

PROVINCE OF BRITISH COLUMBIA

Department of Agriculture

SIXTIETH

ANNUAL REPORT

1965



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COVER

Cattle on range south of Kamloops.
(B.C. Government photo.)

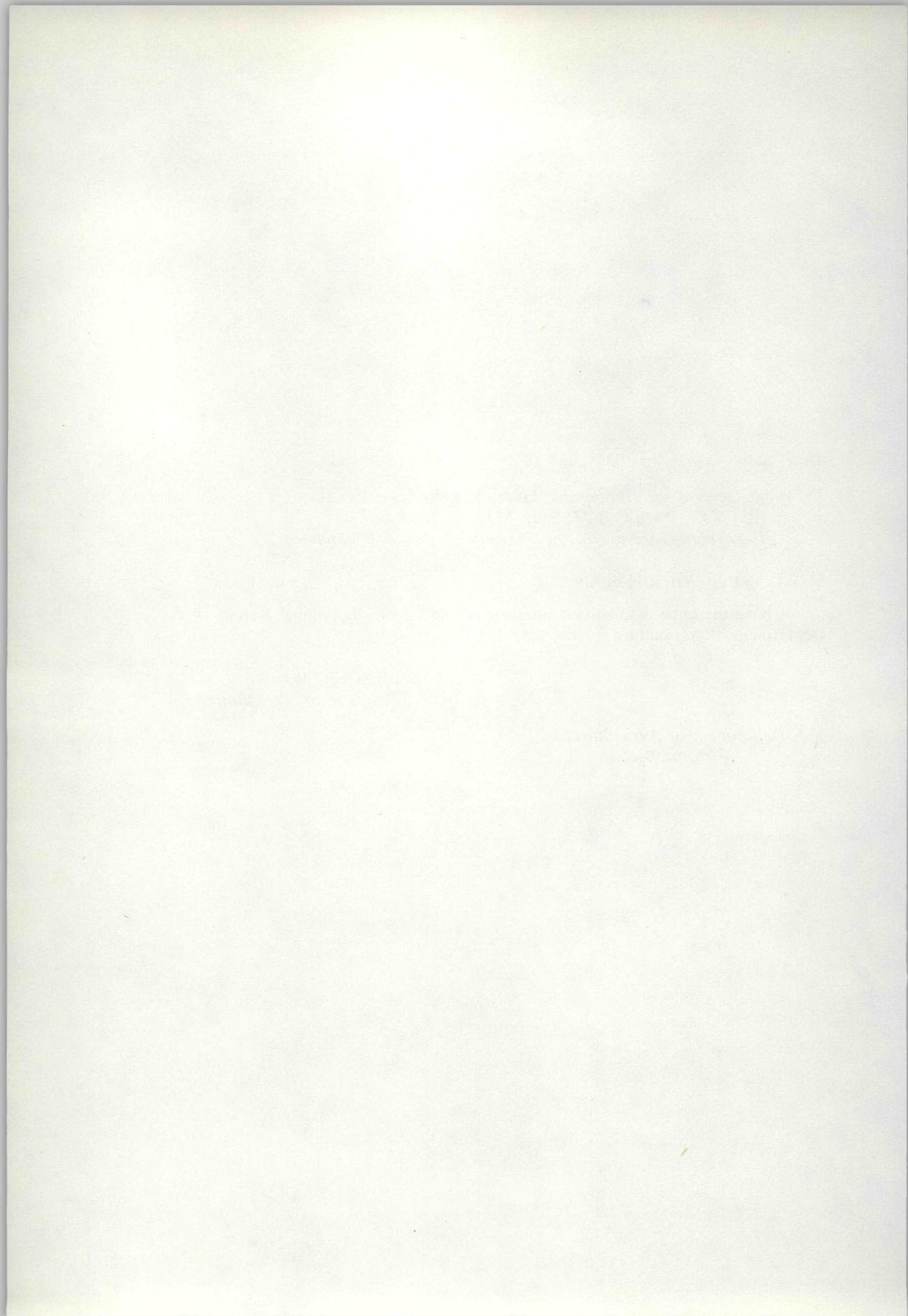
*To Major-General the Honourable GEORGE RANDOLPH PEARKES,
V.C., P.C., C.B., D.S.O., M.C.,
Lieutenant-Governor of the Province of British Columbia.*

MAY IT PLEASE YOUR HONOUR:

I have the honour to submit for your consideration the Annual Report of the
Department of Agriculture for the year 1965.

FRANK RICHTER,
Minister of Agriculture.

