

Dominion
Experimental
Farm

1914-1959



R. H. Helmer, first Superintendent
of the Summerland Experimental Farm

In 1909, Sydney Fisher,
Dominion Minister of Agriculture,
visited the district. It was at this
time that he was urged by J.M.
Robinson, H.C. Mellor and
Martin Burrell, MP, to have an
Experimental Farm established in
the area.

Most of the settlers and farmers arriving in the area had little or no horticultural experience. Scientific advice was greatly needed on pruning, varieties, pest and disease control, irrigation and other problems. Demand for an experimental farm kept increasing and the matter was kept in front of the Dominion Department of Agriculture.



Farm land before breaking.

Some favoured the establishment of an experimental farm in Westbank but early in 1914 approximately 162 ha were purchased from Antoine Pierre by the Federal government. 81 hectares for irrigated farming below the railroad tracks and 81 hectares above for dry farming. R.H. Helmer was appointed as superintendent and he undertook the task of beginning the farm.

First Farm chores included cutting trees, clearing sagebrush, picking stones, building roads and breaking land. Priorities in 1915 included irrigation flume and building construction.

February 1915 saw the construction of a stable and a bridge across Trout Creek which would be the back entrance to the farm until it was washed away during a flood in 1972. J.G. Grisdale, director of Experimental Farms visited in April 1915, and as a result final arrangements were made to carry water across Trout Creek from the Municipality water supply. A site was also selected for an office building.



Summerland Experimental Farm 1920's



978-217-2

Ornamental Gardens looking east in the 1920's.

Much of the early orchard plots were staked out and planted at this time with ground crops in the rows between, as the trees would not be able to bear any fruit for several years.



978-214-11

Early orchard plots with a ground crop of hay, 1917.

The early part of 1916 was spent on road construction but Alf Aveson and Joseph Smith also designed the Ornamental gardens, supposedly from a design copied off a plate! The Ornamental gardens have been enjoyed by many over the years and will continue to be enjoyed for many years to come.



997-293

Ornamental Gardens looking North circa 1926



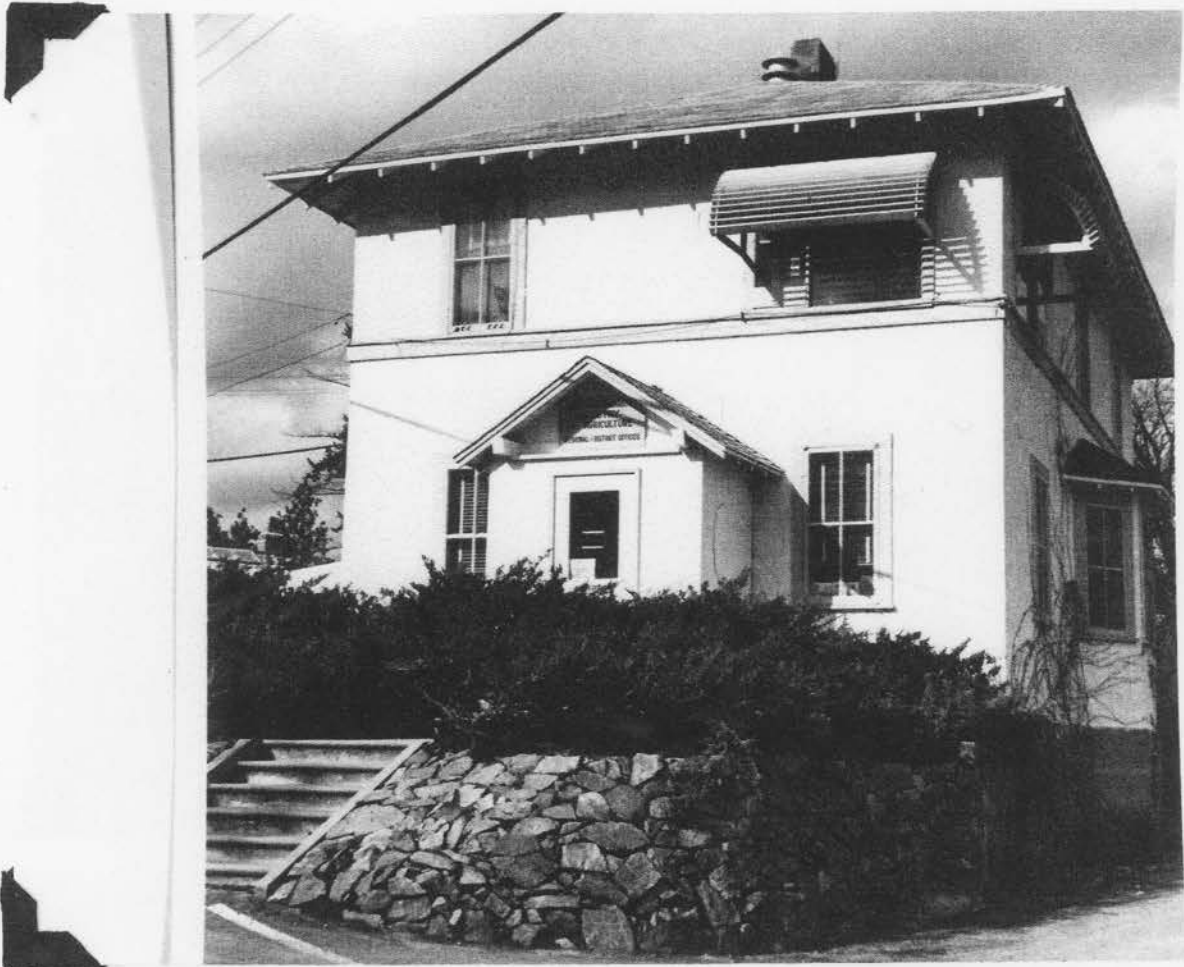
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Same scene looking north during the 1930's. This lawn was used as a putting green in the thirties and was a popular place for young lovers to picnic on Sunday afternoons. The words "S'land Exp. Farm" were spelled out in the flower bushes to the left.



978-214-1f

The Fowl department buildings built down by Trout Creek in 1917. The poultry studies were discontinued in 1940.



991-154-4

The experimental Farm office building, built in 1917. This was the heart of the station till it was demolished when the new Facility was built and it was no longer needed.

It was during these early years that the water problems started to become apparent. The supply available to the farm was sufficient enough during the spring, but come summer when the orchardist's started using more and more water the supply dried up. Often the crops would die for lack of water just as they were starting to mature. A small diesel pump was installed down on the lake in 1921 but it was fraught with problems and another pump on Trout Creek, installed in 1923, was considered to be taking to much water from the orchardist's. Water rights to Crescent Lake were obtained in 1924 and this alleviated some of the problems for a while.



978-20-27

The farm beach which later was renamed Sunoka beach. In the lower right you can see the dock which took the water intake pipe out into the lake.



The boarding house, finished in 1920 and renovated several times. It was demolished in 1960 when the government boarding policy changed.

In the early years of the farm, up until the Government policy changed, many of the workers lived on the farm at the boarding house. For most of them working on the farm was a 24 hours a day, 7 days a week job, even if they were only getting paid for 10 hours. Since only the superintendent owned a car, the staff had to come up with their own ways to relax and be entertained. Square dances at the boarding house were common.

Until 1920, virtually no pests except aphids were noted in the orchards. By 1921, the diseases powdery mildew and fire blight had become prevalent. Even more significant was the discovery of codling moth in the orchard in early autumn. Measures were taken to prevent the spread of this insect. Investigation revealed that a railway refrigerator car on a siding adjacent to the farm contained several empty cocoons, leaving no doubt as to the source of the infestation.



791-66

Releasing sterile Codling Moths

By 1922, pesticide spray applications were commonplace and made easier by the purchase of a power sprayer. 5 spray applications were made in 1922 including lime sulphur for blister mite, lime sulphur and black leaf 40 for powdery mildew and aphids, and three arsenical sprays for codling moth.

The use of sprays worked well for a number of years but later problems cropped up, namely excessive arsenic residues on apples. The US banned the sale of BC apples because of the unacceptable levels. It was temporarily solved by modifying the spray programs but the problem of excessive arsenic still remained.

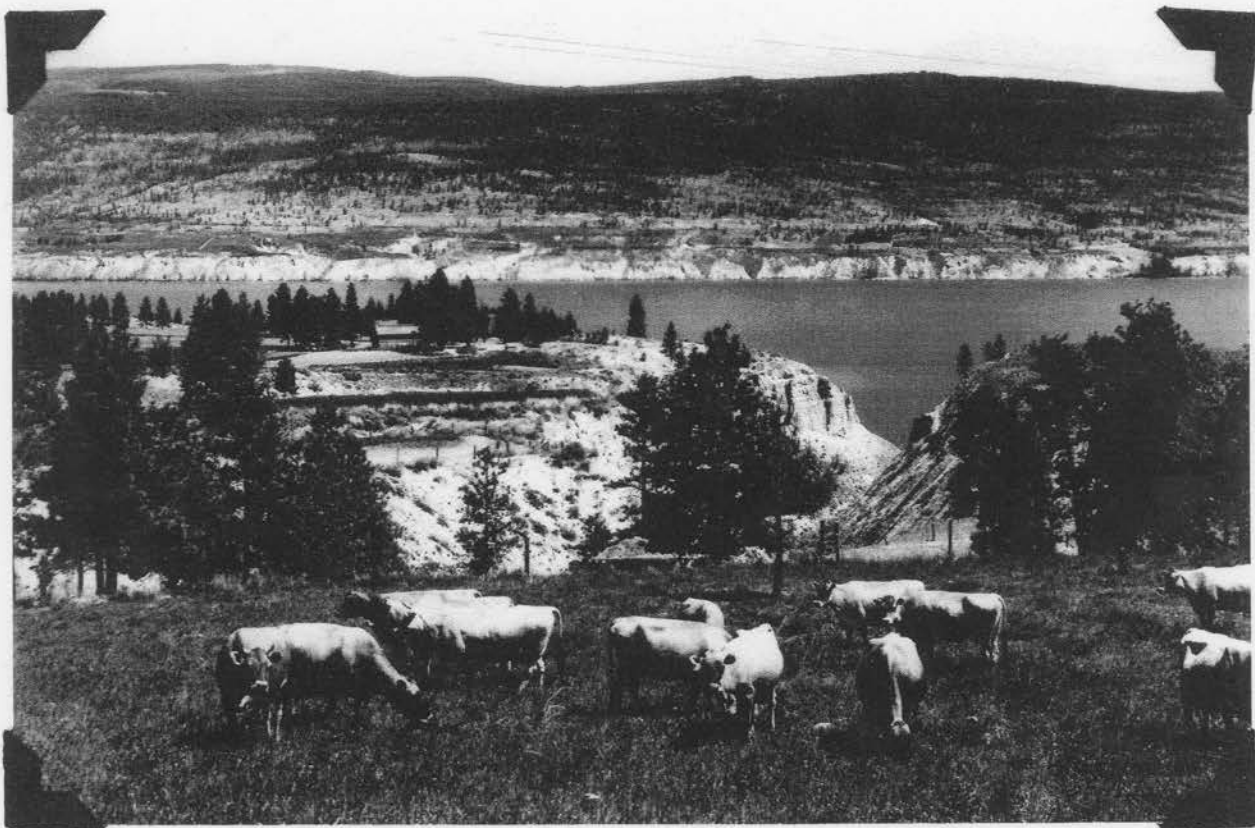


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MD Proverbs removing a codling moth pupae from the irradiation tube.

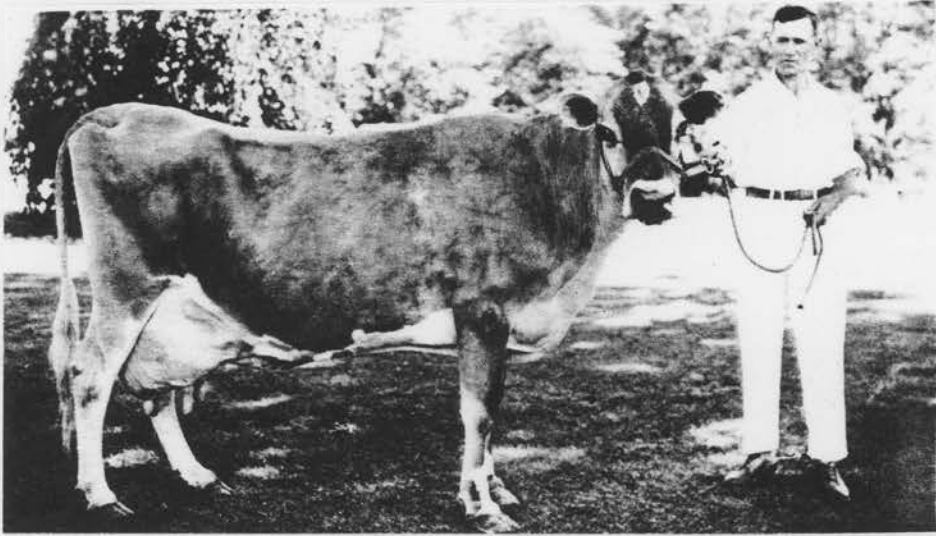
One of the most important projects undertaken to combat this, and the use of pesticides was the codling moth sterility project. The idea came from the success of the U.S department of Agriculture's screwworm eradication program and MD Proverbs was placed in charge of the research on control of the codling moth by release of sterile males. In 1989 the BC Fruit Growers Association made a decision that they would undertake to eliminate the codling moth from the entire apple growing area by a massive release of sexually sterile males.

During the 1920's the farm experimented with beef cattle, poultry and sheep as well as a Jersey herd that went on to set records for milk and butter fat production.

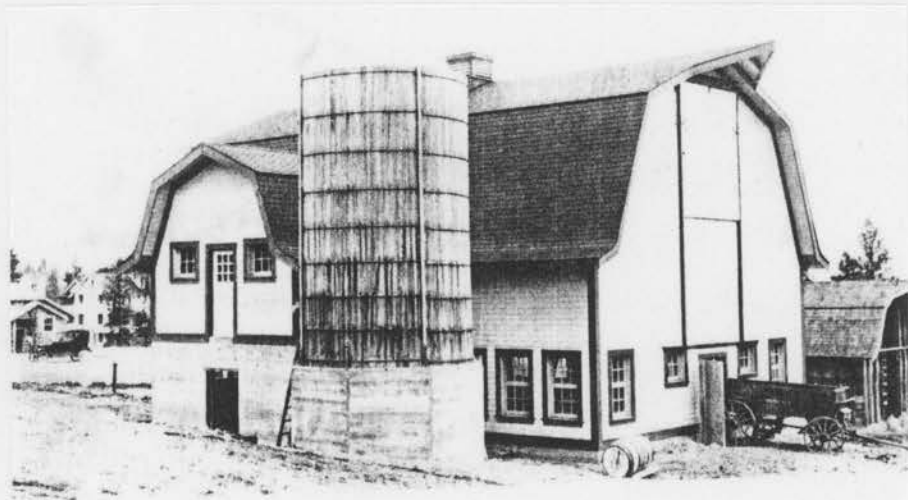


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Jersey herd grazing on an irrigated pasture up on the farm.



