Proceedings of the
Seventeenth Annual Meeting

of the

ENTOMOLOGICAL SOCIETY

of

ALBERTA

Lethbridge, Alberta

October 24th - 25th, 1969

Proceedings of the 17th Annual Meeting of the

ENTOMOLOGICAL SOCIETY OF ALBERTA

October 23-25, 1969

Park Plaza Motor Hotel
Lethbridge, Alberta

Volume 17 *October 1969*

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PROGRAM OUTLINE

Thursday evening, October 23

7.30 Executive meeting

8.00 Registration and no-host reception

Friday morning, October 24

8.00 Registration

8.30 Presidential address and announcements

9.00 Panel discussion - *Entomology in the Crystal Ball*

CHAIRMAN - G. E. Ball

Discussion leaders: *Research* - G. A. Hobbs
Education - R. H. Gooding

10.00 Coffee

10.15 Panel discussion

Discussion leaders: *Chemical controls* - S. McDonald
Extension - C. L. Neilson

11.15 First session of business meeting

12.00 Lunch

Friday afternoon, October 24

Contributed Papers

CHAIRMAN - A. M. Harper

1.30 R. F. Shepherd: *The whats and whys of the ups and downs*

1.50 H. G. Philip: *DDT-dehydrochlorinase from house flies*

2.05 T. R. Pearson: *Structure and function of mosquito taste receptors*

2.25 C-t Huang: *Inhibition of Aedes aegypti trypsin by vertebrate sera*

2.45 A. C. Cheung: *Digestive proteinases from carabids*

3.00 Coffee

Contributed Papers

CHAIRMAN - J. Weintraub

3.15 D. L. Struble and L. A. Jacobson: *A sex pheromone in the army cutworm*

3.30 O. J. Jonasson and D. M. Rosenberg: *Preliminary studies on a method of dieldrin analysis in insects*

3.40 P. K. Chiang: *A comparative study of triosephosphate isomerase*

4.00 Henri Goulet: *Problems in isolating mechanisms between Pterostichus adstrictus and P. pensylvanicus*

4.10 J. D. Shorthouse: *Inhabitants of the spiny roseleaf gall*

4.30 J. M. Powell: *Insects associated with pine stem rusts*

4.50 J. F. Virostek: *Leaf-cutter beekeeping, 1969 (film)*

Friday evening, October 24

6.00 Cocktails

7.00 Banquet

Guest speaker: Dr. W. E. Beckel
Academic Vice-President
University of Lethbridge

Saturday morning, October 25

8.30 Second session of business meeting

Contributed Papers

CHAIRMAN - R. W. Salt

9.30 N. D. Holmes: *Recent new insect records*

9.40 M. A. Khan: *Extermination of cattle grubs*

10.00 Coffee

Contributed Papers

CHAIRMAN - G. E. Swailes

10.15 Renuka Kapoor: *The esterases of Aedes aegypti (L.) (DDT-resistant strain)*

10.35 D. A. Craig: *Techniques for studying the innervation of sense organs*

10.55 J. Weintraub: *Aggregations of male Cephenemyia in southern Alberta*

11.10 G. N. Lanier: *Cytoplasmic incompatibility: A pseudo - Rh factor prevents hybridization of closely related Ips (Coleoptera: Scolytidae)*

11.30 A. W. Thomas: *Autogeny in tabanidae*

11.50 H. F. Cerezke: *Observations on the spruce bud midge, Rhabdophaga swainei Felt, and its damage to spruce in Alberta*

12.05 Brian Hocking: *Two travelling traps*

12.25 Adjournment

* * * * * *

ABSTRACTS OF PAPERS

Observations on the spruce bud midge, Rhabdophaga swainei Felt, and its damage to spruce in Alberta

H. F. Cerezke

Populations of the spruce bud midge, Rhabdophaga swainei Felt, were sampled on 1 to 6 feet high white and black spruce trees in central Alberta. Analyses of the data suggested that the midge attacked the southern aspect of the host more consistently than the northern aspect, and that the terminal buds on stem leaders and lateral branches were preferred. Mean numbers of current infested buds per tree increased directly with increasing tree height; this pattern was apparent on both hosts. The incidence of bud damage was highest at the top of the host where up to 28.5% of all terminal buds of top whorl branches were destroyed on black spruce and up to 45.7% were destroyed on white spruce. Similarly, 15.7% of all leader terminal buds on black spruce were destroyed while 38.3% were destroyed on white spruce. Infested buds were distinguishable from non-infested buds, being flatter at the apex, pinkish in color and larger in diameter. The incidence of parasitism of midge larvae was 49.3% on black spruce and 59.3% on white spruce.

When terminal leader buds of white spruce were removed experimentally to simulate midge damage a mean height loss of 19% was estimated for the year in which damage was done. The data suggested that normal leader height was resumed in the second year after bud damage when one or more of the competing top whorl branches assumed dominance.

