PROVINCE OF BRITISH COLUMBIA

THIRTY-SIXTH ANNUAL REPORT

OF THE

DEPARTMENT OF AGRICULTURE

FOR THE YEAR 1941

PRINTED BY
AUTHORITY OF THE LEGISLATIVE ASSEMBLY.

VICTORIA, B.C.:
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1941.

To His Honour W. C. WOODWARD,
Lieutenant-Governor of the Province of British Columbia.

MAY IT PLEASE YOUR HONOUR:

I have the honour to submit for your consideration herewith the Annual Report of the Department of Agriculture for the year 1941.

K. C. MACDONALD,
Minister of Agriculture.

Department of Agriculture,
Victoria, B.C., December 5th, 1941.

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REPORT *of the* DEPARTMENT OF AGRICULTURE.

REPORT BY THE DEPUTY MINISTER.

J. B. MUNRO, M.S.A.

Honourable K. C. MacDonald,
Minister of Agriculture, Victoria, B.C.

SIR,—I have the honour to submit herewith the report of the Department of Agriculture for the year ended December 31st, 1941.

There is no new legislation to report at this time because no bills of an agricultural nature have as yet been submitted to the first session of the Twentieth Legislature. Legislation passed at the fifth session of the Nineteenth Legislature was referred to in the departmental report for the year 1940.

BRUCELLOSIS CALFHOOD VACCINATION.

As a result of discussions between representatives of the British Columbia Department of Agriculture and the Federal Veterinary Director-General in January of this year, a programme of calfhood vaccination against Bangs disease was decided upon, and the policy has been applied in a number of the more important dairy districts of British Columbia.

Members of the British Columbia Veterinary Association have co-operated in the carrying-out of this policy, under which calves between the ages of 4 and 8 months are vaccinated with Brucellosis vaccine strain 19, which is procured for them at special low cost by the Department of Agriculture from reputable laboratory firms manufacturing serums and vaccine of known potency. The Federal Department of Agriculture authorizes the importation of this vaccine by permit on the distinct understanding that it be used under the direct supervision of officials of this Department and administered by qualified veterinarians. This programme is referred to in detail in the report of the Live Stock Commissioner.

EGG EXPORT SUBSIDY.

Owing to low prices being paid to egg-producers in British Columbia in the spring of this year, it was found, after careful investigation, that British Columbia eggs could not be included in shipments for export to Great Britain at the Atlantic seaboard price agreed upon by the British and Canadian authorities unless some assistance were made directly available to the British Columbia poultrymen.

The policy finally agreed upon was that the Provincial Government would pay the differential between the prevailing price at the British Columbia farms in coastal areas for Grade A and Grade B eggs suitable for export and the cost of production, which was estimated at 21 cents per dozen. Provision was made for paying this subsidy on 30,000 cases, each containing 30 dozen eggs. This involved the expenditure of $27,000, which was rebated to the producers. By this means the producers received not only the rebate from the Government on eggs exported, but as a result of this policy the domestic markets for eggs were strengthened to the extent that at least $250,000 additional value was added to the 1941 egg production, and this additional amount was received directly by those engaged in the industry.

During the four weeks prior to the formulation and announcement of this subsidy policy, laying hens estimated at 120,000 were slaughtered and disposed of for meat purposes in the Coast districts. The effect of the subsidy payment was to put a stop to the decimation of laying flocks and encourage poultry-flock owners to give necessary attention to the maintenance of their laying birds at normal strength in numbers. A committee representing the producer and the trade was set up in March this year and continues to function in behalf of the orderly disposal of eggs and poultry productions.

In the third week of December the Federal Government announced a bonus payment policy by which it would pay 3 cents per dozen on export eggs of suitable grade and size, in order to bring the producer price at eastern shipping-point up to 35.12 cents a dozen until the end of February, 1942. After that date a change in export egg prices will obtain.

FEED FREIGHT RATES.

From time to time since 1933 the two transcontinental railway companies have made alterations in Canadian Freight Association Tariff No. 145 classifications and rates. The majority of the changes have been to the advantage of the poultrymen, dairy farmers, or live-stock feeders in the Coast districts of British Columbia. During the current year, some particularly favourable amendments have been published by the Canadian Freight Association. While the special concessions available on feed-grain and mill-feeds are beneficial to Coast poultrymen and live-stock farmers, it cannot be denied that they are in the majority detrimental to the British Columbia grain farmers who are at a disadvantage in selling their feed-grain on the local markets which they formerly enjoyed. The domestic freight rates from Prairie points to Coast destinations have provided abundant supplies of cheap feed-grain, but local growers are finding it increasingly difficult to dispose of their feed-grains owing to the preferred status of Prairie-grown feeds.

In January of this year representations were made to the transportation companies asking that higher grades of wheat than No. 4 be included in C.F.A. Tariff No. 145. Other grades and kinds of grains were recommended for inclusion at subsequent intervals, and in November advice was received from Montreal to the effect that the representations made by those speaking in behalf of the local poultrymen, dairymen, and live-stock feeders have been favourably considered.

At the present time, wheat grading as high as No. 3 may be transported at the preferred rate from Prairie points to British Columbia destinations at rates formerly applying on No. 4 and lower feed grades of wheat. In addition, all grades of oats, barley, and rye are now included in the C.F.A. Tariff No. 145 schedule. Equally important is the inclusion of feed-corn grown in Manitoba, which is now procurable at reasonable price and at low freight costs to the Pacific Coast farmer. Much of our feed-corn was formerly purchased abroad, notably from South Africa, South America, and United States.

FEDERAL FEED FREIGHT AID.

With a view to making available Prairie feeds at low delivered cost to farmers engaged in the production of bacon, cheese, butter, eggs, and other commodities likely to be required in volume by Britain and her Allies, the Federal Department of Agriculture has formulated a policy of feed freight assistance to producers. By Order in Council passed at Ottawa on November 18th the Dominion Government undertakes to assist British Columbia poultrymen, dairymen, and other live-stock feeders to the extent of absorbing the C.F.A. No. 145 freight differential as from Calgary or Edmonton to destination in British Columbia, leaving to the consumers the responsibility for paying only the share of freight costs from outlying Prairie points to Calgary or Edmonton.

The arrangement for this rebate being paid to feed-buyers is in the hands of the Flour and Feed Administrator, recently appointed by Ottawa and located at Vancouver, B.C. Feed buyers will continue, as in the past, to secure from the Department of Agriculture at Victoria, feed certificates covering their feed-grains and mill-feed importations. They will then make application to the Federal Flour and Feed Administrator for their transportation subsidies. Federal Order in Council is reproduced in Appendix No. 1.

FEED-GRAIN IMPORTATIONS.

Under Canadian Freight Association Tariff No. 145 feed-grains including wheat, oats, barley, corn, mixed grain, screenings, and mill-feeds have been imported in 1941 in quantity considerably in excess of the importations of previous years. At the present rate of application for feed-grain certificates it is estimated that at least

80,000 tons will have been brought in under C.F.A. Tariff No. 145 by the end of December, as compared with 61,351 tons for 1940 and 58,040 for 1939.

AGRICULTURAL PRODUCTION COMMITTEE.

At a special meeting of Agricultural Supplies Board in September, 1941, to consider the feed situation in Canada, the Committee's representations that British Columbia should receive similar concessions to Eastern Canada in the matter of subsidy on transportation costs found ready agreement with that Board and the representatives of all the other eight Provinces gathered there. Details are being worked out and an announcement is expected very shortly.

Since March, 1940, your Committee has, in its circulars, been advising farmers to sow more coarse grains, to do more fall sowing in the appropriate areas, and to produce more legumes.

The solution of the feed problem can only be satisfactorily answered by the increased local production above outlined as a primary source and that supply augmented by imports on which freight rates should be as comparatively low as possible.

Your Committee was successful in securing a special classification under Tariff No. 145 for grain from Creston to Coast points, which should save thousands of dollars per year for producers.

SWINE.

Following meetings with the Dominion Agricultural Supplies Board at Ottawa, when the situation was thoroughly discussed, your Committee was convinced that this Province would be well advised to increase its swine production, and through the Live Stock Branch in co-operation with the Federal Swine Improvement officials 1,000 sows and gilts were placed on farms here.

In order to provide supplies of lowest priced feeds circulars were issued as early as March, 1940, urging farmers to grow an extra acreage of coarse grains wherever possible. Figures just received show that barley acreage increased 9 per cent. in 1940 over 1939; that the number of hogs on farms at December 1st, 1940, was up 283 per cent. over the same date 1939, and that numbers of hogs intended for farm slaughter and market December to May, 1940–41, had increased 88.7 per cent. over the same period in 1939–40.

FIBRE-FLAX.

Heavy rains interfered seriously with the harvesting of over 100 acres of fibre-flax which was cropped experimentally in the Fraser Valley this year. Of particular interest and value was the visit of R. J. Hutchinson, Chief of the Fibre Division, Central Experimental Farms, Ottawa, just as pulling was well under way. Samples sent to the flax-mill at Ottawa have shown the fibre to be of very high quality.

The results of work, looking to a stabilized future to the industry, are not yet completed and cannot form a part of this report. Your Committee feels that fibre-flax and its fabrication will before long be one of the crop rotations paying good returns. This belief has been strengthened by a recent announcement from Ottawa that a flax fibre administrator has been named in the person of Nelson Young, head of the Plant Products Division, who will operate under the War Time Prices and Trade Board. Mr. Young, who will direct processing of flax in Canada, is closely in touch with this situation through his activities as head of the Dominion Seed Board.

HOME CRAFTS.

By means of circulars and addresses the Committee has suggested home-curing of meats, canning chicken, and a general campaign of conservation of foodstuffs on the farm. Full co-operation has been offered in making available any information to interested inquirers.

Home-tanning of hides was again suggested and many copies of directions sent out. The use of fats for home-made soap was also suggested and all were received with interest. Practical and timely advice on fertilizer supply and use has been the subject-matter of special circulars.

IMPORTED EGGS.

In accordance with the "Eggs Marks Act," chapter 82, R.S.B.C. 1936, and amendments thereto, imported eggs and egg products entering British Columbia by the Pacific Coast ports are examined upon arrival. If found to comply with the regulations as set out in the above Act they are released to the importer, or otherwise held until the requirements have been fulfilled.

Imported eggs and egg products entering the Port of Victoria are examined and recorded by John Noble, Federal District Inspector, stationed at that port, and reported at the end of each calendar month to the Chief Provincial Egg Inspector, Court-house, Vancouver. The co-operation of Mr. Noble is much appreciated.

The arrivals reported during the past ten months, ending October 31st, are as follows:—Port of Victoria: 572 dozen eggs for hatching purposes from U.S.A. and 79 cases of salted eggs from China. Port of Vancouver: 240 cases of salted eggs from China.

Salted eggs imported from China are used solely by Chinese residents in Canada for medicinal and flavouring purposes. A considerable falling off in the quantity of eggs from China is quite apparent this year, which may be due to the limited shipping space available.

"NATURAL PRODUCTS MARKETING ACT" INQUIRY.

On October 22nd, His Honour Judge A. M. Harper, sitting as a Royal Commissioner, opened at Victoria an inquiry into the operations of the various commodity boards controlling marketing under the authority of the "Natural Products Marketing (British Columbia) Act." Later the hearing was continued in Vancouver and New Westminster and it is proposed by the Commissioner to extend these sittings to the Okanagan and Fraser Valleys. That this action was about to be taken was announced by the Premier on September 13th. The British Columbia Marketing Board and the Markets Branch have placed their records, whenever required, at the disposal of the Commissioner.

WAR ACTIVITIES.

In addition to the special efforts being put forth by the Department of Agriculture and the Agricultural Production Committee, a number of organizations, such as the Women's Institutes, are achieving definite aims with respect to supplies for Britain.

In the making of wool-filled comforters the Women's Institutes have maintained the initial efforts of last fall, with the result that more than 1,000 comforters have been forwarded either to British Columbia House in London, to the Women's Voluntary Service, or to the Salvation Army in Great Britain. This undertaking is referred to at length in the report of the Superintendent of Women's Institutes.

The same report records the outstanding work that British Columbia's Women's Institute members have accomplished in preserving and shipping to England 126,000 lb. of jam, all of which has been contributed to the Red Cross Society. The women of this Province have had the advantage of abundance of fresh fruits available at low cost—an advantage that is denied to a number of other Canadian Provinces. However, the fact that these fruits have been conserved, processed, and shipped to the Motherland indicates the keen and unselfish interest that the women of this Province are taking in assisting the Empire.

JUNIOR CLUB WORK.

The Canadian Council on Boys' and Girls' Club Work honoured British Columbia by selecting a representative from this Province as their president for 1941; consequently, it was natural that Junior Club Work should have received more than ordinary attention on the part of agricultural officials and farm organizations. Throughout the Dominion the enrolment in Club projects has declined, but there has been an increase in membership in almost all agricultural sections in British Columbia.

At the National Judging Contest staged in Ontario in November British Columbia had teams entered in dairy, beef, swine, and potato projects. The four teams included seven boys and one girl from Mainland communities.

The winnings of these four teams are noted in detail in the report of the Boys' and Girls' Club Secretary. The success of the dairy team, which for the first time since National Contests were established captured the premier award for dairying judging, is deserving of particular mention. For the coming year, S. S. Phillips has been selected as British Columbia's Director on the Canadian Council of Boys' and Girls' Club Work.

FIBRE-FLAX PRODUCTION.

In collaboration with Federal officials this Department has undertaken the encouragement of fibre-flax growing in several agricultural districts, but most particularly in the Lower Fraser Valley. Small test plots have been grown by settlers assisted by District Agriculturists in the Bulkley, Nechako, South Thompson, Shuswap, Okanagan, and Bella Coola Valleys, and reports from all of these areas indicate that a considerable measure of success was achieved by the growers. There appears to be no impediment in the way of production of good fibre-flax in a number of districts, but before a fibre industry becomes a reality it is essential that provision be made for the retting, scutching, and further processing of this crop. This matter is referred to by Ernest MacGinnis in his report on the activities of the Agricultural Production Committee, and also is mentioned in the report of the Field Crops Commissioner.

WILD-RICE GROWING.

On a number of occasions during the past five years attempts have been made to establish wild rice in shallow lakes in a number of sections of the Province, with a view to providing a food crop for wild water-fowl. Reports from Kelowna indicate that wild rice sown in some of the lakes of the Okanagan district by Ben Hoy, District Field Inspector, have yielded seed. Reports from other districts, notably Central British Columbia and the Cariboo, tell that the seed sown in 1940 germinated but evidence is lacking to show that the crop has reseeded itself.

The seeding of wild rice in some of the Interior lakes has been repeated this fall, with the hope that this native Canadian plant may become firmly established in many of British Columbia's well watered hunting-grounds.

CASCARA-TREE CONSERVATION.

In collaboration with the Forest Branch of the Department of Lands and with the Department of Education, a definite study of the propagation, harvesting, and conservation of the cascara-tree (*Rhamnus Purshiana*) was undertaken early in the spring. As a result a publication entitled "The Propagation of the Cascara Tree" was prepared by H. O. English, B.S.A., of the staff of the Provincial Normal School at Victoria, published by the Department of Agriculture, and distributed by the Department of Education to the teachers of all schools in the Southern and Coast districts of the Province, including Vancouver Island.

The Department of Education declared Friday, March 31st, 1941, as Arbor Day within this area and recommended the study of Cascara conservation as the special topic for consideration on that occasion. Through the co-operation of a large number of teachers, educational work of considerable value was accomplished.

The Medicinal Plants Committee named by the Minister includes the following: Professor John Davidson, the University of British Columbia, Chairman; Dr. Wm. Newton, Pathologist in Charge, Dominion Plant Laboratory, Saanichton; J. W. Eastham, Provincial Plant Pathologist, Vancouver; Thomas Braidwood, Vancouver; Dr. H. T. Gussow, Dominion Botanist, Ottawa, ex officio.

Both young and old in all sections where the cascara-tree was at one time abundant have assisted in seeing that cascara harvesting methods are such that the conservation of the tree is considered.

British Columbia is said to be the only area within the British Empire where commercial stands of native cascara are still available for medicinal purposes. Following the initial work undertaken by the three Departments it has been decided that further education and conservation efforts with respect to this native plant will receive the attention of the Forest Branch of the Provincial Department of Lands.

STAFF CHANGES.

Among the permanent appointments to the Agricultural staff made this year there are the following:—

(1.) John L. Webster, Vancouver, Field Inspector, January 1st, 1941.

(2.) James E. Manning, Prince George, District Agriculturist, April 6th, 1941.

(3.) Dr. William T. Carlyle, Williams Lake, District Agriculturist, August 1st, 1941.

(4.) William MacGillivray, Salmon Arm, District Agriculturist, August 1st, 1941.

(5.) Miss Muriel Hawkes, Victoria, Stenographer, April 1st, 1941.

Temporary appointments include: Miss Daphne Hassen, Victoria, Stenographer, July 31st, 1941; and Miss M. K. McGannon, Penticton, Stenographer, November 1st, 1941.

The only resignations to record are of Miss Marybelle Reynard, Victoria, July 31st; and Miss E. E. Lyons, Penticton, September 30th, both stenographers.

FARMERS' INSTITUTES.

The ten District Farmers' Institutes held their annual meetings. Seven were attended by the Minister of Agriculture and the Superintendent of Farmers' Institutes. A number of the District Institutes have found it advisable to hold their annual conferences at different centres each year because this practice tends to develop keen interest throughout the area and provides a large attendance of delegates. This year the centres chosen for District meetings were Nanaimo, Telkwa, Fort Fraser, Kamloops, New Westminster, West Robson, Grindrod, Horsefly, Windermere, and North Pine. Advisory Board members elected this year are:—

District "A"—Sidney Pickles, Saanichton.
District "B"—C. J. Killer, Telkwa.
District "C"—R. Blackburn, Prince George.
District "D"—Wm. Harrison, Pritchard.
District "E"—D. E. MacKenzie, New Westminster.
District "F"—O. B. Appleton, R.R. 1, Nelson.
District "G"—Robert Wood, Armstrong.
District "H"—Walter Hogg, Australian.
District "I"—Wm. Dicken, Fernie.
District "J"—Thos. Jamieson, Pouce Coupe.

The Farmers' Institutes throughout the Province have co-operated with Federal and Provincial authorities in the matter of stumping-powder purchases, storage, and distribution, and this policy for which rebates are paid to users of stumping-powder from Government funds remains an important aid to land-clearing and agricultural production, although the aggregate of purchases has been declining ever since 1937, partly due to labour shortage since the outbreak of war.

The total business turnover of Farmers' Institutes is approximately $250,000, of which the purchases of seed, feed, and fertilizers are annually increasing in volume. Farmers are taking advantage of the special privileges available to those who purchase feeds in car-lot quantities.

Under the pure-bred sire purchase policy eighteen Farmers' Institutes have this year purchased for their members sires which include bulls, boars, and rams.

The Advisory Board was called together by the Minister of Agriculture at the end of 1940 to consider 184 resolutions submitted by all district organizations. The Secretary of the Advisory Board, J. W. Bonavia, has reported to the District Farmers' Institutes the results of the labours of the Board. As usual, some of the resolutions requested action by way of legislation or otherwise that had already been in force but was unknown to those responsible for the drafting of the resolutions. In other cases resolutions from certain districts were in direct opposition to those from other districts. This is quite understandable when the varied conditions of the several areas are considered.

Farmers' Institutes in many sections of the Province have continued their efforts on behalf of junior club organization, and the results of these efforts have this year been most satisfactory as is shown in the report of the Secretary of Boys' and Girls' Clubs.

Total number of Institutes, 1941	211
Farmers' Institute returns in at November 17th	196
Total membership, November 17th	5,004
Total Institutes receiving grant, November 17th	173

New Institutes: Ryder Lake Farmers' Institute (incorporated March 7th, 1941) and Sinkut Lake Farmers' Institute (incorporated April 8th, 1941).

IMPORTED HORTICULTURAL PRODUCTS.

Again the District Inspector in charge of the Plant Inspection Office at Vancouver has approved of imported horticultural products information being released through the Provincial Department of Agriculture. The following report is a summarized statement prepared at Vancouver by A. J. Fuller and it covers the mainland of British Columbia:—

"Importations of nursery stock from foreign countries have dropped lower than 1940 through the continuance of the war, but again the movement of interprovincial stock from Eastern points to this Province has increased.

"All mills, elevators, seed-stores, and warehouses continue to receive attention with the object of cleaning up stored product insects. Cereals and grain from all countries are inspected.

"Ten shiploads of wheat for the United Kingdom were loaded during the period covered by this report. All these boats and the grain were carefully inspected before loading.

"Co-operative surveys between Dominion, Provincial, and United States Bureau of Entomology have been conducted during the summer in the Okanagan, Boundary, and Kootenay areas relating to the pear Psylla, and also at Victoria in connection with an outbreak of apple-sawfly infestation, by the Dominion and Provincial officials. Much knowledge has undoubtedly been obtained through this work.

"Every precaution is being taken to prevent the spread of the pear Psylla from Washington and Idaho into Canada, and the co-operation of the Customs officers at the various border-points is very much appreciated.

"A commercial fumigation plant has been installed at Armstrong to handle inspection of peas.

"In February one large room at the fumigation station was set apart for storing aeroplane parts for the Boeing Aircraft Company up to July.

"In March a shipment of 112 crates of tomatoes from Costa Rica was refused by the importer, the fruit being badly broken down and infested with *Macrosporium* and *Penicillium* mould.

"A resurvey of the area infested with the pine-shoot moth was also made this month. One new location was found in May and action taken to eradicate the pest.

"In April, G. E. W. Clarke reported to this office that *Pulvinaria floccifera* was found infecting holly-trees at Hatzic and *Lecanium coryli* scales infecting apple and prune trees at Huntingdon.

"On May 22nd, John Lane, who was with the Provincial Department as shipper and packer at the fumigation station for many years, passed away.

"In June, Dr. M. Prebble, of the Forestry Division, looking into the question of infestation of *Eulecanium coryli* at Stanley Park, Point Grey, and Marine Drive found that 75 per cent. of the scales examined were parasitized.

"Several large shipments of nuts from India via New York required fumigation on account of infestation.

"In July *Byturus unicolor* was reported as infesting Lloyd George raspberries.

"Only 1,200 sacks of onions have so far been shipped to New Zealand from Vancouver, and two shipments of apples for India and one to the Argentine. This, no

doubt, is due to the shortage of ships on the Pacific. The greater part of the exports are being shipped via eastern ports and New York.

"Exports of nursery stock to foreign countries have become negligible and to the United States normal.

"SHIPPING NEWS.

"For the ten and a half months of 1941 ending November 15th, 1,556 deep-sea and coastwise boats docked at Vancouver. Of this number, thirteen brought shipments of nursery stock and 287 brought plant products as part of their cargo. We continue to meet all boats when they dock. The particulars of passengers with plants or plant products found in their baggage is as follows:—

"Fifty-nine passengers on boats brought: 3 fruit-trees, 2 small fruits, 18 ornamental shrubs, 6 fruit seedlings, 19 ornamental seedlings, 67 plants, 2 roots, 16 lily bulbs, and 1,922 lb. assorted fruits, vegetables, and nuts. These were all released after careful inspection.

"The following were condemned: 3 plum-trees infested with *Aspidiotus ostreæformis;* 3 lb. potatoes for bacterial ring-rot; 14 lb. oranges for *Aspidiotus rapax;* and 2 packages beans for bean weevil.

"It should be noted that deep-sea boats from foreign ports have greatly decreased this year.

"IMPORTED NURSERY STOCK.

"Assorted fruit-trees, ornamental shrubs, plants, bulbs, etc., to the number of 1,398,096 in 750 containers, valued at $13,834.88, were inspected. This necessitated making 288 inspections. Regardless of the war, there is an increase over last year, chiefly plants and roots, even though this is only from January 1st to November 15th.

"Imported nursery stock inspected included: 11,492 assorted fruit-trees, 176,923 assorted small fruits, 6,750 assorted ornamental trees and shrubs, 7,053 roses, 119,909 fruit seedlings, 11,477 ornamental seedlings, 877,411 assorted plants, 95,891 assorted roots, 90,002 assorted bulbs and 2 quarts of bulblets, 1,188 assorted scions, 4,414 lb. peach-pits, 375 lb. and 1 quart wild-rice seed, 200 lb. onion sets, 20 bushels aquatic roots.

"The countries of origin were Australia, Bermuda, Chile, China, England, Ireland, Japan, Newfoundland, New Zealand, Philippine Islands, Samoa, and the United States of America.

"INTERPROVINCIAL NURSERY STOCK.

"Nursery stock imported into British Columbia from Provinces east of Manitoba and inspected by this Department for the period of January 1st to November 15th consisted of 868 assorted fruit-trees, 7,831 assorted small fruits, 3,025 assorted ornamental trees and shrubs, 3,211 rose-bushes, 352 fruit seedlings, 2,370 ornamental seedlings, 13,993 assorted plants, 4,664 assorted roots, 150,330 assorted bulbs, 7,619 scions and rose eyes, 325 potato eyes, and 857 onion sets.

"A total of 2,344 shipments in 2,521 containers were inspected, consisting of 195,505 assorted fruit-trees, shrubs, plants, etc., valued at $7,125.69. This shows an increase of approximately 94 per cent. over last year's imports and 47 per cent. increase in value.

"Nursery stock imported into this Province from Manitoba and points west is taken care of by Mr. Eastham and Mr. Sandall.

"From Horticultural Sales of Montreal 60 cases of bulbs have been planted under quarantine under the supervision of Mr. Hastings.

"INTERCEPTIONS.

"Interceptions include 1 plum-tree condemned for borer, 1 pear-tree condemned for bark canker, 7 raspberry canes condemned for root-borer and gall, 1 flowering almond condemned for peach root-borer, and 5 chrysanthemums condemned for aphis.

"The following were prohibited entry into British Columbia: Regulation No. 1, Domestic, 35 apple scions; Regulation No. 2, Domestic, 7 lb. corn and 5 packages of

corn; Regulation No. 5, Domestic, 7 hazelnut-trees; Regulation No. 6, Domestic, 58 peach-trees and 1 crate of peaches; Regulation No. 10, ½ lb. corn; Regulation No. 18, 4 lb. wheat.

"Interceptions of nursery stock included 20 apple seedlings for woolly aphis; 11 pear seedlings for pear root-aphis; 1 flowering peach for *Aspidiotus forbesi;* 6 Azaleas for *Aspidiotus camelliæ;* 5 Juniperus for *Diaspis carueli;* 5 Sequoia for *Aspidiotus carueli;* 7 Magnolia, 4 Ardisia, and 7 Camellia for *Aspidiotus camelliæ;* and 41 lily bulbs for *Rhizopus necans.*

"INFESTED PLANT PRODUCTS.

"The coffee-bean weevil, *Araecerus fasciculatus,* was found infesting coffee from India.

"*Bruchus chinensis* and *Tribolium castaneum* infesting chick peas from India.

"The vetch *beuchid—Bruchus brachialis,* Fahr.—a very important insect infesting vetch-seed from Oregon.

"Grain, cereals, and nuts from several countries were fumigated for infestation of many stored-product insects. A second inspection after fumigation is always made."

PUBLICATIONS BRANCH.

J. S. Wells, Senior Clerk, reports that within the last eleven months the Publications Branch of the Department of Agriculture has sent to residents of British Columbia over 31,000 bulletins and circulars.

The greatest demand was for Poultry Bulletin No. 107, being revised edition of "Practical Poultry Feeding," edited by Professor E. A. Lloyd and Jacob Biely, of the Department of Poultry Husbandry, University of British Columbia, and published by the authority of the Honourable K. C. MacDonald, Minister of Agriculture. A total of over 2,045 copies of this bulletin have been sent out.

Another new bulletin issued by this Department and in great demand is Bulletin No. 108, "Propagation of the Cascara Tree." Already 1,789 copies have left this office.

Mimeographed stencils to date total 53,651, the Agricultural Production Committee sending out a new stencil totalling 10,050 copies and the Markets Branch sending out over 3,000 copies of their Market News Bulletin.

The following is a list of publications printed to date:—

Horticultural Circular No. 74, "Lettuce Production in B.C."
Horticultural Circular No. 75, "Asparagus Production in B.C."
Horticultural Circular No. 43, "Gardening on a City Lot." (Reprint.)
Horticultural Circular No. 45, "Anthracnose of Apple Trees."
Circular No. 4, "Parsnip Seed."
Bulletin No. 108, "Propagation of the Cascara Tree."
Poultry Circular No. 38, "How Eggs are Formed."
Thirty-fifth Annual Report of the Department of Agriculture.
Bulletin No. 66, "Silos and Silage."
Dairy Circular No. 43, "List of Certified Records."
Climate in British Columbia, 1940.
Circular No. 5, "Control of Disease of Vegetable Seed Crops."
Dairy Circular No. 44.
Agricultural Statistics Report, 1940.
Field Crop Circular No. 12, "Rotation of Farm Crops."

Material for the bulletin "Climate of British Columbia" is prepared by the Dominion Meteorological Bureau, Victoria, and issued by authority of the Minister of Agriculture.

REPORT OF BOYS' AND GIRLS' CLUBS.

S. S. PHILLIPS, B.S.A., SECRETARY.

Considering the fact that the war has affected club-work, causing a serious shortage of experienced farm labour, our Provincial club organization has had a particularly successful year, both from the point of membership and achievement.

The following list shows the number of projects undertaken by the Boys' and Girls' Club organization under departmental supervision in 1941:—

Project.	1940.		1941.	
	Clubs.	Membership.	Clubs.	Membership.
Dairy calf	29	326	32	322
Beef calf	4	45	8	75
Swine	3	40	7	57
Sheep	1	8	1	8
Poultry	56	540	39	371
Potato	16	232	16	193
Grain	2	19	2	18
Seed-growing	2	18	------	------
Alfalfa	2	33	------	------
Totals	115	1,261	105	1,044

A comparison of the 1941 figures with 1940 shows that the membership was either increased or maintained in every project with the exception of poultry, although no seed-growing or alfalfa projects were organized in 1941.

Provision was made in 1941 for a fibre-flax project but no clubs were organized. As the production of fibre-flax in British Columbia is at present in an experimental stage, it is my impression that promotion of this project be delayed until profitable production has been determined.

It is evident from reports received from District Agriculturists that interest is keen in club-work. Many districts organized clubs for the first time this year.

Rules and regulations governing all projects appear satisfactory and no revision is anticipated for the coming year. It is expected that the organization of certain regular projects will be stimulated to meet present demands. Swine is one project that might be increased in view of the fact that unlimited quantities of bacon will be required for the British market. The organization of grain and forage clubs in all mixed farming areas might be encouraged as it is most important that crop production be in proportion to that of live stock.

JUNIOR FEATURES AT PROVINCIAL EXHIBITIONS.

Junior farmer features at exhibitions continue to attract a great deal of public interest, both at larger Provincial exhibitions and the small fairs. It is reported that the number entering classes at the Vancouver Exhibition was higher this year than in any previous year and reports from the District Agriculturists at Smithers, Prince George, Salmon Arm, the Okanagan Valley, and the Peace River District indicate that club-work is increasing in those districts.

PROVINCIAL ELIMINATION CONTESTS.

Elimination contests were held this year at Vancouver Exhibition and at Armstrong Exhibition.

At Vancouver Exhibition on August 29th preliminary contests were held for dairy-cattle and swine judging. The final elimination contest for potato-judging was also

held on that occasion. The following list shows the number competing in the potato-judging contest and the standing of the teams:—

Final potato-judging contest—	Individual Score.	Team Score.
David Blair, Richmond	550	
Jack Maddock, Richmond	525	
		1,075
Jim Schatz, Langley	544	
Hugh Davis, Langley	520	
		1,064

This contest, as in previous years, was conducted under the supervision of H. S. MacLeod, Certified Seed Potato Inspector, and Dr. G. G. Moe, of the University of British Columbia.

A preliminary dairy-cattle judging elimination contest was held at the Vancouver Exhibition under the direction of G. L. Landon, District Agriculturist, assisted by R. L. Davies, of the Brackman-Ker Milling Company. The following list shows the teams competing:—

Preliminary dairy-cattle judging contest—	Individual Score.	Team Score.
Bill Berry, Langley	362	
Barbara Lyons, Langley	351	
		713
Fred Bryant, Chilliwack	349	
Allan Nixon, Sardis	334	
		683
Violet Paton, Langley	347	
Patricia Thompson, Coghlan	326	
		673
James Ferguson, Sardis	321	
Weldon Gorham, Chilliwack	293	
		614
Allan Mufford, Milner	284	
Eldon Porter, Murrayville	281	
		565

A preliminary swine-judging elimination contest was also held at Vancouver. This contest was conducted by G. L. Landon, District Agriculturist, assisted by Stuart Dixon, of the B.C. Electric Railway Company. Following is a list of contestants:—

Preliminary swine-judging contest—	Individual Score.	Team Score.
Bill Freeman, Milner	406	
Frank Harrison, Milner	394	
		800

At Armstrong Exhibition, September 23rd, final elimination contests were held in dairy-cattle judging, swine-judging, and beef-cattle judging. Following are lists of teams competing and the standing of each:—

Final dairy-cattle judging contest—	Individual Score.	Team Score.
Barbara Lyons, Langley Prairie	505	
Bill Berry, R.R. 1, Langley Prairie	520	
		1,025
Terry Fowler, Armstrong	515	
Bert Marshall, Armstrong	504	
		1,019
Gerald Fox, Mud River	446	
Peter Buff, Prince George	454	
		900
Final swine-judging contest—		
Frank Harrison, R.R. 1, Milner	446	
Bill Freeman, Milner	442	
		888

Final swine-judging contest—*Continued.*	Individual Score.	Team Score.
Stewart Phillips, Armstrong	459	
Tom Marshall, Armstrong	381	
		840
Final beef-cattle judging contest—		
Russel Philip, Brigade Lake	426	
Warner Philip, Brigade Lake	420	
		846
Alvin Wiley, Southbank	370	
Cato Loveng, Grassy Plains	313	
		683
John McNally, Westwold	261	
Laverne McLeod, Westwold	282	
		543

Competition was keen in all judging competitions this year. The winning teams for dairy and swine from Langley were well coached, which might be expected as club-work is strongly organized in the Lower Fraser Valley District. The Armstrong teams came second in both of these contests. The dairy team was particularly strong. This team was coached by Noland Boss, who put a great deal of work on the team. It is unfortunate that the Armstrong District was under quarantine this summer on account of an outbreak of infantile paralysis. This interfered with the club meetings to a considerable extent.

The winners of the beef team—Russel and Warner Philip, of Brigade Lake—have been club members for several years. They were well coached by A. Frolek and G. A. Luyat.

The two teams from Central British Columbia made a very good showing. The beef team from the Lakes District came second with a high score. The dairy team from Prince George stood third with a splendid score of 900 out of a possible 1,200 points.

A number of departmental officials assisted in conducting the elimination contests. James Manning took charge of the dairy contest; Wm. MacGillivray conducted the beef contest; G. A. Luyat, assisted by N. Curtis, took charge of the swine contest. The co-operation of Fred Murray, of Armstrong, in supplying hog carcasses, and Roy Trimble in judging these carcasses was also much appreciated.

NATIONAL JUDGING COMPETITION.

British Columbia teams achieved outstanding success in the National Competitions this year. The dairy team from Langley Prairie won first place. Competition in the potato-judging contest was very keen; the team from Richmond, which stood second, being only 9 points behind the winning team. The beef team from Brigade Lake and the swine team from Langley Prairie won third and fourth places respectively.

This is the highest standing our teams have ever made in the National Contest at Toronto. The direction given by J. B. Munro, Deputy Minister of Agriculture, who was President of the Canadian Council this year, has been most helpful in achieving this success. Credit must also be given to the Dominion and Provincial Departments of Agriculture, the University of British Columbia, and the management of our Provincial Exhibitions for their splendid co-operation. Local organizers and associations sponsoring club projects have also done much to promote club organization in many districts.

In this connection it is interesting to note that three of the winning teams were coached by boys who had previously represented British Columbia in the National Contest at Toronto. They are Tom Berry, coach for the Langley dairy team; Clifford Freeman, who coached the Langley swine team; and Alex. Frolek, who coached the Kamloops beef team. In particular, may I acknowledge the work of our District Agriculturists, who have found time in addition to their regular work to encourage and give direction to the club organization of their districts.

AGRICULTURAL STATISTICS, 1940.

GEORGE H. STEWART, STATISTICIAN.

SYNOPSIS OF AGRICULTURAL CONDITIONS.

The report of the departmental Statistician is issued in bulletin form as soon as figures are available respecting production and marketing of agricultural commodities within the Province. However, a synopsis of the information contained in the bulletin is reproduced herewith.

The total gross agricultural revenue of British Columbia is estimated at $51,772,571 for 1940, as compared with the final estimate of $49,402,011 for 1939. This represents an increase of $2,370,560 or 4.7 per cent.

Increases are recorded in the revenue from farm animals, poultry and eggs, dairy products, vegetables, honey, wool, tobacco, and seeds. These increases are in part offset by decreases shown in fruits, grains, fodders, and hops.

The total value of imports is placed at $18,710,703, as compared with a value of $17,210,304 in 1939.

Imports from other Provinces are valued at $16,524,455, compared with $14,977,437 in 1939; while imports from foreign points decreased from $2,232,867 in 1939 to $2,186,248 in 1940.

The total value of exports is estimated at $9,239,019 for 1940, as compared with $9,962,776 in 1939.

FRUITS.

In all horticultural districts weather conditions during the past year have been satisfactory. The winter was the mildest experienced throughout the Province for a number of years. In the fruit and vegetable producing sections no low temperatures were recorded and, while the snowfall in the Interior was light, there was a satisfactory rainfall in all areas. The spring was much earlier than in 1939. The summer was hot and dry and many sections of the Interior experienced a shortage of irrigation-water. The heat and lack of moisture extended into the early fall. In the late fall there was ample moisture but, on the whole, weather conditions were excellent for the harvesting of fruits and vegetables. No frost or snow was recorded until early in November, and during the last two months of 1940 there were heavy rains in the coastal areas, with rain and snow in Interior sections. On the whole, ground-moisture conditions in the Coast sections were satisfactory, although somewhat below normal in the Interior.

Tree-fruits in all sections came through the winter in excellent condition, although it is feared that there may have been slight damage to the trees during November of the current year. The production of apples is lighter than in 1939, due not only to hot, dry weather during the summer period but also to a heavy infestation of codling-moth in many orchards. Pears were a light crop, but of good quality. Stone-fruits, such as prunes and cherries, were also lighter than the crop of the previous year. Both, however, were of excellent quality and marketed as they were under satisfactory climatic conditions, particularly in the Interior, the returns were quite satisfactory.

Due to the early spring, all small fruits were on the market earlier than in the previous year. Early indications were for a heavy crop, but the continued dry weather following the opening of the strawberry season materially shortened that crop and also curtailed the production of raspberries, loganberries, etc. All small fruits went into the winter in very satisfactory condition.

The total production of all fruits in 1940 amounted to 319,552,000 lb., valued at $7,379,840, as compared with 336,140,000 lb., valued at $8,123,611, in 1939; indicating a decrease of 16,588,000 lb. or 4.9 per cent. in volume and $743,771 or 9.1 per cent. in value.

The total production of commercial apples for 1940 is estimated at 249,602,000 lb., of the value of $4,415,650, as compared with 260,746,000 lb., value $5,151,413, in 1939.

Of the other fruits, the estimated commercial production and value for 1940 are as follows, with corresponding figures for 1939 placed within brackets:—

Crab-apples, 5,032,000 lb., $89,203 (4,826,000, $91,810); pears, 14,514,000 lb., $415,303 (14,930,000, $412,585); plums, 2,036,000 lb., $59,059 (3,266,000, $67,054); prunes, 5,098,000 lb., $161,547 (7,752,000, $162,234); peaches, 11,518,000 lb., $390,079 (10,620,000, $350,029); apricots, 3,384,000 lb., $147,966 (3,542,000, $149,728); cherries, 4,184,000 lb., $340,412 (5,262,000, $317,406); strawberries, 12,252,000 lb., $744,246 (14,660,000, $873,081); raspberries, 4,414,000 lb., $300,449 (4,628,000, $285,462); blackberries, 1,046,000 lb., $40,290 (718,000, $30,422); loganberries, 2,384,000 lb., $99,616 (2,062,000, $83,714); bush-fruits, 3,870,000 lb., $164,212 (2,806,000, $134,690).

VEGETABLES.

On the whole, the total vegetable acreage is but little different from that of 1939. The tomato acreage shows a slight increase and the season was favourable for the production of this crop, and with better canning prices the returns have been very satisfactory to the grower. The onion acreage was smaller than in 1939 and the yield was reduced materially due to hot weather and the presence of onion-thrips. The quality of the crop, however, was good and the prices better than last year. Asparagus acreage shows an upward tendency, the largest acreages being in the Okanagan and Fraser Valley Districts. At the present time the estimated acreage is 548 acres.

Greenhouse-vegetable crops, such as tomatoes and cucumbers, show a slight increase. This is particularly applicable to the Northern Okanagan section where greenhouse production of vegetables is increasing.

On the whole, there is an upward tendency in the production of vegetables throughout the Province, particularly of the early spring and late fall crops, such crops being produced not only for the home market but for export to the Prairie and Eastern markets as well.

The aggregate of all vegetable-crops for the year 1940 was 69,539 tons, of a value of $2,770,467, as compared with 53,808 tons, of a value of $2,153,892, produced in 1939; indicating an increase of 15,731 tons or 29.2 per cent. in volume and $616,575 or 28.6 per cent. in value.

The production of field rhubarb is estimated at 1,200 tons, of a value of $39,672, as compared with 1,051 tons, value $39,749, in 1939.

A decrease of 51 tons is recorded in the quantity of forced rhubarb produced. The 1940 crop amounted to 545 tons, valued at $32,902.

The quantity of field cucumbers produced in 1940 amounted to 1,173 tons, valued at $70,075.

Field tomatoes produced in 1940 amounted to 25,774 tons, valued at $701,568, as compared with 12,009 tons, valued at $475,676, in 1939; indicating an increase in quantity of 13,765 tons, or 114.6 per cent.

The production of greenhouse tomatoes in 1940 amounted to 2,011 tons, valued at $400,028, as compared with the 1939 production of 1,992 tons, valued at $325,413.

Other vegetables produced in 1940 amounted to 38,525 tons, valued at $1,497,467, as compared with 36,560 tons, of a value of $1,174,307, in 1939; representing an increase in quantity production of 1,965 tons.

GRAINS, FODDERS, AND ROOTS.

The year 1940 was a less favourable one for field-crop production in the Province than was the year 1939. This was due to the long dry spell experienced during the growing season. As a result, spring-sown grains suffered and yielded somewhat below average. Fall-sown crops came through the winter of 1939–40 in good condition and yielded fairly satisfactorily. The corn-crop gave much more satisfactory yields than it did in 1939. Hay-crops were generally good and were cut in good condition.

The total area of the principal field crops in British Columbia in 1940 is estimated at 581,130 acres as compared with 572,700 acres in 1939, an increase of 8,430 acres.

Wheat production in 1940 is estimated at 1,999,000 bushels from 78,100 acres, a yield per acre of 25.6 bushels, as compared with 1,875,000 bushels from 72,100 acres,

or 26 bushels per acre, in 1939. Oats yielded 5,912,000 bushels from 118,000 acres, as compared with 6,111,000 bushels from 120,300 acres in 1939; yields per acre of 50.1 bushels and 50.8 bushels respectively. The yield of barley is estimated at 580,000 bushels from 17,300 acres, as compared with 484,000 bushels from 14,000 acres in 1939; the average yields per acre being 33.5 bushels and 34.6 bushels. Rye is estimated to have yielded 84,000 bushels from 4,200 acres, as compared with 118,000 bushels from 5,400 acres in 1939; yields per acre of 20 bushels and 21.8 bushels respectively. The production of mixed grains is estimated at 183,000 bushels from 4,900 acres, or 37.3 bushels per acre, as compared with 167,000 bushels from 4,500 acres, or 37.1 bushels per acre, in 1939. The yields of other grain-crops, in bushels, are as follows, with the 1939 figures within brackets: Peas, 97,000 (82,000); beans, 29,000 (28,000); flax-seed, 4,000 (4,000).

The production of all grains amounted to 8,888,000 bushels, valued at $4,130,000, as compared with a production of 8,869,000 bushels, valued at $4,334,000, in 1939.

The average prices up to December 31st received by growers at the point of production for the 1940 crops are estimated as follows, with the revised prices for 1939 crops within brackets: Cents per bushel—wheat, 70 (74); oats, 36 (39); barley, 49 (52); rye, 55 (62); peas, 130 (125); beans, 190 (180); flax-seed, 105 (120); mixed grains, 48 (48).

The total yield of hay and clover in 1940 amounted to 333,000 tons from 158,700 acres, or 2.10 tons per acre, as compared with 315,000 tons from 156,000 acres, or 2.02 tons per acre, in 1939. Alfalfa yielded 157,000 tons from 51,000 acres, or 3.07 tons per acre, as compared with 160,000 tons from 52,300 acres, or 3.05 tons per acre, in 1939. Fodder corn yielded 71,000 tons from 6,100 acres, or 11.66 tons per acre, as compared with 70,000 tons from 6,500 acres, or 10.80 tons per acre, in 1939. Grain-hay is estimated to have yielded 116,000 tons from 51,600 acres, as compared with 113,000 tons from 50,000 acres in 1939; yields per acre of 2.25 tons and 2.25 tons respectively.

The production of all fodders amounted to 745,000 tons, valued at $6,988,000, as compared with 728,000 tons, valued at $7,577,000, produced in 1939.

The total yield of potatoes in 1940 was 122,000 tons from 20,000 acres, as compared with 96,900 tons from 19,000 acres in 1939; the yields per acre being 6.10 tons and 5.10 tons respectively.

Turnips, etc., yielded 61,600 tons from 5,500 acres, or 11.20 tons per acre, as compared with 56,000 tons from 5,600 acres, or 10 tons per acre, in 1939.

The aggregate value of all field crops in the Province in 1940 is now estimated at $14,761,000, as compared with $14,715,000 in 1939.

DAIRY PRODUCTS.

The season of 1940, in spite of misgivings in spring, turned out fairly well for the dairy industry. Early drought restricted the regular pastures greatly; but at the Coast, particularly, fall-sown dairy crops did well. Fall production was assisted by rains and mild weather which prevailed until late in the season.

An appreciable increase in total milk production, therefore, resulted. Of the manufactured products, creamery butter shows a fair advance and evaporated milk a substantial increase; cheese, consequently, experiences a drop in manufacture, milk being diverted to this other more remunerative outlet. The recorded output of ice-cream and ice-cream mix has grown considerably, being now together equivalent to one and a quarter million gallons of ice-cream.

Prices improved slightly, but owing to the pegging of butter, did not reach any but moderate levels; prices for all dairy products, hitherto, being quite low.

The total value of dairy production in 1940 is placed at $14,218,825, as compared with the 1939 production of $13,428,401; an increase of $790,424 or 5.8 per cent.

The make of creamery butter exceeded that of any previous year. The quantity of creamery butter manufactured is estimated at 6,189,036 lb. in 1940, as compared with 6,086,079 lb. in 1939; an increase of 102,957 lb.

Factory cheese is estimated at 750,502 lb. in 1940, as compared with the final estimate of 928,305 lb. in 1939; representing a decrease of 177,803 lb. or 19.1 per cent.

The production of evaporated milk reached an all-time high. The output of the condenseries during 1940 amounted to 458,521 cases, valued at $1,467,268, as compared with 429,856 cases, valued at $1,289,568, in 1939.

Ice-cream totals were likewise higher than in any previous year. The combined output of ice-cream and ice-cream mix during 1940 amounted to 1,122,127 gallons, as compared with 929,045 gallons in 1939, an increase of 193,082 gallons, or 20.7 per cent.

The estimated quantity of fresh milk consumed in 1940 was 21,520,000 gallons, an increase from the preceding year of 575,000 gallons.

LIVE STOCK AND POULTRY.

The international situation has brought a general increase in almost all live-stock prices in the Province. The horse market has been quite good, despite the scarcity of farm labour and the natural increase in the use of mechanical power.

Stockmen generally are showing a keener interest in their business; due, no doubt, to better prices and to prospects of better prices continuing as a result of the war.

Range cattle came through the mild winter of 1939–40 in excellent condition and, as a result, began reaching the market earlier than usual. A dry spell in midsummer affected the ranges somewhat, but cattle and sheep went into this winter in good shape with an abundance of feed all over. Feeders and stockers were in great demand. Lamb prices have been good and wool definitely higher.

The swine industry made its greatest increase in years, with almost 1,000 sows being placed under the Federal-Provincial Brood Sow Policy. Prices have been a little disappointing.

Owing to mild winter conditions throughout the Province, heavy egg-production continued from previous fall right through until the usual June "drop," with prices relatively steady.

Grain prices were slightly higher than during the year previous, with eggs a cent or two lower per dozen. The hatcheries, many of which increased their capacity, reported a heavy increase in chicks sold.

The increased activity in building and war trade industries has been of benefit to poultry-meat and egg consumption generally.

The total numbers and values of farm live stock in British Columbia at June 1st, 1940, are estimated as follows, with the corresponding figures for 1939 within brackets: Horses, 71,000, $5,396,000 (68,250, $5,119,000); milk cows, 129,400, $6,988,000 (124,500, $6,350,000); other cattle, 197,800, $7,516,000 (190,200, $6,086,000); total cattle, 327,200, $14,504,000 (314,700, $12,436,000); sheep, 174,700, $1,260,000 (168,900, $1,121,000); hogs, 83,100, $1,205,000 (49,800, $734,000).

The total value of all these descriptions of farm live stock in 1940 amounted to $22,365,000; an increase of $2,955,000 or 15.2 per cent., as compared with a value of $19,410,000 in 1939.

The total numbers and values of farm poultry in 1940 are estimated as follows, with the 1939 figures in brackets: Hens and chickens, 4,719,300, $3,634,000 (4,683,600, $3,560,000); turkeys, 56,200, $147,000 (54,600, $140,000); geese, 9,200, $17,000 (9,600, $17,000); ducks, 34,900, $35,000 (34,800, $35,000).

The total value of all farm poultry in 1940 amounted to $3,833,000, as compared with $3,752,000 in 1939; an increase of $81,000.

The average farm values per head of live stock and poultry in 1940 are as follows, with the 1939 values in brackets: Horses, $76 (75); milk cows, $54 (51); other cattle, $38 (32); all cattle, $44 (40); sheep, $7.21 (6.64); hogs, $14.50 (14.73); hens and chickens, $0.77 (0.76); turkeys, $2.61 (2.56); geese, $1.80 (1.78); ducks, $1 (0.99).

