

AgRobinson

P R O C E E D I N G S

of the

ENTOMOLOGICAL SOCIETY OF MANITOBA

DECEMBER, 1949

Volume 5

Number 1

Proceedings of the
ENTOMOLOGICAL SOCIETY OF MANITOBA

Vol. 5

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LIST OF MEMBERS

Executive

- President -- Lt. Col. C. A. S. Smith,
Plant Inspection Division,
- Winnipeg.
- Vice-President -- W. R. Allen,
Dominion Entomological
Laboratory - Brandon.
- Secretary -- B. N. Smallman,
Stored Products Insect
Laboratory, - Winnipeg.
- Treasurer -- F. L. Watters,
Stored Products Insect
Laboratory, - Winnipeg.
- Editor-Librarian -- R. R. Lejeune,
Forest Insect Laboratory,
- Winnipeg.

Members

- W. R. Allen, Dominion Entomological Laboratory, Brandon,
Manitoba.
- R. B. Barker (Mrs. W. S.) Calgary, Alberta.
- B. Berck, 724 Dominion Public Building, Winnipeg.
- R. D. Bird, Dominion Entomological Laboratory,
Brandon, Manitoba.
- F. Birt, Chipman Chemicals, 1040 Lynn Avenue, Winnipeg.
- W. F. Black, 97 Sherburn Street, Winnipeg.
- A. W. A. Brown, University of Western Ontario, London,
Ontario.
- W. Colberg, North Dakota Agricultural College, Fargo, N.D.
- T. V. Cole, Brandon, Manitoba.
- W. A. Cumming, Dropmore, Manitoba.

- B. Filuk, 517 McMillan Avenue, Winnipeg.
- D. D. Fraser, Naugatuck Chemicals, 158 Market E.,
Winnipeg.
- F. J. Greaney, 765 Grain Exchange Building, Winnipeg.
- R. H. Handford, Field Crop Insect Laboratory, Kamloops,
British Columbia.
- R. J. Heron, 167 Chestnut Street, Winnipeg.
- J. Kelleher, Brandon, Manitoba.
- R. R. Lejeune, Forest Insect Laboratory, Fort Garry,
Manitoba.
- S. J. Loshiavo, 717 Sargent Avenue, Winnipeg.
- J. A. McLeod, 244 Lipton Street, Winnipeg.
- W. S. McLeod, Division of Entomology, Ottawa, Ontario.
- J. McLintock, Dominion Entomological Laboratory,
Lethbridge, Alberta.
- E. C. Martin, Legislative Building, Winnipeg.
- A. V. Mitchener, Department of Entomology, University
of Manitoba.
- J. A. Munro, North Dakota Agricultural College, Fargo,
North Dakota.
- Miss B. Northcott, Brandon, Manitoba.
- L. O. T. Peterson, Indian Head, Saskatchewan.
- D. J. Petty, 722 Dominion Public Building, Winnipeg.
- R. L. Post, North Dakota Agricultural College, Fargo,
North Dakota.
- L. G. Putnam, Lethbridge, Alberta.
- H. P. Richardson, Box 250, Brandon, Manitoba.

A. G. Robinson, Brandon, Manitoba.

W. Romanow, 633 Church Avenue, Winnipeg.

B. N. Smallman, 724 Dominion Public Building,
Winnipeg.

C. A. S. Smith, 722 Dominion Public Building,
Winnipeg.

D. S. Smith, Lethbridge, Alberta.

J. B. Wallis, 36 Wellington Crescent, Winnipeg.

F. L. Watters, 724 Dominion Public Building, Winnipeg.

H. Westdal, Brandon, Manitoba.

W. M. Whiteway, 722 Dominion Public Building, Winnipeg.

T. H. Williams, 257 Duffield Street, St. James.

R. H. Wong, 557 Pacific Avenue, Winnipeg.

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THE APRIL GENERAL MEETING

The Business Session

The regular spring meeting of the Entomological Society of Manitoba was held in the Horticultural Building, University of Manitoba, April 26, 1949. Thirty members were present and a number of non-members attended the scientific meeting.

The minutes of the meeting of November 16, 1948, were read and adopted.