*Department of Agriculture,
Victoria, B.C.*



BRITISH COLUMBIA DEPARTMENT OF AGRICULTURE

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Provincial Apiarist

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POULTRY

W. H. POPE
Commissioner

SOIL SURVEY

C. C. KELLEY, B.S.A.
Senior Soil Surveyor

GENERAL

B. K. OXENDALE
Clerk

HIGHLIGHTS OF 1965

- New Veterinary Laboratory opened at Abbotsford to provide diagnostic services for live-stock and poultry producers.
- Entire Province officially designated a brucellosis certified area.
- Second *Agricultural Rehabilitation and Development Act* (ARDA) agreement signed, opening way for increased emphasis on programmes to assist rural dwellers to re-establish in new employment or resettle in areas of better opportunity.
- Conferences successfully convened on grape industry, ruminant animal nutrition, irrigation guidance, and dairy management.
- Shipment of 785 head of British Columbia Herefords to Chile, largest single overseas cattle export order in Province's history.
- First year of use of advanced computer techniques successfully completed in Farm Management Programme.
- Survey of consumer preferences for fresh white- or yellow-skinned broiler chicken on the Vancouver market.
- Terms of rehabilitation assistance for tree-fruit growers established.

Report of the Department of Agriculture

REVIEW

A period of below normal temperatures in the winter months followed by poor spring growth conditions and a dry summer created problems for British Columbia farmers in 1965. In addition to heavy tree losses in Okanagan orchards, unfavourable weather throughout much of the growing season resulted in reduced yields in a number of crops and lower quality in others. On the other hand, production increases were recorded in live stock, poultry, and eggs. These increases, coupled with a sharp rise of 21 points in the farm prices index, maintained over-all returns to farmers at relatively high levels. Preliminary estimates place total farm cash receipts for the year at \$154,000,000, a gain of 3 per cent over the 1964 total.

An increase of over 4 per cent in numbers brought the total cattle population to 545,000 head, an all-time record. This gain was recorded solely in the beef breeds, offsetting a further moderate decline in dairy-cattle numbers. Reflecting this trend, cattle marketings were also up as 109,611 cattle and calves were slaughtered in inspected packing plants, 40,375 were exported to the United States, and a further 58,467 head shipped eastward.

Cattle prices displayed a firmer tone as the year progressed, at levels above those realized in 1964. Consumer demand remained strong. Hog prices also climbed during the year, reaching their highest levels since 1951. The Province's hog population did not increase however, declining instead to the lowest figure in more than 50 years.

Similarly, sheep and lamb numbers declined by an estimated 10 per cent to 80,000 head by mid-year. Slaughtering of B.C.-bred lambs in inspected plants amounted to only 29,193 head, although prices generally indicated a continued steady market demand.

The further slight decrease in dairy-cow numbers this year showed up in a 3-per-cent decline in milk production.

As a direct result of unfavourable weather conditions, cereal-grain production dropped by 7 per cent, but yields of hay and fodders were well maintained. Both grain and hay crops suffered materially in quality, but rising prices kept total returns close to 1964 levels.

All sectors of the poultry industry registered gains in 1965, with egg and poultry-meat production up from the previous year. Prices also showed gains, with eggs in particular showing significant improvement. The average weighted price to producers for the year climbed nearly 6 cents per dozen to 33.1 cents. Total poultry slaughter amounted to over 43,000,000 pounds during the year, an increase of 8 per cent over the 1964 figure.

Production of turkeys showed an encouraging increase in response to a 3½-cent increase in the weighted average producer price to 27.6 cents per pound.

Severe winter damage substantially reduced all tree-fruit crops, with soft fruits virtually wiped out in the Okanagan Valley. Quite apart from damage, estimates indicate that more than 200,000 trees were killed outright. Apples alone made a creditable showing, although the crop was about 27 per cent below that of the preceding year. Returns were higher for all grades and varieties.

Winter damage also cut sharply into the strawberry crop as Fraser Valley plantings suffered heavily. The total yield amounted to only one-third that of 1964.

Grape plantings in the Okanagan were also hard hit, the crop this year amounting to a mere 5 per cent of the 1964 total. Other small fruits produced normal yields.

Vegetable production was up significantly this year, particularly in sweet corn, processing peas, and potatoes. With the exception of potatoes, prices generally were equal to or above those realized in 1964.

A reduction of 6,000 head in the numbers of sheep shorn this year, coupled with lighter than average fleece weights, produced a wool crop of only 286,000 pounds, one of the smallest in history. In contrast, beekeepers harvested 4,300,000 pounds of honey to establish an all-time record.

ADMINISTRATION

Further refinements in administrative policies were achieved this year, which, in company with improved techniques introduced earlier, produced satisfying results. The self-improvement plan for staff personnel continued to prove its value, with increased interest being displayed in both refresher courses and postgraduate studies.

