

PROCEEDINGS OF THE SEVENTH ANNUAL MEETING
OF THE
ENTOMOLOGICAL SOCIETY
OF
ALBERTA



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OCTOBER 16TH - 17TH, 1959

Proceedings of the
ENTOMOLOGICAL SOCIETY OF ALBERTA

Vol. 7

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C O N T E N T S

THE SEVENTH ANNUAL MEETING

ABSTRACTS OF PAPERS PRESENTED	PAGE
"Presidential Address" C. E. Brown.....	2
"Observations on snipe flies attacking humans in the foothills of Southern Alberta" J. A. Shemanchuk and J. Weintraub.....	3
"An introduction to the classification and problems of collecting Stratiomyid larvae" Max W. McFadden.....	3
"A taxonomic problem in the genus Scaphinotus" G. E. Ball.....	4
"A book on Alberta butterflies" R. L. Anderson.....	5
"New distributional records for two species of Lepidoptera" R. L. Anderson.....	8
"Nomenclature of Lepidoptera" N. W. Van Veen.....	9
" <u>Pterostichus melanarius</u> Illiger in Alberta (Coleoptera: Carabidae)" R. B. Madge.....	9
"Egg-laying behavior of blister beetles" N. S. Church.....	10
"An inexpensive freeze-drying apparatus" S. McDonald and N. W. Hall.....	11
"Nutritional value of pith and wall tissues in wheat" A. J. McGinnis and R. Kasting.....	11
"The toxicity of guinea pig blood to certain extoparasites" W. A. Nelson.....	12
"Sawfly resistance in monogenic lines of wheat" Ruby I. Larson and M. D. MacDonald.....	13

	PAGE
"A comparative morphological study of flight muscles and wing structure" H. F. Cerezke.....	13
Symposium on insect problems in Alberta.....	14
"Problems in apiculture" J. W. Edmunds.....	14
"Problems in other fields" M. Khan, J. Gurba, and J. Brown	17
"Food-gathering behavior of wild bees" G. A. Hobbs.....	17
"On the reaction to light of larval tabanids" M. Shamsuddin..	17
"The attraction of insects to fire" W. G. Evans.....	18
"A method of maintaining a permanent laboratory colony of the horn fly, <u>Siphona irritans</u> (L.) (Diptera:Muscidae)" K.R.Depner.	19
"Three tales with one moral" B. Hocking.....	19
"Pictorial highlights of the meeting" E. T. Gushul.....	

SOCIETY BUSINESS

MINUTES OF THE GENERAL MEETING, October 16, 1959.....	20
MINUTES OF EXECUTIVE MEETINGS	
April 17, 1959.....	26
October 15, 1959.....	28
October 20, 1959.....	30
FINANCIAL STATEMENT OF THE SOCIETY FOR 1959.....	31
INSECT COLLECTION COMPETITION.....	32
PERTINENT NOTES FROM: MINUTES OF MEETING OF BOARD OF DIRECTORS, ENTOMOLOGICAL SOCIETY OF CANADA, DETROIT, MICHIGAN. November 29 and 30, 1959.....	33
MEMBERSHIP LIST.....	35

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SEVENTH ANNUAL MEETING

October 16th and 17th, 1959, Fort Calgary House, Calgary.

The Seventh Annual Meeting was held amid the pleasant frontier atmosphere of Fort Calgary House, on October 16 and 17, 1959. On the Thursday evening preceding the meeting an executive meeting was held at the York Hotel. At the end of this meeting all members of the society got together to renew acquaintances and catch up on the happenings of the year.

A highlight of the meeting was the attendance of Dr. E. H. Strickland. He attended all the business, scientific, and social functions and renewed many old acquaintances and made a number of new ones.

Associated with the banquet was the presentation to our guest, Dr. Strickland, of an honorary life membership in the Entomological Society of Canada. Mr. George R. Hopping, a charter member of the provincial society, and long-time friend of Dr. Strickland, presented the life membership. In doing so he summarized the contribution which our guest had made to entomology and he emphasized the esteem in which Dr. Strickland was held by his colleagues. Mr. J. H. Brown added some laudatory remarks to supplement the words of Mr. Hopping.

Following the presentation to Dr. Strickland, Mr. C. E. Brown, the chairman, introduced the guest speaker, Mr. Grant MacEwan. Mr. MacEwan stressed in his address the part which insects had played in the development of Western Canada. These remarks were very educational and entertaining. Other after-dinner entertainment was provided by John and Ingrid Watson who presented one of their skits and by several members of the society who showed films and slides depicting the animal life and scenery of Alberta.

Presidential Address

C. E. Brown

Fellow members of the Entomological Society of Alberta and guests. It gives me great pleasure to formally open the Seventh Annual Meeting of the Entomological Society of Alberta.

By no stretch of the imagination can we consider seven years to be a venerable age for a Society, but I do think that we have come a long way in those seven years. I believe that our Society has become mature and has attained a firmly established position in the life of those interested in Entomology in this Province.

We have with us, as a charter member and honoured guest, Dr. E. H. Strickland; the first President of our Society.

Dr. Strickland I would like to express the pleasure of the Society in having you with us at this meeting.

We hope that as these two days progress you will have many enjoyable visits with old friends and that you will see in this Society some of the qualities which were envisioned by you and those other "pioneers" who worked so hard to bring it into being.

As in most Societies of this kind the summer has been one of relative inactivity. An executive meeting was held in April and in July our Society was honoured with an invitation to send a representation to an informal tea held in Edmonton in honour of Her Majesty, Queen Elizabeth. Because of an unexpected sojourn in the hospital, your president was unable to attend and as substitutes were forbidden, the Society was unrepresented.

There has been what I expect would be considered a normal turnover of membership, some old members have left and new ones been added. The executive was sorry to have to accept the resignation of our secretary, Dr. R. W. Stark, who has moved to the University of California. We were glad to welcome to the executive Mrs. Margaret Hopkins who agreed to act as secretary for the remainder of the term.

One of the advantages which the president enjoys is that he knows the condition of the program for the rest of the meeting before this address is prepared. Since I know that we have a very full program before us for the next day and a half, I have made the president's address very brief.

Abstracts of Papers

Observations on Snipe Flies Attacking Humans
in the Foothills of Southern Alberta.

J. A. Shemanchuk and J. Weintraub

While working in the foothills west of Claresholm, Alberta, considerable annoyance was encountered from the snipe fly Symphomyia hirta John. (Family: Rhagionidae). Females gathered in swarms about the upper part of the body, inflicting bites on exposed parts of the body. The bites were very painful and swelling occurred around the site almost immediately; these persisted with accompanying irritation for about three to four days. Livestock did not seem to be bothered by these flies. Observations and reports as far south as Waterton Lakes indicated that the outbreak of these flies was not localized. Some observations on the mating swarms were made.

An Introduction to the Classification and
Problems of Collecting Stratiomyid Larvae

Max W. McFadden

This paper is concerned with the general characteristics of Stratiomyid larvae and the problems of collecting them. The six subfamilies of Stratiomyid larvae, Stratiomyinae, Adoxomyinae, Beridinae, Hermetiinae, Sarginae and Pachygasterinae are discussed as to appearance and habitats. The variety of habitats makes collecting a problem, however, the most successful method of collecting has been the chemical funnel method. Samples of soil or other substances that might contain larvae are collected in plastic bags and taken to the laboratory where they are placed in Berlese funnels. The samples are sprinkled with one part paradichlorobenzene and three parts naphthalene.