Professor Mitchener moved that the Society retain at least five copies of all Proceedings, Reports, and other publications put out by the Society. Seconded by R. D. Bird.

CARRIED

The Secretary-Treasurer presented the financial report of the Society, indicating a balance on hand of \$49.65. B. N. Smallman, Secretary-Treasurer, moved the adoption of the financial report. Seconded by W. R. Allen.

CARRIED

The Secretary-Treasurer reported the present membership as 42, of which 30 are paid-up members.

The meeting discussed at length, an outline of the program for the joint meeting of the Entomological Societies of Manitoba and Ontario in November. It was announced that the executive, acting on a motion of the last general meeting, had set up committees as follows:

Program	-	B. N. Smallman
Finance	-	C. A. S. Smith
Social	-	W. R. Allen
Registration	-	F. L. Watters
Exhibits	-	R. R. Lejeune
University		
Arrangements	-	A. V. Mitchener
Publicity	-	E. C. Martin
Transportation	-	F. C. Birt.

The meeting expressed general approval of the program outline prepared by the Chairman of the Program Committee and made a number of suggestions for his consideration. It was moved by W. R. Allen that the Program Committee provide for a session of short papers to be held at the University. Seconded by C. A. S. Smith.

CARRIED

On a notice of motion, the meeting discussed the matter of affiliation with the Entomological Society of Ontario. After lengthy discussion the motion was amended by C. A. S. Smith and put to the meeting in the form, "That the Entomological Society of Manitoba approves of affiliation with the Entomological Society of Ontario." Seconded by R. D. Bird.

CARRIED

The Secretary was instructed to inform the Secretary of the Entomological Society of Ontario of this decision and to convey the tenor of the discussion which preceded it. The discussion revealed unanimous support for a national society. The minority opposing the proposal for affiliation were of the opinion that affiliation would encourage the Ontario Society to assume the role of a national society and defer the formation of an organization that would be national in name and effect. The majority voting for the motion felt that the objective of a national society could be promoted better within the framework of a loose affiliation of existing organizations.

On a notice of motion, it was proposed that Article 6 of the Constitution be altered to read: "The officers of the Society shall consist of President, Vice-President, Secretary, Treasurer and Editor-Librarian." Moved by C. A. S. Smith. Seconded by D. S. Smith.

CARRIED

Officers for the coming year were elected as follows:

President	-	C. A. S. Smith
Vice-President	-	W. R. Allen
Secretary	-	B. N. Smallman
Treasurer	-	F. L. Watters
Editor-Librarian	-	R. R. Lejeune

The meeting was adjourned at 12:30 p.m.

Scientific Business

The afternoon session was devoted to presentation by members of reviews of their current entomological work. Only written accounts submitted to the Editor by contributors are included in these Proceedings.

Field Crop Insects.- The following reports were contributed by officers of the Dominion Entomological Laboratory, Brandon.

Natural control of the sweetclover weevil
(S. cylindricollis)

R. D. Bird and J. S. Kelleher

The effect of natural control factors on a population of sweetclover weevils over a four-year period was presented.

Seventy-three pairs caged individually, were found to lay from 0 to 1665 eggs with an average of 400 per female. Oviposition extended from June to August inclusive. Assuming a 1:1 sex ratio, one-half of the weevils emerging from hibernation will be females. If each of them lays the expected average of 400 eggs and we know the numbers of larvae and resulting adults, we can determine when mortality occurs and the reproductive success for the season. This has been done for the years 1945 to 1948 and is illustrated in the accompanying table. It will be observed that there was very heavy mortality (92.8 to 98.0 per cent) from oviposition to fourth instar but that a large reduction in population (38.9 to 93.6 per cent) also occurred from fourth-instar larva to newly-emerged adult. The total mortality from egg to adult for the four years of study ranged from 95.60 to 99.87 per cent. The differences between 95.60 per cent mortality from egg to adult and 99.87 per cent for the same period, resulted in 807.69 per cent increase in the population in 1948 as compared to a 75.60 per cent decrease in 1946.

Mortality of *S. cylindricollis* during immature stages
at Brandon in 1945, 1946, 1948 and at Graysville in 1947.
Population is average per square foot.

