBERSHIP LIST

Dr. Jerry Awram
 Alberta Department of Agriculture
 Agriculture Building
 Edmonton, Alberta
 T5H 0V1

Mr. A. Borkent
 Department of Entomology
 University of Alberta
 Edmonton, Alberta
 T6G 2E3

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

Mr. J. L. Carr
 5219 - 53 Street N.W.
 Calgary, Alberta
 T3A 1W5

Dr. Kathleen Ball
 8108 - 138 Street
 Edmonton, Alberta
 T5R 0C9

Mr. A. Carter
 Department of Biology and
 Environmental Sciences
 (Kananaskis)
 University of Calgary
 Calgary, Alberta

Mr. Joseph Belíček
 Department of Entomology
 University of Alberta
 Edmonton, Alberta
 T6G 2E3

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

Dr. M. Benn
 Department of Chemistry
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 T2N 1N4

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