Again, short courses covering a full range of subjects attracted considerable interest, as indicated by the many members who attended one or more.

Of particular importance this year was the preparatory work carried out for the first of a series of general outlook conferences now planned as a continuing annual feature of Departmental activities. The up-dating of inventory data and the long-range projections based thereon provided useful guidelines for future policy decisions.

New photographic equipment was obtained for improved television programming during the year, and full use was made of staff personnel to provide variety and interest in programme material. Radio and the press continued to be utilized for publicity purposes.

Meetings of senior staff officials were also continued as a means of sustaining knowledge of and interest in Departmental activities and in other related areas.

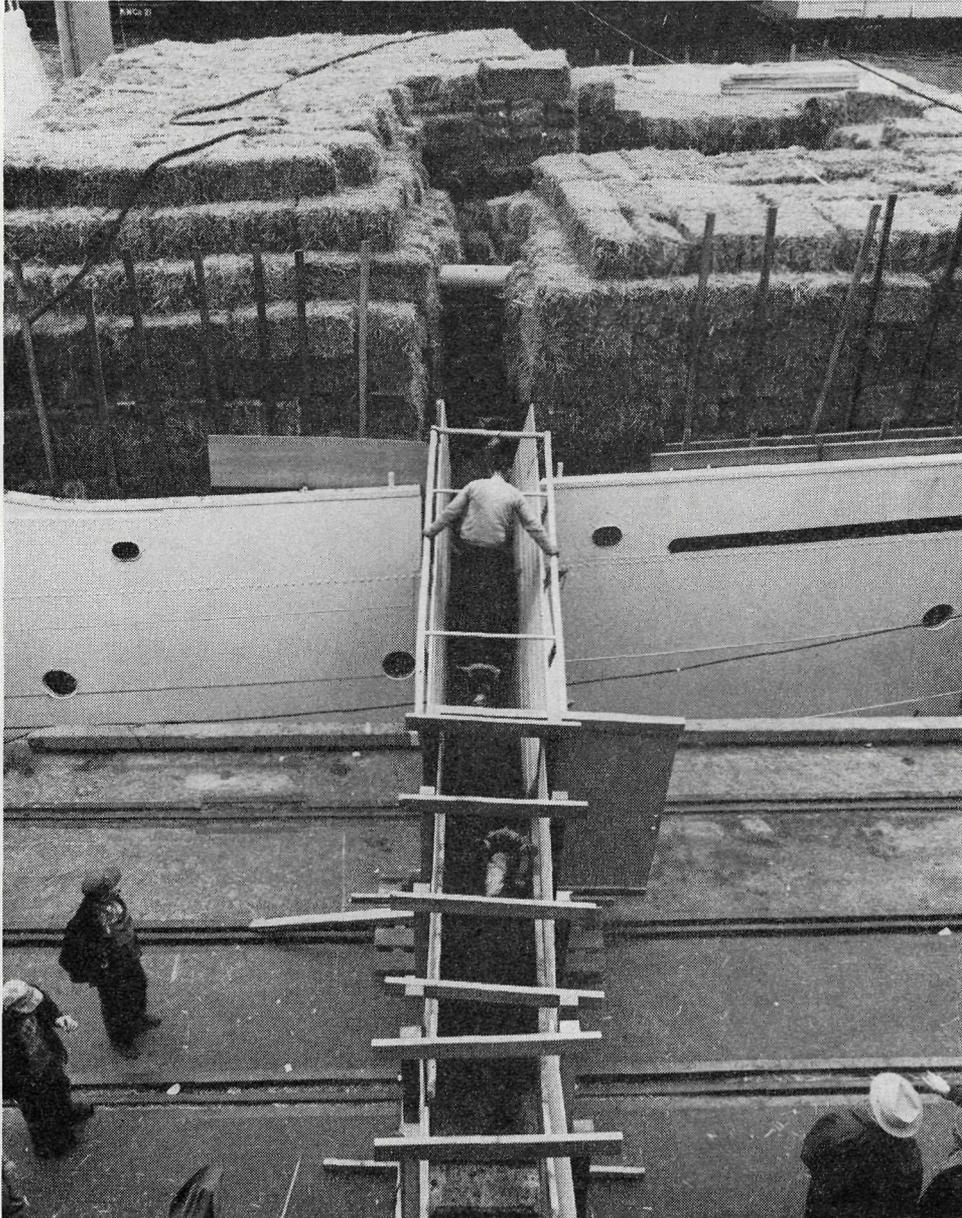
By the end of the year the total permanent staff numbered 291.



New Veterinary Laboratory at Abbotsford, officially opened by the Honourable Frank Richter, October 22, 1965.