	1945	1946	1947	1948
Weevil population in spring	13.00	3.90	9.10	3.90
Estimated number of ♀'s in spring	6.50	1.95	4.55	1.95
Estimated number of eggs laid	2600.00	780.00	1820.00	780.00
Number of 4th instar larvae produced	162.9	16.0	77.3	57.9
Egg to 4th instar-- % mortality	93.7	98.0	95.8	92.8
Population of new Generation	28.5	1.02	13.5	35.4
4th instar to adult - % mortality	82.5	93.6	82.5	38.9
egg to adult - % mortality	98.91	99.87	99.27	95.60
Relation of new generation to spring population	119.2% increase	75.6% decrease	48.3% increase	807.69% increase

Chemical Control

W. R. Allen

This season we expect to assist in the Dominion-wide onion maggot control test. The material to be used will be applied to onion seed or the seedling. Seed treatment with calomel and parathion will be contrasted with applications of the latter to the soil and plants.

Last year we found that two treatments of a DDT wettable formulation, applied during the hatching period and again 5 to 9 days later, gave good control of potato beetles in spite of reasonably heavy precipitation, and that controls effected with 1/4, 1/2 and 1 lb. per acre were not significantly different.

This season we hope to study the effect of DDT and parathion applications to potatoes from the viewpoint of reducing the number of DDT dusts and the control of several of the common potato insects, particularly aphids. The potato stock which we are starting out with carries a small percentage of mild mosaic and leafroll, and we hope to find out whether or not the spread and increase of virus diseases due to the activities of vectors, can be checked.

We expect to continue work with chemical control of the sweetclover weevil, primarily to continue our tests of a large series of insecticides on a small field basis in order to assess the effectiveness of the materials and if possible, to see which materials may be worthy of trial on a large field scale.

Last season sprays applied to new generation sweetclover-weevil adults in early September did not give any appreciable control for any of the treatments employed. Weevil activity was considered to be very slight despite favourable weather conditions. However, control with parathion at rates of 1/2 lb. and 1/4 lb. per acre, 67 and 46 per cent respectively, was significantly better than that obtained with BHC, toxaphane, DDT or chlordane, all at the rate of 1 lb. per acre.

The sunflower Phalonicid will receive some attention from the viewpoint of chemical control. At the present time we have exceptionally little information on the life history of this insect. We hope to make preliminary tests by applying the various dusts to sunflowers just prior to blossom in

the field, since the eggs of this insect may well be laid on the heads and it may be possible to kill the larvae before they become established in the flowers. In addition, we hope to be able to run experiments on the effectiveness of several materials against the larvae of this species.

The effect of feeding different barley varieties on
Melanoplus mexicanus

D. S. Smith and F. E. Northcott

A number of different barley varieties were grown on small plots, and M. mexicanus was confined in cages over the plots. The barley served as a sole source of food for the entire life of the grasshoppers. Some grasshoppers were also reared in cages at the laboratory and fed on clippings from different barley varieties grown in flats.

The period of development on all varieties was approximately the same. Survival on Newal, Hannchen, Prospect, OAC 21, and Montcalm was significantly higher than on others. Survival on Warrior was decidedly lower than on any other. Most eggs were laid by females fed on Montcalm, OAC 21, and Hannchen; Warrior and Titan produced the least.

The barley varieties used were Newal, Hannchen, Plush, Montcalm, Trebi, Prospect, Sanalta, OAC 21, Titan, Glacier, and Warrior.

The effect of feeding wheat with different nitrogen
content on Melanoplus mexicanus

D. S. Smith and F. E. Northcott

Renown wheat was grown using nutrient solutions to produce three different levels of N content. Cuttings from this wheat were fed to grasshoppers in cages..

Mean total N content (by micro Kjeldahl) for the three treatments -

Zero N	3.3%
Low N	4.3%
High N	6.2%

Consistently higher survival was obtained on High N, that on Zero N being very poor. More adults developed on High N, none at all on Zero N. The nymphal period was shorter by 12 days on High N than on the others. More eggs were produced on the High N treatment. Sex ratio and weight of adults showed no differences which could be correlated with the treatment. In brief, the effectiveness of the food as far as survival, development and egg production are concerned, is correlated with a higher nitrogen content.