The larvae in the samples are driven by the fumes into a jar with a half inch of water in it. The jars are then inspected daily for the presence of larvae.

A Taxonomic Problem in the genus Scaphinotus

G. E. Ball

Data were presented on variation in several characters in three similar allopatric "species" of the genus Scaphinotus. These species inhabit the montane spruce-fir forests of southern Arizona, and are isolated from one another by many miles of lowland desert. It was shown that the characters of S. catalinae were approximately intermediate between those of grahami and petersi, but that specimens that could be regarded as typical grahami occurred in the same mountain range, namely the Santa Catalinas. It was suggested that grahami had been the original inhabitant of these mountains, and that subsequently petersi had invaded the area of grahami. Hybridization may have occurred where the two met, giving rise to the form known as "catalinae". The biogeographic history of the southwest was reviewed, and it was pointed out that the Pleistocene provided more suitable climatic conditions than those existing at present, for the movement of Scaphinotus in the lowlands. Possibly then, petersi entered the Santa Catalinas at this time. The data suggest that the three forms should be treated as a single species: grahami and petersi as subspecies, with catalinae representing the "blend" population.

A Book on Alberta Butterflies

R. L. Anderson

I wish to present a strong argument in favor of the publication of a book on Alberta butterflies. This is a dream of every lepidopterist, to have a complete and accurate book on the Lepidoptera of the region of his particular interest as well as on other areas from which he has obtained specimens through trade. The number of books in print is very small and incomplete in comparison with books on other natural history subjects.

There are many reasons why there should be a book on the butterflies of Alberta.

First, for the education of the general public. There are books on western wild flowers and on trees and shrubs, and now we have "The Birds of Alberta", a book in which quite a lot of interest is shown. Nearly everyone I talk to think that there are no butterflies in Alberta except two or three species which are common enough to notice, and they wonder where and how I have made the collection that I have. The purpose of this book in one respect is to make available to the public all the knowledge that we have on butterflies which may greatly encourage the study of Lepidoptera.

Secondly, for the gathering together of all information on butterflies, which is now scattered in many places. In the history of Alberta many collectors have worked certain areas and their collecting data is either unpublished or dispersed in many hundreds of separates. The collection in the University of Alberta and that in Ottawa are about the only readily available sources of study. A book with proper descriptions and coloured plates would make all that available to everyone and particularly to Lepidopterists' all over the world.

Thirdly, for the prestige of Alberta in the cultural aspect. Only a few institutions in America have printed adequate publications. Some notable examples are "The Butterflies of Virginia", "Colorado Butterflies", both of which lack colored plates, "The Butterflies of California", which is a fine book but which can be improved on, and Holland's "Butterfly Book." Alberta would be making an important contribution to this science.

Fourthly, for the proper identification of Alberta butterflies. Alberta has the distinction of being a region of great interest to Lepidopterist's in other parts of North America. This is because so little collecting has been done in Alberta, in comparison to other regions, resulting in a lack of Alberta material in other collections. The high altitude species are in greatest demand as well as some from the plains. The life histories are largely undeveloped and the correct relationship of some subspecies is not known. In the process of gathering the material for this book some of the problems may be solved.

Now we come to ways and means of producing this book. No work of any consequence has been done as yet by myself, inasmuch as I have only collected in Alberta for five years and my time has been occupied from April to October in collecting in an effort to fill in the blank spaces. The winters have been taken up in cabinet making and relaxing and setting material acquired through exchange. However, I have reached the point where I lack only a few species; consequently, I will have more time for other work.

The greatest amount of work will be the composing of the text, and I believe that the best features of other books as well as our own ideas should be used. The text on each species should show the classification, range, occurrence, variations, season and records of capture. The late Mr. Bowman did a great deal

in the publishing of his "Annotated List," and this list may be incorporated with a few revisions of taxonomy and range that have occurred since that time.

The photographs should be in color. Black and white photos do not do justice to the beauty of butterflies. Also, many closely related species or subspecies may only be correctly identified by colour or shading. The genus Speyeria and Polygonia are examples in which the general pattern or markings are very similar on black and white photos, and in which the colour is the main distinction. Word descriptions are never really adequate in describing colour. In the case of the Lycaenidae, in which there are some thirty-five species of different shades of blue, brown or red and with many similar patterns of markings, the uninitiated would be lost without pictures in colour. This would entail most of the expense, and I feel that a grant or backing of some sort would be required when the manuscript is complete and checked.

A book of this type has already been published and describes the birds of Alberta. It is very close to what we propose to do with butterflies and could represent the start of a series of books on natural history subjects. This could be integrated with the proposed provincial museum, if a department of natural history is included in their plans. As an example, the book "Colorado Butterflies" was published by the Denver Museum of Natural History, but was written by three amateur Lepidopterists.

This subject is brought up now to show what we propose to do and how it is to be done, but it may take a considerable length of time to make this dream come true.

New Distributional Records for
Two Species of Lepidoptera

R. L. Anderson

Plebeius icaroides pembina

This subspecies was previously reported only from ecological area 18, as shown in Bowman's "Annotated List." It has now been taken in certain other areas, as follows:

June 16, 1957	a few miles southwest of Midnapore in the Pine Creek region.
June 22, 1957	same region.
June 22, 1958	northwest of Okotoks along southern slopes of the Pine Creek highlands.
June 16, 1957	near Priddis, Alberta.
June 21, 1957	same region.
July 26, 1959	lower elevations in the Highwood Forest Reserve south of the Highwood Pass.
July 11, 1959	same region.

These records may represent a gradual extension northward of the range of this subspecies, or it may be that no collecting was made in these areas prior to the dates shown. So far no icaroides have been taken in the Calgary area or to the west, north or east. It is presumed that this species is gradually extending its range northward.

Polygonia hylas

This species, which is known principally from Colorado, appears to have turned up in southern Alberta. The actual relationship between hylas and Polygonia faunus is not known. Some specimens appear to be intermediate between the two. Typical hylas, however, is quite distinct. The records are as follows:

- May 13, 1956 overwintered specimen from area west of Turner Valley near Kananaskis Forest Reserve.
- August 16, 1958 near Spray Lakes south of Canmore at estimated elevation of 5500 ft.
- Sept. 12, 1959 at several points in the Kananaskis Forest Reserve along the main road at lower elevations.

To my knowledge, there are no previous records of Polygonia hylas in Alberta. This species appears to be quite rare in comparison to the great abundance of P. faunus, zephyrus and gracilis, which probably accounts for its being overlooked or misclassified.

Nomenclature of Lepidoptera

N. W. Van Veen

An interesting discussion of the shifting of names by taxonomists and comments on the confusion this action brings to the amateur.

Pterostichus melanarius Illiger in Alberta

R. B. Madge

The European Carabid, Pterostichus melanarius Illiger, was recently taken in Edmonton. Earlier records of the occurrence of this species in North America were given along with characters to separate it from other Alberta Pterostichus. A few notes on the ecology of this species were presented and the possibilities for study of this highly successful species were discussed.