The average value per pound of unwashed wool in 1940 is estimated at 21 cents, as compared with 16.8 cents in 1939.

The production of farm eggs in 1940 is estimated at 20,350,000 dozens, compared with 18,403,000 dozens in 1939; an increase of 1,947,000 dozens, or 10.5 per cent. Returns to the producer ranged lower than during the previous year.

MISCELLANEOUS.

The production of honey in 1940 is estimated at 1,264,050 lb., of a value of $214,889, as compared with 1,004,880 lb., of a value of $150,732, in 1939; representing an increase in quantity of 259,170 lb. or 25.7 per cent.

The quantity of wool produced amounted to 645,000 lb., of a value of $135,450, as compared with the 1939 production of 637,000 lb., valued at $107,271.

Hops yielded 1,691,500 lb. from 1,303 acres, as compared with 1,830,000 lb. from 1,205 acres in 1939; yields per acre of 1,298 lb. and 1,519 lb. respectively. The average value per pound of hops in 1940 is estimated at 33¼ cents, as compared with 32 cents in 1939.

The year 1940 was probably one of the best on record for tobacco production in the Province. The yield was good and the entire crop was sold at a favourable price. The yield of tobacco in 1940 is estimated at 507,600 lb. from 450 acres, or 1,128 lb. per acre, as compared with 310,000 lb. from 310 acres, or 1,000 lb. per acre, in 1939.

The value of flower, vegetable, and field-crop seed production during the year amounted to $312,377, as compared with the 1939 production of $226,243, an increase of $86,134 or 38 per cent.

The value of floricultural and ornamental nursery stock, etc., sold during the year 1940 amounted to $273,431, a decrease from the year previous of $9,918.

REPORT OF MARKETS BRANCH.

ERNEST MACGINNIS, MARKETS COMMISSIONER.

The marketing of British Columbia's 1941 agricultural crop has presented many various and unusual problems. Early summer drought in parts of this Province; hail damage to apricots, cherries, and apples; heavy production of crops such as strawberries; early fall rains on the Prairie to interfere with the British Columbia fruit deal, and rain here delaying the harvesting and reducing the quality of seed, fibre-flax, potato and root crops, all contributed to create difficulties for those marketing boards and individuals charged with the responsibility of marketing these perishable commodities.

In all but the domestic market the sale of agricultural commodities has faced uncommon and difficult conditions. Ordinarily, if a demand existed anywhere for certain locally grown products it was possible to bring buyer and seller together. Under war conditions and the restriction of markets which naturally follow, such items as priorities, availability of exchange and shipping space immediately become factors of paramount importance.

Varietal changes in food needs develop as normal supply sources are cut off, and frequently resulted in the sudden opening of a new and insistent export market which but a short time before seemed to be permanently closed. This in turn brings about corresponding changes in production programmes; a new phase of marketing wherein the Markets Branch now surveys, in collaboration with other existing departmental agencies, the present or recent sources of Britain's and Canada's supply of all those agricultural commodities which British Columbia can produce.

In cases where it seems that this Province, because of climatic or other favourable conditions, is likely to become and could be a potential source of any particular commodity the item is turned over to the appropriate departmental production service for development.

MARKETING OF 1941 TREE-FRUIT CROP.

The British Columbia Fruit Board; its marketing agency, B.C. Tree Fruits, Limited; and the special War Measures Committee have overcome, by close co-operation with the trade generally and the Dominion Government, many perplexing situations in the marketing of tree-fruits throughout the 1941 season.

Weather conditions created new problems in the cherry deal, with rain the principal trouble, and over 1,100 tons went to processors instead of the 400 tons originally planned for that channel. Hot weather and hail interfered with the apricot movement, but despite these conditions the fruit was shipped to market in an orderly manner and even the hailed grades went out at a reasonable price.

Though rain interfered with the plum market, an order from Great Britain for greengages in SO_2 relieved any congestion and stabilized the average prices obtained. Prunes, too, presented a difficult picture and a heavier yield than was anticipated had aggravated the situation until a substantial order was placed by the British Ministry of Food for a heavy tonnage in SO_2.

A large peach-crop—538,000 cases—was marketed at good prices to a receptive consuming public.

The cantaloupe deal was considerably affected by an increase in acreage of one-third more than usual. The weather was abnormal and 40 per cent. of the crop became available for marketing in a week. However, a large percentage of the crop was marketed and, considering conditions, at prices which should afford fair returns.

The early apples cleaned up better than usual, Wealthies being sold out before McIntosh came on the market. Crab-apples were in demand and the entire tonnage moved at better than average prices.

The main crop of apples were estimated at 1,000,000 boxes less than the five-year average; this, coupled with a short crop in Eastern Canada, where weather conditions imposed a handicap, and the opening of shipping to Great Britain, combined to change favourably the situation as compared with the picture earlier in the season.

The original agreement with the Dominion Government for 1,600,000 boxes of apples at 95 cents and $1.15 for domestic is under revision to meet changed conditions, and it is expected that the guaranteed figures above mentioned will be withdrawn and the ordinary market price will rule. The 1,500,000 boxes which will be exported to Britain will include small-sized apples; and of considerable interest is the fact that a combination pack was put up for this market, comprising Extra Fancy, Fancy, and Cee, with a fairly high percentage of the latter, which of recent years has not been shipped to that trade.

A further clause in the agreement with the Dominion Government provides that if less than 4,600,000 boxes are sold it will pay 40 cents per box on the difference between the two amounts.

It is to the credit of those handling that deal that whereas it was estimated the 1940 crop would cost the Federal Government $1,600,000, actually the amount—$775,000—was less than half of this.

The domestic market for 1941 berries and stone-fruits was subject to the stabilizing influence of an export movement to Great Britain of over 3,300 tons of these commodities processed in SO_2. This fruit and fruit-pulp was handled by the Department of Trade and Industry, Victoria, in co-operation with Special Products Board, Ottawa, in the following amounts:—

	Tons.
Strawberries	1,474
Greengage plum pulp	822
Raspberries	112
Black-currant pulp	64
Italian prune pulp	835
Damson pulp	34
Red plum pulp	107
Green plum pulp	8

The most important feature in the marketing of the 1941 apple-crop was a short crop generally throughout the Dominion, and in British Columbia it was about 20 per cent. under last year's production. Weather conditions favourable to insect-injury contributed to this situation.

Due perhaps to larger incomes earned in urban centres and coupled with a short crop in Eastern Canada the domestic movement has been strong. The British Ministry of Supply is arranging to import over a million boxes of the 1941 crop as compared with

647 boxes last year. The fruit is moving to market in good condition and at prices which will likely constitute a better return to the grower than he has had for several years.

British Columbia's 1940 apple-crop found wide distribution, as the following list of countries will show: South Africa, South America, U.S.A., Newfoundland, B.W. Indies, Iceland, India, Singapore, China, Mexico, Java, Fiji, Burma, Iraq; the shipments totalling 964,340 boxes.

Recapitulation of the distribution of various fruits for the past six years as reported by the B.C. Fruit Board:—

Crop-year.	Pears.	Crab-apples.	Peaches.	Cherries.
1940	321,195	123,554	566,033	165,828
1939	329,193	125,426	503,389	245,075
1938	354,443	118,861	368,606	179,077
1937	286,960	155,499	401,698	118,335
1936	258,579	128,840	82,331	173,462
1935	251,172	128,208	124,624	125,437

DOMESTIC DISTRIBUTION OF APPLES BY THE B.C. FRUIT BOARD, SHOWING COMPARISON FOR SIX SEASONS.

Province.	1940–41.	1939–40.	1938–39.	1937–38.	1936–37.	1935–36.
British Columbia	512,363	292,530	294,623	371,591	192,251	245,319
Alberta	912,051	757,141	707,823	651,308	605,210	645,488
Saskatchewan	852,097	739,903	634,018	627,071	556,677	568,568
Manitoba	687,383	531,797	513,938	492,408	428,316	417,826
Ontario	336,940	95,780	160,015	157,558	169,663	147,981
Quebec	527,893	169,555	252,790	280,304	275,874	184,430
Maritimes	132,920	34,586	25,441	24,271	27,271	16,651
Totals	3,961,647	2,621,292	2,588,648	2,604,511	2,255,262	2,226,263

ANALYSIS OF COMPLETE MOVEMENT OF 1940 APPLE-CROP HANDLED BY THE BRITISH COLUMBIA FRUIT BOARD.

Estimate		5,363,551
Domestic shipments	3,961,647	
Export	964,340	
Cannery	39,008	
Local Government account	398,556	
	5,363,551	5,363,551

STRAWBERRIES.

Strawberries, in common with many other crops this season, appeared likely to mature two weeks earlier than usual but cool, cloudy weather delayed their ripening so that the peak movement came about the usual time.

Three important considerations were interjected into the strawberry-marketing situation this year. First, the United Kingdom order for a substantial tonnage; second, the reports of short crops in Eastern Canada; third, a consequent demand from Eastern Canada for berries which was reflected in a greater local demand for jam berries and sugared for the ice-cream trade.

The most important stabilizing element in the marketing of the crop was the order of the British Ministry of Food for a minimum of 1,700 long tons in SO_2. This was handled by Mr. O'Meara, British Columbia Trade Commissioner, as agent of the Special Products Board, Ottawa, through which the United Kingdom authorities dealt. Daily contact was maintained between our two departments.

Your Commissioner visited the Prairie brokers, jobbers, and retail trade and found that, as usual, supplies for that market were carefully and systematically distributed through the central shipping agency of the various grower organizations. The demand was brisk, supplies were of better than average quality and moved to the consumer at prices which were well maintained throughout the season. The jobbers' floors were cleaned of stock every night.

British Sovereign strawberries have a good record on the Prairies and the quality shipped this season, supplying a demand that has been carefully fostered and developed for many years, will further enhance this good name.

One hundred and ninety-five cars of main-crop strawberries were shipped: 11 from Wynndel, 1 from Vancouver Island, and 183 from the Lower Mainland; 33 cars of raspberries, of which 28 were Lower Mainland, 1 Kelowna, and 4 Wynndel; 2 cars of loganberries from Vancouver Island and 25 cars of late berries from the Lower Mainland made up the car-lot shipments for the season; a total of 255 cars.

The total car-lot movement to the Prairie was higher than the previous year, which suffered by reason of a break in the weather and a shorter season.

The following table shows the distribution of both car-lot and L.C.L. shipments (in crates) to the five main distributing-points:—

Point.	Car-lots.	Mixed Cars and L.C.L.	Total.
Calgary	.....	17,117	.....
Edmonton	.....	7,987	.....
Saskatoon	.....	15,300	.....
Regina	.....	16,472	.....
Winnipeg	.....	*Nil*	.....

L.C.L and Part-car Berry Arrivals at Prairie Points for the 1941 Season.

	Calgary.	Edmonton.	Saskatoon.	Regina.	Winnipeg.
Blackberries	3,206	1,165	1,254	983	*Nil*
Black currants	321	.....	.....	.....	.....
Brambleberries	30	146	.....	.....	.....
Boysenberries	426	33	.....	.....	.....
Blueberries	258	.....	.....	.....	.....
Gooseberries	151	224	.....	.....	.....
Loganberries	1,377	1,198	562	547	.....
Raspberries	8,399	3,165	3,283	5,199	.....
Red currants	209	.....	.....	.....	.....
Strawberries	17,117	7,987	.....	.....	.....
Youngberries	6	.....	.....	.....	.....
Mixed berries	29	44	42	458	.....

POTATOES.

Estimates have been made of a 65 to 70 per cent. potato harvest on the Lower Mainland. The diminution of yield was ascribed to early fall rains in parts of the Lower Mainland which induced the spread of late blight and delayed digging operations, and to infestation of the flea-beetle in the eastern end of the Fraser Valley. The potato marketing board reported in November that even with the lifting of all quota restrictions growers could not deliver enough stock to meet the consumer demand.

To utilize particularly the surplus potatoes frequently found in the Coast area a starch and glucose factory is under construction at New Westminster, and it is anticipated that operations will start in January, 1942. The company is a private one with potato-grower shareholders and representation on the directorate. The average yearly disposal of potatoes from this area for culinary purposes is 25,000 tons. The new processing plant expects to use at least 6,000 tons of industrial potatoes per annum.

The Interior areas have had better harvesting weather and a normal crop which is moving to market in good condition.

It is noted that Alberta potatoes were quoted in November on the Vancouver and Saskatchewan markets.

POTATOES ON FARMS, MARCH 31ST, 1941.

	1940 Production.	Per Cent.	On Farms.
	Cwt.		Cwt.
Canada	42,300,000	32	13,702,000
Prince Edward Island	4,579,000	33	1,511,000
Nova Scotia	2,313,000	32	740,000
New Brunswick	6,896,000	40	2,758,000
Quebec	13,125,000	35	4,594,000
Ontario	6,753,000	20	1,351,000
Manitoba	1,784,000	28	500,000
Saskatchewan	2,584,000	31	790,000
Alberta	1,862,000	29	726,000
British Columbia	2,440,000	30	732,000

LONG-TIME AVERAGE YIELD PER ACRE OF POTATOES, 1908–1940.

	Tons per Acre.
Canada	4.2
Prince Edward Island	5.0
Nova Scotia	5.0
New Brunswick	5.6
Quebec	4.5
Ontario	3.3
Manitoba	3.9
Saskatchewan	3.6
Alberta	4.2
British Columbia	5.6

Market conditions for fruits and vegetables on the Prairie were discussed with the trade and Government agencies during the usual trips as far as Winnipeg. At one point your Commissioner was able to assist in breaking up an incipient price war on strawberries which, had it developed, would have cost the growers thousands of dollars. In addition the daily Prairie press were interviewed and much valuable publicity secured for the berry-crop.

The secretarial work of the British Columbia Agricultural Production Committee now centres in this Branch and a trip to Ottawa during the year to attend the Dominion Conference on feed-grains became necessary.

As the Royal Commission inquiry into the Commodity Boards' operations under the " Natural Products Marketing (B.C.) Act " deals with problems directly connected with this Branch your Commissioner has been attending the hearing whenever possible. Membership of the British Columbia Marketing Board comprises: Mr. J. E. Lane, Chairman; Dr. Wallace R. Gunn, Live Stock Commissioner; and Mr. J. A. Grant.

Miss E. M. Campbell was permanently appointed stenographer to the Markets Branch, April 1st, 1941.

The " Markets Bulletin " is published every week. As a war conservation measure consideration was given to its suspension but such a large percentage of those who make up its mailing-list expressed a desire that it be sent them publication has been continued.

This report would be incomplete without an expression of appreciation to the staff of the Dominion Fruit and Vegetable Inspection Branch at Vancouver, Ottawa, Vernon and on the Prairies, the Department of Trade and Industry, and many others for their whole-hearted co-operation throughout the year.

REPORT OF HORTICULTURAL BRANCH.

W. H. ROBERTSON, B.S.A., PROVINCIAL HORTICULTURIST.

The lowest temperature experienced in all of the horticultural districts during the past twelve months was that of early November, 1940. At that time all Interior sections registered a temperature of from zero to 4° F. This maintained, however, for only a few days, but was the coldest period of any time during the ensuing winter.

The late winter was extremely mild, followed by a very early spring. Some idea of the earliness of the season may be obtained from the following table compiled by B. Hoy, District Field Inspector, of Kelowna, and showing comparative fruit-blossoming dates over a period of years:—

Fruit.	1936.	1937.	1938.	1939.	1940.	1941.
Apricots	.....	April 20	April 16	April 19	April 9	April 1
Cherries	April 28	May 2	April 24	April 24	April 19	April 16
Pears	May 1	May 6	April 27	April 28	April 24	April 20
Apples	May 11	May 16	May 9	May 2	May 2	April 25

Comparatively cool weather with frequent rains prevailed during the late spring and early summer. This was followed by warm weather, which reached the maximum temperature about the middle of July. At this time record temperatures were reported in all areas.

The late summer was cool with rain, the rainfall continuing throughout the fall and early winter. To date no low temperatures have been reported.

HORTICULTURAL CROPS.

TREE-FRUITS.

With the exception of apples, tree-fruits in all sections wintered satisfactorily. The sudden drop in temperature last November in most of the fruit areas of the Interior severely damaged the fruit-buds of apples, with resultant short crop in 1941. Pears were an excellent crop and of good quality. Stone-fruits, such as peaches, apricots, and prunes, were a heavy crop and in good demand. Cherries were a lighter crop than that of 1940. Rain seriously interfered with the harvesting and had it not been for the market demand for SO_2 fruit the loss would have been heavy.

The following table indicates the estimated production of tree-fruits for 1941 in comparison with the 1930 and 1940 production:—

Fruit.	1930 Production.	1940 Production.	Estimated 1941 Production.
Apples (boxes)	4,491,983	5,942,907	4,245,225
Crab-apples (boxes)	135,782	139,758	94,850
Pears (boxes)	171,362	345,573	392,175
Plums and prunes (crates)	309,627	400,716	474,500
Peaches (crates)	166,357	575,659	658,000
Apricots (crates)	33,163	169,166	203,870
Cherries (crates)	165,396	209,239	182,075

Small Fruits.

The following table shows the estimated production of small fruits for 1941, compared with actual production for similar crops in 1930 and 1940:—

Fruit.	1930 Production.	1940 Production.	Estimated 1941 Production.
Strawberries (crates)	308,569	680,633	632,540
Raspberries (crates)	157,579	245,273	258,235
Blackberries (crates)	50,737	58,077	59,869
Loganberries (lb.)	1,656,704	2,383,495	2,490,000
Gooseberries (lb.)	205,922	239,555	340,290
Grapes (lb.)	296,104	2,827,211	2,655,000

In the principal small-fruit areas all small fruits came through the winter in satisfactory condition. All crops, however, were lighter than those of the previous year.

In the early spring it was anticipated that strawberries would be on the market at a date previous to that of last year. Cool weather during the blossoming period delayed ripening, with the result that the general picking-dates were about the same as in 1940 although, due to the cool weather, the season was longer than usual. Everbearing plantings suffered as a result of the dry, hot weather in July and August.

Hot weather also shortened the raspberry-crop in many sections. Due to the demand, however, for raspberries, both for the fresh fruit and on the SO_2 market, berries were taken by the buyers as long as they were available.

Loganberries in the early part of the season gave promise of a heavy crop, but the hot weather at picking-time materially shortened the production. The hot weather also reduced the blackberry-crop.

On the whole, the small-fruit crop was not sufficient to meet the demand and prices generally show an improvement over those of 1940.

Vegetables.

The estimated acreage of the principal vegetable-crops in 1941 in comparison with the 1940 acreage is shown in the following table:—

Kind.	1940 Estimated Acreage.	1941 Estimated Acreage.
Tomatoes	2,772	3,816
Onions	1,060	974
Lettuce	575	594
Celery	332	360
Cucumbers	175	190
Cabbage	531	588
Cantaloupes	290	322

The past season has been one of the most unfavourable that the producers of tomatoes and onions have experienced for some time. Rain during the late summer and fall prevented the satisfactory ripening and harvesting of both crops. Cannery prices for tomatoes were higher than they have been for a number of years and growers were expecting an excellent year. Weather, however, reduced the crop and the pack was of inferior quality. The onion acreage was only slightly less than that of last year. The crop, however, was harvested under difficulties and in many cases growers resorted to kiln-drying that part of the crop that was intended for storage purposes.

Other vegetable-crops show a slight increase and the production was, on the whole, satisfactory, with the exception of cantaloupes, which were not up to their usual quality standard.

Market prices for both greenhouse and outdoor vegetable-crops show an upward tendency.

Seed Production.

Seed production in the Province shows a decided increase. In 1940 the value of vegetable-seed produced was $153,608, as against $72,130 in 1939. Flower-seed production for the same period was $18,082, as compared with $26,456 in 1939. Present indications are that the 1941 vegetable-seed production will be more than double that of last year. Flower-seed values will also be higher, as the few growers of this seed have been able to dispose of their product through channels quite as satisfactory as the British market closed to them because of the war.

Growers are being assisted by this Department through the services of J. L. Webster, Field Inspector, who is in charge of seed-extension work throughout the Province. In this work, which consists of contacting all seed-growers and assisting them with their problems, it is also intended to further extend the "Seed Production Series" of publications started early this year. In addition, certain storage problems are being studied. This work is being carried out in co-operation with the staffs of the Dominion Experimental Stations located in the Province.

Bulbs.

The demand for bulbs, due to conditions in Europe, continues to increase. Growers are increasing their plantings each year and finding a ready sale for all that can be produced. While bulbs of the highest quality can be produced, and are produced, by many growers, there is room for improvement. Only by maintaining a high standard of quality will it be possible for producers to hold the market which they now have when normal conditions return and with it the European competition that may be expected.

The growth of the industry is best indicated by the table given below, showing the increase in acreage over a period of years:—

British Columbia Bulb Acreages, 1929–41.

Bulbs.	1929.	1931.	1933.	1935.	1937.	1939.	1941.
Narcissi	66	85	84	93	92	108	116
Tulips	25	29	28	30	40	45	83
Gladioli	39	58	49	46	67	67	68
Iris (bulbous)	5	4	8	5	19	13	18
Iris (other)	7	5	7	5	5	4	4
Other bulbs	17	19	27	30	26	20	26
Total bulb acreage	159	200	203	209	249	257	315

Tobacco.

The Fraser Valley is now the only commercial tobacco-producing section in British Columbia. A short résumé covering the crop situation is quoted from the report of G. E. W. Clarke, District Horticulturist for the Fraser Valley:—

"The Sumas area continues to be the principal tobacco-growing area in the district. Approximately 640 acres were in crop, which was an increase of about 225 acres over the previous year.

"The type of tobacco grown is Virginia Leaf, flue-cured, and for the curing of the crop over 85 kilns have been constructed in the area.

"Growth and development of the crop has been from fair to good and the yields are expected to range from 900 to 1,100 lb. an acre.

"In 1940 the buyers from the Imperial Tobacco Company purchased the crop and this season similar arrangements are under way for the handling of the crop. Present indications are that a satisfactory deal will be made and the whole crop will be baled and shipped to Ontario."

GRAPES.

The principal acreage devoted to grapes is to be found in the Okanagan. Scattered plantings are also found in the Fraser Valley and on Vancouver Island. The following figures indicate approximately the total plantings in the Province, according to surveys made by the Horticultural Branch officials:—

Survey of Grape Acreage, 1940.

District.	1–5 Years.	6–10 Years.	Over 10 Years.
Vancouver Island	2½	11½	2¾
Fraser Valley	30½	52¼	12¾
Salmon Arm, Kamloops	1¼	1½	2¼
North Okanagan	33½	55	157½
Total, 363¼ acres	67¾	120¼	175¼

The past season has not been very favourable for grape production. In the Interior sections there was some damage to buds in the November freeze of 1940, and in the Coast areas cool unsettled weather during the blossoming period resulted in poor setting of the blossoms and therefore comparatively light yields. Quality also was below normal due to cool weather and lack of sunshine during the ripening period.

BLUEBERRIES.

Blueberries are a comparatively new crop, although mentioned in previous reports. Plantings are principally on Lulu Island in the Fraser Valley. Increasing interest is being shown in the introduction and propagation of new varieties, which should have a marked influence on future production. G. E. W. Clarke, District Horticulturist, reports on the present situation in so far as this crop is concerned as follows:—

"Plantings of the high-bush varieties of blueberries are gradually increasing, particularly on the peat lands of Lulu Island. These large-sized excellent flavoured berries are increasing in popularity on the Coast markets and are also meeting with favour on the Prairies.

"Demand at the present time is in excess of the production and as a result prices have been maintained at a relatively firm level.

"While present plantings have some named varieties a considerable proportion of the producing plantings are of mixed and unnamed high-bush types.

"During the past year considerable time and attention has been given to the propagation of cuttings of named varieties suitable for this district. The planting of these named varieties will eliminate the necessity of using unnamed and possibly unsatisfactory stock for future commercial plantings.

"The results of the propagation-work are giving promise of having been very satisfactory and it is expected that 75 per cent., or a little better, of the plants will be suitable for transplanting in the early spring. Arrangements are being made to continue this propagation-work another season following along the same lines as adopted this year."

HOPS.

The main plantings of hops are in the Fraser Valley in the vicinity of Agassiz and Chilliwack. A few scattered plantings are found on the north side of the Fraser River from Pitt Meadows to Dewdney. This crop is also being grown in the Kamloops section. In the Province at the present time there is approximately 1,400 acres devoted to this crop, most of which is in full production.

Crop indications for 1941 were excellent up until harvesting, when unfavourable weather conditions interfered seriously with the picking.

HORTICULTURAL SURVEYS.

TREE-FRUITS.

The tree-fruit survey covering the Okanagan and Kootenay Districts, which was started in the fall of 1939, was completed in 1940. Compilation of the figures obtained was made early in the present year. These were printed in a form suitable for commercial purposes, and are available to the public.

The following table shows briefly the orchard plantings in the Interior sections from 1920 to 1940, inclusive:—

BRITISH COLUMBIA TREE-FRUIT SURVEY, 1920–40.

Okanagan.

Fruit.	1920.	1925.	1930.	1935.	1940.
Apples	1,103,550	1,147,511	1,137,851	1,130,554	1,091,849
Pears	61,819	70,254	84,589	106,438	150,863
Plums	21,981	20,874	16,689	16,395	16,115
Prunes	44,940	33,420	31,029	56,883	93,227
Cherries (sweet)	23,629	28,854	30,686	43,603	47,228
Cherries (sour)	9,091	7,152	4,571	2,452	1,139
Apricots	31,991	51,107	43,770	56,640	45,361
Peaches	47,378	52,425	47,157	132,297	182,957

Kootenay.

Apples	483,312	378,096	289,546	244,557	161,631
Pears	30,445	21,820	18,254	25,914	23,824
Plums and prunes	50,170	25,031	13,792	17,339	10,159
Cherries (sweet)	21,566	22,822	30,086	38,762	30,141
Cherries (sour)	8,196	4,942	2,784	2,123	1,402
Apricots	204	712	983	2,613	2,033
Peaches	2,189	1,505	2,142	6,143	6,680

BULBS.

The bulb survey carried out during the past season showed a marked increase in bulb acreage, particularly during the past two years. Details are given in a table shown in the first part of this report, but it might be noted that from 1929, when the first survey was made, up to 1941, when the last survey was carried out, there has been an increase from 159 acres to 315 acres; a total of 156 acres, or approximately 100 per cent.

GREENHOUSE.

During the past season the usual biennial survey of greenhouses in the Province was undertaken. The table given below indicates the number of growers and houses in the different sections of the Province, as well as the total area in square feet. This survey shows little change in total area shown by the 1939 survey. The area in square feet in that year was 5,145,668. In 1923 when the first survey was made the area was 1,905,180 square feet.

British Columbia Greenhouse Survey, 1941.

District.	No. of Growers.	No. of Houses.	Area in Square Feet.
Lower Mainland	317	961	2,158,544
Vancouver Island	208	960	2,667,637
Okanagan	37	131	278,153
Kootenay	15	33	48,664
Totals	577	2,085	5,152,998

FIELD-INSPECTION WORK.

POTATO-BEETLE INSPECTION.

Potato-beetle control-work was again undertaken in the East Kootenay section and was under the supervision of A. McMeans. The following extract from Mr. McMeans's report gives a very good idea of the present situation in so far as this work is concerned:—

"The potato-beetle control-work for the past three months of June, July, and August has again been carried out by the British Columbia Department of Agriculture.

"Distribution of calcium arsenate poison-dust has been made to all growers of potatoes in the areas of potato-beetle infestation.

"This is the fifth season that I have been connected with this work and it is a pleasure to me to be able to state that the beetles have been much less numerous the past season than in any year since I have been in charge of this work, even in the larger production areas such as Creston, Cranbrook, and Fernie Districts where the poison-dust has been used in large quantities. Various growers have remarked or called my attention to the absence or decrease of this pest.

"It is really encouraging and gratifying to see the improvement that has occurred the past season. To make a comparison, the general improvement and absence of the beetle is not confined to any one district but is so general that I am going to omit my remarks on the individual districts and try and convey the improvement by a summary showing the amount of poison-dust used by the various districts during the past and present seasons.

Summary Potato-beetle Dust Distribution.

District.	1938.		1939.		1940.		1941.	
	Used.	Left.	Used.	Left.	Used.	Left.	Used.	Left.
	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.
Creston	1,600	210	1,710	.....	2,050	.....	450	1,150
Wardner	250	.....	300	.....	300	40	40	50
Dorr	300	50	480	.....	500	100	480	120
Fernie	2,990	200	2,940	150	3,250	.....	1,150	1,510
Newgate	600	150	300	300	270	200	430	140
Baynes	300	90	360	.....	440	10	75	405
Wynndel	400	210	250	50	315	60	30	180
Grasmere	1,000	90	1,150	325	1,400	25	565	720
Jaffray	1,080	450	1,330	.....	1,175	25	780	220
Totals	8,320	1,450	8,820	825	9,700	460	4,000	4,495

"The weather at Cranbrook the past winter was very mild. Warm weather continued until the month of June, which was cold and rainy. This was followed by a hot July, the thermometer going up to 120° F.

"Adult beetles had emerged and egg masses laid were first noted this season in the Cranbrook area on June 21st.

"The following table shows the dates for various years when the larvæ were first noted:—

1941, June 21st.	1937, June 26th.	1933, June 19th.
1940, June 7th.	1936, June 25th.	1932, June 19th.
1939, July 3rd.	1935, June 19th.	1931, June 15th.
1938, June 26th.	1934, June 8th.	

"The slight outbreaks that have occurred during the previous seasons have been inspected closely and I am pleased to state were found to be free of beetles."

In the Thrums and Salmo areas E. C. Hunt reports that no new outbreaks have occurred during the past season. In infested lots where beetles were originally found none have been found for the last two years. The infestation in Grand Forks was very light.

It is hoped that it will be possible to continue control-work in these sections during the coming year.

Fire-blight Inspection.

Fire-blight control-work was carried out during the past season with very satisfactory results. The following table indicates districts in which inspection-work was undertaken and details of such inspection for 1940–41:—

District.	Total Acres inspected.	Inspected and passed.	Not passed.
Salmon Arm	182	180	2
Vernon	5,700	5,603	97
Kelowna	4,760	4,744	16
Summerland	2,260	2,245	15
Penticton	720	720	----
Totals	13,622	13,492	130

Pear Psylla Survey.

In co-operation with officials of the Dominion and U.S. Departments of Agriculture, surveys were made of orchard areas in the Kootenay and Okanagan Districts adjacent to the International Boundary. These surveys were carried out in order to ascertain whether pear psylla was present in any of the British Columbia orchards. Although the pear psylla is fairly wide-spread in the State of Washington and has been reported within 20 miles of the Boundary, the result of the surveys made indicate that no pear psylla is present in British Columbia.

Nursery-stock Inspection.

The usual inspection of nursery stock was carried out during the past season. Details covering this work for the past eleven months are shown in the following table:—

Nursery Inspection Report, 1941.

	Number inspected.	Number passed.	Number condemned.
Apples and crabs	33,255	32,356	899
Pears	19,210	18,631	579
Plums and prunes	14,897	14,517	380
Cherries	12,417	12,257	160
Peaches and apricots	37,271	35,805	1,466
Miscellaneous	3,055	3,055	----
Totals	120,105	116,621	3,484

Twenty nurseries inspected; twenty-three inspections made; 2.9 per cent. of the inspected stock condemned.

HORTICULTURAL DEMONSTRATION-WORK.

Pruning Demonstrations.

Pruning demonstrations were held in various sections of the Province during the past year. The number held and attendance is shown in the following table:—

District.	No. of Demonstrations.	No. of Pupils.
Islands	15	367
Lower Mainland	15	372
Okanagan	5	83
Total	35	822

Arrangements are being made for continuing this work during the coming season.

Mealy-bug Control.

This work has been carried on in the Kootenay District for several years by E. C. Hunt, District Horticulturist. A very satisfactory statement on the work undertaken during the past season is given in the following extract from Mr. Hunt's report:—

"The insect on the whole has had a very favourable season for a heavy infestation in most all orchards where the insect is found, and more thorough spraying will be necessary next year if this insect is to be kept under control. However, after six or seven years of experimental work carried on in this district with different spray mixtures and materials, some very satisfactory control recommendations can now be made for this insect, and with materials that the growers can afford to use. This, no doubt, will bring about much more efficient spraying due to a low cost and will result in a better control of the insect. This past season mealy-bug control-work in the Kootenay District was carried on in the Bonnington District, Colonel Goode's orchard being used for the test-plots, which were eleven in all and four check-plots. One hundred gallons of the different sprays and mixtures were used for each plot, the work being carried out more on a commercial scale this year as certain sprays had been eliminated by results of other years, either too costly or too complicated for the average grower to use.

"These control experiments or tests are carried out by your District Horticulturist in co-operation with the Science Service officials (Entomologist) of the Dominion Department of Agriculture. For a number of years a 4-per-cent. oil (110 vis.) has given general satisfactory control of the mealy-bugs, not only in the test-plots but where used by growers on a large spraying scale, if the spraying was thoroughly done. The only complaint in the use of this material was its cost. For two years oil of 40 vis. (Diesel oil), used at 6 per cent., has apparently given as good control as the 4-per-cent. 110-vis. oil, and the cost of the 6-per-cent. Diesel oil is about 90 cents as compared with $1.28 for the 4-per-cent. 110 oil for 100 gallons of spray. This past season a 4-per-cent. Diesel oil was used and the results were equally as satisfactory in the control of the mealy-bug as the 4-per-cent. 110-vis. oil or the 6-per-cent. Diesel. This would still lower the cost of the spray mixture to about 60 cents for 100 gallons of spray. Weaker mixtures of Diesel oil, 2 per cent., were also tested out as well as 2-per-cent. 110-vis. oil, and although the control was quite good under thorough spraying it was not thought they were good enough to be recommended at the present time. It is not likely any further control experiments will be carried on this coming year, but the work up to this time indicates that a 4-per-cent. Diesel oil thoroughly applied will satisfactorily control the mealy-bug in the Kootenay District.

Codling-moth Control.

The control of codling-moth is one of the most important items in the economic production of fruit in all of the tree-fruit sections of the Province. In order to improve present control methods experimental and demonstration work is necessary. Such work is being undertaken by officials of both Provincial and Dominion Departments of Agriculture. The major part of this work for the Provincial Department is under the supervision of B. Hoy, District Field Inspector, Kelowna. The following extract from Mr. Hoy's report gives some idea of the work that has been done during 1941 and the situation generally:—

"The carry-over of worms from 1940 was the heaviest we have ever experienced. Wind and rain interfered with spray operations. Much spraying was done on windy days and time after time showers came during spray operations, or rains immediately after the spraying was finished, reducing the amount of spray coverage. This condition of wind and rain made effective spraying nearly impossible. The crop generally was very light, some orchards producing only a few scattered apples. Some growers attempted to remove all the apples from the trees in these real light crops; others sprayed two or three times and a few growers did not do anything. Under any treatment the percentage of damage is always greater in a light crop, because there are more worms per apple. The light crop, coupled with a heavy carry-over of worms and poor spraying conditions, is responsible in a large degree for the heavy infestation of worms in many orchards this year.

"The shortage of satisfactory spray equipment is a factor that must be reckoned with. There is not enough equipment to cover the areas to be sprayed in a short enough time if the work is done thoroughly. Sufficient spray equipment is the first need for good codling-moth control.

"The materials recommended in 1941 were the same as in 1940. Through the courtesy of the Tree Fruit Board these recommendations and a spray calendar were mailed to every grower in the district. Codling-moth bulletins contained up-to-date information about the activities of codling-moth and control methods. As last year, Canadian Industries sponsored these bulletins.

"In the search for new methods of controlling codling-moth this office assisted the Dominion Entomological Branch in trunk-spraying tests at Penticton. The idea of the treatment is to kill the over-wintering larvæ on the tree and cut down the source of infestation early in the season.

"Sprays were applied with our Hardie Mogul 20. All pressure was released and rods substituted for guns on the hose-line with fine nozzles. With the engine idling, enough material came through to give a small fine spray. All trunks were sprayed and branches as far out as there was any rough bark that might harbour over-wintering worms. The trees in this orchard required about a gallon of material per tree for this treatment. The materials used were kerosene containing 1 per cent. of dinitrocresol and Diesel oil containing 2 per cent. dinitrocresol. All trees received five summer sprays of lead and Cryolite by the grower.

"Assistance from this office was given in checking results at harvest and the final results indicated all materials to be equally effective so far as control was concerned.

"At harvest-time the untreated Macs were about five times as wormy as the treated trees and the untreated Jonathans about two and one-half times as wormy.

"Though the control obtained from this new idea was very gratifying, many trees were injured by oil accumulating in the soil at the base of the tree. This perhaps seems discouraging, but the fact that this sort of treatment gave such outstanding results is very encouraging. If a carrier for dinitrocresol that will not injure the trees can be found, this treatment will be of great assistance as an adjunct to spraying in codling-moth control.

"Assistance was also given to the Dominion Entomological Branch in their spraying at the Hart orchard, East Kelowna, and at the East Kelowna Experiment Station. We received assistance from the Dominion Branch in spraying plots at Keloka orchard, East Kelowna, and the Coe orchard at Winfield.

"Results of the codling-moth spraying by this Department indicate that sprays containing oil gave superior results to the ordinary water and lead or Cryolite mixtures. The rapid increase in codling-moth infestation throughout the district would indicate the advisability of recommending oil-wetted mixtures of arsenate of lead or Cryolite in some of the first-brood sprays. Owing to the extra load of poison and the type of deposit on the apple, cleaning at harvest becomes more complicated, so sprays of this type containing arsenate of lead or Cryolite could not be used in second-brood sprays.

"With new ideas on codling-moth control such as destruction of over-wintering worms by spraying and spraying to control the moth, it is hoped that some time in the near future some of these lines of attack will be perfected to the point where they will come into general use. Until such a time arrives we must depend on the present type of insecticides sprayed on the fruit and leaves to kill the young larvæ. The advances being made by organic chemists may also give us a material better adapted to killing the young larvæ than the materials in present use. Phenothiazine and nicotine compounds are both as effective as arsenate of lead or Cryolite, but the cost of material is excessive."

In addition to the work on codling-moth control mentioned previously, demonstration-work was undertaken at different centres such as Salmon Arm, Vernon, Summerland, and Penticton. This demonstration-work was under the direct supervision of the officials in charge of each district office.

Plant Hormone Sprays.

The use of plant hormone in spray form has been recommended for the purpose of preventing fruit drop. Some work with this material was undertaken during the past season by H. H. Evans, District Field Inspector, Vernon. Some idea of the value of this spray may be obtained from the following extract from Mr. Evans' annual report:—

"A commercial product used for the prevention of pre-harvest fruit drop was utilized in the above tests. Twenty large McIntosh in each block were sprayed at the rate of 1 pint to 100 gallons water, at 20 gallons per tree, as soon as indication of premature drop was established.

"On the L. Bateley block, sprayed trees averaged 12 per cent. drop, unsprayed check trees 25 per cent. drop. This grower stated the greatest value to him from this spray's action was increased fruit colour obtained through retention of fruit delaying harvest operations for nearly two weeks. This block was grower-sprayed.

"On the Vernon Orchards, Ltd., block, spraying was done by your assistant and the departmental spray outfit. The same dilution of spray material was used at approximately 20 gallons per tree. All windfalls were picked from under the test block and five check-trees prior to spray application. Fruit drop was continuous on the unsprayed trees, and commenced on the sprayed block eight days following the application. Checks were made ten days after spraying. Unsprayed trees average drop 22 per cent., sprayed trees average drop 10 per cent. These results were not as good as those obtained in the 1940 experiment. When cost of application and difficulty of operating in large McIntosh trees near the harvest period is considered, the observable results from our two seasons' work does not justify any unqualified recommendation for the general use of this type of spray. Its use by growers need not be discouraged or unduly boosted."

Sweet Corn Trials.

The sweet corn trials as conducted this year are a continuation of the work conducted in previous years. These trials are under the supervision of H. H. Evans, District Field Inspector, who reports as follows:—

"This project has been very satisfactory. A good corn year combined with excellent cultural practices by the operator ensured maximum performance of the plots.

"Injury to low-cobbing varieties from the depredations of pheasants indicates a variety limitation which must be taken into account by commercial producers.

"Appreciation is extended to T. P. Hill, Manager of the Coldstream Ranch, for his excellent co-operation.

"Plots were $\frac{1}{100}$-acre each; hill planted, spacing 40 by 24 inches; twenty-five hills checked in each plot. Quality and rating, maximum points 10 for each. Record taken July 26th and August 7th:—

Sweet Corn Comparison Table.

Variety.	Height.	Type and Colour.	Yield in Cobs per Hill.	Ready for Fresh Market.	Quality, 10.	Rating, 10.
Ottawa Hybrids.						
Margold, O.B. 124	6 ft.	Cob med. size, med. high set, poorly filled; core med. large, 10–12 rowed; grain pale yellow, med. size and depth	2.0	Aug. 5	8.5	6.0
Swiftgold, O.B. 123	4 ft. 6 in.	Cob med. size and length, low set; core med. large, 10–12 rowed; grain golden, med. size and depth, rich, sweet, tender, uneven filling; hit by pheasants	3.6	July 28	9.0	9.0
Banting x Black Mexican, O.B. 169	6 ft.	Cob med. size and length, med. high set, poorly filled; core small; grain pale yellow, large, deep, rich, sweet, tender, 8-rowed	5.5	July 25	10.0	8.5

Sweet Corn Comparison Table—Continued.

Variety.	Height.	Type and Colour.	Yield in Cobs per Hill.	Ready for Fresh Market.	Quality, 10.	Rating, 10.
Ottawa Hybrids—Continued.						
Golden Bantam x Dorinny	4 ft. 6 in.	Cob short, med. size, low set; med. core, uneven filling; grain yellow, small, shallow, rich, sweet; skin slightly tough; hit by pheasants; 10–12 rowed	4.0	Aug. 2	8.5	7.5
Sungold, O.B. 159	7 ft.	Cob long, med. size, high set; core large, uneven filling; grain yellow, med. size and depth, med. rich; skin tough; 12-rowed	3.4	July 31	7.0	8.5
Dorick, O.B. 134	5 ft.	Cob med. size and length, filled, low set; med. core; grain yellow, med. size, deep, rich, sweet, tender; 10–12 rowed	3.6	July 29	9.0	9.0
60-day Golden x Dorinny, O.B. 175	6 ft.	Cob med. size, long, high set, filled, uniform; core small; grain large, golden, med. deep, uniform; skin slightly tough; 8-rowed	5.4	July 30	8.5	9.0
Dorking of Dorinny x Banting, O.B. 173	4 ft. 3 in.	Cob small, uniform, filled, low set; core small; grain pale yellow, small, shallow, rich, sweet; skin slightly tough; 8–rowed; hit by pheasants	4.5	July 28	8.0	9.0
Gilgold, O.B. 128	4 ft. 3 in.	Cob med. size, long, low set, uneven filling; core small; grain yellow, med. size and depth, sweet, rich; skin slightly tough; 8-rowed; hit by pheasants.	3.6	July 30	9.0	9.0
Chiquantina x Pickaninny, O.B. 178	6 ft.	Cob. med large, long, high set, uneven filling; core med. size; grain pale yellow, small, shallow, rich, sweet, tender; 10–12 rowed; late	5.0	Aug. 10	9.5	9.0
From Stocks on Hand.						
Saachen	8 ft.	Cob large, long, uniform, high set, late; core small; grain yellow, small, med. deep, rich, sweet, tender; 10-rowed	5.3	Aug. 12	9.5	9.0
Goldban	5 ft.	Cob med. size and length, med. high set, uniform, filled; core small; grain golden, large, deep, rich, sweet, tender; 8-rowed	4.1	July 28	10.0	10.0
Topcross Bantam	8 ft.	Cob med. size and length, uniform, high set, late; core very small, filled; grain yellow, med. size, deep, rich, sweet, tender; 10–12 rowed	4.9	Aug. 14	9.5	9.0
Spancross	7 ft.	Cob large, long, uniform, filled, high set; core large; grain yellow, med. size and depth, sweet, rich; skin tough; 16–18 rowed	4.5	July 30	8.0	9.0
Kingcrost	7 ft.	Cob. med. size, long, uniform, filled, high set; core small; grain golden, med. size, deep, rich, sweet, skin slightly tough; 8-rowed	4.8	Aug. 3	9.0	9.5
60-day Golden	6 ft. 6 in.	Cob large, long, uniform, filled, high set; core med. large; grain golden, large, med. deep, rich, sweet; skin slightly tough; 10–12 rowed	4.7	July 28	8.0	9.0
Golden Bantam	6 ft. 6 in.	Cob med. size and length, uniform, filled, high set; core small; grain golden, med. size and depth, rich, sweet; skin slightly tough; 8-rowed	4.6	Aug. 1	9.0	9.5
Gills Early Market	6 ft. 6 in.	Cob large, med. long, uniform, filled, high set; core large; grain yellow, med. size, shallow, med. rich and sweet; skin slightly tough, 14–16 rowed	4.0	July 30	7.5	8.5

"*Remarks.*—A study of the above table reveals by the uniformity of performance of the series in growth and yield the excellent cultural conditions given the plots. The range of maturity between varieties is fairly wide to be of value in different localities. It will be noted that the quality and general ratings are high in most of the varieties.

Goldban is again outstanding in its all-round performance. Kingcrost, Saachen, and Topcross Bantam of the newer strains are very good. A number of the Ottawa hybrids show very promising qualities and should be further tested. Lack of filling was a noticeable fault with some of these hybrids, but it is difficult to say whether climatic conditions or a constitutional weakness was responsible. Pheasants again took toll of the early, low-cobbing strains. This should not discourage their commercial expansion where earliness and quality are evident.

"The general rating is based on quality, yield, size of cob and core, uniformity of type, colour, set, and filling. The minimum points fixed for accepted performance was: Quality, 8; general rating, 7. Further trials would be very desirable with the hybrids and new strains.

"Golden Bantam has been used as the base for making performance comparisons. The following varieties have given such a good performance in three years' testing as to recommend themselves for commercial production in the Okanagan: Goldban, Kingcrost, 60-day Golden, Saachen, and Topcross Bantam."

Lettuce Variety Trials.

Variety trials with lettuce were carried out in the Coast Districts as well as in the Okanagan. As the Okanagan trials give a good idea of the work done and results obtained, the following is taken from the report of H. H. Evans, District Field Inspector, Vernon:—

"This project continues several years' work of variety testing. General adaptability and season response on the muck soils at Armstrong; resistance to heat, frost, and diseases; also quality and yield are a number of the characteristics studied.

"Growth conditions throughout the season were not normal as cool, showery weather and high soil-moisture tended to accelerate the size of head at the expense of solidity. The sudden intense heat period in July caused tip-burn in the midsummer commercial crop that was approaching maturity at that time. No severe fall frosts occurred until nearly all fall crops had been harvested.

"The spring demonstration-plots were lost this season through mice getting into the cold frames and destroying all seedlings at the half-grown stage. Late seeding of the fall crop with continuous cool, showery weather at the heading period affected the firming of many of the strains.

"*Fall Crop.*—Field seeded July 27th; checked September 15th and October 23rd. Plots contained fifty plants.

"At the September 15th examination it was observed that Imperial No. 847, Stock 365191, and Roheo, Stock 39565, had given poor germination and development. New York No. 515, Imperial No. 44, and Imperial No. 847, Stock 395497, from the same source, were a fair stand but growth was slow and uneven. Data for table were recorded from October 23rd examination.

"*Stocks of Seed-house No. 1.*

"*New York No. 94.*—October 23rd: Heads filling, not uniform, slack; quality good; 5 per cent. fit to cut; frost-injury medium on cover-leaves. (Not suitable for fall crop.)

"*Imperial No. 847.*—October 23rd: Heads large; filling, but not firming; quality good; 5 per cent. fit to cut; no frost-injury. (Suitable for dry, warm fall conditions.)

"*New York No. 515.*—October 23rd: Heads well filled, uniform, not solid; quality good; no frost-injury; 10 per cent. fit to cut. (Suitable for dry, warm fall conditions.)

"*Imperial No. 44.*—October 23rd: Heads small, well filled, solid, uniform; good quality; 50 per cent. fit to cut; no frost-injury. (Very good.)

Stocks of Seed-house No. 2.

"*New York No. 515–199, Stock 57099.*—October 23rd: Heads large, well filled, uniform, medium firm; good quality; slight frost-injury; 15 per cent. fit to cut; doubtful if heads will harden. (Fair.)

"*Imperial No. 847, Stock P.C. 400151.*—October 23rd: Heads large, well filled, uniform type, medium firm; good quality; 20 per cent. fit to cut, No. 2; slight frost-injury on wrapper-leaves. (Fairly good.)

"*Imperial No. 850, Stock 27102.*—October 23rd: Heads large, uniform, well filled but slack; good quality; 5 per cent. fit to cut as No. 2; frost-injury medium. (Doubtful for fall crop.)

"*Imperial No. 44, Stock 97101.*—October 23rd: Heads medium size; uniform plot and type; round head; well filled and solid; 70 per cent. fit to cut; quality good; no frost-injury (Very good.)

"*Stocks of Seed-house No. 3.*

"*New York No. 515, Stock 355392.*—October 23rd: Only a medium stand; heads uneven and undeveloped; no heads near cutting-stage; no frost-injury; no record obtainable.

"*New York No. 199, Stock 385541.*—October 23rd: Heads filled, medium firm, small round type; plot uneven; 5 per cent. fit to cut; developed heads will harden; good quality; no frost; late. (Very promising.)

"*Imperial No. 44, Stock 395641.*—October 23rd: Fair stand; heads filled, fairly solid, uniform type, medium size; 50 per cent. fit to cut; good quality; very slight frost-injury on wrapper-leaves. (Very good.)

"*Imperial No. 847, Stock 395497.*—October 23rd: Fair stand, heads medium large, good type, filled fairly firm; good quality; 30 per cent. fit to cut; very slight frost-injury on wrapper-leaves. (Good.)

"*Imperial No. 847, Stock 365191.*—October 23rd: Poor stand; heads medium size, uniform round type, filled but not solid; late developing; good quality; no frost-injury. (Very promising.)

"*Roheo, Stock 39565.*—October 23rd: Fair stand; heads small to medium size, uniform round type; uneven development; heads filled; firm but not solid; no frost-injury (Very promising.)

