

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



LETHBRIDGE :. ALBERTA  
OCTOBER 1st, 1954

This Issue

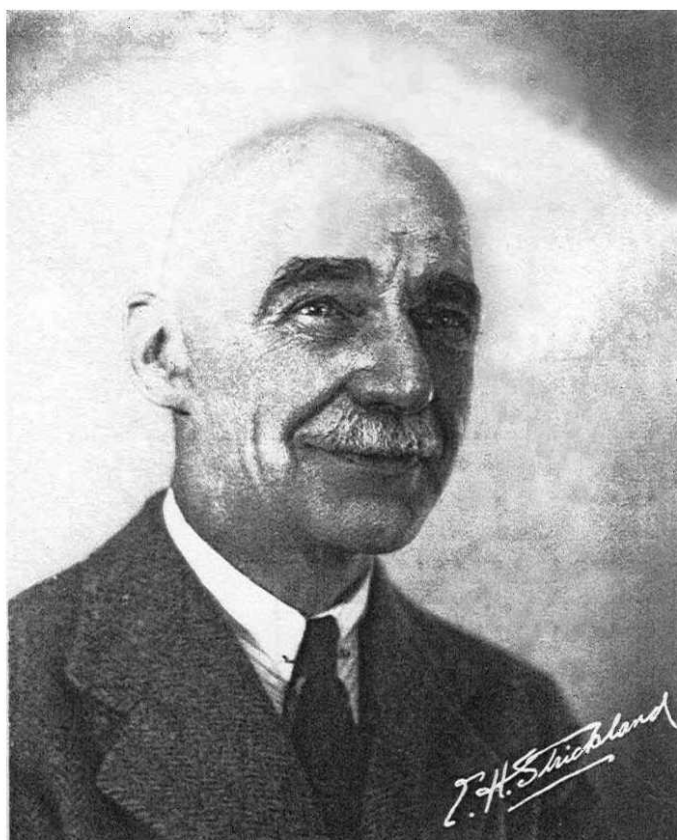
Is Dedicated to

EDGAR HAROLD STRICKLAND

M.Sc. (Harvard), D.Sc. (Alberta)

+ + + +

In 1913 E. H. Strickland was appointed first Officer-in-Charge of the Entomological Laboratory at Lethbridge, where he conducted investigations on cutworms and grasshoppers until 1922 except for a period of military service during the First World War. He accepted the position as Head of the newly formed Department of Entomology at the University of Alberta in 1922 and carried on a full program of teaching and research until his retirement in May 1954. When the Entomological Society of Alberta was formed in November 1952, Professor Strickland was elected its first president and, prior to his retirement, was made the first Honorary Life member of the Society.



Proceedings of the  
ENTOMOLOGICAL SOCIETY OF ALBERTA

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Vol. 2

December, 1954

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SPRING MEETING

Edmonton, Alberta  
May 10, 1954

A meeting was held by the Society in the faculty lounge at the University of Alberta on the occasion of Spring Convocation, at which E. H. Strickland received the Degree of Doctor of Science. The meeting was called to order at 4:30 p.m. by the President, R. H. Painter, with 33 members in attendance.

A letter from Dr. A. Stewart, President of the University, was presented by B. Hocking in which the Society's prize to the best all-round graduating student in Entomology was formally accepted by the University. The Faculty of Entomology requested further guidance from the Society for presentation of this prize.

As an outcome of reports by the Regional Directors on the progress of amateur interest in Entomology it was decided to hold a provincial competition for the best insect collections submitted by young amateur entomologists.

On behalf of the Society L. A. Jacobson presented E. H. Strickland with a life membership in appreciation of his contributions toward Entomology in Alberta and, as a further token of best wishes, a painting entitled "Yucca in Bloom" by Margaret R. Mackay formerly of the Science Service Laboratory, Lethbridge.