Digestive Proteinases in Carabids

A. C. Cheung

By use of specific synthetic substrates and inhibitors, trypsin and chymotrypsin have been demonstrated in the digestive tracts of both sexes of adult Carabus taedatus and Calosoma calidum. No evidence for carboxypeptidase-A, carboxypeptidase-B, or aminopeptidase was found. At 30°C the trypsin has a pH optimum at pH 8.2 to 8.3. The trypsin has been partially purified and its molecular weight estimated by Sephadex G-100 column chromatography to be approximately 20,000 to 23,000. The trypsin is inhibited by TLCK, PMSF, and 2-mercapto-ethanol.

A comparative study of triosephosphate isomerase

P. K. Chiang

Triosephosphate isomerase (TPI) from the thoraces of Musca domestica and Aedes aegypti has been isolated and purified. The estimated molecular weight by Sephadex G-100 filtration is 60,000. With dihydroxyacetone phosphate as a substrate, a Km of 3.5 mM was obtained for mosquito TPI, 1.4 mM for house fly TPI, and 0.5 mM for rabbit TPI. Kinetic experiments indicate the participation of 2 sites in catalysis, and TPI is subject to inhibition by inorganic phosphate, α-glycerophosphate, citrate, oxaloacetate, succinate, folate, ADP, and ATP. Approximately 1.7 moles of α-glycerophosphate are bound per mole of mosquito TPI. With glyceraldehyde-3-phosphate as a substrate, a Km of 1.2 mM was obtained for house fly TPI and 0.59 mM for rabbit TPI. Substrate inhibition was observed when glyceraldehyde-3-phosphate was used as the substrate.

Techniques for studying the innervation of sense organs

D. A. Craig

The effects of vital Methylene Blue, Gomori's Aldehyde Fuschsin, and Palmgren's Silver Stain on the head nerves of larval Simulium are shown and discussed.

Two travelling traps

Brian Hocking

Two portable, collapsible, insect traps designed to catch separately insects flying in opposite directions relative to the wind direction are described. A brief account of the use of these two traps, mostly at the shores of lakes and islands around the world between 27°S and 52°N, is given and illustrated. An interim examination of the 55,000 insects caught in this way is reported.

Recent new insect records

N. D. Holmes

On the average 3 new insect pests of crops appear every 5 years.

In 1968 a field of barley adjacent to a bromegrass field was severely attacked by a close relative to the chinch bug. These insects had

previously completely destroyed the brome. Several other fields in southern Alberta were similarly affected. Specimens sent to an American specialist were judged to represent a new species of Blissus (Lygaeidae). No damage was reported in 1969.

Another new record was obtained in 1968 when fields of fall rye were damaged by the rye joint worm, Harmolita secale (Fitch) (Eurytomidae). Several rye fields north of Coaldale were found to be heavily infested in 1969. This is likely to be a continuing pest.

In 1969 the alfalfa looper, Autographa californica (Speyer) (Noctuidae), attacked several rape seed fields east of Claresholm. Similar damage has previously occurred north of Calgary but never before in this region. Little is known concerning its potential as a crop pest here, although it did limit its attack to rape and did not attack mustard.

Inhibition of Aedes aegypti trypsin by vertebrate sera

C-t Huang

Aedes aegypti trypsin was inhibited by 16 vertebrate sera and Periplaneta hemolymph. The mosquito trypsin and its two bovine inhibitors (α_1-globulin and α_2-macroglobulin) were partially purified. A. aegypti trypsin-α_2-macroglobulin complex has been demonstrated by Sephadex G-200 gel column chromatography and by cellulose acetate membrane electrophoresis. This complex was found to retain the esteratic activity (BAEE and BAPNA as substrates) but it was weak in proteolytic activity (denatured hemoglobulin as substrate). The esteratic activity of this complex was not inhibited by soybean trypsin inhibitor, bovine α_1-globulin, or PMSF. Free A. aegypti trypsin was inhibited by these inhibitors. The inhibition reaction of α_1-globulin and α_2-macroglobulin was competitive and non-competitive, respectively. Other properties of these enzyme-inhibitor complexes were also studied.

Preliminary studies on a method of dieldrin analysis in insects

O. J. Jonasson and D. M. Rosenberg

An extraction and cleanup method is described for the gas chromatographic analysis of dieldrin residues in insect tissue. Periplaneta americana were used.

The limits of sensitivity of the method are set at 0.26 ppm in 0.4 g of 'roach tissue (0.1048 µg in 10 ml n-hexane) but are probably between 0.26 ppm and 0.023 ppm in 0.4 g of 'roach tissue.

The esterases of Aedes aegypti (L) (DDT resistant strain)

Renuka Kapoor

The cholinesterase bands found by starch gel electrophoresis of A. aegypti have been designated A to F; A being the fastest moving band. The technics are sufficiently sensitive to permit running individual specimens and the distribution of esterases in 100 larvae, 60 pupae, and 60 adults is summarized below.

Esterase A - Generally a faint band; activity is increased in presence of alcohol. Present in almost all larvae, occasionally separates into 2 distinct bands. Rarely present in either pupae or adults.

Esterase B - In larvae it is a single or double band more active than esterase A. In pupae it is usually a single (but occasionally a double) band. Present in all adults but with low activity.