Life History of the Flea Beetle,
Phyllotreta sp., in Manitoba

P. H. Westdal

The work during the past season constituted a study of the life history of the flea beetle, Phyllotreta sp. Through a combination of indoor and outdoor rearing, together with field observations, the main features of the life history of the insect were obtained. However, considerable difficulty was experienced before satisfactory incubation and rearing techniques were acquired. It was found that the eggs were extremely subject to desiccation, even under conditions of relatively high humidity, and newly-hatched larvae were difficult to establish under rearing conditions.

Briefly, the life cycle of the insect is as follows. The insect overwinters in the adult stage in leaves and trash, particularly along hedge rows. The adults emerge in late May and early June. It is at this time that the insect is particularly injurious to cultivated cruciferous crops, since it feeds on the first seed leaves, thus often destroying the crop. Oviposition begins about the first week of June, the eggs being deposited in small clusters (up to 7 eggs) in the moist soil just below the dry surface layer, at the base of the cruciferous plants on which the adult feeds. The eggs hatch in from 10 to 15 days. The young larvae feed on the fine root hairs of the host plant, passing through three instars in from 22 to 28 days. The prepupal period is from 4 to 6 days, while the pupal stage lasts from 8 to 9 days. The total period, therefore, from egg to adult is from 44 to 58 days.

Stored Product Insect Laboratory:-

Control of insects in flour mills

B. N. Smallman

A study involving treatment of 135 elevator boots in three mills over a six-month period yielded information on the efficacy of treatments normally used by mills, and of certain innovations. The study provided confirmation, under practical conditions, of a laboratory finding that low vapour pressure fumigants have distinct advantages over more volatile fumigants for local fumigation of elevator boots. Contact sprays, pyrethrum and "Pyrenone", gave relatively poor control or none at all. Evidence was obtained that infestation of boots results mainly by invasion from the corresponding legs. Therefore, a study has been initiated in the present year to develop methods for the treatment of elevator legs. The results obtained in the study of treatment for elevator boots has been reported in the Bulletin - Association of Operative Millers, July, 1949.

Infestation of millstocks by Tribolium

B. N. Smallman and S. Loshiavo

Mill stocks vary greatly in physical and chemical composition, and would be expected to show differences in their ability to support reproduction and development of Tribolium. An indication of these differences would provide millers with a valuable guide for the application of control methods. An "environmental index" was constructed to yield an estimate of the insects' accomplishment in terms of number of insects produced per unit time. On the basis of this index, tailings stocks were shown to be three to five times more favourable for Tribolium than middlings stocks. In general, differences between mill stocks were related to their chemical composition and the known nutritional requirements for Tribolium.

Insect-proofing flour sacks

F. L. Watters

"Pyrenone" (pyrethrins-piperonyl butoxide mixture 1:10) deposited on cotton flour sacks at 7.5 and 10 milligrams pyrethrins per square foot gave a high degree of protection against infestation by Tribolium for as long as 14 months under controlled conditions in the laboratory.

In a commercial warehouse, sacks treated with 5 milligrams pyrethrins per square foot gave excellent protection against spider beetles during the period April to July; this is the period in which spider beetles normally invade sacked flour by ovipositing through the mesh of the sacks. In collaboration with a local bag manufacturing company, work has been initiated to develop a commercial method for treating sacks.

Radio-frequency sterilization of cereal products

F. L. Watters

The dielectric constant, power factor, and loss factor for flour and meal worm larvae were determined under various conditions of temperature and humidity at a frequency of one megacycle. The "loss factor" indicates the ability of the dielectric to absorb energy from the high frequency field; thus, the dielectric would be expected to be heated in proportion to its loss factor. Under all conditions, the loss factor for insects was higher than the loss factor for flour. Thus, support was obtained for the hypothesis that insects will be heated at a higher rate than flour, when exposed in a high frequency field. Further work at higher frequencies is planned.

Degradation of chlorinated insecticides

Dr. Smallman reported that Mr. B. Berck has planned an investigation on the rate of chemical degradation of chlorinated insecticides as influenced by the type of structural surfaces on which they are deposited and environmental factors of light and temperature.