## EXECUTIVE MEETING

Lethbridge, Alberta  
September 30, 1954

At an executive meeting called by the President the following amendments to the constitution were proposed:-

Article 4 to be amended to read: "Meetings may be called each year by the President at times and places suitable to the majority of members. The fall meeting normally shall be considered the annual meeting and shall be held in the locality decided upon at the preceding annual meeting. One-quarter of the total paid-up membership shall constitute a quorum. The meetings shall be informal insofar as possible."

Article 5 to be amended to read: "The officers of the Society shall consist of a President, Vice-President, Secretary, Treasurer, Editor-Librarian, Immediate Past-President, and three Directors. The President, Secretary, Treasurer, and Editor-Librarian shall be elected from the same locality. These officers shall constitute the Executive with full power to act on behalf of the Society within the bounds of the constitution and to appoint committees as necessary."

Article 6 to be amended to read: "Elections shall be held once a year at the annual meeting, and officers so elected shall take office at the beginning of the calendar year and remain in office for a term of one year. The office of President shall not be held by the same member for more than two consecutive years."

This will serve as notification of the proposed amendments to all members, in keeping with Article 7 of the constitution.

## SECOND ANNUAL MEETING

(Held in the El Rancho Motel Banquet Room,  
Lethbridge, Alberta.)

### Social Evening, Sept. 30

An Informal social evening was held in the Banquet Room of the El Rancho Motel commencing at 8:30 p.m. Ruby I. Larson of the Science Service Laboratory, Lethbridge, gave an illustrated talk entitled "Human Ecology" which was a very interesting account of persons and places visited during a tour of Europe in the summer of 1953. This was followed by refreshments and a congenial get-together of the members present.

### General Session, Oct. 1

The second annual meeting of the Alberta Entomological Society was opened at 9:00 a.m. with a few well chosen words of welcome by the President. This was followed by a panel discussion on "Entomology: Where and How" under the chairmanship of the President.

The meeting was then turned over to S. McDonald, who acted as chairman during the presentation of reports and papers.

An informal luncheon was served in the banquet room during a break in the paper-reading session from 12:00 to 1:30 p.m.

The meeting was turned over to the President for the business session at 3:00 p.m.

### Business Session, Oct. 1

At this meeting the Secretary informed the members that the Alberta Entomological Society was officially recognized by the Foreign Trade Service.

The Regional Directors responsible for encouraging interest in amateur entomology gave reports of activities in their respective regions with regard to the Insect Collection Competitions. The collections for 1954 were to be submitted to the University at Edmonton where B. Hocking would head the judging panel. The results of this competition are given on page 13. It was



decided by the members that, in future, the three best insect collections from each region would be brought to the annual meeting for final judging.

The activities of the Prizes and Awards Committee were outlined by B. Hocking. The annual cash award to the best all-round student in Entomology for 1954 was awarded to R. Fodchuck, a graduating student in Agriculture.

The nominating committee submitted the following members as the officers for the coming year, 1955:-

President	-	H. Hurtig
Vice-President	-	C. W. Farstad
Past-President	-	R. H. Painter
Secretary	-	S. L. W. Mann
Treasurer	-	W. W. Hopewell
Editor-Librarian	-	R. P. McMullen
Director to		
National Society	-	C. W. Farstad
Directors	-	W. C. McGuffin
	-	B. Hocking
	-	L. A. Jacobson

The above slate of officers was elected by acclamation.

A vote of thanks was extended to the retiring executive and to the entertainment committee responsible for arranging the meetings.

The third annual meeting of the Society is to be held in the Medicine Hat region in the fall of 1955.

#### PANEL DISCUSSION

##### "Entomology: Where and How"

C. W. Farstad, W. Lobay, H. Hurtig,  
B. Hocking, and G. R. Hopping

The discussion was opened by C. W. Farstad, who expressed his belief that the final solution to the insect control problem was in the field, where research was more difficult and more costly and progress much slower.

