

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



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ENTOMOLOGICAL SOCIETY OF ALBERTA

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PRESIDENT'S ADDRESS

Ladies and gentlemen I would like to welcome you to the 23rd Annual Meeting of the Entomological Society of Alberta.

I would also like to briefly comment at this time on the future of entomology and entomologists. There are approximately one million species of insects, and new species and biotypes of known species are constantly being discovered. As most of us realize, our knowledge of nearly all these insects is limited, and the knowledge we could obtain is almost unlimited. Therefore, I must conclude that our profession could readily absorb large numbers of scientists and supporting staff and large amounts of money.

In the world, we have a population of 4 billion people, which is expected to increase to 7-8 billion in the next 25 years. Man has been on earth for 3 million years and it has taken all this time to reach our present level of food production, and even now we do not adequately feed all our population. In the next 25 years, we must double food production to feed the world population at the present level, and we must do it when some of our most productive agricultural land is covered with paving and houses, when we are experiencing an energy shortage, and when nearly all the available land that can be economically farmed is already producing crops. Therefore, I conclude that, as biologists, we have much to challenge us during the next few years.

Can we justify spending large sums of money on entomology? I think we can! It is estimated that from 10-70% of the food produced in various parts of the world is lost to disease organisms, and to insects, mites, and other animals. Many of the countries that have the greatest food shortage lose the most food to pests. If we can reduce pest damage to almost zero, our predicted food shortage during the next 25 years could be almost eliminated. Therefore, I conclude that there is justification for spending large amounts of money on entomological research.

Is there a future for entomologists to move into other fields? Yes, there is. Entomology provides excellent training for studying other complex situations. Dr. Bill Beckel, one of our local entomologists, is President of the University of Lethbridge. Dr. Robert Glen, a former wireworm specialist, recently retired as director of the Agriculture Canada Research Branch. Dr. Paul Erhilch, an insect entomologist, has recently written the "Population Bomb" and several other books on population, food, and pollution problems. Dr. Kenneth Watt, a former Canadian forest entomologist, is now writing, and developing complex computer programs for solving the world's major problems. Dr. Kinsey, a specialist on insect galls, made a major contribution to sex knowledge of human males and females. Therefore, I conclude that entomologists also have a future in fields other than entomology.

In summary, I see a real need locally, nationally, and internationally for entomology and entomologists.

A. M. Harper

PROGRAM SYNOPSIS

THURSDAY EVENING

- 7:00 Executive Meeting
- 7:30 Registration and Reception

FRIDAY

- 8:30 Registration
- 8:45 President's Address
- Introductions
 Dr. C.D. Stewart, President, Lethbridge Community College
 Mr. C.S. Clark, Regional Director, Alberta Agriculture
 Dr. C.R. Harris, Past President, Entomological Society
 of Canada
- 9:15 Feature Speaker - Dr. G.A. Hobbs
- 10:30-11:30 Submitted Papers
- 11:30-12:15 Business Meeting
- 1:30- 4:45 Submitted Papers

FRIDAY EVENING

- 6:00 Cocktails
- 7:00 Dinner
- GUEST SPEAKER
- Dr. J. Cousins

SATURDAY

- 9:00-11:00 Submitted Papers
- 11:00 Business Meeting, continued
- 12:30 Adjourn

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

HIGHSPEED MICRO CINEMATOGRAPHY OF LARVAL BLACKFLY FEEDING

D. A. Craig
University of Alberta, Edmonton, Alberta

A short Super-8 cine film of black fly larvae feeding was shown. The cephalic fans open and close in approximately 10 milliseconds. The cleaning movements of the mandible on the closed fan can be seen, but not the movements of the maxillae.

THE DISCOVERY OF LARVAL TANYDERIDAE IN ALBERTA

D. A. Craig and K. Exner
University of Alberta, Edmonton, Alberta

Since 1972, some 45 larval tanyderids have been discovered, by various workers, from the following rivers; North Cutbank, Athabasca, Red Deer, Sheep, Bow and the Oldman. As yet, the specific identity of the larvae is unknown. A short film showed the Red Deer River habitat, the collecting technique and some larval behaviour. Scanning electron microscope micrographs were used to show some of the external morphology of the larvae.

SOME ASPECTS OF INSECT PHOTOGRAPHY

E. T. Gushul
Agriculture Canada Research Station
Lethbridge, Alberta

In the field, insects are usually photographed with hand-held equipment consisting of a single lens reflex camera fitted with focusing extension bellows and a short mount 105-mm lens. An electronic flash lamp of suitable output provides a good light source, which contributes to maximum depth of field and the stopping of general action.

In the laboratory, when it is necessary to show the insect to the best taxonomic advantage (frequently against a plain background), the procedure is reversed. The camera and bellows are secured to a suitable firm support, e.g., a copy stand or universal field stand like the plumber's nightmare, while the electronic flash lamp is positioned at the proper lens-to-subject distance and attached to another suitable support. A miniature spot lamp (AO mike light) is used to illuminate the insect during positioning in the focus plane. The insect can be positioned manually to show a straight frontal, rear, dorsal, ventral, profile, or any other angle of view and against any selected background. You simply adjust manually to counteract the insect's movement. A mobile larva is placed on a sheet of double frosted non-glare glass, which is set on a 14-x-17 G.E. x-ray illuminator. Focus and f stop are preset. A mini spotlight is prefocused for the center of the picture area and the larva is maneuvered by sliding and rotating the frosted glass whose sharp edges have been bevel-ground. The larva (or moth, etc.) is always positioned to face the light source. If side or rear detail is to be featured, then it is positioned accordingly. When pre-chilled or CO₂'d insects are photographed, they assume a natural attitude when they start to warm up. Shooting at this moment yields best results. When they do move, you counteract by moving the frosted glass while watching through the view finder. Since both hands are often occupied in manoeuvring the subject, the shutter can be tripped by an assistant or by stepping on the air bulb or a remote-control release. Other alternates are pedal hinge release on wire cable or by solenoid.

CONVERGENCE OR CONVENIENCE? - THERIDIID SPIDERS USING
SPINNERETS TO CARRY EGG SACS (ARACHNIDA: THERIDIIDAE)

R. E. Leech,
Research Secretariat, Alberta Environment,
Milner Building, Edmonton, Alberta.

In Ottawa, Ontario, two female theridiids, *Neottiura bimaculata* (L.), were each observed carrying an egg sac attached to the spinnerets in the manner of lycosids. The egg sacs, about 2 mm diameter, are too large for the spiders to carry with their chelicerae and fangs. The first instance was observed on 9 July, 1973, and the second on 7 July, 1974. As the yellowish bodies of the spiderlings are visible inside the egg sacs, it is speculated that the spiders were relocating the egg sacs to a more favorable site prior to emergence of the spiderlings. In both cases, the spiders and egg sacs were found on leaves in the late evening about 60-75 cm above the ground. Photographs were taken. It appears that these are the first records of this species for eastern Canada.

BLACK FLY ABATEMENT PROGRAM: INSECTICIDE RESIDUES

W. A. Charnetski
Agriculture Canada Research Station
Lethbridge, Alberta

On June 4, 1974, approximately 175 gallons of methoxychlor (24% emulsifiable concentrate) was applied to the Athabasca River in a 15-min injection simultaneously from seven positions across the river. This paper discussed the scope of this experiment and the resultant dissipation of this methoxychlor in the water.