Esterase C and D - In larvae these are 2 closely moving bands, C may be absent in a very few larvae. About 1/5 of the pupae (11 of 58) have esterase C while all have esterase D; the activity of D varies and occasionally this esterase is subdivided into 2 bands. Adults rarely have esterase C but D is always present and very active.

Esterase E - This enzyme is present in low concentrations in larvae; it is absent from some. Esterase E may be inhibited by alcohol. Pupae show either no esterase E or only a weakly active material. In adults this esterase is found in only a few adults and amongst these it is sometimes divided into 2 bands.

Esterase F - Usually present as a single strong band; sometimes as a faint single or double band.

Cytoplasmic incompatibility: A pseudo-Rh factor prevents hybridization of closely related Ips (Coleoptera: Scolytidae)

G. N. Lanier

Ips plastographus consists of three ecological races, which are morphologically and chromosomally distinguishable. One race is limited to coastal California where it infests Monterey and bishop pines; the second occurs in the subalpine zone of the Sierra Nevada and mountains northward to British Columbia; the third is found in the interior mountains from Guatemala to southern British Columbia where it attacks ponderosa and related pines.

Eggs from laboratory pairings between individuals from coastal and subalpine populations showed normal hatchability but fertility of the F_1 was reduced. Hatchability for the various backcrosses differed

considerably. When coastal or subalpine plastographus were paired with interior individuals, results of the reciprocal pairings differed drastically and the F_1 showed increased fertility. The latter result was particularly unexpected a priori, in light of unpaired chromosomes and other disruptions in meiosis frequently observed in testes of these hybrids.

These unusual results cannot be explained by nuclear genetics. Rather, they appear to reflect differences in the compatibility of the various sperm and/or embryos with the cytoplasm of the eggs. Since incompatibility was modified in both the egg and sperm of the F_1 instead of maternally transferred, it is hypothesized that propensity for rejection of sperm and/or embryo is controlled by cytoplasm-conditioning nuclear genes rather than "cytoplasmic genes" per se.

A cytoplasmic incompatibility system may be operative in other closely related Ips, which are totally sterile in both directions.

DDT-dehydrochlorinase from house flies

H. G. Philip

The development of the DDT metabolizing enzyme DDT-dehydrochlorinase was studied using the DDT-resistant house fly strain No. 79 DR-1_{25} + 6 supplied from the Experimental Station, Canada Department of Agriculture, Ottawa.

1) The 24-hour LD_{50} (at 24°C, 60% R.H.) has been determined for 4 to 5 day-old adults of this strain of flies. (LD_{50} = 60 µ g DDT/fly).

2) The proportion of soluble protein (determined by the method of Lowry) increases during larval development, reaches a maximum during the pupal stage and then decreases with aging of sugar-fed adults.

3) DDT-dehydrochlorinase activity was not detectable in eggs or larvae up to 24 hours old.

4) DDT-dehydrochlorinase activity was detected in larvae more than 24 hours old, in pupae, and in adults. The results indicate high DDT-dehydrochlorinase activity during early larval and early adult life and low activity during the pupal stage.

Insects associated with pine stem rusts

J. M. Powell

One hundred and twelve insect, 17 mite, and 2 spider species were collected by the use of cylindrical sleeve cages or reared from the cankers

of the Comandra blister rust, Cronartium comandrae, in Alberta. The insects caused considerable damage to 40-60% of the cankers observed in any one year and destroyed large numbers of aeciospores and pycniospores. Eleven orders of insects were represented, of which the Coleoptera (12 families), Lepidoptera (6), Diptera (9), and Hymenoptera (7) were the most important. Epuraea obliquus, Paracacoxenus guttatus, and an unidentified Cecidomyiidae appeared to be true mycetobionts, several others could be classified as mycetophiles, but the majority of the associated species appeared to be mycetoxenes. Other insects, which caused damage to the canker, included Pissodes schwarzi, Cylindrocopturus deleoni, Ernobius sp. Microgramme filum, Corticaria sp., Bradysia spp., Dioryctria spp., Laspreyresia sp., Grapholitha sp. prob. caerulena, Recurvaria spp., and Cinara spp. An orbatid mite, Ceratozetes sp., was also among the most commonly observed species. This is the first information on the habitat and immature stages of Epuraea obliquus and Paracacoxenus guttatus. Others collected, including Ceratozetes, may represent new species. Several of the collected species were also reared or collected from other pine stem rusts. Pine stem rusts apparently provide a suitable habitat for a number of species.

The whats and whys of the ups and downs

R. F. Shepherd

The outbreak pattern of the forest tent caterpillar was described pointing out that there is some element of a cyclic nature involved. From this it was inferred that there was a density- or time-dependent feed-back mechanism operating. The various possible factors, which could be functioning in this manner, were discussed. They included food relationships, unknown egg mortality, population genetics, parasitism and predation, disease, and insect behavior.