Egg Laying Behavior of Blister Beetles

N. S. Church

Slides were shown illustrating the oviposition behavior of several closely related species of blister beetles caged in the laboratory. The habits of three species, Lytta nuttalli, L. viridana, and L. sphaericollis, are very similar. They dig burrows somewhat deeper than the length of the body in firmly packed soil, using the mandibles to loosen the soil, the head and front legs to remove it from the burrow, and finally the middle and hind legs to push it away from the rim. Then, having backed into the burrow and laid a cluster of eggs, they carefully fill the burrow with undisturbed soil from the rim of the hole, loosening it with their jaws and tamping it firmly in place with their hind legs. L. nuttalli and viridana prefer to dig in moist soil near a stone and angle the burrow in under the stone, whereas L. sphaericollis shows no such preference and digs straight down. Epicauta ferruginea excavates egg burrows like those of L. sphaericollis and digs them in the same way, but fills them differently. It scrapes the loose soil from the excavation back into the hole with its legs, occasionally entering the burrow and tamping the soil lightly with its head. Epicauta puncticollis behaves quite differently, at least in the laboratory. It digs no burrow, but deposits its eggs in a cavity under a stone or in a crevice, sticking them in a cluster to the surface.

An Inexpensive Freeze-Drying Apparatus

S. McDonald and N. W. Hall

An apparatus for freeze-drying insecticide treated plant materials was developed at the Research Station Lethbridge. This equipment was constructed out of readily available materials and had a capacity for drying 100 grams of fresh frozen plant material in less than 24 hours. The loading or unloading of plant material and recovery of the condensate were a simple operation as well as the decontamination of the apparatus.

Nutritional Value of Pith and Wall Tissues in Wheat

A. J. McGinnis and R. Kasting

Lyophilization has proved to be a suitable means of preserving plant tissues for nutritional experiments with the pale western cutworm. The nutritional value of Thatcher wheat stem, Rescue wheat stem wall, and Rescue wheat stem pith was determined for the pale western cutworm by feeding diets prepared from these tissues after lyophilization. The results indicated that all of the stem tissues were nutritionally inadequate for newly hatched larvae. Similar conclusions were reached when the same diets were fed to larvae throughout the sixth instar. The nitrogen content of the stem tissues was lower than that of either 10-day-old Thatcher leaves or 4-day-old etiolated Thatcher sprouts, both good diets, but apparently was not the limiting factor. Further there was no evidence of a factor in the stem tissues that was toxic to the cutworm larvae.

The Toxicity of Guinea Pig Blood to Certain Ectoparasites

W. A. Nelson

When the narrowly host-specific ectoparasites such as lice and sheep keds are fed on guinea pig blood most of them die rapidly, within 24 hours. Trigonal crystals of guinea pig oxyhaemoglobin form within the midgut of the insects, rapidly enlarge, and tear off the gut epithelium, often lacerating the muscular layers as well. When the insects are fed on rabbit the haemoglobin forms spherical lumps, which eventually amalgamate to form an amorphous mass which plugs the gut. Dog lice survive somewhat longer on guinea pig blood, perhaps because its gut normally contains crystals of dog oxyhaemoglobin. Eventually, however, the dog lice die because of enlargement of guinea pig crystals. It is suggested that an osmotic phenomenon operating at the fluid-epithelium interface in the gut causes the fluid to become hypersaturated with respect to the oxyhaemoglobin. It is also suggested that this phenomenon might constitute a basis for host-specificity in Anoplura.

Sawfly Resistance in Monosomic Lines of Wheat

Ruby I. Larson and M. D. MacDonald

In 1957 all 21 monosomic lines of Rescue and S-615, solid-stemmed varieties of common wheat, were tested for resistance to the wheat stem sawfly, Cephus cinctus Nort. A few nullisomics were included. Derived normals, and standard varieties Rescue, S-615, Cadet, Apex and Golden Ball were used as checks.

Most nullisomics were cut less than the normals. Only monosomics of homoeologous group 5, i.e., V, IX, and XVIII were cut consistently less than normal in the lower internodes.

Group 5 monosomics of Rescue, S-615, and Cadet (hollow) were tested for sawfly resistance in 1959. Monosomics IX in both Rescue and Cadet were cut less than their derived normals, significant at the 1% level. Other group 5 monosomics were also cut less than normal, but not significantly so.

The apparent resistance of these lines is not easily explained. The monosomics have slightly thinner culms than normal, and monosomic IX in Cadet is late. At the time of infestation, the stems of Cadet monosomic XVIII had more pith than its derived normal, but Cadet is hollow-stemmed at maturity. Loss of chromosomes of this group may cause the plant to be less nutritious for the sawfly, but we have no experimental evidence of this.

A Comparative Morphological Study of Flight Muscles
and Wing Structure

Herbert F. Cerezke

A comparative, morphological study of three species of beetles in the Family Carabidae was carried out to determine reasons for a possible flightless condition in two of the species under study. These were Nebria metallica Fish. and Nebria aleuta Van Dyke. The other species, Calosoma frigidum Kirby, an able flyer, was used for the basis of comparison because of similar morphology. Partial degeneration of the essential flight muscles and some reduction in the wing structure appeared to be the cause for the apparent flightless condition.

Problems in Apiculture

J. W. Edmunds - Supervisor of Apiculture

The most serious problem in apiculture is the lack of trained research workers. The Ontario Agricultural College at Guelph, Ontario, is the only college in North America offering undergraduate courses in apiculture. Those wishing to specialize in apiculture in the United States must take their undergraduate course in entomology or other related fields, and take post graduate studies in apiculture. This often results in students originally planning to specialize in apiculture, staying in the field in which they do their undergraduate studies.

At the Ontario Agricultural College there has been seven apiculture graduates in the past ten years.

The shortage of research workers is so acute in North America that some research stations have had to drop apicultural research because of the lack of trained workers. Dr. C. L. Farrar, Chief of the USDA, Bee Division, stated this summer (1959) that within the next six years two-thirds of the USDA bee research staff will have reached retirement age. He is at a loss to know who will replace them.

What do we want researchers for? Bee breeding is one of the important studies being followed. Unlike cattle, sheep, hogs, etc., we cannot control breeding closely. To start with, we doubt very much if we have any pure lines in North America. The queen mates in flight which complicates control, and to further complicate breeding, the queen mates with about six or seven drones. Artificial insemination has been developed and is satisfactory for breeding

experimental stock, but is not practical for breeding the number of queens required (200,000 to 400,000 annually).

Considerable progress has been made in developing better strains, also hybrid strains. Before any significant strains can be developed it will be necessary to find a place somewhere in the world where pure strains exist due to geographical locations.

Presently, due to the wide distribution of Acarapis woodie (Rennie), a mite infecting the trachea of honeybees, importation of queens or bees is restricted to importations from Canada to United States and vice versa. Attempts are being made to import frozen semen or transport eggs or young larvae. So far no success has been attained with frozen semen; limited success has been achieved with young larvae and eggs, but still cannot be considered successful.

Pollination:- Honeybees are of far greater value as pollinators of fruit, vegetable and legume crops than for honey production. Ontario Agricultural College (Prof. Townsend) has done extensive work on fruit pollination. The use of honeybees and pollen inserts has saved several pear and apple orchards from the axe. Blueberries in the Maritimes are cross-pollinated by honeybees and significant increases in fruit has resulted. Legumes seed production in Alberta has been studied by Hobbs (Lethbridge) and Pankiw (Beaverlodge), and many of the factors influencing seed production have been determined but more work is required.