Effect of DDT on reproduction of Tribolium

S. J. Loshinovo

Tribolium females surviving 50% mortality induced by exposure to DDT, showed no change in fecundity and fertility in two out of three experiments. In one experiment, females surviving exposure to DDT laid significantly more eggs than unexposed females of the same age and reared under the same conditions. Males surviving 50% mortality had no effect on fecundity and fertility of females.

Forest Insects:-

The effect of moisture on larch sawfly cocoons

W. H. Fell

Because moisture in the soil bears directly on the abundance of the larch sawfly, it is proposed to study its effect on mortality and development in some detail in 1949. An attempt will be made to answer the following questions:- (a) how much moisture is required to kill larch-sawfly cocoons; (b) does the amount of moisture required vary with the developmental stage of the insect in the cocoon; (c) does the species of moss have any influence on development; and (d) does moisture influence diapause?

Experiments will be conducted at the Forest Insect Field Station in the Whiteshell Forest Reserve, Manitoba, with cocoons collected in that region. Cocoons will be layered between moss in rectangular screen cages. It is planned to run six series of moisture treatments, the first starting on May 15 and succeeding treatments following at two-week intervals. Each series will consist of six cages treated as follows:

2 cages submerged for 1 week
2 cages submerged for 2 weeks
2 cages submerged for 4 weeks.

Cocoons will be treated in a typical tamarack swamp. Before and after treatment the cages will be kept in well-drained locations. Mortality and development will be determined by dissecting a sample of twenty cocoons from each cage every two weeks. Two other series of cocoons will be submerged continuously, and intermittently submerged and drained for one-week periods. As a check on the above treatments, two cages will be placed in a well-drained location during the study period. Observations on development of larch-sawfly cocoons in the field will serve as an additional check.

The pitch nodule maker,
Petrova albicapitana Busck.

W. J. Turnock

The pitch nodule maker has been known for many years to attack young pines. Formerly it was regarded as a curiosity but in recent years, due to the great increase of jack pine in North America, the nodule maker and other insects have caused much damage to pine.

The pitch nodule maker feeds on the bark, cambium and sapwood of the stem and branches of young trees. The larva usually makes a deep incision in the stem; it may girdle the stem and kill the tree above the feeding site. When the main stem is attacked it is almost invariably distorted; hence the value of the mature tree for lumber is decreased. Plantations are usually more severely damaged than natural stands.

The insect completes its life-cycle in two years. The eggs are laid in June and the first-instar larvae begin to feed at the tip of the new growth or in an axil of a branch. Each larva surrounds itself with a minute pitch nodule. It overwinters in this position and begins to feed again the following spring. During the second season a conspicuous pitch nodule is formed and most of the feeding takes place. The second winter is passed as a late-instar larva within the nodule. In the spring the larva feeds from a week to a month and pupates some time in May. The pupal period lasts about twenty days and the adults emerge through June.

Chemical control is difficult for the larva is well protected by the nodule. The effectiveness of biological control has not been thoroughly studied but in 1947, 12 per cent of the material reared was parasitised. The adult and newly-hatched larva, before it constructs a nodule, are probably the most vulnerable stages. On this premise, chemical control experiments are planned for June, 1949, when the adults are in the field. Residual sprays will be applied to the trees when the adults begin to emerge. A typical jack-pine plantation in the Spruce Woods Forest Reserve, Manitoba, has been selected for the experiment. DDT, Chlordan and Julius Hyman's new 497 will be tested at different rates of application. The biology of the insect will be studied further in 1949.

Department of Entomology, University of Manitoba:-

Calcium Arsenate, Chlordan, DDT and Loxite
(chlorinated camphene) compared for the
control of Colorado Potato Beetle
Leptinotarsa decemlineata (Say)
in 1948.

A. V. Mitchener

On randomized plots, replicated four times, calcium arsenate, Chlordan, DDT and loxite were compared as a control for Colorado potato beetle. Each plot was sprayed

twice, the interval between the sprayings being twenty-four days with the first spraying on July 13. Observations were made during the course of the summer and finally the yields of potatoes per acre were calculated for each treatment on the basis of the weight of marketable potatoes produced.