Calgarth Starlight, world champion Jersey cow, and J. Aitken, head herdsman.



Dairy barn and Silo
with Herdsman's cottage
in back ground.



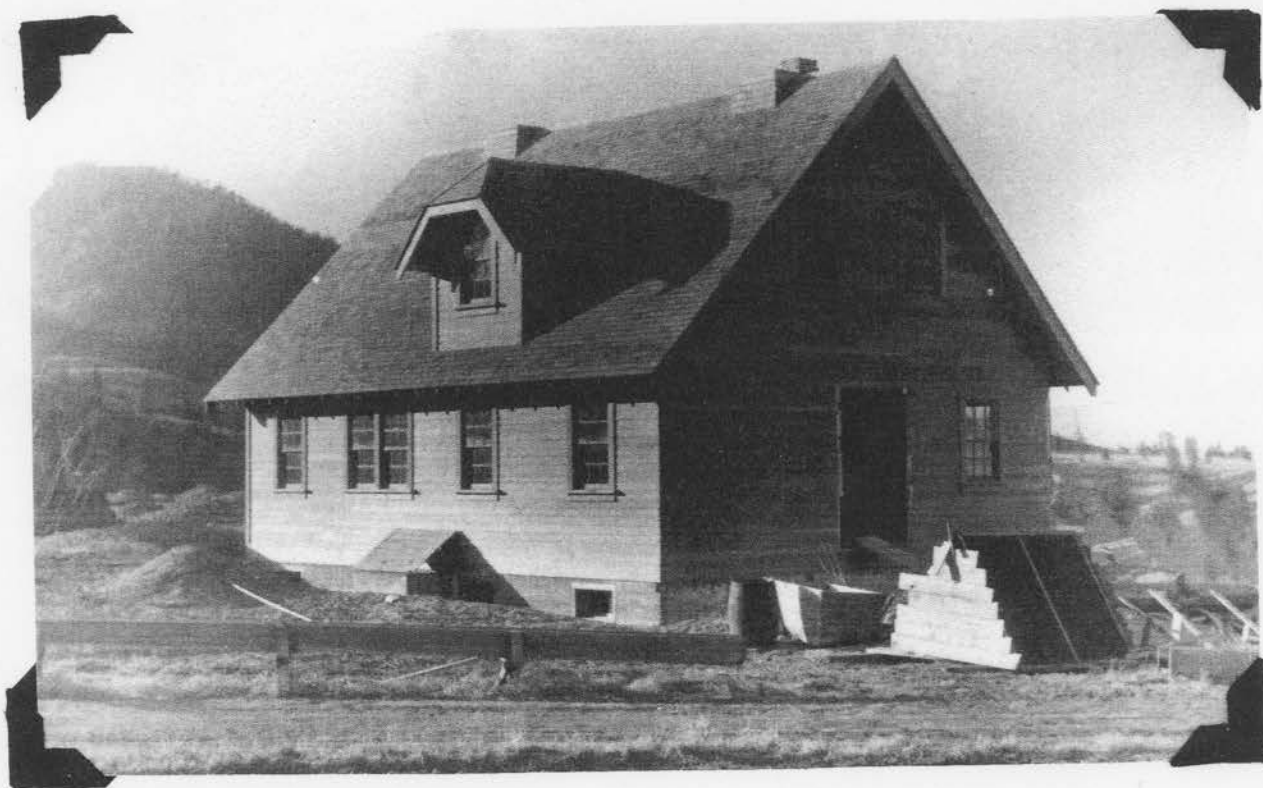
Herdsman's cottage 1920's.



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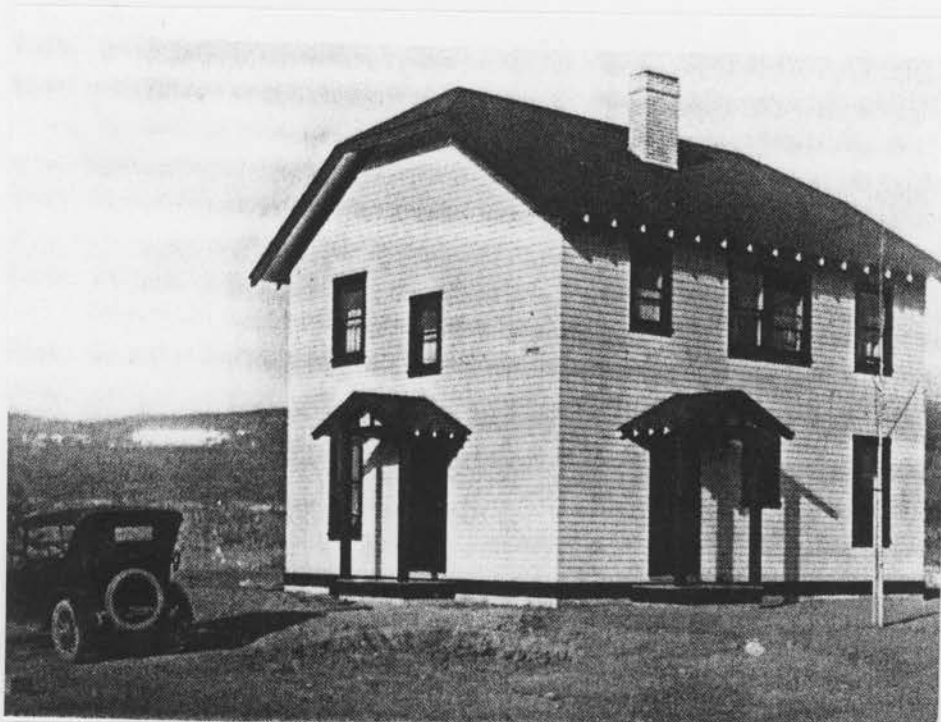
Dairy barn in 1981. After the bloat studies were discontinued the barn was converted into a conference hall and storage space.

1921 saw the construction of the Plant Pathology building (burned in 1973) and the Horticulture building as well. Both of these buildings would see hard work for the rest of their service.



976-37-2

The horticulture building under construction; ca., 1921.



Plant Pathology building; early 1920's. The building was destroyed by fire on June 16th, 1973



978-214-1d

Seven year old orchard, 1922.



978-214-002

The office and staff; 1923. R. H. Helmer is the one wearing a tie on the right side.



W. T. Hunter became the superintendent after Helmers retirement in 1923. W. T. Hunter was responsible for the erection of many of the early buildings and organising the famous jersey herd. It is said of Hunter that because he had the farm so well organised it suffered very little during the depression.



992-73

House and gardens in the 1930's

In 1924 construction of the superintendents house began. Although it was added on to several times for the next couple of years this marvellous building is still in existence today. As well as serving time as a house, it has also done time as an administrative building and more recently as a museum.



991-154-5

The house in 1981 when it was serving as an administrative office.

The first farm picnic was held in June 1924 and more than 1200 people attended. Some notable features in the early days were guest speakers, ciders made by the food processing section, and of course the ornamental gardens. Despite its popularity in the early years, it was abandoned in the later years. However in 1997 the gardens started holding a garden party in the early part of July. Food concessions and wine tasting are par for the "Friends of the Gardens" in this event.



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Farm picnic in the 1920's.



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Farm Picnic in the 1920's



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Cherry Days

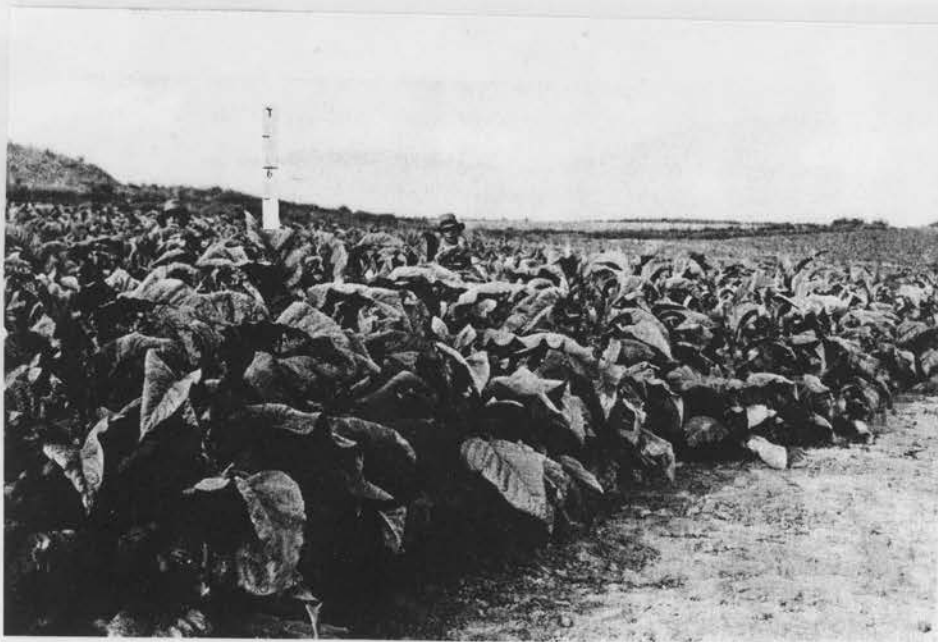


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1925 saw the commencement of the tobacco experiments to determine the varieties best suited for the Okanagan valley. The experiments determined that it was possible to grow tobacco here, yet it required some specialised methods and experience to make it work.

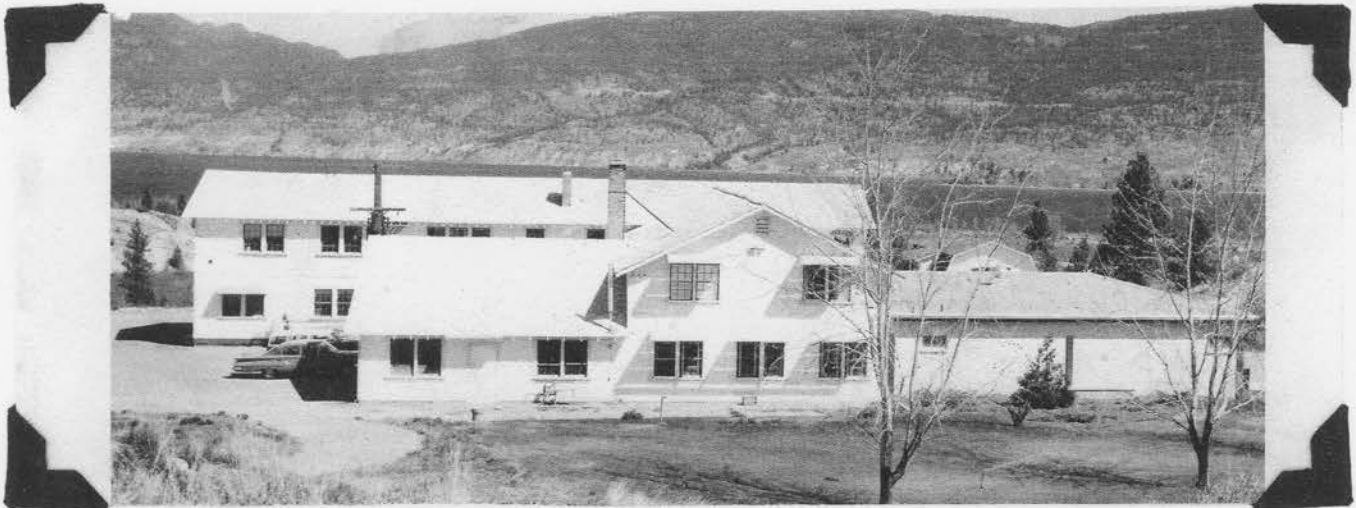


Planting tobacco seedlings 1929.



Tobacco crop 1929

The food processing section at the farm was started in 1929, and it began to support the growing fruit and vegetable canning industry in the province. F. E. Atkinson started working there in June 1929 and is generally recognised as being instrumental in the development of several processes investigated on the Farm. Several early projects were undertaken in this field including fruit dehydration and the use of cull fruit for liqueur production.



Horticulture building, home of the Food processing section.