Bee Behaviour:- Perhaps more is known about the habits of honeybees than most insects. This is due to their economic importance, but we really know very little. Presently theories are being propounded on the presence of a queen substance which deters workers from building queen cells. To date the substance has not been analyzed.

We now know honeybees have dances to designate distance and direction to a source of nectar. Several theories are put forth as to how this information is received in the darkness of the hive.

Royal Jelly:- This substance has received terrific publicity as to the wonders it can perform on humans (mostly for the promoting agents), but recently there has been evidence it contains a substance capable of combating the growth of certain malignant tumors.

From the practical side of commercial beekeeping such subjects as swarm control, population build-up, factors influencing winter survival, effects of fungicides, weedicides and pesticides, must be constantly studied. A recent resolution by beekeepers is requesting the Federal Departments concerned to have printed on all labels of pesticides, weedicides and fungicides, the affects if any, to honeybees. In apple orchards of B.C. in 1959 complete apiaries of bees being used in pollination were killed off with Sevin. In Alberta 100 colonies of bees were drastically damaged by what appeared to be an application of Endrin for control of cutworm. It is thought the damage was due to drift of the insecticide. Analysis of the honeycomb by the Provincial Analyst showed the presence of one of the hydrocarbons.

Nectar Secretion:- Little is known of the factors influencing nectar secretion. The work of Shuel (Guelph) indicates that some day we may recommend one type of fertilizer for forage, another for seed production, based on factors influencing nectar production by the plant to attract pollinators.

These are but a few of the problems facing the apiculture industry. Last but not least, is putting the information across to the beekeepers. This very often requires more than just telling him.

Problems in other fields of entomology

M. Khan, J. Gurba & J. Brown

M. Khan reported on the success of systemic insecticides to rid cattle of warble flies.

J. Gurba noted that government on three levels was required to bring about a co-operative program in insect control.

J. Brown's remarks were concerned with mosquitoes and houseflies in park areas, with the tick programme around Medicine Hat and Manyberries, and with the plague survey. Much of the success of the mosquito and housefly control work is tied in with a good extension service. Workers on the plague survey feel that the fleas, the plague vectors, overwinter on the pale vole and reinfest the ground squirrel in the spring.

Food-gathering behavior of wild bees

G. A. Hobbs

(Dr. Hobbs showed a film).

On the reactions to light of larval Tabanids

Mohammad Shamsuddin

The effect of light on the behaviour of larval Tabanus reinwardtii Wied. (?) and Chrysops fureata Walk. has been studied. The photoreceptors of these larvae are a pair of eye-spots located at the lateromedian part of the head capsule. The illumination of larvae elicits active locomotory activity which begins usually with a local response at the head capsule. This has been designated "the first response." The time interval between the first response

and crawling seems to be an effective factor in the mechanism of directed orientation of the larvae.

Stimulation by lateral light shows that larvae are photonegative. The changes in the direction from which the light acts cause corresponding changes in the larva's direction of locomotion. The most accurate orientation to a 90° change in the direction of illumination has been demonstrated in the fully mature larva.

The rate of movement of mature larvae with reference to light intensity in the range of 10 to 500 foot-candles is governed by the Weber-fechner law.

In a dorsal light gradient the larvae reach the area of light intensity and apparently show directed movement.

The attraction of insects to fire

William G. Evans

A number of insects, including species of Cerambycidae, Buprestidae, Scolytidae, Carabidae, Empididae, Clythiidae, Vespidae and Aradidae, have been reported as being attracted to smoke and fire. Some preliminary work was done with Melonophila acuminata and qualitative tests on response to the odor of smoke and on visual responses to fire and smoke showed negative results. This insect, however, did respond to heat and in the hypothesis presented it is concluded that heat alone could be the stimulus for attracting Melonophila to fires.

A Method of Maintaining a Permanent Laboratory Colony
of the Horn Fly Siphona irritans (L.). (Diptera : Muscidae)

K. R. Depner

A method of rearing horn flies for an indefinite time is given. Horn flies were reared for 23 successive generations with no apparent loss of vigor or decrease in rate of survival of the immature stages. Survival of eggs, larvae and pupae, averaged 77%, 74%, and 78% respectively.

Three Tales with One Moral

B. Hocking

The tar sands atom bomb, the Saskatchewan dam and the Edmonton lighting poles which serve as resting boxes for sparrows were cited as examples of the results of a deficiency of biological education in high places. The best opportunity to remedy this situation lies with the High Schools because of their larger enrolment. Of 181 teachers giving Biology 32 in High Schools in 1958, 102 had had no university instruction in the subject.

WHO'S WHO

Registration

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Gurba

McFadden, Shamsuddin, Ewan, Shemanchuk, Hocking, C. Brown, Cerezke

Blakeley, Shepherd, Edmunds, Anderson, Van Veen, Ball, McGinnis

Strickland, Mrs. Hopkins, Holmes, Swailes, Evans, Dr. Larson, Church

A Tribute

Dr. & Mrs. Strickland,

Banquet

Strickland,

Grant MacEwan,

Hopping,

The Stricklands



ENTOMOLOGICAL SOCIETY OF ALBERTA

WHO'S WHO

Mrs. Hopkins & C. Brown, Edmunds, Gurba, Khan

Hobbs, Shemanchuk, Harper, Nelson, Strickland, Ball, Lilly, Harper,
 Peterson, Ball, Evans

INSECT COLLECTIONS

 ? Haufe, Nelson, Khan, Shemanchuk, ? ?
 Blakeley & Elliot, Ewan, Madge, Shamsuddin, Cerezke, McFadden

Edmunds, Gurba, ? , Blakeley, Gushul, J. Brown, ?

 Ingrid & John Watson do their stuff

MINUTES OF THE
7th ANNUAL MEETING OF THE ENTOMOLOGICAL SOCIETY
OF ALBERTA

FORT CALGARY HOUSE, CALGARY, October 16, 1959

The general business meeting of the 7th Annual Meeting of the Entomological Society of Alberta met at 1:15 P.M. on Friday, October 16, 1959 at Fort Calgary House on the Stampede Grounds, in Calgary. C. E. Brown was in the chair. The chairman read announcements and then called for a motion that the minutes of the previous general business meeting be accepted as circulated in the Proceedings; this motion was made by G. Evans and seconded by P. Blakeley. CARRIED.

Minutes of the executive meeting held in April were read. It was moved they be adopted as read by G. Evans, seconded by G. Ball. CARRIED.

Correspondence pertinent to business of general interest was read.

In discussing business arising out of the minutes G. Ball suggested the secretary be instructed to send a letter to the University of Alberta, about March of 1960, inquiring about progress on the presentation of the degree of Honorary Doctor of Laws to Mr. Seamans.

In discussing the matter of a director to the Entomological Society of Canada it was suggested that R. Salt's name should stand this year since his name was given last year. B. Hocking stated that as President-elect he would like to have a director from Edmonton so that he would have an executive committee next year.

L. Jacobson gave a report about the changing of the constitution and stated the reasons for the by-laws not being accepted, (as given in the executive meeting Oct. 15). J. Gurba explained how he found out the changes in the constitution were not valid. The chairman stated that the executive has passed a motion that the next executive be charged with looking into the matter. There were no objections.