"It will be noted that there appears wide variations in performance of the plots. This cannot be considered altogether varietal faults. It is felt that late seeding and the rather abnormal weather conditions, combined with supersaturation in soil-moisture, was greatly responsible for the erratic performance. Similar conditions were noticed with the standard varieties in commercial crops in some fields. Imperial No. 152, which had been accepted by the growers as the standard fall variety for several years, performed very erratically this season and was a disappointment to a number of growers. Some fall-crop fields bolted and others would not harden. This condition strongly emphasizes our observations of past years, in that seasonal conditions have a tremendous influence on performance of both lettuce and celery crops.

"*United States Department of Agriculture Strains.*

"*Spring Crop.*—Frame seeded March 10th; field planted April 15th.

"*Fall Crop.*—Field seeded July 21st.

"All plots contained 100 plants.

"This series comprises a number of strains not named and apparently still under test by the U.S.D.A. services.

"*Spring Crop.*—Checked May 30th and June 11th.

"*Summer Crop.*—Checked July 3rd.

"*Fall Crop.*—Checked September 30th and October 23rd.

"*Plot 1: U.S.D.A. No. 10899M.*—May 30th: Heads large, filling, not firming; mixed type. June 11th: Heads large; flat round type; light green colour; filling uneven through mixed type; type solid; good texture; high quality; 70 per cent. fit to cut; no tip-burn or slime. (Very good.) July 3rd: Heads large, coarse, well filled and solid; texture medium coarse; type mixed; high quality; 50 per cent. fit to cut; no tip-burn or slime. (Very good.) October 23rd: Mixed type; heads developing unevenly; small size; developed heads solid; fair texture; sweet, good quality; very slight frost-injury; uneven development worst fault. (Good.)

"*Plot 2: U.S.D.A. No. 14787*M.M.—May 30th: Large, open-growing plant; coarse deep green leaves and heavily serrated; type mixed. June 11th: Heads medium size, round flat; filled and solid; texture coarse; flavour bitter; quality fair; 80 per cent. fit to cut; no tip-burn or slime. (Fair to good.) July 3rd: Heads medium, open plant; type mixed; filling and firming unevenly; texture coarse; flavour bitter; fair quality; cutting uneven; no tip-burn or slime. (Fair.) October 23rd: Strong growing open plant; heavy green leaves; heads medium to large; round flat; type mixed; filled and solid; texture medium coarse; flavour slightly bitter; quality fair to good; 100 per cent. cut; no frost-injury. (Very good.)

"*Plot 3: U.S.D.A. No. 12149*M.M.—May 30th: Large growing, fairly open, pointed; uniform type; pale green colour. June 11th: Heads large, filled but not firming evenly; texture fair; flavour bitter; quality fair to good; 55 per cent. fit to cut; tip-burn and slime medium. (This variety doubtful.) July 3rd: Strong growing open plant; pointed type; heads medium large; filled but firming slowly and unevenly; texture fair; flavour bitter; quality fair to good; a few heads fit to cut; slight tip-burn. (Fair.) October 23rd: Heads filled, fairly solid; pointed type; uneven; texture medium fine; no bitterness; quality good; 75 per cent. cut; slight frost-injury on wrappers. (Good.)

"*Plot 4: U.S.D.A. No. 12173*M.M.—May 30th: Plants medium size; compact; Iceberg type and mixed; slightly pointed; foliage fine texture; colour, pale yellow green. June 11th: Heads medium size, filled but uneven firming; solid; good texture and quality; 50 per cent. fit to cut, others will harden; slime and tip-burn medium. (Promising.) July 3rd: Plant and head medium size; Iceberg type; mixed; filling good, but loose; inclined to blow; pale yellow colour; tip-burn severe. (Doubtful.) October 23rd: Heads filled but firming slowly and unevenly; texture medium fine; good quality; 25 per cent. fit to cut; slight frost-injury on wrapper-leaves. (Fair.)

"*Plot 5: U.S.D.A. No. 13744*M.—May 30th: Plant compact; medium size head; uniform type; round head; leaf nice texture; good green. June 11th: Head medium size, filled and solid; good type and form; uniform; texture fine; quality good; very slight bitterness; 80 per cent. fit to cut; no tip-burn or slime. (Very good.) July 3rd: Plant compact; medium size; round uniform type; filled and solid; texture fine; quality good; 60 per cent. fit to cut; tip-burn medium. (Good.) October 23rd: Plot and type uniform; head medium size, well filled and solid; fine texture and quality; 100 per cent. fit to cut; frost-injury medium in top leaves. This plot was fit to cut ten days earlier. (Very good.)

"*Plot 6: U.S.D.A. No. 14593*M.M. *(Black Seeded).*—May 30th: Plant fairly compact; medium size; type uniform but slightly mixed; flat round head; colour pale green. June 11th: Heads medium size, filled and solid; type mixed; texture and quality good; very slight bitterness; 90 per cent. fit to cut; tip-burn and slime medium. (Good.) July 3rd: Plot fairly uniform; mixed type; medium size; round, partly pointed head; texture and quality good; filled but not firming; inclined to blow; no tip-burn but bad basal rot. (Doubtful.) October 23rd: Plot not uniform; type mixed; well filled but firming slow; good texture and quality; 50 per cent. fit to cut; frost-injury light. (Promising.)

"*Plot 7: U.S.D.A. No. 15461*M.—May 30th: Plant large, loose, strong-growing plant; type mixed; flat round and pointed heads; colour good green; quick development. June 11th: Heads large, filled and solid; type mixed; texture coarse; flavour bitter; quality fair to poor; a good grower and early cutting; slightly over size and doubtful quality; 85 per cent. fit to cut; tip-burn or slime very slight. (Very promising.) July 3rd: Large plant; good type; heads large, well filled, and solid; texture coarse; quality fair; 70 per cent. fit to cut; tip-burn medium. (Very promising.) October 23rd: Plant heavy grower; large head, well filled and solid; texture coarse; quality good; 90 per cent. fit to cut; no frost-injury. (Very good.)

"There is some very interesting material in this series, well worthy of more extended trials. The variability of performance in the different period plantings is not entirely varietal, as the summer and fall crop plots were subject to soil-moisture saturation, also somewhat abnormal climatic conditions."

Celery Variety Trials.

All of the work in testing celery was undertaken in the Okanagan Valley at Armstrong, in co-operation with W. C. Boss of that place. Mr. Evans, District Field Inspector, who was in charge of this project, submits the following report:—

"This series continues the project of testing new strains and varieties of celery in an effort to find the most satisfactory types for production on the peat-muck soils of North Okanagan. The plots included both yellow and green types. Seasonal conditions were subnormal. Lower temperatures and high summer precipitation prevailed through the greater part of the growing season.

"The spring crop only is recorded. The fall crop was completely destroyed by ants in the cold frames at the seedling stage and the operator considered it too late at that time to reseed.

"Excellent cultural attention was given the plots by the operator. An early examination of the plots on June 24th revealed bolting in Plots 1, 4, and 8.

"Plots 1/100-acre each. Frame seeded March 28th; field planted May 6th; records taken July 21st and August 6th.

"*Stocks of Seed-house No. 1.*

"*Plot 1: Improved Long Joint Wonderful (Yellow).*—July 21st: Head medium tall; heavy head; medium thick stalk; brittle; mild flavour; fit for market; ten plants bolted. August 6th: Heads past best market condition; no more bolt; 115-day celery. (Good early.)

"*Plot 2: Secaucus Green (Semi-green).*—July 21st: Head and stalk heavy; medium tall; very brittle; mild flavour; high quality; ready for market; light suckering; fourteen bolted. August 6th: Heads still in excellent market condition and maintaining quality; twenty-five bolted; 115-day celery. (Good semi-green for succession.)

"*Stocks of Seed-house No. 2.*

"*Plot 3: Masterpiece (Yellow).*—July 21st: Head short, heavy; stalk thick, solid, slightly stringy; medium suckering; fair flavour and quality; ready for market; twenty heads bolted. August 6th: Heads in good condition; more stringy and twenty-six plants bolted; 110-day celery. (Fairly early type; too short.)

"*Plot 5: Utah (Green).*—July 21st: Head medium tall; heavy, thick stalk, green; light suckering; stalk brittle; strong flavour; high quality; not fit to market; five plants bolted. August 6th: Head thick and heavy; just ready for market; slightly bleaching; no further bolting; 130-day celery. (Good for succession.)

"*Plot 6: Utah No. 99 (Green).*—July 21st: Head tall, medium heavy, open head; stalk medium thick, very brittle, solid; very strong flavour, good quality, dead green; plant heavy suckered; two plants bolted. August 6th: Head adding weight, dead green, not ready to market; ten plants bolted; long season; late type suitable for main crop; 140–145 day celery. (Good main crop; very promising.)

"*Plot 7: Tall Utah No. 10 (Green).*—July 21st: Head tall and heavy; stalk thick, solid, brittle; good flavour and quality; light suckering. August 6th: Head tall and heavy; good form; quality very good; excellent market condition; one plant bolted; 130–135 day celery. (Excellent qualities.)

"*Plot 8: Epicure (Semi-green).*—July 21st: Head large and tall; stalk thick, solid, very brittle; good flavour; high quality; medium bleach; medium suckering; seven plants bolted. August 6th: Plot in excellent condition, ready to market; ten plants bolted; medium bleach; 125-day celery; good succession type. (Excellent qualities.)"

Raspberry Variety Trials.

The raspberry variety trials are a continuation of the work which horticultural officials have been conducting in their respective districts for a number of years. Amongst the varieties being tried there are two which are of outstanding interest. These are the Washington and Tahoma, two Washington State introductions. It is

hoped that by the end of 1942 some idea of their value in the various districts will be available. Many other varieties are also on trial, with varying results in different districts.

Strawberry Plant Selection Work.

In the main producing strawberry districts plant selection has been encouraged by horticultural officials. The purpose of this work is to build up the production per acre and it is believed that this can be done by selecting planting stock from high-producing parent plants and free from disease.

In the Fraser Valley the work that has been done in that area is commented on by G. E. W. Clarke, District Horticulturist, in his annual report. The following is quoted from Mr. Clarke's report:—

"A few growers are giving more attention to the selection of strawberry plants and particularly the British Sovereign variety to improve the source of stock for plant propagation. Plantings of selective healthy vigorous plants in comparison with the ordinary planting of plants as has become the general practice among growers have shown a marked superiority. Yields of from 4 to 6 tons, and in a few cases even a larger tonnage, have been noted under similar conditions and culture. Less disease has been apparent even in some plantings at three and four years.

"Plant selection is being undertaken by members of the South Fraser Farmers' Union and the number of growers becoming interested in increasing.

"The Marshall variety of strawberry is grown by some growers for the manufacturers and jam requirements. The McKim Bros., on Lulu Island, obtain yields of over 6 tons to the acre and while management and culture is an important factor, inspected and certified imported Marshall plants have been definitely demonstrated to be superior to plants as formerly obtained and grown."

Similar work has also been carried out on Vancouver Island by E. W. White, District Horticulturist, who reports as follows:—

"This project, which was being carried out in conjunction with E. C. Reid, Assistant in Horticulture, Dominion Experimental Station, reached a further stage this year. Mr. Reid left his position early in the year to join the armed forces and is now on duty in Great Britain. However, plans already made were carried out by E. R. Hall, Acting Superintendent. The selected plants, which were propagated last fall, were set out in a plot this spring, together with other selections and varieties. The source and number of the plants were as follows: H.C.O., 65 plants; D.H., 186 plants; W.H., 145 plants; and W.B., 42 plants. The ground was well prepared and the plants went in in good shape and made good growth. The plot was kept clean up till about the middle of June when the runners were allowed to develop at random. With the rains of September and lack of labour the plot became very weedy. However, there will be a good supply of stock plants available to growers in the spring to start a propagating bed. It is not intended to keep the strains segregated any longer."

Greenhouse Tomato Trials.

Work with Vetomold tomato and the origin of this variety was mentioned in last year's report. After the passing of a year it is interesting to note the resistance of this variety to mould and the view-point of the growers on the variety in question. This information is perhaps most clearly expressed by E. W. White, District Horticulturist, in his report, in which he says:—

"This variety was grown quite extensively by all greenhouse operators as a spring crop and again proved quite resistant to mould, but in some cases mould was prevalent. The fall crop was practically all Vetomold and it developed a heavy infection of mould. It is now stated by the plant pathologists that a new strain of mould has developed to which Vetomold is susceptible. This same condition has also developed in Ontario. However, despite the mould infection, the operators of one large greenhouse plant have stated that they had the best fall crop this year that they have had for years. It should be stated that the month of September was one of the worst in years as far as greenhouse operators were concerned, who were growing a fall crop of tomatoes.

Aside from mould infection, Vetomold has proved just as good or even a better type of greenhouse tomato than Best of All, being somewhat milder, firmer, and just as good quality.

"It would appear that Vetomold will be grown again next year as a spring crop; in fact, many greenhouse operators already have their plants of this variety coming along at the present time.

"In August a brief report on the performance of Vetomold in this district was submitted to O. J. Robb, in charge of vegetable breeding at Vineland Experiment Station, Vineland Station, Ontario, and in reply Mr. Robb stated that the same condition as prevailed in British Columbia had occurred in Ontario. Mr. Robb was kind enough to forward two packets of a strain of tomato known as "V 121." This selection is not classed as immune to certain strains of mould such as Vetomold was, but is resistant to all strains. One packet of this seed was given to Riddle Bros. and the other to H. F. Creed for trial as a spring crop in comparison with Vetomold."

Apple-scab Control.

Apple-scab control-work has been carried out in both the Northern Okanagan and Kootenay Districts for a number of years. In the Okanagan the work undertaken has been, to a large extent, a check up on new fungicides suitable for scab-control alone or in combination with other sprays. This work has been undertaken by H. H. Evans, whose report on the past season's work follows:—

"This project continues the apple-scab control-work for the North Okanagan. Scab infection was very light to medium over the district in 1941. From the fruit check made by G. E. Woolliams, Plant Pathologist, the only plot on the experimental block showing infection was the unsprayed check. This showed a 6-per-cent. light infection, which indicates the fruit was marketable. Ten plots comprised the series. The pre-pink spray was applied April 27th, calyx May 13th, and cover-spray June 3rd.

"The materials used were lime-sulphur, sulphoron wettable sulphur, Bartlett's wettable sulphur, and manganese sulphate. Calcium arsenate was added to all sprays on all plots.

"Checks of the plots were made approximately ten days following the calyx and cover applications for evidence of spray-burn. Slight leaf-spotting and edge-burn of fruit-spur cluster leaves was observed only on plots where manganese sulphate had been added to the sulphur sprays. This occurred following calyx application. The amount and type of injury was not sufficient to be considered at all detrimental.

"The 1–40 lime-sulphur plots showed slightly off colour early in the season, but recovered later. All other plots showed good colour tone throughout the season and normal leaf development.

"From our several seasons' work with the wettable sulphurs, and results obtained, they appear to have firmly established their value in apple-scab control, in combination with and supplemental to liquid lime-sulphur, and can safely be recommended in the scab-control programme for the Enderby to Okanagan Centre section of the Okanagan."

In the Kootenay District apple-scab control-work as carried out by E. C. Hunt, District Horticulturist, is reported on by Mr. Hunt as follows:—

"Apple-scab in this district was very bad this past season, and some of the worst infected fruit was found in some of the orchards where apple-scab was never so very prevalent. The disease had started to build up from 1940, a bad scab year, and in these areas about one scab spray is all that is applied, with the result that a very heavy infestation of the disease developed on McIntosh Red, Newtown, and a few other varieties to a less degree. In well sprayed orchards, even the McIntosh were quite clean but, on the whole, spraying operations were not so thoroughly carried out this year as other years. The season was bad for spraying, windy and a lot of rain, that delayed the work. Spray-injury also was much more prevalent this year than usual. Considerable foliage-injury showed up, particularly on Cox's Orange and Jonathan, and it did not seem to make much difference just what spray materials were used. Injury from lime-sulphur 1 to 60 alone and in combination with calcium arsenate or arsenate of lead. Also some arsenate of lead injury where used alone.

"Your assistant did some supervising spray-work for the control of apple-scab in the Willow Point area on McIntosh Red. In all, four sprays were applied every two weeks, starting with the pink. At picking-time counts were made on the apples harvested (light crop) and out of a total of 3,158 apples only 135 were scabby, which is better than 95 per cent. clean fruit. The material used was lime-sulphur 1 gallon to 60 of water plus calcium arsenate 4 lb. to 100 gallons of spray mixture. Apple-scab control-sprays were also under test at Queens Bay in the Attree Bros. orchard, variety Rome Beauty. Plot 1 had four sprays and Plot 2 five sprays. Plot 3, check, no spray. Material used was lime-sulphur 1 gallon to 60 of water plus 4 lb. of calcium arsenate to 100 gallons of the spray mixture. First spray was the pink and applications were made every two weeks after that. The apples on one tree in each plot were counted at picking-time with the following results: Plot 1, with four sprays, a total of 995 apples, of which 987 were clean, or a percentage of 99.20 clean fruit. Plot 2, with five sprays, a total of 847 apples, of which 841 were clean, or a percentage of 99.29 clean fruit. Plot 3, check, no spray, had 333 scabby apples and 140 clean apples on the tree, or 70.40 per cent. scabby fruit and 29.60 per cent. clean fruit. On the above results the fifth spray in the control of apple-scab on Rome Beauty was not necessary, even in a bad scab year as in 1941. The fruit with four sprays was just as clean as where five sprays were applied."

Tarnished Plant Bug Control.

This control-work was carried out during the past season in the Penticton District and under the supervision of R. P. Murray, District Field Inspector, who reports as follows:—

"The ordinary measures recommended for controlling tarnished plant bug have not given very satisfactory results. Even under clean cultivation, some peach orchards have suffered severely from this pest.

"Losses from tarnished plant bug to the peach-grower have been more serious in many cases than the codling-moth to the apple-grower, as the peach-grower has been more or less helpless in fighting this pest. A 40-per-cent. loss from tarnished plant bug damage on peaches has not been uncommon, and many growers depending on peaches for their main source of revenue have been hard hit.

"In order to try and find some method more effective, this office tried out on a small scale an experiment with pyrethrum dust. This is the first time a trial of this nature has been made in the Province to control tarnished plant bug, and was so successful, it should be tried on a much larger scale during the coming year.

"This year about 3 acres of Vedette and Rochester peaches, that have been badly damaged for the last three years, were used for the dusting trials. These trees are about 6 years old and growing in an extremely heavy cover-crop of alfalfa. The check was a plot of about 1 acre of Vedette of the same age, growing under similar conditions as the dusted trees. Pyrethrum dust was applied just before the blossoms opened and again just as the blossoms were falling. The counts were made when the peaches were about the size of walnuts and were as follows:—

	Per Cent.		Per Cent.
Vedettes, not dusted	19.3	Vedettes, dusted	2.9
Rochester, not dusted	22.0	Rochester, dusted	6.8

"The poorer control on Rochester may be accounted for by the fact that this variety has been the most heavily damaged by tarnished plant bug of any of the peach varieties grown in this section. The duster used was a small "Friend" on skids, powered with a 2½-horse-power gas-engine and a 4-inch discharge-hose. The unit was carried on a Model A Ford truck. The cost was approximately $6 per acre for material and the plot of 3 acres was done in slightly over an hour."

Cover-crop Work.

The maintenance of humus in orchard soils is a problem that is always before growers. In some areas cover-cropping is almost impossible due to lack of irrigation

and low rainfall. In other sections, due to the tree-growth, the maintenance of a satisfactory cover-crop is difficult.

The possibility of orchard mulching is being considered in the Salmon Arm District. The project in mind is briefly outlined in the following report by C. R. Barlow, District Field Inspector for that section:—

"One of the major problems confronting orchardists in the Salmon Arm area is that of maintaining orchard soils in good physical condition, soil-fertility, and the conservation of soil-moisture. In many instances alfalfa is available, or could be made so, for use as a mulch in the orchards. Because scant information is available as to the results obtained by following out such a practice, it is planned to carry out next year, in the orchard of Mrs. M. Scott at Salmon Arm, an experiment on an area of about 1½ acres of fully mature McIntosh Red and Wealthy apple-trees, using alfalfa as a mulch. The object of the experiment will be to study the costs involved by following out such a practice, the response of the trees as to yields and quality of fruit, growth, etc., and its effect upon soil conditions. The details of the experiment have not yet been fully worked out but it is hoped that the project will be under way next year."

In so far as actual cover-cropping is concerned, the work that is being done in both the Vernon and Penticton Districts is worth noting. In the Vernon District H. H. Evans reports as follows:—

"In the spring of 1941 a cover-crop project was laid down on an 8-acre orchard block of McIntosh owned by S. Advent. The object of this work is dual: (1) To obtain data on tree reaction and soil-building possibilities of various types of cover-crop plants, and (2) as a medium for the Dominion Entomological staff to study the environmental preference to such crops of hibernating codling-moth larvæ.

"It is a known fact that these larvæ are utilizing the dead, hollow stems of sweet clover, alfalfa, and weeds for hibernation, thus adding to the difficulty of controlling this pest.

"The time may not be far distant when orchard sanitation may demand some change in our present cover-crop programme.

"Early information which it is hoped this project will provide may be of value when the time for such a change arrives.

"The block is divided into six plots as follows:—

		Acres.
Plot 1.	Alfalfa	1½
Plot 2.	Yellow sweet clover	1½
Plot 3.	Kentish wild white clover	1
Plot 4.	Grasses (Kentucky blue, meadow-fescue, perennial rye)	1
Plot 5.	Barley	1½
Plot 6.	Oats	1½

"Excellent stands of alfalfa, sweet clover, and the grasses were obtained. The Kentish white-clover catch was spotty and will need some reseeding.

"The grain-crops made a fair but not heavy stand; poor seeding conditions and heavy shade was partly responsible. The owner has shown keen interest to co-operate in the work."

In the Penticton District R. P. Murray, reporting on the cover-crop work carried out there, makes the following statement:—

"As reported previously, an attempt has been made to find some cover-crop suitable for heavily shaded orchards, where it is almost impossible to obtain a stand of sweet clover or alfalfa. Various grain-crops, as well as Sudan grass have been tried, and many of them, as well as the Sudan grass, discarded, generally because of failure to produce sufficient tonnage of material.

"This season a further change was made. Arrangements were made to have the use of 3 acres for a period of years, if necessary, and include alfalfa and sweet clover with the annual grain-crops. At the present time there is ½ acre of sweet clover, ½ acre of alfalfa, and 2 acres of grain. These plots will also be used by the Entomological Branch to study over-wintering codling-moth larvæ in cover-crop orchards.

"The usual practice is to broadcast sweet clover and alfalfa on fresh disking and cover with a harrow. This method has been tried in this orchard with indifferent results. This season a small hand-seeder was used, the seed drilled in rows about 18 inches apart, and a fine stand resulted. Whether it was due to the method of seeding or the wet showery weather it is difficult to say; probably both had some influence in obtaining a stand of these two crops. Six pounds of seed per acre was used. The spring grain consisted of oats, beardless barley, and spring wheat. This was seeded April 10th and disked under June 24th. At this time all the grains had headed with the grain in the milk stage. Samples were taken from each plot. The crop was pulled by hand and the roots well shaken, weighed, and measured to find the difference, if any, in the amount of material returned to the soil.

Crop.	Average Length of Straw. Inches.	Green Weight per Acre. Lb.
Oats	34.9	26,016
Spring wheat	32.8	19,662
Beardless barley	39.2	16,132 "

In addition to the horticultural demonstration-work which has already been detailed in the preceding part of this report there is other work being undertaken. The following headings give at least an indication of some of the main projects being carried out in the different horticultural districts:—

Vancouver Island.....Strawberry Plant Selection; Raspberry Variety Trials; Thornless Loganberry Trials; Loganberry Plant Selection; Cherry Rhubarb Trials; Lettuce Variety Trials; Greenhouse Tomato Trials; Boron Trials with Cauliflower.

Lower Mainland.....Strawberry Plant Selection; Raspberry Variety Trials; Tomato-selection Work; Lettuce Variety Trials; Celery Variety Trials.

Okanagan.....Test of Hardy Intermediate Fruit Stocks; Codling-moth Spray Tests; Codling-moth Demonstration Spraying; Cover-crop and Fertilizer Trials; Apple-scab Sprays; Trials with Hormones for Apple-drop; Peach-mildew Control; Lettuce and Celery Trials; Corn Variety Trials; Edible Soya-bean Trials; Tarnished Plant Bug Control; Raspberry Variety Trials.

Kootenay.....Potato-beetle Control; Mealy-bug Control; Little Cherry Control; Apple-scab Sprays; Raspberry Variety Trials.

GENERAL.

At the present time there is listed by the Agricultural Department a fairly comprehensive set of circulars and charts dealing with horticultural matters. The horticultural staff attends to the revision and reissuing of these as required.

Reports are compiled from time to time on horticultural subjects, the most important being the Horticultural News Letter and the monthly estimate of fruit production. These are published during the summer months.

ACKNOWLEDGMENT.

Your Horticulturist wishes to take this opportunity of acknowledging the assistance which his staff has received at all times from the officials of the Dominion Department of Agriculture as well as from the staff of the University of British Columbia.

REPORT OF PROVINCIAL PLANT PATHOLOGIST.

J. W. EASTHAM, B.Sc., PLANT PATHOLOGIST.

Special delivery tags, totalling 1,025, were issued during 1941, of which 627 have been accounted for to date. In addition, 50 tags were issued for greenhouse stock. These figures are about the same as for last year, except that returns are fewer; due, no doubt, in part to the earlier preparation of this analysis. Of the orders filled under these tags, 256 contained bulbs, 356 ornamentals, 42 asparagus and rhubarb, 42 strawberries, 25 fruit-trees, 9 small fruits, and 3 grapes. In addition, 68 shipments not provided with tags were inspected at Vancouver. These included commercial shipments of 600 lilac plants and 300 Tartarian honeysuckle; two of onion sets, each of 3,000 lb.; one of 1,500 gladiolus corms; and several of caragana and hardy fruits for the eastern part of the Province; while the remainder were mostly non-commercial shipments from private gardens, chiefly herbaceous perennials.

NEW WEEDS.

Chorispora tenella (Pall.) DC.—This is an annual plant of the family Cruciferæ which has, as yet, received no English name. The following botanical description may help in recognizing it. Height, 4 to 14 inches; basal leaves, 1 to 3 inches long, numerous, in a rosette, lance-shaped, pinnately lobed, glandular-puberulent, stalked; stem leaves toothed to entire, shortly stalked; flowers with short stalks; sepals ⅛ to ⅕ inch long, oblong, green or purplish; petals red-purple in colour, ⅓ to ½ inch long with a slender claw; pods 1¼ to 1¾ inches long, breaking across into numerous single-seeded joints.

A large patch of this plant was found growing by the side of a ditch south of Kaleden in 1940. In the spring of 1941 specimens were brought in to the District Field Inspector at Penticton by a rancher who reported that it was becoming a bad weed and that live stock, both cattle and sheep, refused to touch it. The plant, when fresh, is rather succulent but has a somewhat disagreeable smell when crushed. Only one reference to this plant has been located—namely, in St. John's "Flora of Southeastern Washington and Adjacent Idaho"—which gives a description from which the above is adapted and states that it is a weed "recently introduced from Siberia" and cites two collections: "Lewiston, Idaho, 1929, and Spokane, Washington, 1935."

It is too early to predict how it will behave in our territory. Like some other plants of the mustard tribe it may spread extensively on overgrazed ranges in the Dry Belt without becoming a weed of cultivated land.

Cow Parsnip (*Heracleum lanatum* Michx.).—This is a large coarse perennial of the parsnip family. It may reach a height of 7 feet with leaves nearly 1 foot in length divided into broad segments and flat-topped umbels of white flowers 6 to 12 inches across. It is common throughout the Province in moist ground, but is not a weed in the ordinary sense and does not persist in cultivated land. However, it is a host of the Parsnip Webworm (*Depressaria heraclina* DeG.). This insect has proved a serious pest in parsnips grown for seed, webbing the umbels together and feeding on the flowers and young seeds. It would be well, therefore, for growers of parsnips for seed to eradicate this plant from the vicinity of their parsnip fields.

NURSERY INSPECTION.

Early in June an inspection for virus diseases was made of all stone-fruits in the more important nurseries at the Coast. These stocks were found very free from virus symptoms with the exception of two varieties of plums, which showed peculiar leaf appearances wherever found. The exact nature of this condition has not yet been established.

MISCELLANEOUS.

About 1,000 sheets have been added to the herbarium, which now comprises a good working collection of native plants, especially grasses and other forage plants, weeds, and poisonous plants. Numerous plants have been identified for correspondents, a more

recent feature being real or supposed medicinal plants. In addition to the large number of routine inquiries at the Vancouver office on plant diseases and insect pests, local florists are making much use of this office for the identification of unusual garden plants, a service which, while interesting, consumes a good deal of time.

"LITTLE CHERRY" DISEASE OF THE KOOTENAYS.

In previous reports mention has been made of the separate application of such materials as boric acid, magnesium, and zinc with negative results. Other materials have also been separately tested by E. C. Hunt. However, as a final test of whether or not nutrition is a factor in the development of the disease, a mixture containing the ordinary fertilizer elements N, P, and K, together with all minor elements that have been shown to be essential to one plant or another was obtained. This contained the elements iron, magnesium, sulphur, boron, manganese, copper, aluminium, lead, arsenic, calcium, zinc, and cobalt. An orchard was selected in which growth of the trees was excellent owing to the liberal use of barnyard manure, but the size and quality of the fruit as poor as in an uncared-for orchard. Two plots of five Lambert trees were employed and the material applied to the soil in two instalments—October, 1940, and May, 1941. Two similar plots of Lamberts were left as checks.

Measurements of the mature fruits were made, 100 fruits being taken at random from each of four treated and four untreated trees. The average maximum diameter of the 400 fruits from treated was 18.9 millimetres and of the 400 untreated 19 mm. These results seem to finally dispose of nutrition as a factor.

Virus Nature of "Little Cherry."

Buds from severely affected trees from the Nelson District were taken by Mr. Foster and on July 31st, 1940, these were put into three fruiting Lambert trees at the Dominion Experimental Station, Saanichton. These trees had all borne normal fruit in the preceding years. At the same time buds were placed in ten Mazzard seedlings in the virus testing nursery at the Dominion Pathological Laboratory, Saanichton. Data were taken July 5th, 1941, about four days earlier than desirable on account of the fruit being attacked by birds. On account of this, also, one of the three trees had to be discarded. One hundred fruits taken at random from each of the two remaining budded trees—i.e., 200 in all—gave an average maximum diameter of 17.57 millimetres, while that of a similar number of fruits from two check-trees gave 21.16 mm., a difference of 2.59 mm. The fruit from the budded trees also had the dull finish and lack of flavour associated with "little cherry" in the Kootenays, and seemed identical in every way. While the results obtained indicate a virus is responsible it would have been better if more trees could have been used and also if those apparently infected could have been left for another year. As it is, they were taken out immediately after the data were recorded for fear of spreading the disease.

As was to be expected, seeing that no symptoms other than those on the fruit have been observed on bearing trees, the budded mazzard seedlings showed no recognizable symptoms.

Further Work on "Little Cherry."

Assuming, as indicated above, that this disease is of virus nature it is of great importance to know whether the native wild cherries are susceptible to the disease. This is highly probable from what is known of other virus diseases. The wild cherry (*Prunus emarginata*) is particularly abundant in the Kootenay Lake area and the choke-cherry (*P. demissa*) also occurs. Many trees adjacent to affected orchards were examined but no definable symptoms were observed. Owing to the small size and thin flesh of the fruit of these wild species this is to be expected, and does not indicate that they are not susceptible to, or carriers of, the disease. Buds from trees adjacent to one of the most severely affected orchards have been placed on two bearing Lambert trees at Saanichton and it is hoped that definite results may be obtained. It is much to be desired, however, that where so much depends on the result, the experiments could be made on a larger scale.

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As there is undoubtedly a difference between different varieties in the extent to which the fruit is affected—e.g., Royal Anne shows the effects much less than Lambert—it has been thought desirable to test the effects of different stocks on resistance. Four stocks, Gold, Mazzard, Mahaleb, and Royal Anne have been budded to Bing and Lambert. The trees will then be distributed to growers in the affected area for testing.

The following is a summary of the report of the Assistant Plant Pathologist, W. R. Foster:—

Spray Injury on Pears.

In 1940 considerable leaf injury of pears resulted from a combination spray of lime-sulphur and lead arsenate. The amount of injury was different on different varieties. The table shows the average estimated damage of the leaves on the trees of each variety at Saanichton. The sprays given consisted of lime-sulphur 1–35 with the addition of 3 lb. of lead arsenate to 100 gallons of mixed spray; time of application, pink, calyx, and three weeks later.

Variety.	Average Percentage of Leaf Area damaged.
Anjou	15
Barry	5
Bartlett	5
Besi de Chaumontel	35
Beurre d'Amanlis	5
Beurre Diel	10
Beurre Hardy	5
Bosc	8
Boussock	13
Cayuga	----
Charles Ernest	5
Clairgeau	23
Clapp's Favourite	10
Conference	10
Dr. Jules Guyot	2
Doyenne d'Alencon	8
Doyenne de Comice	15
Easter Beurre	5
Ewart	5
Farelle	50
Flemish Beauty	5
Fondante Thirriot	5
Glou Morceau	40
Gorham	1
Howell	----
Louise Bonne de Jersey	15
Madame Ballet	5
Madame Ernest Baltet	50
Nouvelle Fulvie	12
Ovid	5
Phelps	1
President Deviolaine	22
Pulteney	10
Royale Vendee	10
Seckel	20
Sheldon	8
Souvenir du Congress	5
Triomphe de Vienne	10
Vicar of Winkfield	5
Virginie Baltet	15
Willard	5

Bunt in Northern Okanagan.

(W. R. Foster in collaboration with H. H. Evans and the Cereal Division, Central Experimental Farm, Ottawa.)

A considerable reduction in the amount of bunt has taken place in recent years in the Northern Okanagan, owing to the introduction of resistant varieties: Ridit, Oro, Hussar, and Albit. Growing these resistant varieties has given a practical control, but better varieties or hybrids are being continually sought. The results of tests conducted this year showing percentage of bunt and yield of a number of hybrids developed by the Cereal Division, Ottawa, are given in Table I.

Date of seeding as a means of preventing soil-borne infection of bunt does not appear to be of much practical importance in the Northern Okanagan. Early seeding (September 5th), Table II., gave a lower percentage of bunt and a high yield this year, but is unsatisfactory in at least four out of ten years owing to a lack of ample soil-moisture.

Table I.—The Resistance of Different Varieties and Hybrids to Soil-borne Infection to Bunt and their Yield at Armstrong, B.C., in 1941.

Variety.	Bunt, Per Cent.	Yield, Bushels per Acre.
Ridit	Trace	41.2
Jones Fife	8.0	46.2
Albit	0.0	30.0
1964—3 D.G.C. x Ridit	6.0	38.8
1968—18 D.G.C. x Ridit	Trace	40.0
1968—19 D.G.C. x Ridit	0.0	51.2
1968—24 D.G.C. x Ridit	Trace	37.6
1969—17 D.G.C. x Ridit	0.0	31.2
2619 A-D.G.C. x (D.G.C. x Ridit)	Trace	41.2
2619 C-D.G.C. x (D.G.C. x Ridit)	Trace	40.0
2619 E-D.G.C. x (D.G.C. x Ridit)	Trace	48.8
2619 H-D.G.C. x (D.G.C. x Ridit)	1.0	43.6
2619 M-D.G.C. x (D.G.C. x Ridit)	4.0	35.0
2619 P-D.G.C. x (D.G.C. x Ridit)	Trace	48.8
2619 R-D.G.C. x (D.G.C. x Ridit)	2.0	45.0
2619 S-D.G.C. x (D.G.C. x Ridit)	Trace	46.2

Table II.—The Effect of Different Dates of Seeding on the Percentage of Bunt and Yield in the Jones Fife Variety at Armstrong in 1941.

Date of Seeding.	Bunt, Per Cent.	Yield, Bushels per Acre.
September 5	18	60.1
September 15	35	53.3
September 25	39	56.0
October 5	52	38.8
October 15	64	30.9
October 25	54	29.0

Dark-berry of Cotoneaster.

(Due to *Phytophthora cactorum*. *See* Annual Report for 1939.)

Copper-containing sprays—Bordeaux, Bordeaux plus Agral 2, Bouisol, and Bordinette—were very effective in preventing this disease on *Cotoneaster horizontalis*. One application on October 1st in 1940 was all that was necessary to give excellent control. Monthly examination of the experimental plots did not show any appreciable difference between the different copper sprays. The adding of the spreader, Agral 2, did not have any effect.

A paper on this disease is in preparation for publication in "Scientific Agriculture."

The Effect of Copper-containing Sprays on the Dark-berry of Cotoneaster.

Treatment.	Estimated Percentage of Unaffected Berries.					
	Oct. 1.	Nov. 1.	Dec. 1.	Jan. 3.	Feb. 3.	Mar. 3.
No treatment	98	35	15	10	2	1
Bordeaux 4–4–40	98	90	85	80	75	50
Bordeaux 4–4–40 plus Agral 2	98	90	85	80	75	50
Bouisol	98	90	85	80	75	50
Bordenette	98	90	85	80	75	50

Fertilizer Experiments at Creston.

(W. R. Foster in co-operation with J. R. Thorpe, Superintendent of the Sub-experiment Station at Creston.)

Fertilizer experiments started in 1939 (*see* Annual Report, 1939) were continued in 1940. The data *re* results for 1940 were not ready in time for the report of that year. The objects of the experiments are to determine:—

(1.) The effect of different chemical fertilizers on the yield and quality of wheat.

(2.) The cause of floret sterility which caused a considerable reduction in yield on Nick's Island in 1938.

The different chemicals were seeded with Red Bobs wheat with a Kemp rod-row seeder, on poor soil. Each plot consisted of five rows 1 foot apart and 18.5 feet long, each treatment being replicated four times. The results given in the following table show that the soil required nitrogen, phosphorus, potassium, and manganese. The fertilizer mixture 6–10–10 at the rate of 100 lb. per acre plus 30 lb. of manganese sulphate produced the greatest yield. The fertilizer mixture of 6–10–10 alone was nearly as good.

The Effect of Different Fertilizers on Yield of Wheat, Weight per Bushel, etc., at Creston.

Fertilizer.	Plot No.	Weight per Bushel.		Weight of 1,000 Kernels.		Yield per Acre.	
		Plot.	Average.	Plot.	Average.	Plot.	Average.
		Lb.	Lb.	Gm.	Gm.	Bu.	Bu.
N	1	59.5		30.0		14.2	
	14	60.0		36.0		15.8	
	27	59.5		33.0		11.0	
	40	60.5	59.9	34.5	33.4	16.0	14.3
P	2	58.5		32.0		11.8	
	15	59.0		33.0		17.1	
	28	59.5		31.5		12.8	
	41	60.0	59.3	35.0	32.9	14.9	14.2
K	3	60.0		32.0		14.6	
	16	58.5		33.0		15.2	
	29	59.0		33.0		13.2	
	42	58.8	59.1	34.5	33.1	14.6	14.4
N P	4	59.5		27.0		12.6	
	17	59.5		31.0		10.9	
	30	58.0		33.0		12.8	
	43	59.0	59.0	33.0	31.0	19.4	13.9
P K	5	58.8		32.0		11.3	
	18	60.5		40.0		12.2	
	31	60.0		33.0		21.4	
	44	60.0	59.8	32.0	34.3	18.9	15.9

The Effect of Different Fertilizers on Yield of Wheat, Weight per Bushel, etc., at Creston—Continued.

Fertilizer.	Plot No.	Weight per Bushel.		Weight of 1,000 Kernels.		Yield per Acre.	
		Plot.	Average.	Plot.	Average.	Plot.	Average.
N K	6	61.0		33.0		13.9	
	19	60.0		32.5		16.2	
	32	61.0		33.0		16.6	
	45	60.0	60.5	34.5	33.3	20.8	16.9
N P K	7	62.0		32.0		19.2	
	20	59.9		33.0		16.0	
	33	57.5		33.0		25.4	
	46	61.0	60.0	36.0	33.5	24.5	21.5
N P K and Boron 10	8	58.0		32.0		15.0	
	21	58.0		35.0		15.6	
	34	60.0		32.0		22.7	
	47	61.0	59.3	33.5	33.2	22.7	19.0
N P K and Mn 10	9	60.0		36.0		13.6	
	22	61.5		30.0		16.8	
	35	60.0		36.0		23.0	
	48	61.0	60.6	34.5	34.1	23.4	19.2
N P K and Mn 30	10	60.0		32.0		15.1	
	23	58.5		33.0		17.7	
	36	60.0		34.0		29.9	
	49	59.5	59.5	35.0	32.5	28.1	22.7
N P K and Mn 60	11	58.5		29.0		10.4	
	24	60.0		33.0		13.4	
	37	60.0		33.0		11.2	
	50	60.5	59.8	34.5	32.4	23.5	14.6
Mn 30	12	.....		.....		.....	
	25	58.0		33.0		12.2	
	38	60.0		33.5		12.8	
	51	60.0	59.3	34.0	33.5	18.5	14.5
Check	13	57.0		32.0		11.4	
	26	58.0		33.0		13.1	
	39	60.0		30.5		12.8	
	52	59.5	58.6	34.0	32.6	17.2	13.8

N=Ammonium sulphate.
P=Calcium acid phosphate.
K=Potassium sulphate.
Mn=Manganese sulphate at the rate of 10 to 60 lb. per acre.
Boron=Borax at the rate of 10 lb. per acre.

Sterile florets have not been serious since 1938, the year when the water-level was very high. Height of water may play an important part in the cause of sterile florets.

REPORT OF PROVINCIAL ENTOMOLOGIST.

MAX H. RUHMANN, B.A., ENTOMOLOGIST.

Due to the close proximity of the *Pear psylla (Psylla pyricola)* to our southern border in the State of Washington, a survey of the Interior fruit sections was made in early June by several officers of the Dominion Entomological Staff, assisted by four officers of the U.S. Federal Bureau of Entomology from the State of Washington, to see if this insect had crossed into this Province. In the State of Washington, particularly in the Spokane fruit areas, the pear psylla has become a serious pest. It has reached points close to our border, and may make its appearance in our pear orchards in the near future. Another psylla known as the *Tomato or Potato Psylla (Paratriosa cockerelli)* is also close to our borders in the United States and also in Alberta, and has been reported in the East Kootenay but no definite records have as yet been found.

Another Psila *(Psila rosæ)*, commonly known as the *Carrot-rust Fly*, has been recorded at some Pacific Coast points for the past five years and a gradual spread is indicated. Considerable losses have this year been experienced by commercial carrot-growers as a result of the depredations of this pest.

In the Grand Forks District a close survey was made during June and July for the *Colorado Potato-beetle (Leptinotarsa decemlineata)*. The original outbreak of this insect at Grand Forks was first noted in 1936 in a garden plot in the town and had spread to all sections of the district by the following year. Since then the infestation has been gradually reduced and this year no Colorado potato-beetles were found or reported from this district. We have had very fine co-operation from the local growers in this clean-up work. The infestation in the Creston District is reported to be much reduced both in area and intensity.

Considerable quantities of tomatoes for canning purposes are now being grown at Grand Forks. Although this is only the second year for this undertaking the *Tobacco Horn-worm (Protoparce quinquemaculata)* has already made its appearance, attacking the tomato plants. This is a large moth of the Sphinx group which is not difficult to control, as is likewise the *Tomato Sphinx (Protoparce sexta)* which has not made its appearance in this district yet.

Several species of *Cutworms* were much in evidence in these tomato-fields and caused much loss. Not sufficient plants were obtainable to replace all the plants destroyed by cutworms. In a few instances growers attempted to protect their remaining plants with a poison-bait (Paris green and bran) broadcast among them, with the result that several thousands of young plants were killed by contact with the poison-bait. Possibly these growers will, next year, bait their land for cutworms a day or two before planting.

There was an exceptional freedom from the *Onion Thrips (Thrips tabaci)* at Grand Forks, which in 1940 took a very heavy toll of the onion-crop.

The *Onion-maggot (Lylemyia antiqua)* was more active than for some years in the Okanagan Valley.

Increasingly severe infestations of the *Codling-moth (Carpocapsa pomonella)* have been noted in the Okanagan Valley for some years, and to a less extent in the Boundary country. This can, in some measure, be attributed to the extension of unusually warm weather into the late fall, thereby greatly extending the second-brood period of the codling-moth.

In June a report was received from Earl Hunt, District Agriculturist at Nelson, that a block of 300 acres of orchard at Glade was completely defoliated. An examination was made and it was found that the trees had been stripped by the *Forest Tent-caterpillar (Malacosoma disstria)*, not a vestige of green foliage having been left on a single tree. Many of these trees are low in vitality and it is probable that a number of these will die from the effects of this defoliation. Some of the trees were showing indications of new bud development in late June.

You advised me of extensive defoliation of Cottonwood trees in the Cariboo, Chilcotin, and adjacent regions by the same insect, and indicating heavy parasitism of the larvæ by a Tachinid fly. The Glade infestation was destroyed to the extent of over 90 per cent. by a Hymenopterous parasite.

After every mild winter during the past twenty-odd years, injury by the *Corn-ear Worm (Heliothis obsoleta)* is reported by growers. This is frequently reported as the European corn-borer; fortunately this is in error. This year injury by this insect exceeds any previously recorded in the Interior. This may perhaps be accounted for by three consecutive mild winters.

The usual number of fall and early spring complaints of the *Box-elder Bug (Leptocoris trivittatus)* were received. Fortunately this insect has as yet merely a nuisance value. It is known to attack various fruit-trees and grapes, but we have no records of such attacks in the Interior as yet.

A little moth known as the *Lilac Leaf-miner (Gracillaria syringella)* is causing a lot of annoyance to gardeners by making lilac hedges and trees unsightly in the Okanagan Valley.

General correspondence and library-work was attended to. Miss Bigland assisted the Horticultural Office with stenographic-work during the season, and produces the mimeographic-work for the local offices of the Department of Agriculture.

REPORT OF PROVINCIAL APIARIST.

A. W. FINLAY, PROVINCIAL APIARIST.

Bees went into winter with hives heavy with stores. A late honey-flow the previous fall had benefited colonies to the extent of filling empty brood-combs in addition to the amount usually left by the bee-keeper for wintering. Weather conditions during the winter of 1940–41 were very mild and bees were active with frequent cleansing flights nearly every month. Brood-rearing began early and colonies built up rapidly in March when favourable weather enabled them to gather pollen and nectar from the willows. Winter losses did not exceed 15 per cent. and such were mostly due to queenlessness or failing queens. The fine weather in April saw supers being placed on strong colonies, and surplus honey was accumulated to the extent that many bee-keepers started extracting by the second week in May. Bee-keepers in the Fraser Valley reported a surplus of 50 to 80 lb. of honey from fruit-bloom, dandelion, and maples at this time. Similar conditions prevailed throughout the Province, giving every indication of a record crop.

The usual gap in the honey-flow occurred during June, when there is generally merely sufficient nectar from minor sources to keep bees engaged until the main honey-flow comes later from the clovers. In July, the yield from alsike, alfalfa, and sweet clover began with a light flow, increasing daily until the middle of the month, when disaster came in the form of a heat-wave so intense that plants were shrivelled up. On light soils, clover was blasted to dried stalks and in some places alfalfa appeared cooked even under irrigation. There was an immediate cessation of the honey-flow in most districts, though in some more fortunate locations a light flow continued or was resumed later in August. Under normal conditions, this light flow usually continues for several weeks after the crop is taken off (generally about the second week in August), but incessant rains were the rule during this period in 1941, so that bees went into winter quarters very light in stores. Bee-keepers were notified regarding this condition and advised to make up any shortage of winter stores by sugar-feeding, thus avoiding the necessity for the expenditure of Canadian funds to replace colony losses by the purchase of package bees. The total honey-crop for the Province was estimated at 1,169,040 lb.

FIELD-WORK.

Field-work began in March with ideal weather conditions for apiary inspection. Systematic inspection was given in all districts where bee diseases were known to exist, and special calls attended to in other territory.

A number of field-days were arranged by the British Columbia Honey Producers' Association throughout the summer and the local Apiary Inspector was authorized to attend such meetings where held in his district, giving assistance with practical demonstrations and advice.

The appointment of W. H. Turnbull as Inspector of Apiaries for Interior districts was much appreciated by the bee-keepers in the territory concerned. He has accomplished some very good work this season with a record number of colonies examined in the Okanagan and Kootenays.

Following is a summary of the field-work done in the various districts. Although there has been an increase in the amount of new bee-keepers this year, and a considerably greater number of colonies of bees examined, the disease situation appears definitely better. A further reduction in the number of colonies destroyed on account of American foul-brood was due to the co-operative assistance of the bee-keepers themselves.

SUMMARY OF APIARY INSPECTIONS.

Inspector.	District.	Estimated.		Disease A.F.B.
		Apiaries.	Colonies.	
W. J. H. Dicks	Greater Vancouver to Haney	384	1,279	33
E. R. Freeman	Lower Fraser Valley	533	2,518	166
J. Gillespie	Vancouver Island	182	1,147	19
A. S. Homersham	Nelson	3	30	4
H. L. Johnson	Upper Fraser Valley	264	1,435	66
W. H. Turnbull	Interior	347	3,761	84
Totals		1,713	10,170	372

OFFICE-WORK.

Applications for registration of 396 new apiary locations were received from bee-keepers and given certificates; 115 cancellations were recorded, leaving a registration list of 4,738.

The work of changing the registering of bee-keepers and locations by card-index in place of the cumbersome ledger is being proceeded with. About half of the total registrations have been card-indexed by the stenographer this year.

Correspondence included the receipt of 844 letters and 904 were sent out.

Microscopic examination of 49 samples of diseased bee-comb and smears, sent to the office for diagnosis, were made and reports sent out with instructions for treatment where necessary.

Supervision of Inspectors' reports and accounts, departmental reports, and telephone calls were routine work of the office.

The exhibits of honey and apiary products at the two principal fall fairs, Vancouver and Victoria, were decidedly below the usual standard in 1941, both in the number of entries and the general quality of the honey. This was expected in view of the short crop on the Coast districts and unfavourable conditions at the time bee-keepers usually prepare their honey for exhibition. There were sixty entries in Vancouver compared with 100 the previous year. The attractive arrangement of the commercial classes was, as usual, a feature of the honey exhibit and quite up to their usual standard for originality of design. The quality of the exhibits varied greatly. Most of the entries in the light colour classes were excellent, but a few in the amber classes were unfit for table use. The honey exhibits at Victoria were also light in the number of entries. The quality was very good and fairly uniform.

A number of winter meetings were attended in Vancouver. The moving-picture film, "Bee-keeping in British Columbia," prepared by the Department of Agriculture, was shown in Vancouver, Squamish, Oliver, and Vernon, and was very much appreciated wherever shown.