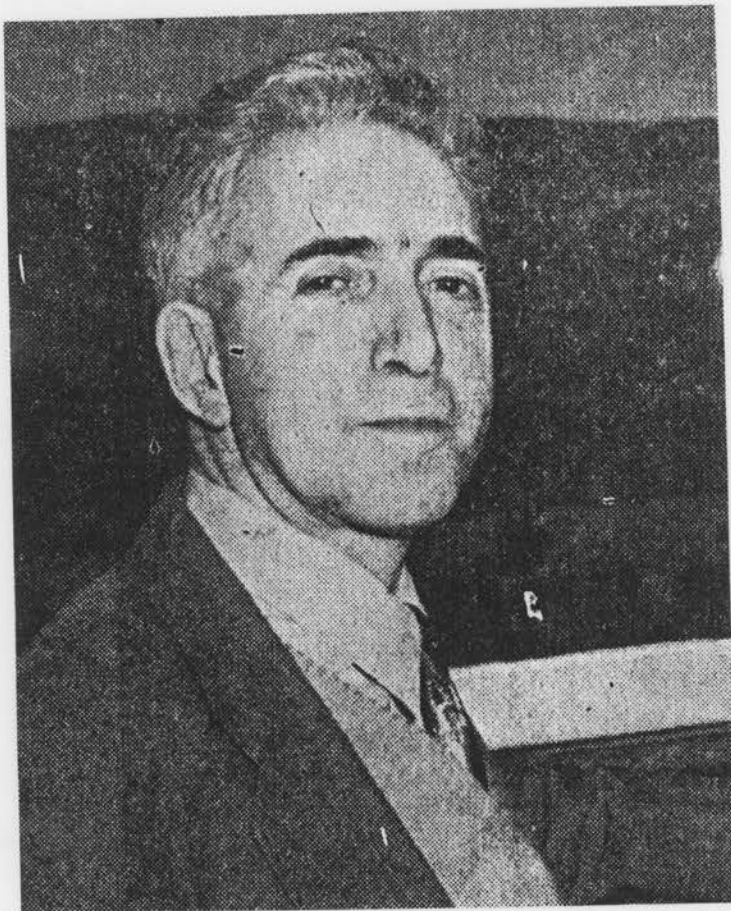
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Early Farm Orchard

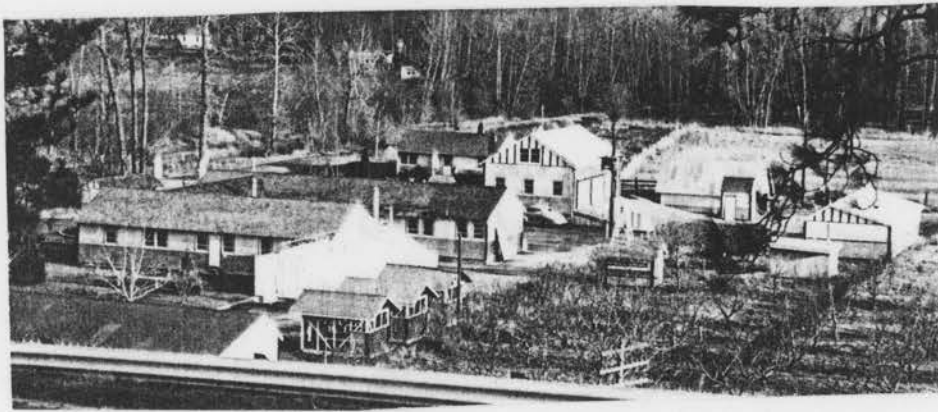
The Spartan apple variety was started in 1924 and released for commercial trial in 1936. It probably the most important apple variety ever introduced in BC. The Spartan Apple is a hybrid cross of the MacIntosh and the Newton apple made in 1924 by Dick Palmer and selected in 1936 by Arthur Mann. Summerland was also instrumental in the releasing of several other fruit varieties; Fairhaven and the Triogem peach varieties, Tydemans Red, Bright MacIntosh, Sinta, Spencer, Summerland, Summerred, Macspur, Morespur, and Wijcik apple varieties, Sierra Pear, early Blenheim and Skaha apricots, Sue, Sam, Star, Van, Lapins, Compact Lambert, Compact Stella, Salmo, Stella, and Summit Sweet cherry varieties as well as several other new varieties. Many never become very important varieties but the market is still there. As an example of the magnitude of the fruit program at the Station, 957 638 varieties of different fruits were under test on the farm.



979-10-18

R. C. Palmer

In 1932 R.C Palmer was appointed as the third superintendent of the farm until his untimely death in 1953. Reacting to the changing needs of the era, several programs were discontinued under his leadership. Most notably the swine program, tobacco investigation, and poultry program.. Emphasis on the farm shifted from applied studies towards basic research. The beef and dairy cattle program were discontinued and most of the animals sent to Saskatoon, while horticulture was expanded. Animal science still continued its research into the bloat problem in dairy cattle until the 1960's when it was moved Agassiz, this included those famous cows with windows in their stomachs, while the field crops section was sent to Kamloops.

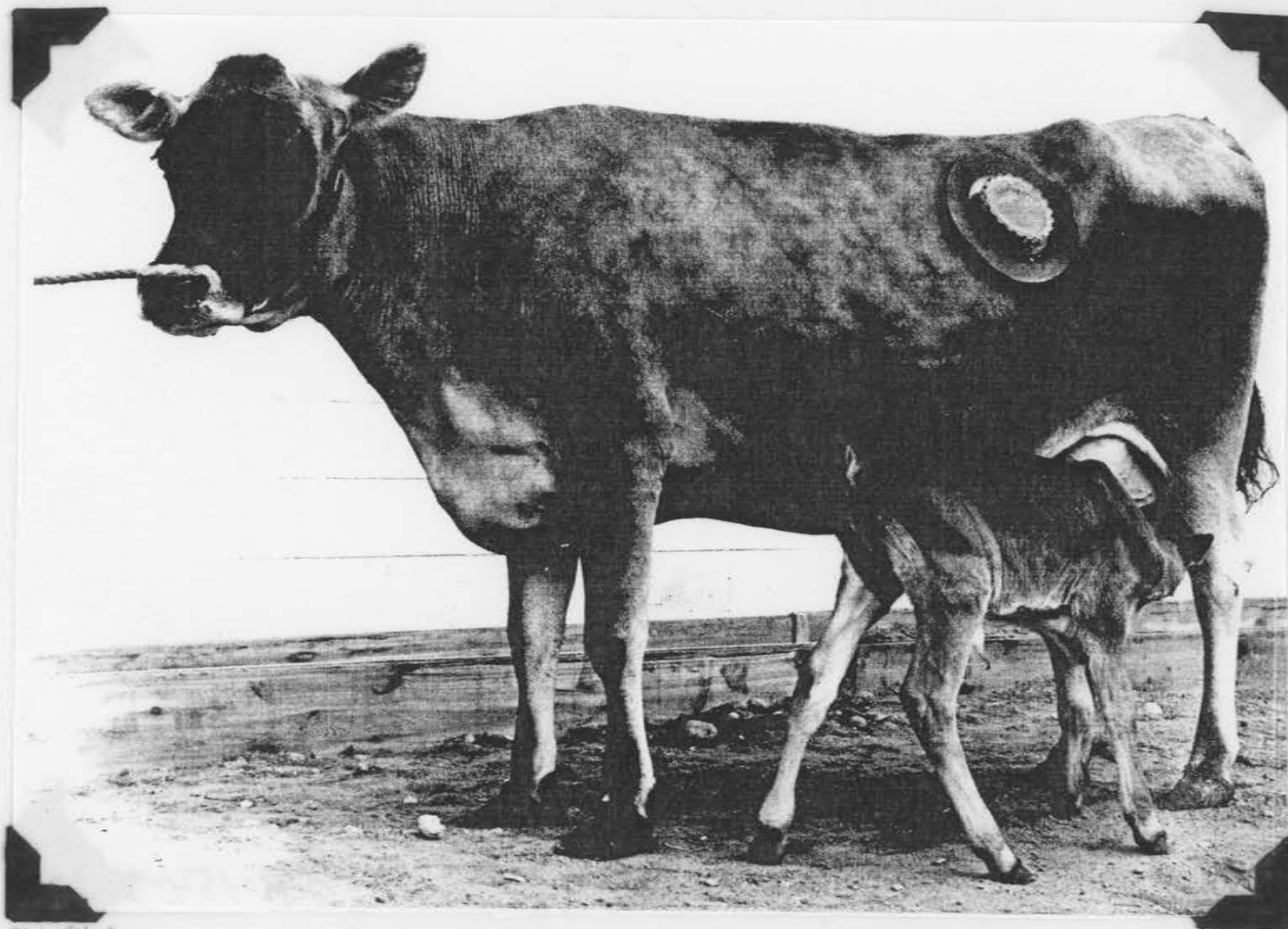


The entomology section, previously established in Vernon since 1919, was moved to Summerland in 1945, and took up residence on the lower bench in Trout Creek. The 1940's also saw the planting of the virus orchard by the plant pathology section which was key for several projects that were coming up in the future.



T. H. Anstey

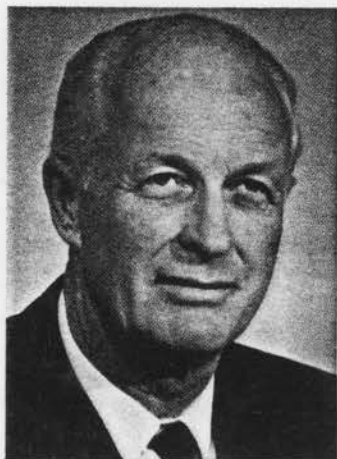
T. H. Anstey replaced R. C. Palmer as the superintendent of the farm in 1953. T. H. Anstey over saw the reorganisation of the farm and the research sections.



991-154-3

Mid 1950's. The window in the cows stomach helped the researchers to see what the cattle had eaten and how it was being digested. It helped the study of bloat in dairy cattle immensely.

In April 1959 the experimental farm service, which included the horticulture, food processing, animal husbandry, forage crops, soils and irrigation sections, was reorganised into one unit with the science services, which included the entomology and the chemistry and plant pathology sections under one director and renamed the Research Station, of the Research Branch, Canada Dep. Of Agriculture, Summerland, BC. Previously the presence of the science services, being more or less autonomous, had provided the superintendents of the farms and officers in charge of the science sections with numerous administrative headaches. Budgeting of finance and human resources was complex and co-operative research projects were difficult. By combining them, since they all shared the farm as a common resource many of the problems would be eliminated and further heights could be achieved.



C. C. Strachan

The purpose of the station was “to solve through research and by application, the problems encountered by producers of fruits and vegetables, by processors in the utilization of fruits and vegetables, and by dairymen in the prevention and management of bloat in dairy cattle”.

The new director of the Summerland Research Station was C. C. Strachan. The station then consisted of ten sections of which he was head over; Administration, Agricultural Engineering, Animal Science-Chemistry, Field Crops, Entomology, Food Processing, Plant Pathology, Pomology, Soils and Vegetables-Ornamentals. There were a 112 full time staff members.

The period of 1959 to 1974 saw a marked change in the character of the research station. The government housing policy changed and except for where it was absolutely necessary, say for security, the staff would now have to live off grounds. The boarding house was torn down, as well as the herdsman's and gardeners cottage.



D. V. Fisher

All the staff were saddened by the sudden death of the Director Charlie Strachan. However D.V. Fisher, the new Director, had been an integral part of the station and the Pomology section since 1933 and had a thorough knowledge of the Okanagan fruit industry.

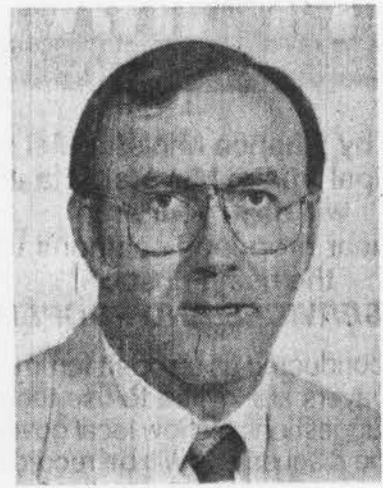
G. C Russell replaced D.V. Fisher as he retired as Director of the Station. He faced several challenging problems, including the planning for and initiating construction of a new office-laboratory complex that would house the entire staff. While this may be seen as a simpler problem than some others in the past, it was in fact not. Recent reductions in the research program had left only the tree fruits, grapes, and food processing section, however most of the facilities were old and only functional due to the near heroic efforts by the operational staff. It is a tribute to G. C. Russell that he met those challenges admirably. He retired in 1985 and was replaced by D. M. Bowden who oversaw the final completion of the new Office-Laboratory complex and the removal of the old before his retirement in 1989 when J. Dueck took over the post of Director.



G.C Russell



D. M. Bowden



J. Dueck



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Construction of this five story office-laboratory complex began November 1984 and was completed at a cost of \$23.8 million including equipment. The 12,000-square-metre building contains offices and laboratories for researchers in production and protection of tree fruits and grapes, soil management and food processing. It contains 90 controlled-atmosphere rooms and 716 square metres of greenhouse space to provide special growing conditions for research materials and a versatile food processing pilot plant area. This building is owned and operated by the Research Branch of Agriculture Canada which operates a national network of research establishments across Canada.

This book was compiled with information from the Summerland Museum Archives and the Summerland Museum Photo Collection. Photocopy images are from sources within the Summerland Museum Archives and any news print articles are from the same source with reports to the Summerland Review and The Summerland Museum.

Just a few of the discoveries and achievements of the research station and its predecessors include:

- Identification of Boron deficiency effects and treatment which paved the way to a larger export industry.
- Pioneering work establishes B.C as leader in the production and distribution of virus-free fruit tree stocks
- Pioneering the development of low volume air blast sprayers.
- Development of the sterile codling moth program
- Identification and control of several viral, bacterial and fungal agents in tree fruits.
- The determination of water and nutritional requirements of tree fruits in the Okanagan.
- Development of methods of monitoring irrigation schedules.
- The introduction of dwarfing root-stocks and the control of tree size by breeding for compactness.
- The development of disease resistant vegetables

In addition to the above accomplishments is the great volume of work which has been done at the Station over the last 85 years which has formed the underpinning of many branches of the agriculture and associated industries, including developments and discoveries for too numerous to mention.

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Research Station – General History/Background

As Summerland grew into a booming metropolis and agriculture was becoming more and more prevalent, the demands for an experimental farm increased. After some years of local encouragement to the provincial Department of Agriculture, approximately 162 hectares of land were purchased from Antoine Pierre and named the Summerland Experimental Farm. On November 8, 1914, R.H. Helmer was appointed superintendent and the Experimental Farm began the study of tree fruits, field crops, vegetables, poultry, domestic animals, and - later ornamental plants.

Construction on buildings at the Farm began in 1917 and continued to grow as new areas of study developed. In 1917 the crops suffered greatly from the lack of water, Helmer found it impossible to conduct tests of any kind without a guaranteed source of water. Just when the crops were starting to mature the water supply would be shut off because the local Summerland orchards had priority. A diesel pump was installed at the lake in 1921 easing the water issues for the lower levels of the farm. In 1923, a pump house was installed upstream on Trout Creek just west of the KVR trestle. In 1924 a dam was built on Crescent Lake and the groundwork was laid for a new pump house on Okanagan Lake.

Until 1920, there were virtually no pests in the orchards except aphids. By 1921, powdery mildew and fire blight had become prevalent. Codling moths were discovered in the orchard in early autumn. The source was investigated and it was discovered that a railway refrigerator car on a siding adjacent to the farm contained several empty cocoons...

The addition of the Jersey cows to the Experimental Farm in 1924 increased the livestock program, partly because of the need to utilize feeds being produced at the farm, but also because of the need for manure for fertilizer! The Jersey Cows became a popular attraction at the Farm due to their "glass stomachs"; these viewing ports were put into the sides of the cows so that the scientists could observe the digestion of food.