LIVE STOCK

During the year the Live Stock Branch continued its programme of disease control and eradication among farm animals. With the designation of British Columbia as a brucellosis certified area, it was announced that effective April 1, 1966, the policy of payments to veterinary practitioners for calf inoculations will be terminated. In the 12-month period ended June 30th this year a total of 60,903 calves was inoculated, and payments to practitioners amounted to \$64,232. This brought to \$571,937 the total moneys paid out under this policy since its inception.



Loading cattle, part of shipment of 893 head to Chile, at Ballantyne Pier, Vancouver, October 1st, 1965.

Veterinary Inspectors made a total of 455 visits to the 20 licensed public sales yards of the Province in 1965, in which 168,305 head of live stock were inspected. Inspections for foot-rot in sheep were reduced to only 7,266 head this year, about one-half the 1964 figure.

Inspections in Provincially licensed killing plants during the year totalled over 59,000 carcasses, an increase of some 17,000 over the previous year's total. An additional 6,015 farm-killed animal carcasses were also inspected.

Licences were issued to 429 fur-farms, involving in all nearly 178,000 animals, including 165,367 mink and 12,356 chinchilla.

Dairy herd improvement association reports show a further increase in individual records completed by dairy cows on test, a total of 17,408 in the four major breeds and the unclassified category.

Brand Inspectors checked 195,171 cattle and 15,011 hides in 1965, an increase of 50,365 and 1,787 respectively over 1964 totals.

Records of artificial insemination centres again showed a steady increase in first services with a total of 75,349. Twelve centres throughout the Province have now obtained cabinet equipment for storage of frozen semen as a means of providing more efficient distribution.

The sum of \$7,150 was expended this year under terms of the Purebred Sires Purchase Assistance Policy, covering the purchase of 10 Hereford, 2 Aberdeen Angus, and 1 Holstein bull, 3 rams, and 3 boars. Transportation assistance was also provided for the movement of 312 sheep. Further assistance in the amount



Dairy-farm Inspector checking milking equipment. Milk holding tank on right.

of \$2,310 was provided by way of grants to British Columbia breeders showing at the Royal Agricultural Winter Fair in Toronto and the Pacific International Live Stock Exposition in Portland, Ore.

A total of 78 dairy heifers and calves was selected during the year for placement on farms in the Central Interior under the Dairy Cattle Placement Policy. Increased interest was shown in the Federal-Provincial Record of Performance Programme for Purebred Beef Cattle this year, with a total of 754 animals being placed on test in 24 herds.

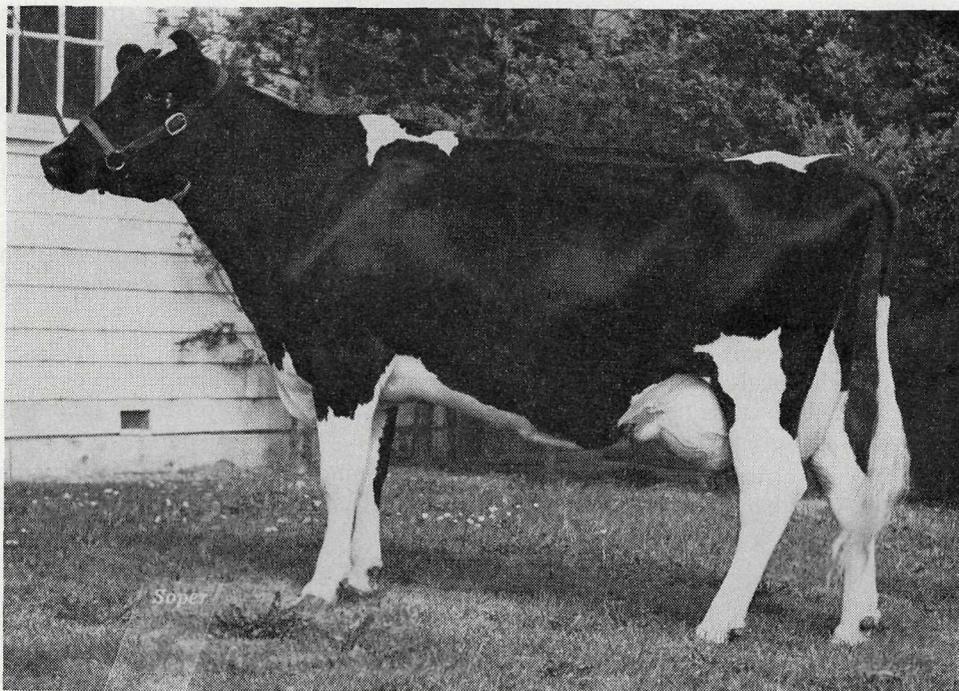
Field-days were again held at several points for live-stock breeders, with particular interest being shown in live animal-to-carcass demonstrations. Also continued were production and management demonstrations at the institutional farms.