None of the insecticides used injured the potato foliage. The highest yields were obtained from the plots treated with loxite, chlordan (50% wettable powder) and DDT in the order named, but there were no significant differences among these yields. Apparently any one of these insecticides as indicated by one year's work may be used upon potato foliage with practically equal effectiveness for the control of Colorado potato beetle. Emulsifiable technical chlordan 40% was not as effective as the former three insecticides. Calcium arsenate gave much poorer control than any of the former four insecticides. None of the insecticides used impaired the flavor of potatoes when they were eaten as boiled potatoes. At present DDT is recommended as a control for Colorado potato beetle.

Further particulars concerning this work may be found in the Journal of Economic Entomology for February, 1949.

FALL MEETING OF THE ENTOMOLOGICAL SOCIETY
OF MANITOBA

The regular fall meeting of the Society this year (1949) was not held but was replaced by the annual meeting of the Ontario Entomological Society. This was held in Winnipeg on November 2nd, 3rd and 4th, with the Manitoba Society functioning as host. The object in undertaking this rather ambitious project was to promote the development of an Entomological Society which would be truly national in name and scope. All the arrangements, including the program, accommodation, exhibits, and social activities, were made by committees of our Society. Members of this Society also contributed to the scientific part of the program, both by preparation and delivery of scientific papers on various topics and by participation in symposia and discussions. Papers submitted at these meetings will appear in due course in the Canadian Entomologist.

The program committee, under the chairmanship of Dr. B. N. Smallman, Entomologist-in-charge of the Stored Product Insect Laboratory, Winnipeg, was successful in soliciting the participation of eminent scientists from both the Dominion of Canada and the United States, which resulted in a number of highly interesting and instructive papers on entomological and other related subjects.

The meetings were formally opened by the Hon. D. L. Campbell, Premier of Manitoba, who made an address of welcome to all delegates and visitors at 11 a.m. on the opening day, November 2nd. The President of the Ontario Society commented on the prestige and compliment paid to the Society by this courteous and very much appreciated gesture.

All of the general sessions were held in the MacDonald Room of the Fort Garry Hotel, with additional accommodation being provided in Salon D for meetings of the Council and Directors.

At the general sessions, six technical papers embracing a wide range of entomological topics were presented. Also, three symposia were conducted under the chairmanship of Dr. C. W. Farstad, Lethbridge, Alberta, Dr. C. E. Michel, University of Minnesota, and Dr. B. N. Smallman, Winnipeg, respectively. The high standard of all the papers and discussions reflected great credit on the scientists who prepared and presented them and they indicated the tremendous amount of work that is taking place in the field of entomology.

At a luncheon on Wednesday, held in the Fort Garry Hotel, Professor R. A. Wardle, head of the Department of Biology, University of Manitoba, delivered a humorous disertation entitled, "Hexapods and Hexameters," to the delight of all present.

Wednesday evening the Entomological Society of Manitoba entertained the Ontario Society at an Entomologists' Smoker which was held in the St. Vital Legion Hall. This event, because of its informality and friendly atmosphere, provided an opportunity to all to fraternize and subsequent comments indicated that this result had been achieved.

The morning of Thursday, November 3rd, was allotted to the presentation of short papers. A comparatively large number of titles having been submitted, twenty-six altogether, it was found necessary to divide them into three sections and hold simultaneous sessions in three separate rooms. Accommodation for this purpose was very kindly provided by the University of Manitoba, and following these morning sessions, a cafeteria luncheon was arranged by Professor Mitchener at the University, at which Dr. G. H. S. Gillson, President of the University, made a brief address to the Society.

The final social event was a banquet held in the Banquet Room of the Fort Garry Hotel on Thursday evening at which the guest speaker was Dr. J. A. Anderson, Chief Chemist of the Grain Research Laboratory, Winnipeg. Dr. Anderson chose as his topic, "The Scientific Method" and his address was a masterpiece of erudition.

A feature of the meetings was a display of scientific equipment exhibited in booths around the walls of the MacDonald Room. Fourteen separate exhibits and demonstrations were set up, under arrangements made by Mr. R. R. Lejeune, and all these attracted a wide interest among the delegates.

The question of a National Entomological Society was discussed in committee at various times throughout the meetings with no complete agreement or concrete decisions made, but the incoming executive indicated that the question was still a very live issue and stated their indication to further pursue enquiries as to ways and means to bring about a completely satisfactory arrangement.