After World War II attitudes towards research changed as veterans were given the opportunity to take university courses under a reestablishment program. Staff had many more opportunities to come in contact with people in their field and expand their knowledge base. In April 1959, the Experimental Farms Service was reorganized into one unit with the Science Service and renamed the Research Station. 1963 saw another policy change greatly affect the employees of the Research Station when government owned housing at the Station was phased out. This signaled the end of the camaraderie amongst the staff that came from working and living together.

In the late seventies dreams of a new research facility became reality when a new modern building was finally constructed in 1984. The Pacific Agri-food Research Centre was established and amalgamated all sections of study at the Station under one roof.

(RESEARCH Station history.doc¹

Ornamental Gardens – History/Background

Work on the Ornamental Gardens began in 1916 and was basically completed by 1921. Originally developed to bring English and Eastern Canadian beauty to the rough edges of the "frontier", the gardens grew to become a 6 hectare English style garden that became popular with locals and tourists to the region. The old Log Cabin, the centerpiece of the garden area was built in 1917, and landscaping around other buildings on the grounds started to take shape around 1921.

There is a story that may be less fact than fiction, of when Joseph Smith and Alf Aveson, the first two head gardeners, were given the responsibility of designing the Gardens. They found an English painted plate depicting a beautiful English garden, and then modeled the gardens after it, giving them their beautiful English flavor.

The Superintendent's home was built in 1928, under the direction of Superintendent Wilbur T. Hunter. Hunter was notoriously good at stretching a budget and under his supervision, the groundwork was laid for the pump house on Okanagan Lake, the construction of numerous buildings was completed, and a nine-hole golf course along with a putting green were put in for staff use.

Alf Aveson, the second head gardener, was almost stone deaf and once when he walked onto the railway trestle to survey his gardens, he failed to hear an approaching train. The Superintendent's wife heard him bellowing in the distance and sent a rescue crew to help pull him up just as his grip was loosening. It is said that he refused to step on the trestle for any reason afterwards.

The Annual Farm Picnics that were held every June 3rd (King George V's birthday) beginning in 1924. These picnics attracted thousands of people, who went on guided tours of the orchards and other experimental plots, as well as livestock judging and visits to the poultry farm. Events were centered in the gardens where families would picnic and enjoy children's races and a baseball tournament. There's a story about a teamster at the farm, Dan MacLean, who one year he marched playing the bagpipes from 2:30 until 7 o'clock at night. It seems that each time he passed the boarding house, he received a wee dram and lost all track of time!

While Nat May was head gardener from 1941 – 1961, a number of improvements and trimmings were added to the landscaped area of the Gardens. Rock walls, a lily pond, and a long trellis covered in honeysuckle and grapes were added from the site of the Superintendent's house down to "Hog's Hollow"; the site of a bowling green, later a tennis court and sometimes a skating rink.

The responsibility for the Gardens was initially under the Vegetables and Ornamentals section but was transferred to the care of Administration in 1971. In 1990, budget cuts at the Station threatened to close the Ornamental Gardens; greenhouses had been dismantled and the Gardens had been reduced to the basic planting and daily care, research was no longer a thought for the purpose of the Gardens. However, the Friends of the Gardens Society was established and they have managed to work in conjunction with Agriculture Canada to keep the gardens open. The Friends of the Gardens hold many annual events at the gardens and have helped create the Xeriscape garden, educating the public on the use of native and dryland plants to create beautiful gardens without the extreme use of water.

Judy Minardi
2008

Photos possibly suitable for the web on this site

Foreword

This history of the Summerland Research Station was completed in 1986 as part of the celebration of the 100th anniversary of the establishment of the Experimental Farms Service of the Canada Department of Agriculture. In writing this history the emphasis has been on presenting the people, both scientists and support staff, who established the farm and who contributed significantly toward providing new information to help maintain a viable agricultural industry in interior British Columbia, and to the welfare of agriculture nationally and internationally.

The Dominion Experimental Farm at Summerland was established in 1914 to provide research to help solve the problems of a developing agricultural industry. The early research dealt with a wide range of crops, poultry, swine, and cattle. The scope of the research has narrowed over the years with the decrease in variety of crops grown in interior British Columbia. Now the primary concerns are with tree fruit and grape production and with food processing. In 1959, the farm was amalgamated with the Science Services laboratories of Plant Pathology, established in 1921, and Entomology, established in 1912, to form the Summerland Research Station. Although the achievements of this station resulted primarily from the efforts of the station staff, the progress and impact of these achievements on the industry could not have been as effective without the invaluable cooperation and assistance of many other individuals and organizations.

Special mention should be made of the cooperation of the British Columbia Fruit Growers' Association for its continuing support during the past 10 years, of a research scientist located on the station working on storage problems, and of the British Columbia Ministry of Agriculture and Food, which has had extension staff located on the station since 1975. Also recognized for their valuable assistance are other producer organizations, individual producers who cooperated in many ways in trials, and agribusiness organizations. These groups also provided valuable means of transferring information to producers. The assistance of scientists from other establishments of the Research Branch of Agriculture Canada and from universities who supplied our staff with information from their research work is also recognized and appreciated.

As this history is being finalized, another major event is occurring that is certain to contribute significantly to molding the future character of the station. That event is completion of the new office-laboratory building that will house the entire research staff. This building will provide the potential for much greater interaction and cooperation among the staff, and the new equipment will permit a greater degree of sophistication in research procedures. Credit is due to Dr. Glenn Russell, not only for his efforts toward having the need for this building recognized by those who make decisions in funding, but also for his efforts in managing the planning for and designing of this impressive building.

On behalf of the station, I express appreciation to the author of this history, W.W. Fleming, for his conscientious efforts, and to all others who assisted him to make the completion of his task possible.

D.M. Bowden
Director
Research Station
Summerland, British Columbia

I came to the Okanagan Valley with the idea, common to many travelers from the Prairies, that growing fruit-bearing trees is easy. You plant the tree, wait until the crop is ready, then harvest the perfect, abundant fruit. As I became involved in orcharding, I realized that nothing could be further from the truth; in fact, it is an extremely complicated endeavor and its complexity increases with time.

The experimental farm at Summerland was established to assist growers in solving the seemingly endless problems that can occur when trying to produce and maintain a viable orchard.

This history is not an attempt to record the scientific achievements of the research station but rather to tell the story of the people who, through the years, have made so many contributions to the station.

W.W. Fleming

The Cultivators

"Research stations and experimental farms, or 'The Farm,' as they are often still called in many of the communities where they are to be found across Canada, are different things to different people.... to local gardeners they are a place to go for friendly advice regarding their problem weeds or insects ... they are a delightful attraction in apple blossom or chrysanthemum seasons; to school children they are an extension of their science class or a place to picnic and hike..."

History of the area

Gold mining and fur trading, two magnets that led to settlement of most of British Columbia, were absent from the Okanagan Valley. Only ranching was of economic concern to this area in the early days. Trout Creek, the area where the Summerland Research Station is located, was originally designated as common pasturage. In 1887, the British Columbia government made the land available for settlement. The first permanent settlers in the Trout Creek area, James Gartrell and Duncan Woods, preempted most of the land north of Trout Creek, and Antoine Pierre held the land south of Trout Creek. Gartrell and Woods held the water rights to Trout Creek, dammed it, and released the water in the summer to irrigate their land. Gartrell imported apple trees from Ontario and Washington, and his property became the first commercial orchard in the Okanagan Valley. The land owned by Pierre was later sold to the Canada Department of Agriculture and became the site of the experimental farm.

Originally, all the mail for the Summerland area came south by packhorse from Okanagan Mission (Kelowna) down the east side of the lake to Penticton. At Penticton, the trail forded the Okanagan River and led north on the west bench, through the present site of the research station, and down to Trout Creek. This trail became a wagon road and was used until the road along the lakeshore was built in 1910.

Beginning in 1886, the first steamer on Okanagan Lake, *Mary Victoria Greenhow*, made irregular trips between Okanagan Landing and Penticton. Along with the completion of the Shuswap and Okanagan Railway in 1892, the Canadian Pacific Railway launched the *SS Aberdeen*. This stern-wheeler, 44.5 m long, 9 m beam, and 355.62 Mg, steamed the lake from Penticton to Okanagan

Landing, giving Okanagan residents their first regular mail, freight, and passenger service. In 1907, the *SS Okanagan* replaced the *SS Aberdeen*, and later the *SS Sicamous* was added to the fleet. Most of the wharves used by these ships still exist.

Until the turn of the century, the economy of the area was based on mining, primarily in the Similkameen Valley, and ranching.

Robinson then turned his attention to the Summerland area. In 1902, a post office was opened under the name of Summerland, and in 1903 the Summerland Development Company was formed. In planning the district, Robinson wanted to include Trout Creek Point, but he was unable to obtain the land and the townsite was built 5 km north on the lakeshore.

By 1905, Summerland was a booming metropolis. The residents had water in their homes, septic tanks, electricity (the first town on Okanagan Lake to have it), a school, and a sawmill. By 1906, Okanagan College, open only to male students, was established. In 1910, an addition was made to the college to house female students. The present Youth Center Association auditorium was the gymnasium for Okanagan College. By 1907, a single-wire magneto telephone system was installed. During this time, Robinson developed Naramata on the east side of Okanagan Lake, and a ferry was operated between the two communities. In August 1908, the first issue of Summerland Review made its appearance. In 1909, the first hospital in the area was officially opened. Also, in 1909, the first apple show was arranged. It was judged by R.M. Winslow of the provincial Department of Agriculture, after whom a siding of the Kettle Valley Railroad on the experimental farm is named. In fact, Winslow was a federal election polling place until the late 1950s and was usually one of the first to report results, as there were only 10 or so voters. In 1909, the Honorable Sydney Fisher, Dominion Minister of Agriculture, visited the district and he was urged to have an experimental farm established in the area.

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The early years--1914-1923

Helmer must have been a good judge of character because several of the people he hired in 1914 were to remain with the farm until their retirement. The records indicate that the first person hired by Helmer was W.J. (Billie) May. He originally worked as a laborer, was appointed vegetable foreman in 1921, and held this position until his retirement in 1951. Another longtime employee hired in 1914 was George W. Johnson. He also started as a laborer, became office clerk in 1916, and retired at the age of 67 in 1944. Harold Smith worked for Helmer in 1914, joined the army in 1915, returned in the spring of 1924 as orchard foreman, and became farm foreman in 1940. He retired in 1952.

Landing, giving Okanagan residents their first regular mail, freight, and passenger service. In 1907, the *SS Okanagan* replaced the *SS Aberdeen*, and later the *SS Sicamous* was added to the fleet. Most of the wharves used by these ships still exist.

Until the turn of the century, the economy of the area was based on mining, primarily in the Similkameen Valley, and ranching.

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Others hired in 1914 included H. Tomlin, carpenter; H. Foreman, painter; A.J.F (Bert) Anderson, orchard foreman; R.H. Atkinson; Harry Thornthwaite; Ernie and Billie Simpson; Sid Sharp; Harry Treffry; Tom Carefoot; Alf Bloomfield; Sam Peters; and Joe Smith.

The first farm chores included cutting trees, clearing sagebrush, picking stones, building roads, and breaking the bottomland near Trout Creek. Summerland pioneer Fred Gartrell had the honor of plowing the first furrow on the farm.

The year 1915 was a boom one at the farm. Many more people were hired, among them were W.R. (Bill) Nelson and Tom Nelson, both carpenters who worked until their retirement in 1951.

The major priorities for Helmer in 1915 were the construction of flumes to carry irrigation water and the construction of buildings. By May 1915, Helmer had more than 40 staff members, comprised of the Nelson brothers, W. Tullett, E. Simpson, C. Barr, E.W. Maroe, H. Darke, T. Harwood, O. Smith, F. Bywater, T. Brewer, and H. Tomlin as carpenters; J. Reid, S. Peters, and H. Thornthwaite as teamsters; J. Gillis as foreman; J. Fyffe, S. Denike, C.A. Marshall, W. Sculthorpe, S.F. Sharp, E. Fox, H. Chepmell, A. Martin, H. Holding, Clarke Wilson, O.F. Zimmerman, G.F. McKenzie, B. Blair, H. Brewer, T. Carefoot, M. Tait, H. Walton, W.E. Rines, W. Verity, D. Clark, W. Watson, J. Read, R. Phinney, W. Dow, and G. Williams as general laborers; plus others previously hired in 1914.

On 19 February 1915, the Nelson brothers began construction of a stable by Browns Bridge, which spanned Trout Creek. J.S. Kirk, who surveyed most of the early farm, and T.J. McAlpine selected a good site for a new bridge over Trout Creek, which became the back entry to the farm until the bridge was washed away by a severe flood in 1972. On 27 February, Helmer moved to a temporary house on Trout Creek Point. On 18 March, seed grain arrived by boat and three teams were employed to cart it away from the wharf in Summerland. By 2 April 1915, clearing of the bottomland near Trout Creek was finished and construction of flumes and ditches on the upper benches was under way.

On 6 April 1915, J.G. Grisdale, director of Experimental Farms, arrived from Ottawa. As a result of his visit, final arrangements were made to carry water across Trout Creek from the Summerland municipal water supply and a site was selected for an office building.

By 17 June 1915, the water main was in place and operating. The headlines of the day in the *Summerland Review* stated that "the system worked perfectly and carried an abundance of water." Neither the people of Summerland nor Helmer and his staff had any idea of the problems that lay ahead.

The accomplishments in 1915 were considerable and included making flumes for irrigation, surveying, clearing sagebrush, cutting trees, pulling stumps, picking stones, fencing, leveling ground, plowing, constructing roads, planting orchard trees, setting out plots for lawns, setting up a meteorological station, building stables, a house for the superintendent, a hay shed, the teamsters' shack, the foreman's shack, and grain and implement sheds. The main crop grown in 1915 was beans. Other crops included grass, hay, oats, rape, and potatoes. Wages were \$2.50/day for laborers. The average workday was 10 hours.

By the end of October 1915, about 50 ha had been cleared, plowed, and put under crop, and about 100 ha had been graded and were ready to receive water. However, there was not enough time to irrigate all the land because of the late start of the flow of water.

The main experimental and illustration objectives of the farm were to be directed toward fruit growing, but all aspects of field and animal husbandry were to be studied as well. The prime concerns were to find out which crops, crop varieties, and breeds of livestock were best suited to the area, and to find solutions to production problems peculiar to the area.