Analyses of surface water taken in 1974 at three locations (L/B, centre, and R/B) across the width of the Athabasca River and at eight sites down the river showed variations in residue levels and in the length of the slug. These variations have been correlated to hydraulic parameters of the river. At 8.75 km from treatment, the maximum MeOCl concentration ([MeOCl]) at the L/B, centre, and R/B locations was 0.084, 0.124, and 0.112 ppm, respectively, while the length of MeOCl slug was 2:42, 2:41, and 4:33 hr. At 19.5 km from treatment, the maximum [MeOCl] at the L/B centre, and R/B locations was 0.015, 0.105, and 0.049 ppm, respectively, while the length of the MeOCl slug was >4:15, >4:30, and >4:30 hr, respectively. At 28.2 km from treatment, the maximum [MeOCl] was 0.033, 0.053, and 0.04 ppm, respectively, while the MeOCl slug had increased to >6:04 hr in each case.

Subsurface water samples were collected 3.7 and 11 km from shore at four locations D/S of treatment. Unfortunately, sampling at the 21-km site was curtailed before the maximum [MeOC1] had been obtained. However, from samples taken 3.7 km from shore at 37.3, 75.1, and 176 km, the maximum [MeOC1] was 0.0091, 0.0036, and 0.0012 ppm, respectively, while the length of the MeOC1 slug was >16:00, >17:00, and >67:00 hr. From samples taken 11 km from shore, the maximum [MeOC1] was 0.0094, 0.0046, and 0.0015 ppm, respectively, while the length of the MeOC1 slug was 14:00, 14:00, and >67:00 hr.

Surface samples collected at Fort McMurray reached a maximum [MeOC1] of 0.0004 ppm and the length of the MeOC1 slug was >76:00 hr.

The MeOC1 was moving as a slug, with the maximum [MeOC1] decreasing with the increasing length of the slug as it moved downstream.

The distance of mixing of the MeOC1 has been estimated from the results of a dye test and results of the MeOC1 residues in water. It has been estimated, using the method of injection employed in 1974, distances of 1.5, 10, and 48 km would be required to produce 90, 95, and 98% mixing respectively. The minimum acceptable mixing is 98%.

EVALUATION OF SOME INSECTICIDES FOR FEEDLOT HOUSEFLY CONTROL IN ALBERTA

H.G. Philip, M.G. Dolinski, A. Khan*
Alberta Department of Agriculture, Edmonton, Alberta
*Agriculture Canada Research Station, Lethbridge, Alberta

A procedure was developed for determining the effect of weather on the biological activity of housefly adulticides applied as residual wall sprays inside and outside feedlot buildings.

Eight 4 sq. ft. unpainted plywood panels were sprayed per insecticide (0.5% chlorfenvinphos, 0.5% FMC 33297, 1% dimethoate, and 2% tetrachlorvinphos). Four panels were hung outside a cattle loafing shed facing south, the other four hung inside. Four 1" x 6" diameter mesh-covered cages, each containing 25 3-6 day-old adult houseflies, were attached to each treated panel and 8 untreated (control) panels for 24 hours every 7 days. Two hour knockdown and 24 hour mortality counts were recorded. Bioassays were discontinued when 24 hour mortality was less than 50%.

Results of this study are presented that show the effective biological activity of insecticides applied to surfaces exposed to weather is significantly reduced from that of unexposed treated surfaces.

THE RELEASE OF *UROPHORA CARDUI* (DIPTERA:TEPHRITIDAE)
IN ALBERTA FOR CONTROL OF CANADA THISTLE (*CIRSIIUM ARVENSE*)

W.G. Evans (read by B. Mitchell)
University of Alberta, Edmonton, Alberta

Urophora cardui, a gall-former widely spread in Europe, has recently been introduced into Canada by Canada Agriculture in an attempt to reduce stands of Canada thistle, a very important agricultural weed. This insect oviposits into the vegetative buds of the host, the resulting larvae forming cells to initiate a multilocular gall on the main shoot in about 15 days. Fully developed galls may range in size from a walnut to a fist with from 1 to 10 larvae/gall. Winter is spent as diapausing larvae and pupation occurs in the spring. There is one generation/year. The main effect of this insect on the thistle plant is reduction in biomass and height.

Approximately 50 males and 50 females, obtained from P. Harris and D.P. Peschken, Canada Agriculture, Regina, Sask. were released in July, 1975, in a dense young thistle stand in a cow pasture near Ellerslie, Alberta. Adult survival at time of release was about 90% even though the flies spent at least 2 days in the shipping container. The weather during release was warm and showery. On September 12, 1975 18 galled thistle plants were found with a total of 20 galls. This low incidence of galls is attributed to the presence of cattle in the pasture which may have accidentally eaten the young galled plants. Notwithstanding this natural obstacle, that has to be contended with anyway, there may not be a loss of flies if winter survival is high. Survival of overwintering larvae will be determined in the spring of 1976.

CHEMICAL CONTROL OF THE PITCH NODULE MAKER
PETROVA ALBICAPITANA (BUSCK) IN ALBERTA

J.A. Drouin and D. Kusch
Northern Forest Research Centre, Edmonton, Alberta

The pitch nodule maker, *Petrova albicapitana* (Busck) attacks jack pine and lodgepole pine throughout Canada. Plantations of these tree species and in particular, lodgepole pine is susceptible to severe attack and damage. Chemical controls are difficult due to the larva's concealed feeding habit. Four treatment plots were located at Devon on high value plantings of heavily infested 8-10 yr old lodgepole pine, 4.5 cm in diameter and 2.0 m high. Plots consisted of two 5-tree replicates selected at random. Four chemicals were evaluated. The soil treatments were applied May 13, diluted with water and examined on July 22.

Results indicate the pitch nodule maker can be significantly reduced with systemic soil drench applications. Good controls were obtained with Cygon 4E at 1 oz/in. diameter (0.5 a.i.) and Furadan 10G @ 4 oz/in. diameter (0.4 a.i.). Treatments will be expanded in 1976 with these and other systemics for second year data, timing and at varied application rates.

THE EFFECT OF DIMETHOATE AND 2,4-D COMBINATIONS
ON THE CONTROL OF THREE SPECIES OF GRASSHOPPERS

S. McDonald
Agriculture Canada Research Station
Lethbridge, Alberta

Grasshopper control in cereal crops is often required at the same time farmers are applying herbicides for weed control. Combining insecticides and herbicides may reduce application costs but has not been recommended because the interactions of such combinations are unknown.

In laboratory toxicity tests the oral toxicity of dimethoate to the three economic species of grasshoppers was reduced when combined with equal parts of 2,4-D. This suggests that 2,4-D has an antagonistic reaction. However, when this combination was tested on wheat plants, at recommended control rates under field conditions, neither insect nor weed control was adversely affected.

More research is required with such combinations to determine if changes occur in the mammalian toxicity, residue persistence, or environmental impact before these practices can be recommended and brought into use.

SOME EFFECTS OF THINNING LODGEPOLE PINE ON
SUBSEQUENT POPULATION CHANGE OF THE ROOT-
COLLAR WEEVIL *HYLOBIUS WARRENI* AND ITS DAMAGE

H.F. Cerezke

Northern Forest Research Centre, Edmonton, Alberta

A study of the effects of thinning young lodgepole pine in the foothills of Alberta, and subsequent changes in populations of the root-collar weevil, *Hyllobius warreni* Wood, its cumulative damage and effects on tree growth was described.