H. Hurtig emphasized that insecticides should be looked on as crop protection agents rather than as insect control agents and that better planning and co-operation of insecticide research is essential. B. Hocking stated that a change in the entomological curriculum was forthcoming at the University of Alberta which was designed to turn out more useful entomologists and field men. This change involves an increased study of the basic sciences and an increase in laboratory work. G. R. Hopping felt that the public should be better acquainted with the fundamental research in progress and the benefits obtained from it.

W. Lobay outlined the policy of the Crop Protection Division of the provincial Department of Agriculture, which was authorized to make expenditures on "official pests" only. He emphasized the need for more information on insects of economic importance within the province and suggested that the Society contribute in this regard. He expressed his appreciation to the Science Service Laboratory, the University of Alberta, and other organizations that have assisted his Division in the past.

#### SUMMARIES OF PAPERS PRESENTED

##### "Some Observations on the Effect of Host Physiology on Populations of Sheep Keds"

W. A. Nelson  
Livestock Insect Laboratory  
Lethbridge, Alberta

It has been found that populations of sheep keds build up more rapidly and reach higher levels on poorly fed sheep. This is also the case in other parasitic infestations such as rat lice. The explanation for this may possibly lie in the vitamin or amino acid levels in the blood of the host animal.

In nutrition experiments with sheep on winter feed it was found that ked populations began to die off rapidly in January. Such decreases have also been noted by other authors. This phenomenon has now been related to the cessation of the oestrous cycle in barren ewes. In pregnant ewes, populations continue to build up quickly

until after lambing, at which time they too fall off rapidly. Such decline does not occur in the same manner on range-wintered animals, so that this phenomenon also appears to be related to the type of winter feed ingested by the host animal.

From pathological symptoms in the excretory system of dying keds, it is suggested that there is a disruption of protein metabolism in the insect, which is caused by the presence or absence of some factors in the host blood at the critical periods mentioned above. In normal keds, both uric acid and xanthine have been identified from the excretory products.

"A Tabloid *Drosophila* Medium"

B. Hocking  
Department of Entomology  
University of Alberta  
Edmonton, Alberta

A standard maize meal-agar *Drosophila* medium, before yeast is added to it, may be dried out at first in air and finally in a desiccator, giving a tabloid which can be stored apparently indefinitely in a closed jar. A tabloid can be reconstituted at any subsequent date by adding about one and one-half times the original amount of water to it in a covered rearing bottle and placing this in an oven at 100° C. for an hour or two with occasional agitation. Yeast is added when cold. Tabloids reconstituted a year later have given healthy cultures. This procedure saves making up a bath of medium when only one or two bottles are required to maintain a culture.

"How to Know Bark Beetles"

G. R. Hopping  
Forest Zoology Laboratory  
Calgary, Alberta

The common species of bark beetles can readily be identified in the field by observing the bark of the host tree. The formation and location of the brood galleries made by the adults, the tunnelling patterns of the immature stages as well as entrance and exit holes are characteristic for each species.

"Mechanics of the Emergence  
of the Pale Western Cutworm"

P. E. Blakeley  
Science Service Laboratory  
Lethbridge, Alberta

In a study of the emergence of the pale western cutworm, it was observed that eclosion of the adult was accomplished by the front and middle legs exerting an outward and downward pressure which ruptured the pupal skin along definite sutures. It appeared that a moulting fluid had first softened the cuticle. Eclosion then took place through the opening thus formed. No variation in this opening was found.

Emergence of the adult was observed through glass walled containers. The soil above the moth was moistened with a fluid exuded from the mouth. This softened soil was then rasped with heavily sclerotised spines on the tibiae of the fore legs. The loosened soil was moved past the body and compressed below until the moth reached the surface.

Experimental evidence indicates that the space provided by the earthen cell is necessary for emergence. The prepupae were unable to construct cells in pure quartz sand or in moist river sand and very crumbly cells were formed in dry river sand and moist clay. These findings may be of value in the field to interpret decreases in populations during the prepupal and pupal periods. Without the protection of the hard-walled earthen cells the prepupae and pupae could be more susceptible to predators.