The groundwork for the farms reputation for cooperation was firmly laid by Helmer, as evidenced by the following quote from the 05 November 1915 edition of the *Summerland Review*, concerning Summerland's first agricultural fair. "The farms display was one of the outstanding features of the show. It proved to be one of the most popular sections and its lessons in concentrated form on practical farming methods and farm equipment were absorbed by many."

The early part of 1916 was spent in road construction. Also, Joseph Smith, gardener at that time with Alf Aveson, designed the ornamental gardens. It is said they copied a design that was painted on a plate, tracing the pattern on the ground without any kind of measure. Orchard plots were staked out by surveyor Kirk and, after the purchase of nursery stock from Kaleden, orchard planting began on 13 April 1916. Blocks of McIntosh Red, Delicious, Yellow Newtown, Grimes Golden, and Rome Beauty apples were planted, with fillers of Wagener, Duchess, Transparent, Jonathan, and Coxs Orange. Later, windbreak trees were planted to protect the orchards. Careful records of the progress of the apple trees were kept, as evidenced by the first notes on tree progress on 16 June 1916.

Crops planted in 1916 included cereal crops, alfalfa, timothy, millet, mangel, sugar beet, and sunflower. Vegetable crops included tomato, cauliflower, potato, pepper, radish, corn, cabbage, peas, pumpkin, melon, asparagus, turnip, celery, carrot, onion, cucumber, and brussel sprouts.

In 1916, fewer people worked at the farm, probably because of the war. The number on staff ranged from a low of 12 to a high of 28. Those recorded as being on strength at that time were W. Nelson, carpenter; H. Foreman, painter; J. Smith, gardener; J. Gillis, foreman; E. Mountford, W. May, A. Pierre, and R. Phinney, teamsters; and C. Wilson, A. Anderson, A. Aveson, G. Williams, A. Martin, G.W. Johnson, C. Van Seymortier, C.H. Cordy, C. Marshall, H. Sculthorpe, and Mrs. W. May, laborers.

The first field day on the farm was held on 21 July 1916 and teams of horses were used to pull out any cars stuck in the mud or that were unable to climb any steep grades.

On 23 October, construction of livestock pens and a stable commenced, and on 7 November, Jack Gillis went to Lacombe for cattle; he returned a week later.

The next few years were troublesome for Helmer and his staff, mostly because of lack of water. In 1917, the crops suffered greatly and a note on 22 August 1917 says "there is not a drop of water in the flumes." Helmer found it impossible to conduct tests of any kind without a guaranteed supply of water. Just when the crops were starting to mature the water supply would be shut off because local Summerland orchards had priority. On 18 August 1919, Helmer wrote to J.H. Gridale, Deputy Minister, advising him that he would not work another year unless adequate water was available. Crop records for 1919 were disappointing. J.H. Gridale directed Helmer to inform the Summerland Council that operations on the farm could cease just as easily and as quickly as they began unless an adequate supply of water was guaranteed.

In 1921, a diesel pump, fraught with problems, was installed at the lake and this eased the water situation on the lower levels of the farm. In 1923, a pump house was installed upstream on Trout Creek, just west of the Kettle Valley Railway trestle, and a grant of \$3500 was made to the Municipality of Summerland for the upgrading and maintenance of the flume system supplying water to the farm. Although these were troubled times for the superintendent, the problems seemed to strengthen the motes of the farm. Except for keeping the orchards alive, little was accomplished horticulturally.

However, progress was made in other areas. In 1917, construction began on an office building as well as a poultry administration building and four poultry houses on the lower flats, adjacent to the bridge over Trout Creek. In 1919, the assistant superintendent's residence, now Wilcox Hall, was

built. A cottage was built in 1920 for the superintendent as well as a pavilion, known as the "log cabin," in the gardens for visitors, a foreman's residence, a boardinghouse, and another silo, and many improvements were made to the sheds and stables. In 1921, construction was started on the original Horticulture building. The concrete basement was divided into four 453-m³ frost-proof units, and each unit was equipped to, control temperature by ventilation. These units were used for fruit storage experiments. The main floor, 9 m x 12 m, was used for grading and packing, whereas the upper storey was used for making and storing boxes. In 1921, construction began on the Plant Pathology building as well.

The next year or two saw the completion of all this construction plus landscaping around the buildings. New flumes were built, existing flumes were maintained, and road grading improved. In 1922, Helmer leased more land east of the farm along the lake front.

Staff hired during the early 1920s continued to exhibit considerable longevity of service.

In December 1919, after returning from World War 1, D.G. (Doug) Denny was appointed head poultryman, a position which he held until his death in 1940.

In 1920, A.J. (Arthur) Mann, formerly a provincial horticulturist in Penticton, was hired and put in charge of field husbandry and forage crops. He was the first university graduate to be hired by the station. Mann reported for duty on his first day at the farm wearing a white shirt, a tie, and gloves. He saw a crew of men building a rock wall and enquired where he could find the superintendent, explaining that he was the new employee. Helmer, who enjoyed rolling up his sleeves and "digging in," welcomed Mann from among the crew and suggested that he, too, pitch in and help. Mann did so but not for long. He continued to wear a white shirt and tie until he retired in 1955.

In May 1920, R.C. (Dick) Palmer, a young student assistant, was hired in 1921, he became an assistant in horticulture and later was to become superintendent of the experimental farm.

In 1921 there was a severe outbreak of fire blight, a disease that is caused by a bacterium (*Erwinia Anylovora*). The Dominion Laboratory of Plant Pathology was established as a result of this outbreak and Dr. H.R. (Harold) McLarty was hired as a plant pathologist in September of that year. He immediately began supervision of the construction of a new plant pathology laboratory.

As happens occasionally with government programs, by the time McLarty was in a position to work on fire blight, a satisfactory control system had been developed. McLarty was surprised at the lack of fungus-related diseases in orchards. Only peach leaf curl, anthracnose, perennial canker, apple scab, and powdery mildew were common then. However, he was equally impressed with the diversity of nonparasitic physiological disorders, such as drought spot and corky core, affecting the fruit crops and he immediately turned his attention to these.

In April 1922, Tom Joy was hired as a general tradesman for the pathology laboratory. It is said of him that "his association with the laboratory has probably had a greater influence on the development of the surroundings and services than that of any other one individual. The buildings, workshop, and the designing of innumerable pieces of intricate equipment have all been his responsibility."

McLarty fondly recalls the time when Joy, after being shown how to wallpaper some cupboards by McLarty, effortlessly finished the job, much to McLarty's astonishment. It turned out that Joy had previously been a paperhanger and had papered the Truro N.S., town hall.

Muriel Wilson, employed on a casual basis since 1918, was hired full-time as a stenographer in 1920. She held this position until 1925. E.M. (May) Harrison also worked as a stenographer from June 1922 until January 1924. There were other staff changes too. Anderson left as orchard

foreman, Jack Gillis left as farm foreman and was replaced by herdsman, T Clarke Wilson, and Alf Aveson replaced Joseph Smith as gardener. Aveson loved his gardens so much that he cried at the first killing frost. Other staff members who remained on the roll for a long time include J. Baptiste, F.D. Gibson, W. Johnston, J. Phillips, D. Nels McIntyre, H.W. Seeley, A.E. (Ted) Stevens, and J. Worsfold.

During these years experiments were conducted on breeding, feeding, and viability of beef cattle, sheep, swine, and poultry. Crop rotations and yields of wheat, oats, barley, and alfalfa were intensively studied, as were varieties of roses, other ornamentals, all types of vegetables, mangels, and soybeans. Fertilizer trials were done, utilizing different forms of nitrogen. Pollination, important in the Summerland area, was researched, including overwintering and feeding of bees. Cultural, varietal, yield, pruning, thinning, water requirement, fruit quality, disease resistance, hardiness, soil fertility, economic, and storage trials were done on all types of fruit, including apples, apricots, cherries, peaches, plums, pears, raspberries, gooseberries, strawberries, black, red, and white currants, and walnuts.

Numerous plants were tested at the farm to determine if they could grow in the area. This testing included extensive trials to determine hemp (marihuana) seed production capability in the area. Any seed produced was to be grown in the Prairie Provinces for rope fiber. W. Roach, whose name appears briefly in the farms records, might have been in charge of this project.

Early noteworthy discoveries include the following: the addition of iodine to feeds prevents goiter in sheep and swine, and winterhardiness of fruit trees is dependent upon soil moisture supply in the fall.

Until 1920, virtually no pests except aphids were noted in the orchards. By 1921, the diseases powdery mildew and fire blight had become prevalent. Even more significant was the discovery of codling moth in the orchard in early autumn. Measures were taken to prevent the spread of this insect. Investigation revealed that a railway refrigerator car on a siding adjacent to the farm contained several empty cocoons, leaving no doubt as to the source of the infestation.

By 1922, pesticide spray applications were commonplace and made easier by the purchase of a Hayes power sprayer. Five spray applications were made in 1922, including lime sulfur for blister mite, lime sulfur and Black Leaf 40 for powdery mildew and aphids, and three arsenical sprays for codling moth.



Whitey, born 1895, belonged to J. Gilles and did many chores on the farm.
Here, T (Clarke) Wilson is driving; ca., 1915.

Sheep pens; ca.,
1921.

In addition to the already mentioned research, the staff was kept busy attending or putting up displays at fairs and exhibitions all over the Okanagan Valley. Tours and field days were conducted at the farm for visiting dignitaries, grower groups, students, and the general public. During the winter months Helmer, in cooperation with provincial horticulturists, attended meetings throughout the Okanagan and Kootenay valleys.

Apparently, problems arose regarding salaries and the classification system, as is evidenced by a letter of 5 April 1922 from E.S. Archibald, director of the Central Experimental Farm, Ottawa, to

Helmer, concerning G.W. Johnson. It states, in part, "The whole principle upon which classification is based makes it impossible to recognize the especially valuable services of any one individual."

It is difficult to imagine what life was like on the farm in those days. Harold McLarty recalls it as being a wonderful place to work. "It was the staffs only life and even though they were paid for only 10 hours work, they lived on the farm, so it was a 7-day week, 24-hour-a-day job." In the early years the farms location was isolated. Only the superintendent had a car, a McLaughlin-Buick, and the staff had to rely on their own form of entertainment for relaxation. Square dances at the boardinghouse were popular.

Money problems were sometimes encountered because the financial source was 4800 km away. During the construction of the Plant Pathology laboratory, McLarty either had to borrow money from the bank and pay the interest himself or use his own money to pay the construction workers. It sometimes took 4 months for the money to arrive from Ottawa. No doubt Helmer faced similar problems. For comparison, the total expenditure for the farm for the fiscal year 1918-1919 was \$29651.23, which included a bill of \$60.00 for telephone service, whereas the total expenditure for the farm for the fiscal year 1984-1985 was \$3 875 200, which included \$37 700 for telephone service.

Mrs. Helmer's hospitality was well known. Whenever she heard three toots of a train whistle, which signified that a train was stopping at Winslow Siding, she would start preparing a meal for the visitors.

The Helmers' personalities served as a guide to many people who followed them in forming the stations reputation. McLarty states that "Helmer was a very generous, openhearted person and Mrs. Helmers hospitality was boundless."

In June 1923 Helmer resigned and Wilber T. (Bill) Hunter became the next superintendent of the farm.



The office and staff; 1923.



A visit from some dignitaries: *Left to right*: Miss Cummings, secretary to the Minister; F.C. Elfort, Mrs. Helmer, R. Palmer, Isabel Helmer, Mrs. Motherwell, Miss Motherwell, the Honorable Richard W. Motherwell, Minister of Agriculture; Miss Motherwell, R.H. Helmer, Ronald Helmer, unidentified.

CHAPTER 3

Growth and expansion--1923-1931

Hunter was both a builder and a go-getter. During his tenure at the experimental farm improvements were made to the water system (building Crescent Lake dam in 1924, installing a pump house on Trout Creek above the farm, and laying the groundwork for a pump house on Okanagan Lake), and additions were made to the boardinghouse, the assistant superintendent's house, and the Horticulture building. He arranged for the construction of a dairy barn and silo, an ice house, a fire hall, a hay barn, stables, a tobacco barn, a machine and carpentry shop, a public outhouse, a garage for the foreman, greenhouses, the gardeners and herdsman's residences, and the superintendents residence and garage. A nine-hole golf course (near the present budwood

orchard), a putting green (in the gardens), a tennis court, a baseball field, and a bowling green were laid out for the use of the staff. It is said of Hunter that because he had the farm so well organized it suffered very little during the depression.

One important staff member hired on 17 December 1923 by Hunter was J.J. (John) Embree, an extremely inventive and talented man who installed the first Trout Creek canyon water pump, which still exists but is no longer in use. While working on this project, Embree fell off the roof and broke his leg. He crawled up the 90-m vertical bank and called out for some time before help finally arrived. Embree soon recovered from this accident, but while traveling to work by motorcycle on his first day back on the job he fell and broke his other leg. Embree worked closely over the years with other staff in the development of new equipment. When first hired, his machine shop equipment consisted of a floorless shack, a vice, one set of dies that was still in use when he retired in 1955, and an old post drill. Embree was also an accomplished musician and his talents were enjoyed by the many residents of the boardinghouse over the years.



Boardinghouse before addition; 1925.



New dairy barn and silo; 1920s. Note boardinghouse and herdsman's cottage in background.



Herdsman's cottage, front and rear. Note Plant Pathology building in background; 1920s.

The livestock program was increased in 1924, partly because of the need to utilize the feeds being produced in the experimental plots and partly because of the increased demand for manure for fertilizer. The year 1924 saw the beginnings of the farm's famous Jersey herd with the purchase of five registered Jersey cows and one bull. On 17 July 1924, J. (Jimmy) Aitken was hired as head herdsman. He resigned in November 1927 but returned on 14 November 1929 at the urgent request of Hunter. He was instrumental in the development of this herd, which established several world records for milk and butterfat production. Those days are fondly recalled; the staff were able to buy milk for five cents per quart and "the cream came halfway down the jar" Cream was only 30 cents per quart. Aitken also separated the milk and made butter and ice cream.

In addition to the Jersey herd, the farm had 24 beef steers, about 15 Clydesdale horses, 24 Cheviot sheep, about 50 Berkshire swine, and over 300 chickens.

Two important projects were begun in 1924 by Dick Palmer of the horticulture section. These were the commencement of apple breeding, and work with clonal rootstocks from East Malling, England.