After 8 years following thinning there was a higher incidence of trees with weevil wounds on thinned trees (av. 55%) compared to control trees (av. 25%). The amount of root-collar circumference girdled in thinned plots showed a decreasing trend with tree size and was generally lower on thinned trees (av. 24.2%) compared to control trees (av. 31.7%). Thus, while more trees were attacked and weevil density per tree and per ha were higher on thinned trees compared to control trees, average radial growth rate was still higher on thinned trees than on control trees. The results were discussed in relation to such factors as weevil behavior, hail damage, tree age and site conditions which had an influence upon the results.

A MATHEMATICAL MODEL TO ESTIMATE ENERGY
FLOW THROUGH ARCTIC INVERTEBRATES

James K. Ryan

University of Alberta, Edmonton, Alberta

The model is based on four equations which govern energy flow through animal populations. Growth and death are exponential in day degree time. Respiration = aW^b . Respiration is empirically related to growth in immature animals. The model predicts developmental time and mean numbers in a cohort. These values are compared to the day degrees in a season and the mean standing crop to estimate energy flow.

A MATHEMATICAL MODEL WHICH QUANTIFIES THE VISUAL FIELD AREAS OF INSECT COMPOUND EYES

J. E. Kuster

University of Alberta, Edmonton, Alberta

While viewed through an ocular goniometer, the compound eyes of *Cicindela tranquebarica*, *Megacephala carolina*, *Omus californicus*, and *Amblycheila schwarzi* (Coleoptera: Cicindelidae) were rotated through 360° in 10° increments. Every 10° the angles of the visual fields were measured on a stage goniometer. The visual field angles for one and both compound eyes were plotted on homolograms.

The areas of monoscopic, stereoscopic, and blind visual fields were quantified in steradians by summing the surface areas bounded by the two solid angles of each 10° strip from -90° to +90°:

$$\sum_{-\frac{\pi}{2}}^{+\frac{\pi}{2}} \left[2 \left(\frac{\theta_2 + \theta_1}{2} \pi \right) \right] \left[\sin \theta_2 - \sin \theta_1 \right]$$

Where θ_1 and θ_2 are angle readings from the raw data, and $\theta_2 = \theta_1 + 10^\circ$. Visual field areas expressed as percentages of the unit circle surface area were calculated by multiplying the above formula by $\frac{100}{4\pi}$.

This model transforms the shape of any insect compound eye into a sphere. Therefore it can be used to graphically and quantitatively compare the various visual field areas of insects.

TRICHOPSELAPHUS: MORPHOLOGICAL AND
GEOGRAPHICAL PATHWAYS OF THE PAST

George E. Ball
University of Alberta, Edmonton, Alberta

For the species of this tropical Middle American-South American genus of harpaline carabids, a reconstructed phylogeny is presented based on coincidence of the pattern of variation of form of male hind femur, of ovipositor stylus, and of apex of the median lobe of the male genitalia. From most ancestral to most derived the sequence of species is: *T. magnificus*, new species; *T. meyeri*, new species; *T. minor* Bates; and *T. subiridescens* Chaudoir. Analysis of the distribution pattern in terms of historical geology and geography of tropical America suggests that the genus arose in South America. An early Tertiary dispersal across a sea barrier to nuclear Middle America produced in that area the ancestral stock of the *T. subiridescens* group, and left behind in South America the ancestral stock of the *T. magnificus* group. Subsequently, the *T. subiridescens* stock differentiated in Middle America, to produce *T. meyeri* and the ancestor of *T. minor*-*T. subiridescens*. The latter stock differentiated with re-dispersal to South America, leaving in Middle America *T. minor*, and in South America, *T. subiridescens*. The last-named species extended its range into Middle America when the Panamanian land bridge formed, near the close of the Pliocene epoch.

MITES ASSOCIATED WITH BUMBLEBEES IN SOUTHERN ALBERTA

Lynn Richards
Lethbridge, Alberta

More than twenty species of mites live in bumblebee nests. Most are phoretic on the bees, and a few on dung insects; one is an internal parasite, and the rest are soil mites. Mites in the genera *Kuzinia*, *Parasitus*, *Pneumolaelaps*, *Proctolaelaps* and *Locustacarus* are closely associated with bumblebees. *Kuzinia* feeds on pollen and wax and are phoretic as deutonymphs. *Parasitus* is predatory on other mites, insect larvae, and nematodes. Deutonymphs are the phoretic stage. *Pneumolaelaps* feed on *Bombus* eggs and directly effect the nest populations. They are phoretic as adult females. *Proctolaelaps* is phoretic as adult females. The first four genera listed use *Bombus* queens, workers, and *Psithyrus* queens for transfer into and between nests. Mites are also lost and gained by foragers at flowers. These mites overwinter on *Bombus* and *Psithyrus* queens. *Locustacarus buchneri* is found only in the trachea and air sacs of the bees and has a low percent of occurrence in the bees in southern Alberta, except for *B. occidentalis* and *P. suckleyi*, (which further indicates the close relationship between these two species). If the queen is infected so are her workers and males.

EVIDENCE FOR CIRCULATING ANTIBODY ACTIVITY IN THE
MECHANISM OF RESISTANCE OF SHEEP TO *MELOPHAGUS OVINUS*?

W. A. Nelson
Agriculture Canada Research Station
Lethbridge, Alberta

By restricting ked population to one area of the body of sheep, and obtaining a complete cycle in numbers on that area, it was shown that when the remaining area was subsequently infested only a low population cycle was obtained. It was tentatively concluded that the skin of the second area had been sensitized sufficiently by the initial population to confer resistance upon it. This could only have been due to circulating antibody produced in response to the initial population.

COLD-HARDINESS OF SOME ALBERTA MOSQUITOES

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

Females of *Anopheles earlei* Vargas and *Culex territans* Walker, which overwintered at George Lake in rockpiles and badger burrows, had mean supercooling points in winter of $-23.6 \pm 0.5^{\circ}\text{C}$ and $-26.1 \pm 1.0^{\circ}\text{C}$ respectively. Since the minimum temperatures recorded at this site were -18°C in a rockpile and -6°C in a burrow, both species could have spent the winter supercooled rather than frozen. The LT_{50} of *C. territans* in the laboratory was 133 days at -5°C , and 178 days at $+2^{\circ}\text{C}$. *Culiseta inornata* (Williston) was not found in winter near Edmonton but its mean supercooling point in September was $-11.3 \pm 0.5^{\circ}\text{C}$, and its LT_{50} was only 20 days at -5°C and 70 days at $+2^{\circ}\text{C}$. Nevertheless, it was common in the study area in summer.