Inhabitants of the spiny rose leaf gall

J. D. Shorthouse

A description of the spiny rose leaf gall caused by an undescribed species of the genus Diplolepis was given. The stimulus for gall development comes from the feeding activities of the Diplolepis sp. larvae. Both the larvae of Diplolepis sp. and an inquiline, Periclistus pirata O.S., are capable of causing inner chamber development. This inquiline is the most common inhabitant of non-parasitized galls.

The community of the spiny rose leaf gall consists of six species besides Diplolepis sp. and Periclistus pirata O.S. The primary parasites are Eupelmella vesicularis Retz., Habrocytus rosae Girault, and Ormyrus brunneipes Provancher. The remaining three inhabitants, Glyphomerus stigma Fab., Eurytoma incerta Fullaway, and Torymus bedegularis Linn. are hyperparasites.

A sex pheromone in the army cutworm

D. L. Struble and L. A. Jacobson

A sex pheromone was detected in the female army cutworm moth, Chorizagrotis auxiliaris (Grote) (Lepidoptera: Noctuidae). The methods used to extract the pheromone and the bioassay conditions were described. Potential synthetic pheromones were discussed.

Autogeny in tabanidae

A. W. Thomas

A new method for the detection of autogeny in horse flies was described. This method consisted of studying the physiologicalage of females throughout a season. If only parous members of a species were collected, this species was considered autogenous--at least for the first gonotrophic cycle.

Out of 29 Alberta species studied, 14 proved to be autogenous. The maximum number of gonotrophic cycles completed by any one female was two.

There was a correlation between seasonal distribution and autogeny. Late-season species, that is, those whose populations reached maximum density in late July-early August, were autogenous. Early-season species were anautogenous.

The use of attractant traps for the control of horse flies was discussed. It was suggested that these would be ineffective for controlling autogenous species.

Aggregations of male Cephenemyia in southern Alberta

J. Weintraub

Observations were made on the behavior of males of Cephenemyia jellisoni Townsend and C. apicata Bennett and Sabrosky aggregating at 2 man-made objects in the Porcupine Hills--a fire lookout tower, which attacted most of the flies observed, and a cattle shelter, which attracted only a few. Both objects were at the crests of prominent hills, the former in a clearing among limber pine and Douglas fir and the latter in open rolling grassland. Males of both species were found at the same times and at the same places. The seasonal activity period was between early July and mid-September. The daily activity period was between 11.00 a.m. and about 3.00 p.m., peaking slightly between 12.00 noon and 1.30 p.m.

The males of both species occupied the upper 30 feet of the 60-foot lookout tower, with most of the activity occurring at the white lookout hut at the top. Their activity consisted of hovering about on the leeward side, perching on various surfaces and pursuing each other or small thrown objects. Males of both species could be attracted down to the 30-foot level by exposing white objects, for example, insect nets. The males would hover near the nets in a wind or land upon them in calm.

No females came to the tower but male and female activity, including mating, was seen through binoculars to occur at the tops of pines at the edge of the clearing. There was traffic of males between the trees and the lookout tower; at any given time more males were counted about the tower than about the trees.

The relative attractiveness for the males of man-made objects over natural objects suggested a super-model, which simulated natural site markers. The landing of males on the artificial sites also suggested possibilities of treating the sites to effect selective control of these parasites of Cervidae.

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P. E. Blakeley G. E. Ball	D. M. Rosenberg Sab and Mary Kami R. H. Gooding J. Weintraub	Isabel Blakeley Hazel Gushul Edna Jacobson Enid McDonald	H. McDonald R. H. Burrage
Registration	Panorama of Delegates		
K. R. Depner C. E. Lilly P. E. Blakeley	J. Weintraub	J. A. Sheman-chuk	S. McDonald R. H. Gooding G. E. Ball	C. L. Neilson G. A. Hobbs
Inspecting Collections	Insect Displays	E. T. Gushul	B. Hocking
L. Safranyik H. F. Cerezke	The Four Horsemen	The Think Tank	Attentive Audience	A. C. Oboite
T. Sen-Gupta	M. Krunic	Serious Discussion	Kay and George Ball	J. Weintraub	Ruby I. Larson H. F. Cerezke
B. Volkers "The Thinker"	Ruby I. Larson	J. B. Gurba	A. M. Harper R. H. Gooding "The Smith Bros.?"	R. (Dick) Painter Edna Jacobson	D. S. Smith

SEVENTEENTH ANNUAL MEETING LETHBRIDGE - 1969

G. N. Lanier	Renuka Kapoor	D. H. Craig	Insect Sensory Receptors	B. S. Heming	A. W. Thomas	J. D. Shorthouse
A. M. Harper	N. D. Holmes	M. A. Khan	T. R. Pear-son		A. C. Cheung	H. G. Philip	H. F. Cerezke
D. L. Struble	C-t Huang	D. M. Rosenberg	P. K. Chiang	∝-glycero-P cycle	P. K. Chiang
M. A. Khan	C. E. Lilly		Henri Goulet	R. F. Shepherd	Brian Hocking (World Traveller)
Hazel Gushul Clara Shemanchuk Renuka Kapoor	Beulah and Reg Salt	Dave and Marg Larson	Betty Hobbs R. H. Painter	Ann Weintraub Georgean Harper
Isabel and Phil Blakeley	The Banquet	Hanna and Dick Painter Edna Jacobson Stu McDonald
After-dinner Audience	The President Speaks	Neil (Anyone for pol-lution?)	W. Beckel	B. Hocking

ENTOMOLOGICAL SOCIETY OF ALBERTA

Minutes of Executive Meeting

October 23, 1969, 8.00 p.m.