An interesting event in late 1924 was the acquisition of the farm's flagpole. Hunter commissioned E Brent to obtain a suitable pole for the farm. E Brent was the son of J. Brent, who was responsible for delivering the mail from Okanagan Mission (Kelowna) to Penticton and area, as mentioned in [Chapter 1](#). Getting a suitable pole in those days was not an easy task. Brent first selected a tree near Allengrove, B.C., then cut it and limbed it. Using the front bob of a sleigh (it was late winter), he hauled the 28.5 m pole along Shingle Creek Road and through a trail on the Indian reserve to the farm, a distance of more than 32 km. The flagpole is still in use, albeit a little shorter. About 1 m was accidentally broken off the flagpole when it was lowered for painting in 1973. Even today it is a difficult task to raise and lower the pole, and one can imagine the effort and ingenuity it must have taken Brent to drag it to the farm and for Embree to erect it. The lofty year-round snowcapped mountain peak clearly visible from the research station's gardens carries the name of the Brent family.



Orchard with corn cover crop; 1923.



The experimental farms flagpole.

It was about this time that Crescent Lake dam was completed. During the construction, one of the farm employees, Nelson Hardy, was killed by a falling tree. His wife, Grace, managed the boardinghouse on the station from 1924 to 1929.

The first farm Picnic was held in June 1924 and attended by more than 1200 visitors. Hunter decided to make the picnic an annual event and it became the social event of the year in the Okanagan Valley; in later years up to 4000 people attended.

In 1925 the farm experienced several major events. Probably the most important one was that for the first time the farm had an adequate water supply for its crops. Another, was the commencement of tobacco experiments to determine varieties and types best suited to the Okanagan Valley. Arthur J. Mann was in charge of this research. Variety tests were conducted at several locations in the valley because of the different climates and soil types that occur. Mann was assisted by Ted Stevens, who worked for the farm from 1922 to 1934.

On 01 August 1925, W.M. Fleming (no relation to the author), horticulturist formerly with the British Columbia Department of Agriculture at Duncan, was hired and put in charge of vegetables, floriculture, and landscape gardening. By adding Fleming to the staff, Palmer was able to concentrate his efforts on tree fruit and small fruit research. When Hunter resigned, Fleming was put in charge of animal husbandry as well, and deserves much credit for developing the stations Jersey herd. Fleming is fondly remembered for his generosity. For Christmas one year he gave his assistant a turkey and it was the first time that family had ever had a turkey dinner.

In March 1925, Ted Atkinson was hired to assist Harold Smith and A.J. Mann with planting tobacco. He decided to continue with his formal education and resigned from the farm in June of that year. He was subsequently rehired and eventually became head of the Food Processing Section. Also in 1925, W. King was hired to assist in the gardens and ornamentals. He worked at the station until 1968.



Irrigating carrots; 1925. Tobacco kiln; 1920s.

In 1926, most of the programs continued without change except for the sheep trials, which were terminated because of lack of pasture. M.F. (Frank) Daniels was hired to assist with the swine breeding program. He worked at the station until 1940. D.J. (Donald) Strachan was hired as orchard foreman in April 1926, and he held this position until 1949. Dick Schroeder and A.E. Tavendale were also hired in 1926 and remained with the farm until 1929 and 1930, respectively.

In 1927, Palmer made an important contribution to the tree fruit industry: the first recommendations for harvesting dates of apple varieties to reduce breakdown in storage. By 1927, tobacco had become an important commercial crop. Approximately 142 ha were in production. However, insects such as cutworms, flea beetles, and hornworms, and diseases were beginning to destroy the new crop. Mann also found that proper amounts of irrigation were critical for tobacco; too much or too little water could devastate a crop.

Two of the three Manning brothers who worked on the farm were hired in 1927. W.G. (Wes) Manning stayed for about a year, and C.H. (Charlie) Manning stayed until April 1942. Also, R.C. (Bob) Anderson came on staff. He worked on a breeding program to improve bacon characteristics of Berkshire swine, and remained with the farm until 1932. The gardens were rearranged in 1927 and the road was rerouted to go around the gardens and separate them from the orchards.

In 1928 the tree fruit research staff was increased with the hiring of J.E. (Ed) Britton, from Kelowna, B.C. His responsibilities included stone fruits and honey bee pollination.

Fleming began studies on soil temperature at different depths in relation to cantaloupe production and yields. Mann reported excellent yields but poor quality of tobacco crops. Commercial production of tobacco was reduced to only 22.5 ha because of low 1927 crop sales.

Aveson, the gardener, retired in 1928. On one occasion during Aveson's stay at the farm he narrowly escaped being killed. He had just planted the lavender flowerbeds, designed to form the words Dominion Experimental Farm, and had gone onto the nearby Kettle Valley Railway trestle to see what the flowerbeds looked like. While Aveson, who was deaf, had his attention focused on the overall floral design, he was nearly struck by an oncoming train. He never crossed the trestle again. He was replaced by Alfred Hornby, who held the position until 1941.

Richards, who had been in charge of Illustration Stations since 1923, left in 1928. Nat May was hired in 1928. He assisted Hornby in the gardens and Jim May, Nat's brother, who was a school boy, worked as a field hand. Nat May became head gardener when A. Hornby retired in 1941.

Nat May was very personable and stories of his actions or reactions abound. He was highly decorated in World War 1 and his heroics as a stretcher-bearer earned him much acclaim as well as the admiration of his colleagues. After the war he managed the family farm near Belfast, Ireland, for a while and then came to Canada and settled in Summerland.

May was not fond of Hornby's cacti because he and, in later years, George Riches had the dubious honor of carrying the 90-cm tubs containing the cacti, which had 7.5-cm spines, from the gardens into the greenhouse in the fall and from the greenhouse into the gardens in the spring. May and Riches were not fond of Britton's bees either, especially after being chased by a swarm of bees that had been in a hive they inadvertently dropped.

Jim May worked on the farm in the summers during his school years. Later he worked full-time at the farm on the vegetable program until he joined the armed forces in 1941. He returned in 1944 and became a technician in Plant Pathology, assisting Ewart Woolliams and later Dave McIntosh and Maurice Welsh. Otto Koester was hired in 1928 and worked on irrigation systems until 1933, when he left. A.W. Hobbs was also hired in 1928 to assist Denny on the poultry program and

remained with the farm until 1936. Walter Powers was hired the next year and assisted Hornby, May, and King in the gardens for 3 years.

In 1928, Palmer recommended optimum harvest dates for pear varieties. Also, Britton began studies on cherry breeding. He was hoping to produce an earlier variety than the now common commercial varieties Bing, Lambert, and Royal Anne. A better pollinizer for these three varieties was also needed to replace Republican. A variety named Deacon seemed promising. Fifteen cherry trees had been planted in 1906 in the orchard of W.H.F Welsh. Ten were Royal Anne (Napoleans), and the others were big and black. Britton determined that they were the Deacon variety. This was good news for Welsh. Deacon became the main cherry pollinizer in British Columbia and all the nurseries on the coast wanted budwood. It remained a major pollinizer until the introduction of Van in 1944 by Mann. Three peach seedlings, Veteran, Valiant, and Vedette, from the common commercial variety Elberta were introduced in 1928 in the Okanagan Valley. They had been developed at Vineland, Ont.

Hunter persuaded F.E. (Ted) Atkinson to work at the farm in June 1929 as a casual employee for sixty cents an hour, or \$150 per month. Atkinson immediately began working on dehydration of prunes and apricots and the year 1929 is generally recognized as the beginning of the Food Processing Section on the farm. W. (Bill) Pollock was hired to assist Atkinson, as was C.C. (Charlie) Strachan, a summer student. Pollock worked at the farm until 1934. Strachan, after graduating from the University of British Columbia, was appointed as a chemist on 15 May 1931. Atkinson became a full-time employee in September 1932.

Money for the various programs was difficult to get, and for research in those days on the utilization of cull fruit for liquor production Atkinson had to dry some fruit, sell it, and use the money (\$137.00) to help finance this program. It seems that the staff were always in good spirits in this section until a Customs Liquor Inspector discovered the loss of 91 L (20 gallons) of brandy from a locked storage cabinet, which later it was discovered had no back.

A humorous story of this era concerns Dan MacLean, a teamster from 1929 to 1931, who dearly loved the skirl o' the pipes. During one of the June picnics, he volunteered to play the pipes while marching through the gardens and past the boardinghouse. He began at 2:30 P.m. and by 7:00 P.m. he was still marching around playing the pipes. It seems, each time he passed the boardinghouse, he received a wee dram and lost all track of time.

G.W. (George) Riches was hired in 1929 as an assistant to Mann on the tobacco program. He worked at the farm until 1941. Eileen Tomlin was hired in 1929 as a stenographer. She worked at the farm until January 1943 when she enlisted in the Canadian Armed Forces.

Fred Schumann was hired as a teamster in 1929, and in 1930 J.W. (Jimmy) Russell was hired to assist in the Horticulture Section. Russell stayed until 1936. The third Manning brother, F.J. (John) Manning, was also hired in 1930 as a teamster. He replaced Dan McLean. Others who came and went during this period included M Shields, J. Phillips, J. Hannan, W. Inglis D.N. (Nels) McIntyre, F.N. Hewetson, F.E. O'Shea, A.B. Carn, and F.C. House.

During these years, experiments continued with breeding, propagating, cultural methods, fertilizing, irrigating practices, pruning, top grafting, thinning, and harvesting and storing of fruits, vegetables, and tobacco. Growers were advised of important findings through the media, by district horticulturists, or at growers' meetings. The Jersey and Berkshire herd programs and the poultry programs continued to show excellent results and the Food Processing Section was beginning to show results as well.



Planting tobacco seedlings; ca., 1929. Tobacco crop; 1929.



Poultry diseases meeting;
1931



Cutting silage;
1920s.



Portable picking machine invented by J.J.
Embree.

Meanwhile, in Plant Pathology, McLarty and staff were settled in their new building and additional staff was hired. In February 1924, Ada Burritt was hired as a stenographer. Previously, Plant Pathology, which administratively was in another branch of the department, had shared a stenographer but this arrangement proved unsatisfactory. Zoe Fudge, who had been on staff since November 1926, replaced Burritt in 1928. She resigned in 1940. In 1926, G.E. (Ewart) Woolliams joined McLarty as an assistant plant pathologist to work on vegetable diseases.

J.C. Roger was appointed to the Plant Pathology staff in 1928 to work on control of crown rot of apple trees. He also worked on control of fire blight, mildew, and physiological disorders.

McLarty and Woolliams both were away for periods doing graduate studies during this time. McLarty obtained his Ph.D. degree at the University of Illinois in 1931. He was the first of the Summerland staff to obtain his doctorate and one of the first in the Dominion Department of Agriculture.

By 1930, corky core-drought spot had become an extremely serious problem, even putting some growers out of business. In 1931 McLarty negotiated a purchase-lease agreement for the Spencer property in East Kelowna to work specifically on this problem. The Spencer property became the site for the Kelowna substation. It is to McLarty's credit that the property is now owned by the department. At the time, the departments officials in Ottawa thought the property was only being leased. They were surprised to learn 6 years later that the land was now owned by the department. This caused considerable friction between McLarty and his superiors. However, the smoke finally cleared and the substation still plays an important part in the research done at Summerland.



Sprayer; 1930s. Packinghouse; 1930s.

Also in 1931, J.C. (Jack) Wilcox was hired as an assistant to work on the corky core problem, and H.E. Trimble was hired as foreman of the Kelowna substation. The Trimble orchard in Peachland had been particularly devastated by drought spot and it was during McLarty's survey to determine the extent of the problem that he hired Trimble. T.B. (Tommy) Lott was transferred from the

Saanichton Experimental Farm to become McLarty's technician. Finally, McLarty had the human resources required to research the corky core problem.

Others who worked in the Plant Pathology laboratory during this period included T.M.C. Taylor, J. Bostock, A.T. Davidson, G.V. VanTausk, R. Hammond, and K. Stark.

Briefly, as of 1931, the personnel on strength and their responsibilities were as follows:

Hunter was the superintendent. Fleming headed the vegetable and animal husbandry and was assisted by W. May, Aitken, Daniels, and Anderson. Palmer was in charge of pome fruit and storage, and was assisted by H. Smith. Britton headed the stone fruits and bees section, assisted by D. Strachan. Atkinson was in charge of food processing; his assistants were Strachan and Pollock. Mann was responsible for the tobacco research, assisted by Riches and Stevens. Denny was responsible for the poultry program, assisted by Hobbs. Hornby was in charge of the gardens, assisted by N. May, Powers, and King. G.W. Johnson kept records and weather information. The Nelsons were carpenters, J. Embree was the mechanic, and the other employees performed clerical or general farm duties.

The superintendents residence is probably the most recognizable building remaining from Hunters time. It is now used as the main administration office. The main part of the building is 10 m x 14 m x 8 m. The approximately 195 m² main floor originally had a kitchen, living room with stone fireplace, dining room, den with stone fireplace, and washroom. A sunroom was situated halfway up a circular staircase between the main and second floors. The 173 m² second floor included the main bedroom with stone fireplace, ensuite, balcony, three other bedrooms, and a washroom. In the 149 m² basement, in addition to the utility room, steel vault, and storage rooms were the maids' quarters, consisting of a living room with stone fireplace, a kitchen, two bedrooms, and a bathroom. It stands as a monument to Hunter's ingenuity for stretching the budget and if it were still a residence would be one of Summerland's most beautiful homes.

A quote from the 1923 annual report (Hunter's first year as superintendent) demonstrates Hunters foresight. "It is probable that as the fruit industry develops in this province, storage will come to play an increasingly important part in the successful marketing of the fruit crop."

With Hunters departure in November 1931, W.M., Fleming acted as superintendent until the appointment of R.C. (Dick) Palmer in September 1932.



The first pack of sulfur dioxide-processed cherries in the Okanagan; Penticton Cooperative Growers; 1930s.

CHAPTER 4

Before and during World War II--1932-1946

Dick Palmer, who had been in England on an exchange program, returned to Summerland in September 1932 as superintendent. Participating in the exchange program with Palmer was Stephen Roger from East Malling Research Station. He returned to England and delighted in relating his experiences in the "wild west of British Columbia." One night he and some friends went to Penticton for a night on the town and became mired to the axles in the mud on their return trip.

One of the group had to hike back to the farm in the middle of the night and rouse an unamused teamster to hitch up a team of horses and rescue their stranded vehicle. He related many more such experiences in those early years when he visited Summerland in the 1960s.