.At the final business session the last afternoon of the conference, the Entomological Society of Manitoba was accepted as an affiliate of the Ontario Society.

The meetings closed with the final business session in the MacDonald Room, when votes of thanks and comments made by visitors expressed sincere appreciation to the Entomological Society of Manitoba for making possible an annual meeting of the Ontario Society which had attained a new high in its history of scientific endeavour. A resolution was passed to the effect that the meeting was outstanding in the history of the Society.

To provide a record of this important undertaking, the program is included in this issue of the Proceedings.

C. A. S. SMITH
President

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P R O G R A M

TUESDAY, NOVEMBER 1

Salon D, Fort Garry Hotel

3.00 P.M.

Meeting of Directors.

8.00 P.M.

Meeting of Council.

3.00 to 5.00 P.M. and 8.00 to 10.00 P.M.

Advance Registration, Rotunda, Fort Garry Hotel.

WEDNESDAY, NOVEMBER 2

MacDonald Room, Fort Garry Hotel

9.00 A.M.

Registration.

10.00 A.M.

Business Session.

11.00 A.M.

Address of Welcome.

Honourable D. L. Campbell, Premier, Province
of Manitoba.

Lt.Col. C. A. S. Smith, President, Entomologi-
cal Society of Manitoba.

President's Remarks.

Dr. G. M. Stirrett, Kingston, Ontario.

12.00 Noon

Luncheon -- Jade Room.

Speaker: Professor R. A. Wardle, University
of Manitoba.

"Hexapods and Hexameters".

1.30 P.M.

Virus Diseases of Insects.

Dr. G. H. Bergold, Sault Ste. Marie.

2.30 P.M.

The Measurement of Meteorological Factors Affect-
ing Insects.

Dr. W. G. Wellington, Sault Ste. Marie.

3.30 P.M.

SYMPOSIUM: Selective Breeding of Plants for Insect Control.

Chairman: Dr. C. W. Farstad, Lethbridge.

9.00 P.M.

Entomologists' Smoker.

St. Vital Legion Hall.

THURSDAY, NOVEMBER 3

University of Manitoba
Entomology Building--Fort Garry Campus

9.30 A.M.-- Room A

SECTION A

1. Biology of Fishia discorse Grt. (Lepidoptera, Noctuidae).
H. McDonald, Saskatoon.
2. Notes on the oviposition, overwintering stages, and life history of Simulium arcticum in Saskatchewan.
F. J. H. Fredeen, Saskatoon.
3. The control of Lygus in seed alfalfa in northern districts and a discussion of factors involved.
H. A. McMahon, Saskatoon.
4. New phases in plant quarantine activities.
H. F. Olds, Vancouver.
5. Apologia pro Acarologia.
H. H. J. Nesbitt, Ottawa.
6. Observations on the outbreak and control of the tobacco hornworm, Protoparce sexta Johan.
Gerard Rioux, Quebec.

7. Biology of the sweetclover weevil, Sitona cylindricollis Fahr. (Read by title).

R. D. Bird, Brandon.

8. Biology of a new pest of sunflowers, Phalonia sp. (Read by title).

H. Westdal, Brandon.

9.30 A.M.-- Room B

SECTION B

1. The effect of insecticides on the oxygen consumption and heart-beat of cockroaches.

A. W. A. Brown, G. T. Hardey and
W. B. Orser, London.

2. The toxicity of hexachlorocyclohexane to certain micro-organisms, earthworms, and arthropods.

F. O. Morrison, MacDonald College.

3. The fumigation of steamship cargo spaces to control insect pests.

H. A. U. Monro, C. Cunningham and J. E. King.

4. Recent results with new acaricides in field and laboratory.

G. G. Dustan, T. Armstrong, W. G. Garlick, and
W. L. Putman, Vineland Station.

5. Effect of horn flies on prairie cattle.

J. S. Skaptason, Winnipeg.

6. Field experiments in the control of Simulium arcticum in the South Saskatchewan river, 1949.

F. J. H. Fredeen, Saskatoon.

7. Microdetermination of DDT in river water.

B. Berck, Winnipeg.

8. Rearing and sexing Musca domestica L. for toxicological studies.

R. S. Fisher and F.O. Morrison, MacDonald College.

9. Chlordan, toxaphene, 118 (octalene) and 497 (octalox) compared for the control of grasshoppers in Manitoba in 1949. (Read by title).