THE EFFECTS OF LABORATORY-REARED TSETSE FLIES
(*GLOSSINA MORSITANS MORSITANS*) ON HOST RABBITS

K. R. Parker
University of Alberta, Edmonton, Alberta

A colony of tsetse flies (*Glossina morsitans morsitans* Westw.) maintained in the Department of Entomology, University of Alberta were fed on a series of Flemish Giant × French Lop Ear rabbits. Twelve male rabbits from three litters were used. Equal numbers of control and experimental rabbits were obtained from each litter. Experimental rabbits were exposed 2 or 3 times a week for a period of 8 months to 300-500 flies on each exposure. Differences between exposed and nonexposed rabbits were not significant (Student's t-test) with respect to red and white cell counts, hematocrit, weight changes, and whole blood clotting times. Three other rabbits were exposed to the same daily exposure 6 days a week. Results show definite decreases in red cell counts and hematocrit values as might be expected from blood losses. Capillary clotting times for all three rabbits show an initial sharp increase followed by a further gradual rise to a peak and then dropping after exposure from 11,000 to 13,000 flies. White blood cell counts show an increase consistent with possible vertebrate resistance and antibody production. Circulating antibodies reacting with salivary gland emulsions were present in the rabbits exposed daily to tsetse flies. An anticoagulant which prevents clotting of rabbit blood was found in tsetse fly salivary glands.

HEAD CAPSULE GROWTH IN CRANEFLIES (*DIPTERA: TIPULIDAE*)

G. Pritchard
University of Calgary, Calgary, Alberta

In larval craneflies the whole of the head can be retracted into the thorax, but the hind part, which is open and dissected, is permanently retracted because the cuticles of the head and the appropriate parts of the thorax are fused in this region. This hind part of the head capsule grows for a considerable period of time after each ecdysis, thereby continuously increasing the area available for attachment of mandibular muscle. This phenomenon is discussed in light of the questions: 1) How is the cuticle continuously laid down? 2) For how long during an instar is new cuticle produced? 3) What influences the rate at which new cuticle is produced? 4) Does this growth provide a means of precise age determination within an instar? 5) Is there a relationship between possession of this feature and the type of body plan and amount of growth and frequency of moulting in Diptera larvae?

AEDES BARRI REUGER AND *AEDES MERCURATOR*
DYAR IN THE CALGARY AREA

M.A. Enfield
University of Calgary, Calgary, Alberta

Sampling of the mosquito larvae in temporary sloughs northwest of Calgary in April and May 1975 revealed that over 90% of the larvae of spring *Aedes* in that area belonged to just two species.

The commoner of the two appeared to answer the description given by Rempel (1959) for *Aedes riparius*, but examination of the genitalia of males reared from these larvae showed them to be similar to those of *Aedes excrucians*. Using both larval and adult characters, the species was identified as *Aedes barri* Reuger from the key published by Barr (1958).

Larvae of the second species could not be definitely identified from any of the keys available, having some of the characteristics of *canadensis*, *flavescens*, *increpitus* and *sticticus*. When the genitalia of reared adult males were seen to be very similar to those of *Aedes stimulans*, it was realized that the larvae, too, were similar to this species, but with greater branching of several of the setae, notably on the head and siphon.

The closest description for such a species are those given by Dyar (1920) for *Aedes stimulans mercurator* and *A.s. albertae*. Dr. D. M. Wood, of the Biosystematics Research Institute in Ottawa, has compared the types of both subspecies with specimens sent from Calgary, and is of the opinion that they are all specimens of the same species, namely *Aedes mercurator*.

RESISTANCE TO THE WHEAT CURL MITE, *ACERIA TULIPAE*

Ruby I. Larson and T. G. Atkinson
Agriculture Canada Research Station
Lethbridge, Alberta.

The wheat curl mite, *Aceria tulipae* Keifer, is the vector of both wheat streak mosaic virus (WSMV) and an unidentified pathogen causing wheat spot mosaic (WSpM). WSM is present in most of the winter wheat growing areas of North America, but WSpM has been recognized only in southern Alberta, southern Ontario, North and South Dakota, Nebraska, and Ohio. WSpM, though less widespread than WSM, and often found with it, can be very damaging by itself in southern Alberta. WSMV can be transmitted manually, but the WSpM pathogen requires the mite for transmission.

We believe that in areas where both WSM and WSpM are present, mite-resistant wheats are a better control measure to aim for than is the development of varieties immune to WSMV alone. Immunity to WSpM pathogen has not yet been discovered. This may be because screening of *Triticum-Agropyron* (T-A) lines for resistance to WSMV has been done almost exclusively by manual inoculation and the WSpM pathogen can be transmitted only by means of the mite.

We have isolated in a T-A hybrid a chromosome from *A. elongatum* that bestows good resistance to colonization by *Aceria tulipae* when substituted for chromosome 6D of wheat or added to the wheat chromosome complement. In growth cabinet tests, mite-resistant chromosome addition and substitution lines in wheat varieties Rescue and Cadet, when exposed to mites carrying WSMV, matured and set seed, although they are susceptible to WSMV. The varieties themselves succumbed. Contrariwise, a WSMV-immune but mite-susceptible chromosome substitution line was devastated when exposed to mites carrying the WSpM pathogen.

Although the line of Rescue with the substituted *Agropyron* chromosome yields as well as Rescue itself, it has poorer quality and lower test weight and 1000-kernel weight. It is about 3 days later than Rescue. For these reasons, we are in the process of translocating onto a wheat chromosome the portion of the *Agropyron* chromosome responsible for mite resistance while eliminating deleterious genes on that chromosome and retaining desirable genes on the wheat chromosome involved in the translocation.

Lethbridge Community College	Mrs. Shemanchuk	Mrs. Hobbs	Mrs. Struble	R. Larsen	Mrs. Weintraub	Kay Ball	Mrs. Swailes	Mrs. Holmes	Mrs. Charnetski
G.E. Ball	G. A. Hobbs	G. Hilchie	B. Rolseth	K. Parker	J. Kuster	W. Barr	J. Gurba	B. Heming	
				R. Mickalonis	J. Rickert		H. Philip		
J. Hudson	P. R. Wilkinson	President's Welcome			A. Harper	C. D. Stewart	C.S. Clark	S. McDonald	
D. Craig									
R. Harris	G. A. Hobbs	J. Weintraub	D. Craig	E. Gushul	R. Leech	W. Charnetski	H. Philip	B. Mitchel	E. Swailes
H. Cerezke	G.E. Ball	J. Ryan	D. Struble	J. Hudson	J. Kuster		Tiger Beetle	Well, what did the boss have to say to you??	
L. Richards	W. A. Nelson	M. A. Enfield	G. Pritchard	Head capsule on crane flies	K. Parker	R.I. Larsen		T.G. Atkinson	
N.D. Holmes	D. Craig	B. Osberg	Collections		J. Gurba	P. Blakeley	M.Enfield	P. Scholefield W. Nelson The Richards	



TWENTY-THIRD ANNUAL MEETING - LETHBRIDGE 1975

G.A. Hobbs	R. Bertrand	A. Nimmo	M. Steiner B. Rolseth	The Borkents	A.M. Harper	T. Lavery	P. R. Wilkinson
R. Leech	J. Rickert	R. Larson	E. Russell		J. Hudson W. Barr	J. Běliček S. McDonald N. Sladen H. Cerezke	
J. Weintraub	J. Rickert M. Steiner	J. Hudson G. Ball R. Bertrand P. Russell	R. Leech L. Peterson R. Gooding H. Mehlhaff	M. Steiner H. Philip P. Scholefield M. Enfield	G. Hobbs J. Gurba L. Jacobson P. Reigert		
R. Gooding	S. McDonald	J. Ryan	W. Haufe	K. Depner	G. Hilchie	J. Kuster D. Watler	George & Kay Ball
J. Weintraub J. Drouin N. Sladen R. Harris		G. Hilchie G. Hobbs K. Parker		G. Harper	Dolly Drouin Enid McDonald	Mrs. H. Gushul	
The Strubles R. Larsen	L. Jacobson		The McDonalds		The Weintraubs	The Hobbs	
The Shemanchuks			After dinner		and topic	Speaker J. Cousins	



ENTOMOLOGICAL SOCIETY OF ALBERTA

MINUTES OF EXECUTIVE MEETING

April 17, 1975 - 1:30 p.m.