G. R. Hopping discussed the pertinent points of Dr. Glenn's summary concerning affiliation with a National Biological Society. He pointed out that our group was not entirely professional and that the National body was. He also noted that it would likely involve an increase in fees of up to \$3.50. W. C. Broadfoot pointed out that membership in the American Society did not involve an increase of fees in connection with the Phytopath Society. G. E. Swailes stated that they had been assessed one dollar for the American Entomological Society. The final conclusion was that not enough was known about the idea yet and that any union was not imminent in any case. B. Hocking

suggested that since there were to be two of our members present at the Canadian Entomological Society meetings they would be able to follow the discussions and keep in mind the needs of our local society with regard to such matters as amateur members.

G. Evans reported on the Entomological Society of Alberta prize. The prize has been given for six years. The first year it was won by R. Fodchuck who is now a District Agriculturist; the second year by R. Madge who is now studying for his doctorate at the U. of A. in Entomology; the third by W. Klassen; the fourth year by R. H. Gooding, both in Entomology; the fifth year by Natalka Horeczko who is now in medicine; and the sixth year it was won by H. Cerezke, who is now studying Entomology for his M.A. degree at the U. of A.

The Edmonton group felt the prize was very useful and would like to see it continued. N. Holmes said that it was stimulating interest already there. R. Madge and H. Cerezke were at the meeting and admitted that they would have gone on in Entomology even if they hadn't received the prize. B. Hocking suggested at this time that the prize drew attention to our Society and gave it prestige because of being listed in the University Calendar. G. Evans moved and G. Ball seconded a motion to continue the scholarship.
CARRIED.

B. Hocking read excerpts from the constitution of the Entomological Society of Canada which showed that the parent body has no say in choosing the directors to the parent body from the local societies. S. Smith stated that when he was secretary our society was assigned the odd years for changing the director to the parent body and we were required to submit the name. J. Gurba suggested that the nominating committee and the executive study the matter and take whatever action was necessary.

The matter of an increase in size in the Canadian Entomologist was brought up. W. C. Broadfoot stated that it was desirable and that it would speed up publication. After some discussion and re-reading of a letter concerning this matter it was moved by G. E. Swailes, seconded by A. Harper that we advise our director that we are in favour of enlarging the Journal's size.
CARRIED.

B. Hocking brought up new business in the form of the suggestion that we should be contributing toward the cost of producing Zoological Record. He noted that Canada makes no contribution whereas other small countries do. He suggested that we as a society take the lead and we might be joined by other societies, possibly later the parent society could collect the amount and send it in. S. Smith asked if governments were contributors. B. Hocking replied that they were not, that it was societies such as ours that contributed. W. A. Nelson suggested that it be taken to the National society from the beginning. After further discussion the following motion put forward by G. Ball, seconded by G. Evans.

"That the Entomological Society of Alberta contribute \$10.00 annually toward the publication of Zoological Record, and that we inform the National society of this action suggesting they also contribute a sum toward publication, and that it would be desirable if other regional societies would contribute in the future." CARRIED.

Reports of the committees:

Library advisory committee: (J. Brown, chairman, G. E. Ball), J. B. Gurba, R. Shepherd, P. Blakeley, set up in 1958.). No report.

Insect collection committee: G. Hobbs, passed over the report for Lethbridge to R. Larson who reported on the Junior Science Club of Lethbridge. She showed slides and gave an interesting account of the activities of this club in presenting a display at the exhibition during the past summer. Four collections were submitted to this competition. B. Hocking reported that there was some interest in Edmonton but no submissions had been received this year. J. Edmunds reported from Edmonton that he had met a very enthusiastic collector who lives outside of Edmonton who had made a large collection in a short time. G. R. Hopping reported that two collections were received in Calgary. One surprising collection was received only a few days before the meeting. Three brothers had made a fine collection.

Some discussion followed concerning the rules and needs of the competition. R. Larson stated that some prodding was needed to get young collectors to make the final preparations for submitting a collection. J. Gurba stated that the 4 H Clubs were an excellent place to contact prospective collectors. They had initiated a new program of projects for the first time this year. Insect study was one of the projects. There are 12 camps in the Province with 100 to 150 children at each. C. E. Brown attended one of these camps this year and said he found the children an interesting group. Some discussion followed on why one year's collection was necessary and the possibility of expanding the scope for collectors who continue to submit collections. The chairman suggested a committee be set up to study the matter. This was put into the form of a motion by G. Hobbs. Seconded by J. Shemanchuk.

"That a committee consisting of one member from each area be appointed to decide on the rules necessary for the insect collection competition, to act this year and in the years to come." CARRIED.

R. Larson, G. R. Hopping, G. Evans were suggested by G. Hobbs, B. Hocking, and J. B. Gurba respectively, as committee members. Accepted.

G. Evans reported on the prize for this year. The American Cynamid prize had gone to F. Matsumara. The Alberta Entomological Society prize had gone to Herb Cerezke, who is now studying for his Master's degree at the University of Alberta.

The Insect Collector's Guide was reported on by B. Hocking. He was unable to find his committee so he acted himself. He decided there were two alternatives: 1. To use leaflets which were published separately. Some of these are produced by the University. 2. To reprint the Insect Collector's Guide. The University would not take on such a project but they gave information concerning the cost. The cost of similar bulletins ran between 10¢ and 13.2¢ per copy; this was 25% lower than if it was done by commercial printers. If the society undertook this project it would have to charge for the copies.

It appeared that there were about 60 copies of the old guide still available. Considerable discussion took place concerning the desirability of publishing, of having the Society's name connected with the publication, and of the size of the publication needed, whether it would be in pamphlet or in booklet form. A show of hands demonstrated that a majority of the meeting was in favor of having the Society's name connected with a publication. Finally it was moved by G. Shemanchuck and seconded by L. Peterson,

"That a committee be set up to report next year on the feasibility of producing a publication on insect collecting and whether it should take the form of a pamphlet or a book." CARRIED.

The meeting adjourned on a motion by W. A. Nelson at 5:00 P.M.

SECOND DAY

7th ANNUAL MEETING - OCTOBER 17, 1959

The final business meeting of the 7th Annual Meeting was called to order by the chairman on Saturday morning at 12:15 P.M.

The first matter to be brought up was whether or not the members desired to continue to supply an amount up to \$50.00 to help bring amateurs or undergraduate students to the meeting. The chairman introduced Don Elliott who had been brought from the Calgary district. It was moved by J. Shemanchuck and seconded by B. Hocking that this money continue to be available. CARRIED.

The report of the nominations committee was made as follows:

President, L. Jacobson.

Vice-president, J. Edmunds.

Secretary, A. Harper.

Treasurer, P. Blakeley.

Editor-librarian, N. Church.

Regional directors, Lethbridge, E. Gushel; Calgary, N. VanVeen; Edmonton, J. Gurba.

Director-at large, (To the Canadian Entomological Society), G. Evans. G. Ball, in making his report, expressed regret that R. Salt, who had been suggested last year, as Director-at-Large, could not be nominated this year because the president-elect needed an executive committee in Edmonton.

Signed by: G. Ball, L. Peterson, and J.A. Cook.

It was moved by B. Hocking and seconded by G. Hobbs that nominations cease and the report of the Nominations Committee be accepted. CARRIED.