"Bionomics of the Leaf-cutter Bee, Megachile (Xanthosarus)  
perihirta Ckll. (Hymenoptera: Megachilidae) with  
Reference to its Role in Pollination of Alfalfa"

G. A. Hobbs  
Science Service Laboratory  
Lethbridge, Alberta

Phases of the bionomics of Megachile perihirta Ckll. that have a bearing on its usefulness and its worth as a pollinator of alfalfa are discussed.

The importance of timing the blooming to coincide with its short flight period is pointed out.

Biotic potential of this species that does not construct all of its cells in one tunnel is calculated by a study of flight activity curves for a five-year period and a consideration of the amount of work accomplished in a day.

The worth of a female perihirta is calculated by multiplying the number of seeds set per flower tripped as a result of its visits X the number of flowers tripped to make a load X the number of pollen loads to provision a cell X cell-building potential. The estimated value of an individual of this species is great enough to point up the need for experimentation on the reduction of those biotic factors in the environmental resistance that have been discovered and assessed.

"The Influence of the Variety of Wheat on.  
the Length and Fecundity of the Female of  
the Wheat Stem Sawfly, Cephus cinctus Nort."

C. W. Farstad, A. W. Platt, and D. S. McBean

A co-operative project between the Field Crop Insect Laboratory, Lethbridge, Alberta, and the Cereal Section, Experimental Station, Swift Current, Saskatchewan, was initiated in 1932 to investigate the possibility of breeding an acceptable variety of wheat that was resistant to the attack of the wheat stem sawfly, Cephus cinctus Nort.

Initial field observations had shown that certain solid-stemmed vulgare and durum varieties were less severely damaged than hollow-stemmed varieties. In addition, it was apparent that there were differences in the size of both the larvae and the adults of the surviving populations.

The adult female emerges with a full complement of eggs, and it was possible, therefore, to make a study of the relationship between the length and fecundity of the female and the variety of the wheat.

A detailed study was undertaken in 1943 to (1) evaluate the influence of the variety on survival and fecundity, (2) ascertain whether there were factors other than solidness that might be contributing to resistance, and (3) find additional methods of evaluating resistance.

### Methods

Nineteen varieties were grown at five stations, namely, Nobleford, Alberta, and Swift Current, Shaunavon, Regina, and Scott, Saskatchewan. The stubs, which contained the surviving populations, were collected from the plots in the spring of 1944, and the emergence record was taken. Approximately 24 hours after emergence the females were anaesthetized, the overall length was measured, the tip of the abdomen clipped off, and the eggs squeezed out and spread on a glass surface for counting.

### Results

The first eleven varieties are solid-stemmed, and all are vulgare (bread wheat) with the exception of Golden Ball, which is a solid-stemmed durum. In S-615 x Coronation the mean length of the female was 6.7 mm. with 24 eggs whereas in Marquis, at the other end of the scale, the mean length was 8.0 mm. with 45 eggs. An increase of 1.3 mm. in length almost doubled the number of eggs per female.

The results show that there is a close relationship between female length and egg number or oviposition potential. The differences between station regressions and the means are highly significant, showing that the rate of change was not the same at all stations. An examination of the regression lines shows that the rate of change at Nobleford differed from that at the other four stations. This survey was exposed to a period of extremely high temperatures and drought, which resulted in premature ripening. There was high larval mortality, even in the highly susceptible varieties. In addition the population

in the Nobleford area was entirely parthenogenetic and there may have been a different reaction in the bi-parental population.

At the other stations the crop growth was more normal. The best figure available for predicting egg numbers is the average regression for the four normal stations. This yields a prediction equation of  $y = 14.4x - 71.4$  where  $y$  = the predicted number of eggs and  $x$  = the observed mean length of the females.