Held at the residence of the President, J. A. Shemanchuk, Lethbridge

PRESENT: J. A. Shemanchuk (President), D. A. Craig, Ruby I. Larson, C. E. Lilly, J. Weintraub (for W. A. Nelson)

1) *Reading of minutes*

Minutes were read of:

The 16th annual business meeting parts I and II.
The executive meeting, August 22, 1969.
The committee - E.S.A. Annual Meeting (1969), September 5, 1969.

2) *Items arising out of minutes*

Discussion was held of items to be presented at the 17th annual business meeting, as follows:-

a) Zoological Record contribution.
b) Invitation to the Entomological Society of Canada to hold the 1973 annual meeting in Edmonton.
c) Announcement of winner of Entomology Prize.
d) Report of Committee on Entomology Prize.

3) *Appointment by executives of committees for 17th annual meeting*

a) Nomination committee

B. Hocking (Chairman)
R. W. Salt
N. D. Holmes

b) Resolutions committee

D. S. Smith (Chairman)
R. F. Shepherd

c) Insect collection competition

J. D. Shorthouse (Chairman)
D. A. Craig
B. Heming

d) Auditors

A. M. Harper
L. A. Jacobson

4) *Interim financial statement*

The President, J. A. Shemanchuk, reported that as of October 23, 1969, 8.00 a.m., the total cash of the Society on hand was $583.42.

5) *Minutes of annual meeting of Entomological Society of Canada*

The minutes were read by J. A. Shemanchuk. Discussion ensued about the new fees, schedules, prizes for encouragement of entomology students, and date of the 1970 annual meeting of the E.S.C. to be held at the Fort Garry Hotel, Winnipeg, Manitoba, on August 24-26, 1970, the hosts to be the Entomological Society of Manitoba.

6) New business was discussed for inclusion in the agenda of this year's annual business meeting.

7) D. A. Craig moved, and Ruby I. Larson seconded the motion, that the meeting adjourn.

CARRIED

8) The meeting adjourned at 9.15 p.m.

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Minutes of the 17th Annual Business Meeting - Part I

The 17th annual meeting of the Entomological Society of Alberta was held at the Park Plaza Motor Hotel, Lethbridge, on October 24, 1969, at 11.15 a.m. The President, J. A. Shemanchuk, devoted part of the time allotted for the opening address to start the business meeting and announced the appointment of J. Weintraub as Secretary of the Society for the remainder of the term to replace W. A. Nelson, who is out of the province for one year.

1) The minutes of the 16th annual meeting were presented as recorded in the Proceedings. President J. A. Shemanchuk called for errors or ommissions arising from the recorded minutes of the 16th annual business meeting, which all of the members received as part of the 1968 Proceedings of the Society.

   D. A. Craig moved, and G. E. Swailes seconded the motion, that the minutes of the 16th annual meeting be adopted as recorded.

   CARRIED

   A subsequent correction from P. Kevan was accepted by the membership and the last sentence of Item 14 (page 28 of the 1968 Proceedings) was changed to read, "After some discussion J. A. Shemanchuk presented the motion 'that we (Alberta Entomological Society) are unable to take action because we do not send an official representative to the A.C.C.,' seconded by C. E. Lilly."

2) P. E. Blakeley asked whether the adoption of the recorded minutes included approval of the 1968 financial statement.

   L. A. Jacobson moved, A. M. Harper seconded, that the membership approve the 1968 financial statement as recorded in the Proceedings.

   CARRIED

3) The minutes of the Executive Meeting of October 23, 1969, were read for the information of the membership.

4) Composition of committees for the 17th annual meeting were posted for the information of the membership.

5) The Treasurer, P. E. Blakeley, presented an interim financial statement and forecast that the bank balance will be down somewhat from last year. He announced the present balance as $583.42 but emphasized that all the bills were not yet received and/or paid. A year-end Treasurer's Report will be prepared.

6) The Treasurer announced the new schedule of fees of the Entomological Society of Canada. For full members, $16 to the parent Society plus $2 for the Entomological Society of Alberta; the new student fees are $8 to the parent Society. Discussion ensued about the time of joining by new members (mainly students) re their payment of fees and attendance privileges at the annual meeting.

P. E. Blakeley moved, G. C. D. Griffiths seconded, that student fees for the Entomological Society of Alberta be credited to the year of the annual meeting at which they were paid.

CARRIED

7) The President reported that no contribution was made to the Zoological Record for 1969 but that the 1968 contribution had been made and acknowledged.