Report of the Resolutions Committee:

WHEREAS, the accommodations and arrangements provided for the meetings and the banquet have been most comfortable and convenient.

BE IT RESOLVED THAT, a special letter of thanks be forwarded to the Calgary Exhibition and Stampede Board for making them available to us.

WHEREAS, the financial assistance provided by various commercial concerns has contributed materially to the enjoyment of those concerned,

BE IT RESOLVED THAT, these firms be sent special letters of thanks.

WHEREAS, the local program, arrangement and entertainment committees have done an excellent job in making the meetings proceed smoothly and in providing for the material comfort of all those attending,

BE IT RESOLVED THAT, a sincere vote of thanks be tendered to these committees.

WHEREAS, the guest speaker at the banquet provided a most interesting and informative footnote to the history of entomology on the western prairies,


BE IT RESOLVED THAT, Grant MacEwan be sent a special letter of thanks.

Signed by: P. Blakeley, D. S. Smith.

It was moved by P. Blakeley and seconded by E. Swailes that the report of the Resolutions committee be accepted. CARRIED. B. Hocking moved a special vote of thanks to C. E. Brown for the fine arrangement of the meetings and extra work done. Seconded by M. Hopkins.

The president suggested that the 1960 meeting would be held in Lethbridge since this would more or less follow custom. This was moved by A Harper and seconded by P. Blakeley. CARRIED.

The meeting was adjourned on a motion by G. R. Hopping.


(President)


(Secretary)

Minutes of an executive meeting of the Entomological Society of Alberta held at 2:00 P.M. in the library of the Forest Biology Laboratory, 102 - 11th Ave. E., Calgary, April 17, 1959.

Those present were the chairman C. E. Brown and J. A. Cook, W. C. McGuffin, G. W. Evans, G. R. Hopping, L. A. Jacobson, N. D. Holmes and Margaret C. Hopkins.

Excerpts from the minutes of the annual meeting were read to review matters to be attended to. A correction was noted by L. A. Jacobson -- G. R. Hopping should have remained as Director-at-Large for another term in connection with being a director to the National body. It was moved by G. R. Hopping and seconded by G. W. Evans that the name of R. W. Salt be interchanged with G. R. Hopping on the list of directors.

The annual meeting was discussed. It was moved by L. Jacobson and seconded by N. D. Holmes that the date be one of the first three weekends in October. Probably Thanksgiving week-end on Oct. 10th would not be suitable.

It was decided that the meeting should be held at a hotel for the convenience of those from out of town since the arrangements of the 1958 meeting had been so satisfactory. The Beacon, Stampeder and a new motor motel were mentioned. C. E. Brown was to make the final decision after prices and accommodations had been investigated further.

Commercial firms were to be approached for funds to aid with the expenses of the meeting. L. Jacobson suggested that Arrow Sprays would be one firm interested since members of the Lethbridge Laboratory work with them.

W. C. McGuffin was appointed as chairman of the program committee for the Annual Meeting. Several suggestions were offered- that an early letter requesting contributions to the program should be sent out,--that some speaker such as Grant McEwan or Earnest Watkins would be interesting, ---and so on.

The matter of an honorary degree for H. L. Seamans was brought up. G. Evans reported that the matter was well in hand and that a letter would soon go forward to the University authorities. The degree would not be presented this year because such degrees are assigned to different categories, such as Physics, Agricultural Science, and so on and that it might not be given for two or three years.

The presentation of an honorary membership in the Entomological Society of Canada to Prof. Strickland was mentioned. G. R. Hopping reported that in correspondence from Dr. Prebble he had learned that the Entomological Society of Canada would pay the travelling expenses. It was moved by G. Evans, seconded by N. Holmes that the Alberta Society take care of the local expenses of the visit.

The chairman then brought up the matter of possible affiliation of the Entomological Society of Canada in a federation of Canadian Biologists. G. R. Hopping reported that he had received correspondence from Dr. Prebble concerning this matter and that the idea was that each local Entomological Society was to consider the matter and send its recommendations to the National Society at its next meeting. Dr. Glenn, in spite of his newly assumed duties, still intends to supply a report to the affiliated Societies concerning his findings on the various possibilities. L. Jacobson suggested that a committee representing the three areas be formed, the members of which could take the matter to their local members before the next meeting of the Entomological Society of Alberta. The directors, G. Evans, N. Holmes and G. R. Hopping were appointed to do this.

Discussion then turned to the constitution and correspondence and a telephone conversation between J. B. Gurba and the Alberta Registrar of Societies. Apparently the most recent copy of the constitution does not correspond with the one registered and cannot be accepted. L. Jacobson said he would be willing to look into the matter since he was secretary at the time the original constitution was written. G. R. Hopping moved and G. Evans seconded that L. Jacobson be appointed chairman of a committee to look into the matter with power to choose anyone he wished to assist.

N. Holmes brought up the matter of the \$50.00 prize that has been offered in the past to students in Entomology. The suggestion had been made that this money was not actually "stimulating interest in Entomology" as it had been intended to, and that new ways be found to serve this purpose. He moved and G. Evans seconded that an amount up to \$50.00 be provided to cover the expenses of one or more interested amateurs or undergraduate students to attend the annual meeting of the Entomological Society of Alberta. CARRIED. The Edmonton group were requested to submit a report on the recipients of the prize in the past and to report if they thought it was serving a useful purpose.

L. Jacobson made a motion that a committee be set up to establish a fund for more travel aid and that the committee members circulate an advance notice of motion concerning this fund prior to the annual meeting. He suggested this committee consist of G. Evans as chairman, N. Holmes, and G. R. Hopping. This committee should also receive applications for assistance under the above-mentioned \$50.00 and select those to be assisted. W. C. McGuffin seconded this motion. CARRIED.

R. W. Stark visited the meeting to tender his resignation as secretary. He is to assume duties at the University of Berkeley, Calif., after May 1st. Margaret Hopkins was appointed secretary in his place on a motion by G. R. Hopping seconded by N. Holmes.

The meeting adjourned about 4:00 P.M. on a motion by N. Holmes.

EXECUTIVE MEETING - ENTOMOLOGICAL SOCIETY OF ALBERTA

CALGARY, OCTOBER 15, 1959.

Minutes of an Executive meeting of the Entomological Society of Alberta held in Room 203 in the York Hotel, Calgary, Alberta, October 15, 1959, at 7.30 P.M.

Present were: J. A. Cook, L. Jacobson, N. Holmes, G. R. Hopping, Margaret Hopkins, and C. E. Brown in the chair.

Minutes of the last executive meeting were read and adopted on a motion from N. Holmes seconded by L. Jacobson. Correspondence pertinent to business to be done was read. The only business arising out of the correspondence was a discussion about the increased size of the Canadian Entomologist; this was left to be discussed at the general meeting.

The mix-up in the election of a director to the Canadian Entomological Society at the 1958 fall meeting was discussed. It was suggested that if the name of R. Salt had been left on the slate of officers his name could have been placed on the ballot in the summer of 1959, and he would have taken over from G. R. Hopping at the end of the 1959 Can. Ent. meetings. A chart was displayed by C. E. Brown which could be used in future as a guide in elections. It was finally suggested by L. Jacobson that a director be elected this year to serve a one or two year term, depending on what is acceptable to the parent body. (See correspondence from G. R. Ball to R. Salt and G. R. Hopping).