A. V. Mitchener, Winnipeg.

9.30 A.M.-- Room C

SECTION C

1. First records of European corn borer in Western Canada.

C. A. S. Smith, Winnipeg.

2. Occurrence of European corn borer in North Dakota.

J. A. Munro, Fargo, North Dakota.

3. Mass propagation of corn borer egg masses in a research project on European corn borer.

F. G. Holdaway, St. Paul, Minnesota.

4. Grasshopper populations in Western Canada.

H. W. Moore, Saskatoon.

5. Hatching and emergence of grasshoppers from the soil.

P. W. Riegert, Saskatoon.

6. Grasshopper control.

L. G. Putnam, Lethbridge.

7. The 1949 grasshopper control campaign in Saskatchewan.

W. H. Horner, Regina.

8. Status of wireworm control in the prairie provinces.

A. P. Arnason and W. B. Fox, Saskatoon.

9. Notes on the biology and control of the European clover seed weevil, Tychius picirostris Fab., a new pest of clover seed.

David A. Arnott, Chatham.

12.00 Noon

Cafeteria Luncheon, University Campus.

MacDonald Room, Fort Garry Hotel

2.00 P.M.

Entomological Studies in the Canadian Arctic.

Insect Survey

Dr. T. N. Freeman, Ottawa.

Studies of the Biology and Control of Biting Flies.

Dr. C. R. Twinn, Ottawa.

3.00 P.M.

Exhibits and Demonstrations.

3.30 P.M.

SYMPOSIUM: Systematics.

Chairman: Dr. C. E. Mickel, University of Minnesota.

6.00 P.M.

Reception--Drawing Room, Mezzanine.

7.00 P.M.

Banquet--Jade Room.

Speaker: Dr. J. A. Anderson, Grain Research Laboratory, Winnipeg.

"The Scientific Method".

FRIDAY, NOVEMBER 4

MacDonald Room, Fort Garry Hotel

9.00 A.M.

The Role of Insect Physiology in Applied Entomology.

Dr. A. Glen Richards, University of Minnesota.

10.00 A.M.

Exhibits and Demonstrations.

11.00 A.M.

Recent Advances in Insect Toxicology.

Dr. H. Hurtig, Suffield.

1.30 P.M.

SYMPOSIUM: The Preparation of Scientific Papers.

Chairman: Dr. E. N. Smallman, Winnipeg.

3.00 P.M.

Exhibits and Demonstrations.

4.00 P.M.

Final Business Session.

EXHIBITS AND DEMONSTRATIONS

Exhibit of electron micrographs of insect cuticle.

A. Glen Richards, University of Minnesota.

Demonstration of micro-injection techniques.

G. H. Bergold, Sault Ste. Marie.

Demonstration of mosquito blood meal identification
by use of the precipitin reaction.

A. S. West, Queen's University.

Exhibit of sawfly resistance in wheat.

C. W. Farstad, Lethbridge.

Exhibit showing penetration of and feeding effect on plant tissues by haustellate insects.

A. A. Granovsky, University of Minnesota.

Demonstration of a spray tower assembly.

F. L. Watters and Joyce M. Randall, Winnipeg.

Demonstration of chemical determination of DDT residues.

B. Berck, Winnipeg.

Demonstration of use of radio-active tracers to study movements of soil insects.

R. A. Fuller, Saskatoon.

Demonstration of the effects of chemical seed treatments on germination and early growth of seeds.

Miss J. E. Hutchinson, Saskatoon.

Exhibits of types of haemocytes in blood of the Mediterranean flour moth.

John W. Arnold, Ottawa.

Exhibit of photographs and blueprints showing features of constant temperature rooms at Science Service Laboratories, Lethbridge.

R. W. Salt, Lethbridge.

Exhibit--Canadian Laboratory Supplies.

Exhibit--Halross Instruments Corporation Limited.

Exhibit--Julius Hyman and Company.