G. E. Ball moved, B. Hocking seconded, that the Entomological Society of Alberta contribution of $10 for 1969 be forwarded to the Zoological Record.

D. M. Rosenberg's suggestion of increasing the contribution was discussed but no action was taken.

Original motion *CARRIED*

8) The President reported that he had verbally extended an invitation to the Entomological Society of Canada to hold the 1973 annual meeting in Edmonton. He also stated that the Entomological Society of Canada preferred a date in August. Regional Director, R. H. Gooding, pointed out that the Entomological Society of Canada required a written invitation and that dates need not be mentioned in the invitation.

The Entomological Society of Canada will hold annual meetings as follows:-

1970 - Winnipeg, Manitoba, August 24-26, Fort Garry Hotel
1971 - Victoria, British Columbia
1972 - Montreal, Quebec

R. H. Gooding moved, L. K. Peterson seconded, that the President write to invite the Entomological Society of Canada to Edmonton for the 1973 annual meeting.

CARRIED

9) The President reported that the Entomological Society of Alberta Prize had been awarded to E. H. Miller and acknowledgement of the payment had been received.

10) G. E. Ball reported for the Committee on the Entomological Society of Alberta Prize. By correspondence with G. Pritchard, it was decided to recommend that the Society offer a prize to students of both the University of Alberta and the University of Calgary.

D. M. Rosenberg moved, G. E. Ball seconded, that a prize of $50 each be given to an entomology student at the University of Alberta and the University of Calgary.

After a discussion of finances, the motion was tabled until Part II of the business meeting.

11) R. F. Shepherd moved, N. D. Holmes seconded, that Part I of the business meeting adjourn.

CARRIED

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Minutes of the 17th Annual Business Meeting - Part II

October 25, 1969, 8.30 a.m.

1) R. H. Gooding submitted the Report of the Regional Director to the Entomological Society of Canada and presented a summary of the report. R. H. Gooding moved, B. Heming seconded, adoption of the Report.
CARRIED

2) Continuation of Item 10 of Part I of business meeting re Entomological Society of Alberta Prize.

R. H. Gooding moved, N. D. Holmes seconded, to retable the motion and the recommendation until the next annual meeting.
CARRIED

3) B. Hocking, Chairman of the Nominations Committee, presented the following slate of officers for 1970:-

President	-	J. B. Gurba
Vice-President	-	G. Pritchard
Secretary	-	B. Heming
Treasurer	-	R. Dixon (alternate D. M. Rosenberg)
Editor	-	D. A. Craig
Directors	-	S. McDonald (Lethbridge)
	-	D. J. Larson (Calgary)
	-	I. Stringer (Edmonton)
Regional Director	-	W. O. Haufe

B. Hocking moved, L. K. Peterson seconded, that the report be adopted as read.
CARRIED

G. E. Ball moved, N. D. Holmes seconded, that nominations cease.
CARRIED

4) J. D. Shorthouse presented the Report of the Insect Collection Competition. Eleven collections had been submitted, all but one being in the senior category. The very active group from Olds, under the leadership of Mr. Godwin, again dominated the competition.

J. D. Shorthouse moved, D. A. Craig seconded, adoption of the Report.
CARRIED

P. E. Blakeley moved, C. E. Lilly seconded, that prizes for the Insect Collection Competition be limited to a total of $50 for 1969.
DEFEATED

The President will request Committee Chairman, A. Raske, to write Mr. Godwin commending him on his excellent work in the Insect Collection Competition.

5) The Report of the Resolutions Committee was presented by D. S. Smith. Resolution 1 had been circulated to the members earlier for consideration and had been altered to read:

> Resolution 1 - "Whereas the Entomological Society of Alberta recognizes its responsibility to man's welfare in protecting him and his crops from noxious or disease-carrying insects and Whereas production of food and fibre cannot be increased at a rate commensurate with human population growth, therefore Be it resolved that pesticide programs be carefully considered and that the long-term welfare of man, other species, and their environments be given precedence over immediate economic gain and that the Governments of Alberta and Canada be urged to sponsor and support research on world population control."

G. N. Lanier moved, B. Heming seconded, that the resolution be adopted as read.

CARRIED

> Resolution 2 - "Whereas the success of the 17th Annual Meeting of the Entomological Scoety of Alberta can, to a large extent, be attributed to the following be it resolved that letters of thanks and appreciation be sent to:-
>
> a) Dr. W. Beckel for his very entertaining and stimulating address at the annual banquet
> b) The Canadian Sugar Factories, Lethbridge, and the Oliver Chemical Company (Lethbridge) Limited, for their financial support
> c) The staff and management of the Park Plaza Motor Hotel for the preparation and provision of accommodations
>
> Be it further resolved that a vote of thanks be tendered to all those involved in the preparation of the meeting and the program."

D. S. Smith moved, R. F. Shepherd seconded, that the Resolutions Committee Report be adopted as read.

CARRIED

6) Items of new business

The President asked for direction in carrying out the Resolution 1. He was instructed to write to the Governments of Alberta and Canada.