A total of 7,035 animal specimens and 37,564 serology specimens was processed by the Veterinary Laboratory at Abbotsford.

DAIRYING

As a part of the administrative reorganization of the Department, dairy-farm inspection work was transferred from the Live Stock to the Dairy Branch this year. This move brought all direct services to the dairy industry under a single administration.

By the end of the year the number of dairy plants operating in the Province under licences issued by the Dairy Branch had decreased by 5 to a total of 51. Of these, only 39 were pasteurizing milk, as compared to 48 in operation one year earlier. Nineteen were producing ice-cream, 11 cottage cheese, 4 other cheeses, and 9 butter.



Colony Farm's "Colony Ianthe Cyvro Canary," first prize aged cow and Grand Champion, Pacific National Exhibition, 1965.

With the completion of the first full year of the administration of revised milk-grading regulations, the Branch recorded a total of 25,500 samples analysed for bacterial content, the standard being 75,000 per ml. Less than 7 per cent of the samples failed to qualify for this high-quality classification, indicating the remarkably high calibre of today's dairy industry in British Columbia.

The Dairy Branch laboratory carried out 36,789 analyses during the year, of which 29,462 were for purely regulatory purposes, while the remainder were for special project and survey tests. Of particular interest this year was the preliminary investigation of and staff-training in the operation of the infra-red milk analyser (IRMA), which will be used initially to test all composite milk samples in the Province for butterfat content, replacing the Babcock tester. Later its use will be extended to analysis of samples for protein and lactose content.

Also commenced in 1965 was a regular programme of inspection checks on the accuracy of calibration of farm milk holding-tanks.

For the first time the Branch conducted a two-day dairy-plant management conference, which attracted 34 management officials, as well as a nine-week night-school course for 21 ice-cream makers. The regular pasteurizer operator's correspondence course was taken this year by 18 persons.

FIELD CROPS

The Field Crops Branch continued its "Know Your Soils Club" programme in 1965 at 24 points throughout the Province. In all a total of 756 registered for the lecture and field-days series. Attendance was good, indicating a strong interest in a basic knowledge of the subject.

A change in the system of field-crop trials and demonstrations was introduced this year, in which fertilizer trials will not be carried out on locations from which soil samples have already been obtained. Yield data will then be analysed in relation to the soil test results. Sixty samples from first- and second-year forage seedings on Vancouver Island were collected during the year, from which 40 selections were made for confirmation and correlation with fertilizer trials next year.

The Branch's soil analysis service carried out a total of 2,690 sample tests in 1965, involving approximately 20,000 determinations. Under the new policy of assessing charges for this service, receipts for the year totalled \$5,247. Of the samples submitted for analysis, about two-thirds were from farms, the balance from greenhouses, golf clubs, and gardens. Results of analyses of all farm samples are coded for computer processing.

Four Inspectors were appointed this year for weed-control work, and trials on the use of chemicals on specific crops were continued. A special project to demonstrate the effectiveness of chemical control of diffuse knapweed on range land was conducted at Keremeos and Monte Creek.

To control the movement of raw refuse screenings, 34 feeders' permits were issued. A further 15 permits for the removal of screenings from elevators were also granted.

APIARY

Short courses on beekeeping were conducted by the Apiary Branch at New Westminster, Salmon Arm, and Dawson Creek in 1965. A one-day legume pollination workshop was also held at the last-named point, as well as a number of beekeepers' field-days throughout the Province. Assistance was also given on courses in beekeeping at vocational agricultural classes and night-school courses.

Over 7,000 of the Province's 31,500 bee colonies were inspected, and 124 cases of American and European foul brood were detected. Tests carried out in co-operation with the Beaverlodge Experimental Station demonstrated that both of these diseases can be transmitted by package bees shaken from infected colonies.

Lectures, demonstrations, and supervision by both Apiary and Entomology Branch personnel were again provided among fruit-growers, many of whom now rent colonies for increased yields through pollination. Some 1,100 colonies were rented for this purpose this year.

Pollination work on over 1,000 acres of clover at Creston was carried out with encouraging results. Also encouraging were the results of the continuing tests with alkali and leaf-cutter bees on stands of alfalfa near Kamloops, in which it was demonstrated that seed yields may be significantly increased through proper management. This project is being conducted in co-operation with the Entomology Branch.