Despite its limitation the relationship established promises to be of value in assessing sawfly resistance. The plant breeder is on safe ground, other things being equal, in discarding those lines that consistently produce large adults.

"An Explanation of Erratic Results  
in a Routine Experiment"

R. W. Salt, N. S. Church and A. G. Hewitt  
Science Service Laboratory  
Lethbridge, Alberta

Erratic results were obtained in what appeared to be a straightforward investigation into the effects of low temperature on the rusty grain beetle, Laemophloeus ferrugineus (Steph.). Gradual changes in the stock culture caused by long-term or genetic acclimatization, were demonstrated, and offer a partial explanation. Short term, or physiological, acclimatization, which could have produced extensive and rapid effects, was ruled out as impossible under the circumstances. Further explanation was sought in the experimental procedure.

In the original experiments, eggs, small and large larvae, prepupae, pupae and adults were exposed to constant temperatures between  $-10^{\circ}$  and  $+15^{\circ}$  C. for periods of one to 60 days. To be counted as survivors, eggs had to develop to normal pupae; larvae, prepupae and pupae to normal adults; and adults had to survive 15 days. The experiment covered a period of almost 10 months.

The erratic mortality data are thought to stem from the survival requirements demanded of the immature stages.

The usual procedure is to count living and dead at a selected time after exposure, a method which produces definite quantitative data in spite of the fact that many survivors have been affected in varying degree by the sublethal exposure. The subsequent expression of these effects may easily invalidate the arbitrarily obtained mortality data. Since these sublethal effects are of infinite variety and degree, the longer the insect is reared, after exposure, the more chance there is that these effects will find expression. On innumerable occasions, and particularly at critical times like hatching, molting, and emerging, the progress of the insect towards recovery, towards abnormal survival, or towards death is redetermined. It is suggested that this succession of crises, each offering a choice of paths for the future, produced the variability of results in this experiment.

"Notes on the Arrival of the Alfalfa Weevil in Canada"

G. A. Hobbs  
Science Service Laboratory  
Lethbridge, Alberta

Intensive survey led to the finding of the alfalfa weevil, Hypera postica (Gyll.), in southern Alberta this year. Following its discovery, extensive survey in an intensive manner led to its discovery in the irrigated region that surrounds Lethbridge. It is still a rare insect in this irrigated region. Isolated fields along the Milk River and the Orion-Manyberries route contain very small populations of the weevil and its parasite, Bathyplectes curculionis (Thomson), indicating that it has been in southern Alberta for more than a year.



"A New Economic Pest of Sugar Beets  
in Southern Alberta"

C. E. Lilly  
Science Service Laboratory  
Lethbridge, Alberta

An important pest of sugar beets, the sugar-beet wire-worm, Limonis californicus (Mannh.), was discovered in economic numbers for the first time at Turin in southern Alberta. The only previous record was found in R. Glen's "Larvae of the elaterid beetles of the tribe Lepturoidini (Coleoptera: Eleteridae)" where two specimens of Limonis sp. near ectypus Say were collected at Taber. In M. C. Lane's reviews of this paper he states, "...and the species near L. ectypus Say from Manitoba, Saskatchewan, and Alberta is probably L. californicus (Mannh.)".

The infestation at Turin seriously reduced a six-acre stand of beets by approximately 45 to 50 per cent of the anticipated yield. The owner of the field reported that crops on this piece of land have been very poor for the last five years, thus indicating that the infestation is probably one of long standing. The distribution of this pest in the Turin area is not known but an examination of beet fields in the immediate vicinity of the damaged crop failed to uncover any more specimens.

ENTOMOLOGICAL SOCIETY OF ALBERTA  
INSECT COLLECTION COMPETITION, 1954

B. Hocking

This competition was organized in the spring with the object of encouraging an interest in insects and insect natural history among children. Prizes were offered for the best entries in each of two age groups, up to 11, and up to 18 years. Announcements were made on the radio and in the newspapers, and copies were sent to all schools and to young peoples' organizations such as Boy Scouts and Girl Guides. Advice and assistance and some items of equipment were made available at Edmonton, Calgary, Lethbridge, and Medicine Hat to children who were interested, and many people took advantage of these offers.