7) N. D. Holmes expressed dissatisfaction with the content and editorial policy of The Canadian Entomologist. Lively discussion revealed that no firm policy had been expressed by the Entomological Society of

Canada or the Journal. R. F. Shepherd moved, A. M. Harper seconded, that the Executive of the Entomological Society of Alberta write to the Editor of The Canadian Entomologist that confusion exists about editorial policy and requesting that a firm statement be published.

CARRIED

8) L. K. Peterson requested assistance in defining an entomologist, which had been asked for by the vocational schools of Alberta. R. H. Gooding referred him to the Canada Manpower Centre, who have a definition and description.

9) The President thanked the following for valuable assistance during his term of office:-

   a) J. Weintraub, who ably accepted the position of Secretary for the remainder of the year,

   b) The committees that have been responsible for local arrangements,

   c) The executive that served so faithfully,

   d) The participants in the panel discussion,

   e) The chairmen of session who kept the meeting on schedule, and

   f) All delegates present for participation in the meeting.

10) D. A. Craig moved, B. Heming seconded, that the business meeting be adjourned.

CARRIED

* * * * * *

FINANCIAL STATEMENT 1969

Receipts

Balance transferred from Calgary - January 1, 1969			$578.33
Collector's Guide			.25
Fees:			
ESA - 1968 - 1 at $2.00	$2.00		
- 1969 - 32 at 2.00	64.00		
- 1970 - 27 at 2.00	54.00	$120.00	
ESC - 1969 Student - 1 at $4.00 .	4.00		
- 1970 " - 2 at 8.00 .	16.00		
- 1969 Full - 15 at $8.00 ...	120.00		
- 1970 " - 20 at 16.00 ...	320.00	460.00	580.00
Annual meeting:			
Donations		55.00	
Registrations and banquet		339.50	394.50
			1,553.08

Disbursements

Fees to Ottawa	460.00	
Entomological Society of Alberta Prize	50.00	
Printing 1968 Proceedings	20.16	
Annual meeting	325.30	
Mimeo insect collection letter	10.00	
Postage	6.00	
Bank charges	1.92	
Insect collection prizes	16.58*	889.[illegible]
Balance in bank - December 31, 1969	679.70	
Less outstanding cheque*	16.58	663.12
Balance as at December 31, 1969		1,553.08

Audited April 1, 1970

L. A. Jacobson

A. M. Harper

P. E. Blakeley,
Treasurer

REPORT OF INSECT-COLLECTION COMMITTEE

A. Raske

The prize winners for 1969 were as follows:-

Adult

First prize	Richard Krahn, Olds Agricultural and Vocational College, Olds, Alberta.
Second prize	Herman Barthel, Olds Agricultural and Vocational College, Olds, Alberta.
Third prize	Wendy Groenveld, Olds Agricultural and Vocational College, Olds, Alberta
Honorable mention	Cheryl Williams, Olds Agricultural and Vocational College, Olds, Alberta

Junior

Hugh Godwin,
Olds, Alberta.

The following served as judges:-

J. D. Shorthouse (Chairman)
D. A. Craig
B. S. Heming

REPORT OF THE REGIONAL DIRECTOR

November 1968-August 28, 1969

R. H. Gooding

The Board of Directors of the Entomological Society of Canada has met 3 times during the past year; January 30-31, 1969, in Ottawa, August 25, 1969, in Guelph, Ontario, and August 29, 1969, in Guelph, Ontario. I was in office until August 28, 1969, and attended the first two meetings; Dr. B. S. Heming substituted for Dr. W. O. Haufe at the August 29 meeting.

The mid-winter meeting is an innovation, which was decided upon by the Board in August, 1968, and is intended to give the members of the Board an opportunity for concentrated but unhurried consideration of the Society's business. The cost of travel to Ottawa by the Board members is met by the Society for those members who cannot find other sources of money.

The following are the major items from the Board meetings, which I attended:-

1) *International Association on Water Pollution*

J. A. Downes represented our Society on the "Provisional Canadian Committee" of the I.A.W.P. and reported to the Board on the organizational meeting held by the Canadian Committee. The Board voted to pay the supporting dues ($25) in order that the Entomological Society of Canada be represented on the "Interim Committee" of I.A.W.P.

2) *Training of Entomological Technicians*

A working party on "Training of Entomological Technicians" had been set up in 1968 under the chairmanship of H. E. Welch. The purpose of this committee was:

"(i) to review the certification procedure for engineering and medical technicians and technologists,

(ii) to survey the courses and curricula in entomology in Canadian Institutes of Technology, and

(iii) to make recommendations to the President of the Society on technical training."

The main recommendations of this committee were:

"(i) that the Society not become involved in a certification programme and

(ii) that the Society appoint a 'Committee on Technician Training'."

The report also suggests 8 terms of reference for the new committee. (A copy of the complete report is in the Regional Director's file.)

3) *Brief to the Biological Council of Canada*

A brief was submitted to B.C.C. covering the areas of ecology, pesticides, and university research and training of students. This material was intended for incorporation into the brief submitted by B.C.C. to the Senate Committee on Science Policy.