Very little hiring, construction, or changes to programs took place for the next few years because of the depression and the outbreak of World War II. Probably the most significant construction was the pumping system from Okanagan Lake in 1933. The system had two pumps. One was a two-stage 112.5-kW (150-hp) pump, located at lake level, designed to deliver 84.9 L/per second to a head of 100 m, and the other was a one-stage 30-kW (40-hp) pump, located on the bench, to deliver 56.6 L/per second to a head of 100 m. These capacities enabled the station to irrigate the experimental plots with 4000 m³ per season. The farm now had ample water to conduct experiments and was not dependent on the Municipality of Summerland for its irrigation water. The only other major construction was an addition to the boardinghouse in 1939-1940, which could now accommodate 35 people.

During the early part of this era, several discoveries were made and many problems solved. Probably the most significant of these was the solution to the drought spot-corky core problem. Drought spot-corky core is an apple disorder, characterized by russetting, spotting, pitting, browning of the core tissue of the fruit, shoot die-back, and in severe cases, death of the tree. Several factors such as water stress, pruning practices, and infectious diseases were suspected as the cause of this disorder. A steering committee consisting of Palmer and McLarty from Summerland, and district horticulturists Ben Hoy from Kelowna, Maurice Middleton from Vernon, and Bob Murray from Penticton was set up, and a search for the cause and a cure was under way. The Kelowna substation was an excellent place to conduct these experiments because the trees were 20 years old and showing severe drought spot symptoms.

McLarty determined that the cause of drought spot was not a transmittable disorder. His initial survey of affected orchards, including comparisons of various horticultural practices, resulted in no clear evidence of the cause. An observation that drought spot did not occur near one grower's house, whereas the rest of the orchard was severely affected was to have meaning in retrospect.



Clydesdale horses. *Left to right: Bessie, Lorna, and Sport; 1930s.* New pumping plant; 1934.

Various other leads failing, McLarty and his team of Wilcox and Trimble investigated the possibility that the symptoms were caused by a mineral deficiency. They systematically applied solutions of various mineral salts into 1-cm holes bored in the trunks of affected trees. They determined that boron was the deficient element and by 1935 recommended its application. Continued research determined that soil or foliar application of the deficient element worked as well as if not better than trunk-boring application, which led to the recommendation of a blanket treatment of borax to all orchard land.

This discovery stimulated business at the 20 Mule Team Borax Company, as carload after carload of borax was ordered by Okanagan Valley growers. A representative from the company visited the growers to find out why borax was being used in such huge quantities.

An interesting sidelight to the story is that the solution to the problem lay camouflaged in McLarty's initial survey, namely, the orchard that did not have problems with drought spot near the house. That grower's wife had been pouring the wash water around the trees near the house and had

been using 20 Mule Team borax for her laundry. Had McLarty realized what was happening he would have solved the problem many years earlier.

Maurice E Welsh, a student assistant hired in the summer of 1935, fondly recalls the cries of joy resounding through the hills of East Kelowna when it was determined that lack of boron was the cause of the problem and that a simple application was the cure. McLarty's discovery that boron is an essential minor element for plant nutrition earned him worldwide recognition, although the credit for the discovery had to be shared with researchers in Australia, who were accorded priority of publication by a matter of only a few weeks.

A seemingly unrelated problem was occurring in Washington State about this time. Vegetable growers in Washington, just south of the Trail Cominco smelter, were having severe problems with their crops. They had launched a multimillion dollar lawsuit against Cominco, claiming that effluent or air pollution created by the smelter was responsible for the damage being done to their crops. The National Research Council (NRC) sent a team of researchers to the area to investigate. The Food Processing laboratory on the Summerland Experimental Farm was used by the NRC researchers for their analyses. They determined that boron deficiency was also causing the problems experienced by the Washington vegetable growers.

Research continued with mineral nutrients, and optimum amounts and application procedures were worked out. Other mineral deficiencies were also shown to exist such as manganese, magnesium, and zinc. Toxicity levels were also determined. Most of this type of research was conducted at the Kelowna substation by Wilcox with Trimble's assistance. In 1936, Trimble was replaced by Spencer Dyson, who stayed until he joined the Canadian Armed Forces in 1943. Mel Bailey was transferred from Summerland to Kelowna to look after the substation during Dyson's absence. Bailey worked for the station from 1940 to 1949, mostly as an assistant carpenter. Dyson returned in 1948 and worked at the substation until he died in 1958. He was replaced by Leif Elvedahl.

During this period McLarty and Roger also worked on crown rot, mildew, and scab. Woolliams did research toward a cure for apple scab and several vegetable diseases. Viral diseases were of little consequence in the fruit-growing districts until 1932 when mottle-leaf of sweet cherry was discovered near Nelson, B.C. Tommy Lott was assigned to study this disease.



Soil sterilizer; 1940s.

A chemist, Irving Smith was seconded to the Plant Pathology laboratory about this time. He resigned and was replaced by Cyril Woodbridge in 1935. Also in 1935, M.F Welsh was hired as a student assistant for the summer months. In November 1935, Roger died suddenly. He is fondly remembered for his admonishments to summer students when they grumbled about the work required of them. One of these admonishments was "And furthermore we'll make a man of you my son." He was replaced by R.E. Fitzpatrick, who was the only plant pathologist with indeterminate status appointed during the years 1926-1946 within the department. He left Summerland in 1946 to establish the Plant Pathology laboratory on the University of British Columbia campus at Vancouver. He was appointed officer in charge and later became director of the Vancouver Research Station, an appointment he held until his retirement in 1971.

In 1938, Philip Salisbury was hired to work on vegetable diseases with Woolliams. He left in 1939 and was replaced by Frances Mellor. She transferred to Vancouver in 1947 and teamed up with Fitzpatrick to work on virus diseases of strawberry.

J.C. Wilcox was transferred from Plant Pathology, under McLarty, to the experimental farm, under Palmer, in 1937. He continued his work in soil and plant nutrition and became particularly interested in irrigation. The year 1937 is generally recognized as the beginnings of the Plant Nutrition, Soils, and Irrigation Section of the research station.

Some of the projects undertaken at this time included the determination of nutritional factors affecting apple yields involving soil, shoot, and root analyses, orchard fertilizer tests to establish nitrogen, phosphorus, and potassium recommendations, soil erosion studies, cover crop tests in orchards, irrigation water analyses for pH, total salts, phosphorus, potassium, calcium, and magnesium and, beginning in 1945, sprinkler irrigation studies. Wilcox also completed his doctorate degree during this time. Until the end of the war Wilcox had several assistants, including Allan Knight (1939-1944), Joy Walker (1943-1946), and John James (1945-1947). In 1939, Cyril Woodbridge joined the Canadian Armed Forces.

In 1940, Welsh, who had been working as a summer student and concentrating his efforts on the crown rot problem, isolated the pathogen that causes the disease. He completed his doctorate in 1942, using his research on the crown rot problem as his thesis subject, and then joined the Canadian Armed Forces. Mellor and Fitzpatrick continued with the crown rot studies.

Tommy Lott continued working with stone fruit virus diseases and showed that little cherry, a virus disease, was sap transmissible. Unfortunately, because of the war no funds or human resources were available to attempt to contain the disease and by 1945 it had destroyed the cherry industry in the Kootenays and threatened to spread to the Okanagan Valley.

During the war years, the staff members of Plant Pathology who had not joined up were busy aiding the vegetable seed industry, which had become a top priority due to the war. They trained inspectors and conducted field inspections to ensure that these crops were free from disease.

Work in animal husbandry under Fleming continued. Through the station's efforts, a strain of Berkshire swine that exhibited excellent bacon characteristics was developed. Demand for this black-skinned pig was low because the market demanded white pigs. However, white pigs suffered from scald or sunburn in this area and as a consequence the program was dropped in 1935.

Work with chickens showed that the White Wyandotte breed had high egg production, was disease-free, and had desirable body conformation. In 1940, Denny died suddenly and research on poultry was discontinued.

The Jersey herd continued to lead the way in Canada for butterfat production, winning several awards. Calgarth Starlight and Sunflower Flora were the winners of most of the awards and as a consequence every cow in the herd was a closely related descendant of these two outstanding performers.

In 1938 Calgarth Starlight was the world's champion lifetime butterfat producer with 60 620 kg of milk and 3518 kg of butterfat. There are many aspects to the competent care of a dairy herd. The outstanding production records of the Summerland herd were due in no small measure to the unflinching care and constant vigilance of the herdsman, Jimmy Aitken, and his assistants.



Hog barn, south of railroad crossing; 1930s.

One of Aitkens assistants, Frank Daniels, had nine children. When the war started, Daniels was determined to join up, even though a parent was not permitted to do so if there were more than five children in the family. He only declared five and joined up in 1940. N. May, the service officer for the Royal Canadian Legion, had a difficult time looking after Mrs. Daniels and her nine children because their allowance was only half of what it should have been. N. Doug Younghusband was hired as an assistant herdsman in 1942.

During the period 1933-1945 Fleming continued his work with vegetables. He and his capable foreman, W. May, were aided by the addition of Cedrick Hornby, who came on staff in 1938. Fleming also continued his work with forage crops and field husbandry, and by 1938 had surveyed and laid plans for irrigating a large area south of the main area of irrigated land on the farm. With the outbreak of the war the funds earmarked for this project were used elsewhere, and this area became known as the promised land.

Fleming and staff determined optimum varieties and conditions for growing cantaloupe and tomato as well as for growing other vegetables. They also did extensive studies on ornamental flowers and shrubs to determine the types that were suited to the Okanagan Valley climate.

With the outbreak of the war, Hornby joined the Canadian Armed Forces. His absence interfered seriously with the vegetable investigations. However, progress was made with variety testing, irrigation, and nutrition requirements. The researchers demonstrated the need for crop rotation and application of additional amounts of nitrogen and boron to vegetable crops in this area. They also concentrated their efforts on foundation seed production, which entailed the production of certified seed for the Dominion seed production program and verification trials whereby samples of all stocks were grown and checked for trueness to type.

There was a significant change in the ornamentals area in 1941 with the retirement of Alfred Hornby. His son, Charlie, worked briefly at the station.

Alfred Hornby was replaced by his wellknown assistant, Nathaniel May. May was required to keep the children and pets of the staff who worked on the station out of his gardens, in particular the Palmer's two sons and their dog. As a consequence, May and Mrs. Palmer were not always on the best of terms. On one occasion, Mrs. Palmer requested that May plant a climbing vine around the trellis archway entrance to her garden. He willingly obliged and planted zucca melons.

It was in 1933 that Mann showed his true professionalism. Although he had attempted for many years to develop the exacting culture methods, varieties, and curing procedures necessary to produce high-quality tobacco, he determined that the Okanagan Valley does not have a climate suitable for growing tobacco. Sad though this was for Mann, it probably turned out for the best because he then concentrated his efforts on fruit breeding. In 1935 F.W.L. Keane was hired as his assistant and it was during this period that the sweet cherry vari[e]ties Sue, Star, Sam, and Van were originated. The name Sam is an acronym for Summerland Arthur Mann.

Probably the most important apple variety introduced ever in British Columbia is Spartan. It was introduced in 1936 for limited commercial trial. Spartan is a hybrid of McIntosh x Newtown made in 1926 by Palmer and selected in 1934 by Mann. It was hoped Spartan would meet the urgent need

for a new variety that had the hardiness and high quality of McIntosh, the vigor and productivity of Delicious, and the long storage life of Newtown.

From 1933 to 1936 work was done on seedling and vegetatively propagated rootstocks by F.N. Hewetson. He also worked on disease-resistant and size-controlling rootstocks as well as the Malling strains. He originated the owl's nest, which is a hole dug in the soil adjacent to a tree and lined with a glass partition to enable observation of root growth. He later became a Professor of Pomology at the University of Pennsylvania.



Laying out tomato plots; mid-1930s.

Palmer concentrated his efforts on developing simple, reliable maturity tests. He found that the usual testing methods, seed and skin color, were not reliable for some varieties. He successfully measured the flesh firmness of all varieties of pears by using a mechanical pressure tester. He also found that soluble solids, mainly sugar, were good indicators of maturity for cherries and prunes and that skin color was a good indicator for apricots and plums.

During this time Britton confirmed that Vedette, Valiant, and Veteran, three varieties of peaches developed at Vineland Research Station, were suited to the Okanagan Valley climate.

In May 1933 D.V. (Don) Fisher was hired on a temporary basis. He worked at the farm in this capacity until October 1936 when he was officially appointed as a fulltime employee. Fisher continued his education while working at the farm, obtained his Ph.D. degree in 1941, and continued a long career of research in pomology here.

Young Fisher was an active type of person and tended to walk up and down the boardinghouse stairs with more exuberance than was deemed necessary by some of his fellow boarders. One night while Fisher was away in the town the hinge pins on his bedroom door mysteriously disappeared as well as the nuts and bolts that held his bed together. One of the staff, who later became the first director, was suspected, but nothing was ever proven.

Entomology in the Okanagan Valley goes back to 1919, when E.R. Buckell established the Dominion Entomology Laboratory at Vernon to study insect control in the southern interior of British Columbia. His staff included E.P. Venables, A.A. Dennys, and A.D. Heriot. The major apple insect problem at that time was woolly apple aphid and its connection with perennial canker, a serious disease caused by a fungus that affects apple trees. They showed that the aphid was a different strain from those in eastern North America and that perennial canker could only develop in tissue that had been fed upon by woolly apple aphids. Venables then introduced a parasite that controlled the aphid and thus perennial canker was reduced to a minor disease.



Harvesting and grading Red



An owl's nest--a hole dug in the soil adjacent to a tree and lined with a glass partition to enable



Machine shop and tools;
1930s.

Delicious apples. Don Fisher observation of root growth; 1932.
on left; 1933.



Plow used for marking out irrigation furrows in the orchards; 1930s.



Apple juice filler designed at Food Processing laboratory--one of the steps in establishing the apple juice canning industry.



Dr. Klink, president of University of British Columbia, talking to group; 1930s

In 1939, Buckell transferred to Kamloops Research Station and James Marshall was appointed in his place. Major problems in the 1930s and 1940s were codling moths, mites, leafrollers, and several other pests that threatened the development of the fruit industry. Marshall and his staff introduced effective chemical control programs, and much of the credit for the survival and expansion of the tree fruit industry is due to their efforts. One of the major problems in the early 1940s was excessive arsenic residues on apples. The United States banned the sale of British Columbia apples because of unacceptable residues of arsenic. Marshall and his staff solved the problem by modifying the spray program and recommending that the packinghouses be equipped with brush-buffer fruit wipers.