The following members were suggested as judges for the insect collections: G. Hobbs, G. R. Hopping, G. Ball.

L. Jacobson reported on the constitution. He explained that Judge Turcotte had paraphrased the constitution to fit it into the accepted form when it was originally submitted. The copy of the constitution which was submitted when the new by-laws were submitted was not in this form and so was not acceptable. He suggested that the matter be left for the present and that the new executive be charged with putting the amendments in the proper form. This was put in the form of a motion by L. Jacobson. Seconded by N. Holmes.

"That the present constitution and by-laws be restudied and readapted by the next Executive with a view to complying to the societies act." CARRIED.

The president reported that arrangements were well in hand for the visit of Dr. Strickland and that G. R. Hopping was to make the presentation of the Honorary Life Membership in the Canadian Entomological Society.

G. R. Hopping gave a brief report on the matter of affiliation with a National Biological Society and agreed to make a report at the general meeting.

C. E. Brown asked L. Jacobson to thank the speaker at the banquet and he agreed to do so.

Treasurer, J. A. Cook, gave an interim report stating that the bank balance was \$358.90. He moved and N. Holmes seconded that the report be accepted. CARRIED.

The following committees were set up at the suggestion of the executive:

Resolutions committee: P. Blakeley and D. S. Smith.

Nominating committee: G. Ball, L. Peterson, J. A. Cook.

The meeting adjourned on a motion from N. Holmes.

EXECUTIVE MEETING, OCTOBER 20, 1959

Minutes of an executive meeting held in the Forest Biology Laboratory, October 20, 1959.

Present were: R. Shepherd, J. A. Cook, Margaret Hopkins and C. E. Brown in the chair.

The meeting was called in order to "round off" the business of the Annual meeting.

Some discussion took place concerning correspondence to be done by the Secretary in connection with thanking people concerned with the meeting, and prospective members of the Society, and so on.

It was suggested the Treasurer prepare a report on the finances of the meeting apart from the collection of dues, so that we could see if the collections made had paid for the meeting.

It was suggested a list of unfinished business be prepared for the next Secretary.

The Secretary was instructed to send ten dollars to Dr. Strickland to cover expenses for meals and miscellaneous items.

The following committee was set up in accordance with the resolution passed at the general meeting concerning a society publication on insect collections.

G. Ball - Chairman
B. Hocking
C. E. Brown
G. Hobbs

The secretary was asked to inform these people of their appointment.

It was suggested the same committee stand with respect to bringing amateurs or undergraduate students to the meetings, and that the secretary inform them (G. Evans, chairman, N. Holmes, G. R. Hopping).

ENTOMOLOGICAL SOCIETY OF ALBERTA

Financial Statement for Year Ending December 31, 1959.

Receipts:

Bank Balance Jan. 1, 1959.....		\$ 315.60
(received from Edmonton)		
Membership Fees:		
Ent. Soc. of Alberta - 1958.....	\$ 8.00	
- 1959.....	69.00	
- 1960.....	<u>38.00</u>	\$ 115.00
Ent. Soc. of Canada - 1958.....	\$ 18.00	
- 1959.....	150.15	
- 1960.....	<u>24.00</u>	192.15
Conference donations.....	217.50	
Annual banquet attendance.....	100.00	
Conference registration.....	95.00	
Banquet refreshment refund.....	8.30	
Postage on hand.....	.23	
Cash on hand.....	<u>1.77</u>	<u>422.80</u>
SUB-TOTAL.....	\$ 729.95	\$ 729.95
TOTAL RECEIPTS.....		<u>\$1045.55</u>

Expenditures:

Paid to Ent. Soc. of Canada.....	\$192.30	
Postage.....	9.25	
Book prize.....	17.70	
U. of A. Award.....	50.00	
Lethbridge Herald Printing.....	19.25	
Knight's Stationery (printing).....	23.10	
Bank charges.....	1.20	
Annual banquet refreshments.....	71.30	
Annual meeting guest expenses.....	10.00	
Albertan Printers -		
Programs and cards.....	<u>44.41</u>	
Flowerdale Co. - Banquet flowers....	8.00	
Restaurants Ltd.- Banquet caterers..	200.65	
Zoological Records - donation.....	10.23	
Conference meeting -		
Accommodation Hotel York	<u>29.60</u>	
TOTAL EXPENDITURE. -	\$686.99	\$ 686.99
Bank Balance.....		<u>358.56</u>
	TOTAL.....	<u>\$1045.55</u>

Compiled and checked
Dec. 31, 1959

J. A. Cook,
Treasurer, 1959

Audited and Found Correct
January 18, 1960
John M. Powell
W. C. McGuffin

INSECT COLLECTION COMPETITION, 1959

The judges were Dr. B. Hocking, Dr. E. H. Strickland, and Dr. R. Hartland-Rowe and the results and comments are as follows:

<u>Senior Group</u>	First Prize	David J. Larson, 1201-24th Street S., Lethbridge, Alberta.
Comments:	"Entomologist"	Arrangements, classification, variety: good.
	Second Prize	Jack Haberman, 3115-10th Avenue S., Lethbridge, Alberta.
Comments:	"Naturalist"	Some of the spreading: poor.
	Third Prize	Joseph Shorthouse, 2317 - 13th Avenue S., Lethbridge, Alberta.
Comments:	"Collector"	Classification could have gone further.

There were no junior prizes this year.

Some mention should be made of the following persons who submitted collections but who were not eligible for prizes due to their ages:

Joseph Moeck Henry Moeck Edward Moeck	1007 - 3rd Avenue N.W., Calgary, Alberta.
D. P. Elliot	4512 - 26th Avenue S.W., Calgary, Alberta.

William G. Evans.

MINUTES OF MEETING OF BOARD OF DIRECTORS
ENTOMOLOGICAL SOCIETY OF CANADA
SHERATON-CADILLAC HOTEL, DETROIT, MICHIGAN

November 29, 1959 - 3:00-6:00 - 7:30-11:00 p.m.

November 30, 1959 - 7:00-8:45 p.m.

(A copy of these minutes is being sent to each director of the national society. Copies are sent also to the president and the secretary of each regional society.)

The following directors and officers were present: M.L. Prebble, W.J. Brown, A.G. McNally, J.L. Auclair, J.B. Maltais, F.O. Morrison, B. Hocking, G.R. Hopping, G.P. Holland, E.G. Munroe, W.S. McLeod and L.L. Reed.

Deceased Members

The President referred to members of the Society who had passed away during the year: Dr. Arthur Gibson, E. J. Stansfield, M. Sager, R. W. Hutton, A. C. Baker.

Correspondence

Letters from Doctors E. M. Duporte, E. M. Walker and E. H. Strickland were read in which they referred to the honour of being elected to honorary membership in the Society.

Regarding multiple membership in regional societies, correspondence with all the regional societies except Manitoba indicated that there is no barrier to membership in several regional societies with a single membership in the Canadian Society through only one of these.

Annual Meeting - 1960

The Entomological Society of Saskatchewan as host society for 1960 has indicated that September 12-14 are the most appropriate dates for the 1960 meeting. The Board of Directors accepted the invitation for the above dates subject to ratification at the annual business meeting.

Annual Meeting - 1965

The Acadian Society has invited the national society to be its guest for the 1965 meeting on the occasion of the 50th Anniversary of the Acadian Society.