Your Inspectors attended various field-days during the summer and their practical demonstration and advice were greatly appreciated.

REPORT OF FIELD CROPS BRANCH.

CECIL TICE, B.S.A., COMMISSIONER.

CROP CONDITIONS.

The year 1941 was a fairly favourable one for crop-growth. Crops sown in the fall of 1940 came through the winter in good condition and got away to a splendid start in the spring of this year, due to early moisture and warm soil.

Spring-sown crops were sown early as a result of favourable weather and germination was good. Growth was very satisfactory the early part of the season due to a more abundant supply of moisture than in the previous year. However, an abnormally

hot spell during the month of July had rather a disastrous effect on many crops, particularly those being saved for seed.

Hay-crops on the whole were very satisfactory, but considerable hay was spoiled in some districts due to wet weather.

The corn-crop on the whole was below normal. Stalk production was good but ear development was lacking.

Potatoes suffered badly, more particularly in the Coast districts, due to the Late Blight fungus (*Phytophtora infestans*). The continued wet, muggy weather in the fall of this year was most favourable for the development of this disease, and farmers who had not sprayed their crops suffered heavily. In fact the almost continuous rain during the month of September in most districts resulted in delayed threshing and much loss of crop. Considerable grain and seed were lost in the stook.

Reports received to date would indicate that seed and grain production is down considerably and that there will be a shortage of seed supplies in many districts of the Province.

B.C. FIELD CROPS UNION.

This organization, of which your Commissioner is the Secretary-Treasurer, has had a very satisfactory year. There were 163 members located as follows:—

	Members.
Vancouver Island and Islands	14
Interior	34
Central British Columbia	65
Lower Mainland	11
Kootenays	11
Peace River	13
Cariboo	13
Northern British Columbia	1
Boundary	1

The chief activity of this Association is to conduct tests on the farms of the members. In a Province such as British Columbia, with a wide range of soil and climatic conditions, an organization such as this can perform useful service in supplementing the work of the Dominion Experimental Farms.

Thirty-four distinct tests were available to members of the Union this year and 133 tests were conducted altogether.

The 1940 annual meeting was held in the City of Vernon in March of this year. This was the first time an annual meeting had been held in the Interior of the Province and the decision of the executive in selecting an Interior point proved sound.

FIBRE-FLAX PRODUCTION.

It has been known for some years that high-grade fibre-flax could be produced in the Fraser Valley. However, due to lower production costs in certain European countries, it has not heretofore been possible to encourage commercial production in that area. The war has changed the picture, and Ireland is looking to Canada for the bulk of its supplies of fibre-flax and fibre-flax seed since European sources of supply have been cut off.

Prompt arrangements were made by the Agricultural Production Committee for a supply of high-grade fibre-flax seed of the Stormont Gossamer variety for use of British Columbia farmers, and more particularly Fraser Valley farmers, who had the proper soil conditions. Altogether 85¾ acres were planted to fibre-flax with this seed in the Province. The various fields were inspected by officials of the Federal and Provincial Departments during the growing season and several 100-lb. sheaf shipments were forwarded to Ottawa for processing.

SEED PRODUCTION.

Every effort has been made during the year to increase the production of field-crop seeds, particularly those which we had been importing from European countries prior to the war. In addition to this, replacement of stock seed of red clover in the Fraser Valley and of alfalfa in the Lillooet-Lytton area was continued. In this connection 350 lb. of two-cut red-clover seed was placed in the Fraser Valley and 500 lb. of registered Grimm alfalfa seed in the Lytton-Lillooet area.

In order to give further encouragement to the production of mangel-seed, 30 lb. of Frontenac mangel-seed was purchased from MacDonald College, Quebec, and made available for distribution among interested farmers.

Encouragement was also given to the production of registered alfalfa-seed in the Okanagan and 400 lb. of registered Grimm alfalfa-seed was purchased for this purpose.

Figures showing the production of seed in British Columbia for 1941 are not yet available. For this reason the 1940 figures are given below:—

	Lb.
Timothy	417,000
Red clover	400,000
Alfalfa	60,000
Alsike clover	120,000
Alsike clover and timothy (mixed)	30,000
Reed canary grass	1,000
Creeping red fescue	400
Crested wheat-grass	2,000
Field corn	20,000
Vetch	20,000
Mangel	6,000
Swede turnip	7,000
Peas	480,000

The total value of all these seeds was $140,265.

It is also interesting to note that approximately 150 acres of sugar-beet seed was harvested in the Province this year. The bulk of this seed was produced in the Fraser Valley by one of our leading commercial seed firms. The balance of the seed was grown on Vancouver Island by certain farmers working in co-operation with the Dominion Experimental Farm at Saanichton. Altogether 158,006 lb. of sugar-beet seed was produced.

TRIPOD OR RACK CURING HAY.

In wet seasons farmers are losing much hay through spoilage. Also, it is generally felt that the bulk of our hay-crops are cut too late; that is to say, the crops are cut when many of the weeds have matured their seeds and the hay is too far advanced to be of good feeding quality. Our investigations of the tripod and rack-curing methods of curing hay would lead us to believe that this method of curing hay has a definite place on many farms in this Province, as it would enable farmers to cut their hay earlier even if weather conditions were uncertain.

Some publicity has been given the subject by means of articles for the Press and circulars sent out to Farmers' Institutes. Also, the Dominion Experimental Farm at Saanichton has started some definite investigations regarding the matter.

STOCK SEED.

Through an arrangement entered into three years ago between the Provincial Department of Agriculture and the University of British Columbia, stock seed of cereals and roots is being produced annually at this latter institution at a certain fixed price. The seed so produced is distributed through the B.C. Field Crop Union at a considerably reduced price. The Provincial Department of Agriculture makes up the difference between the price paid to the University and that charged the farmer.

The following table shows the kinds and quantities of seed produced at the University in 1941 under the above arrangement:—

	Lb.
Dawson's Golden Chaff wheat	800
Jones Fife wheat	800
Kharkov wheat	500
Ridit wheat	800
Storm rye	500
Victory oats	1,600
Eagle oats	600
Chancellor peas	300
Yellow Intermediate mangel	150
Bangholm Swede turnip	30

FERTILIZER COMMITTEE.

Five meetings of the Fertilizer Committee were held during the year. Your Commissioner, who is a member of the Committee, attended four of these meetings. The purpose of this Committee is to standardize fertilizer mixes. It is unfortunate, however, that on account of increased costs of potash and of labour fertilizer prices to the farmer will be higher next year.

The complete list of fertilizer compounds and mixes recommended by the Fertilizer Board for British Columbia for 1941–42 is as follows:—

2–20–0	2–16–6	6–10–10
11–48–0	4–10–10	6–30–15
16–20–0	5–10–5	9–27–9
0–10–16	6– 7–6	
2–12–10		

In regard to supplies of nitrogen, phosphorus, and potash, it should be pointed out that no shortage is anticipated. There are large deposits of phosphate and potash on the North American Continent. In nitrogen, too, we are independent of foreign supplies, though still importing nitrate of soda from Chile. Canada is well served by her own domestic sources of nitrogen, chiefly in the form of sulphate of ammonia.

FIELD CROPS COMMITTEE.

Two meetings of the B.C. Field Crops Committee were held during the year. Your Commissioner is Secretary of this Committee. Matters pertaining to crop production, the standardization of varieties, and crop testing were discussed.

One of the chief features of the Committee's work was the series of radio talks and interviews on "The Importance of Quality in Seeds," which were arranged in co-operation with Radio Station CBR, Vancouver, during the months of February and March. The opening address was given by the Hon. K. C. MacDonald Minister of Agriculture, and this was followed by weekly talks and interviews by each of the following: Dr. G. G. Moe, Head of the Department of Agronomy, U.B.C., Vancouver; Cecil Tapp, Supervising Analyst of the Dominion Seed Laboratory, Vancouver; G. M. Stewart, District Supervisor, Dominion Plant Products Office, Vancouver; Dr. D. G. Laird, of the University of B.C., Vancouver; Mills Clarke, Agronomist at the Dominion Experimental Farm, Agassiz; W. R. Foster, Assistant Provincial Plant Pathologist; and your Commissioner. Subjects discussed were as follows: "Methods of producing Stock Seed"; "Germination and Purity Tests"; "Available Supplies and Merits of Registered and Certified Seeds"; "The Grading and Cleaning of Seed"; "Results obtained from Crop Tests"; "Preparation of the Soil"; and "Diseases of Cereals."

SOIL TESTING.

Increased interest in soil testing is indicated by the large number of soil samples sent in to the office for examination. This method of giving advice to farmers and others regarding their soils may not be perfect, but it certainly is a guide and the service is much appreciated by all who receive it.

A complete analysis of all samples is undertaken; that is to say, nitrogen, phosphorus, potash, and lime determinations are made. These are the important factors.

The actual analyses of the soils is undertaken by S. S. Phillips, Assistant Field Crops Commissioner, whilst the reports of the analyses, together with practical information as to the best methods of handling the soils, based on the analyses made, are handled by Paul C. Black.

It should also be pointed out that many personal visits are made to individual farms during the year by officials of this Branch, and information given regarding general soil and crop management. Meetings are also attended when the necessity arises.

Up to the time of preparing this report 217 samples of soil had been tested by this office. (*See* Appendix No. 3.)

THRESHERMEN'S REPORTS.

In accordance with the requirements of the "Noxious Weeds Act," threshermen report annually the amount of grain and seed threshed by them. This information is assembled by the district agricultural officials representing the various sections of the Province and their co-operation is much appreciated. It is realized that on account of the introduction of the small combines on the farms of this Province, it is becoming increasingly difficult to obtain complete records of all those engaged in threshing.

Since it will be some time before the 1941 summarized statement of the amount of grain and seed threshed in the various districts is available, the 1940 statement appears as Appendix No. 2 of this report.

CORN TEST-PLOTS.

The corn test-plots with hybrid and standard varieties of corn were continued and extended during the year, in co-operation with Dr. S. E. Clarke, of the Dominion Experimental Farm, Swift Current, Sask. Altogether twenty-two tests were made covering the following areas:—

	Tests.
Interior	13
Fraser Valley	5
Vancouver Island	5
Cariboo	3

The hybrids and standard varieties tested were as follows: K.S.2-N.K., D.-N.K., K.R.2-N.K., F.B.-N.K., Wis. 279, Wis. 455, Wis. 525, Wis. 570, Wis. 606, Wis. 676, Wis. 680, Golden Glow, Wis. 325, and Wis. 645.

As far as time has permitted green weights have been made and samples forwarded to the Dominion Experimental Farm, Swift Current, Sask., for dry-matter determinations. When the results are received a complete statement showing the tonnage of both green and dried material per acre will be prepared.

RANGE IMPROVEMENT.

In connection with range-improvement work, 1,000 lb. of Crested Wheat-grass seed was purchased and placed for distribution in the hands of four district agriculturists, located at the following points: Salmon Arm, Vernon, Kamloops, and Williams Lake.

H. H. Evans, District Field Inspector of Vernon, makes the following report on the seed distributed in his district:—

"As this seed was not available for seeding in the fall of 1940, one-half of the amount supplied was seeded in the spring of this year. Where seeding was made on land that could be harrowed, a fair stand was obtained. On the rough range land area where no cultivation was possible, the stands were very poor or a total failure. Under these conditions where germination occurred, the Annual Brome (*Bromus tectorum*) was sufficiently heavy to stifle out the crested wheat seedlings.

"The balance of the seed was distributed this autumn. Where early seeding was made there appears good germination and a fair stand obtained. This should give the young seedlings an opportunity to withstand the smothering effects of Brome grass in 1942."

WEED-CONTROL.

The programme of weed-control work carried on by this Branch during the year was along similar lines to that of previous years.

Two seasonal Weed Inspectors were appointed for the Peace River Block. C. Mixer, of Kilkerran, was reappointed Weed Inspector for the south side of the Peace River and H. D. McIvor, of Fort St. John, was appointed Weed Inspector for the north side of the Peace River. These two Inspectors were under the immediate supervision of Sergeant W. A. S. Duncan, of the B.C. Police at Pouce Coupe. They travelled through their respective districts during the growing season giving valuable information regarding the control of weeds and enforcing the provisions of the "Noxious Weeds Act" whenever it was deemed necessary. A close check-up was made of new noxious weeds and every effort put forth to prevent their spread.

In other parts of the Province complaints concerning the prevalence of noxious weeds have been dealt with from time to time and educational work has been carried on whenever time has permitted.

H. H. Evans, District Field Inspector at Vernon, reports that there was no opportunity to carry out any experimental control-work this year but the plots that were sprayed in 1940 were rechecked, and the following results were noted:—

PERCENTAGE REGROWTH OF OLD PLANTS.

Weed.	Carbon Bisulphide.	Stephens Formula.	Sodium Chlorate.
	Per Cent.	Per Cent.	Per Cent.
Leafy Spurge	None	25	Not treated
Morning Glory	None	None	None
Sow-thistle	50	None	None
Twitch-grass	Trace	10	30
Russian Knapweed	None	5	5
Canada Thistle	None	None	Trace

"The Morning Glory plots were left uncultivated over the past season and a light stand of seedling plants was observed. The poor results obtained with carbon bisulphide on the perennial Sow-thistle is, we feel, mainly attributable to the loose, dry soil condition at the time of treatment. Of this weed group, Twitch-grass is the most difficult to control. It would appear advisable to make one follow-up application in the same season on any areas which produced a regrowth of the treated weed."

Mr. Evans also states that assistance was given the Weed Inspector at Spallumcheen Municipality for a period of nine days on a very thorough survey inspection for Dodder infestation of alfalfa-seed fields. Twenty-eight farms were inspected. Those crops found infested were reinspected following eradication-work by the farmer. All assistance possible was afforded the operator in elimination of this troublesome weed.

The following indicates the scope of the work:—Farms inspected, 28. Acreage, 349. Degree of infestation: Trace—5 farms, 37 acres; light—3 farms, 45 acres; condemned—2 farms, 17 acres.

The above represents only those areas where Dodder infestation was suspected and not the total alfalfa-seed acreage of the district.

GRAIN SCREENINGS.

Records of consumption of grain screenings and permits in connection with removal of same are issued by W. Sandall, Field Inspector, in the Court-house, Vancouver, who also carries on various other duties for the Department. The following is an excerpt of Mr. Sandall's report covering this subject:—

"Grain screenings is a by-product, originating in the recleaning process of wheat at the elevator. It is delivered from the cleaners in various separations and graded accordingly.

"A pamphlet issued by the Board of Grain Commissioners of Canada (Bulletin No. 4) provides for five grades of screenings, which are identified as follows: Oat screenings, No. 1 Feed screenings, No. 2 Feed screenings, Uncleaned screenings, and Refuse screenings, graded according to official standards.

"In compliance with the British Columbia 'Noxious Weeds Act' and regulations thereunder, grain screenings which contain weed-seeds in excess of the percentage allowed by the 'Canada Grain Act' of the Dominion or the regulations made thereunder from time to time for No. 2 Feed screenings shall not be removed from any grain elevator, mill, or warehouse to any place within the Province, except only by virtue of permit duly signed by the Minister or by a person authorized in writing by the Minister, and issued at the office of the District Field Inspector, Court-house, Vancouver, B.C.

"Permits above referred to consist of two specific forms—i.e., one permitting removal of low-grade screenings by a dealer or grain merchant and one a feeder's permit which entitles the holder to remove low-grade screenings conditional to prescribed regulations. These permits are restricted to certain areas, mainly within the boundaries of Greater Vancouver. Care is exercised in preventing the removal of low-grade screenings to farming districts where the high percentage of weed-seeds contained in such screenings may become a general menace, through the introduction of many varieties of weeds.

"Up to October 31st, twenty-eight permits to remove screenings were issued covering various quantities and three feeders' permits were issued during the same period. All screenings permits expire at the end of the year of issue.

"Complying with section 4 of the regulations under the 'Noxious Weeds Act,' manager's reports (the forms for which are supplied by the Provincial Government) are submitted each month by all British Columbia grain elevators and Vancouver dealers who handle screenings to the Hon. Minister of Agriculture, through the office of the District Field Inspector, Court-house, Vancouver. These reports show the movement of all grades of screenings, the name and address to whom they are delivered, date of delivery, quantity, grade number of permit (if any), and whether for local use or export.

"A permit is not required for the removal of oat screenings, No. 1 and No. 2 feed screenings.

"The movement of wheat from the local elevators has been extremely light; consequently only a small quantity of screenings has been available to local demands.

"During the first ten months of 1941 which ended October 31st, approximately 2,640½ tons of all grades have been consumed locally. This quantity was supplemented by about 240 tons of high-grade screenings recleaned from barley for malt purposes, imported from Calgary, Alberta. For a similar period in 1940, while much below the requirements, the local consumption amounted to 3,321 tons. Compared with the home consumption of 7,169 tons for a like period in the year 1939, the last figure is an average of the normal local requirements. The above figures do not include screenings which have been exported, mainly of low grades.

"It has been established by carrying out certain investigations with feed merchants who deal in screenings that none of this material is distributed unground, thus eliminating any danger of weed-seed germination when it passes to the consumer. The manufactured product is subject to analysis by the Dominion Plant Products Division for weed-seed content, also protein, fat, and fibre requirements.

"Section 11 of the Screenings Regulations requires that screenings which contain weed-seeds in excess of the percentage allowed by the 'Canada Grain Act' or regulations thereunder for No. 2 Feed screenings shall not be ground or otherwise manufactured for sale within the Province. To comply with the above section, feed merchants who obtain low-grade screenings from elevators reclean such screenings in order to raise to the required grade before grinding, the refuse accumulated from this recleaning process is usually exported to the United States or otherwise disposed of to ensure prevention of a weed outbreak from that source. Approximately 397 tons of this refuse have been exported by local feed-dealers during the ten months ending October 31st, 1941.

"Appendix No. 4 will show the quantity of screenings of each grade removed from British Columbia grain elevators each month of 1941 ending October 31st, as compiled from the manager's reports."

CANADIAN SEED PRODUCTION.

A preliminary report issued by the Dominion Plant Products Division indicates that in spite of adverse weather for harvesting in many sections of Canada this year, there will be ample seed for sowing in 1942.

The following table shows the estimated total production of various field-crop seeds in 1941, together with the estimated annual seed requirements:—

Kind of Seed.	Production. Lb.	Seed Requirements. Lb.
Alfalfa	6,847,500	3,000,000
Red clover	5,311,200	4,000,000
Alsike clover	4,011,800	2,000,000
Sweet clover	3,825,000	3,000,000
Timothy	4,045,000	8,000,000
Canadian blue grass	80,000	100,000
Brome grass	5,579,000	200,000
Crested wheat-grass	2,614,500	500,000
Western rye grass	17,500	1,500
Creeping red fescue grass	100,000	1,750
Bent grasses	12,800	----------

CANADIAN GRAIN PRODUCTION.

In cereal grains Canada seems to be well supplied with grain both for feed and seed.

The following statement shows the estimated total production for 1941 and estimated annual seed requirements:—

Kind.	Production. Bu.	Seed Requirements. Bu.
Spring wheat	290,042,000	30,000,000
Fall wheat	16,417,000	1,000,000
Oats	357,955,000	34,600,000
Barley	121,378,000	11,100,000
Spring rye	3,258,000	416,000
Fall rye	10,644,000	1,200,600
Flax (oil)	7,362,000	478,850

CAMPBELL RIVER LOGGED-OFF LAND SEEDING.

On November 21st, 1941, an inspection was made of Campbell River logged-off land seeding by L. Todhunter, who, in the spring of 1939, following the disastrous fire, seeded some 2,000 acres of burned-over land to timothy and alsike clover, sweet clover, white Dutch clover, and subterranean clover. Up to the time of this inspection all of these plants gave evidence of having become firmly established, but it was a great disappointment to note that the white Dutch clover, which at the time of last inspection in the spring of this year appeared to be extremely healthy, had almost entirely disappeared, there being only the occasional plant in evidence where previously the ground had been carpeted with plants. The close grazing of this area by deer, which are abundant in the district, may account for some of the plants being killed, although heavy grazing under some conditions stimulates a stronger growth. There may, however, be a lack of plant-food in this soil, which is of a light sandy nature.

The area seeded to timothy and alsike has produced an excellent stand. The alsike clover, however, appears to be going out as there was not so much in evidence as at the time of last inspection. There are heavy stands of timothy on a better type of soil, the plants being large and fairly compact. There is also a great deal of natural reproduction and young plants are about one-quarter of an inch in height. The stems of the

old plants had reached a height of from 2½ to 3 feet and appeared to have borne a large amount of seed, which at the time of visit, had all been scattered. It is estimated that this area contains about 800 acres of exceptionally good grazing for cattle or sheep. Other areas seeded to timothy and which were not showing good progress now appear to be doing much better; a large increase in the number of plants being noted.

The sweet clover appears to be making better progress, especially where moisture conditions are most favourable, which are chiefly in hollow places and coulees.

A small area located about a quarter of a mile south of the Forest Nursery and where the soil is a silt loam, is seeded to subterranean clover. Here the stand is very good, plants being vigorous and healthy and spreading rapidly. There is much evidence of reseeding and even at this late date numerous seed-pods were noted. This area is also being heavily grazed by deer and used as range for cattle. Other areas seeded to subterranean clover, where the catch was not too good, are greatly improved and should in the near future provide good pasture.

REPORT ON SOIL-SURVEYS.

C. C. Kelley, B.S.A., Officer in Charge.

Field operations in 1941 were confined to the classification of 344,281 acres in the Prince George District. This work completed the soil-survey of a rectangular block which lies between meridians 122° 30′ and 123°, with Summit Lake and Woodpecker the north and south boundaries. Completion of this project makes possible a short summary of the findings, which follow in order:—

PRINCE GEORGE DISTRICT.

The Climate.

Aside from the quality of soils, the temperature and moisture relationships of a region are the chief factors that govern agricultural development, and statements regarding them are matters of the greatest importance.

The climate of the Prince George map area is peculiar to the western fringe of continental climatic conditions. Its most striking feature is variability, the moist Pacific air from the south-west being in more or less continuous conflict with polar air from the north and north-east.

Winters are cold and summers mild, with rather abrupt seasonal changes. Each winter has from three to six cold spells of varying duration when polar air penetrates southward. The low temperatures reached at such times range from 15 above to 50 below zero, and unprotected ground may freeze to a depth of 6 feet or more. Between cold spells the warm fronts from the south-west Pacific Ocean moderate the winter climate and day temperatures are from 32° to 60° F.

Winter begins with a definite change during the last week of October, with light snow which melts away. Around November 10th there is generally a heavier snowfall which remains on the ground. Since 1916 the annual snowfall has varied from a low of 22.40 inches to a high of 141.75 inches, the average being 65.29 inches.

Ice forms around November 15th and the lakes are soon frozen over. In winter the ice builds up to a thickness of about 24 inches on lakes and rivers, and in the rivers anchor-ice may form.

Spring break-up comes on April 9th, when the ice begins to move on the rivers. The break-up on the lakes is from a week to ten days later. During most years April and May are cool months with low precipitation and humidity. The low humidity cuts away the snow and helps dry the land for seeding.

Summer precipitation and higher temperatures begin with frequent thunder-showers in June. The thunder-showers continue to the middle of July, after which there is a period of warm weather with less rainfall until September, when precipitation is slightly greater and temperatures cooler.

During the past twenty-four years crop losses have occurred in several seasons due to wet weather in September, the frequency and amount of loss being insufficient to cause major concern. Heavy crop losses caused by drought in summer are practically unknown in the period of record, one-third reduction in average yield being the greatest loss due to dry weather.

An important feature of the climate is the increase of annual precipitation since 1932, which marks the beginning of a wet cycle of years. From 1917 to 1931 the annual average precipitation was 17.91 inches. Between 1932 and 1940, however, the average was 26.12 inches. This is an increase of 8.21 inches; 84 per cent. or 6.90 inches of which being added rain in summer and fall. The annual average for twenty-four years is 20.98 inches; the lowest year having 14.45 inches and the highest year 28.73 inches. For the past twenty-five years the mean annual average temperature is 39° F., the lowest temperature on record being —57° F. and the highest 102.4° F.

The Growing Season.

Growing plants differ in their capacity to resist cold and their growth periods vary accordingly. A measure of the growing season is essential, however, in a description of climate and in the absence of tabulated data this is given roughly as from May 1st to September 15th, a period of about 138 days. The short growing season is more apparent than real, owing to growth acceleration during the long days in June, July, and August.

The period between the last frost in spring and the first frost in fall is important to the group of crops with the least frost resistance, but in the map area this period is obscured by the occurrence of light frosts in summer. At the present time there is no dependable period between spring and fall that is always frost free.

Throughout the summer months when nights are clear the temperature is decreased and heavy dew is formed, which sometimes fogs the depressed areas and serves as protection against frost. During periods of low humidity in summer, however, the cold air drains into the depressions at night and light frosts occur, while the higher ground remains frost free. In the fall the latter conditions are reversed, owing to heavy condensation and high relative humidity. The frosts occur on the uplands, while river channels and coulees often stay frost free for a considerable period under the protection of heavy fog at night. The frost occurrence from year to year varies with the changing relationships of relative humidity, cloudiness, and temperature.

While summer frosts occur at present there is a strong possibility that they will disappear as the district passes from the pioneer stage to a mature agricultural community. Other districts in Canada have been affected by summer frosts and a short frost-free period during the early stage of development. Small and isolated clearings in a bush-covered country form dead air pockets which permit the fall in temperature at night in clear weather when humidity is low. As the district becomes more extensively settled the cleared land is connected into long stretches which promote more continuous air-drainage. Such conditions in future should reduce the summer frost hazard and lengthen the frost-free period.

Frost records taken since 1920 show that the last frost in spring ranges from May 12th to May 31st, and the first killing fall frost occurs from August 22nd to October 7th, heavy frosts in August appearing only twice in the record. Four years in twenty have no summer frosts, but sixteen years have 1° to 5° in June and (or) July and August. The frost-free period ranges from forty-three days to 120 days, eighty days being the average.

Soils of the Prince George District.

The soils of the district are divisible into two main groups. The first group contains the most desirable soils for farming. These are fine textured, drought-resistant, stone-free soils derived from fine sediments deposited during the glacial and post-glacial erosion cycles, and arable organic soils.

The second group contains definitely non-agricultural soils, which are rated as submarginal, and soils that are temporarily non-agricultural, rated as marginal.

Details as to the different classes of land in the surveyed area follow, the names given to soils being provisional:—

Arable Soils.

	Acres.
(*a.*) Soils derived from glacial lake sediments—	
Pineview clay	234,336
Bednesti silt loam	10,920
Glacio-lacustrine soils	245,256
(*b.*) Soils derived from post-glacial river sediments—	
Fraser sandy loam, silt loam, and clay loam	32,111
(*c.*) Arable organic soils—	
Muck and meadow	5,561
Total arable soils	282,928

Marginal and Submarginal Soils.

These soils include glacial till, glacial gravels, gravelly river terraces, glacio-lacustrine loamy sands and loamy sands on river terraces, rough mountainous land, hilly and eroded or broken land, muskeg and water (not including the water area of the Nechako and Fraser Rivers).	
Total non-arable land	411,913
Total classified land	694,841

The 282,928 acres of arable land are capable of supporting a farm population of about 7,100 people at the rate of a family of four on each quarter-section. These people could maintain 53,000 head of beef and dairy cattle and produce about 35,000 hogs annually, in addition to a large volume of poultry, seed, vegetables, small fruits, etc.

In the whole map area the land that has been cleared and cultivated amounts to 10,053 acres. This is only about 3.5 per cent. of the total arable land. It is estimated that one-third or about 3,351 acres of the total cleared land has been abandoned. This leaves about 6,702 acres as the amount that is actively farmed.

Soils derived from glacial till or boulder-clay are included in the marginal group. Areas of these soils are comparatively fine textured but stony. They will produce crops, but cultural practice is more or less expensive and difficult. When land becomes scarce the least stony and gravelly areas may be cleared and used for pastoral purposes as parts of farms established on the arable soil types.

One of the most valuable natural resources of the district is classed as submarginal land. This type consists of glacial gravels and gravelly river terraces. In a map area that contains 234,336 acres of heavy clay land and 10,920 acres of silt loam, large supplies of gravel will be required as far into the future as we can see for road-building, concrete, and general construction. Most of this land is now in public ownership, and the suggestion is advanced that it should remain as part of the public domain. In the event of a land boom most of this land would pass into private ownership under the present system of administration, and the Government, farmers, and others would have to buy gravel or face long haulage. This would add needlessly to construction costs and hold back local development.

FOREST-COVER.

The forest-cover on arable soils will have an important bearing on future development. The areas of heavy and light types of land clearing are as follows:—

	Acres.
(1.) Heavy clearing (spruce, lodgepole pine, etc.)	157,340
(2.) Light clearing (aspen, willow, alder)	125,588

Where heavy cover occurs on a small part of an established farm, it is an asset that should be maintained as a wood-lot. Where new settlement is concerned, however, such

land could not be economically cleared for agriculture at present. This type should be reserved for the forest products until a time of more definite need.

The division described as "light clearing" is of ample size for present requirements. The cover in this category is of a kind that would yield to modern land-clearing machinery. Its development involves financial and engineering problems of a kind that already have some precedent in Canada. The light-clearing division includes 104,642 acres of Pineview clay, 8,812 acres of Bednesti silt loam, and 12,133 acres of Fraser soils.

Farm Water-supply.

One problem giving rise to pessimism in the past is that of a farm water-supply from wells. This pessimism is due mainly to the lack of systematic exploration for water with adequate equipment. The use of heavy equipment has recently demonstrated that water is available in the locality known as Pineview. No doubt a substantial drilling programme, together with the systematic plotting of well cross-sections, would soon clear up the unsolved problems surrounding farm water-supplies in the map area.

If, as a result of such an exploration programme, a water-supply from wells cannot be secured in parts of the area mapped as Pineview clay, advantage can be taken of the fine-textured surface and subsoil for the construction of cisterns and damming of depressions for storage of snow-water. In addition a limited supply of rain-water can be obtained from the roofs of buildings.

Land-clearing.

In the Prince George District thirty years of local experience have proved that past methods of clearing land are too slow. The main reason for failure to develop the district in the past is the physical inability of the settler to get sufficient land under cultivation with the tools at his disposal. With various kinds of help in the form of palliatives, the sum total of his efforts are 10- to 20-acre clearings, where the requirement calls for 100 acres or more.

The primary development problem of the future centres around cheap and efficient methods for clearing land. The first step in this direction should be provision of funds to bring about solution of the land-clearing problem on an experimental basis. The job of testing out various kinds of machinery, working out costs, finding the best equipment for use, and rehearsing the procedure is one that should be based at the local Experimental Station. Public ownership of the land-clearing machinery and absorption of depreciation cost would substantially reduce the charges passed on to the farmer.

The experience of the past thirty years suggests that if the present development practice is continued it will take at least another thirty years for the Prince George District to get the volume of production required to build up the co-operative machinery essential for the processing and disposal of all crops. This objective, however, could be achieved in ten years or less by means of rehabilitation measures scientifically planned and applied.

Co-operative Community Planning.

Arable land is believed to be the most important asset a geographic area can have, owing to its permanent yield value, and in this respect the Prince George map area is comparatively rich. In addition there are considerable resources of pulp, saw-timber, and water-power.

This group of natural resources points to an extensive mixed farming area, with secondary industries for processing some of the farm products. It also indicates the manufacture of wood-pulp and possibly some of the cellulose derivatives. The population necessary to carry out this programme would probably compare with the present population of the Okanagan Valley.

To date, however, growth has been slow, owing to obstacles met with in attempts to bring large areas of land under cultivation at low cost. At present the district is dragging its way slowly through the pioneer stage and its comparatively great natural resources are only slightly developed. For some time a means of stimulating or

speeding up the general growth process has been one of the primary local problems for which no solution has been found.

Report and Soil Map Requirements.

The Prince George area is a pioneer district where the local population are combined in a desire for general development of the natural resources. The district must base its future on agricultural and forest wealth, and the opportunity is thus provided to make available the basic information necessary for long-range planning.

From the technical standpoint this district is unique in having a fundamental survey of soil resources so early in its growth, and the Department of Agriculture has a great opportunity to demonstrate the efficiency and economy of scientific principles in a development plan as opposed to the expensive hit-and-miss experience of older communities. The basic information necessary for a planned future must be carefully built into the soil-survey report.

For this district two maps should be provided. These are a soil map, which provides the fundamental information, and a secondary land-use map which will separate submarginal soils and arable soils with heavy cover from arable soils with light cover, the latter being of immediate importance for new development. A scheme should also be provided for withholding Crown lands in the undesirable categories from sale, so as to emphasize development in the most economic division.

General.

Total lands classified by this Branch amount to about 1,615,000 acres, of which 545,000 acres have been disposed of in the form of a published report. A second report for publication describing 345,000 acres is completed except for editing. During the winter of 1941–42 material was organized into a report describing the Prince George District.

REPORT OF CHIEF VETERINARY INSPECTOR.

Anson Knight, V.S., Chief Veterinarian.

The past year has been an exceptionally busy season for your Veterinary Inspectors. Considerable ground has been covered in dairy-inspection work, also T.B.-testing and dealing with other diseases of an infectious or contagious nature. The health of the stock throughout the Province in general, however, is in excellent condition. No widespread disease condition has existed in any section of the Province. In several localities certain diseases have been dealt with which if allowed to proceed without curtailment would probably have involved considerable numbers of cattle and resulted in heavy losses. Pasturage conditions have been excellent throughout the summer and fall months and cattle should go into winter quarters in splendid condition. The forepart of the season was somewhat dry, but owing to showery conditions through July and early August pastures recovered and continued to grow and provide plenty of feed up to the time of early frosts. The onset of continued wet weather during the late summer and early fall has cut in on the winter supply of grain. In many cases the grain-crop was totally destroyed and throughout parts of the Interior the winter feeding of grain will have to be curtailed, with the result that possibly a considerable number of pigs will be put on the market in an underfinished condition.

Considerable advice has been advanced by your staff in regard to the feeding of all classes of live stock. Many animals throughout the districts covered by your Inspectors have shown mineral deficiency, some quite pronounced, others showing an unthriftiness which was rectified by making mineral matter available. In certain sections of the Province one article of diet is adopted for almost the entire winter period and in these sections the stock-raisers have been advised to produce alfalfa or some of the leguminous crops to supplement their other feeds. The adoption of this method has been quite noticeable within this past two years and I am pleased to note, especially

in the Peace River area, that considerably more alfalfa and clovers have been produced and considerably more acreage no doubt will be seeded to these leguminous crops, with the result that the animals will be wintered in a better and more satisfactory condition.

Some assistance was rendered by your staff in organizing and shipping cattle from Central British Columbia to the Kamloops Feeder Sale which was held on October 16th.

Although certain numbers of animals in this shipment were not of the quality that one would desire, yet the prices received should be quite satisfactory to the producer.

Addresses were given at five meetings of Farmers' Institutes held throughout Central British Columbia.

I would beg to submit a list of the diseases dealt with throughout the past year:—

Plant-poisoning.—Water hemlock still continues to cause some losses amongst cattle, especially in the early spring. This is probably more pronounced throughout Central British Columbia, although occasional losses have occurred throughout the Cariboo and other sections. Little can be done in regard to medical treatment of these cases, but it is incumbent on the owner of the cattle to protect his animals from visiting such low-lying ground where these plants thrive.

Astragalus Campestris.—Although this plant does not cause actual death it so depreciates the value of the animal that such animal might be considered a complete loss. The animals become partially paralysed and emaciated and when badly affected it takes some two or three years for them to fully recover. No medical treatment has proved of any advantage.

Hydrocyanic Acid Poisoning.—This was noticeable in one section of the Chilcotin District and was probably due to the animals eating *Triglochin maritimum* (salt marsh arrow-grass). This plant, although not poisonous in some sections of North America, in other sections has caused loss in localized areas.

Photosensitization.—This condition has existed amongst a number of cattle in the western part of Ootsa Lake and also in the Horsefly District. It is probably due to the animal being previously sensitized to the action of sunlight by eating certain plants. These plants have not been identified. This condition only affects white animals or light roans and a few cases have been observed amongst horses with white faces. It affects the outer layer of the skin and, if severe, the deeper layers, causing the skin to thicken and crack, and owing to the fact that the function of the skin is somewhat destroyed the animals become unthrifty. The tendency amongst cattle-breeders now is to produce other animals than the lighter colours.

Ketosis (Malnutrition) in Sheep.—A severe case of malnutrition was observed in one flock of sheep in the Francois Lake area. Some 105 head of ewes and shearlings had died out of a flock of 180. Upon making extensive inquiries it was learned that the owner of the sheep had fed considerable timothy straw and other refuse to his sheep throughout the long winter period. Considerable time was spent with the owners of this flock of sheep to endeavour to impress on them the necessity of providing a greater variety of feed of good quality throughout the winter months. Some time was also spent in examining their summer range. The latter, however, appeared to be in excellent condition. The sheep when once on the range appeared to be picking up and putting on flesh, although it is to be expected that a few of the older sheep would not fully recover from their previous winter's experience and may die when put on dry feed this coming winter. It is understood also that the owner is attempting to provide a greater variety with respect to feeding of alfalfa or clovers. This, together with a little grain and a few turnips, should put his sheep through the winter months in good condition.

White Scours in Calves.—A severe case of this occurred in a Jersey herd and the party owning the herd was not able to raise calves for some length of time. Upon inspection, two new-born calves were injected with colon bacillus bacterin and together with 20 cc. of anticolon bacillus serum, with a subsequent injection of 5 cc. a few days later. The two calves remained healthy and also any calves born subsequently receiving the same treatment remained healthy.

Foot-rot in Sheep.—Some 25,000 head of sheep were inspected in the Interior and the Okanagan Districts. They appeared to be quite free of this trouble which was so

prevalent a few years back. A recent importation from Alberta apparently started a fresh outbreak in the Columbia Valley and the infected sheep were quarantined. These sheep will be inspected at various times and when free of the disease will be liberated.

Blackleg.—Small outbreaks of this fatal disease occurred in various parts of the Province. The carcasses were burnt or buried under supervision of your Inspectors. All young stock in contact with these animals were injected with blackleg aggressin. Many of our stockmen to protect themselves from the onset of this disease make a practice of vaccinating all young stock year after year, a system which is to be recommended especially in the Interior of this Province.

Influenza.—An outbreak of this trouble occurred in the Pitt Meadows area. Although causing considerable inconvenience to the owner the disease did not spread amongst other cattle.

Actinomycosis.—A number of cases of this trouble were observed in certain dairy cattle in the lower part of the Fraser Valley and it is also noticeable throughout many sections of the Interior, although no large numbers of cattle are noticed at any one time and it has not caused any severe losses. The stock-owners have been advised by your Inspectors to make use of potassium iodide as a treatment, which is quite successful if the disease is diagnosed in the early stages.

Coccidiosis.—Small outbreaks occurred in the Interior, more especially throughout the Cariboo and Chilcotin areas. This disease is not by any means as prevalent as it was a number of years ago when considerable numbers of cattle succumbed to the malady. The animals observed this year were treated by the prescribed methods, which worked out fairly successfully. The owners have been advised to keep their animals off of old feeding-grounds and out of old corrals. When the ground is once contaminated the parasite may live for some length of time in spite of severe cold weather or hot summer temperatures. Old corrals and feeding-grounds should be fenced, ploughed up, and left idle for a few years. Where this method has been adopted the owners report that they had no further outbreaks, but it is observed that in many cases the owners will not take the trouble to fence their contaminated premises, and as the old feeding-grounds and corrals are handy for feeding purposes there is a tendency to eliminate as much work as possible and still use the old premises.

Hæmorrhagic Septicæmia.—Small outbreaks occurred in a number of districts such as Seymour Arm, Ashcroft, Clinton, and Cariboo. There are preliminary factors predisposing to this disease such as cold weather, weaning-time, driving long distances, and overheating—conditions which, to a large extent, can be eliminated. In the actual treatment of such animals sulfanilamide has proved fairly effective and also pulmonary mixed bacterin which is administered subcutaneously. This is one of the very fatal diseases; animals often succumbing within thirty-six to forty-eight hours. The experience of your staff in this Province is that it does not occur over any large number of animals, only a few head being affected where the disease has occurred.

Tuberculosis.—Your Veterinary Inspectors have carried out considerable testing throughout the Province. A list of the districts and number of premises visited, together with the number of cattle tested and reactors, is shown in Appendix No. 7, showing premises visited and cattle T.B.-tested.

Dairy Inspection.—The milk vendors catering to the sale of milk for public use have been kept under observation by your Inspectors. A large number of dairy premises have been visited, the cattle inspected and dairy premises graded as under the "Milk Act." We find a steady improvement in the sanitary conditions under which milk is produced. Some stables have been remodelled, new stables and barns have been erected, milk-houses and proper equipment installed. Appendix No. 6 gives summary of premises inspected and graded.

REPORT OF LIVE STOCK BRANCH.

WALLACE R. GUNN, V.S., B.S.A., B.V.Sc., COMMISSIONER.

The year 1941 has been very unusual. As a result of the international situation there has been a definite increase in prices and as a consequence greater interest in

production. The man on the land has found it very difficult to secure adequate farm labour with farm-labourers in general turning to other more remunerative fields for employment. The very unusual weather conditions during the year added greatly to the labour required in the handling of farm crops. Thousands of tons of feed, both hay and grain crops, have been destroyed and much of that that was eventually harvested has been greatly reduced in its feeding value.

Keener interest, which always comes as a result of better prices, has increased the demand for the services of this Branch very greatly. Some new programmes of work have been undertaken and many more could be commenced if time would permit, and especially if the necessary field services could be assured. Due to lack of sufficient men in the field, your Commissioner has been called upon to not only administer and supervise some of these policies but at times to actually undertake the required field-work.

Live-stock marketings of beef, pork, and lamb were well up to normal and prices were well advanced. Whether or not these prices are in line with the prices of the products of industry is questionable.

HORSES.

The horse industry has not had a particularly good year, excepting in a few districts. The chief reason it is felt for this slackening in interest in horse-breeding is the fact that farm help is very difficult to secure and what help is available is quite often not capable of handling horses. As a result farmers have been compelled to reduce their work as much as possible and have not attempted breeding mares. Lack of help also has resulted in farmers turning to tractors for their farm-power, which type of power enables them to do more work per man than the average horse-power. A reasonable increase in the prices of farm products also encourages the use of mechanical power.

It might be well for farmers generally to bear in mind that when hostilities cease and the prices of farm products return to a new low level horse-power might be the salvation of many farmers. Definitely in such circumstances it might be the most economical power and would perhaps be the only type of power that many could afford.

This Branch has continued its classification of stallions with the idea of gradually getting all stallions, both grade and pure-bred, in the Province inspected. It has been the policy of your Commissioner to encourage horsemen to get away from the keeping of grade stallions or the use of grade stallions and to rather purchase as young animals good quality pure-breds. These young pure-bred stallions are quite plentiful in the Province and as yearlings and two-year-olds can be purchased at very little more than grade-stallion price and if properly developed are eligible for the Federal-Provincial Premium Policy. This latter policy has been one of the greatest factors in keeping our horse-breeding activities up to their present quite high standard. Up to date no attempt has been made to grade and enrol light horses generally. In the Province during the year stallions were classified as follows: "A," 22; "B," 12; "C," 8; "D," 9. "A" and "B" class horses are the two top grades of registered horses and are recorded as free from hereditary diseases and unsoundnesses and are fit for premium. "C" class is for registered horses showing some minor unsoundness not felt by the Inspectors to be of a serious nature. "D" class is for grade stallions, all of which must be sound and up to a reasonable weight before being permitted to travel.

BEEF CATTLE.

The beef-cattle industry is in a very healthy state with prices above average and shipments increased. British Columbia still continues to import beef to satisfy our Provincial needs. The following are prices for good steers on the Calgary market:—

January 2nd, $7.75; January 16th, $8.25; February 6th, $8.50; February 20th, $8.50; March 6th, $8.75; March 20th, $8.25; April 3rd, $8.50; April 17th, $7.50; May 1st, $8; May 15th, $8; June 5th, $8; June 19th, $8; July 3rd, $8.50; July 17th, $8.50; August 7th, $8.50; August 21st, $8.50; September 4th, $9; September 18th, $9; October 2nd, $9; October 16th, $8.50; November 6th, $8.25; November 20th, $8.25.

Vancouver prices for this period were about the same, not yet in line with Calgary market.

Three very good sales were held in the Province. The details on the Kamloops Bull Sale and Spring Fat-stock Show may be obtained from the report of the District Agriculturist, G. A. Luyat. It might be said, however, that the fat stock sold at an average of $2.75 per hundred above the previous year; the average this year being $10.66 for 414 cattle, the champion car-load bringing 13 cents. Groups averaged 10.04 cents per pound and singles an average of 10.24 cents, with the champion steer bringing 30 cents a pound. The junior farmer entries ranged from 11 cents to 21 cents. Bull prices were not particularly high. The top price paid for Herefords was $560, with $284.50 of an average for fifty head of Herefords. Eighteen Shorthorn bulls averaged $257.50. The total for the Bull Sale was $19,100. The total for the entire sale was $60,100.

The fall Stocker and Feeder Sale at Williams Lake in October saw a new record of prices and numbers sold. Some 2,219 cattle and 93 bulls were auctioned. Prices averaged ¼ cent to ½ cent above Vancouver prices for the day. Good steers brought up to $8.90 per cwt. Yearling steers brought up to $8.50 per cwt. and an average of $7.53. Two-year-old steers went to the top price of $8.90 with an average of $7.54. Yearling heifers brought up to $8.50 with an average of $7.36, and two-year-old heifers a top of $7.65 and an average of $7.30. Calves brought up to $8.10 with an average of $6.88. This sale of 93 bulls brought a total of $17,890. The top Shorthorn bull brought $300, with an average of $156 for Shorthorns. The top price for Herefords was $425 with an average of $369. There were only four entries in Aberdeen Angus and the average price was $210 with a top price of $225. Further details will be found in the report of the District Agriculturist, Dr. W. T. Carlyle, Williams Lake.

Another sale was held in Kamloops on October 16th under the auspices of the Central British Columbia Live-stock Association, a new organization formed with the idea of getting organized marketing of live stock in Central British Columbia established. Very definitely this sale proved of great worth to the people of Central British Columbia, who in many instances have been compelled to sell their few head of animals to local buyers at a price definitely out of line. On the whole the cattle might be said to be a very useful bunch, perhaps a little rougher in type than the cattle from the strictly range country, but on the whole they carried plenty of flesh. Mixed in with some lots were cattle carrying some dairy blood which helped to pull down averages. Two-year-old steers averaged $7.70, yearling steers $7.21; two-year-old heifers $7.05 and yearling heifers $7.03. Cows averaged $5.21. Quite a number of these cattle went into feed-lots for finishing and to hold until required by the market.

All these sales received the support of the British Columbia Department of Agriculture and it is hoped that they will be continued and extended to other sections of the Province. An effort is being made to bring into practice a similar method of selling in the East Kootenays. The work of the Branch in that section of the country has been aimed at making cattlemen in that area more sale conscious. With better bulls being regularly sent in and local associations being established your Commissioner feels that it is only a short time before something definite will be done in that territory.

Your Commissioner, in co-operation with district men, continues to give every possible assistance to the industry. Such assistance aims at dealing with the many different problems facing cattlemen in general. The question of better sires is of first importance and the proper distribution of sires to small cattlemen is one of very great importance. The matter of obtaining sires capable of improving the quality and at the same time keeping up the scale in steers is perhaps one of the most difficult problems. Linked with this and very definitely modifying it is errors in management and nutrition. Under the section " Nutrition and Animal Health " this will be dealt with at greater length.

DAIRY CATTLE.

The dairy-cattle industry is in a very healthy state at the present time, with milk prices proportionately higher. The demand for good dairy cattle continues keen. American buyers continue to scour dairy sections for good quality young type cattle

negative to the agglutination test. Very definitely more cattle could be marketed from some sections of the Province to the United States' market if farmers would undertake a definite policy of live-stock improvement intended to build up more negative cattle. Since last year a policy of calfhood vaccination against brucellosis has been instituted by the Department. Your Commissioner has been a supporter of this type of control since it was first discussed by research-men many years ago. It may not be a perfect policy, but if the programme as established by this Department receives the full support of cattlemen and veterinarians it should do a great deal to improve the situation, especially for dairy cattlemen. The policy will be outlined and discussed more fully in the section under " Brucellosis Control."

SHEEP.

Sheep prices have been very satisfactory this year, coming in line with prices of agricultural products in general. The following are the prices for lamb for the year on the Calgary market:—

January 2nd, $8.75; January 16th, $9.50; February 6th, $9.50; February 20th, $9.50; March 6th, $9.50; March 20th, $9.50; April 3rd, $9.50; April 17th, $8.75; May 1st, $8.75; May 15th, $8.75; June 5th, $9.25; June 19th, $8.75; July 3rd, $11; July 17th, $11.50; August 7th, $10; August 21st, $9.50; September 4th, $9.50; September 18th, $9.50; October 2nd, $9.50; October 16th, $9.50; November 6th, $9.25; November 20th, $9.

In reference to the question of predatory animals and sheep-killing dogs. It would seem that this combination is making an even greater inroad into our sheep flocks of this Province each year. In the Greater Cariboo District more and more sheepmen are being forced out of business on account of coyote and bear. This particularly applies to the smaller sheepmen with flocks not large enough to warrant constant herding. It is hoped that this year some definite work can really be got under way to organize these sheepmen so that they may band small flocks into large enough flocks to permit them being placed under a herder. Where this is not possible it is felt that the establishment of tame pastures and close-folding at night may reduce the losses from predators. In some sections timber wolves have been encountered but the Game Department is attempting to deal with this rather difficult problem.

In the more closely settled sections of the Province the sheep-killing dog continues his inroads and is driving out more and more sheepmen each year. Until some means is developed whereby all dogs are definitely tagged or destroyed this situation will continue to exist. The summary of the last three years' compensation claims paid is as follows:—

Year.	Sheep.	Compensation.	Poultry.	Compensation.	Goats.	Compensation.
1939	361	$2,480.00	212	$176.85	6	$37.00
1940	191	1,659.25	531	396.14	2	17.00
1941	109	988.50	203	440.16	--	------

Under the section on " Nutrition and Animal Health " more will be said on some of the specific problems affecting general sheep production. Wool prices continued throughout the year at a very encouraging level, well above the average of some few years ago.

SWINE.