In spite of very unfavourable weather eighteen entries were received, some of them of a remarkably high standard. Lethbridge was the most productive area, followed by Calgary, Edmonton, and Medicine Hat. Entries were first judged locally, and at Lethbridge local prizes were awarded through the generosity of members in that area. The better entries were then forwarded to Edmonton where the final judging was done by a panel including K. Bowman--butterflies and moths; B. Hocking--flies; G. E. Ball--beetles and other groups. Prizes have been awarded as follows:-

Senior Group: 1st prize - Norman Rollingson of Lethbridge  
2nd prize - Ronald Law of Calgary  
3rd prize - Fred Vincent of Calgary

Junior Group: 1st prize - Donna Mae Nattrass of Manyberries  
2nd prize - Wayne Nattrass of Manyberries  
3rd prize - Cam Huth of Calgary

The prizes consist of books on insects, insect display cases, pins and collecting equipment, and a year's junior membership in the society.

The commonest faults were: insects set too low on the pin; labels too large, partly through including identifications on the locality labels; poor spreading of Lepidoptera, beetles pinned through the pronotum instead of the right elytron; poor arrangement, failing to group insects in the same orders together; and, finally, too few specimens, many collectors apparently not realizing that it is desirable to have a series of specimens of each species.

The biggest collections consisted of nearly 150 specimens representing as many as 44 different families and ten different orders of insects. Among the more interesting species taken were the tortoiseshell butterfly, Nymphalis j-album, by Norman Rollingson, and the fritillary, Argynnis leto, and the swallowtail, Papilio machaon hudsonianus, by Donna Nattrass. In other groups, the ground beetle, Dicaelus laevipennis, taken by Donna Nattrass is a new record for the province of Alberta and extends the known range of this species by at least 300 miles. The deer fly, Chrysops aestuans, taken by Wayne Nattrass, while not a new record, is a species that is not represented in the University of Alberta collection.

In spite of poor weather the competition was a great success. Greater success, however, is hoped for next year, with many more entries from all districts, and especially from country areas.

Annual Statement of  
THE ENTOMOLOGICAL SOCIETY OF ALBERTA  
for the year ending December 31, 1954

Receipts

Balance from 1953 .....		38.04
Membership fees		
Alta. Ent. Soc. 1954 .....	114.02	
Alta. Ent. Soc. 1955 .....	<u>80.50</u>	194.52
Can. Ent. Soc. 1953 .....	3.00	
Can. Ent. Soc. 1954 .....	108.00	
Can. Ent. Soc. 1955 .....	<u>80.00</u>	191.00
Sale of insect pins .....		5.25
Surplus from Annual Meeting .....		.57
Refund on fees from Can. Ent. Soc. - R. H. Painter .....		2.00
Donation .....	<u>1.00</u>	<u>394.34</u>
		432.38

Disbursements

Membership fees to Can. Ent. Soc. for 1953 .....	3.00	
1954 .....	108.00	
1955 .....	<u>80.00</u>	191.00
Ent. Soc. Alta. prize at Univ. of Alta. ..		50.00
Insect collection prizes .....		25.00
Stationery .....		.35
Covers for Proceedings .....		17.60
Refund on Can. Ent. Soc. fees - R. H. Painter .....	<u>2.00</u>	<u>285.95</u>
Balance, December 31, 1954 .....		<u>146.43</u>

(Signed) S. L. W. Mann  
Secretary

(Signed) B. Hocking  
Treasurer

MEMBERSHIP

December 31, 1954

Ball, G. E., Department of Entomology, University of Alberta,  
Edmonton.

Birch, F., 10540 - 101 Street, Edmonton.

Blakeley, P. E., Field Crop Insect Laboratory, Box 270, Leth-  
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Bowman, K., 10240 Wadsworth Road, Edmonton.