An experiment in the over-wintering of bees at Agassiz showed the possibilities for the production and sale of package bees in British Columbia, as 69 colonies were derived from an original 10 by the following spring. Further work was also undertaken with bumblebees to determine their value in pollinating such special crops as cranberries and red clover.

POULTRY

The Poultry Branch continued in 1965 to expand its continuing programme of conveying to the industry the best available information on nutrition and disease-control problems, as well as promoting advanced techniques in production and management. To accomplish these ends, all media were used in addition to personal contacts at general meetings and on producing farms. Much of this work was carried out in co-operation with the University of British Columbia and the Canada Department of Agriculture.

As a part of the disease-control programme, a study was launched this year into the incidence of leukosis in a strain of chickens known to be free of but susceptible to this disease when exposed to various strains of commercial birds. Further studies were carried out in a project to develop a technique for the introduction of bacteriocidal materials into hatching eggs.

In the poultry nutrition field, further research was centred on a study in which a comparison was made of the genetic growth potential and nutritive requirement for optimum growth of broiler chickens available in British Columbia with those from basic breeders. Coupled with this was a project to determine the possibilities for the use of greater percentages of available feedstuffs in a lower-cost unprocessed form than is commonly done at present.

Again in this field a number of tests were conducted to determine the value of marl as an alternative source of calcium in poultry rations.

Included among the continuing research projects was a cost study designed to yield useful data on the cost of producing eggs and broiler chickens on selected farms in the Fraser Valley and on Vancouver Island. Similarly, work was extended in production tests in which 2,300 birds from 24 separate matings were checked to determine their comparative value to commercial producers.

In an effort to combat one of the oldest problems in poultry husbandry, a continuing field study was carried out on the incidence of eggshell damage at the farm level with further investigation into possible methods of prevention.

SOIL SURVEY

Continued requirements of the ARDA programme occupied much of the time of the Soil Survey Branch in 1965. These again consisted of surveys of soil classification in which soils were rated according to their capability for agriculture and forestry. Soil classification work was continued in the Fraser Valley and capability ratings applied to the classified areas. Similar ratings were completed in the Kettle, Elk, and Upper Kootenay Valleys and a start made on the Upper Columbia Valley.

In co-operation with the Canada Department of Agriculture and the University of British Columbia, work was begun on a small-scale soil map of the Province. A draft of the area south of latitude 52° N. was completed during the year.

Further research was continued on problems associated with soil fertility, with emphasis on the grouping of soil types having similar nutrient status and systematic analyses of these soils. The interpretation of such survey data permits its application in a practical manner at the farm level. In the Lower Fraser Valley, for example, these data prove most useful in investigation of soil problems related to drainage, while in the Okanagan Valley the same kind of data can be applied to irrigation as well.

A total of 3,600 analyses was completed by the Branch this year from soil samples collected by field parties in the Langley and Kent district of the Fraser Valley, as well as the Prince George area. The standard methods used in former years were continued, but certain analyses were applied using new techniques. These included the plotting of lime potential-base saturation curves and the characterizing of the free iron status of some Fraser Valley soils.

Also continued were the X-ray diffraction analyses, followed by further analyses after chemical treatment on selected samples. This treatment provided improved clarity through the removal of amorphous aluminosilicate material.

The chemical composition of about 100 alfalfa samples was analysed in an attempt to determine the relationship of soils to plant and animal nutrition. The distribution of sulphur on phosphorus-deficient plants was found to be restricted to specific soil groups, while some samples proved to be sufficiently low in copper to affect animal nutrition.

HORTICULTURE

Full participation by all major nursery-stock producers in the tree-fruit nursery-stock certification programme was reported this year by the Horticulture Branch. The colour-coding feature of certification, developed by the Branch, has proved particularly successful as a means whereby varieties and rootstocks can be readily identified. In spite of losses sustained from winter injury, a total of 130,000 nursery trees were colour-coded.

A cost-of-production study on nursery-stock production was undertaken by the Branch in co-operation with the University of British Columbia, with some initial findings anticipated in 1966.

Continued during the year was a series of tests made in co-operation with the Experimental Station at Saanichton to determine the practicability of growing tomato plants in artificial media in greenhouses. Results indicated that the use of a sand and sawdust mixture, with controlled applications of fertilizer and water, produced yields approximately double those of plants grown under the same conditions in soil.

Also continued was the programme, initiated in 1963, designed to develop improved techniques in the digging and winter storage of strawberry plants to avoid possible winter injury. Thus far, results obtained point to some advantages, but



Grape vineyard at Okanagan Mission; Okanagan Lake in background.

yields of fruit in the following seasons average slightly less than 3 tons per acre, well below averages realized under ordinary conditions where plantings are left in the field.