A meeting of the Executive of the Entomological Society of Alberta was held, April 17, 1975 in the Biology Building, Research Station, Canada Agriculture, Lethbridge, Alberta. Present were W.A. Charnetski, A.M. Harper, C.E. Lilly, W.A. Nelson, L.K. Peterson, J.A. Shemanchuk and H.F. Cerezke. The meeting commenced at 1:30 p.m.

- 1) Insect Collection Competition-- This item was reviewed, and after some discussion, it was suggested the Secretary contact Dr. D. Craig and indicate the wishes of the Executive that an attempt be made to disperse notices of the Collection Competition for 1975. It was agreed that up to \$80.00 to \$90.00 be used for postage, if necessary, and \$80.00 to \$100.00 for prizes.
- 2) Insect Survey of Alberta-- A letter from the Hon. Horst Schmid was reviewed concerning this proposed survey and its workings through the Provincial Museum and Archives. It was agreed that a three-member committee be established to arrange a meeting and further discussions with Mr. D. Spalding of the Museum, and prepare reports of progress to Hon. Schmid and for the Ent. Soc. Alta. Dr. G.E. Ball was suggested as the Chairman of this committee along with Dr. H.R. Wong and Mr. H.G. Philip.

Dr. W. Charnetski reviewed the proposed Biological Survey of Canada, indicating it was likely to be funded and to proceed.

- 3) Brief on Pesticide Use in Alberta-- L.K. Peterson gave a brief review of the Environment Conservation Authority's headings on Pesticide Use in Alberta. It was suggested that Dr. N. Holmes be asked to prepare a short summary statement on the brief he presented to ECA on behalf of the Entomological Soc. of Alta. and that he submit his summary to be published in the 1974 proceedings.
- 4) Financial Statement-- The Treasurer reported a current bank balance (as of March 10, 1975) of \$2,200.00, petty cash of \$5.13, an outstanding bill of \$53.00 and current assets totalling \$2,152.73.

The sale of insect boxes was to be recorded separately and any funds from the sale of the Insect Collector's Guide are to be sent to the Entomology Dept., U. of A.

- 5) Dr. W. Charnetski reported that the reprinting of the Certificate for the E.S.A. Prize (U. of A.) was nearly complete.

- 6) The Secretary noted for interest that during 1974-75 a number of notices and miscellaneous literature had been received. It was suggested that these be listed for printing in the 1974 proceedings.
- 7) The Secretary was instructed to prepare a list of libraries in Alberta which should be on the mailing list to receive copies of the ESA proceedings. The Glenbow Foundation was to be included. The list will be printed in the 1974 proceedings.
- 8) 23rd Annual Meeting of ESA-- A program committee consisting of J.A. Shemanchuk (Chairman), D.L. Struble and G.E. Swailes was established to plan for the 23rd annual meeting in Lethbridge. The suggested dates are November 7-8, 1975, and likely at the Lethbridge Community College. The Secretary was instructed to contact Dr. G. Ball to see if these dates will be suitable for Department staff and students. Mr. Shemanchuk will plan banquet arrangements and has suggested a smorgasbord. A theme for the meeting and guest speaker were discussed but the committee is open to suggestions. W.A. Charnetski moved, W.A. Nelson seconded, that an advance of up to \$100.00 be made available to the program committee for planning the annual meeting. Carried.
- 9) Manpower Study, E.S.C.-- Dr. W.A. Charnetski reported on manpower in entomology in Canada from a study by the Ent. Soc. of Canada. He indicated that a consultant group has been contracted to collect data on Entomologists in Canada and that the study was to be completed by September 30, 1975. Assistance from the regional societies has also been requested to provide a mailing list of all entomologists for contact by the consultant.
- 10) Dr. W.A. Charnetski gave a brief report on the Teen International Entomology Group (T.I.E.G.) for Student encouragement in Canada and indicated E.S.C. was giving continued support.
- 11) Publishing Proceedings of E.S.A.-- This topic was brought up and discussed as there appeared to be interest for a publishing media for papers presented at the meetings of E.S.A. It was pointed out that recent annual meetings have tended to be more professional than previously. However, it was suggested that the meeting remain informal and that contributors be allowed to choose whether to publish only title, abstract or complete paper. The executive members are to examine this more fully and present a report at the annual meeting in November.

The meeting adjourned at 4:30 p.m.

H. F. Cerezke
Secretary-Treasurer

MINUTES OF EXECUTIVE MEETING

November 6, 1975 - 7:00 p.m.

A meeting of the Executive of the Entomological Society of Alberta was held November 6, 1975 at the Lethbridge Community College, Lethbridge. In attendance were Dr. A.M. Harper, Dr. W.A. Charnetski, Dr. W.A. Nelson, Dr. K.R. Depner, Dr. R.H. Gooding and Dr. H.F. Cerezke.

- 1) The minutes of the previous Executive meeting held April 17, 1975 were moved adopted by W. Charnetski, seconded by W. Nelson.
- 2) A letter from Dr. G.E. Ball concerning discussions on the proposed Insect Survey of Alberta was reviewed and set aside for the Business Meeting.
- 3) The idea of publishing the Entomological Society of Alberta Proceedings was discussed, but generally with mixed feelings. A suggestion put forward was that a special issue of *Questiones Entomologicae* might be considered, with the author of a paper having the option of publishing either title, abstract, entire paper or nothing. The topic was set aside for discussion with Dr. G. Ball at the Business Meeting.
- 4) The Secretary provided an interim financial statement and indicated total current E.S.A. assets amounted to \$2,035.05.
- 5) The Secretary indicated a total E.S.A. membership of 81, of which 19 were known to have 1975 paid membership in Ent. Soc. Canada. It was pointed out that new membership costs in Ent. Soc. Can. were \$20.00 per person, \$2.00 of which is to be returned to the affiliate Society.
- 6) The Secretary reviewed correspondence he had received as follows:
 - Letter of acknowledgement from Zoo Record for ESA 1974 contribution.
 - Request for Nature Canada for ESA membership list.
 - Letter from Mr. R.R. Goforth, Research and Environmental Affairs Manager, Syncrude Canada Ltd., offering information on their environmental programs. The Secretary was instructed to reply to Mr. Goforth requesting to stay on the mailing list to receive further information on environmental impact studies.
 - Letter from Zero Population-Growth requesting endorsement of their policies.
 - Letters asking for support to broaden boundaries of Kluane National Park, Yukon Territories.

- Letter from Univ. of Alberta indicating final payment to the society for sum borrowed for insect display boxes. The boxes are now all sold. The suggestion was made that sales of display boxes should probably be restricted to students in Alberta.
- Letter from Mrs. B. Hocking expressing her good wishes to society members.
- Other miscellaneous correspondence.