Broadfoot, W. C., Science Service Laboratory, Box 270, Leth-  
bridge.

Broughton, O., Radio Station CJOC, Lethbridge.

Brown, J. H., Department of Public Health, Edmonton.

Church, N. S., Field Crop Insect Laboratory, Box 270, Leth-  
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Chisholm, Mrs. R., 9816 - 112 Street, Edmonton.

\*Clemis, J., 1618 - 3 Avenue North, Lethbridge.

\*Collett, Betty, Lacombe.

Cook, J. A., 402 Customs Building, Calgary.

Cumming, Margaret, 402 Customs Building, Calgary.

Depner, K. R., Livestock Insect Laboratory, Box 270, Leth-  
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Edmunds, J. W., Terrace Building, Edmonton.

Farstad, C. W., Field Crop Insect Laboratory, Box 270, Leth-  
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Gravells, R., Suffield Experimental Station, Ralston.

Green, C. F., Suffield Experimental Station, Ralston.

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Henson, W. R., 402 Customs Building, Calgary.

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Hillerud, S. O., Department of Extension, University of Alberta, Edmonton.

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Hocking, B., Department of Entomology, University of Alberta, Edmonton.

Holmes, N. D., Field Crop Insect Laboratory, Box 270, Lethbridge.

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Humfrey, G., Suffield Experimental Station, Ralston.

Hurtig, H., Suffield Experimental Station, Ralston.

Jacobson, L. A., Field Crop Insect Laboratory, Box 270, Lethbridge.

Kendall, Shirley P., Suffield Experimental Station, Ralston.

Kilduff, T., Provincial Department of Agriculture, Court House Building, Lethbridge.

Larson, Ruby I., Field Crop Insect Laboratory, Box 270, Lethbridge, Alberta.

Le Maistre, W. G., Terrace Building, Edmonton.

Lilly, C. W., Field Crop Insect Laboratory, Box 270, Lethbridge.

Lindsay, I. S., Suffield Experimental Station, Ralston.

Lobay, W., Provincial Department of Agriculture, Edmonton.

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McCalla, P. D., Provincial Department of Agriculture, Edmonton.

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- McDonald, Stuart, Field Crop Insect Laboratory, Box 270,  
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- McGregor, H. A., 11406 - 66 Street, Edmonton.
- Mackay, Margaret R. (now Mrs. John Aronson), 31 Alexander  
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- McMullen, R. D., Suffield Experimental Station, Ralston.
- Mann, S. L. W., Suffield Experimental Station, Ralston.
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- Painter, R. H., Livestock Insect Laboratory, Box 576, Leth-  
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- Peterson, L. K., Field Crop Insect Laboratory, Box 270,  
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- Reid, R. W., 402 Customs Building, Calgary.
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- Salt, R. W., Field Crop Insect Laboratory, Box 270, Leth-  
bridge.
- Shepherd, R. F., 402 Customs Building, Calgary.

Smith, D. S., Field Crop Insect Laboratory, Box 270, Lethbridge.

Stark, R. W., 402 Customs Building, Calgary.

Stogryn, R. P., 310 Post Office Building, Lethbridge.

Strickland, E. H., 2945 Tudor Road, Victoria, B. C. (Honorary life member)

Swailles, G. E., Field Crop Insect Laboratory, Box 270, Lethbridge.

Swindlehurst, E. B., Provincial Department of Agriculture, Edmonton.

Thompson, C. O. M., Livestock Insect Laboratory, Box 270, Lethbridge.

Watson, C., Suffield Experimental Station, Ralston.

Weintraub, J., Livestock Insect Laboratory, Box 270, Lethbridge.

\*Weir, L. C., 402 Customs Building, Calgary.

Wenner, B. J., Suffield Experimental Station, Ralston.

Wright, B., Mercoal.

Wyatt, C. W., Box 217, Banff.

\* Student Members.