During the early part of the year the situation looked very encouraging for the swine industry. With the assistance of the Federal-Provincial Brood Sow Policy we were able last year to place some good foundation stock throughout many different sections of the Province and as a result shipments of hogs by truck and mixed car came into the central market from Central British Columbia and the Cariboo, with a very definite extension of the business in the Okanagan, Kamloops, and North Thompson Districts. Unfortunately, weather conditions this year have been so bad that in many

sections the grain-crop has been entirely destroyed and farmers in many instances are being compelled to sell off their breeding stock and go out of business. An effort is being made to get farmers to retain a small foundation so that they will be in a position to go forward again when feed supplies are better.

A study of hog-grading on the rail basis, which only last year came into effect, has shown our Province off to very good advantage. The percentage of top grade hogs from some sections of the Province, particularly the North Okanagan, shows perhaps higher than any other section in the Dominion. For years this area has carried some very good lines of breeding. With the very capable assistance of the District Agriculturist, William MacGillivray, of Salmon Arm, we have been able to round out a programme of swine improvement that has not only been very profitable to the farmers but of immense interest to the industry. Hog prices at the beginning of the year were not too satisfactory but, as the export market to Great Britain extended, prices gradually improved until to-day farmers can profitably raise hogs if they are fortunate enough to put some intelligent thought to the work.

Your Commissioner has made an especial study of nutrition in swine and the problem of complex swine diseases as well as breeding for type and economical production. Working closely with Mr. MacGillivray, your Commissioner feels that we have been able to protect the industry in the North Okanagan against this greatest problem of disease and its group of contributing factors. In this particular field of work we have every reason to feel very pleased with what has been accomplished. Considerable time has been spent in discussing through meetings and otherwise the problems in and around profitable swine production. Your Commissioner is fully convinced that this is the only means whereby a definite policy can be established in any community. Until a definite programme can be outlined in any district, either in swine production or in any other branch of agriculture, we cannot expect any marked improvement. Volume of production is one of the greatest single factors hindering increased production and that cannot be improved until a policy has been definitely instituted. It is hoped that next year we may be able to interest other districts in a programme similar to that now very well established in the North Okanagan. That can only be done with the help of district officers.

NUTRITION AND ANIMAL HEALTH.

Range cattle disease and disease-like conditions include such as hæmorrhagic septicæmia, coccidiosis (so-called), necrotic stomatitis, blackleg, pinkeye (keratitis), tuberculosis, knock-heel, plant-poisoning, and deficiencies of different kinds. These take their yearly toll, but the consistent work being carried on has greatly reduced these losses. Many ranchers and farmers are to-day, due to our educational programme, better prepared to deal with these diseases and deficiencies and are gradually adopting the policies suggested by us. We are constantly trying to improve upon our present-day methods of dealing with these problems. In most instances it requires much study and many trials in order to make the findings of the research-worker applicable in the field of extension.

(*a.*) *Hæmorrhagic Septicæmia and Coccidiosis.*—Hæmorrhagic septicæmia took a heavy toll last year amongst feeder cattle and cattle being moved any distance, and it is interesting to note that stockmen are this year on our advice using protective vaccination. It is also interesting to note that this disease made its appearance quite extensively in Vancouver Island during the early part of the year and what came as a surprise was the appearance of the so-called coccidiosis on the Island. Your Commissioner was called into consultation by a local veterinary practitioner and was able to contribute to the control of the disease with a treatment developed some years ago while working on this condition in the range country. This so-called coccidiosis is widely distributed over this continent and can perhaps be held responsible as the greatest single loss to cattlemen during the winter months, more particularly in the range country where it seems to largely affect calves. These attacks in range calves seem to develop certain pronounced symptoms which to date have not appeared to my knowledge in the dairying districts. The percentage of deaths varies considerably. In many instances losses run quite high.

Your Commissioner some years ago did work in the range country with both coccidiosis and hæmorrhagic septicæmia, and was able to develop a line of treatment somewhat different which seems to be getting very good results. Work done some years ago by Dr. E. A. Bruce, Pathologist, Dominion Department of Agriculture, Saanichton, resulted in the isolating of the protozoan of coccidiosis (*Coccidium zuerni*) in herds affected with this condition. Your Commissioner, after observing thousands of these cases in British Columbia and after discussing similar cases in other parts of the continent with workers, now feels that there may be other factors at work, including errors of nutrition and possibly other infections, even perhaps a virus. The rapidity with which an outbreak spreads in a herd, either on range or on a farm, forces the thought of some infective agent or agents. The sudden cessation of the epizootic and the rapid recovery of large numbers of cases in a herd as a result of any pronounced change in feed or living conditions brings forth the thought that there may possibly be other contributory factors in addition to a causative organism or organisms, perhaps nutritional. As with most debilitating diseases and conditions animals seriously affected readily develop pneumonia. From observations made by your Commissioner it would seem that in the field it is quite common to have hæmorrhagic septicæmia enter the picture, particularly in the pectoral and enteretic form.

Circular No. 27, dealing with the so-called Coccidiosis, and Circular No. 23, dealing with Hæmorrhagic Septicæmia, have been prepared for distribution to stockmen beyond the reach of the services of a veterinary practitioner.

(*b.*) *Calculi in Range Steers.*—Calculi in range steers has been under observation by your Commissioner for some years. This trouble causes a more or less complete occlusion of the urinary tract. These hard formations develop in the kidneys, make their way to the bladder and in trying to pass through the urethra are held up at the "S" curve, resulting in the accumulation of urine in the bladder. This organ ruptures and the urine escapes into the abdomen, giving temporary relief. It is not uncommon to find 40 to 50 gallons or more in the belly of a calf. The first symptoms shown by the animal is a short jerky switching of the tail. When this symptom shows in almost 100 per cent. of cases it is too late to treat. In fact, treatment on the range is not practical.

The cause of this trouble may be due to a combination of at least two factors—namely, a high alkaline intake and a deficiency of Vitamin A. My reason for this supposition is that it occurs in the Dry Belt where the water-supply is highly alkaline, and in seasons when the fall and winter is unduly mild and cattle are not brought in at the usual time and put on feed there is a marked increase in the number of cases reported. Your Commissioner has already generally advised ranchers to bring their steer calves in early and put them on good quality alfalfa-hay high in the Vitamin A carrying green carrotine. It may be expected this year that the incidence of this condition will be high with so much badly weathered hay to be fed. This hay is low in both Vitamin A and soluble protein.

(*c.*) *Mineral Deficiencies.*—Mineral deficiencies primarily centre around the elements calcium, phosphorus, and iodine, with certain other trace minerals entering into the picture and being added as our experience warrants. The problem of the intelligent use of these elements as a supplement in the rations of animals depends upon an intimate knowledge of the soil deficiencies in each district, the effect of climatic conditions, precipitation, as well as the type of animal and the nature of his basic ration. On this basis we have endeavoured to build up suitable suggested mixtures for stockmen. Where commercial mixtures of known content are available these are listed, otherwise where some special mix is required we try to advise. We have had excellent co-operation from one particular British Columbia firm in a position to make up special mixes to suit any particular need, including the addition of trace minerals. The use of kiln-dried iodine stabilized superiodized salt as a basis of these mixes has greatly helped. In the past cattle and especially sheep suffered from a lack of iodine because the iodized salt mixes rapidly lost this element.

The results of the correcting of these deficiencies in live stock can scarcely be evaluated, but very definitely it is one of the most important factors contributing to the economical production of live stock. We are satisfied that mineral deficiencies

contribute greatly to the bad effects upon live stock of eating of certain poisonous plants such as *Astragalus campestris* (timber milk-vetch), the larkspurs, lupine, and others. These deficiencies seriously affect the type and scale of cattle and help greatly to reduce the percentage calf crops to the place oftentimes where it proves unprofitable to continue in the business.

(*d.*) *Equine Encephalomyelitis (Sleeping Sickness in Horses).*—No general epizootic can be reported for the year. Prompt reports came on the request of this office from all district officers of this Department. The same prompt replies were received from all Provincial Police offices. As seems to be the usual thing, veterinary practitioners in the area, except Dr. Lehman, of Kelowna, failed to reply to a circular letter of inquiry from this office. The officers of the Dominion Health of Animals Division made prompt replies.

A study of these reports along with personal observations made would indicate that very few cases really did appear in the Province. Dr. Lehman reported one case on the Westbank Indian Reserve which recovered. Constable G. D. Heatley in the North Kamloops District reports four cases, one of which died. One fatal case was reported from the South Okanagan, a case of an animal that recovered from an attack two years before. Two or three unconfirmed cases were reported from the Cariboo area about Miocene.

It is within reason to expect that not all cases which occurred in the Province were diagnosed and reported; also that some of the suspected cases may have not been properly diagnosed. However, it is encouraging to be able to report that as a result of our work of the last few years the disease has made but little headway; this despite a gradually decreasing interest on the part of the farmer in the need for preventive vaccination.

Your Commissioner was privileged to study first hand and discuss with veterinarians and research-workers from the Prairie Provinces their plan for dealing with the disease, and accordingly begs to state that we in British Columbia have a vastly better and more efficient organization. Up to the present the work of organizing this control programme has fallen entirely on us, despite the fact that the virus of equine encephalomyelitis has very definitely been proven dangerous to humans.

The following review of the situation obtaining in the Provinces of Manitoba, Saskatchewan, and Alberta, given by the British United Press was reported in the September 18th, 1941, issue of the Vancouver *News-Herald:*—

"Sleeping sickness and infantile paralysis has stricken nearly 2,000 persons in Manitoba, Saskatchewan, and Alberta and caused 80 deaths since the beginning of the year, a British United Press survey disclosed to-day. At Regina health authorities said belated reports of sleeping sickness cases brought the total to 449 in the Province. Twenty-eight persons died from the disease in Saskatchewan. The total number of infantile paralysis cases was 32 with no deaths.

"Three new poliomyelitis cases were reported in Alberta to-day, bringing the total number to 140. Sleeping sickness cases total 28 with no new cases reported. A decision will be made to-day whether schools in Alberta will reopen September 22nd.

"In Manitoba, poliomyelitis cases for the year total 833 with 8 deaths. Sleeping sickness cases amounted to 446 with 44 deaths."

The basis upon which our programme of control has been based was intentionally built so as to take care of the following anticipated possibilities:—

(1.) The prevention of actual cases in horses, with the consequent deaths and reduced efficiency in these animals, by block vaccination of all horses within the area by means of organization of local committees of horsemen who appointed their own vaccinator and arranged other necessary detail. Instruction in the proper method of administration and, above all, proper care of the vaccine was emphasized.

(2.) The above programme was intended also to prevent the spread of the disease directly from sick animals to susceptible human beings.

(3.) Also it was aimed at preventing the establishment of reservoirs of the disease, which is perhaps the most important point to keep in mind in taking a long-distance view of the situation. Your Commissioner has insisted from the beginning that in the light of present-day knowledge we must of necessity be prepared to have new mediums

uncovered as being capable of furnishing a reservoir. This surmise has definitely proved correct. For example, it is known that the wood-tick (*Dermacentor andersonii*) is capable of carrying the disease over from the adult to the egg stage from generation to generation. This will give some idea of the great possibilities there are from that side alone to the avenues of spread of the disease. Your Commissioner as a result has worked hard to prevent the development of cases which, when they occur, may reasonably be expected to establish a local reservoir.

(4.) Educational work has been regularly carried out with respect to possible vectors, such as mosquitoes, and their control.

(5.) Emphasis was put upon the fact that the disease being caused by a virus would likely have all the peculiarities usually found in diseases caused by viruses and would likely be as difficult to deal with. Hence the necessity for carrying on an active aggressive campaign. Such a campaign in the future should include the active support of medical health officials. Your Commissioner hopes to be able to get such machinery prepared for approval well before the season for the disease approaches. Without a doubt the Department's policy prohibiting the movement of unvaccinated horses into the Province has greatly helped. This might be extended to prevent the movement of all horses into the Province during the danger season. Observations made by your Commissioner indicate that somewhere in or about horses coming from infected areas the virus can be carried; therefore the necessity for closer control. It is the duty of all regulatory officers to give encouragement to the institution of regulations which will tend to close the door against all possible avenues of spread. Early and premature statements made by workers sometimes leave a wide opening for the entry of disease. We feel justly proud of our position with respect to encephalomyelitis and believe that we are in perhaps the best position of almost any Province in this Dominion. We have had only a few cases in horses in the Province. We have had but one human case which occurred in the Creston area, a district directly exposed to infection from south of the International Boundary. Even this, very reasonably we believe, would not need to have occurred had horse-owners followed instructions.

(*e.*) *Calfhood Vaccination against Brucellosis.*—A definite programme of control of brucellosis by calfhood vaccination with a brucellosis vaccine has been undertaken as a definite policy under the direction of this Department. The policy has been established in the simplest form, making it possible for farmers to secure vaccine on application under the joint signature of himself and his veterinarian, the vaccine to be administered by a registered veterinarian only to animals between the ages of 4 and 8 months, all calves to be identified and a full report made by the veterinarian on forms furnished by the Department.

Vaccine is imported by the Department on Federal permit and is stored in a regular depot to insure high potency. It was considered best and definitely cheaper to purchase vaccine rather than attempt to manufacture.

No definite blood testing is required by farmers. This part of the programme is left to the discretion of the farmer and his veterinarian. A number of laboratories are available to do this work. Blood testing will largely be used to obtain a cross-section of the extent of infection in a particular herd. It may be used to check calves after vaccination in order to insure a take from the vaccination. Later, before breeding, heifers may be blood-tested and, if positive, perhaps removed from the herd if a negative herd is being established.

In view of the fact that Federal blood tests and certificates are required for International shipment it is felt that the establishment of any elaborate blood-testing programme or the establishment of central laboratory facilities is unnecessary at present at least. Herd-owners desirous of building up negative herds can avail themselves of the Federal Accredited Plan.

In order to ensure success under this policy it is most necessary that all regulations be closely adhered to and that too much must not be expected from vaccination alone. A good deal of educational work has been done by your Commissioner in an endeavour to impress upon the minds of the farmers the importance of certain other fundamentals also. This work should be actively continued in order to get our cattlemen established on a definite policy of herd improvement. Leadership in this is primarily a responsi-

bility of this Branch. The future of the industry in both beef and dairy cattle production calls for the building of a clear-cut practical policy.

(*f.*) *Caseous Lymphadenitis.*—This disease made its appearance quite extensively in the Wallachin District in one large flock. This flock was quarantined and later marketed for immediate slaughter. A number of other flocks where a few cases have been uncovered by post-mortem in the abattoirs under Federal inspection have all been quarantined, and while they are given all liberty to move about on their regular ranges so long as they do not trespass on the property or ranges of others it is required that they sell on permit from this office only direct for immediate slaughter. It is believed that very good progress has been made in the eradication of this disease, but due to the fact that it is a chronic type of condition its eradication will of necessity be somewhat slow. The distinct aim is to try to eradicate the disease but at the same time cause a minimum of interference to the sheepmen. If allowed to go unnoticed it is the opinion of your Commissioner that it would gradually spread to nearly all the flocks in the country and gradually increase in amount in each flock to the place where it would result in the condemnation of large numbers of old ewes and make the advisability of their shipment to market of questionable value to the sheepmen.

There are other possible angles which will not be dealt with in this report. These particular points alone are sufficient to warrant the establishment of the present quarantine plan of control. From observations made it would seem that the chief centres of infection centre about importations of sheep from outside this Province. Had the policy of breeding replacements in our own Province for the needs of ranchers advocated to the sheepmen of this Province by your Commissioner regularly for the last twelve years been adopted this problem would not have developed.

The present policy has met with stiff resistance from a very few sheepmen who felt they would be hard hit. The greatest objection, however, came from a few dealers who, due to our regulations, lost an opportunity of making a few profitable deals; but generally dealers, too, realized that if the disease were permitted to establish itself in the sheep flocks that they as well as the sheepmen in general might suffer. It is hoped that we may continue to get the support of the industry and that we may look for a rapid clean-up of the disease.

WARBLE-FLY AND TICK-CONTROL WORK.

The programme of warble-fly control has very definitely proven itself one of real worth to farmers and ranchers. At the present time our dairy districts are fast becoming warble-free areas. Some exceptionally fine work has been done by district officers following out the policy of this Branch in warble-fly control.

In the Fraser Valley area where a few years ago this programme was not considered practical, the report of our District Agriculturist, G. L. Landon, shows approximately 40,000 head of cattle treated during the year 1941, the first treatment being applied on February 13th and the second and last treatment on March 20th. This is an increase of approximately 10,000 head of cattle over the year 1940.

It is unfortunate that reports have not been received from all districts receiving this service. Only 25,792 cattle were reported coming from 1929 herds. In these cattle were found 36,226 warbles. Some effort will have to be made in order to secure more complete reports. It is desirable that all districts be treated, but the service does warrant a report from the committees.

In the Cariboo, under the direction of District Agriculturist Dr. W. T. Carlyle, a very good start was made in which some 3,022 cattle were treated with 43,989 warbles found. It is quite evident that this programme will extend considerably in the Cariboo District this year. Ranchers are beginning to learn the real value of the work. From that district Dr. Carlyle reports over 60 warbles on a single animal. He anticipates some 8,000 head at least to be done in the coming year.

In the Prince George area, due to previous work done by James Travis, former District Agriculturist in that district at the time the programme was undertaken, a large area shows practically entirely free from warble-flies. In the first treatment for this year 149 warbles were found on 436 cattle and on the second treatment 17 warbles on 308 cattle.

In the Ootsa Lake District a small beginning was made under the direction of District Agriculturist S. G. Preston, indicating the presence of a certain amount of warbles and the advisability of checking this at the beginning.

In the Peace River District, under the direction of District Agriculturist T. S. Crack, in some thirty herds treated some 1,152 warbles were found in 5,062 cattle. This indicates a low percentage of warbles, but the advisability of cleaning up these areas in the beginning before the fly becomes a real problem.

Further small tests in the control of the wood-tick (*Dermacentor andersonii*) were undertaken during the year with the same good results as in previous years. The use of Rotox brand Standardized Derris is quite evidently furnishing a practical means of control within the reach of the average stockman. It furnishes a means whereby he can protect his cattle against the tick in a cheap and efficient manner.

GENERAL.

During the year 1941 the work of the Live Stock Branch has continued to extend considerably and every effort is being made to serve all branches of the industry as fully as possible. The extension of the work has only been possible through the very capable and willing co-operation of district officers. It is fully realized by your Commissioner that in many of these territories district officers are endeavouring to carry on a wide range of work, including the work of other branches of this Department, and as a consequence we have to be satisfied with the services that these men are able in the time at their disposal to give to our particular policies. It is, I think, a very great credit to district men to see them give so freely of their time at all hours of the day far into the night and every day of the week and during holidays.

The field organization is definitely improving and the very excellent bimonthly reports that are being received in this office from some of the district offices are helping greatly in giving a better picture of all situations in and around the live-stock industry throughout the Province. These reports enable us to check on methods employed by district officers and assist them by additional advice. It also permits of a close check on situations that might otherwise go unnoticed and develop into real problems at a later date.

REPORT OF RECORDER OF BRANDS.

GEO. PILMER, RECORDER.

Until complete reports of shipments up to December 31st, 1941, are received sometime in January, it is impossible to make any definite comparisons with the previous year, but so far as can be seen at present shipments of cattle will show an increase of around 5,000 head over 1940, chiefly from the Cariboo District. Complete figures will be supplied as soon as possible.

Splendid co-operation has been received from the Provincial Police in carrying on the inspection-work and also in making the many investigations required from time to time. Unfortunately the police did not take over the Yale toll-gate on the Fraser Canyon Highway as had been expected, and proper check on stock and hides passing down the highway has not been possible.

Among our paid Inspectors there have been a few changes: W. F. Pinchbeck, Williams Lake, who had been Brand Inspector there for many years, passed away in the spring. His son, Wilfred, took over the work, but after some months found it necessary to resign and J. M. G. Smith has been appointed in his place. At Houston, Fraser MacKenzie resigned and Harold H. Silverthorn was appointed; and at Endako A. Annan resigned.

Range-riding has again been carried out during the summer months by co-operative arrangement among the ranchers in Clinton and Lytton Districts, and all appear to be very well satisfied with the results and feel that the money they spent on this work was well worth while.

Convictions were obtained in the following cases:—Branding with unregistered brand: Five, at Williams Lake, Clinton (2), Kamloops, and Fort St. John. Branding illegally: One, at Fort St. John. Dealing in stock without a licence: Five, at Kamloops, Chase, Salmon Arm, Merritt, and Fort St. John. Shipping without brand inspection: Two, at Chase and Lillooet. Slaughtering unlawfully: One, at Summerland. Driving stock without notice: One, at Williams Lake.

Comparative figures of registration, etc., will be submitted as early as possible in 1942.

REPORT OF DAIRY BRANCH.

HENRY RIVE, B.S.A., DAIRY COMMISSIONER.

The winter with the months of early spring having been favourable, a heavy production for the season was anticipated. The spells of extreme heat in summer checked severely the flow of milk and the totals for the year will not exceed greatly those of the previous one, in spite of later moderate weather with ample moisture for growth. Prices for dairy products have advanced, subject, however, to restrictions on the home markets. Prices of nearly all dairy feeds and particularly of concentrates have gone up considerably. Of experienced assistance for the dairy farmer and general farm labour, a lamentable shortage continues. Considering the increase in costs of production, the milk producer has not benefited greatly by any advance in prices so far. Stocks of dairy feedstuffs in the country are fair, considering the wastage due to inclement weather.

DAIRY FACTORIES.

Twenty-seven butter-factories, three cheese-factories, two condenseries, one milk-powder plant, and two casein plants have been in operation during the year. Several plants are devoted exclusively to wholesale ice-cream manufacture. A number of small plants make and retail and some butter-factories make wholesale ice-cream.

All dairy-factories and milk plants have been visited periodically by officials of this Branch. Equipment and utensils, methods employed, storage and sanitation have been regularly inspected and reported on. The grading and testing of milk and cream furnished to plants in respect to practice and equipment have been continually under scrutiny, and many checks of grades and tests allotted have been carried out and results made known to producers.

CREAMERIES.

Despite the somewhat enhanced price for butter-fat now obtaining in this class of product, very little increase in total of creamery butter manufactured has occurred. Rather less than one-half the butter consumed in British Columbia is manufactured here, the rest coming principally from Alberta. Creameries of the Interior, to a very great extent, find local markets and ship little away from their own neighbourhoods. A creamery is proposed for Williams Lake to serve as a distributing-point rather than in response to demands of producers.

CHEESE.

Three cheese-factories usually operate in British Columbia, at least during the summer months. Diversion of supplies of milk took place so that two only of these manufactured during the whole season. Returns were fairly remunerative. A new cheese-factory is operating this season at Edgewood, on the Arrow Lakes.

CONDENSED PRODUCTS.

A very considerable increase in the quantity of evaporated milk manufactured took place this season, prices having advanced materially owing to demand for export to Great Britain. Not much whole-milk powder was made nor was there any substantial increase in skim-milk powder or casein.

ICE-CREAM.

A very good season was experienced and the output at the Coast particularly was greatly in advance of former years. Besides the temperatures that prevailed, the presence of the various mobilized units largely accounts for the demand.

HERD IMPROVEMENT.

Fourteen cow-testing associations employing seventeen supervisors have been in operation during the year. Approximately 8,345 cows have been on test during the year, being an average of about 490 per association and twenty-one per herd. Returns received continue to show advances in total production, due largely to elimination of low-producing strains and to better care and management. In a minor degree these are due also to planned, enlightened breeding arrangements, but this phase develops slowly. Extension of the work of record-making which is necessary to any permanent cumulative improvement in dairy quality seems extremely difficult to secure. The proving of dairy sires through the production of offspring continues, but great acceleration is required to make the project the timely and popular measure it should be.

During the last weeks of March, a course for intending applicants for positions as cow-testing association supervisors was held in Vancouver on the premises of Hoy's Crescent Dairy, Ltd. Eight were in attendance.

CREAM-GRADERS' LICENCE EXAMINATION COURSE.

A cream-grader's licence examination course was held on the premises of Hoy's Crescent Dairy, Ltd., March 17th to 29th, inclusive, of this year. A class of nine attended, all with previous experience; one for testing only.

LICENCES ISSUED.

During the year, twenty applicants for testers' licences were examined. Seventy-seven testers' licences were issued and forty-two combined testers' and graders' with one single grader's licence. To fifty-six persons, firms, companies, or associations creamery or dairy licences were issued.

VERIFICATION TESTS.

No verification tests were requested during 1941.

MEETINGS.

Meetings were attended and participated in by members of this Branch at Armstrong, Barriere, Essondale, Keatings, Kelowna, Malakwa, Saanichton, Vancouver, Vernon, and Victoria.

PUBLICATIONS.

Dairy Circulars No. 43, "Annual List of Milk and Butter-fat Records"; No. 44, "The Tenth List of Dairy Sires"; and No. 45 (stencil), "Second List of Long-distance Production Records" were the publications of the year.

OFFICE-WORK.

Reports, returns, and inquiries as to manufacturing of dairy products and to markets, together with applications, notices, and correspondence regarding cream-grading, testing, licences, milk records, and dairy sires continue to increase in volume. The work of the two stenographer-clerks has been most satisfactory.

GENERAL.

A "refresher" course in Cheddar-cheese making was held at the University of British Columbia, March 3rd to 15th, under the University Extension Service, conducted by T. Hicks, of the Federal Department of Agriculture, Ottawa. A number

with cheese-making experience attended. The course might well be repeated for several years to come, as this Province could benefit greatly by inducing interest in the manufacture of cheese.

Regular returns of manufactured dairy products are received and transmitted in co-operation with the Dominion Bureau of Statistics. Factory and dairy plant inspection with checking of grades and tests were carried out by F. C. Wasson and F. Overland, Provincial Dairy Inspectors and Instructors, while supervision of herd improvement work with dairy sire listings was in charge of G. H. Thornbery, Assistant in Charge, Cow-testing Associations—all of whom have continued to show application and devotion to their work.

CREAMERY AND DAIRY LICENCES ISSUED DURING 1941.

Acme Dairy, Limited, 126 Hastings Street West, Vancouver; Arctic Ice Cream & Dairy Co., Ltd., 1166 Hornby Street, Vancouver; Arlada Cheese Factory (Alfred Slater), Edgewood; Armstrong Cheese Co-operative Association, Armstrong; Associated Dairies, Ltd., 405 Eighth Avenue West, Vancouver; Avalon Dairy (J. Crowley), Wales Road and Forty-third Avenue, Vancouver; Balmoral Farm Dairy (W. Young), 4301 Hastings Street East, Vancouver; Borden Co., Ltd., The, R.R. 1, Sardis; Borland Ice Cream Co., Ltd., 1520 Sixth Avenue West, Vancouver; Cariboo Farmers' Co-op. Association, Box 34, Quesnel; Central Creameries (B.C.), Ltd., 325 Railway Street, Vancouver; Columbia Valley Co-op. Creamery Association, Box 25, Golden; Comox Creamery Association, Box 460, Courtenay; Cowichan Creamery Association, Box 130, Duncan; Creston Co-operative Creamery Association, Creston; Crystal Dairy, Ltd., 1803 Commercial Drive, Vancouver; Drake's Dairy (Geo. A. Drake), 441 Sixth Street, New Westminster; Empress Dairies, Ltd., 1002 Hastings Street West, Vancouver; Frasea Farms, Ltd., Eburne; Fraser Valley Milk Producers' Association, 425 Eighth Avenue West, Vancouver; Fraser Valley Milk Producers' Association, Sardis; Fraser Valley Milk Producers' Association, Abbotsford; Gibson's Dairy Produce, Ltd., 7 Hastings Street West, Vancouver; Glenburn Dairy (C. A. Haslam), 3695 Hastings Street East, Vancouver; Golden Arrow Creameries, Limited, 1001 Pender Street West, Vancouver; Guernsey Breeders' Dairy, Ltd., 2405 Broadway West, Vancouver; Hazelwood Creamery Co., Ltd., 351–355 Keefer Street, Vancouver; Hoy's Crescent Dairy, Ltd., 1335 Howe Street, Vancouver; Hoy's Ice Cream, Ltd., 1335 Howe Street, Vancouver; Interior Creameries (Alf. Miller), Prince George; Interior Creameries (Alf. Miller), Telkwa; Jersey Farms, Ltd., 2256 Broadway West, Vancouver; Kelowna Creamery, Ltd., Pendozi Street, Kelowna; Meadowvale Creameries, Ltd., 8860 Hudson Avenue, Vancouver; Medosweet Dairy Products, Limited, University Hill, Point Grey; Melrose Dairies, Ltd., 3396 Kingsway, Vancouver; Mission Farm Products, Limited, Mission; Nanaimo Creamery Association, 625 Pine Street, Nanaimo; National Dairies, Ltd., 1132 Hastings Street East, Vancouver; Northwestern Creamery, Ltd., 1015 Yates Street, Victoria; Okanagan Valley Co-op. Creamery Association, Vernon; Okanagan Valley Co-op. Creamery Association, Enderby; Palm Dairies, Ltd., Kamloops; Palm Dairies, Ltd., Grand Forks; Palm Dairies, Ltd., 685 Baker Street, Nelson; Palm Dairies, Ltd., Nelson and Cambie Streets, Vancouver; Palm Dairies, Ltd., 930 North Park Street, Victoria; Peter's Ice Cream Co., 3205–3207 Broadway West, Vancouver; Registered Jersey Dairies, Ltd., 608 Broughton Street, Victoria; Richmond Milk Producers', Ltd., 1508–1512 Hastings Street East, Vancouver; Royal Dairy (F. A. W. Grahame), Monteith Street, Vernon; Royal Dairy, Ltd., 707 View Street, Victoria; Salmon Arm Co-operative Creamery Association, Salmon Arm; Salt Spring Island Creamery Co., Ltd., Ganges; Turner's Dairy, Ltd., 666 Sixteenth Avenue East, Vancouver; and Valentin Dairy (H. B. M. Valentin), 218 Eleventh Street, Prince Rupert.

COMBINED MILK-TESTERS' AND CREAM-GRADERS' LICENCES ISSUED DURING 1941.

Akerman, J. E., Ganges; Anderson, J. D., Quesnel; Arndt, Gus, Box 324, Kelowna; Batey, H. S., 1015 Yates Street, Victoria; Clarke, Everard, Vernon; Davidson, W., 1756 McSpadden Avenue, Vancouver; Drake, A. W., Ganges; Dungate, Edward,

Prince Rupert; Dungate, W., Prince Rupert; Ellis, Jack, 4328 Venables Street, Vancouver; Freer, Scott, Box 67, Vernon; Grahame, F. A. W., Monteith Street, Vernon; Harkness, W., c/o J. Creech, R.R. 1, Campbell River; Haslam, W., 130 Robins Street, Nanaimo; Higham, C. J., General Delivery, New Westminster; Holmes, Jas., 396 Twentieth Avenue West, Vancouver; Hoskins, Alf. C., Box 365, Chilliwack; Innes, A. E., 325 Railway Street, Vancouver; James, D. A., 3508 Eighteenth Avenue West, Vancouver; Jenne, H. H., 401 Kokanee Avenue, Nelson; Johnson, Geo. D., 3484 Kingsway, Vancouver; MacKerricher, W. R., 328 Twenty-third Avenue West, Vancouver; McAllister, C. W., 707 View Street, Victoria; Morse, A. O., 2685 Pandora Street, Vancouver; Muraro, W., Box 366, Nelson; Parkin, John, c/o Comox Creamery, Courtenay; Patchett, Geo., c/o Cowichan Creamery Association, Duncan; Patten, L. W., Box 115, Vernon; Penman, W. C., 777 Fort Street, Victoria; Pyvis, Roy T., Box 152, Chilliwack; Reid, S. E., 636 Fifty-seventh Avenue East, Vancouver; Reusch, H. P., c/o National Dairies, 1132 Hastings Street East, Vancouver; Rolph, E. N., 927 Pine Street, Kamloops; Ross, Paul B., 608 Broughton Street, Victoria; Skelley, E., c/o Creston Co-op. Creamery Association; Skelton, R. J., Salmon Arm; Sorensen, Walter, 337 Dunsmuir Street, Vancouver; Strachan, Jos., 325 Railway Street, Vancouver; Thomson, F. D., Box 19, Quesnel; White, C. J., Box 308, Penticton; Williams, Jos., 2439 Adanac Street, Vancouver; and Wise, Harold, 1031 Comox Street, Vancouver.

MILK-TESTERS' LICENCES ISSUED DURING 1941.

Annis, F. R., Box 10, Telkwa; Antilla, Lawrence E., Box 10, Vernon; Ardley, Ernest S., 2921 Windsor Street, Vancouver; Atkinson, G. W., 3433 Dundas Street, Vancouver; Austin, Philip, Telkwa; Bailey, Geo. H., c/o J. E. Wingrove, Cloverdale; Barone, Adam, Prince George; Barren, Alex., 258 Steveston Highway; Bothwell, Howard A., R.R. 3, Cloverdale; Boutin, Henri J., Sub.-P.O. No. 36, Vancouver; Brown, Geo. W., 1015 Yates Street, Victoria; Busby, Chas., Armstrong; Busby, G. A., Armstrong; Cameron, Wm. C., Enderby; Campbell, Douglas G., Salmon Arm; Canavor, Leslie, 4301 Hastings Street East, Vancouver; Carrell, Morris P., Mission Farm Products, Mission; Chevalley, Frank, R.R. 1, Sardis; Clare, Robt. R., 405 Eighth Avenue West, Vancouver; Clegg, R., 2125 Argyle Street, Hollyburn; Cranswick, P., 1002 Hastings Street West, Vancouver; Dinsmore, D. R., 195 Twentieth Avenue West, Vancouver; Dougans, Douglas H., 3550 Thirty-ninth Avenue West, Vancouver; Drake, Geo. A., 441 Sixth Street, New Westminster; Drake, S. Stewart, 441 Sixth Street, New Westminster; Evenson, A. H., Palm Dairies, Kamloops; Falk, L. W., General Delivery, Abbotsford; Fawcett, Geo., 930 North Park Street, Victoria; Gibbs, J. A., 930 North Park Street, Victoria; Hilton, C., 666 Sixteenth Avenue East, Vancouver; Holmes, C., 2305 Maple Avenue, New Westminster; Hoy, Norman D., 5998 Larch Street, Vancouver; Ingledew, N. H., 1935 Twelfth Avenue West, Vancouver; Jenne, L. H., Palm Dairies, Nelson; Jensen, A. P., Penticton; Johnston, Wm. G., 311 Observatory Street, Nelson; Jokanovich, Robt., 442 Salisbury Drive, Vancouver; Jones, Mrs. Mary J., Box 466, Penticton; Laker, D. H., 605 Forty-eighth Avenue East, Vancouver; Lucas, Arthur R., 2642 Fourteenth Avenue West, Vancouver; Marcy, Ella S., Sardis; Martin, Geo. R., 405 Eighth Avenue West, Vancouver; McArthur, R. W., 8860 Hudson Avenue, Vancouver; McLeary, Sam, Box 186, Cranbrook; Miller, Alfred, Prince George; Miller, Ronald C., 22 Twenty-second Avenue West, Vancouver; Monahan, A. W., 305 Eleventh Avenue West, Vancouver; Mullen, Jos., Armstrong; Murray, Hazel A., 208 Maple Avenue, Chilliwack; Nash, Sydney C., Armstrong; Norton, F. H. A., 1015 Yates Street, Victoria; Okulitch, V. J., Abbotsford; Orr, J. B., R.R. 1, Sardis; Paulsen, Thorvald, Telkwa; Petersen, Martin, Telkwa; Rose, Mrs. Agnes J., Vanderhoof; Rose, J. A., Mission City; Ross, Mrs. Rose, 709 Vernon Street, Nelson; Rowbotham, B. E., Eburne; Scofield, J. K., c/o Cariboo Farmers' Co-op. Association, Quesnel; Seller, G. A., 666 Sixteenth Avenue East, Vancouver; Slater, Alfred, Edgewood; Smith, Henry, 1335 Howe Street, Vancouver; Smith, L. E., 3633 Jersey Avenue, New Westminster; Steeves, Donald R., 2256 Broadway West, Vancouver; Tait, W. J. C., University Hill, Point Grey; Thom, Harold H., Mission; Toews, G. F., Eburne; Turner, L. H., 666 Sixteenth Avenue East, Vancouver; Udy, R., 368 Sixth

Avenue East, Vancouver; Valentin, H. B. M., Box 533, Prince Rupert; Washington, F. J., 425 Eighth Avenue West, Vancouver; West, Chas. H., c/o Avalon Dairy, Wales Road and Forty-third Avenue, Vancouver; Wilson, Allen, Box 97, Courtenay; Wood, Geo. Roger, 3380 King Edward Avenue West, Vancouver; Wood, R. K., 545 Cornwall Street, Victoria; and Young, Leslie A., 1636 Eleventh Avenue West, Vancouver.

CREAM GRADER'S LICENCE ISSUED DURING 1941.

McArthur, R. W., 8860 Hudson Street, Vancouver.

REPORT OF POULTRY BRANCH.

J. R. TERRY, POULTRY COMMISSIONER.

Conditions such as prevailed during the last war were approximated by the industry during the present year.

In the early weeks of the year egg prices were depressed and as a result many laying fowls were marketed. Reports were then rife as to possibility of Great Britain needing many eggs to replace those formerly imported from Denmark, Holland, France, and Belgium. With only the Dominions and the Republic of Eire to draw supplies from, Canada, owing to nearness to the Motherland, was first looked to for supplies. A total of 250,000 cases were sent in the first shipments, and of these this Province sent a good quota, despite the handicap of distance. To assist in shipping expenses the Department, through the the Honourable the Minister, provided some thousands of dollars, which action enabled dealers to clear up the surplus which had accumulated. This in turn started an upward turn for egg and poultry prices, which ranged as high as 30 per cent. above prices last year.

It is now known that the Dominion authorities have contracted to send 1,000,000 cases in the next few months, and towards this total British Columbia is again expected to send its share. The effort will be a challenge to our breeders, and it is hoped that the transaction will at least recompense them for their efforts.

Many breeders report great difficulty in getting either experienced or inexperienced assistance.

PRICES.

The following is a comparison of prices received by the producer per dozen for the past ten years:—

	Cents.		Cents.
1932	15	1937	24
1933	15	1938	25
1934	15	1939	23
1935	16	1940	22
1936	21	1941 (eleven months)	27

MARKET CONDITIONS.

The winter months, particularly at the Coast and Island locations, were the mildest experienced for many years. As a consequence, egg production was very good, partly accounting for the price slump of January.

Throughout the hatching season, which now extends from January to late June, the weather was favourable. Later on inclement weather, following a very hot spell in early fall, had a disastrous effect on egg production. In addition, the many general farmers, who were operating fair-sized poultry sections in connection with their mixed farming, suffered heavy losses through damaged grain-crops.

BREEDING OPERATIONS.

During the past few years many producers have operated breeding-pens to supply eggs to hatcheries. The plan in general use is for the hatchery owner to supply

reliable breeding males to producers and contracting to take all hatching-eggs produced. Sufficient breeders are now operating to enable them to organize an association to look after their interests.

The hatchery operators report increased business this year, some of them having to increase equipment to take care of orders. A large proportion of chicks produced were again exported to the Prairie Provinces.

It is noticed that many of the chicks hatched are from pure-bred fowls crossed. This practice is also being taken up by ordinary breeders, it being found that in most cases better vitality is shown. In addition, the carcasses of such crosses are more suitable for table purposes. Many hatcheries discontinued the exclusive sale of day-old cockerels, purchasers being expected in future to buy day-old pullets as well.

DEPARTMENTAL WORK.

During the year the usual Farmers' and Women's Institute meetings were addressed by members of the Branch. In addition, Fall Fair Exhibitions were attended also and at some the poultry exhibits were judged. The exhibits in most cases showed a slight drop in numbers, but were of higher class than usual.

Several books and circulars were revised, including the bulletin "Poultry-house Construction," and circulars dealing with egg formation and care of feathers. Articles were prepared and supplied to poultry journals and weekly farm editors of city newspapers.

Many interviews were held during the year, many of them dealing with poultry problems, in addition to information needed by prospective breeders.

Mail received and sent out was above average for the year, there being an unusual number of disease inquiries.

BLOOD-TESTING WORK.

As usual this work is again being carried out, with the bulk of the operations taking place in the Fraser Valley. The Gulf Islands and Vancouver Island, with the Okanagan District, are other parts where birds are tested.

The writer reports that about the same number of birds are being tested on the Island this year, with less turkeys than last year. This is partly due to the fact that charges for these fowls have been greatly increased.

It should be noted that water-fowl have been found immune to pullorum trouble.

The Department's testing-work is again being conducted by Dr. Wood and his staff assistants at the University of British Columbia laboratory.

Complete details of the testing-work may be found in the report of G. L. Landon, B.S.A., on another page.

BOYS' AND GIRLS' CLUBS.

This year most of the clubs are listed under the baby-chick class, with a few clubs only using hatching-eggs for their project.

Out of a total of forty-one clubs the Fraser Valley District leads with nineteen clubs this year, nine of these being organized at Mission. This is followed by the Okanagan with twelve clubs. A great majority of the clubs purchased day-old chicks. Vancouver Island clubs, all of whom purchased hatching-eggs, totalled six. The average number of members in each club was nine.

In most cases the clubs were organized by District Agriculturists, with Farmers' Institutes, Women's Institutes, and Poultry Association officials. The clubs at Mission are the oldest in the Province, dating back to 1916.

POULTRY ASSOCIATIONS.

During the year two Provincial associations were discontinued, being the B.C. Turkey Club and Light Sussex Club. Both organizations were organized during the boom period of 1928–30, and the writer, after making inquiries during the summer, arranged for closing out the two clubs. Each club was able to distribute cheques to all members in good standing.

The Provincial Association marked time during the year. Owing to lack of Government grant its work has been severely curtailed. The business of the organization has, perforce, been conducted by correspondence.

During the coming poultry show season two affiliated Associations are to hold shows: Ladysmith and Vancouver. The Ladysmith show is to be again organized and managed by our worthy President (Rev. C. McDiarmid).

A movement is on foot to form a Provincial Poultry Committee similar to Eastern Provinces, and the Provincial Association has been asked to take its place with the other allied organizations.

DISEASES.

Many post-mortems were made by members of the Branch; also whenever possible specimens were forwarded to Dr. E. M. Bruce, V.S., pathologist in charge at Sidney Experimental Farm (Laboratory Division). The following diseases were encountered during the year by visit or by postal procedure:—

Paralysis, 104; coccidiosis, 32; leukæmia, 7; tuberculosis, 3; diphtheric roup, 9; worms, 22; vent gleet, 4; ovarian, 18; and cannibalism, 4. Rabbit diseases: Snuffles, 3; and coccidiosis, 2. Water-fowl: Paralysis, 2. Turkey: Blackhead, 9.

The majority of cases inquired into naturally originated in the Fraser Valley.

The matter of poultry-disease investigation and prevention has been given much attention during the year, both by public and private research authorities. The discovery of new drugs, particularly those dealing with parasitical infestations, promises to be of great benefit to poultry-breeders. Commercial druggists are now making these drugs available and good results have been reported in the Province.

Paralysis in its various forms seems to be on the increase and this Division again urges that prevention by regular and persistent culling be carried out by breeders. Experiences met this year by the Division again proves the soundness of the advice to breed from disease-resistant stock is the safest and best way to fight this and most other diseases.

WATER-FOWL.

Duck-production has about equalled last year's total, with Khaki Campbell varieties leading in the laying division and Muscovy and Pekin in the meat and egg production classes.

The consumption of duck-eggs is increasing, advertisements and window-cards pointing to this. Duck-eggs are richer than fowl-eggs and, where the ducks are fed suitable foods, should prove more popular than at present. Prices per dozen, allowing for increased weight, are generally lower than other eggs. For culinary purposes they are par excellence.

Geese have increased slightly during the year, the Toulouse variety being by far in the majority. This breed are good layers, quick growers and hardy. Very little shelter is needed, and where grass is available they should be produced cheaply. A daily feed of whole grain fed in water-troughs is all that is needed to produce a plump bird at the holiday season. Goose-grease is still a marketable commodity. It is sold by some druggists at nearly $1 per pound. The feathers fetch a higher price than common fowls. Duck feathers are also profitable.

Emden geese, white plumaged variety, are still bred in one or two localities. In weight they equal the Toulouse, and whilst not quite as prolific as layers they make excellent mothers.

TURKEYS.

The Bronze variety is still the most popular, although the White Holland and Bourbon Red breeds are increasing in public favour. This year the production will be larger than last season. Prices will be higher and this will help offset the price of grain and other feeds used. Boiled barley and small potatoes are given, being fed by most of the turkey-rearers. These feeds produce a superior white, soft flesh, so much in demand.

Fewer turkeys are being blood-tested this year for pullorum trouble. The cost of testing is given as one reason for this condition, charges being tenfold higher than last year.

REPORT OF WOMEN'S INSTITUTES BRANCH.

MRS. V. S. MCLACHLAN, SUPERINTENDENT.

Women's Institutes have continued their war-time programme of production, conservation, and marketing with unabated zeal, as started in 1940. They read and do their best to carry out the advice contained in the circulars sent out by the Agricultural Production Committee as well as such suggestions as are made from time to time in the monthly Women's Institute Bulletin.

CONSERVATION OF FRUITS AND VEGETABLES.

Mrs. J. F. Price, Vice-President of the Provincial Board, is also Chairman of the B.C. Food Conservation of the Red Cross Society. Last year this Committee launched a food conservation project with a special invitation for co-operation extended to the Women's Institutes in the fruit and vegetable growing areas of the Province.

The Red Cross offered cans, some sugar, labels, cartons, warehousing, and all transportation costs, the Institutes being asked to provide fruits and vegetables, labour, and as much sugar as possible. The aim of the Committee was to process fruits and vegetables which might otherwise be wasted, and distribute them to civilian victims of war in Britain, to Canadian troops in hospitals or camps overseas, military hospitals in Canada, and needy evacuees in Canada. Fruits or vegetables unsuitable for these purposes were to be distributed to charitable organizations.

Last season's pack of fruit and vegetables amounted to about 12 tons, under half of which passed the overseas test. However, Women's Institutes in British Columbia and Ontario did such good work that this year they were asked to undertake the project again on a larger scale and circulars were sent to all Institutes in the Province. This year approximately 62 tons of processed fruits have been conserved, of which 59 tons have been shipped overseas and the remainder will be distributed in accordance with the aims and objects of the project.

Being a co-operative project it is difficult to estimate exactly the number of Women's Institute members who contributed to this successful effort, as practically every Institute member is also a member of the local Red Cross Unit.

However, of the sixty-three centres which have sent in canned products to the Provincial Red Cross Warehouse, fifty-one have been Women's Institutes. These are:—

Aldergrove.	Kaslo.	Pitt Meadows.
Armstrong.	Kalamalka.	Point Grey.
Arrow Park.	Kelowna.	Poplar Manor.
Balfour and Queens Bay.	Keremeos.	Quick.
Beaver.	Langley Fort.	Robson.
Bonnington and S. Slocan.	Langley Prairie.	Rutland.
Burton.	Mission.	Ryder Lake.
Cedar.	Nakusp.	Strawberry Hill.
Coghlan.	Nelson.	St. Elmo, Laidlaw.
Coldstream.	New Denver.	Upper Camp River.
Cowichan.	Okanagan Centre.	Upper Sumas.
East Chilliwack.	Okanagan Falls.	Vernon.
East Arrow Park.	Oliver.	Victoria.
Edgewood and Inonoaklin.	Otter.	Westbank.
Haney.	Patricia.	Willow Point.
Hatzic.	Peachland.	Winfield.
Huntingdon.	Penticton.	Wynndel.

Mrs. Price states: "The Red Cross and Women's Institutes have initiated an important experiment—that of the organized use of volunteer effort to conserve surplus products which otherwise go to waste in the fields of this bounteous Province. Although there are still many problems to be solved in connection with it, yet it has met with considerable success and is a project well worth developing into a permanent work, attacking as it does the fundamental human problem—people going hungry and food going to waste."

In addition to the above work, practically every Institute member is also a Red Cross member and in many of the smaller communities the Institute is also the Red Cross unit. Since the outbreak of war the Institutes have followed the policy of co-operating with existing organizations rather than forming new ones for war-work, and have achieved a great deal of work which is credited to other organizations. For this reason, at their recent meeting the Provincial Board drew up a questionnaire asking for details of Institute war-work. The records from these questionnaires are being compiled in my office, but will not be available until sometime in the new year.

B.C. WOOL-FILLED COMFORTERS.

This work is increasing in activity now that the busy summer season is over. In every district where it is possible to obtain wool the Institutes are at work once more making wool-filled comforters for Britain. Huntingdon reports that in their district "ten sheep have given the only coats they have to make comforters for Britain." Since the project was started by Mrs. George Murray in November, 1940, reports sent to this office show that the Institutes have made over 1,000 comforters, most of them filled with B.C. wool. Of this number 645 were sent direct from this office to England, the first ten cases going to Mr. McAdam, at British Columbia House, and the rest to the Women's Voluntary Service and the Salvation Army. All arrived safely and the recipients have sent most grateful thanks. Mr. McAdam arranged a broadcast for the presentation of the first cases to the Lord Mayor of London. This came to British Columbia as an extremely clear rebroadcast and was heard with pride by many of the Institutes. He also sent photos of the presentation. We also heard indirectly that one village in Kent admired the comforters so much that they insisted on exhibiting them in the window of the local shop before they were distributed. As the problems of shipping increased with the Battle of the Atlantic, Institutes were advised to give their comforters direct to the Red Cross or Bundles for Britain, to save transportation both on the seas and in England. It has been reported to this office that 601 comforters have been sent in this way and all those which are wool-filled bear the label "A gift of B.C. Wool from the B.C. Women's Institutes."

DISTRICT CONFERENCES.

During the year District Conferences were held at Keremeos, in the Okanagan District; Armstrong, Salmon Arm District; Qualicum, North Vancouver Island District; Victoria, South Vancouver Island District; Upper Sumas, South Fraser District; Hammond, North Fraser District; and Pouce Coupe in the Peace River District. I attended all these Conferences, accompanied by Mrs. B. F. Gummow, the new Provincial President, except the one in the Peace River District. Owing to its scattered nature the Kootenay District were unable to finance a conference this year, but the smaller Arrow Lakes District held a successful rally at Nakusp. Small local rallies were also held at Prince George for six of the nearer Bulkley Valley Institutes and at Clearwater for the three near-by Institutes. I attended this rally and found all the members most enthusiastic. The highlights of this rally were provided by Mr. G. Luyat, District Agriculturist, who spoke to a rapt audience on their own local problems. All the delegates were most interested in his address and showered him with questions and offers of hospitality if he would visit them again.

PROVINCIAL BOARD MEETING.