7) Various committees were established as follows:

Nominations Committee	- Dr. W.A. Nelson (Chairman) Mr. L.K. Peterson
Resolutions Committee	- Dr. G.E. Ball (Chairman) Dr. W.O. Haufe
Insect Collections Competition	- Mr. H.G. Philip (Chairman) Mr. J. Bělíček Dr. K.W. Richards
Auditors	- Mr. J.A. Muldrew Mr. J.A. Drouin

- 8) No names had been submitted in 1975 for new Honorary membership replacements in the Ent. Soc. of Canada. However, W. Charnetski moved Mr. L.A. Jacobson's name be considered as an Honorary Member in Ent. Soc. Can., seconded by R. Gooding. W. Nelson also suggested Dr. G.A. Hobb's name be submitted for Honorary Membership in Ent. Soc. Can. Charnetski suggested that the ESA Executive be empowered to suggest nominees for Hon. membership in ESC without mentioning actual names at the Business Meeting.
- 9) R. Gooding moved, W. Charnetski seconded that Ent. Soc. Alta. provide seven free banquet tickets for Dr. and Mrs. Cousins, Mr. and Mrs. Clarke, Mr. and Mrs. E. Gushul and Dr. R. Harris.
- 10) W. Charnetski, Regional Director of E.S.C. reported briefly on the following:
- Science Policy of ESC.
 - Manpower Study of Entomologists in Canada.
 - Report on future annual meetings of ESC (Varty's report).
 - Biological Survey of Canada.
- He noted that room and board for attendance at ESC Board of Governor's meeting in 1975 would cost ESA about \$55.00.
- 11) Representation of ESA on a Public Advisory Committee of the Alberta Environment Conservation Authority was discussed. The Secretary was instructed to draft a letter to the appropriate person with the Alberta ECA, asking in what capacity and representative structure we as a Society might serve.

12) Meeting adjourned.

H. F. Cerezke
Secretary-Treasurer

MINUTES OF THE 23RD ANNUAL BUSINESS MEETING

Parts I and II

November 7-8, 1975

The 23rd annual meeting of the Entomological Society of Alberta was held at the Lethbridge Community College, Lethbridge, Alberta, November 7-8, 1975. The meeting was opened by the President, Dr. A.M. Harper.

- 1) The minutes of the 22nd annual meeting were adopted as published in the 1974 Proceedings on a motion by H. Cerezke, seconded by J. Shemanchuk.
- 2) An interim financial statement was presented and adoption moved by H. Cerezke, seconded by E. Swailes.
- 3) Membership in E.S.A. - H. Cerezke reported there were 81 members, including two honorary members.
- 4) Correspondence received by the Secretary was noted for interest to the membership.
- 5) The following Committees and their members were announced by A. Harper.

Nominations:	W. Nelson (Chairman)
	L. Peterson
Resolutions:	G. Ball (Chairman)
	W. Haufe
Insect Collections:	H. Philip (Chairman)
	J. Bělíček
	K. Richards
Auditors:	J. Muldrew
	J. Drouin

- 6) Insect Collection Competition-- Dr. D. Craig reported as Chairman of this committee and announced his resignation after 1975. It was pointed out that the \$900.00 loaned by the Society to the Dept. of Entomology at U. of A. had now been fully reimbursed and that a new loan was now required to purchase more insect collection boxes. Dr. Craig agreed to investigate costs of plastic boxes with the view of obtaining them in Edmonton at about \$3.50 per box. A few suggestions were made as to how boxes may be obtained cheaper. The matter was left with Dr. Craig and his successor.
- 7) Common Names Committee-- Dr. G. Ball indicated he had nothing to report.

- 8) Report of Regional Director to ESC-- Dr. W. Charnetski reported he had attended two meetings in 1975, and that action taken was reported in the September, 1975 issue of the E.S.C. Bulletin. Highlights included E.S.C. grant to help University publications, E.S.C. Manpower Study, Student Scholarship Fund, Biological Survey of Canada, Teen International and future meetings of E.S.C. The 1977 E.S.C. Meeting will be in Winnipeg, the 1978 meeting, location as yet undecided, is to be the first meeting held independently of regional sponsorship (re Varty's report).
- 9) The 1974-75 E.S.A. Prize winners were announced as follows: Mr. G. Hilchie (University of Calgary), present at the meeting. Mr. E. Pike (University of Alberta), not present.
- 10) The President, A. Harper announced the passing since the last meeting of the following, and asked all members to stand and observe one minute silence.

Dr. H.R. (Hod) Seamans (83), an honorary member residing in Ottawa.

Mr. R.D. Dixon (36) in Edmonton, an active member.

Dr. R. Kasting (51) in Lethbridge, an active member.

Dr. N.S. (Norm) Church (46) of Saskatoon, a charter member.

- 11) Donation to Zoological Record-- J. Bělíčěk moved, B. Heming seconded that \$15.00 be donated again by E.S.A. Carried.

Dr. Craig amended the motion and moved the donation be increased to \$25.00, seconded by G. Ball. Carried.

- 12) A. Harper expressed congratulations on behalf of the Society to Dr. N.D. Holmes for being awarded an honorary Doctor of Laws degree from the University of Lethbridge in May, 1975, and to Mr. E.T. Gushul for being made an associate of the Photographic Society of America.
- 13) Honorary Members-- A. Harper announced there were no nominations this year to E.S.A. but that the Executive would look after this for next year. He noted the Society could have up to four.
- 14) Insect Survey of Alberta-- Dr. G. Ball reported on behalf of a committee (consisting of G. Ball, H. Philip, H. Wong) set up to explore the undertaking of this survey. He noted his committee had prepared a report on the proposed survey (copy in E.S.A. Secretary files) and had held a meeting October 29 to discuss the report with B.A. McCorquodale, D.V. Weseloh and D.A.E. Spalding of the Provincial Museum and Archives. The report was received favorably and would be forwarded to the Hon. H. Schmid. Dr. Ball noted his Committee feels their job is partly done and that they would like to remain functional until they feel their need had been fulfilled. G. Ball moved, W. Charnetski seconded that

the Secretary draft a letter to the Hon. H. Schmid after two months to indicate that a study proposal had been prepared and discussed with the Provincial Museum officials, and that the Society wished to remain in contact. Carried. In the discussion, the view was expressed that the proposal, as it stands, may present conflicts with other entomologists in the provincial government for the setting of priorities and funding.

- 15) Honorary Membership in E.S.C.-- A. Harper suggested E.S.A. put one or two names forward from the Alberta region. He noted there were no vacancies at present and that nominations had to be made ahead of time to be considered at the annual meeting. W. Charnetski moved, R. Gooding seconded that the Executive of E.S.A. be empowered to formulate a contingency list of proposed Honorary Members to E.S.C. Carried.
- 16) Canada Centre on Biting Flies-- It was suggested that the Sub-committee on Biting Flies meet and decide or advise on behalf of E.S.A. interests. This Sub-committee included K. Depner, L. Peterson, H. Philip and R. Gooding. However, R. Gooding inquired as to the need and function of the Sub-committee. W. Haufe reported on behalf of the National Committee on Biting Flies and indicated that no information had been received as yet as to where the new Canada Centre would be located. He indicated the issue was very controversial.
- 17) Payment of Room and Board of Regional Director-- A motion by R. Gooding, seconded by J. Gurba, was made that the E.S.A. pay the expenses incurred by the Regional Director, W. Charnetski in 1976. Carried.