Proposed Changes in the Constitution of the Entomological Society of Ontario

The Board of Directors authorized the modification of the letterhead of the Entomological Society of Canada, which at present indicates the Entomological Society of Ontario as co-publishers of THE CANADIAN ENTOMOLOGIST, to conform with the proposed changes in the Constitution of the Entomological Society of Ontario which will result in THE CANADIAN ENTOMOLOGIST being the publication of the Entomological Society of Canada alone. It was also suggested that the letterhead be simplified on recommendation of the Editor, Treasurer and Secretary, eliminating the extensive list of elected officers.

Affiliation with the Canadian Federation of Biological Sciences

Under date of June 17th 1959, the President distributed to all members of the Entomological Society of Canada a memorandum outlining the background of the proposal to affiliate with the Canadian Federation of Biological Sciences and the results of Dr. Glen's further study of this matter. The Directors representing regional societies were asked to obtain the views of their members regarding the matter of an application for affiliation. All seven Directors responded in correspondence or verbally at the meeting of the Board of Directors on November 29th. Although members of the Society in certain regional societies favoured continued review of possible affiliation with the Canadian Federation of Biological Sciences or other integrating agency, the majority were of the opinion that any move toward affiliation at this time would be premature.

Report of the Editor, Can. Ent.

The Editor stated that papers are being submitted more rapidly than they can be published and that delay in publication, now standing at about five months, will soon rise to eight months or more, in spite of an increase in size of issue from sixty-four to seventy-two pages in July 1959. The Editor recommended that the Board authorize a further increase to eighty pages in January 1960 and to ninety-six pages in July 1960, provided the present rate of submission of manuscripts is sustained. The report was adopted.

Associated Financial Matters

The Entomological Society of Alberta stated that it had forwarded a cheque to Zoological Record in support of this invaluable work and recommended that the Entomological Society of Canada should also contribute. Following discussion, it was moved by A. G. McNally and seconded by W. J. Brown that the Canadian Society contribute \$100.00 to Zoological Record. The motion carried, and the Secretary was instructed to inform all regional affiliated societies of this action and to suggest that they consider making individual contributions.

ENTOMOLOGY SOCIETY OF ALBERTA

UP TO DATE MAILING LIST 1959 - 1960

A - Alta. Ent. Soc.
C - Can. Ent. Soc.

<u>NAME</u>	<u>ADDRESS</u>
A - Anderson, R.L.	Field Titles Service, 2nd Floor Royalite Building, 11 - Hunter St. Calgary, Alta.
A - Archibald, J.G.	Department of Agriculture, Court House, Lethbridge.
A - Alberta Pacific Grain Co. (Mr. A. Boyse)	4th Flr., Herald Bldg., Calgary, Alta.
A - Alberta Wheat Pool (Mr. A.T. Baker)	Lougheed Bldg., Calgary, Alta.
A - Allied Chemicals (E.G.Law)	Allied Chemical Services Ltd., 5507 - 1st St. S.E., Calgary, Alta.
A - Baird, R.B.	Research Station, Research Branch, Canada Agriculture, Lethbridge, Alta.
A - Ball, G.E. (Dr.)	c/o Dept. of Entomology, University of Alberta, Edmonton, Alta.
A & C - Blakeley, P.E.	Research Station, Research Branch, Canada Agriculture, Lethbridge, Alta.
A - Broadfoot, W.C. (Dr.)	Research Station, Research Branch, Canada Agriculture, Lethbridge, Alta.
A - Brooks, A.R. (Dr.)	Canada Agric. Research Lab., University Sub P.O., Saskatoon, Sask.
A & C - Brown, C.E.	Forest Biology Lab., 102-11th Ave. E., Calgary, Alta.
A & C - Brown, J.H.	Provincial Entomologist, Dept. of Public Health, Edmonton, Alta.

<u>NAME</u>	<u>ADDRESS</u>
A - Carr, J.L.	R.R. #4, Calgary, Alta.
A - Cerezke, H.	Dept. of Entomology, University of Alberta, Edmonton, Alta.
A - Chisholm, Mrs. R.	14716 - 108 Ave., Edmonton, Alta.
A - Clancy, D.N.	92 - Westview Drive, Calgary, Alta.
A & C - Church, Norman S. (Dr.)	Research Station, Research Branch, Canada Agriculture, Lethbridge, Alta.
A - Cooper, G.S. (Dr.)	North America Cynamid, 160 Bloor Street East, Toronto 5, Ontario.
- Dow Chemical of Canada Ltd. (E.E. Wiffen)	Technical Service & Development, Sarnia, Ontario.
A - Edmunds, J.W.	Department of Agriculture, Terrace Bldg., Edmonton, Alta.
A - Elliott, Don	4512 - 26th Ave. S.W., Calgary, Alta.
A - El-Moursy, Aly	Department of Entomology, University of Alberta, Edmonton, Alta.
A - Evans, G.W. (Assist. Prof.)	Department of Entomology, University of Alberta, Edmonton, Alta.
A - Ewen, A.B.	Department of Entomology, University of Alberta, Edmonton, Alta.
A & C - Farstad, C.W. (Dr.)	Research Station, Research Branch, Canada Agriculture, Lethbridge, Alta.
A - Fletcher, Homer	Chipman Chemicals Ltd., 10301 - 109 St., Edmonton, Alta.
A - Fredeen, H.	Canada Agric. Research Lab., University Sub P.O. Saskatoon, Sask.
A & C - Gooding, R.	12850 - 107 Street, Edmonton, Alta.
A - Green, C.F.	Suffield Experimental Station, Ralston, Alta.
A - Gurba, J.B.	Field Crops Branch, Provincial Department of Agriculture, Edmonton, Alta.

<u>NAME</u>	<u>ADDRESS</u>
A - Gushel, E.T.	Research Station, Research Branch, Canada Agriculture, Lethbridge, Alta.
- Golden West Seeds (H. Johansen)	608 Centre Street, Calgary, Alta.
- Golden Arrow Sprayers Ltd.	1439 - 17th Ave.S.E., Calgary, Alta.
A & C - Harper, A.M. (Dr.)	Research Station, Research Branch, Canada Agriculture, Lethbridge, Alta.
A & C - Hartland - Rowe, Richard (Dr.)	Department of Zoology, University of Alberta, Calgary, Alberta.
A & C - Haufe, W.O. (Dr.)	Research Station, Research Branch, Canada Agriculture, Lethbridge, Alta.
A - Hewitt, A.G.	Research Station, Research Branch, Canada Agriculture, Lethbridge, Alta.
A & C - Hobbs, G.A. (Dr.)	Research Station, Research Branch, Canada Agriculture, Lethbridge, Alta.
A & C - Hocking, B. (Prof.)	Department of Entomology, University of Alberta, Edmonton, Alta.
A & C - Holmes, N.D. (Dr.)	Research Station, Research Branch, Canada Agriculture, Lethbridge, Alta.
A & C - Hopkins, Mrs. M.E.P.	Forest Biology Laboratory, 102-11th Ave. E., Calgary, Alta.
A & C - Hopping, G.R.	Forest Biology Laboratory, 102-11th Ave. E., Calgary, Alta.
A - Hurtig, H. (Dr.)	Entomology Division, K.W. Neatby Bldg., Ottawa, Ont.
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