Field trials to overcome the problem of excessive use of irrigation water were carried out in the Oliver-Osoyoos area during the year in co-operation with the Research Station at Summerland. Preliminary findings showed that controlled irrigation scheduling may become an increasingly important feature of orchard operation. In addition to savings in labour that may be achieved, it was also demonstrated that the diversion of excess water can add substantially to the irrigated acreage in a given area.

For the second successive year, the Branch directed vegetable variety trials in the Fraser Valley near Cloverdale. Seed of new varieties and hybrids was obtained from Japan, Great Britain, the United States, and other parts of Canada. All were planted in single rows and not replicated, the object being merely to obtain a reasonable comparative study rather than replicated yield results. Eleven vegetables were tested—beets, broccoli, Brussels sprouts, bush beans, cabbage, carrots, cucumbers, lettuce, onions, spinach, and sweet corn. Included among these were 37 onion hybrids and 32 varieties of cabbage.

While the trial plots were located on muck soils, the results were generally applicable to the entire valley, and it is anticipated that a number of the selections made thus far will prove superior to those currently being grown.

EXTENSION

Recognition of the need for extension programmes to be more closely inter-related with economic examination of the total farm enterprise produced changes in the application of the Branch's policies this year. Although most of these will not be fully implemented until the coming year or later, initial moves were made toward the development of package-style farm recommendations affecting management decisions at the total farm operation level. As a part of this shift, greater emphasis was placed upon closer co-operation with other agencies, in particular the Canada Department of Agriculture and the University of British Columbia.

At the same time it was emphasized that the need for continued services in the field of technical information has not diminished, so that the changes contemplated will represent an adjunct to rather than a replacement of previous practices.



District Agriculturist with 4-H Clubs workshop, Fort St. John.

The net result has already shown up in a realignment of duties for a number of the field staff, a trend which will be accelerated in time.

The 4-H Clubs Division reported a slight decrease in numbers of clubs to a total of 233 in 1965, but a further slight gain in total membership to 3,100. Beef, clothing, and dairy projects continued to attract the greatest interest, although tractor clubs made the largest membership gain this year. Close to 800 members entered competitions at the Pacific National Exhibition, including 308 girls involved in home arts activities.

For the third successive year the interprovincial 4-H exchange programme saw nine delegates from British Columbia visit the other nine Provinces, one to each, while a similar number from these Provinces was hosted here. In the western Provincial exchange programme, British Columbia clubs played host to 36 members from Saskatchewan and 38 from Alberta.

A total of 10,807 acres was cleared and 5,705 acres broken during the last fiscal year under provisions of the Department's land-clearing assistance programme. This brought to over \$5,700,000 the total expenditures for land-clearing purposes since the programme's inception. The cumulative total for lands cleared and broken now stands at 145,281 and 65,819 acres respectively.

The Agricultural Engineering Division reported further advances in its testing projects in 1965. Log-type reports were completed on the findings on artificial hay-drying, which will prove useful for future extension purposes. Of interest were the results of this year's tests on the use of solar energy as a source of supplemental heat for hay-drying, in which it was demonstrated that this method may offer worthwhile savings under favourable weather conditions.

Tests on the artificial drying of grain in storage indicated that the principle of forcing tempered air through stored grain is sound and provides tangible savings in labour at a relatively low capital cost.

Considerable progress was also reported in both irrigation and drainage projects, from which valuable data were obtained. In the former, tests were carried

out on problems arising from the effects of wind conditions on sprinkler placements, as well as tests to determine sprinkler spacing for optimum water distribution.

Irrigation work included the determination of maximum coefficients of discharge and the size and locations of ditches and pumps required for various drainage-system operations.

The ARDA programme was sharply stepped up this year with the approval of additional projects for rural development and rehabilitation. The cumulative total of these now stands at 52, representing an expenditure of over \$14,000,000. Included were the remodelling of the Vernon Irrigation District system, to cost an estimated \$6,600,000, and improvement to the Southern Okanagan Lands Project (SOLP), valued at \$2,000,000.