Some discussion followed as to the reasons for payment of room and board by provincial societies. It was pointed out that the costs for room and board would be about the same for each delegate where as transportation costs would be variable.

- 18) W. Nelson listed the following slate of Executives of E.S.A. for 1976. G. Ball moved, D. Craig seconded that no further nominations be made. Carried.

President	W.A. Nelson
Past-President	A.M. Harper
Vice-President	B. Heming
Secretary-Treasurer	H. Cerezke
Editor	J.A. Drouin
Directors-Lethbridge	K.R. Depner
-Calgary	G. Pritchard
-Edmonton	R.H. Gooding
Regional Director to E.S.C.	W.A. Charnetski

- 19) G. Ball presented the report of the Resolutions Committee and moved its adoption, seconded by W. Haufe. Carried.

Whereas the success of the 23rd Annual Meeting of E.S.A. can to a large extent be attributed to the following, be it resolved that letters of appreciation be sent to:

- (1) Dr. Jim Cousins for his delightful after-dinner account of the early history of Lethbridge;
- (2) Dr. C.R. Harris, Past-President of E.S.C. for his participation in the meetings;
- (3) Dr. Gordon A. Hobbs, who as feature speaker presented a masterful and entertaining summary of his work on legume pollination by bumble bees and leaf cutter bees;
- (4) Dr. C.D. Stewart, President Lethbridge Community College, and Mr. C.S. Clark, Regional Director, Alberta Department of Agriculture for providing facilities for the scientific program;
- (5) The staff the students of Food Services Department, Lethbridge Community College, for a banquet well served and of such quality and proportions that it will long be remembered;
- (6) FMC for providing donations for coffee during breaks in the scientific sessions;
- (7) The Lethbridge Brewery for refreshments for the hospitality evening.

Be it further resolved that a vote of thanks be extended to the Executive and Committees who were involved in preparation of the meeting and program.

- 20) W. Haufe expressed concern about the austere situation presently in entomology and asked for comments. G. Ball also commented that the situation with entomology in western Canada was becoming serious and that there appeared to be no intention to re-build. He suggested a resolution should be made on behalf of the Society expressing this concern and to be sent to various federal and provincial departments. W. Charnetski noted similar concern was expressed at the last two E.S.C. meetings. J. Gurba indicated that documentation of the entomology picture had already been submitted through the Alberta Pest Control Advisory Committee but that re-submissions should be made to other federal departments. N. Holmes suggested that federal government policy appeared to be aimed at cutting back in all fields of agricultural research.

W. Charnetski moved, J. Shemanchuk seconded that a committee of L. Jacobson, J. Gurba and G. Ball be established to formulate a resolution expressing concern of the state of entomology. Carried. P. Blakeley further moved, seconded by W. Charnetski that the committee take whatever action, with the authority of E.S.A. Executive, as they see fit. Carried.

- 21) During this part II of the business meeting H. Philip renewed the discussion on the Biting Fly Subcommittee and asked for clarification. The question was raised as to who really wants the Centre for Biting Flies in Alberta. R. Gooding stated he didn't really know what plans the National Committee had for establishment of a centre. However, W. Haufe pointed out the need for an agency somewhere to interpret problems and to inform people what to do in case of outbreaks such as in southern Manitoba. A. Harper noted that two E.S.A. members were also members of the National Comm. on Biting Flies and that they can report to E.S.A.

R. Gooding then moved, J. Hudson seconded that the present Sub-committee of four be dissolved and that the two members on the National Comm. (W. Haufe and B. Taylor) report to E.S.A. and to others interested in biting flies on actions of the National Committee. Carried.

- 22) Report on Pesticide Use in Alberta-- L. Peterson informed the members that final reports would likely be out by spring 1976. Proceedings of meetings are now available for \$24.00 or \$4.00 per proceeding (7 total).
- 23) Location of 1976 E.S.A. Meeting-- Kananaskis was suggested as a location but that there would be a restriction of 45-50 people. It was suggested that Y.M.C.A., 6 miles from Kananaskis might be used for accommodation. Another suggestion was Olds; the decision was left for the Executive. The suggestion was also made that the Secretary inquire through B. Godwin for possibly holding the 1977 meeting at Olds.
- 24) Making E.S.A. Proceedings a Scientific Publication-- This topic was discussed and several suggestions were made. One suggestion was that some means be provided to publish title of paper only, or abstract, or entire paper. G. Ball commented on the suggestion that one issue of Quaest. Ent. be used to publish Society papers, pointing out that the present Proceedings format is a Society function which he finds satisfactory, and that as editor of Quaest. Ent. there would be extra duties and delays in publishing because of outside reviews required in addition to decisions as to whether a paper is acceptable or not. A. Harper concluded the discussion, indicating no change in format for the 1975 Proceedings, but suggested the next Executive might pursue the matter if they wished.
- 25) Insect Collection Competition-- D. Craig reported on this year's selection of winners as follows:
- First - Brian Osberg, Lethbridge (Junior) Elizabeth Russell, Olds.
 - Second - Majorie Marshall, Olds.
 - Third - Russell Lemieux, Olds.

D. Craig expressed thanks to Mr. B. Godwin for his special efforts of student encouragement.

- 26) Formation of Achievement Awards Committee-- B. Charnetski suggested that a committee should be established to look at names in the region who could be reported and recommended to E.S.C. This suggestion was left for the new Executive.
- 27) A. Harper expressed thanks to all those who had looked after the local arrangements. W. Charnetski moved, J. Weintraub seconded that the meeting adjourn. Carried.

H. F. Cerezke
Secretary-Treasurer

FINANCIAL STATEMENT FOR 1975

<u>Receipts</u>	<u>Subtotals</u>	<u>Totals</u>
Bank balance held in Edmonton account	\$ 1,955.39	
Petty cash	9.58	
Credit held for F.W. Faxon	5.72	
Total funds held by Treasurer Jan. 1/75	<u>1,970.69</u>	\$ 1,970.69
Membership fees: 1974 2 @ \$4.00	8.00	
1975 30 @ \$4.00	120.00	
1976 51 @ \$4.00	204.00	
	<u>332.00</u>	322.00
Bank interest: April 30	28.46	
October 31	28.63	
	<u>57.09</u>	57.09
Annual meeting:		
Advance from Ent. Soc. Alta.	100.00	
Registration 53 @ \$4.00	212.00	
Banquet 65 @ \$5.00	325.00	
Lethbridge Brewery	30.00	
FMC	40.00	
Bar sales	62.05	
Bottle refunds	6.60	
Soft drink refunds	23.28	
Liquor refunds	32.40	
	<u>831.33</u>	831.33
Sales of 1974 Proceedings, Colorado Library (F.W. Faxon)		4.00
Reimbursement of loan from Univ. Alta. Ent. Dept.:		
February 1975	283.36	
October 1975	277.97	
	<u>561.33</u>	561.33
Total Receipts for 1975		3,756.44
Credit held for F.W. Faxon		1.72
Total Ent. Soc. Alta. Receipts		3,754.72