4) *Finances of the Canadian Entomological Society*

The Finance Committee (E. G. Munroe, chairman) submitted a detailed, 14-page analysis of the financing of the Society and included 14 recommendations designed to prevent the Society from getting into financial difficulties (copy in Director's folder). The essence of the report was that although the Society was not yet in financial difficulties it would be unless measures were taken soon. On the basis of this report the Board recommended to the general meeting that active membership, student membership, subscriptions, page charges, price of reprints, and overhead on the memoirs all be raised. This was passed at the general meeting without a single dissenting vote. A copy of the new schedule has been mailed to all members.

5) *By-Laws of the Entomological Society of Canada*

The by-laws were discussed, again, in some detail at the January meeting and the Board then submitted them to the membership-at-large for approval by mail ballot. The membership approved these with very few votes in opposition. The new by-laws will come into effect when approved by the appropriate "powers-that-be" in Ottawa.

6) *Membership*

The membership committee reported that "the majority of people and agencies that are interested in memberships and supporting the Society are already enrolled." The Society is presently growing at approximately 5-7% per annum.

7) *Bulletin*

The first issue of the Bulletin was a financial disaster in as much as it used up the funds, which were expected to produce 3 or 4 issues. A committee (D. C. Eidt, chairman) was set up to develop a format and a policy for the Bulletin and to select a new editor for the Bulletin.

8) *Student Encouragement*

Funds from the Entomological Society of Canada were available in 1969 to help defray the expenses of students attending the Entomological Society Meetings in Guelph. Unfortunately, this was not well publicized and apparently no students requested funds to attend the meetings.

9) *Collection of Dues*

There was considerable feeling at the Board meetings that the present arrangement in which the Regional Societies collect the membership fees and pass them on to the National Society is unsatisfactory. Some of the Regional Societies are extremely tardy in turning over funds to the National Society. Although the Board took no action it discussed the possibility of having the National Society collect its dues directly from the members.

10) *Program Committee*

The Board requested that the President appoint a Program Committee "that would be available for assistance to affiliated societies in the planning and organizing of meetings; and would consist of three members appointed on a rotating basis to three-year terms so that each year the senior member (chairman) would be a resident of the region of the affiliated society that is host for the meeting that year."

11) *Dates and Places for Future Meetings of the Entomological Society of Canada*

1970 - Fort Garry Hotel, Winnipeg, August 24, 25, 26
1971 - Victoria, British Columbia
1972 - Montreal, Quebec
1973 - Alberta

As per our resolution last year the executive extended an invitation to the Entomological Society of Canada to meet with us in Alberta in 1973. This has been done verbally 2 or 3 times and I have the distinct impression that the Board of the Entomological Society of Canada would like the invitation in writing.

MAILING LIST - 1969

MEMBERS	ADDRESS
BALL, Dr. G. E.	Entomology Department, University of Alberta, Edmonton, Alberta.
BALL, Mrs. G. E. (Kay)	Entomology Department, University of Alberta, Edmonton, Alberta.
BARRON, Mr. J. K.	Entomology Department, University of Alberta, Edmonton, Alberta.
BLAKELEY, Mr. P. E.	Research Station, Canada Agriculture, Lethbridge, Alberta.
BROWN, Mr. C. E.	Department of Forestry, Centennial Tower Building, 400 Laurier Avenue West, Ottawa 4, Ontario.
BURGESS, Miss Angie	Entomology Department, University of Alberta, Edmonton, Alberta.
CARR, Mr. J. L.	Rural Route No. 4, Calgary, Alberta.
CEREZKE, Mr. H. F.	Forestry Research Laboratory, Department of Forestry and Rural Development, 132A Ninth Avenue South West, Calgary, Alberta.
CHANCE, Mr. Martin A.	Entomology Department, University of Alberta, Edmonton, Alberta.
CHANCE, Mrs. Mary (Galloway)	Entomology Department, University of Alberta, Edmonton, Alberta.

CHIANG, Mr. P. K.	Entomology Department, University of Alberta, Edmonton, Alberta.
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EVANS, Dr. W. G.	Entomology Department, University of Alberta, Edmonton, Alberta.
EWEN, Dr. A. B.	Research Station, Canada Agriculture, Saskatoon, Saskatchewan
GOODING, Dr. R. H.	Entomology Department, University of Alberta, Edmonton, Alberta.
GOULET, Mr. H.	Entomology Department, University of Alberta, Edmonton, Alberta.

GRIFFITHS, Mr. G. C.	Entomology Department, University of Alberta, Edmonton, Alberta.
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WEINTRAUB, Mr. J.	Research Station, Canada Agriculture, Lethbridge, Alberta.
WHITEHEAD, Mr. D. R.	Entomology Department, University of Alberta, Edmonton, Alberta.

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PAINTER, Mr. R. H.	422 - 25 Street South, Lethbridge, Alberta.
SEAMANS, Dr. H. L.	581 Fraser Avenue, McKellar Park, Ottawa, Ontario.
WHITE, Mr. R. M.	Rural Route No. 1, West Summerland, B. C.