OTHER SERVICES

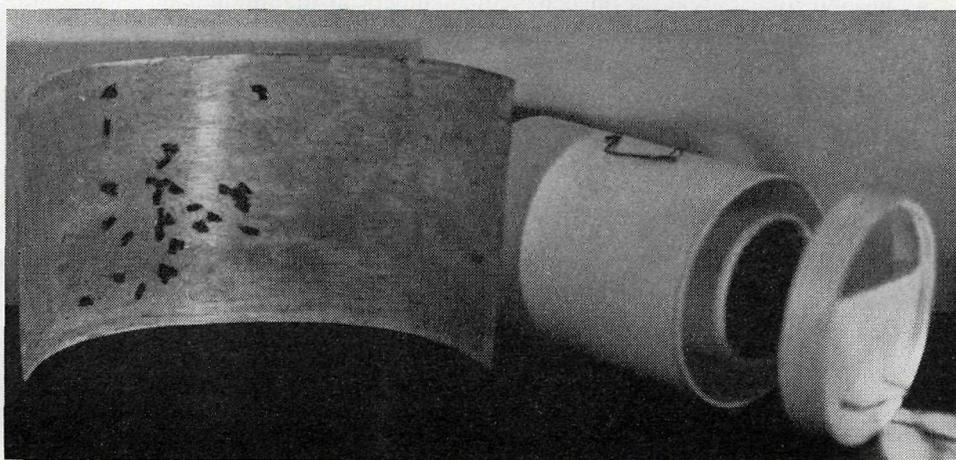
The Plant Pathology Branch reported that plant diseases in 1965 were for the greater part of minor economic importance. Slightly below average precipitation during the growing season in most areas proved unfavourable for the development of parasitic foliage diseases.

For the first time, golden nematode was found on the Saanich Peninsula, adjacent to Victoria, in June. Examination of over 18,000 soil samples from areas throughout most of the Province produced conclusive evidence that the outbreak was confined to a total of about 100 acres of land on nine properties. The incidence on most of these was found to be slight.

Bacterial ring-rot of potatoes was found on 14 farms this year, 11 of these being in the Fraser Valley and the remaining three in the Southern Interior.

By far the greatest number of horticultural and field-crop pathology problems resulted directly from frost injury sustained in December, 1964. Actual losses from other factors were considered to be minimal.

An important break-through commanding widespread attention in tree-fruit circles was the announcement that three new varieties of sweet cherries have now been developed showing resistance to little cherry disease, a virus which has plagued growers in the Kootenays for more than 30 years. These resistant varieties, through an extensive international research project in which both Canadian and United States scientists participated, are now available for commercial distribution.



Inexpensive, effective codling moth trap devised by Okanagan horticulturists, with flypaper insert removed.

Further work on the problem of damage to apple and cherry trees by the ambrosia beetle was reported this year by the Entomology Branch. Investigations at Creston revealed that there are four species of this insect attacking cherry-trees instead of one, as had been thought previously. Losses from this cause have reached a point where detailed research will now be undertaken to develop necessary control measures.

In co-operation with the Canada Department of Agriculture, work was also carried out at Grand Forks and Salmon Valley aimed at developing a suitable programme for the control of tuber flea beetle in potatoes, using chemicals not previously employed for this purpose.

The British Columbia Pesticide Laboratory at Vancouver completed 689 analyses during 1965 under the Branch's direction. Samples analysed included 507 of milk, 60 of forage or feed, 30 of vegetables, and 13 of animal fat. Results were useful in the formulation of recommendations for the safe use of pesticides.

Among the continuing projects conducted by this Branch was the mosquito-control programme, in co-operation with Federal and local agencies.

The Markets and Statistics Branch was actively engaged in lending assistance to several promotional efforts on behalf of agricultural products, particularly in connection with the annual National Salad Week campaign.

Changes were made in regulations governing grades of vegetables and potatoes during the year, to coincide with similar changes in the Federal regulations.

Advisory services were provided to three groups interested in the establishment of marketing schemes for eggs and fowl, turkeys, and mushrooms.

Negotiations leading to the disposal of a potato-storage warehouse near Vernon were successfully concluded with the transfer of title from the Crown to private interests.

Advertising expenditures during the year exceeded \$10,000, and included 48 press advertisements and time purchases on eight radio stations.

The Farm Management Service was further expanded to bring the number of farmer participants close to 400 in all areas of the Province. Data derived from these accounts provided the initial basic material from which useful guidelines may be formulated in the coming year.

The Farmers' Institute Branch reported a total of 127 Institutes active at the close of the year. Of this number, 104 filed returns showing a total membership of 4,764 and total purchases on behalf of members in the amount of \$1,642,300. The sum of \$40,500 was advanced for grasshopper control, and 120 licences were issued for the sale of poisonous materials for agricultural uses.

Twenty-one exhibitions and 36 fall fairs were officially recognized and supported by the Department during the year.

Among the achievements at the Department's institutional farms, the Holstein herd at Colony Farm completed 220 R.O.P. records this year with an average production 28 and 27 per cent higher for milk and butterfat respectively than the Canadian class average for the breed. Colony still leads all Canada in numbers of long-time producers, with 128 cows having each produced more than 100,000 pounds of milk.

Distribution of published material by the Publications Branch amounted to 116,345 units this year, in addition to over 500,000 copies mimeographed from 3,662 stencils.