<u>Disbursements</u>	<u>Subtotals</u>	<u>Totals</u>
Ent. Soc. Alta. Prize: Univ. of Alta.	\$ 50.00	
Univ. of Calgary	50.00	
	<hr/> 100.00	100.00
Printing Ent. Soc. Alta. Prize Certificates		54.00
Printing 1974 Ent. Soc. Alta. Proceedings		229.20
Binding Ent. Soc. Alta. Proceedings, Vols. 11-20		79.20
Contribution Zoo Soc. London		15.25
Advance for 1975 Ann. meeting		100.00
Annual Meeting:		
Banquet, 71 @ \$4.25	301.75	
Dinner wine, 20	66.00	
Coffee service (Fri. Nov. 7)	16.00	
Liquor Permits	7.00	
Beer (Nov. 6)	45.00	
Wine (Nov. 6)	6.95	
Plastic cups, Receipt Books	4.05	
Food (Nov. 6)	35.92	
Liquor	91.30	
Soft drink mix	26.20	
Honorarium (Guest Speaker)	50.00	
Gratuity (Serving staff, Lethbridge Comm. Col.)	20.00	
Postage	8.40	
	<hr/> 678.57	678.57
Room and meal costs of Reg. Dir. to attend ESC meeting		53.00
Postage		27.43
Envelopes		5.52
Receipt book		1.93
Letraset sheet (ESA Prize Certificates)		4.60
Petty cash on hand		10.29
Total Disbursements		<hr/> 1,358.99
Total Receipts	3,756.44	
Total Disbursements	1,358.99	
Bank balance	2,387.16	
Credit held for F.W. Faxon	1.72	
Total Ent. Soc. Alta. funds held in bank	2,385.44	
Petty cash on hand	10.29	
Total Ent. Soc. Alta. cash in Treasury December 31, 1975		2,395.73
Loan of Insect Coll. Comp. Com. to Univ. Alta. Ent. Dept.		900.00

Disbursements (cont'd)SubtotalsTotals

Reimbursements to Ent. Soc. Alta. by
Univ. of Alta.:

December 1973	\$ 338.67
February 1975	283.36
October 1975	277.97
	<hr/> 900.00

900.00

Value of insect collection boxes held by
Insect Coll. Comp. Com.

00.00

H. F. Cerezke
Secretary-Treasurer

Approved by ESA Auditors:

J. A. Muldrew
J. A. Drouin

REPORT OF THE REGIONAL DIRECTOR

As Regional Director, I attended two meetings of the Governing Board of the Entomological Society of Canada, one at Guelph on February 18-19, 1975, and another at Saskatoon on August 16-18, 1975. Actions taken have been published in the Bulletin of the Society (Volume 7(1): 18-19, March 1975, and Volume 7(3): 64-65, September 1975).

The Entomological Society of Canada continues to make significant advances in membership services and in 'promoting' entomology in Canada. Particularly noteworthy are the following:-

The Canadian Entomologist-- A \$10,000 grant was obtained from NRC to support publications from university staff members.

The total number of manuscripts submitted to the Editor have increased significantly since the page charges were increased.

Manpower Study-- The Manpower Committee was able to obtain a \$25,000 grant from the Federal Government to hire consultants to conduct a nation-wide manpower study of entomologists. As Regional Director, I submitted a list of entomologists in Alberta to the committee. Everyone has now had at least one questionnaire from the consultants.

Scholarship Fund-- The qualifications of landed immigrant applicants was changed to "must have a degree from a Canadian university" from "must have a degree in science from a Canadian university".

The executive supported the expenditure of \$500.00 annually for an 'Award' to be made to a full-time postgraduate student specializing in entomology.

Biological Survey-- Substantial progress has been made; the concept and the scope of the survey was accepted by the government agencies responsible for funding. However, the effect of the government austerity program on the survey is not known at this time.

Independent ESC Annual Meeting-- The executive accepted the responsibility of holding an independent meeting in 1978 in lieu of a joint meeting. The time will be decided at a later executive meeting.

Student Members-- Student members of ESC now have full voting privileges.

W. A. Charnetski
Regional Director

*REPORT OF THE INSECT COLLECTION**COMMITTEE*

The competition received a boost this year with eleven entries. However, then of these were from Olds College and were in the Open Challenge Section. More entries from elsewhere were expected as the Competition had been widely advertised and a large number of plastic display boxes sold.

The following prizes were awarded:

First Prize (Junior)	Brian Osberg, Lethbridge
First Prize (Open)	Elizabeth Russell, Olds
Second Prize (Open)	Marjorie Marshall, Olds
Third Prize (Open)	Russel Lemieux, Olds
High Commended (Open)	Jim Howard, Olds

Miss Russell is to be congratulated on presenting one of the best collections judged in years.

I would like to thank those who have helped me judge the collections over the past five years and trust the new Chairman, Mr. Hugh Phillip, will receive the same support.

D. A. Craig, Chairman
Insect Collection Committee

POTPOURRI

The following items have been received by the Secretary during 1975 and are available on file for anyone wishing to see them.

1. Copies of White Owl Conservation Awards newsletter called "News".
2. Monthly notices of new publications from Environment Canada.
3. A Directory of Canadian Conservation groups for 1975/1976, compiled and distributed by Canadian Nature Federation.
4. Report of Yukon's Kluane National Park and a request for support for an adjustment in the park boundaries to include the Burwash Uplands.
5. Information and request for support for reduced immigration to Canada from the conservation group Zero Population Growth.
6. Information and invitations to attend and participate in the Cooking Lake Study Area hearings.
7. Information on the Youth Science Foundation.
8. Copy of a private brief presented to the Alberta Environment Conservation Authority during their Supplementary Hearings into the Use of Pesticides and Herbicides in Alberta.
9. Copy of "Citizen's Bulletin", circulated from Information Branch of Environment Canada.
10. Copy of the report of the proposed Alberta Insect Survey as submitted by the Ent. Soc. Alta. for consideration by the Provincial Museum of Alberta.



OBITUARY

NORMAN STANLEY CHURCH 1929-1975

Dr. Norman Stanley Church of the Agriculture Canada Research Station, Saskatoon passed away suddenly 26 July 1975, at the age of 46 years.

Norman was born at Stavely, Alberta, in 1929 and spent his childhood there. He became interested in entomology, and after graduation from high school he attended the University of Alberta where he received a B.Sc. degree in 1950. After working as a summer assistant with the Dominion Entomology Laboratory of Canada Department of Agriculture at Lethbridge during the summer of 1949, he returned in the spring of 1950

to accept permanent employment and to work closely with Dr. R.W. Salt. He obtained leave to attend Montana State College and received an M.Sc. in 1954, and later Cambridge University where he studied under Dr. V.B. Wigglesworth and received a Ph.D. degree in 1958. Returning to Lethbridge, he remained until 1963, at which time he was transferred to the Agriculture Canada Research Station at Saskatoon.

Norman's career was characterized by a clear insight into entomological problems, meticulous research, and a deep devotion to helping his fellow man. Early in his career he studied diapause in the wheat stem sawfly and the temperature relations of flying insects; later he moved on to study the reproductive physiology and embryology of blister beetles, with many of the latter studies being carried out in close co-operation with Dr. J.G. Rempel of the University of Saskatchewan and his graduate students. At the time of his death Norman had begun investigating the regulation of feeding activity cycles in wireworms. He was the author of some 25 published scientific papers.

Norman was the Secretary of the Entomological Society of Canada and Western Regional Director of the Professional Institute of the Public Service of Canada, and throughout his career he gave freely of his time to organizations and to individuals. His sunny disposition always spread good cheer around him and he will be remembered with much affection by his many friends and colleagues. He is survived by his mother at Stavely, Alberta, and by two sisters.

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