The Hon. the Minister of Agriculture called a meeting of the new Provincial Board in Victoria in November, when all five members attended for two busy days. All the members seemed to be businesslike and inspired with practical ideas on Institute-work. The urgent need for eggs for Britain was explained at length by Mr. John I. Brown, who also showed films of the egg industry. Following this meeting every District Conference endorsed a resolution urging the necessity for taking all necessary steps to conserve eggs to meet the contracts made by the Dominion with Great Britain.

OTHOA SCOTT TRUST FUND.

Owing to the death of Mrs. J. D. Gordon and the absence overseas of Mr. Alan Morkill, it is necessary to appoint two new trustees for the Fund. Mrs. W. S. Webster, R.M.D. 4, Victoria, has been appointed in the place of the late Mrs. Gordon and probably Mr. W. D. Todd will be selected to fill Mr. Morkill's place. There is now $5,700 in Dominion Government bonds and over $800 in the Bank of Commerce. The Provincial Board authorized the purchase of another $500 worth of bonds as soon as the new trustees are appointed.

NEW INSTITUTES.

There are now 186 Women's Institutes in the Province, with a population of 4,008 members (as at June 30th, 1941). Three new Institutes have been organized at Dragon Lake, in the Bulkley Valley, and Northside, Vanderhoof, in the same district, and at Landry, in the Peace River District. A report has been received of the urgent need for Institutes in the little communities in the area between Golden south to Fernie and Cranbrook. A clergyman recently moved to this area from a dried-out Prairie district, says that conditions here are far worse than in his dried-out parish, as "these people do not seem to have any one to help them." Plans are being considered for some method of getting in touch with some of the communities with a view to starting Women's Institutes.

Three Institutes have fallen into abeyance during the year, largely because of a shift in population; they are Deerholme and Vimy, in the South Vancouver Island District, and Lull Bay, in the North Fraser District.

The Women's Institute Bulletin is sent out each month to all Institutes and to District Board and Provincial Board members, as well as copies sent by request to various papers and magazines. The efforts made to keep the Bulletin brief but interesting appear to be rewarded with increasing interest in the publication.

REPORTS OF DISTRICT AGRICULTURISTS.

NEW WESTMINSTER.

G. L. LANDON, B.S.A.

The winter of 1940–41 was extremely mild, followed by a fairly late spring with considerable rainfall in May and June. This was followed by the hottest ten days in years in the Fraser Valley during July. The heat was so extreme that considerable damage was done to vegetable-seed crops, oats, tree-fruit crops, etc.

Finally, September commenced with a spell of wet weather which has continued intermittently right through to late November. While the total precipitation in September and October were not records, the wet spell was the longest since 1920.

GENERAL AGRICULTURAL CONDITIONS.

The unusual climatic conditions have had an adverse effect on crop production, particularly the oat-crop, clover-seed crop, vegetable-seed crop, and the late hay-crop. Pasture conditions, of course, have been good all season—the best in years, due to the wet season. It is estimated that 30 to 40 per cent. of the oat-crop was not threshed and the clover-seed crop dropped from 200 tons in 1940 to an estimated 35 tons in 1941.

LIVE STOCK.

As mentioned previously, pasture conditions have been excellent all year for dairy cattle, sheep, etc. Owing to the highest price for butter-fat in twelve years, every possible heifer is being raised for milk production. Dairy farmers generally have had a good year, although an acute shortage of farm labour has had an effect on the situation. More electric milking-machines have gone into use in the Fraser Valley than for

years past. Prices for milk cows have been very good all year; but lately, owing to the shortage of labour, the demand has dropped off.

The lamb-crop was good and the wool-clip was good, with prices firm. The sheepmen have had a very good season.

After somewhat of a slump in late 1940, hog prices improved and the hog market situation is distinctly good this year. Increased feed prices have tended to reduce profits, however.

Increased feed costs have had an effect on production of milk, pork, beef, and eggs this year. This should be remedied to a considerable extent with the new freight policy announced by the Dominion Government.

There has been a good demand all year for pure-bred bulls, boars, and rams of good quality stock.

Interest continues keen in draught- and light-horse production. Indications are that with the threatened shortage of gasoline, the draught-horse will stage a come-back in the Fraser Valley. This in spite of the fact that more tractors than ever have been placed on farms this season.

Field Crops.

Field-crop conditions have already been mentioned to some extent. Owing to the mild weather, there was no winter killing of clover-crops. Seeding was fairly early, but was interrupted by wet weather in April and May. The hay-crop was good, but considerable tonnage was lost by June rains.

The corn-crop was good but, owing to the wet fall, did not mature as well as usual. Yields have been considerably lower than usual.

Potato and root crops made good growth during the growing season, but early and late blight cut into the potato yield very heavily. Blight, combined with wet weather, has reduced the potato-crop by an estimated 30 to 40 per cent.

Warble-fly Control.

Warble-fly control is expanding rapidly in the Fraser Valley and 1942 will see most of the area under organized control. A separate report which dealt with it in detail was forwarded to Dr. Gunn on this project. An estimated 40,000 head of cattle were treated this year and some 730 lb. of Rotox was used in the campaign. First treatment was applied February 13th and last treatment about March 20th. The 1940 report shows 30,000 head treated, so that some 10,000 more cattle were treated this season.

Owing to the increase in the number of cattle treated and the large area now under control, it will not be possible for your District Agriculturist to give each district personal supervision as in past years. The older organized districts will have to mix the material, through their local committees, themselves.

It is expected that all of Langley Municipality and probably all of Surrey will be under control in 1942, as well as portions of Delta.

The following table shows the areas under control in 1941 and those districts which sent in reports. Great difficulty is experienced in securing reports from some districts. Very good reports were received from Chilliwack, Glen Valley, Milner, Mount Lehman, Otter, and Surrey.

District.	No. of Herds.	No. of Stock.	Estimated No. of Warbles.
Agassiz	10	160	.....
Aldergrove	185	1,147	6,868
Chilliwack (including Atchelitz)	813	12,675	6,349
Dewdney-Deroche	76	1,819	1,387
Glen Valley	38	793	1,019
Matsqui	46	969	962
Milner	48	449	2,019
Mount Lehman	87	685	922
Otter	177	1,290	3,564
Poplar	57	363	.....
Sumas (including Yarrow)	183	3,267	5,148
Surrey	207	1,846	7,538
Miscellaneous	2	329	450
Total	1,929	25,792	36,226

JUNIOR-CLUB WORK.

Junior-club work continues to be probably the major project in the Fraser Valley and takes more of the time of your Agriculturist than anything else. It is time well spent, however, and is a project receiving support from every district in the Fraser Valley. The following table shows the number of clubs for the past three years, with data on the various club projects.

Year.	Swine Clubs.	Calf Clubs.	Poultry Clubs.	Potato Clubs.	Grain Clubs.	Total.
1939	2	20	31	9	2	64
1940	1	17	20	8	2	48
1941	2	21	19	8	2	52

In these clubs there was a total of 465 members, made up of 188 members in calf clubs, 16 in swine clubs, 158 in poultry clubs, 18 in grain clubs, and 85 in the potato club project.

Calves were exhibited at local fairs at Agassiz, Mission, Chilliwack, Abbotsford, Langley, and Surrey, and at Vancouver Exhibition.

At Vancouver Exhibition this year the feature exhibit in the live-stock section was the boys' and girls' calf clubs. A total of 152 calves were exhibited in the classes over 1 year and under 1 year of the following breeds: 39 Ayrshire calves, 19 Guernsey calves, 41 Holstein calves, 46 Jersey calves, 4 Shorthorn, and 3 Hereford calves. All these calves were shown on the Wednesday evening in the Arena, making a truly marvellous display and exceeding anything shown in Canada, with the possible exception of the Toronto Exhibition.

In addition, many exhibits were made in the swine, sheep, and goat classes.

Altogether, 1941 has been a most successful season for junior-club work in the Fraser Valley.

JUDGING CLASSES AND COMPETITIONS.

In most districts where boys' and girls' clubs are organized, judging classes are held during the summer months, particularly in Chilliwack and Langley. I attended as many of these as possible, but most of this work must of necessity be done by the local organizers.

Particular mention should be made of the field-day held in August at Swift Canadian Company plant in New Westminster, and at Colony Farm. At the Swift plant a trip was made through the abattoir and carcass grading explained to the club members. Later, a judging competition was held with two classes of carcasses, under the supervision of Hector Ford and Harold Steeves, of the Dominion Live Stock Branch.

A very large number of club members competed at Vancouver Exhibition in stock judging, swine carcass judging, poultry judging, showmanship, etc. The club programme was organized and supervised by your representative, assisted by members of the junior club committee of the Vancouver Exhibition Association.

Five boys and one girl from the Fraser Valley made the trip to Toronto, representing the Province in the Canadian Council competitions. The dairy team, Barbara Lyons and Bill Berry, were members of the Langley Jersey and Holstein Clubs. The swine team, Bill Freeman and Frank Harrison, were members of the Langley Swine Club. The potato team, Jack Maddocks and David Blair, were members of the Richmond Potato Club. These team members won in the elimination contests held at Vancouver and Armstrong Exhibitions.

An excellent showing was made by the teams; the dairy team winning first place, the potato team second place, and the swine team fourth place. This is the first time British Columbia has won the dairy trophy, and, in fact, it is the first team from the West ever to win the dairy competition. Since 1931, it has always been won by Quebec or Ontario.

The teams had a grand trip and related their experiences at the annual banquet of the Langley Agricultural Association on November 14th.

In connection with the team going to the National competitions, I would like to emphasize the value of the coaching given by Tom Berry, Chas. F. Mann, Cliff Freeman, Joe Maxwell, and Sid Gray, organizers of the various clubs. In addition, valuable assistance was given by the staff of the Faculty of Agriculture at the University of British Columbia; H. S. MacLeod and his staff of the Dominion Department of Agriculture; R. L. Davis, and many others.

Lime Committee.

The B.C. Lime Committee, as originally constituted, no longer exists. Dr. D. G. Laird and your representative pass on all applications and forward them to Victoria for payment. Detailed reports on this work are forwarded at the close of each fiscal year.

Fall Fairs.

Your Agriculturist attended the following fairs and exhibitions:—Vancouver Exhibition: Supervisor of club programme; Chilliwack Exhibition: Judge of poultry classes and supervisor of club programme; Mission, Surrey, and Abbotsford Fairs: Supervising the club programme; Langley Fair: Judging the poultry classes and supervising the club programme.

Seed Promotion.

Visits were made to a number of vegetable and sugar-beet seed growers. A great deal of time was spent on the promotion of fibre-flax growing in the Fraser Valley. Some 80 acres were grown this year, but the wet fall has had a serious effect on the quality of the fibre and seed produced. An excellent crop was grown and it was ably demonstrated that the Fraser Valley is a good district for the production of fibre-flax.

Indications are that a scutching mill and machinery will be available to handle the crop in 1942. Should this be the case, there will be no difficulty in securing a comparatively large acreage devoted to fibre-flax.

The sugar-beet seed-growers had a very good year, but vegetable-seed growers have suffered considerable loss due to unfavourable harvesting conditions.

Farmers' Institutes and other Meetings.

Farmers' Institutes, Boards of Trade, Cow-testing Associations, and Poultry Associations have called on this office for addresses at different times. Motion pictures were shown at Chilliwack, Abbotsford, Ladner, Mission, Pitt Meadows, Cloverdale, Surrey, and other districts. Your representative attended field-days of the Ayrshire Breeders at Fairbridge Farm on Vancouver Island; Jersey Breeders' show at Chilliwack; potato-growers' field-days, etc.

Owing to the heavy live-stock and junior-club programme, not as much time was spent on field crops as had been intended. Silage-corn variety tests were arranged and it is expected some valuable data will be received from these tests.

Tests of the Ottawa strain of red-clover seed were also arranged with several growers at Ladner, Nicomen Island, etc. Results of these tests will not be available until 1942.

Poultry Programme.

Blood-testing and approval of the poultry flocks continues to take up a great deal of time. Two inspectors are temporarily working on the flock-approval and blood-testing, but all details, schedules, etc., are arranged from this office.

A detailed report on the flock-approval work is submitted separately each year.

Considerable time has been devoted to the Assistance to Settlers Plan with the co-operation of the Provincial Relief Branch. However, this phase of the work has now practically disappeared.

Unfortunately, it has not been possible to call on many farmers during the year, owing to the heavy programme of junior-club work, poultry blood-testing, and warble-fly control, etc. With the extra amount of work in the Fraser Valley it is only possible to work through local committees and key men in each district.

KAMLOOPS AND NICOLA.

G. A. LUYAT, B.S.A., DISTRICT AGRICULTURIST.

No snow fell during the winter of 1941, with the result that irrigation supplies were cut to a bare minimum and in some cases second-crop alfalfa had to go without a supply of irrigation-water. In many instances irrigation-ditches were running at one-quarter volume of that of the previous year. Temperatures during the winter were very mild and even and at no time went below 15 above zero, and that for only a day or two. The advantages gained from a very easy winter were, however, nullified by a summer climatical condition never experienced before in this district with such severity, that being the continuous rains which fell from the end of July until the middle of October. These heavy rains did make up for the short supply of irrigation-water. The fall season was a particularly good one for the ranges but extremely unfavourable to all crops, and no cold snap was had as is generally expected in November.

BEEF INDUSTRY.

Shipments of cattle commenced to roll from the Nicola and Kamloops Districts by the middle of June and these were heavier than heretofore, probably because the winter had been so mild and because the price was holding well with some fear that it would break later on. Prices for good steers opened at $7.50 per cwt., f.o.b. Nicola and Kamloops. Cows commanded a price of $5.25 to $5.50, with indications that they were a little hard to move. In August the prices advanced readily and from week to week they rose to finally $9 f.o.b. shipping-point for good steers, with cows at $6 to $6.50. In late September there was a slump when it was feared that a new quota might not open on October 1st. Prices dropped back to $8 for steers. There was a keen demand for feeder-cattle all fall and these moved out readily at $7 to $7.50 and $8 for the choice ones.

The Douglas Lake Cattle Company sold some 800 head of 2-year-old steers, which were picked up by a Nebraska feed-lot for feeding. H. Koster, of the B.C. Cattle Company, Canoe Creek, dispersed 1,200 head of cows, calves, yearling steers and heifers through Weiller and Williams, at Edmonton, who in turn sold 300 of the steers to Guichon Ranch, Ltd., the remainder of the cattle went to the Prairies and were marketed around Edmonton.

Market stuff came off the ranges this year in better shape than they have been in for several years back, owing to the abundance of feed stimulated by the wet, cool season. The calf-crop was slightly lower than that of last year as a result of the dry conditions during the breeding season in 1940. Good young breeding bulls, particularly of the Hereford breed, are being picked up readily at prices from $250 to $300 per head, there seems to be a scarcity of the good ones. Breeders are having no difficulty in disposing of what they have. Breeders from this district marketed 15 Shorthorn, 25 Hereford, and 2 Aberdeen Angus bulls at the Williams Lake sale in October. Three car-loads of Shorthorns and Herefords were purchased at the Calgary Bull Sale by the Douglas Lake Cattle Co; Guichon Ranch, Ltd.; Nicola Lake Stock Farm; Basque Ranch, Ashcroft; and C. Turner, Westwold. Quite a number of Hereford bulls raised by Basil Jackson at Ashcroft were purchased by the Douglas Lake Cattle Co. and Guichon Ranch, Ltd., at a good price.

SHEEP AND WOOL.

The B.C. Sheep-breeders' Association, with their head office at Kamloops, reported that 215,000 lb. of wool were shipped from the Kamloops and Nicola Districts, showing an increase of 2,048 lb. over last year. The average price that will be paid the grower has not yet been determined.

Lambs were sold f.o.b. Kamloops from very early summer to late fall at prices ranging from 13 cents to 10.35 cents. There was a slump in the lamb market during October when the Prairie lambs made themselves felt on the Coast market. Sixty-two rams at the annual Ram Sale in September sold for a total of $2,725, making an all-breed general average of $44.50. The averages of the breeds were as follows: 20 Hamp-

shires, $42; 24 Suffolks, $46; 10 Southdowns, $35; 2 Cheviots, $50; and 6 Rambouillets, $53.

At this sale only the better type rams were allowed to be sold and a good steady average price was maintained over all the breeds. Seventeen Corredales and 3 Rambouillets were brought in from the Prairies following the Ram Sale and sold to some of the band operators at $30 each.

Sheep range has always been difficult to find with an increasing sheep population and this year more highland ranges with trails have been opened by the Forest Branch.

Dairying Industry.

With the price of butter-fat showing an increase over that of last year there has been quite an impetus in the production of this line. The total number of pounds of butter-fat of the special grade was 78,487.8 lb., with prices paid to the producer ranging from 28 cents to 34 cents. The prices in May and April were 27 cents and 28 cents, while August returned a high of 34 cents. The total butter-fat production of special and No. 1 for the Kamloops District, ending October 29th, was 117,870.9 lb. During the month of July pastures dried considerably and did not pick up again until September.

Swine Production.

There has been an increase over 1940 in the number of hogs kept in the Kamloops, Westwold, and Nicola communities; with the price of bacon advancing more interest has been shown in swine production. Hogmen are slowly beginning to realize that rail grading has marked advantages over that of marketing on the live basis. In the spring a co-operative car-load was shipped from the Kamloops District, principally from growers who heretofore had not been desirous of having their hogs marketed on a rail-grade basis, and the returns from this shipment were a surprise to many producers and had the effect of making them demand rail grading from their buyers who had not equipped themselves with tattoo outfits up till then and were buying hogs on a live basis at prices below the market value of the hogs. Many of the swinemen now would not sell their hogs on any other basis than on the rail grade, even if they had the opportunity.

The quality of the breeding stock is steadily improving and more producers are aiming at receiving premiums. Taking the district as a whole, it might be stated that more lights than heavies were shipped to begin with and with the experience gained they are now weighing their hogs from time to time to determine the correct time to ship. Greater care in feeding is being taken and those who formerly produced hogs with a soft finish have learned from bitter experience that more grain fitting is required.

Horses.

The horse sale which was formerly sponsored by the Interior Horse-breeders' Association was not held during the year of 1941 because it was thought that the demand was not there. There was some discussion with regard to making a shipment of horses to a sale in Chilliwack, but as it was already filled with valley horses the project had to be dropped. More tractors than ever are in operation on the ranches now and seem to be doing work faster and more efficiently than what was being done with horses. There was a demand for light horses by American buyers during the late spring and early summer and many moved across the line from here.

A breeding-station at Kamloops is in operation with three stallions standing for service; these being "Dolan," owned by Irving and Edwards; "Help Yourself," by J. E. Owens; and "Soneen," by A. McGowan, the latter dying shortly after the breeding season was over. There has been quite a heavy run on the "Dolan" colts for track-work from all parts of Canada and the United States. Good prices have been paid for his stock because of their steady performance on the race-track. The number of mares served from this breeding station by each stallion are as follows: "Dolan," 32 mares; "Soneen," 31 mares; and "Help Yourself," 34 mares.

Poultry.

Generally speaking, with the low price of grain in the Kamloops District poultry has always been a very profitable enterprise. During February and March there was a surplus of eggs on the market in Kamloops, with the result that prices fell off to a low of 15 cents per dozen to the producer. Some effort was made to control the marketing of this produce through the retail stores, who have a habit of slashing prices because of the small surplus on hand. The establishment of a grading-station was spoken of so as to have all eggs pass through one of the wholesaling firms of Kamloops. The surplus production, however, did not last very long and this idea automatically faded away. This fall, eggs have commanded prices from 40 cents to as high as 50 cents per dozen in the stores. Grain has been scarce because all that was marketed in good shape has been picked up, leaving only poorer quality material for feed.

Field Crops.

The year has been most unfavourable for the harvesting of all crops, principally owing to the excess rains which were had from midsummer until the end of October. On some ranches the first crop of alfalfa was not cleaned up until the end of September and in many cases much of the crop was lost. The grain-crops were almost a 50 per cent. loss, much of it sprouting in the stooks. In the first place, some of the yield was cut down by the four or five days of intense heat in July and later by the high moisture content following harvesting. About five combines were sold in the Kamloops District this year of a type suitable to handle small crops. This machine went a long way towards saving the crop wherever it was put to work early.

Two hundred and fifty acres of peas in the Chase community and 200 acres in Westwold were grown under contract with the Armstrong pea growers and from the harvest of these only 50 tons were saved in Westwold and about 150 in Chase, the remainder spoiling entirely from weather conditions. The prices have been $25 per ton f.o.b. Kamloops for wheat and with a keen demand for a good grade of grain. The potato-crop was considerably lighter than last year. Corn-crops for silage wherever grown did very well, even though this crop particularly likes warm weather. Many of the ranches had a large surplus of hay from the two winters preceding and it is not likely that there will be any great shortage except in a few cases.

The alfalfa-seed crops in the Lillooet and Lytton Districts were cut by half in yield, the cause being the lack of sunlight needed for seed setting as well as the conditions under which the crop was harvested. The quantity of good seed harvested in this community is not known at this time. Very little of this seed was harvested in the Kamloops area owing to the weather. The Associated Seed Growers, of Brooks, Alberta, had large contracts for seed-beans in the Kamloops District, but weather conditions were such that only a very limited quantity was harvested in shape to make seed as this crop is very difficult to handle under such conditions.

Boys' and Girls' Projects.

The following clubs and their membership and supervisors were reorganized during the spring of 1941:—

	No. of Members.	Supervisor.
North Kamloops Beef Calf Club	6	T. P. Wilson.
South Kamloops Beef Calf Club	8	A. Frolek.
Westwold Beef Calf Club	10	C. Turner.
Westwold Lamb Club	8	C. Turner.

During the bull sale in March of this year the Diamond S Ranch, operated by Spencer's, Ltd., of Dog Creek, put out twelve 1-year-old Hereford bred steer calves with the junior of this district to feed and prepare for the Christmas fat-stock show and sale to be held on December 1st and 2nd. The calves were distributed on the recommendation of the club supervisors and your Agriculturist to those members who were doing good work. The contract was that each member receiving a calf would have $25 in payment for the animal deducted from his sale returns. This project helped very

materially to stimulate interest amongst the juniors. During the course of the summer a meeting every two weeks, and in some cases every week, was held with each club, at which several judging classes were given as well as questions asked covering the beef industry. At the Provincial Elimination Contests at Armstrong the Westwold Club, represented by Jack McNally and Laverne McLeod, and the South Kamloops Club by Russell and Warner Philip, competed to determine which team would represent British Columbia in the National Contests at Toronto. At this Elimination Contest, Warner and Russell Philip established a large lead over all other Beef club teams. Their good performance in the Provincial Eliminations won for them and their project a place as a team to represent British Columbia at the National Contests in Toronto. In the East these boys scored the highest points in the beef project as a team in judging and oral reasons, but fell to third place on oral questions. Ralph Devick, Jack Wilson, and Leonard Johnson took first honours as a team in the Junior Live-stock Judging Contests at the Vancouver Exhibition.

White-clover Seed Production.

In the spring of this year it was noted that white clover seemed to thrive and grow luxuriantly along the benches of the North Thompson from Little Fort north to Vavenby and north-west in the Upper Clearwater country. Conditions, both climatically and soil, apparently are so favourable to this plant that it has a tendency, when undisturbed, to choke out all other crops. With prices on the retail market of $1.25 per pound there is a possibility that seed from this plant could be produced with very substantial returns to the growers and with very little expense and work connected to it. During the course of the summer stands were examined for their seed content and found to be heavily laden with seed of a good quality. Every effort was made to induce settlers to take up this cash crop, particularly those a distance away from the railroad where transportation costs are an item to consider. Some heads were harvested for the purpose of determining what production might be expected and to find out something about the threshing and cleaning of this particular seed. Threshing was tried with a combine but as the operator did not know much about the adjustments of the screens and the speed of the machine, the results were poor. A quantity is being held awaiting threshing until such time as a representative of the firm selling this combine is here to make the proper adjustments for handling a crop of this kind.

Corn Trials.

Co-operating with Dr. S. E. Clarke, Agrostologist, Swift Current, Sask., C. Tice submitted to this office for trial the following varieties and hybrids of corn: N.W. Dent, F.B.-N.K., D.-N.K., Wis. 325, Wis. 525, Wis. 570, Wis. 606, Wis. 645.

Trial plots were established at the Guichon Ranch, the Indian School at Lytton, Harper Ranch, Kamloops, and with F. P. Stewart, Heffley Creek, but owing to the rush of the season at the time of maturity only those plots on the Guichon Ranch and the Harper Ranch were harvested on the 20-foot row unit basis to determine the dry-matter content of one variety against the other. The yield per acre on a dry matter and green weight basis is as follows:—

	Variety.	Green Weight.	Dry Matter.	Yield. (Tons per Acre.)	
				Dry.	Green.
		Pounds per Plot.	Per Cent.		
Harper Ranch	N.W. Dent	49.5	24.83	4.46	17.97
	F.B.-N.K.	75.9	24.67	6.80	27.55
	D.-N.K.	63.5	26.66	6.14	23.05
	Wis. 325	56.8	24.98	5.15	20.62
	Wis. 525	64.6	26.99	6.33	23.45
	Wis. 570	91.5	29.11	9.67	33.21
	Wis. 606	62.7	27.64	6.29	22.76
	Wis. 645	82.4	27.03	8.08	29.91

CORN TRIALS—*Continued.*

	Variety.	Green Weight.	Dry Matter.	YIELD. (TONS PER ACRE.)	
				Dry.	Green.
		Pounds per Plot.	Per Cent.		
Guichon Ranch	N.W. Dent	46.5	21.61	3.65	16.88
	F.B.-N.K.	77.4	23.03	6.47	28.10
	D.-N.K.	59.5	26.93	5.82	21.60
	Wis. 325	47.6	21.54	3.72	17.28
	Wis. 525	73.5	23.83	6.36	26.68
	Wis. 570	67.4	23.33	5.71	24.47
	Wis. 606	78.5	22.75	6.48	28.50
	Wis. 645	35.5	23.78	3.06	12.89

PROVINCIAL BULL SALE AND FAT-STOCK SHOW.

Again the bulls sold well, with the Herefords averaging $284.50 with a top contributed by J. S. Palmer & Son, selling to Guichon Ranch, Ltd., at $560; the Shorthorns, $257.50, with a top of $510, contributed by Robert Taylor and sold to O'Keefe Ranch. In the market-cattle section of the sale 414 head sold for a gross total of $40,992.18. A few details of the sale are shown by the table:—

Class.	Average.	High.	Contributor.	Prize.
Car-lot of fifteen	$10.73	$13.00	Guichon Ranch	Champion.
Group of five	10.04	12.00	Douglas Lake Cattle Co.	First.
Singles	10.24	30.00	Western Canada Ranching	Grand Champion.
Boys and girls	12.72	21.00	Andre DeLeeuw	Champion.

CENTRAL BRITISH COLUMBIA SALE.

In view of the fact that all Central British Columbia cattle ultimately have to pass through Kamloops over the Canadian National Railway on their way to market in Vancouver, it was thought by your Agriculturist that, as the cattle-producers of that area have never realized full market value for their cattle, either sold in Vancouver or at home to drovers, an auction sale in Kamloops would give them the fullest returns. This idea was eventually linked up with an association in the process of organization in Central British Columbia. In the late summer, following two meetings of the cattle-producers of that area, it was finally decided to hold a sale in Kamloops on October 16th, under the auspices of the Central British Columbia Live-stock Association, at which 677 head of cattle and some 622 head of lambs and ewes were sold. Thirty-one cars of live stock rolled from Central British Columbia by special train into Kamloops, where they were finally graded and sorted into convenient sale lots. The total sales amounted to $38,706.54 with 2-year-old steers averaging $7.60; 1-year-old steers, $7.33; 2-year-old heifers, $7.14; 1-year-old heifers, $7.01; cows of all types, $5.25; and old bulls, $6.11. The sale closed with the contributors of that area highly pleased with the results, as some cattle had realized double the price offered on them at home. With the demand for feeders in the Southern Interior being quite keen, it has been decided to make this an annual event. Formerly these feeder-cattle were sold at sacrifice prices in Vancouver where there was no place for them.

GRASSHOPPER-CONTROL.

Your representative, on instructions from the Minister, acted in the capacity of Secretary-Treasurer to the Nicola Grasshopper-control Committee, as well as the appointee of the Minister to the Committee. Six committee meetings were held during

the season and the annual meeting on October 25th. The total gross expenditure for the year amounted to $1,264.44. From 1940 to 1941 the net assessable cost of control was cut down by $1,231.43. For the first time a bait-spreader was used throughout the entire season and the supervisor of the control-work, C. Guichon, reported on its high efficiency and its economy of bait. The costs of spreading were naturally lower and the bait was spread in a more uniform way without waste. It does not look as though there will be any great infestation next year, according to Mr. Buckell, Dominion Entomologist, but the area requires careful supervision and some baiting to keep the control well in hand. A slight increase in hopper population has been reported on the Tranquille range and in other parts in the vicinity of Kamloops where no control is in effect.

Rural Occupational School.

One Rural Occupational School under the Youth Training Plan was held at Little Fort, where a good attendance was had. This school was in operation for two weeks and the trainees, as well as others joining in at night meetings, reported it as highly educational and successful.

General.

Approximately 400 lb. of gopher bait made with rolled oats as a base and strychnine as the poisoning element were distributed amongst the settlers and farmers of the North Thompson Valley. Effective work through this poison was reported by all who used it.

Cattle treated for warble-fly control during the spring of this year numbered 3,886. All breeders using the treatment reported very effective results.

Prior to the opening date on which bulls are allowed to run at large considerable work was done in co-operation with the police in having the "Animals Act" enforced, so that cattlemen would not have difficulties of early calving in cold weather.

BULKLEY VALLEY.

S. G. Preston, M.S.A., District Agriculturist.

The early part of the season was very favourable but, gradually, lack of moisture retarded growth and the crops and pasture suffered further through a heat-wave in July. Added to this, continued fall rains made harvest and threshing operations difficult. At present, however, practically all crops have been threshed and a good price is being realized from grain, seed, and live stock.

The following precipitation records as supplied by the Smithers Experimental Sub-station show the distribution of rain throughout the season. It will be noted that when these figures are compared with those from other parts of British Columbia, this district has suffered less from excess fall moisture than elsewhere.

Month.	1941.	1940.	1939.
April	0.63	0.75	0.67
May	1.15	0.45	1.73
June	2.21	0.63	1.30
July	1.10	1.72	2.17
August	0.87	1.61	0.35
September	2.47	0.36	0.79
October	1.64	1.76	2.43
Totals	10.07	7.28	9.44

Field Crops.

Cereals.—The Bulkley Valley and Lake District will have a shortage of both feed and seed grains. The yields are little better than one-third the expected amounts. This is partly due to reduced yields during the dry part of the growing season and the heat-wave, as well as losses by rain between harvest and threshing. This season the

standard varieties such as Victory Oats, Marquis Wheat, and O.A.C. 21 barley gave considerably the best results; the early varieties of grain giving a very low yield.

An experiment was carried out with fibre-flax. Ten pounds of seed were supplied by the British Columbia Department of Agriculture and were grown on the farm of Ray Oulton, of Smithers. The results were very satisfactory. The seed ripened well and the flax was a good height. A sample will be retted and dried and forwarded to Ottawa for fibre analysis.

Forage-crops.—The estimated yield for timothy-seed for 1941 is from 390 to 475 tons. This follows very closely to the original estimate of 500 tons. The reduction could easily be accounted for by losses through fall rain, late harvesting, and an unusual amount of destruction in the stooks by mice. The grade has not been affected by the rains. Practically all returns have been No. 1 with 95 to 100 per cent. germination and the colour good.

The hay-crop was fair this season and was stored before there was any loss by rain. However, there will be little surplus as most farmers cut only sufficient for their own needs. About 500 tons have been marketed to date and this will be practically all that will be sold, especially with the shortage of feed-grain.

More than usual interest is being shown in the growing of legumes. I have reported that 400 lb. of alfalfa-seed, 150 lb. of red clover, and 400 lb. of alsike were purchased by farmers of this district for 1941 plantings, together with approximately 1,000 lb. of timothy-alsike mixtures. Through the C.T.A. and this office we have been promoting the use of legumes, especially for dairy cattle, and with an increase in the price of butter-fat the farmers have been looking for a feed that will give greater milk production. Further certain nutritional troubles in cattle and sheep could be eliminated by the inclusion of legumes in the feed, and this also has led to more interest in the production of clovers and alfalfa. Much credit is also due to tests conducted at the Smithers Experimental Sub-station where, for three years, excellent stands of clovers and alfalfa, as well as mixtures, have been grown under conditions representative of much of the Bulkley Valley at least.

The following table shows the estimated yields this year for cereals and forage-crops used for seed purposes and feed. Due to the fact that the threshing was delayed, figures from the threshers' reports cannot be included.

Estimated Yields, Cereals and Small Seeds, 1941.

Spring wheat (bu.)	9,000
Fall wheat (bu.)	2,000
Oats (bu.)	35,000
Barley (bu.)	8,000
Rye (bu.)	200
Timothy-seed (lb.)	800,000
Meadow-fescue (lb.)	1,000
Creeping red fescue (lb.)	1,500

Live Stock.

An improvement in the price of dairy, beef, swine, and sheep during the past three years has led to a definite increase in live stock on the farms of Central British Columbia and active assistance by the Department of Agriculture and Canadian National Railways to facilitate marketing has added materially to the interest in making greater use of live stock on the farms. Most notable in the marketing schemes have been pool shipments of hogs by train or truck and the auction sale of cattle and sheep at Kamloops on October 16th. It is becoming yearly more difficult to realize cash returns from other than timothy-seed and live stock, so a steady market for the latter was imperative. Timothy-seed is marketed successfully by the various cleaning plants and the creamery and whole-milk trade takes care of the butter-fat, but previously the producers of beef and swine were pretty well at the mercy of the local buyers, particularly the man with only a few head for sale. Co-operative shipments thus give the small shipper equal opportunity with the larger producer.

Beef Cattle.—The year 1941 again shows an increase in the amount of beef cattle shipped from the district. The following table, which has been made up from figures supplied by the Canadian National Railways and trucking companies, includes cattle, sheep, and swine. Last season sixty-one cars of cattle and sheep found their way to outside markets.

From.	Vancouver, etc.		Prince Rupert.		Kamloops.	
	Cattle.	Sheep.	Cattle.	Sheep.	Cattle.	Sheep.
Burns Lake	14	1	10	....	6	3
Palling	1	....	....	....	1	....
Forestdale	....	....	....	....	1	....
Topley	....	....	1	....	....	....
Houston	3	....	....	....	1	....
Barrett	....	....	1	....	....	....
Quick	....	....	....	....	1	....
Telkwa	5	....	3	....	6	....
Smithers	5	....	2	....	2	1
Kitwanga	....	....	3	....	....	....
Totals	28	1	20	....	18	4

Smithers–Terrace.....3 cars cattle.
*Smithers–Vancouver.....1 car hogs.
*Houston–Vancouver.....1 car hogs.

* Completed loading between shipping-point and McBride.

There were sixty-nine cars of cattle, four cars of sheep, and approximately 475 head of hogs shipped out.

The cattle and sheep sale at Kamloops made it obvious that an improvement in beef cattle in general is essential. This matter was taken up at the annual meeting of the Central British Columbia Live-stock Association at Burns Lake on December 6th. One to two car-loads of good beef bulls are needed in the district and an attempt will be made to promote the introduction of these animals.

The grazing season was extended by the advent of fall rains and the soil is now well soaked up so as to afford plenty of moisture for next spring's pasture. The wide variation in possible fall grazing in the various sections of Central British Columbia was brought to our attention this fall when choosing a date for the annual feeder sale. The pasture is practically finished in such areas as Vanderhoof, Endako, and Ootsa Lake by the end of September, but the Francois Lake and Bulkley Valley areas, because of the large admixture of timothy and, in places, alsike clover, are able to keep the beef cattle on pasture successfully for from four to six weeks later than the other sections.

Dairying.—While the improved price of butter-fat in 1940 made the dairymen more enthusiastic about milch cows, it was not until this year that a definite move was made to improve feeding and breeding to any extent. In the Smithers, Telkwa, and Quick areas six young Guernsey bulls were introduced in one lot by local dairymen through the Farmers' Institute Sire Purchase Plan.

The average butter-fat records again are the highest since the Association was inaugurated. These figures will be well over 300 lb. of butter-fat per cow for the past twelve months. The following table summarizes the returns from dairy products for 1941:—

Butter-fat to creameries	$28,000
Butter-fat for whole-milk trade, Prince Rupert	9,360
Total	$37,360

Swine.—Beginning two seasons ago, as reported in the 1940 report, a few pool shipments of hogs were made to the commission houses and packing plants at Vancouver. The work has been continued and breeding plans followed up. This season satisfactory shipments have been made by train and truck. To date approximately 300

hogs have been shipped out in this manner, besides 175 through private sales, totalling 475. With the late threshing it was not possible to feed as well as should have been done early in the fall; consequently, there will be between 200 and 250 more marketed before Christmas of this year.

Some very fine breeding programmes are being carried out and excellent results obtained in feeding. One farmer reports the use of as low as 450 to 500 lb. of grain to finish his hogs, in addition to the milk used. He has been obtaining 50 to 75 per cent. selects in his shipping.

Considerable credit is due the Dominion Department of Agriculture in regard to their Experimental Station Swine Policy. Excellent boars have been provided for the Smithers station which can be used for service by the farmers. Further, practically all the registered boars produced at this institution have been sold locally.

The Bulkley Valley has come ahead very satisfactorily in the production of good swine. The Dutch settlers at Houston are building up a fair business in this line. Now the Lake District is beginning to take more interest in swine, so we may soon have a much larger number to ship.

Diseases are few in the hogs of this district although occasionally we find infestations of stomach-worms or deficiency diseases. The use of supplementary feeds has been stressed for so long now that practically every farmer realizes its importance. However, in the case of fall litters occasionally damp quarters, lack of sunlight, unbalanced diet, or insufficient minerals lead to rickets.

Sheep.—The desire to raise more sheep has in part been counteracted through district-wide health problems. It appears that following the dry season of 1940 much of the feed was short of minerals. On those farms where sheep are ordinarily brought through the winter on a maintenance diet, serious deficiency diseases developed. In the past a number of farmers have gone out of sheep for the same reason. In one case during the past spring the cause was laid to malnutrition and in another iodine deficiency. Dr. A. Knight, Provincial Veterinarian, investigated as many of these cases as possible, and in the end concluded that the use of legumes for winter feed is essential, besides the feeding of minerals, if sheep-raising is to be carried on successfully year after year.

Over 600 sheep were marketed at the feeder sale at Kamloops on October 6th. Here, as with the cattle, much lack of attention to feed and care was evident. Particularly noticeable were a few undocked sheep and buck lambs. Those who gave their sheep the best attention were rewarded with a remunerative price.

It is noted with a good deal of satisfaction that the action of the Provincial Department of Agriculture in suggesting improvements in the sheep business has led to orders for clover-seed to increase the legume ration and purchases have been made in a number of instances of pure-bred rams.

Horticulture.—Cutworms gave little trouble this season and the spring and summer were admirably suited to growth of gardens, except for a slight shortage of moisture. While yields have not been heavy, the quality of most garden produce is excellent. It is expected that there will be ample of all products for local use, with a surplus of potatoes and swede turnips.

The fall rains caused some inconvenience in digging and storing but for the most part roots and potatoes were removed from the fields in good condition. Although there has been more or less cloudy and rainy weather since September 1st, the amount of rain was not excessive, so there was not the amount of second growth and spoilage in the field that was experienced in the Vanderhoof and Prince George areas.

There appears to be a good demand for vegetables and while the wholesalers have been slow to raise the price to a point comparable with the value of the products the farmers who hold their vegetables will receive better results by the middle of the winter.

There is little new to report on the small fruits. Strawberries, currants, and raspberries are grown generally, but very little for market. The average quality of strawberries is poor. The hardy varieties grown are pale and often lacking in flavour, while the better quality types are subject to frost-damage, incomplete fertilization, etc. With the raspberries there appears to be considerable mosaic and new stock is needed before a greater interest will be taken in the growing of this fruit. Further, rasp-

berries are not a dependable crop. This season the heat-wave in July practically ruined the unripened portion of the crop.

The currant-worm has made its appearance in a number of instances, and while currants are quite hardy these worms can cause a complete crop loss.

The Department of Agriculture again arranged for a number of fruit-trees to be supplied to this district. These originated from the Summerland Experimental Station and were distributed in several lots of twenty-four and smaller amounts to make up for winter-killing in previous plantings. There were practically no failures for the first season and the wood has matured well this fall so a good proportion should come through the winter satisfactorily, as long as they are protected from the mice and rabbits.

From our 1936 plantings at Telkwa not only was a good crop of crab-apples produced but several good types of eating apples as well. These varieties will be reported to the Horticultural Branch at a later date.

Poultry.—Poultry is steadily but inconspicuously increasing each season. With the activities at Prince Rupert, there has been a growing demand for eggs and dressed poultry. Besides what are shipped by the stores several producers send their eggs directly to Prince Rupert.

The favourite breed for egg production is still the White Leghorn, although there is a definite increase in the Barred Rocks particularly and, to a lesser degree, Hampshires. The Dominion Experimental Sub-station at Smithers features Barred Rocks and many of the cockerels produced there have been purchased by poultrymen in the Lake District and Bulkley Valley.

A visit was made to the district during the summer by G. R. Wilson, of the Dominion Egg Grading Department. Mr. Wilson held a series of meetings and described the operation of egg grading. However, no move has yet been made to put this district under compulsory egg-grading regulations.

Beef.—Approximately seventy car-loads of beef were shipped from the district during the past twelve months. About one-third of this was sold at the feeder sale at Kamloops on October 16th. Prices have remained steady throughout the fall. There is reason to believe that the feeder sale has forced the drovers to bring up their prices.

Net prices to the farmers from the feeder sale will approximate the following, after freight and marketing charges have been deducted:—

	Per Cwt.
Bulls	$5.31
Cows	4.51
Two-year-old steers	6.85
One-year-old steers	6.58
Two-year-old heifers	6.39
One-year-old heifers	6.26

When it was definitely determined that in the outlying sections of the district farmers received a net price of more than double on the cows at the sale than the best offer from the drovers, and one-third more on steers, the sale has been a definite advantage to the cattlemen. A grant of $300 from the Horned Cattle Fund allowed the originators sufficient capital to organize the Live-stock Association. Their first project was a feeder sale at Kamloops. The Honourable the Minister of Agriculture gave this project his support and expressed his satisfaction on the way it had been carried out. With only six weeks to work after the Association was formed, the arrangements were made and the stock marketed.

Sheep.—Sheep are not raised to any great extent in this area, but there is some increase and four car-loads were marketed at Kamloops and Vancouver besides the dressed animals shipped to Prince Rupert. The Kamloops sale of sheep was only moderately successful. Lambs brought the market price of $10.35 to $8.85 per cwt., with an average of $10.11, while ewes brought $9.91 per head. The net price will be approximately $9.25 per cwt. for the lambs. The breeding ewes brought the lowest price. There was practically no demand for them, presumably as the sheep ranches did not expect any to be marketed and they were sold in too small lots to interest the large sheep-raisers.

Junior Clubs.—This year we had six Junior Clubs in the district, namely:—

	Members.
Danskin Beef Calf Club Branch, Grassy Plains	6
Uncha Valley Beef Calf Club Branch, Uncha Valley	6
Danskin Potato Club, Uncha Valley and Grassy Plains	7
Forestdale Dairy Calf Club, Forestdale	8
Round Lake Dairy Calf Club, Quick	6
Bulkley Valley Dairy Calf Club, Smithers	6

The membership was lower than in previous years, but with so many of the boys taking part on the farm-work or working away from home it was difficult to procure a complete quota. There was one new club at Forestdale which made excellent progress the first season and for which much credit is due the organizer, W. Hawthorn.

For the first time since 1937, a judging team of two boys was sent to Armstrong to compete in the Provincial Eliminations. These were Cato Loveng, of Grassy Plains, and Alvin Wiley, Southbank, of the Francois Lake Beef Calf Club. They made an excellent showing for their first attempt. Both boys were 16 years of age.

Farmers' Institutes.—It is felt that more than the usual activity is being shown by a few of the Farmers' Institutes and this should be acknowledged at this time. Much credit is due the Smithers, Quick, Francois Lake, Uncha Valley, and Danskin Institutes for support in the organization of the Central British Columbia Live-stock Association and in making the Feeder Sale a success. The Advisory Board member, C. J. Killer, of Telkwa, gave very valuable assistance and, together with R. Blackburn, Advisory Board member for Prince George, was principally responsible for the association and sale being started.

Further, for their particular districts, the Institutes have promoted and assisted co-operative buying, selling, and better community spirit. The Bulkley Valley Institute has brought in considerable stock-feed and household supplies for its members. The Smithers Institute originally started the Bulkley Valley Credit Union. The Quick Women's Institute and Farmers' Institute are strong organizations in that district and with the gasoline-station as a project are of real assistance to the farm life. The Francois Lake Farmers' Institute now has a general store of its own and is doing an excellent business. In the Lake District, the Farmers' Institutes are practically the only organizations which help to keep the farmers organized and through which the Department can work.

Fall Fairs.—The only fair held in District "B" this year was at Quick. A small fair sponsored by the Quick Women's Institute and held at the Round Lake hall was highly successful. Prizes were given in the form of War Savings Stamps. Assistance was given in the judging at this fair while I also acted as official judge at the Prince George fall fair. This latter fair, held in the new arena, was a credit to the district and was much better managed than in previous years, as well as showing a marked improvement in the quality of farm products.

Study Groups and Credit Unions.—A certain growing interest is being noted in co-operative stores and related activities. The Smithers Farmers' Institute originally started a study group which followed with the organization of a Credit Union. The Credit Union was extended to cover the area from Evelyn to Houston and is now in operation and making a few loans. If a satisfactory agreement can be arranged between the Quick, Telkwa, and Driftwood Districts, it is likely a co-operative store will be started at Telkwa.

As previously mentioned, the Francois Lake Farmers' Institute has a store of its own which is running satisfactorily. On the south side of Francois Lake a co-operative store was started at Uncha Valley and later branch stores located at Grassy Plains and Tatalrose. This latter organization, however, is feeling the need of more capital and will have a hard struggle to attain any degree of success.

Some assistance has been given these organizations from time to time in obtaining for them information or assisting with their problems. The points of sound financial standing, loyalty of the members, and the value of organization have been stressed.

While the season has not been altogether favourable, the general rise in farm prices will partly compensate for reduced yields of grain and seed. The deficit in cash returns from crops also will be partly made up from increased volume of live stock, dairy and poultry products marketed. There is also the compensation that the soils are well supplied for moisture for the following season so at least for next spring we can look for early pasture and ample moisture with which to start the crops.

Marketing of live stock was definitely improved with the advent of the feeder sale at Kamloops, and this should lead to more and better live stock produced in the district and marketed by the producer.

NECHAKO AND UPPER FRASER.

JAMES E. MANNING, DISTRICT AGRICULTURIST.

The year can be considered a successful one from the view-point of the use made of the services of the office by both rural and urban residents alike and from the moderate success attained in one or two new co-operative efforts.

A most successful District Farmers' Institute convention was held in June at Fort Fraser, which was attended by both the Minister of Agriculture and the Deputy Minister. It was at this convention that early plans were made to form an organization that would market live stock produced within the district, and the idea having gained the instant approval of the Minister and the benefit of his advice gradually developed into a concrete fact, for in September the Central British Columbia Live-stock Association was formed.

Considerable assistance was given during the summer to representatives of the Provincial Land Settlement Board and the Dominion Department of Agriculture by supplying transportation and the services of the District Agriculturist during such journeys. Moreover, certain special assignments were undertaken by this office for both the above-mentioned Departments.

Indifferent weather during the growing and harvesting seasons greatly reduced the yields of all crops throughout the district, but especially so in the Prairiedale section of Vanderhoof and the Pineview and Woodpecker sections nearer Prince George, where the loss can be considered serious.

By May 1st arrangements had been made by Mr. Travis for a further supply of package bees to be brought into the district; for the distribution of fruit-trees to certain farmers; and for the continuance of the efforts to control the gophers in the McBride District. Some correspondence had been carried on in connection with the formation of Boys' and Girls' Clubs. The distribution of fruit-trees had already taken place under a scheme whereby certain districts would have the opportunity of testing out certain varieties of fruit-trees.

BEE-KEEPING ATTEMPTS.

There were twenty packages of bees ordered for this season and all seem to have done well. Several of the purchasers had never owned bees before, but this first experience has made them keen and most of them are attempting to bring their bees through the winter.

It is usual for the ice to go out of the rivers and lakes by the middle of April and for spring to be here by May 1st. It was so this year, but growth was retarded by excessive rains and the lack of sunshine in both May and June. Early July was excellent for growing crops and they made exceptional progress then, but commencing on July 12th a spell of very hot weather set in, lasting about ten days, that proved very destructive to the entire district by withering the grain then forming. August weather was good up to the middle of the month, when it changed to very wet, and this condition was carried on throughout almost the whole of October. It was this prolonged wet weather during the harvesting season that destroyed so much of the crop for the year,

especially the alsike-seed crop, which at the time of writing seems to be an 80-per-cent. loss. The appended table will clearly show how the present situation developed:—

	Rain.	Excess.	Sunshine.	Maximum Temperature.	Minimum Temperature.
	In.	In.	Hrs.		
May	2.34	0.47	.....	85.0	.....
June	3.97	1.45	—38.0	84.6	.....
July	2.50	0.13	+42.0	102.4	.....
August	3.79	2.13	—25.0	88.6	34.5
September	6.12	3.57	—73.3	70.0	25.2
October	2.92	0.60	—36.0	62.5	22.4
November	Normal	.....	.....	.....	.....

Crops.

The usual acreage of oats, barley, and wheat were planted, with the expectation of harvesting average crops. The previous year saw rather more acreage seeded to alsike clover which was to be harvested as seed. In an effort to produce a higher grade of alsike-seed and one that would give greater returns to the producer, the farmers in and around Prince George made arrangements with the Dominion District Supervisor at Vancouver to have certain of their alsike fields inspected during the year. In July, C. Tapp came into the district and accompanied by the District Agriculturist inspected approximately 230 acres belonging to seventeen farmers, to whom were issued certificates of inspection. This inspection brought to light the fact that very few of the early alsike blossoms were carrying any seed, and that the crop would depend upon the development of the newer blossoms and must therefore be harvested late. The harvest weather has been so poor that at the time of writing the amount of seed actually threshed is counted in the number of sacks rather than the number of tons. Only one 10-acre field has been threshed that was inspected, and this produced at the rate of 200 lb. per acre of uncleaned seed. To the best of the writer's knowledge about 75 acres of alsike-seed has been "stacked" and will yet be threshed. The remainder, estimated at 1,000 acres, has yet to be cut. Sharp frosts without snow may permit some of these acres to be harvested by combines eventually. Any other method of harvesting is considered out of the question owing to the loss of seed that would follow extra handling. It has been thought necessary to discuss the alsike-seed crop at greater length than usual as it is the most important cash crop in the Pineview, Salmon Valley, Beaverley, and Woodpecker areas.

As regards the cereal-crops, they have threshed about 90 per cent. of the entire crop at Fort Fraser with an estimated loss of 30 per cent. in average yield; completed threshing at Vanderhoof with very poor yields, reported as low as 15 bushels of oats per acre in many instances and practically all grain considered as "tough" by the owners; at Prince George and vicinity threshing can be considered as nicely started, thanks to a full week of drier weather; at McBride, after a poor start they have reported that threshing is finished with crops better than were expected. All Farmers' Institutes have been requested to urge all farmers to have samples of their seed-grains sent to the Plant Products Division for germination tests as soon as possible.

Live Stock.

The general condition of the live stock can be considered as healthy. The annual journey through the district by Dr. A. Knight, Provincial Veterinarian, has greatly contributed to this general good health; that, and the fact that very few animals are imported into the country.

The number of farm stock within the district remains about the same, with a tendency in the Prince George area to turn to a definite dairy breed again. The establishment of an Ayrshire herd at the Experimental Farm has aroused interest in this breed. The Tabor Creek Dairy Calf Club purchased eight well-bred Ayrshire

calves from Chilliwack breeders last spring and there seems to be a likelihood of another such club formed next year.

The Prince George Farmers' Institute, with headquarters at Pineview, again carried out the vaccination of horses against encephalomyelitis, and a certain amount of this vaccination has been done in other parts. It is a distinct pleasure to be able to record no outbreak of this disease in this district.

Several farmers entered the Family Herald Sheep-raising Course, so there is every likelihood of a small increase in the number of sheep in the district another year.

Boys' and Girls' Clubs.

Three clubs were in operation this year: two dairy calf clubs and one poultry club. With the change of District Agriculturist in the spring certain contacts with those previously interested in the work were lost and not recovered. There is a hope that more clubs will be in operation next year and every effort will be made to increase the number; but owing to older boys joining the Forces in many cases, or taking jobs outside the district, it will certainly be a harder task to find suitable material for this very important educational work than it has been. This district had the good fortune to be represented at the Elimination Contest at Armstrong this year, and this fact in itself will be of great value next year when we are looking for club members.

Central British Columbia Live-stock Association.

To find a market for the surplus hogs that were raised in Central British Columbia, pool shipments in car-load lots were made to outside markets during last winter and early spring. The work connected with these shipments was almost wholly done by the representative of the C.N.R. Agricultural Department and the District Agriculturists of Smithers and Prince George. It was found necessary to appoint some person or a group of persons to take over this work and to give them certain authority in the matter of settlements and claims. After consultation with interested parties, the writer drew up a resolution covering the situation and this was adopted by the Prince George Farmers' Institute for presentation to the District " C " Farmers' Institute Convention, where it was passed unanimously. Fortunately the Minister of Agriculture and the Deputy Minister were attending the convention and their advice was both sought and given. The Minister spoke on the usefulness of such an organization and said that in the event of it being formed and left open to all stock producers in the district, he could promise assistance from the Horned Cattle Fund of $300. The Minister went on to say that such an association might eventually undertake to ship and to market large lots of live stock and, if they did, suggested Kamloops as the place of sale. District " B " was invited to join the organization and accepted, and on September 9th, at Endako, representatives of Districts " B " and " C " drew up the papers of incorporation and the association became an accomplished fact. Before the meeting closed, the directors decided to hold a sale of live stock at Kamloops on November 16th. The whole district was organized as well as was possible under such short notice, but no real success would have been possible without the Minister's further help in the form of giving the service of Dr. A. Knight with his car for a matter of two weeks to contact the shippers. The sale was held and can be considered a great success. It was opened by the Minister and in two and a half hours approximately $44,000 was realized. It was undoubtedly a very fine effort on the part of all concerned and the result of splendid co-operation.

The Supervisor of the Dominion Illustration Stations, R. M. Hall, held three field-days in the district—one at Strathnaver, one in Salmon Valley, and one at McBride. The District Agriculturist was asked to assist and this he did by taking charge of the dairy cattle section at each station.

District fall fairs were held at Reid Lake, Fort Fraser, McBride, Woodpecker, and Prince George. At the first three the District Agriculturist acted as one of the judges and further served by obtaining the services of most of the other judges, as well as in other capacities. All these fairs were efficiently conducted and reflected much credit on the management committees responsible for their operation.

In June the Vanderhoof Board of Trade asked the Minister of Agriculture for special assistance in an effort to control some patches of Canada thistle that were threatening to infest the airfield. The assistance was given and a supply of sodium chlorate sent up which was applied in three applications by the District Agriculturist. The chemical seemed to work very efficiently and the results quite pleased Mr. Tice, Field Crops Commissioner, when he was on a tour of inspection of Central British Columbia in August.

There are nineteen Farmers' Institutes functioning in the district and all but one of them (Croydon) are in a healthy state. Visits have been paid to fourteen, and during the last week in November arrangements have been made to visit the Institutes at Loos, Dome Creek, and Longworth, all of which are situated along the railway east of Prince George. The reception accorded the District Agriculturist has been most cordial in every instance.

WILLIAMS LAKE, CARIBOO.

WM. T. CARLYLE, B.S.A., B.V.Sc., V.S., DISTRICT AGRICULTURIST.

From January 1st, 1941, very mild winter weather was experienced. Only at the higher altitudes did a covering of snow persist for any length of time. Roads muddy or made treacherous by ice were factors to be constantly reckoned with while travelling.

Cattle wintered well with a minimum amount of hay fed. Injuries caused by icy footing was a cause of complaint.

March and April were fine and warm with the season much advanced over the average year. Prior to April 14th growth was slow, due to very dry conditions. On April 14th a splendid rain lasting twenty hours occurred. The warm weather following created ideal growth conditions on the range lands. By the end of April cattle on the range had shown a remarkable improvement in condition; calves were strong and healthy, with the cows in condition to supply plenty of milk.

The month of May was very dry over most of the Cariboo and Lillooet Districts. The only rain of any account fell on May 12th. The weather was cool and cloudy and rain threatened nearly every day. Some forest fires east of the Cariboo Road caused anxiety but little loss to settlers. Very dry conditions prevailed on farm lands in the Forest Grove and Lone Butte areas particularly. In regard to garden-stuff, frosts caused damage and retarded growth in some areas. This was particularly noticeable at Soda Creek and Marguerite, areas usually very frost-free. Older cattle made good gains during the month, but these lessened towards the end of the month because of the drying-out of the range grasses.

The first week in June was cool and backward, with moisture still very much needed. Some areas experienced a heavy frost on June 4th. A heavy rain fell on June 7th and from then on for the remainder of the month moisture was plentiful and growing conditions were excellent. This state held true also for the first part of July.

From July 15th on extremely hot weather prevailed. On July 16th and 17th the maximum temperature was 106° F. Extreme heat continued till August 13th, when showers fell. During this period grass dried up, except on timber range, and rates of gain on cattle dropped. Fine weather was again experienced until August 23rd. Rain that day ushered in the longest continuous wet spell ever to be experienced in this district, only two or three days being free of rain until October 9th.

In spite of the dry weather and extreme heat of July and August in many of the farming areas good crops could be seen. Winter wheat yields were satisfactory; much of this was threshed and some threshing of other grain was also done before the prolonged wet weather set in.

On ranches the yields of hay were possibly 20 per cent. lower than last year, due to the drier weather. After August 22nd no further haying was possible. Many ranchers with swamp meadows had considerable number of days' haying yet to do. Hay cut but not stacked was ruined and the second cutting of alfalfa was almost a total loss.

Grain in the stook was badly weathered and there was much sprouting.

During the better weather experienced the latter half of October haying was resumed and grain fit to thresh was threshed. Many farmers suffered cruel losses.

Much grain was unfit to thresh and the quality of that threshed was greatly lowered. Because of the large carry-over of hay and the fact that many ranchers did get up most of their hay, the majority of the cattlemen will have sufficient winter feed.

Cattle made excellent gains on the green pasturage during September.

Live-stock Health.

Contagious abortion is perhaps the only disease that is spreading. No survey has ever been made as to just how prevalent this disease is and very few blood tests have been taken. There seems little doubt though that it is responsible for the loss of many calves each year.

Blackleg.—The range about the 100-Mile House and from there south and east is infected with the organism causing this disease. All young stock must be vaccinated if losses are to be avoided. During very mild weather in February, 1941, one ranch lost fourteen head of yearlings. Neglect to vaccinate calves was responsible for this loss. Two other ranchers had cases in October. On ranches where outbreaks occurred all carcasses were burned and all susceptible stock was vaccinated. Many others were induced to vaccinate.

Hæmorrhagic Septicæmia.—Up until the middle of November only one outbreak of septicæmia was reported and this was investigated. Fifteen calves recently weaned were affected and five died. The remainder responded to treatment and all susceptible calves were vaccinated. Recommended treatment in these cases consists of as good nursing as possible with administration of sulphanilimide powder and alkalines.

Some predisposing cause or causes seem always to be necessary as a preliminary factor to these outbreaks of hæmorrhagic septicæmia. In the case just reported these calves had been driven for 7 miles after separation from their dams and had become overheated. Other predisposing causes noted last year were shipping and trailing in early winter, and weaning just as cold weather sets in.

On a ranch along the main highway, cases of what appear as a chronic type of hæmorrhagic septicæmia have occurred throughout the year. Response was had to the sulphanilimide treatment. All cattle on the ranch were vaccinated with pulmonary mixed bacterin in October in an effort to prevent further cases.

Coccidiosis.—Only a few odd cases suspected of being coccidiosis have been seen. These responded to treatment. No general outbreak has occurred.

Actinomycosis.—Cases of actinomycosis are constantly reported. The recommended treatment of potassium iodide, if given in the earlier stages, has yielded excellent results.

White Scours in Calves.—In a herd of pure-bred Jersey cattle all calves born were being lost from scours. All manner of treatment had been tried and the strictest sanitation possible was adhered to, but losses continued. The case was reported to this office and colon bacillus bacterin and anti-colon bacillus serum were procured. Two calves were born soon after and to each within an hour of birth was administered 5 cc. of bacterin and 20 cc. of serum. Some shock was experienced, a few days later another 5 cc. of bacterin was injected. These calves remained perfectly healthy as did calves born subsequently and receiving the same treatment.

Water-hemlock Poisoning.—Losses from this form of plant-poisoning continually occur; seldom are more than one or two animals involved and cases are usually in the spring. A young pure-bred bull was lost in October. The owner was very sceptical about this being the cause until the roots of a few plants were dug up in the slough beside which the animal was found.

Sheep Losses, Francois Lake.—In February a trip was made to Francois Lake to investigate severe losses amongst a flock of sheep. Careful investigation supplemented by laboratory examination of specimens failed to reveal any disease organism. From a careful study and recording of feeding and management methods, a nutritional disorder was proven.

Ropey Milk Outbreak, Prince George.—Caused by bacillus actis viscosus. In July a ropey milk outbreak in a large dairy herd at Prince George was investigated in company with Mr. Manning, District Agriculturist. The infection was traced to the teat

of one cow, possibly contracted from a swampy area in the pasture. While at Prince George some pig losses were looked into.

Photosensitization.—In July on a ranch in the Horsefly area several animals were badly sunburned. These were white in colour or light roan. It seems likely that these animals were previously sensitized to the action of sunlight by eating of certain plants or plants unknown.

Hydrocyanic Acid Poisoning.—At a lake on the Dog Creek range cattle have mysteriously died for many years. In company with two local ranchers a survey was made of it and samples of water, mud, and all plants growing in the vicinity. Amongst these Mr. Eastham identified one as *Triglochin maritimum* L. (salt marsh arrow-grass) and reported as follows: " The arrow-grass is now well recognized as a plant producing hydrocyanic acid. Curiously enough, although the plant is universal in the salt marshes at the Coast, it does not appear to be poisonous here. I have seen large areas of it eaten down with no complaints of injury, but in the dry Interior the circumstances are different. Cases of poisoning are reported from Utah, Nevada, Wyoming, and elsewhere in the Western States and there have been several authenticated cases in British Columbia. I would certainly incriminate this plant where it is found in cases of suspected poisoning." The symptoms as reported seemed to fit hydrocyanic acid poisoning.

Tuberculosis.—Nine herds with a total of fifty-two head were tested and one reactor was found. Four dairies were graded. Two at Williams Lake, one at Clinton, and one at Wells. Two graded " A " and two graded " B." The two that graded " B " were formerly in " A " category and it is hoped to soon have them qualify for this grade again.

Cattle Breeding and Nutrition.

Calves arrived healthy and vigorous. Calving percentages were good, except in herds infected with contagious abortion.

Supplying of mineral mixtures to breeding stock is becoming a routine practice with many stockmen. The great value of doing so has been amply demonstrated time and again.

Many improvements could be made in the manner of handling cattle on the range. Better care and more generous feeding would be in order with many outfits. Yearling heifers at the feeder sale ranged in weight from 450 lb. to 970 lb. Differences in management rather than in breed and type would seem to account for this surprising spread in weights of cattle the same age.

Fourth Annual Feeder Show and Sale.

Conducted by the Cariboo Live-stock and Fair Association. British Columbia has long felt the need of a market where feeder and stocker cattle could be purchased; providing such eliminates the trouble and expense that individual buyers assume when they must tour the ranches of the Interior to fulfil their needs. Also, in the past, much of the stocker and feeder class of cattle had to be purchased at Vancouver and reshipped to the country, causing added expense to the buyer.

Where no buyers were available for this class of stock at Vancouver they were absorbed into the dressed-meat trade, with a resultant depressing effect on beef prices.

The executive of the Cariboo Live-stock and Fair Association inaugurated this sale at Williams Lake for the express purpose of keeping cattle not suitable for killing-off at the Vancouver market and selling such direct to the country purchaser.

The cutting-pens at the sale yards were remodelled; many new gates were constructed, also overhead walks and feed-racks in all pens. A new sale ring was built on level ground and a covered-in grandstand and auctioneer's and clerks' stand. Also a small shipping office was built beside the scale-house and water was laid to the bull and sheep barns. These improvements did much to facilitate the work and it should be pointed out that many of them are a greatly added convenience to stockmen using the stockyards throughout the year.

It is very doubtful indeed if the cattle sold at this sale could have been consigned to any other market in Canada or the United States and realized as much for their

owners. The high price of the sale—$8.90—is perhaps the highest price that has been paid for a full car-load of cattle locally for many years.

The auction sale was conducted in record time. The total of 2,190 head passed through the sale-ring in four hours. Having cattle always in the sale-ring helped greatly in keeping bidding brisk.

The grading of the smaller groups of cattle into car-load lots, an innovation started last year, was continued and improved upon. Thirty-eight such car-loads were sold. Buyers and sellers both expressed their satisfaction at the manner in which this feature of the sale had been conducted.

The annual bull sale was again a successful event. Ninety-three bulls were sold on Friday, October 10th. Staging the bull sale the day following a successful cattle sale is an ideal arrangement. Williams Lake is becoming more and more a discriminating market in that type and quality in the bulls offered is appreciated and the bidding goes accordingly. Highest prices paid were:—

Herefords: Von Mixer 29th and Zipper Dominio 34th, $425; bred by R. McGregor, Pinantan, B.C. Average price, $211.

Shorthorns: Royal Refiner, $300; breeder, James Turner, Royal Oak, V.I. Average price, $156.

Aberdeen Angus: Lavington Darkie, $300; breeder, R. J. Dall, Westwold, B.C. Average price, $210.

Total proceeds of the bull sale were $19,860.

Three hundred lambs were entered in the sheep show to compete for prizes offered by the Dominion and Provincial Departments of Agriculture. After showing, they were marked for ownership with branding fluid and shipped to the Vancouver stockyards for sale. Net prices received after deduction of handling costs were higher than the best offers received locally.

Lamb proceeds were $2,439. Top price received was $11.25; low, $10. Grand total proceeds of the sale were $162,904.06.

This year show classes were held for pure-bred beef breeding animals. It is hoped larger entry lists can be built up for these in the future.

The association sponsored contributions of cattle for the Queen's Canadian Fund for aid to air-raid victims. A total of $2,541.46 was raised in this way.

Warble-fly Control Campaign.

A warble-fly control area was formed and designated as the Cariboo Highway and Chimney Lake area. Seventeen owners co-operated and 3,022 head of cattle were treated. Excellent results were obtained. Careful records were kept and much useful information relative to warble-fly control in this area accumulated. A much more extensive campaign is planned for next year.

Insects and Pests.

South Riske Creek Grasshopper-control Area.—Because of very light infestation in 1939 and 1940 no actual control operations were carried on in this area. To E. R. Buckell and I. J. Ward, of the Dominion Field Crops Insect Laboratory, after making a survey of the ranges in August, 1940, the large build-up in number of grasshoppers presaged a serious outbreak in the future. The policy of getting the population down to inconsequential numbers and keeping it so is what they advocate. To carry out this policy means that some control operations must be carried on each year. Also to cease all work for a year or two leads to a general lack of interest in control operations. This is exactly the attitude that was found to exist amongst land-owners in this area. It was only with the greatest difficulty that your District Agriculturist, who serves as secretary-treasurer of this area, and the chairman, R. C. Cotton, of the Control Committee, were able to gather sufficient land-owners together for the annual meeting in November, 1940. In spite of the situation that was known to exist, the majority did not feel that any control was necessary in 1941. A campaign to arouse interest so that work might be started in the spring was carried on all winter and, as a result, at a committee meeting held in May it was decided to initiate control measures. A foreman was engaged,

the truck was repaired, and a building rented for mixing and storage. The foreman started work on May 19th and was almost continually employed until July 12th, locating and poisoning egg-beds.

True to forecasts, grasshopper populations were greatly increased. Excellent work was done in poisoning, though some damage to crops was suffered in August. The committee have ordered a mechanical bait spreader for next year. Total expenditures for the season were $429.64, as reported at the annual meeting held on November 4th.

Clinton Grasshopper-control Area.—A meeting of the control committee of this area was held at Jesmond on May 8th when plans to inaugurate the work for the year were made. At the annual meeting held on October 21st, reports showed that $593.94 had been expended on control operations. The mechanical bait spreader used this year for the first time gave entire satisfaction. Enough savings in the one season had been effected to pay the entire cost of the machine.

Tent-caterpillars.—In areas about Lac la Hache, Horsefly, and Chimney Creek there was a heavy infestation of this pest. Aspen poplar groves were completely defoliated. A fly, the larvæ of which is parasitic on the pupæ of this caterpillar, is increasing and should bring the outbreak under control within a year or two.

Wireworms.—One grower reported rather heavy damage to his potato-crop from wireworm infestation.

Corn-growing.

Last year fourteen varieties of corn were grown on three ranches in the Soda Creek area. Very careful records were kept and comparative yields tabulated. Yields as high as 35½ tons per acre of green weight were secured, with the highest dry weight per acre of 8½ tons. Three of the standard varieties—Falconer, Rainbow Flint, and Minnesota 13—were considered the most desirable with all factors considered. The heaviest yields were recorded by hybrid strains, but lack of maturity of ears was a fault.

This year test varieties were distributed to some seventeen growers. In addition, commercial supplies were located for seven growers. At only one place was it possible to get yield records, though general reports have been secured on others. Results were very much in line with last year, except that three hybrids—Wisconsin 279, 325, and 355—gave an excellent account of themselves. In some areas of high altitude the crop was not a success, due to heavy frosts in summer. The best crop, in a 9-acre plot at Soda Creek, received plenty of irrigation-water. However, others that could not irrigate received remarkably high yields considering the dryness of the summer. Corn-growing in the Cariboo therefore seems to have been established and with proper stimulation the acreage devoted to this crop can be greatly, if slowly, increased.

Hogs.

In 1940 there was a considerable increase in hog production. Most producers planned on disposing of their stock on the local markets; very few of them had any idea as to how they could reach outside markets. By January the local outlets were completely glutted and appeals were made to this office for help in disposing of the surplus. Assistance was given therefore in having a car-load of 126 head shipped out from Williams Lake. Incidentally every hog in this shipment was of excellent bacon type. It was learned that transport trucks returning to the Coast would haul live hogs and some men were already shipping in this way. This method was suggested to all further inquiries and the situation was soon righted.

Where good care is practised, excellent litters of pigs were farrowed and raised. No disease was reported.

Sheep.

Excellent lambing percentages were had by the breeders of sheep. No diseases were reported nor any losses from sickness. Predatory animals again took their heavy toll. Mostly coyotes were incriminated, occasionally bears. Prices were very satisfactory; higher than last year. Some excellent rams were brought into the district from Kamloops in September.

A plan has been suggested to the sheepmen of co-operating in the marketing of their lambs next year.

PEACE RIVER.

THOS. S. CRACK, DISTRICT AGRICULTURIST.

The season up to the beginning of harvest was perfect with every prospect of good crops and good yields, but on August 29th it started to rain, and rained or snowed practically every day to the end of October. The crops that were cut had to stand in the stooks up to that time before threshing could be done, there are a lot of crops which are not cut that will be a total loss. I have not got the thresherman's reports in yet, so am unable to give the average yield per acre of any crops. At the present time there is every appearance of this district being short of seed-oats for the spring; even feed in some areas will be short this coming winter. The weather since the beginning of November has been fine.

The following is a summary of the live stock shipped by the Dawson Creek Co-operative Live-stock Shipping Association from January 1st to October 31st, 1941:—

Hogs, 9,293; returns to farmers	$164,647.82
Cattle, 632; returns to farmers	37,258.79
Sheep, 402; returns to farmers	2,944.35
Total	$204,850.96
Estimated shipments by private buyers:—	
Hogs, 3,097; returns to farmers	$54,882.60
Cattle, 210; returns to farmers	12,419.59
Sheep, 134; returns to farmers	981.45
Total	$68,283.64
Total shipments from Dawson Creek:—	
Hogs, 12,391; returns to farmers	$219,530.42
Cattle, 842; returns to farmers	49,678.38
Sheep, 536; returns to farmers	3,925.80
Total	$273,134.60

This represents an increase of $13,582.60 over the period January 1st to December 15th, 1940.

The Dominion Provincial Brood Sow Policy continues to do good work in this district by the placing of boars in districts where twenty or more sows were purchased. Eleven of these groups have been organized this fall, but up to date are not complete.

Eight shearling rams and five lamb rams have been brought into this district under the Dominion Ram Club Policy, which has done much to improve the sheep this year. Farmers are taking more interest in the raising of sheep than ever before.

Five pure-bred bulls were brought into this district last spring under the Bull-loaning policy. Farmers are continuing to take more interest in obtaining registered bulls for their herds. Dr. A. Knight visited the district during the summer for the purpose of testing cattle for T.B. Both north and south of the river was visited but no reactors were found.

Districts where the warble-fly control has been carried on for the past four years shows a marked decrease in warbles found this year.

A total of 2,418,783 lb. of seed-grain were cleaned with the hand seed-cleaners purchased by Institutes through the Federal-Provincial assistance plan.

The flower-show held in Dawson Creek on August 9th continues to be successful; this year there were more and better exhibits than in previous years.

Only two agricultural fall fairs were held this summer as it was thought better to cut down on these as a war effort. The Dawson Creek agricultural section was held for three days the early part of August, as it was thought by some of the Committee it would be better for the district to hold the fair the same time as the sports. This was not satisfactory for the fair, as the usual spectators were more interested in the sports going on at the same time.

The Kiskatinaw fall fair was held at the usual time—namely, August 14th—at Progress. This was very successful, the exhibits being of fine quality with far more live-stock exhibits than in previous years.

The Dawson Creek seed fair was to have been held on October 25th, but owing to the continued wet weather had to be postponed until sometime in February or possibly early March.

A very successful field-day was held at the Beaver-Lodge Experimental Station on July 19th, with 250 visitors from the Block taking part.

Only two clubs were held this year. One Beef Calf Club held at Progress and one Potato Club held at Groundbirch.

It is not possible for me to submit threshers' reports at the present time, as threshing is not complete and the returns are not yet in.

I have taken a quantity of oat samples from the threshing-machines and sent them to the Plant Products Division, Calgary, for a grade and germination test so that we shall have an idea how the farmers will be for seed in 1942. A large quantity of oats were not worth threshing even for feed.

Far more farmers went in for growing alfalfa for seed this year than previously, but owing to wet weather were unable to harvest it. Practically all seed was shelled out and is still left standing in the fields not cut.

A large percentage of summer fallow was ploughed this summer, but owing to the continual rain the farmers were unable to keep the weeds down as they should, the ground being so wet they could not get on to it with the necessary machinery.

I have visited practically all the local Farmers' Institutes throughout the district at one or more of their meetings during the year. I find that most of them are taking quite an interest in the improvement of live stock and general farming practices. The Women's Institutes are turning most of their energies to Red Cross and war work.

The ground is now frozen and it has been impossible to do much fall work this fall. The stock are going into the winter in good shape. Pigs have suffered a little owing to the price of oats going up and farmers selling when this year's crop was in sight; then when the farmer could not thresh they had to feed bundles to keep them going. There are very few 1940 oats in the district.

I appreciate very much the co-operation I have received from all those with whom it has been my duty and pleasure to work during the year.

SALMON ARM, REVELSTOKE, AND EAST KOOTENAY.

Wm. MacGillivray, District Agriculturist.

The winter of 1940–41 was exceptionally mild and with very little snowfall. The minimum temperature for the winter as recorded at Salmon Arm was 7° above zero in February as compared with 5° below zero in January of 1940. The precipitation for the months of December, 1940, and January to April of 1941 was 5.69 inches less than for the same period the previous year. High temperatures were experienced in April, 77° being recorded at this point. During the growing season, May to September, inclusive, the rainfall in 1941 exceeded that of the same period in 1940 by 7.88 inches. During the month of July, exceptionally high temperatures were recorded on several days, severely scorching grain-crops and all shallow-rooted plants.

The summer was an exceptionally difficult one in which to make good hay. Very little of the first-cut alfalfa in any part of the district was cured under favourable conditions. Large acreages rotted in the fields and had to be carried off to the manure-pile. It was possible to secure the second cut in better condition, but bad weather was again experienced during the third-cut season. Very heavy losses occurred in grain and peas. In the Salmon Arm District it may safely be said that at least one-third of the pea-crop was ruined and probably 75 per cent. of the wheat, oats, and barley sprouted badly in the stooks, reducing the quality of the grain and in many cases causing a total loss.

As might be expected the season was very favourable to pasture-growth and for the production of roots. There was scarcely enough heat to secure the maximum

growth and development where corn was to be ripened, but, generally speaking, ensilage-corn yielded very well. The season was distinctly favourable for the seeding of grass-seeds and excellent catches have been secured even on the lightest lands.

Live stock, especially cattle, grew and fattened to advantage and should enter the winter in good condition. Range sheepmen complained that the exceptionally wet weather of the past summer seriously hindered the growth and development of their lambs on the mountain ranges.

Live Stock.

Beef Cattle.—The number of beef cattle raised in the Salmon Arm-Revelstoke District is very small. One or two herds of registered Shorthorn and Hereford cattle are maintained and the bulls from these are sold at the Kamloops bull sale in the spring and at Williams Lake in the fall and by private treaty. Prices generally have shown a considerable improvement over the previous year.

In the East Kootenay District the work commenced by this Department some years ago, is beginning to bear fruit. Much more attention is being devoted to beef-raising in the entire district. The policy of the Department in assisting farmers to purchase bulls on a time-payment plan has been of inestimable value. Had it not been for this policy very few registered bulls of the beef breeds would have been used in these districts. The improvement in the quality of the cattle is most marked and it is indeed a pleasure to observe herds in which cows of indifferent type are nursing calves by registered sires which show most excellent breeding and conformation.

Prices for beef cattle have been considerably higher than for some years past, and it is hoped that these may be maintained. Beef was being raised below the cost of production, and operators will require more than one year of more remunerative prices in order that they may be in a position to pay off liabilities incurred during the lean years and better establish themselves for the next period of depressed values. There is much more interest being displayed in improved live stock and the securing of better type sires in the whole area mentioned.

Sheep.—Very few farm flocks of sheep are maintained in the western part of this area, but several of the large ranch operators use the timber pastures of the Hunter Range, Crowfoot Mountain, and the Malakwa Range for summer grazing. Most of these bands are of merino breeding and rams of the mutton breeds, mostly Suffolk and Hampshires with occasional Southdowns are used.

It has been observed this past year that the sheepmen are purchasing Rambouillet and Romnollet rams. A few years ago, British Columbia sheepmen sold their lambs at very satisfactory prices. No replacements were kept and it was the custom to purchase yearling ewes on the Prairie, most of the time at lower prices than had been realized for ewe lambs, and indeed in many years leaving a fair margin of profit in favour of purchasing these replacements from the Prairies. This past year, however, the price of yearling ewes in Alberta has been so high as to render such a course impractical. As a result, there is a distinct swing to the use of Merino type rams, the male offspring from which will be disposed of as fat lambs in the usual course and the ewe lambs retained for flock replacement. This will have the further advantage of ensuring that the rancher has acclimatized replacements and freedom from disease such as caseous lymphangitis.

In the East Kootenay District from Golden to Edgewater and Invermere there are a great many small flocks of sheep. These are mostly of Hampshire breeding and have proved a most profitable investment to the owners.

A very serious outbreak of foot-rot occurred in a large flock which had been brought on to infected pasture in the Parson District. Prompt action by this Department has kept the trouble from spreading and an inspection of the flock a few weeks ago indicated very considerable improvement.

The price of lambs and of wool has been very satisfactory and the sheepmen during the past few years have experienced a greater degree of prosperity than have either cattle, horse, or hog producers.

In the East Kootenay District not enough attention has been paid to the control of parasites, both external and internal. Dipping has not been carried out and it is

not unusual to see flocks showing the raggedness and lack of thrift which accompanies a severe infestation of ticks. The treatment of lambs for stomach-worms was attempted by a number of sheepmen, but further work along this line is required. Phenol thiazine treatment has been tried with considerable success by a few men this past year.

Swine.—During the present year grading of hogs has been in effect throughout the Dominion and producers have had an opportunity of studying this form of marketing as compared with that formerly in use—that is, selling on the hoof on a straight bacon grade with no premiums. There is always some producer who finds fault with the grading. Usually an inspection reveals that fault lies with the type of hog produced, the weight at which it was shipped, or the finish which it carried.

At a meeting held in Armstrong at which twenty-four hog-breeders were present, the chairman asked those who wished to revert to the former system to stand up. No one did so. Farmers wishing to secure good type young sows for breeding purposes find it almost impossible to do so as very few farmers wish to sell other than on a rail-grade basis.

Hog shipments during the past season have been heavier than at any previous time. From Armstrong and Enderby alone 7,000 hogs have been shipped to Vancouver in the first forty-six weeks of the current year and 2,500 hogs have been shipped from Salmon Arm. Swine shipments from the southern Interior districts represent well over 50 per cent of all of the hogs raised and marketed in the whole Province of British Columbia.

The very high standing of our Interior hogs reflects great credit on the initiative of the farmers in the district who have endeavoured to secure the best possible breeding stock and whose feeding practices are considerably in advance of those found elsewhere in this Province.

Our farmers realize that their contribution to the Canadian export of bacon to Great Britain is only an indirect one. About 150,000 hogs are imported to British Columbia annually from Alberta. An increase in hog production in this Province for domestic consumption will ensure that fewer Alberta hogs will come west and the bacon from these will be available for the export market. The task of supplying 600 million pounds of bacon to Britain during the current year is an enormous one and will require the co-operation of all concerned.

Dairy Cattle.—The demand for dairy cows has been exceptionally keen. The price of butter-fat has been on a higher scale than in the past and when such conditions prevail farmers are not averse to the labour and trouble involved in milking cows. At one time this summer the price of butter-fat was 80 per cent. higher than for the same month in 1940. Higher prices for grain, protein supplements, and other concentrates and higher rates ruling for wages, together with all the other calls which are made on our people in these days, reduce very materially the spread between existing values and those of the previous year.

There has been a reasonably fair demand for bulls of good dairy type and from sires and dams with R.O.P. backing. This has been evident in the Malakwa, Salmon Arm, and Kootenay Districts. Every assistance has been rendered to farmers to secure stock of the best quality possible compared with the price it was possible to pay.

At farm sales held in this district, grade cows have been selling as high as $100 and several car-loads have been exported to U.S.A. and to Alberta. These buyers pick only the best of the cattle and it is unfortunate that good quality animals should be sold, leaving in many cases the less desirable individuals in the herd. However, this is a condition which it is almost impossible to alter, as a buyer has interest only in what suits him and that is usually the best.

The incidence of garget is a further indication of the prevalence of Bangs disease. Several complaints received at this office indicate a pretty heavy infection of garget and granular vaginitis. In all cases farmers have been advised that an improvement in their herds can only be obtained by adherence to strict sanitary methods in handling their live stock, barns, etc.

Breeding troubles are causing serious losses in most parts of the district. The feeding of mineral supplements and the addition of a suitable protein concentrate to

the ration has been advised in many cases and it is gratifying to know that satisfactory results have been obtained in more than one instance.

Poultry.—The price of eggs during the latter part of this summer and fall has been satisfactory from the producers' point of view. Some interest has been displayed in the campaign to secure a large volume of eggs for export to Great Britain. However, the price quoted for this purpose is not sufficiently attractive to interest producers in the Interior. Those who were specialized producers have been driven out of the business through low prices and high charges for feed.

Field Crops.

It is difficult to arouse sufficient interest in pure seed and efforts to place a quantity of Elite seed last spring were almost a failure. At Enderby 100 lb. of Elite Marquis seed, sown on specially prepared summer fallow, was a sheer delight to observe. It grew and flourished during the season. Heavy rains caused it to lodge rather badly and consequently the yield obtained was not as high as it should have been. The quality was excellent.

An experiment was commenced in Gleneden in which a 3-acre field was seeded down one-third to Crested Wheat, one-third to Brome Grass, and one-third to a mixture of the two varieties. An excellent catch was obtained and the experiment will be further developed during the coming year, it is hoped, by the application of fertilizer to a section of each plot.

Some interest has been displayed in the seeding of Ladak alfalfa in the higher parts of the district. Applications have been received for test-plots for Reed Canary grass seed next spring. A Malakwa farmer maintains that this grass is of no value as his cattle would neither pasture on it nor eat the cured hay. This statement is contrary to all other observations elsewhere.

Several farmers purchased certified seed-oats from the Peace River but on account of the very poor harvest conditions, little of this seed will be available for further development. The crop of peas was exceptionally good and over a much larger acreage than the previous year. However, again, harvest conditions were so poor that very heavy losses ensued and grades were lowered considerably where the peas were threshed.

Very little alfalfa-seed has been secured and some farmers have lost thousands of dollars' worth of this very valuable crop.

Through the co-operation of the Field Crops Commissioner, 200 lb. of winter wheat has been seeded in the Grassmere District near Fernie with a view to securing information on the possibility of growing all grains in that district.

Forage Crops.

Six varieties of Hybrid corn were tested out at Gleneden and in Silver Creek and compared with ordinary varieties such as Golden Glow, North West Dent, and Rainbow Flint. The results were very encouraging and samples have been dispatched to Swift Current for a dry-matter test. In both experiments Spall's Golden Glow outyielded the Hybrid varieties in weight of green matter per acre.

Every effort has been made to encourage farmers to grow more corn for ensilage purposes, and where a variety can be secured that will ripen there would be considerable advantage in growing some for grain. The cobs could be ground and would provide a valuable addition to the grains available in this country for hog and cattle feeding.

Considerable effort was made to persuade farmers to make ensilage of alfalfa which could not be cured in good condition on account of the exceptionally wet season. It would be of very great value to most of them if they could get away from the routine method of hay-making and concentrate on grass ensilage in a wet summer.

Club Work, Boys' and Girls' Clubs.

In the Salmon Arm District two calf clubs, two swine clubs, and three chicken clubs operate. Chicken clubs function at Grindrod, a calf club at Enderby and at Armstrong,

two beef calf clubs, two grade dairy calf clubs, one Jersey calf club, two pure-bred Ayrshire calf clubs, and two swine clubs and several chicken clubs.

In the elimination contest to decide the teams to compete at Toronto an Armstrong dairy team placed next to Langley which led by six points. That this latter team won the National contest indicates the high quality of our local team. In swine judging an Armstrong contestant was high man for the Province.

Meetings and Field-days.

During the current year thirty-seven meetings have been addressed and various subjects pertaining to agriculture have been discussed. Seven field-days were attended and demonstrations given on live stock, etc. The writer attended the annual meetings of seven Farmers' Institutes and the District Institute conventions at Grindrod and Invermere. These were two outstanding conventions.

The most successful field-day in the district was that held at Edgewater in August, when upwards of 100 people attended to hear discussions on various matters by Jack Byers, District Supervisor, Federal Production Service, at Calgary; C. B. Twigg, of Creston; and the writer. It is hoped that it may be possible to increase the number of agricultural field-days during the next year as these are one of the finest contributions which our Department can make to the general agricultural welfare in any section of the community.

General.

More time was spent in the Columbia Valley and East Kootenay District this summer than in 1940. Every effort has been made to develop an interest in beef-raising in the district from Brisco south. Relief was extremely heavy in that district during the years of depression and the writer feels confident that if the farmers and small ranchers in the area concerned were to concentrate on quality beef production they would be able to weather the next economical depression without resort to public assistance.

An effort was made to interest farmers in the Creston area in hog production this fall. It would have been possible to ship thirty to forty high type Yorkshire gilts into that district under the Dominion-Provincial Brood Sow Policy. For some reason, no interest was aroused.

Many of those operating small orchards would find themselves more secure if they combined dairying and hog-raising with their fruit-growing operations. A creamery established in Creston a few years ago is finding it difficult to secure sufficient volume to operate. The combination of cream shipping and hog-raising should not need any elaboration.

Then again some of the grain produced on the Creston Flats is not suitable for sale in the top grades but should be fed to cattle and to hogs. There is a good market available for the finished product in the Nelson, Rossland, and Trail Districts, and there is the other market in Vancouver. The source of supply for stocker and feeder cattle is available in the beef-growing district previously referred to in the East Kootenay. This latter district is not suitable for finishing cattle but can produce, and does produce, a good quality feeder animal which should be purchased by the Creston men and finished on the grain produced in that district.

On the instructions of the Honourable the Minister of Agriculture, the writer took four stockmen of the Columbia Valley and East Kootenay on a trip to Alberta to observe the operation of a community auction sale. About 450 head of cattle were being sold at a sale at Cardston on November 8th and provided an excellent demonstration for the delegation.

For years these men have been at the mercy of itinerant drovers and local butchers, none of whom have any reputation as generous buyers. The result is that cattle have been sold in many cases far below their value.

The District Supervisor of the Federal Department of Agriculture accompanied the writer on a trip through that district this summer and discussed with the stockmen the possibility of holding an auction sale at a central point next year. The Honourable the Minister of Agriculture made a grant to the Waldo Stock-breeders' Association

with which they have purchased a weigh-scale to be erected in conjunction with the corrals at the Elko station. Negotiations are at present being carried out with the C.P.R. with a view to securing a lease on some C.P.R. land on which the association hopes to erect the corrals and facilities necessary to handle a feeder show and auction sale early in October of 1942.

It is felt that the areas of higher altitude which grow seed-potatoes of excellent type should be encouraged to do so, and the product should be disposed of in the potato-growing areas of the Lower Mainland. It is an accepted fact that the success of potato-growing in England can be traced to the purchase of seed grown in the north of Scotland at higher altitudes and latitudes.

Certified potatoes grown in the Invermere and Northern Columbia Valley Districts and in the Grassmere and Newgate Districts, and the Malakwa area, should find a ready market in the Fraser Valley. The Federal potato inspection service might give consideration to this phase of agriculture, and do everything possible to further such a project.

Christmas Trees.

This report would not be complete without reference to the part which the Christmas-tree industry is playing in securing for many of our farmers a cash crop which was not thought of some years ago. The demand for Christmas trees seems to be practically inexhaustible and it is felt that rotating districts in which trees could be cut, and exercising supervision so that wanton damage is not caused, would contribute very largely to the improvement of living conditions in many parts of the area covered by the writer. This is particularly true of the East Kootenay and the Salmon Arm Districts.

GRAND FORKS AND BOUNDARY.

J. Travis, District Agriculturist.

Weather conditions throughout the whole of this area were such that normal operations were next to impossible. Seeding practices were hindered and in many cases delayed on account of excessive rains which continued throughout the entire season. Fields were soaked and flooded with soil temperatures low. Consequently, cultivation was hampered, permitting rapid development of weeds and retarding the progress of seeded and transplanted crops; included in the latter being extensive acreages of tomatoes. Despite these many handicaps, crops made favourable progress. As the season advanced warmer weather prevailed, although still accompanied with continuing rains, there being a brief respite during the Provincial-wide hot, dry spell of July 13th to 18th. A storm of exceptional violence descended on the Grand Forks Valley on August 15th, doing much damage to fruit-trees and standing crops. Throughout the entire harvesting season operations in the field were hampered. Hay and cereal crops were lowered in quality and grade. Vegetable-seed crops were finally threshed and artificially dried. Considerable acreages of canning tomatoes were eventually abandoned, being unfit for processing.

Acreages of the principal crops in the Grand Forks District were as follows: Alfalfa, 623 acres; potatoes, 225 acres; onions, 35 acres; carrots, 28 acres; grain, 458 acres; field corn, 164 acres; tomatoes, 437 acres.

Car-lot shipments of potatoes and sundry vegetables as at November 15th were as follows: Potatoes, early, 21; potatoes, late, 36; onions, 19; beets, 1; turnips, 1; parsnips, 8 tons; asparagus, 10 tons, plus 2½ tons canned.

Producer price per ton delivered at packing-house averaged: Potatoes, $18; onions, $30; beets and turnips, $20; parsnips, $30; asparagus, 9¼ cents.

In the Boundary District crop acreages for 1941 are estimated as follows: Spring wheat, 4,527 acres; winter wheat, 520 acres; oats, 820 acres; barley, 278 acres; rye, 285 acres; field corn, 175 acres; mixed hay, 1,325 acres; vegetables, 179 acres; small fruits, 32 acres.

Seed Production.

Growing of vegetable-seed continues to flourish and expand. This product finds a receptive and profitable market in Canada and overseas. Owing to war conditions,

advance contracts for 1942 are available at prices which should return a fair margin of profit to the growers. Due to unfavourable harvesting conditions, 1941 deliveries of some lines are short. Producers of registered and certified seed are aware of the importance attached to a high quality product. The following acreage for the year 1941 was distributed among thirty-five growers producing registered, certified, and commercial or spot seed:—

	No. of Acres.	No. of Growers.
Onion	57	13
Carrot	59½	24
Radish	27¼	13
Beans	1	2
Corn, sweet	1½₀	2
Asparagus	3½	2
Cucumber and squash	1¼	3
Totals	150¹¹⁄₂₀	59

In the Grand Forks District, 27.65 acres were planted to three varieties of certified seed potatoes: Netted Gem; Warba; and Chippewa. In the Boundary District, 3.65 acres were planted to four varieties: Netted Gem; Early Epicure; Warba; and Irish Cobbler.

A total of approximately 180 tons of seed will be available from all districts.

Fruit-growing.

In the small-fruit section, strawberries and raspberries suffered in yield and quality owing to an unfavourable season. During the peak of the season 11 tons of raspberries were processed.

The apple-crop was heavy despite the loss on the ground attributed to a particularly severe wind-storm which visited the district on August 15th. The principal varieties grown are McIntosh Red, Delicious, and Winesap. A total of 104 cars of mixed fruit and vegetables and 26 cars of prunes were shipped out.

Tomato Cannery.

Following the establishment of the cannery during 1940, an increase in acreage planted to tomatoes in 1941 was noted. This proved to be a disastrous year, due entirely to unfavourable weather, with the result that only a small percentage of the crop was harvested, the total pack being around 30,000 cases as compared to the 1940 total of 70,000. Growers and operators alike sustained heavy losses. Prices paid to growers were: No. 1, $17 per ton; No. 2, $12 per ton. Only a very slight quantity graded out to No. 1's.

Plant Diseases.

The steady procession of damp, sunless days fostered the spread of certain types of disease. Potatoes and tomatoes were subjected to early blight, more or less severe.

Vegetable-seed crops were carefully checked over by the Plant Pathologists attached to Dr. McLarty's staff for any suspected diseases associated with seed-crops.

Insect Pests.

Numerous inquiries were submitted to this office with regard to insect pests attacking crops throughout the growing season. Mr. Max Ruhmann, Provincial Entomologist, remained in the district for several weeks rendering valuable assistance to the growers while patrolling the territory during inspection for any appearance of Colorado Beetle. No recurrence of this latter pest was noted.

Grasshoppers.—A minimum of time and cash was expended during the current year, in the Midway Grasshopper-control Zone.

Field Crops.

Field crops of all description were subjected to severe setbacks. Early cuttings of alfalfa-hay were in some cases a total loss and subsequent cuttings, although eventually

salvaged, suffered in quality, as also did mixed hay. Farmers will have sufficient feed on hand for the winter months, with little market surplus in sight.

Throughout the Boundary District cereal grains, which gave early promise of record yields, were reduced to pitiful grades. Stooked grain sprouted and feed values deteriorated. Intermittent stook and stack threshing was extended into November. Very few threshermen's reports covering quantities of grain threshed have been received to date.

Field-crop Trials.

Field Corn.—Five varieties have been under test for grain corn at Grand Forks: Northwest Dent, Golden Glow, Minn. 13, Wis. 455, and Wis. 355. Wis. 355 ranked superior to all others in yield and performance and was the only variety to provide mature ears as at October 10th. This hybrid successfully resisted several severe windstorms when others went down.

Soy-beans.—Six varieties of soy-beans were placed with three local growers. It was unavoidable that seed could not be sown until the end of May or later. Varieties tested were Mandarin, Pagoda, O.A.C. 211, Wisconsin Black, Kabot, and Manitoba Brown.

Despite seasonal drawbacks and late planting, the performance of the plants supported the opinion that earlier sowings would have been sufficiently advanced to permit of seed of some varieties being harvested early in September. Kabot, Pagoda, and Wisconsin Black could be included in this category.

Live Stock.

Range stock had access to plenty of feed during the past season. Prices for beef cattle have been on the upgrade and there is a tendency on the part of stockmen towards herd improvement, with frequent purchases of pure-bred sires and females. The Provincial Live Stock Commissioner, in a series of well-attended June meetings, discussed matters pertaining to the health of animals with members of Greenwood Riding and Grand Forks Stock-breeders' Associations.

For the first time a car-lot pool shipment consisting of 196 head of sheep was assembled at Grand Forks, consigned to the Coast market. Results were very satisfactory and a second similar shipment went forward in October.

Cattle shipments in car-lots consisted of seven to eight cars from Grand Forks and eighteen to nineteen cars from Boundary District. All the finished beef is about cleaned up, but there are some feeders still on hand.

Poultry Clubs.—Interest in poultry-work was sustained during the season. R. F. Hine, of the Grand Forks school staff, was chiefly responsible for membership enrolment and negotiations in connection with the purchase of baby chicks for two Rhode Island Red and one White Leghorn club. Miss Pearl Lindsay, Rock Creek, again acted as organizer for that area and assisted at the club meetings of the local New Hampshire club. The total membership for all clubs was twenty-eight.

Weed-control.

Field Bindweed (*Convolvulus arvensis*) continues to widen its area of infestation, spreading by means of underground stems and roots. Experiments towards the end of July with spray applications of sodium chlorate were conducted but no simple and inexpensive control has yet been devised.

Quack-grass or Couch-grass (*Agropyron repens*) is widely distributed throughout this territory, taking possession of neglected hay-meadows, pasture fields, and vacant lands. Experiments with fall applications of weed chemical are now in progress.

APPENDICES.

APPENDIX No. 1.

ORDER IN COUNCIL.

[8989]

AT THE GOVERNMENT HOUSE AT OTTAWA.

TUESDAY, the 18th day of November, 1941.

PRESENT:

HIS EXCELLENCY THE GOVERNOR-GENERAL IN COUNCIL.

WHEREAS the Minister of Agriculture reports that representations have been made by the Government of the Province of British Columbia that feed supplies are insufficient to meet live stock and poultry feed requirements consequent upon the war and have urged that action be taken whereby the Dominion Government would assist British Columbia farmers in obtaining necessary feed grains and millfeeds from the Prairie Provinces at prices which will permit them to maintain live stock and poultry production;

THAT by Order in Council dated the 28th day of October, 1941, P.C. 8396, under the War Measures Act, measures were approved extending freight assistance to Western grains and millfeeds shipped into Eastern Canada for use exclusively as feed for live stock and poultry; and that it is desirable that similar assistance be extended to consumers of live stock and poultry feeds in British Columbia.

NOW, THEREFORE, His Excellency the Governor-General in Council, on the recommendation of the Minister of Agriculture and under the authority of the War Measures Act, Chapter 206, Revised Statutes of Canada, 1927, is pleased to authorize and doth hereby authorize the Minister of Agriculture to pay the rail freight charges from Calgary, Edmonton, or other points in the Province of Alberta having the same freight rate, as herein prescribed, viz.:

(1) On Western Wheat, Oats, Barley, Rye, No. 1 Feed Screenings or No. 2 Feed Screenings, whole or ground, Wheat Bran, Wheat Shorts or Wheat Middlings, shipped from points of origin in the Provinces of Alberta, Saskatchewan or Manitoba to destinations in British Columbia and distributed for use exclusively as feed in British Columbia for Canadian live stock or poultry before July 1st, 1942; provided that whenever applicable the rates of freight shown in Canadian Freight Association Tariff No. 145 must be used;

(2) On Corn, whole or ground, shipped from points of origin in the Provinces of Alberta, Saskatchewan or Manitoba to destinations in British Columbia and distributed for use exclusively as feed in British Columbia for Canadian live stock or poultry before July 1st, 1942, the portion of the through freight charges from Calgary or Edmonton to such destinations;

(3) On stocks of grains in storage elevators, warehouses and feed mills within British Columbia in the amount of not less than 30 tons of any one kind of Western Wheat, Oats, Barley, Rye, Corn, No. 1 Feed Screenings or No. 2 Feed Screenings, whole or ground, as of the date of this Order in Council and which has been shipped from points of origin in the Provinces of Alberta, Saskatchewan or Manitoba subsequent to May 1st, 1941, and which may be distributed for use exclusively as feed for live stock or poultry subsequent to the date of this Order in Council and prior to July 1st, 1942;

(4) On stocks of millfeeds in storage within British Columbia which were shipped from the manufacturing mill in the Provinces of Alberta, Saskatchewan or Manitoba on and after October 1st, 1941, in the amount of not less than 25 tons as of the date of this Order in Council and which may be distributed for use exclusively as feed for live stock or poultry subsequent to the date of this Order in Council and prior to July 1st, 1942;

provided that wherever the actual freight charges from the point or points of origin of such grain or feeds to destinations in British Columbia shall be less than the basic freight charges from Calgary or Edmonton, such freight assistance allowable shall be reduced proportionately and provided further on all grains and feeds shipped and distributed in accordance with the provisions hereof evidence satisfactory to the Flour and Feeds Administrator is produced to show that the sale price to the consumer has been reduced by and takes into account the payment of such freight assistance as is herein prescribed.

A. D. P. HEENEY,
Clerk of the Privy Council.

THE WARTIME PRICES AND TRADE BOARD.

The following has been released under date of Ottawa, Canada, December 19th, 1941:—

" Subsidies will be paid to producers of milk sold to manufacturers of concentrated milk products, and in certain areas to producers of milk sold for fluid milk distribution, the Wartime Prices and Trade Board announced to-day. This action has been taken with a view to encouraging milk production and rectifying certain inequalities at present existing, while, at the same time, avoiding general increases in prices to consumers.

" In making the announcement on milk prices the Board pointed out that in a number of areas increases in prices to producers were approved, in order to insure adequate supplies of milk, prior to the enactment of the price ceiling regulations. While recognizing the validity of the same principle when applied to areas which have received no increases, the Board is not prepared, at this time, to authorize increases in the retail price of milk to consumers. Accordingly, it has been decided to meet the immediate situation by the payment of subsidies until a survey can be made of the entire question of the supply and prices of milk in Canada, with a view to devising a more equitable price structure.

" The Board has, therefore, decided that on and after Monday, December 22nd, the production of milk in Canada shall be encouraged by the payment of a subsidy of 30 cents per hundred pounds, over and above the present lawful price, to producers of fluid milk sold in all areas where no increase in milk prices has taken place since August 1st, 1941, and that a subsidy of 40 cents per hundred pounds, over and above a minimum price of $1.70 per hundred pounds, or the present price, whichever may be higher, shall be paid to the producers of milk sold to manufacturers of concentrated milk products. The amount of the subsidy will be added to the price paid to the producers by the milk distributor or by the manufacturer of concentrated milk products.

" The manufacturer of concentrated milk products will be reimbursed at the end of each month for all payments under milk subsidy order upon completion of a form approved by the Board. The milk distributor will be reimbursed at the end of each month for all payments under the milk subsidy order upon completion of a similar form and production of a certificate from the proper Provincial Milk Board that the subsidy has been paid to the producer. In areas where a Provincial Milk Board certifies that payment of a subsidy to encourage the production of milk is impracticable the Wartime Prices and Trade Board may sanction an increase in the retail price of milk not exceeding 1 cent per quart.

" The Board has also commenced a special investigation of milk production and prices throughout Canada with a view to stimulating increased production and at the same time stabilizing the average annual cost of milk and dairy products to the Canadian consumer. It is recognized that certain adjustments of prices as between different localities and as between different uses of milk may be necessary. At the same time costs and methods of distribution will be examined with a view to effecting all possible economies in this direction."

APPENDIX No. 2.

THRESHERMEN'S RETURNS, 1940.

Area.	Number of Threshing-machines or Combines.	Spring Wheat.	Winter Wheat.	Oats.	Barley.	Peas.	Rye.	Legume-seed.	Grass-seed.	Miscellaneous.	
		Bu.	Bu.	Bu.	Bu.	Bu.	Bu.	Lb.	Lb.		Lb.
Smithers	35	20,269	600	75,292	16,321	17	84	7,500	745,030	.....	.....
Enderby, Armstrong, Vernon, Lumby	26	106,080	63,891	105,842	46,218	20,315	10,593	44,780	3,000	.....	.....
Kelowna	3	6,237	6,991	17,574	4,365	132	462	1,000	.....	Beans,	72,960
										Flax,	3,416
Peace River Block	110	1,584,646	1,881	914,493	146,927	500	11	15,240	125,755	Beans,	49,500
										Flax,	429,464
										Buckwheat,	1,296
Fraser Valley	50	10,801	2,475	596,284	25,025	3,418	165	179,910	.....	Mixed grains,	30,800
										Vetches,	32,520
										Buckwheat,	5,184
										Flax,	672
Salmon Arm and Kootenay	42	29,811	12,376	70,341	24,971	19,765	708	8,045	.....	Beans,	360
										.....	.....
Vancouver Island	30	7,627	18,201	236,052	14,236	2,218	224	.....	.....	Mixed grains,	65,520
										Vetch,	10,380
										Flax,	840
Cariboo	12	17,484	2,500	52,375	8,336	667	4,550	850	70	.....	.....
Boundary	7	28,607	9,714	9,167	4,430	.....	436	.....	.....	.....	.....
Creston	7	420,100	.....	10,900	600	4,000	.....	900	.....	.....	.....
Prince George	36	22,703	8,591	169,884	16,109	286	556	144,093	.....	Mixed grains,	2,744,000
										Flax,	1,008
										Alsike and timothy,	50,818
Kamloops and District	26	28,932	26,746	63,176	29,065	3,725	4,116	41,160	.....	Beans,	95,580
										Flax,	20
Kootenay and Arrow Lakes	10	5,136	716	9,774	1,824	62	.....	.....	.....	.....	.....
Totals	394	2,288,433	154,682	2,331,154	338,427	55,105	16,905	443,478	873,855		3,594,338

APPENDIX No. 3.

Soil-testing by Spurway Method, January 1st to October 31st, 1941.

Name.	Address.	Nature of Soil.	Nitrates. Lb. A/6 In.	Ammonia. Lb. A/6 In.	Phosphorus. Lb. A/6 In.	Potassium. Lb. A/6 In.	Calcium. Lb. A/6 In.
Cole, L.—							
No. 1	c/o J. H. Bisson, 3142 Quadra Street, Victoria	Neutral	16	16	4	40	800
No. 2	c/o J. H. Bisson, 3142 Quadra Street, Victoria	Slightly acid	16	Trace	4	40	800
Abbott, D.—							
No. 1	Box 343, Victoria	Neutral	16	Trace	40	40	1,200
No. 2	Box 343, Victoria	Neutral	16	Trace	40	40	1,200
Fields, J. C.—							
No. 1	123 Cambridge Street, Victoria	Slightly acid	16	Trace	4	40	800
No. 2	123 Cambridge Street, Victoria	Slightly acid	16	Trace	20	40	1,200
No. 3	123 Cambridge Street, Victoria	Slightly acid	16	------	20	40	1,200
No. 4	123 Cambridge Street, Victoria	Slightly acid	16	Trace	20	40	1,200
Hartley, H. C.—							
No. 1	2 Church Street, Nanaimo, V.I.	Medium acid	80	------	4	40	800
No. 2	2 Church Street, Nanaimo, V.I.	Medium acid	16	------	4	40	800
Sawyer, D.	Trunk Road, Ladner	Medium to strongly acid	200	16	8	40	800
Collins, E. H.	Seven Oaks P.O., Victoria	Medium acid	16	Trace	4	40	800
Hallwright, H. E.	1221 Richardson Street, Victoria	Slightly acid	16	Trace	4	40	800
Monk, E. J.	1815 Chambers Street, Victoria	Neutral	16	Trace	40	80	1,200
Willows Hotel	Campbell River	Slightly acid	16	Trace	20	40	800
Pond, S. P.	Nelson	Neutral to slightly alkaline	200	Trace	40	80	1,600
Turner, A. D.	Sub-P.O. 12, New Westminster	Slight to medium acid	16	Trace	4	40	1,200
Oak Bay Nursery—							
No. 1	2057 Meadow Place, Victoria	Medium acid	16	Trace	4	40	800
No. 2	2057 Meadow Place, Victoria	Medium acid	16	Trace	4	40	800
Rice, A.	Chilliwack	Medium acid	16	Trace	4	40	800
Knighton, H. R.—							
No. 1	Princeton	Slightly acid	16	Trace	20	80	800
No. 2	Princeton	Slight to medium acid	80	Trace	40	80	800
Mrs. J. Forrest	Sooke	Medium acid	16	------	4	40	800
Currie, H. R.—							
No. 1	Saturna Island	Medium acid	40	------	4	40	800
No. 2	Saturna Island	Medium acid	16	Trace	4	40	800
No. 3	Saturna Island	Medium acid	16	Trace	4	80	800
Van Buren, H.—							
(Front) No. 1	Canada Life, New Westminster	Medium acid	16	Trace	4	40	800
(Back) No. 1	Canada Life, New Westminster	Medium acid	16	Trace	4	40	800
(Field) No. 2	Canada Life, New Westminster	Slightly acid	40	Trace	4—	40	800
(Field) No. 3	Canada Life, New Westminster	Medium acid	40	Trace	4	40	800

(Field) No. 4	Canada Life, New Westminster	Medium acid	80	Trace	4	40	800
(Field) No. 5	Canada Life, New Westminster	Medium acid	80	Trace	4	40	800
(Field) No. 6	Canada Life, New Westminster	Medium acid	80	Trace	4	40	800
(Front) No. 7	Canada Life, New Westminster	Medium acid	16	Trace	4	40	800
(Front) No. 8	Canada Life, New Westminster	Medium acid	80	Trace	4—	40—	800
(Back) No. 8	Canada Life, New Westminster	Medium acid	40	Trace	4	40	800
(Back) No. 9	Canada Life, New Westminster	Medium acid	16	Trace	4	40	800
(The Island) No. 10	Canada Life, New Westminster	Medium acid	200	.....	4—	80	800
Page, J.—							
No. 1	3491 Saanich Road, Victoria	Neutral	40	Trace	28	160	1,200
No. 2	3491 Saanich Road, Victoria	Neutral	40	Trace	20	80	1,200
Warren, C.	3485 Seymour Street, Saanich, V.I.	Medium acid	80	Trace	4	40	800
Wilson, Mrs. A.—							
No. 1	Deep Cove	Neutral	80	Trace	20	80	1,200
No. 2	Deep Cove	Medium acid	16	Trace	8	80	800
Pearce, H.	1155 Oxford Street, Victoria	Slightly acid	40	.....	4	40	1,200
McLennan, R. M.	1151 Oxford Street, Victoria	Slightly acid	200	Trace	4	80	1,200
Cave, F. C.—							
No. 1	1755 Fifty-eighth Street West, Vancouver	Strongly acid	16	.....	4	40	800
No. 2	1755 Fifty-eighth Street West, Vancouver	Strongly acid	16	.....	4	40	800
No. 3	1755 Fifty-eighth Street West, Vancouver	Strongly acid	80	.....	4	40	800
No. 4	1755 Fifty-eighth Street West, Vancouver	Neutral	Trace	.....	4—	40	1,200
Warren, E. C.	920 Falmouth Road, Victoria	Neutral	Trace	.....	20	80	1,200
Robinson, A. L.	119 Clarence Street, Victoria	Medium acid	16	.....	8	40	1,200
Cuchanowski, August—							
No. 1	1417 May Street, Victoria	Neutral	200	.....	8	80	1,200
No. 2	1417 May Street, Victoria	Neutral	40	.....	4	80	1,200
Harrison, J. B.—							
No. 1	R.R. 2, Eburne	Very strongly acid	.....	.....	4	40	800
No. 2	R.R. 2, Eburne	Very strongly acid	16	.....	4	40	800
No. 3	R.R. 2, Eburne	Medium acid	80	.....	4	40	800
No. 4	R.R. 2, Eburne	Strongly acid	16	.....	4	40	800
Robertson, W. H.	Department of Agriculture, Victoria	Slightly alkaline	No trace	.....	No trace	80	1,200
Gerald O'Neill	938 Collinson Street, Victoria	Neutral	80	.....	40	160	1,200
Lampart, Edward G.	Alberni	Medium acid	80	.....	4	40	800
Hart, Louis—							
No. 1	Osoyoos	Slightly alkaline	Trace	.....	16	80	1,200
No. 2	Osoyoos	Neutral	16	.....	20	80	1,200
Mowat, G.	1327 Walnut Street, Victoria	Medium acid	16	.....	4	40	800
Cartwright, M.—							
No. 1	2104 Thirty-seventh Avenue West, Vancouver	Medium acid	40	.....	4	80	800
No. 2	2104 Thirty-seventh Avenue West, Vancouver	Medium acid	40	.....	8	4	800
No. 3	2104 Thirty-seventh Avenue West, Vancouver	Medium acid	16	.....	4	40	800

APPENDIX No. 3—*Continued.*

SOIL-TESTING BY SPURWAY METHOD, JANUARY 1ST TO OCTOBER 31ST, 1941—*Continued.*

Name.	Address.	Nature of Soil.	Nitrates. Lb. A/6 In.	Ammonia. Lb. A/6 In.	Phosphorus. Lb. A/6 In.	Potassium. Lb. A/6 In.	Calcium. Lb. A/6 In.
Levelton, Clifford	Bella Coola	Medium acid	Trace	.....	4—	40—	800
Clotworthy, S. J.—							
No. 1	R.R. 1, Victoria	Slightly acid	80	.....	4	40	1,200
No. 2	R.R. 1, Victoria	Medium acid	80	.....	4	40	800
No. 3	R.R. 1, Victoria	Medium acid	40	.....	4	80	800
No. 4	R.R. 1, Victoria	Medium acid	80	.....	4	80	800
Vye, H.—							
No. 1	1846 Kings Road, Victoria	Medium acid	80	.....	8	40	800
No. 2	1846 Kings Road, Victoria	Slightly acid	80	.....	4	80	1,200
Redknot, S.	950 Market Street, Victoria	Slightly acid	16	.....	8	80	800
McCullagh, G.	c/o Sooke Farmers' Institute, Sooke	Medium acid	16	.....	4	40	800
Rumsley, F. C.	c/o Sooke Farmers' Institute, Sooke	Medium acid	40	.....	4	40	800
Adcock, L.	c/o Sooke Farmers' Institute, Sooke	Medium acid	40	.....	4	40	800
Leary, O. G.	c/o Sooke Farmers' Institute, Sooke	Medium acid	16	.....	4	80	800
Welsh, E. W.—							
No. 1	R.M.D. 2, Victoria	Medium acid	16	.....	4	40	800
No. 2	R.M.D. 2, Victoria	Medium acid	40	.....	4	40	800
No. 3	R.M.D. 2, Victoria	Medium acid	40	.....	4	40	800
No. 4	R.M.D. 2, Victoria	Strongly acid	80	.....	4	40	800
No. 5	R.M.D. 2, Victoria	Medium acid	200	.....	4	40	800
Simpson, A. W.	c/o Sooke Farmers' Institute, Sooke	Medium acid	16	.....	4	40	800
Lamb, J. H. Mortimer—							
No. 1	Galiano Island	Slightly acid	40	.....	20	80	1,200
No. 2	Galiano Island	Slightly acid	16	.....	16	40	1,200
Rogerson, A.	1315 Monterey Avenue, Victoria	Medium acid	40	.....	4	40	800
Wilkinson, A.	Lumberton	Slightly alkaline	80	.....	8	80	1,600
Addems, M.—							
No. 1	274 Beach Drive, Victoria	Very slightly acid	200	.....	20	80	1,200
No. 2	274 Beach Drive, Victoria	Very slightly acid	200	.....	20	80	1,200
Bonner, R.—							
No. 1	90 Obed Avenue, Victoria	Slightly acid	80	.....	8	80	800
No. 2	90 Obed Avenue, Victoria	Medium acid	40	.....	4	40	800
No. 3	90 Obed Avenue, Victoria	Neutral	80	.....	20	40	1,200
Shaw, A. H.	1139 Tattersal Drive, Victoria	Slightly acid	200+	.....	40+	160+	1,200
Plaunt, J. G.	Box 304, Port Alberni	Slightly acid	16	.....	4	40	800
Burnett, Mrs. A.	1443 Richardson Street, Victoria	Medium acid	200	.....	8	80	1,200
Lovekin, A.	Ucluelet	Medium acid	200	.....	4	80	800

Unicome, C.—							
No. 1	Glynn P.O.	Slightly acid	16	.....	4	40	800
No. 2	Glynn P.O.	Neutral	16	.....	4	40	800
No. 3	Glynn P.O.	Slightly acid	80	.....	8	40	800
No. 4	Glynn P.O.	Slightly acid	200	.....	40	80	1,000
Matson, E. W.—							
No. 1	R.R. 1, Ladysmith	Slightly to medium acid	40	.....	4	40	800
No. 2	R.R. 1, Ladysmith	Slightly acid	16	.....	4	80	800
Katilla, M.	R.R. 2, Ladysmith	Slightly acid	Trace	.....	4	40	800
Gisborne, R.—							
No. 1	R.R. 1, Ladysmith	Slightly acid	16	.....	4	40	800
No. 2	R.R. 1, Ladysmith	Medium acid	200	.....	4	40—	800
Van Maanen, J.	626 Speed Avenue, Victoria	Neutral	200	.....	8	40	1,200
Milwarde-Yates, Mrs. Joan—							
No. 1	R.R. 1, East Sooke	Strongly acid	80	80	4	80	320
No. 2	R.R. 1, East Sooke	Strongly acid	80	80	4	80	320
McKay, W.—							
No. 1	Seaside Farm, Sooke	Slightly acid	40	.....	4	40	800
No. 2	Seaside Farm, Sooke	Strongly acid	200	.....	4	40	800
Martin, D. M.—							
No. 1	c/o Royal Bank of Canada, Douglas Street, Victoria	Neutral	80	.....	16	40	800
No. 2	c/o Royal Bank of Canada, Douglas Street, Victoria	Slightly acid	200	.....	8	80	1,200
Irvine, W. H.—							
No. 1	c/o Pemberton's, Victoria	Medium acid	16	80	4	40	800
No. 2	c/o Pemberton's, Victoria	Medium acid	16	16	4	40	800
Cullen, E.—							
No. 1	Cobble Hill	Slightly acid	200	.....	8	80	800
No. 2	Cobble Hill	Slightly acid	80	.....	4	40	800
Dunn, W. K.	319 Burnside Road, Victoria	Neutral	80	.....	20	80	1,200
Worsley, J. H.	Lakeside Road, Cobble Hill	Medium acid	200	.....	8	40	800
Ditloff, E. B.	Wildwood Heights	Slightly acid	16	.....	4	40	800
Irvine, Mrs. W. R.	Craigflower P.O., Victoria	Slightly acid	80	.....	16	80	800
Wilson, M.	Kerr Farm, Cobble Hill	Medium acid	200	.....	8	80	800
Richardson, Chas.—							
No. 1	Sooke	Medium acid	200	.....	8	80	800
No. 2	Sooke	Very slightly acid	200	.....	16	80	1,200
Montfort, B.—							
No. 1	Arbutus Road, Cadboro Bay	Slightly acid	80	.....	8	40	800
No. 2	Arbutus Road, Cadboro Bay	Slightly acid	200	.....	Trace	40	800
Sheret, Mrs. Andrew—							
No. 1	1030 St. Charles Street, Victoria	Neutral	200	.....	40+	160	1,200
No. 2	1030 St. Charles Street, Victoria	Very slightly acid	200+	.....	40+	120	1,200

APPENDIX No. 3—*Continued.*

SOIL-TESTING BY SPURWAY METHOD, JANUARY 1ST TO OCTOBER 31ST, 1941—*Continued.*

Name.	Address.	Nature of Soil.	Nitrates. Lb. A/6 In.	Ammonia. Lb. A/6 In.	Phosphorus. Lb. A/6 In.	Potassium. Lb. A/6 In.	Calcium. Lb. A/6 In.
Murray, R. P.	Penticton	Neutral	Excessively high	.....	Excessively high	Excessively high	Excessively high
Deloume, Mrs. A. J.	3315 Glasgow Avenue, Victoria	Medium acid	40	.....	4	40	800
Edmonds, A.	R.R. 1, Cadboro Bay	Medium acid	200	.....	4	40	800
Spooner, Mr.	907 Sixth Street, New Westminster	Medium acid	40	.....	4	40	800
Montfort, R.—							
No. 1	Cadboro Bay	Medium acid	40	.....	8	40	800
No. 2	Cadboro Bay	Slightly acid	200	.....	8	40	1,200
No. 3	Cadboro Bay	Slightly acid	200	.....	8	80	1,200
No. 4	Cadboro Bay	Slight to medium acid	200	.....	40	120	1,200
Hill, A. J.	1234 Hillside Avenue, Victoria	Medium acid	120	.....	4	40	800
Bullock, A.	2542 Bowker Avenue, Victoria	Medium acid	200	.....	8	80	1,200
Montfort, R.—							
No. 1	Cadboro Bay P.O.	Slightly acid	80	.....	4	40	1,200
No. 2	Cadboro Bay P.O.	Slight to medium acid	200	.....	8	80	1,200
No. 3	Cadboro Bay P.O.	Very slightly acid	160	.....	20	80	1,200
Thompson, E. J.	Cobble Hill	Slightly acid	16	.....	4	40	1,200
Lawson, Dr. E. H.	Ganges, V.I.	Very slightly acid	16	.....	8	40	1,600
Palmer, A.	Ocean Falls	Slightly acid	16	.....	8	40	1,200
Galloway, A.	Kamloops	Slightly alkaline	400	.....	80	220	1,200
Orrico, Louis—							
No. 1	Shelbourne Street, Victoria	Medium acid	200	.....	40	120	800
No. 2	Shelbourne Street, Victoria	Strongly acid	240	.....	60	160	1,200
No. 3	Shelbourne Street, Victoria	Slight to medium acid	240	.....	60	160	1,200
Lucich, Theodore	Mayo, Y.T.	Slightly alkaline	40	.....	16	80	1,600
Greer, W. W.—							
No. 1	Clearwater	Slightly acid	80	.....	4	80	800
No. 2	Clearwater	Very slightly acid	16	.....	4	40	800
Eastwood, J. C.	50 South Turner Street, Victoria	Neutral	200	.....	8	80	1,200
Dodd, C.	1598 Sixth Avenue West, Vancouver	Slightly acid	200	.....	20	160	1,200
Fawcett, T.	269 Royal View Avenue, Victoria	Neutral	240	.....	20	160	1,200
Pradoline, E.—							
No. 1	Revelstoke	Neutral	400	.....	4	40	1,200
No. 2	Revelstoke	Alkaline	16	.....	.....	.....	.....
McPhee, Wm.	620 Dunedin Street, Victoria	Neutral	200	.....	16	18	1,200
Hawkins, T. H.	1104 Topaz Avenue, Victoria	Slightly acid	80	.....	4	40	800
Bree, E. Norman	Telkwa	Neutral	16	.....	8	40	1,200
Robinson, P.	Fort St. James	Slightly acid	200	.....	4	40	800

Keefe, Jim	Soda Creek	Neutral	16	.....	20	40	1,200
Brandon, T.	Telkwa	Neutral	16	.....	20	40	1,200
Hargreaves, R.	Soda Creek	Neutral	200	.....	40	120	1,200
Willock, Brigr. Gen.	Comox	Very slightly acid	16	.....	4	80	800
Nichol, Mrs. B. B.	2410 Heron Street, Victoria	Very slightly acid	400+	.....	4	80	1,200
Bird, E. W.	2823 Dysart Road, Victoria	Neutral	40	.....	20	40	1,200
Jones, Mrs. J.	3029 Earl Grey Street, Victoria	Neutral	80	.....	20	80	1,200
Holloway, A. G.—							
No. 1	214 Russell Street, Victoria	Neutral	16	.....	20	80	1,200
No. 2	214 Russell Street, Victoria	Slightly acid	16	.....	8	40	800
LeBourdais, Signaller Louis	Work Point Barracks, Victoria	Neutral	16	.....	20	80	800
Tait, Wm.	Department of Lands, Victoria	Neutral	200	.....	4	40	1,600
McPherson, A. H.	R.M.D. 4, Victoria	Slightly acid	16	.....	8	40	800
Lane, N. K.—							
No. 1	R.R. 1, Royal Oak	Very slightly acid	80	.....	4	80	800
No. 2	R.R. 1, Royal Oak	Neutral	80	.....	4	80	1,200
No. 3	R.R. 1, Royal Oak	*Medium acid*	Very high	.....	Very high	Very high	.....
Orrico, L.	R.M.D. 4, Victoria	Neutral	200	.....	40	160	1,200
Earle, George	2137 Spring Road, Victoria	Neutral	200	.....	40	160	1,200
Hills Bros. Seed Co.—							
No. 1	3191 Crown Street, Vancouver	Neutral	16	.....	20	80	1,200
No. 2	3191 Crown Street, Vancouver	Neutral	200	.....	40	160	1,600
No. 3	3191 Crown Street, Vancouver	Neutral	16	.....	4	40	1,200
McKechnie, Maxwell—							
No. 1	Duncan	Slightly acid	16	.....	4	80	800
No. 2	Duncan	Slightly acid	16	.....	4	40	800
McKenzie, John	Comox, V.I.	Neutral	16	.....	4	40	1,200
Lewis, Mrs. A. E.	1145 Rock Street, Victoria	Neutral	80	.....	4	40	800
Nott, G. S.—							
No. 1	5187 St. Catherines Street, Vancouver	Strongly acid	16—	.....	4	40—	800
No. 2	5187 St. Catherines Street, Vancouver	Strongly acid	*Nil*	.....	*Nil*	40—	800
Cryer, N.	R.R. 1, Ladner	Very strongly acid	80	.....	4	40	800
Middlemass, H.—							
No. 1	Chase River	Strongly acid	16	.....	4	40	800
No. 2	Chase River	Medium acid	16	.....	8	40	800
Collins, Mrs. D. F.	3158 Jackson Street, Victoria	Almost neutral	200	.....	20	80	1,200
Worsley, R. S.	941 Island Road, Victoria	Neutral	200	.....	4	40	1,200
Wright, Smith	R.R. 1, Ladner	Very slightly acid	16	.....	40	80	800
Atter, C. E.—							
No. 1	726 Mount Joy Avenue, Victoria	*Very slightly acid*	16	.....	½	10	100
No. 2	726 Mount Joy Avenue, Victoria	Slightly acid	80	.....	4	40	800
Luyat, G. A.—							
No. 1	Williams Lake	Neutral	200	.....	4	80	1,200
No. 2	Williams Lake	Very slightly alkaline	16	.....	4	80	1,200

APPENDIX No. 3—*Continued.*

SOIL-TESTING BY SPURWAY METHOD, JANUARY 1ST TO OCTOBER 31ST, 1941—*Continued.*

Name.	Address.	Nature of Soil.	Nitrates. Lb. A/6 In.	Ammonia. Lb. A/6 In.	Phosphorus. Lb. A/6 In.	Potassium. Lb. A/6 In.	Calcium. Lb. A/6 In.
Luyat, G. A.—*Continued.*							
No. 3	Williams Lake	Very slightly acid	16	-------	8	40	800
No. 4	Williams Lake	Neutral	200	-------	25	40	800
No. 5	Williams Lake	Slightly alkaline	80	-------	8	80	1,600
No. 6	Williams Lake	Neutral	80	-------	20	160	1,200
No. 7	Williams Lake	Slightly alkaline	200	-------	20	160	1,600
Anderson, Capt. C. L.	R.R. 1, Cowichan Station	Medium acid	Trace only	-------	4	40—	800
Keown, Dr. G. H.—							
No. 1	745 Pandora Avenue, Victoria	Very slightly acid	80	-------	4	40	800
No. 2	745 Pandora Avenue, Victoria	Neutral	200	-------	4	160+	800
No. 3	745 Pandora Avenue, Victoria	Slightly acid	16	-------	4	40	800
Haslam, Wm.—							
No. 1	1001 Balmoral Road, Victoria	Neutral	16	-------	8	80	1,200
No. 2	1001 Balmoral Road, Victoria	Neutral	200	-------	8	80	1,200
Baillie, A. S.—							
No. 1	Copper Mountain	Slightly alkaline	16	16	4	80	1,200
No. 2	Copper Mountain	Slightly alkaline	-------	16	4	80	1,200
Phillips, Mrs. J. D.	475 Head Street, Victoria	Slightly acid	40	16	20	80	320
Riddell, A. W.	1198 Victoria Avenue, Victoria	Slightly acid	40	16	20	80	320
Rines, Mrs. W.—							
No. 1	3800 Carey Road, Victoria	Neutral	16	16	8	160	320
No. 2	3800 Carey Road, Victoria	Slightly acid	16	-------	8	80	320
Webb, J. F.	Cowichan Bay	Slightly acid	16	16	20	80	800
Errington, Miss K. V.	1421 Stadacona Avenue, Victoria	Slightly acid	-------	16	4	40	320
Farr, Prof. E. S.	1326 Yates Street, Victoria	Very slightly acid	80	80	4	-----	320
Cook, Mrs. G.	2623 Blanshard Street, Victoria	Slightly alkaline	-------	16	20	160	800

APPENDIX No. 4.

SUMMARY OF MOVEMENT OF GRAIN-SCREENINGS, JANUARY 1ST TO OCTOBER 31ST, INCLUSIVE.

Month.	Consumed in British Columbia.								Export direct from Elevator.		Total per Month.	
	No. 1 Feed.		No. 2 Feed.		Uncleaned.		Refuse.		All Grades.		All Grades.	
	Tons.	Lb.	Tons.	Lb.	Tons.	Lb.	Tons.	Lb.	Tons.	Lb.	Tons.	Lb.
January	.....	.....	20	.....	372	1,200	74	.....	30	.....	496	1,200
February	.....	.....	.....	.....	225	1,750	37	1,700	30	.....	293	1,450
March	.....	.....	3	.....	238	1,000	123	1,740	35	.....	400	740
April	.....	.....	205	1,000	152	1,900	34	550	.....	.....	392	1,450
May	.....	.....	86	150	82	.....	64	950	.....	.....	232	1,100
June	.....	.....	257	1,060	84	1,710	4	.....	90	.....	436	770
July	.....	.....	77	1,550	3	.....	57	.....	60	.....	197	1,550
August	.....	.....	5	.....	116	1,810	6	1,000	60	.....	188	810
September	72	1,000	13	700	126	.....	34	.....	30	.....	275	1,700
October	.....	.....	.....	.....	41	1,240	18	1,300	.....	.....	60	540

APPENDIX No. 5.

ESTIMATE OF HONEY-CROP, 1941.

District.	Apiaries.	Hives.	Honey-crop.	Average per Colony.
			Lb.	Lb.
Vancouver Island and Gulf Islands	645	2,540	78,740	31
Greater Vancouver	460	2,445	110,025	45
Lower Fraser	776	6,650	299,250	45
Upper Fraser and Chilliwack	380	2,940	147,000	50
Okanagan, Shuswap, and Thompson	640	5,010	375,750	75
Kootenays	240	1,735	112,775	65
Central Interior	100	700	45,500	65
Total	3,241	22,020	1,169,040	53.1

APPENDIX No. 6.

NUMBER OF DAIRY PREMISES INSPECTED AND GRADED UNDER "MILK ACT," 1941.

District.	No. of Premises.	No. of Cattle.	Grade of Premises.			Ungraded.
			A.	B.	C.	
Lower Fraser Valley—						
Agassiz	101	1,878	3	95	3	-----
Burnaby	19	359	18	1	-----	-----
Chilliwack	688	12,947	16	642	29	1
Coquitlam	18	425	4	14	-----	-----
Deroche	28	801	4	24	-----	-----
Dewdney	63	1,313	2	61	-----	-----
Harrison Mills	16	341	-----	16	-----	-----
Hatzic Prairie	25	547	-----	25	-----	-----
Langley	529	7,321	10	492	27	-----
Lulu Island	125	3,032	32	90	3	-----
Ladner	234	5,359	41	190	3	-----
Mission	9	233	-----	8	1	-----
Matsqui	294	4,936	2	274	17	1
Maple Ridge	42	918	3	35	4	-----
New Westminster	3	73	3	-----	-----	-----
North Vancouver	6	108	5	1	-----	-----
Pitt Meadows	90	1,863	12	75	3	-----
Surrey	208	3,353	23	169	16	-----
Sumas	157	4,051	12	135	9	1
Vancouver	5	196	5	-----	-----	-----
Yarrow	81	888	-----	72	9	-----
Sea Island	10	308	6	4	-----	-----
Interior—						
Barnhart Vale	4	90	-----	4	-----	-----
Beresford	2	36	-----	2	-----	-----
Kamloops	16	455	-----	15	-----	1
Douglas Lake	1	18	-----	-----	-----	1
Pritchard	2	10	-----	-----	-----	2
Merritt	4	54	-----	4	-----	-----
Lower Nicola	1	14	-----	1	-----	-----
Salmon Arm	5	93	-----	3	-----	2
Enderby	1	4	-----	-----	-----	1
Rose Hill	2	22	-----	2	-----	-----
Robbins Range	1	16	-----	-----	-----	1
Allenby	1	12	-----	1	-----	-----
Copper Mountain	1	41	-----	1	-----	-----
Princeton	4	89	-----	4	-----	-----
Hedley	3	48	-----	3	-----	-----
Oliver	2	43	-----	2	-----	-----
Kaleden	1	4	-----	1	-----	-----
Okanagan Falls	1	26	-----	1	-----	-----
Osoyoos	1	11	-----	1	-----	-----
Penticton	13	113	4	9	-----	-----
Summerland	3	89	3	-----	-----	-----
West Summerland	2	47	-----	2	-----	-----
Allen Grove	1	18	-----	1	-----	-----
Marron Valley	1	23	-----	1	-----	-----
Lytton	1	17	-----	1	-----	-----
Ashcroft	1	11	-----	1	-----	-----
Sicamous	1	7	-----	1	-----	-----
Solsqua	1	13	-----	-----	-----	1
Canoe	1	8	-----	-----	-----	1
Blind Bay	3	22	-----	-----	-----	3
Faulkner	1	75	-----	1	-----	-----
East Kootenay—						
Fernie	6	101	1	3	2	-----
Erickson	1	2	-----	-----	-----	1
Camp Lister	2	5	-----	-----	-----	2
Creston	2	7	-----	-----	-----	2

APPENDIX No. 6—*Continued.*

NUMBER OF DAIRY PREMISES INSPECTED AND GRADED UNDER "MILK ACT," 1941—*Continued.*

District.	No. of Premises.	No. of Cattle.	Grade of Premises.			Ungraded.
			A.	B.	C.	
West Kootenay—						
Greenwood	3	33	.....	3	.....	.....
Grand Forks	4	57	.....	4	.....	.....
Cascade	1	4	.....	.....	.....	1
Revelstoke	7	146	2	5	.....	.....
Okanagan—						
Coldstream	4	92	.....	2	.....	2
Lumby	2	16	.....	.....	.....	2
Armstrong	1	25	.....	.....	.....	1
Kelowna	15	346	4	11	.....	.....
Winfield	3	80	.....	3	.....	.....
Rutland	4	52	.....	4	.....	.....
Okanagan Mission	5	53	.....	3	.....	2
Lavington	1	24	.....	1	.....	.....
Okanagan Landing	2	19	.....	2	.....	.....
Vernon	16	264	.....	14	.....	2
Vancouver Island and Coast Points—						
Saanich	150	3,010	112	38	.....	.....
Metchosin and Rocky Point	12	182	4	8	.....	.....
Langford and Sooke	13	159	6	7	.....	.....
Cowichan and Duncan	44	1,025	21	22	.....	1
Ladysmith	14	321	7	7	.....	.....
Nanaimo	45	942	41	4	.....	.....
Parksville	5	154	3	1	.....	1
Alberni	26	660	21	3	.....	2
Comox and Courtenay	12	382	10	2	.....	.....
Powell River	9	144	9	.....	.....	.....
Buccaneer Bay	1	6	1	.....	.....	.....
Lasqueti Island	18	38	.....	.....	.....	18
Gibsons Landing	21	53	.....	5	.....	16
Sechelt	23	82	.....	7	.....	16
Quathiaski	4	8	.....	1	.....	3
Bella Coola	48	129	.....	1	.....	47
Prince Rupert	3	74	3	.....	.....	.....
Peace Block	169	638	.....	1	2	166
Cariboo	13	101	3	4	.....	6
Nechako Valley	34	236	7	3	2	22
Bulkley Valley	31	301	4	7	.....	20

Summary.

Lower Fraser Valley	2,751	51,250	201	2,423	124	3
Interior	82	1,529	7	62	.....	13
East Kootenay	11	115	1	3	2	5
West Kootenay	15	240	2	12	.....	1
Okanagan	53	971	4	40	.....	9
Vancouver Island and Coast Points	448	7,369	238	106	.....	104
Peace Block	169	638	.....	1	2	166
Cariboo	13	101	3	4	.....	6
Nechako Valley	34	236	7	3	2	22
Bulkley Valley	31	301	4	7	.....	20
Totals	3,607	62,750	467	2,661	130	349

APPENDIX No. 7.

NUMBER OF PREMISES VISITED AND CATTLE T.B.-TESTED, 1941.

District.	No. of Premises.	Cattle tested.	No. of Reactors.
Interior—			
Barnhart Vale	4	90	-----
Beresford	2	36	-----
Kamloops	16	455	2
Douglas Lake	1	18	-----
Pritchard	2	10	-----
Merritt	4	54	-----
Lower Nicola	1	14	-----
Salmon Arm	5	93	-----
Enderby	1	4	-----
Rose Hill	2	22	-----
Robbins Range	1	16	-----
Allenby	1	12	-----
Copper Mountain	1	41	-----
Princeton	5	90	-----
Hedley	3	48	-----
Oliver	3	44	-----
Kaleden	1	4	-----
Okanagan Falls	1	26	-----
Osoyoos	1	11	-----
Penticton	13	113	-----
Westbank	1	1	-----
Summerland	1	24	-----
West Summerland	1	17	-----
Allen Grove	1	18	-----
Marron Valley	1	23	-----
Lytton	1	17	-----
Ashcroft	1	11	-----
Sicamous	1	7	-----
Solsqua	3	17	-----
Canoe	1	8	-----
Blind Bay	3	22	-----
Notch Hill	1	2	-----
Sorrento	1	1	-----
Monte Lake	1	177	-----
West Kootenay—			
Revelstoke	10	153	3
Grand Forks	4	57	-----
Cascade	1	4	-----
Greenwood	3	33	-----
East Kootenay—			
Fernie	6	101	-----
Erickson	2	3	-----
Creston	4	10	-----
Camp Lister	2	5	-----
Okanagan—			
Armstrong	4	35	-----
Kelowna	11	177	-----
Winfield	3	80	-----
Rutland	4	52	-----
Okanagan Mission	6	53	-----
Lavington	1	24	-----
Okanagan Landing	3	21	-----
Vernon	16	165	-----

APPENDIX No. 7—*Continued.*

NUMBER OF PREMISES VISITED AND CATTLE T.B.-TESTED, 1941—*Continued.*

District.	No. of Premises.	Cattle tested.	No. of Reactors.
Coast Points—			
Powell River	9	144	.....
Buccaneer Bay	1	6	.....
Lasqueti Island	18	38	.....
Gibsons Landing	21	53	.....
Sechelt	23	82	6
Quathiaski	4	8	.....
Bella Coola	48	129	.....
Prince Rupert	3	74	.....
Peace Block	169	638	.....
Cariboo	13	101	1
Nechako Valley	34	236	.....
Bulkley Valley	31	301	.....

Summary.

Interior	86	1,546	2
West Kootenay	18	247	3
East Kootenay	14	119	.....
Okanagan	48	607	.....
Coast Points	127	534	6
Peace Block	169	638	.....
Cariboo	13	101	1
Nechako Valley	34	236	.....
Bulkley Valley	31	301	.....
Totals	540	4,329	12

APPENDIX No. 8.

Boys' and Girls' Clubs, 1941.

Potato Clubs.

Name of Club.	Organizer.	Secretary.	Membership.
Danskin	H. A. Durban, Grassy Plains	Cato Loveng, Grassy Plains	7
Big Eddy-Mt. MacPherson	A. S. Parker, Revelstoke	Douglas Parker, Revelstoke	11
Ground Birch	Mrs. M. Wetherill, Ground Birch	Phyllis Wetherill, Grand Birch	13
Otter	R. L. King, R.R. 1, Coghlan		9
East Spallumcheen Netted Gem	F. Marshall, Armstrong		10
West Spallumcheen Netted Gem	F. Marshall, Armstrong		7
Grand View Flats Warba	F. Marshall, Armstrong		8
Armstrong Early	F. Marshall, Armstrong		7
Grindrod	M. A. Dangel, Grindrod	Nettie Block, Grindrod	8
Ladner	C. Swenson, R.R. 1, Ladner		29
Richmond	Joe Maxwell, R.R. 1, Eburne	J. P. Maddocks, R.R. 2, Eburne	24
Mission District, No. 1	G. A. Jones, Mission City	Mae Goundry, Mission City	8
Mission District	G. A. Jones, Mission City	Emiko Shikze, Mission City	9
Milner	S. J. Gray, R.R. 1, Milner	Bert Robinson, R.R. 1, Milner	11
Noohalk (Indian)	Wm. Christie, Bella Coola	Andy Siwallace, Bella Coola	11
Richmond	Joe Maxwell, R.R. 1, Eburne	J. P. Maddocks, R.R. 2, Eburne	21

Grain Clubs.

Richmond Junior Grain	E. Gilmore, New Westminster	Stephen May, R.R. 2, Eburne	10
Ladner (Delta)	W. Montgomery, New Westminster		8

Beef Calf Clubs.

Kamloops (South)	T. P. Wilson, Vinsulla		11
Kamloops (North)	T. P. Wilson, Vinsulla		10
Westwold	C. Turner, Westwold	J. McNally, Westwold	8
Bridge Lake Dual Purpose	Harry Leavitt, R.R. 1, Fawn	Charlie Faessler, R.R. 1, Fawn	9
Francois Lake (Uncha Branch)	E. W. Stevens, Southbank	Glen Wiley, Southbank	7
Armstrong	H. McCallan, Armstrong	Tom Marshall, Armstrong	9
Francois Lake (Danskin)	H. A. Durban, Grassy Plains	Beatrice Anderson, Southbank	11
Progress	H. C. Hannam, Progress	Ruth Mudiman, Progress	10

APPENDIX No. 8—*Continued.*

BOYS' AND GIRLS' CLUBS, 1941—*Continued.*

Dairy Calf Clubs.

Name of Club.	Organizer.	Secretary.	Membership.
Bulkley Valley	Ray Oulton, Smithers	Helen Oulton, Smithers	8
Round Lake	F. R. Annis, Telkwa	Rhoda Howells, Telkwa	7
Abbotsford-Poplar	J. S. Reid, R.R. 1, Abbotsford		8
Richmond-Ladner Pure-bred Jersey	Jack Savage, Ladner		10
Agassiz-Harrison Pure-bred Jersey	W. G. Harris, Agassiz	John Harris, Agassiz	8
Chilliwack Pure Guernsey	Don. W. Richardson, Atchelitz	Alan Nixon, R.R. 3, Sardis	7
Mud River-Beaverley	Wally Kienzle, Prince George	David Skidmore, Mud River	11
Tabor Creek	S. Zingle, Prince George	Peter Buff, Prince George	9
Chilliwack Grade Jersey	T. E. Law, R.R. 2, Chilliwack		9
Langley Pure-bred Holstein	T. K. Berry, Langley Prairie	Bill Berry, Langley Prairie	15
Richmond-South Vancouver Guernsey	Angus L. Hay, 1598 S.E. Marine, Vancouver	Angus L. Hay, Jr., 7721 Windsor Street, Vancouver	12
Mission Pure-bred Jersey	W. Williams, Box 57, Dewdney	Patsy Goundry, Hatzic	7
Surrey Ayrshire	John Farquhar, R.R. 1, Langley Prairie	Bernice Robson, Barnston Island	9
Rosedale Ayrshire	Geo. H. Bryant, R.R. 1, Chilliwack	Fred H. Bryant, R.R. 1, Chilliwack	9
Richmond Holstein	G. G. Grimes, R.R. 1, Steveston	Sharon Bridge, R.R. 1, Steveston	11
Valley Holstein	Bro. T. Girard, Mission City	Ewen McKinnon, Deroche	8
Langley Ayrshire	John Farquhar, R.R. 1, Langley Prairie	Tom Farquhar, R.R. 1, Langley Prairie	10
Matsqui	R. B. Whitson, Matsqui	Myrtle Ellison, Gifford	30
Chilliwack Pure-bred Ayrshire	Allen Keenleyside, Chilliwack	Isobel McBlain, R.R. 3, Sardis	9
Chilliwack Pure-bred Jersey	R. C. Philipson, Chilliwack		11
Langley Jersey	F. C. Mann, Langley Prairie	Patricia Thompson, Coghlan	12
Chilliwack Grade Guernsey	H. R. Connolly, Sardis		9
South Bulkley	W. W. Hawthorne, Forestdale	Vera Nelson, Forestdale	10
Denman Island Grade Jersey	Marcus Isbister, Denman Island	Marcus Isbister, Denman Island	12
Armstrong Pure-bred Jersey	Geo. Lockhart, Armstrong		9
Armstrong Grade	Noland Boss, Armstrong		12
Fintry Pure-bred Ayrshire			8
Enderby Grade	David Jones, Enderby		11
Salmon Arm (West)	John Patterson, R.R. 1, Salmon Arm	Ross Stewart, Salmon Arm	9
Mount Ida	H. A. Brooke, R.R. 1, Salmon Arm		7
Forest Grove	J. C. Dean, Williams Lake		9
Comox Valley	H. P. Allberry, Sandwick		8

Sheep Clubs.

Westwold Lamb Club	C. Turner, Westwold	Janice McLeod, Westwold	8

Swine Clubs.

Coombs and District	Jas. Campbell, Coombs	Gerald Acton, Hilliers	10
Langley	Clifford Freeman, R.R. 1, Milner	Walter Tuey, Langley Prairie	8
Chilliwack	George H. Bryant, R.R. 1, Chilliwack	Leila Johnston, R.R. 1, Chilliwack	8
Mount Ida	H. A. Brooke, R.R. 1, Salmon Arm	Alan Syme, R.R. 1, Salmon Arm	7
Salmon Arm (West)	Hugh McLeod, R.R. 1, Salmon Arm	Roy Partridge, R.R. 1, Salmon Arm	9
Armstrong (A)	Wm. MacGillivray, Salmon Arm		7
Armstrong (B)	Wm. MacGillivray, Salmon Arm		8

APPENDIX No. 8—*Continued.*

BOYS' AND GIRLS' CLUBS, 1941—*Continued.*

Poultry Clubs.

Name of Club.	Organizer.	Secretary.	Membership.
Armstrong Barred Rock, No. 1	C. Clay, Armstrong		9
Armstrong New Hampshire	C. Clay, Armstrong		12
Armstrong White Leghorn	C. Clay, Armstrong		3
Armstrong Barred Rock, No. 2	C. Clay, Armstrong		23
Armstrong Rhode Island Red, No. 1	C. Clay, Armstrong		12
Armstrong Rhode Island Red, No. 2	C. Clay, Armstrong		23
Pineview Barred Rock	Women's Institute, Prince George	Francis Zingle, Prince George	9
Sidney Original	James Ramsay, Sidney	Roddy McLeod, Sidney	5
Rock Creek New Hampshire	Pearl Lindsay, Rock Creek		7
Grand Forks White Leghorn	R. F. Hine, Grand Forks	Vera Koftinoff, Grand Forks	12
Grand Forks Rhode Island Red	R. F. Hine, Grand Forks	Olga Starchuk, Grand Forks	16
Chilliwack New Hampshire	Neill M. MacGregor, Chilliwack	Ray Vickerson, Chilliwack	9
Chilliwack High School Barred Rock	Neill M. MacGregor, Chilliwack	Mac Helmer, Chilliwack	5
Chilliwack High School Leghorn	Neill M. MacGregor, Chilliwack	Jim Bailey, Chilliwack	10
Langley High School Rhode Island Red	C. E. Hagelstein, R.R. 1, Langley Prairie	Thelma Tuey, Langley Prairie	10
Murrayville Barred Rock	C. E. Hagelstein, R.R. 1, Langley Prairie	Marjorie Smith, Milner	7
Langley Prairie Barred Rock	C. E. Hagelstein, R.R. 1, Langley Prairie	Irene Lawson, R.R. 2, Langley Prairie	7
Langley High School White Leghorn	C. E. Hagelstein, R.R. 1, Langley Prairie	Margaret Greenfield, Langley Prairie	11
Langley High School Barred Rock	C. E. Hagelstein, R.R. 1, Langley Prairie	Bessie Hurl, R.R. 2, Langley Prairie	7
Murrayville School Rhode Island Red	C. E. Hagelstein, R.R. 1, Langley Prairie	Hilma Johnson, R.R. 2, Langley Prairie	9
Hatzic and Ferndale Rhode Island Red, No. 2	Wm. Chell, Mission City		8
Hatzic and Ferndale Mixed, No. 3	Wm. Chell, Mission City		8
Cedar Valley Mixed, No. 5	Wm. Chell, Mission City		9
Mission Rhode Island Red, No. 6	Wm. Chell, Mission City		9
Hatzic Barred Rock, No. 1	Wm. Chell, Mission City		8
Mission City White Leghorn, No. 8	Wm. Chell, Mission City		8
Mission City Mixed, No. 9	Wm. Chell, Mission City		8
Hatzic, Ferndale, and Cedar, No. 4	Wm. Chell, Mission City		8
Mission Barred Rock, No. 7	Wm. Chell, Mission City		9
Poplar	James S. Reid, Abbotsford	Leonard Fisher, Abbotsford	8
Ladysmith White Leghorn	Rev. C. McDiarmid, Ladysmith		8
Cassidy-Ladysmith Rhode Island Red	Rev. C. McDiarmid, Ladysmith	Nina Griswold, R.R. 1, Ladysmith	10
Ladysmith Rhode Island Red	Rev. C. McDiarmid, Ladysmith		8
Brechin School	J. T. Neen, East Wellington	Coral Diploch, Nanaimo	9
Canoe	Alfred Lund, Canoe	Ernest Baker, Canoe	10
Grindrod Barred Rock	John L. Monk, Grindrod	Daisy Halksworth, Grindrod	10
Salmon Arm (West) New Hampshire	J. A. McCurdy, Salmon Arm	James Matson, R.R. 2, Salmon Arm	10
Mount Ida-Salmon Arm (West)	J. A. McCurdy, Salmon Arm	Margaret Stewart, R.R. 1, Salmon Arm	9
Otter Point Rhode Island Red		Rose Shambrook, R.R. 2, Victoria	8

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