W. (Billie) Atkinson was hired in 1933 as a painter. He worked at the station until his retirement in 1956.

Others hired during this era included the following: E. Beeman (1935), who assisted in the poultry department; W. Davis (1938), who started with the farm crew and later transferred to Entomology, where he remained until his retirement in 1973; E.R. Ganzeveldt (1936-1943); E. Johnson (1933-1940); K. Nash (1933-1938); J.S. Mott (1941-1945); G.R. Thorpe (1936-1942); W.R. Blagbourne (1943-1946); V. Parker (1933-1944); J.E. Wright (1944-1963); S. Harris (1936-1939); E. Wheeler (1940); and F.J. Baines, F. Twiss, J. Dee, J.B. McQuaig, and P.H. Bovar (1943-1945). Summer students included R.M. (Richard) Palmer, son of Dick Palmer; H.J. (Harry) O'Reilly; I. Greenwood; and L. Smith, son of farm foreman H. Smith.

In 1940, T. (Clarke) Wilson, one of the first employees on the farm, retired. He was replaced by Harold Smith, who had been employed at the farm in 1914, served in the military during the war, returned to the farm in 1918, and had been orchard foreman since 1924.

Some of the staff members who resigned or retired before the end of World War II included O. Gustavson, A.W. Hobbs, O. Koester, K. Nash, J. Russel, F. Schumann, A.E. Stevens, G. Thorpe, G. Riches, and C. Manning.

John and Charlena Manning retired in 1944. John Manning had worked as a teamster and Charlena Manning had managed the boardinghouse since 1934. Charlena Manning was replaced by Mrs. Fletcher.

The office staff underwent changes during these times as well. One of the original staff members, George W. Johnson, retired in 1944 and was replaced by Allan Calvert. Eileen Tomlin joined the Canadian Armed Forces in 1942, and was replaced by Dorothy Butler. Other office staff included Florence Stark (1939-1942) and Evelyn Oakes (1942-1946).

As mentioned earlier, in the 1930s a group of NRC scientists was offered the Food Processing laboratory in which to do their research. These scientists were a great help to Atkinson and his staff. Even though working conditions were crowded at times, the NRC scientists brought with them the latest analytical equipment as well as the expertise required to operate it and willingly assisted with any analytical problems the station might have had. One of the offshoots of the work done at Trail by the NRC scientists was the development of a method for scrubbing sulfur dioxide from the smelter stacks and converting it into ammonium sulfate fertilizer.



Picnic tent; 1930s. Apple cider being sold at picnic; 1930s.

The staff in the Food Processing Section continued research to find uses for lowgrade, or cull, apples: juice, cider, syrup, glazed chips, and cider vinegar were considered possibilities. They continued to assist commercial canners, jam makers, dehydrators, and wine makers with new processes and product development as well as developing recipes, using Okanagan Valley fruit. Improvement in the technique of processing cherries made possible the manufacture of a superior glazed cherry at comparatively low cost.

In 1934 Pollock resigned and was replaced by Fred Schumann. Schumann worked at the farm until his resignation in 1937. George Strachan worked for Atkinson from 1937 until 1940, at which time he joined the military. He returned to the farm in 1946, and transferred to Lethbridge Research Station in 1947. He later became a well-known researcher in New Zealand, and a research center there is named after him. F.E.G. (Frank) Plunkett was hired in 1940 to replace Strachan. Before joining the department, Plunkett operated a coffee shop at the Summerland ferry. It was while chatting with Atkinson on one of his many trips that Plunkett was offered the position. He remained with the farm until he retired in March 1959. Atkinson continued his unusual style of interviewing prospective staff when he hired Adrian Moyls in the rotunda of the Georgia Hotel in Vancouver 1943.



Jersey judging; ca., 1930s.



Flume tarring; 1930s



Food Processing staff; 1945. Left to right: A. Moyls, F. Plunkett, K. Lacey-Strachan, F.E. Alkinson, G. Strachan.

CHAPTER 5

Post war years--1946-1959

After World War II, research attitudes were markedly changed by the institution of an educational program whereby (1) veterans could take university courses under the Department of Veterans Affairs reestablishment program, and (2) professional employees of the department could take postgraduate courses and receive half their salary while doing so. This profoundly affected the research being done, because the staff had contact with many more people in their particular field

of study than had been possible before. Most of the research staff hired after the war took part in these programs.

Responsibility for Flemings work with animal and field husbandry was assumed by R.S. Noble in 1946. He resigned in 1948. It was about this time that the station became completely mechanized and Noble purchased the last two Clydesdales on the farm when he resigned.

The vegetable program was taken over by Cedrick Hornby when he returned from the war. He had been Flemings assistant before joining the forces. Hornby resigned in 1950.

The year 1945 saw the beginning of many changes at the research station. They were brought about not only by the end of the war and the hiring of many more staff members, but also by the death of W.M. Fleming. He had been in charge of the vegetable, forage, animal, and field husbandry programs in addition to being the assistant superintendent, irrigation supervisor, fire marshall, and chief surveyor on the station for many years.



First Entomology laboratory; ca., 1946.



Entomology laboratory; 1956.



Entomology staff; 1949: *Front row:* M. Proverbs, J. Marshall, J. Smith, C. Morgan. *Back row:* R. Downing, G. Lewis, Miles, I. Carne.



Calgarth Starlight, world champion Jersey cow, and J. Aitken, head herdsman.

J.E. (Jim) Miltimore took over the animal science and forage crop projects and continued work with the Jersey herd. Fertilizer requirements of forage crops were determined in the 1950s in cooperation with Jack Mason in the Soils Science Section.

One of the major goals of the dairy program was the provision and distribution of high-quality Jersey breeding stock. With the advent of artificial insemination this program was no longer necessary. By the mid-1950s the animal husbandry program concentrated on bloat research. One of the procedures used to study this problem was to make a permanent, closable opening, known as a fistula, in the side of a ruminant animal in order to facilitate sampling of the stomachs contents. The fistula was usually made from plastic and many visitors still remember these animals as "cows with glass stomachs." This procedure made it possible to obtain considerable new information that permitted development of recommendations for control of bloat in cattle grazing alfalfa. The procedure is still used by many research centers throughout the world working on ruminant nutrition.

In May 1951, Lloyd Uzick joined the Animal Science Section staff and in 1952 chief herdsman Jimmy Aitken retired. He was replaced by his assistant Doug Younghusband, who stayed until 1966. In 1956 Jack Jardine was hired as an assistant and remained at the farm until 1963. Teunis Kwak also assisted during this time period.

Others who worked in this section included Gunnar Rasmussen, who started in 1954 and worked with the farm crew until 1976, John MacNutt, Bert Lukey, W. Lagaden, Andy Senedick, and Bruce Younghusband.

Pete Pearson was hired in 1946 to assist W. May in the Vegetable Section, and C.L. Wright was added to the staff in 1949. Lyall Denby was hired as a summer student in May 1950 and became the successor to Hornby in September of that year.

Denby was a city boy and had no idea of the problems he would encounter in carrying out field research. This situation was complicated by the retirement of Billie May in 1951. However, Art Simpson was hired to replace May and Denby continued the vegetable studies. An example of his problems involved irrigation. Denby was dedicated to his research and often went out at night to move irrigation pipes. One dark night, he became lost while driving his Model A car in the fields, and knocked over a sprinkler hydrant. The car came to an abrupt halt over the hydrant and a vertical torrent of water blew the floorboards out of the car. Denby, being new at the job, did not know the location of the shut-off valve and had to climb up the hill, meekly tap on foreman Harold Smith's door, and ask for help. Denby was embarrassed by the roar of rage that ensued as everyone living on the farm became fully aware of what had happened.

Hendrick Keuning, Percy Willis, and Walter Greber were taken on staff to supplement the existing staff of Simpson, May, King, and Wright.

During these years research continued toward developing recommendations for varieties of sweet corn, cabbage, carrot, onion, watermelon, pepper, and eggplant suited to the Okanagan Valley climate. Verification trials of seed varieties, yield trials of tomatoes, and tests of newly introduced ornamentals were also done. A breeding program was initiated with the objective of developing strains of superior varieties of tomatoes and peppers resistant to verticillium wilt. An example of the size of the vegetable program is that in 1954, 118 vegetable varieties were tested to determine characteristics of special merit for production in the Okanagan Valley area.

The Horticulture Section also underwent several significant changes after the war. Don Fisher returned to resume his projects. In 1948 Ed Britton retired and was replaced by S.W. (Stan) Porritt. Fisher and Porritt worked together on problems associated with harvesting and storing tree fruits. In 1950 Earl Edge was hired as an assistant. Palmer, who had been the superintendent since 1932, found less time for tree fruit research as the administrative responsibilities and staff increased, and since the war he had concentrated his efforts mainly on ornamentals. On 26 March 1953, Palmer did not return to the superintendent's office for lunch and upon investigation, John Baillie, the accounts

clerk, found him dead in the vault in the office basement. Palmer's tragic death saddened people associated with agriculture throughout Canada. He is remembered not only for his association with the Summerland Experimental Farm for 33 years, but also for his vigorous work on tree fruit variety development, improved orchard husbandry, and his keen interest in ornamental horticulture throughout the valley. The Palmer Memorial Research Grant, the Palmer Memorial Scholarship fund, and the Palmer Memorial Trophy were established at the University of British Columbia in his honor. Richard Claxton (Dick) Palmer was the son of R.M. Palmer, onetime Deputy Minister of Agriculture for British Columbia. His brother, E.F. Palmer, was the director of the Ontario Horticulture Experimental Station at Vineland. The Palmers were dedicated agriculturists.

Palmer's replacement as superintendent was T.H. (Tom) Anstey, who had been a senior horticulturist at the Agassiz Experimental Farm since returning from the war in 1946. He assumed the superintendent's administrative duties and the supervision of the ornamental research. Replacing Palmer would have been a challenge for anyone. Anstey met that challenge admirably. He graduated from the University of British Columbia (B.S.A., M.S.A.), where he acquired a sound knowledge of British Columbia agriculture, prior to joining the forces. After the war he took

refresher courses at East Malling and Long Ashton before returning to Agassiz Experimental Farm and serving as a horticulturist from 1946 until his appointment as superintendent at Summerland in 1953.

Another major change in the Horticultural Section came when Mann retired in 1955 after 34 years of service. His assistant, Fred Keane, transferred to the Plant Pathology virus orchard, and the tree fruit varieties and breeding programs were combined with harvesting and storage to form the Pomology Section.

Karlos Lapins, who had worked with Mann as a technician since 1950, was promoted. He became responsible for the fruit breeding program and was assisted by Hans Schmid, hired in 1956. G.M. Weiss came on strength to conduct studies on propagation, hardiness, and rootstocks. R.G. Killick, who had been employed at the farm since 1953, became Weiss's assistant.

During this period the Pomology Section was concerned with three major research areas. Fisher, as head of the section, retained responsibility for stone fruit varieties and tree training. In 1957 F.M. Trussell was hired to assist Don Fisher. Lapins was concerned mainly with the breeding program. He initiated an artificial freezing technique for screening new varieties for frost hardiness. Another important aspect of the work was an attempt to create new plant varieties by using colchicine or irradiation with a Cobalt 60 source. He found these treatments to be too harmful to tree buds and they have been discontinued. An interesting aspect of the program at this time was the breeding of sweetkerneled apricots to be processed as a substitute for almond paste. Weiss was concerned with rootstocks, hardiness, nematodes, deer repellents, summer pruning, and mist propagation.

Research by Fisher and Porritt on harvesting and storage included defining the relationship of maturity of apples at harvest to quality and storability; maturity at harvest of pears and the resulting canned product quality; controlled atmosphere storage; precooling of soft fruit before packing to improve quality; storage treatments and their relation to flesh breakdown; storage cooling rates; chemical dips to increase storage life; chemical and mechanical thinning trials; "stop-drop" sprays; effects of various chemicals on maturation date and fruit size; and determining the cause of Spartan breakdown.

These different research areas were not delineated by hard and fast divisions. Researchers had an interest in all the projects, with the objective of better, more efficient orcharding. As an example of the magnitude of the program at this time, at the end of 1957, 638 varieties of different fruits were under test at the Summerland Experimental Farm.

Three new varieties were introduced to the Okanagan Valley in 1957. These were Fairhaven, a firm, early, freestone canning peach; Triogem, a peach with similar characteristics to Fairhaven but more red color in the skin; and Tylemans Early Worcester, an early apple whose name was later changed to Tylemans Red. Of the three, only Triogem did not become an important variety.

Over the years the experimental farm had supplied growers and nurseries with bud and scion wood of new varieties on introduction. By 1957, when 161 000 buds were distributed, it was determined that the station could no longer continue this practice. Fred Keane had been looking after this program until 1955, at which time the responsibility fell upon Harold Domi. When Domi resigned, Bob Killick replaced him. During these years, foundation plantings of virus-indexed clones of desirable fruits were planted and budwood distributed from them. In 1962, the British Columbia Fruit Growers' Association took over the budwood propagation and distribution program and hired a full-time manager, Harold Domi. In 1975, Domi returned to the research station.

The budwood orchard, as it is now known, though not administered by the research station, is housed on the station and still serves Okanagan Valley orchardists.

During this period, Denby had continued discussions with the superintendent, Anstey, in attempts to get his facilities improved. Finally it was agreed to upgrade them under a public works repair program. Under Denby's direction, repairs undertaken to the original building proceeded as follows: a new foundation was constructed around the old building, new walls and a roof were put up, then the old building was torn clown and presto! there stood a new building, later called Fort Denby. The auditors were su[r]prised by the existence of a new building on the farm with no construction capital outlay.

Anstey served as superintendent until 1958, at which time he participated in an exchange program with the superintendent of the experimental farm at Kentville, N.S., Charles J. Bishop. This exchange program gave both superintendents the opportunity of seeing the industry and research methods in each others areas.

Included in Palmers achievements, many of which have already been mentioned, was his founding of the farms library. The first librarian was Dorothy MacLeod who had worked for Ted Atkinson in Food Processing Section since 1947. She was appointed librarian in 1951 and held that position until 1954, when she was replaced by Elizabeth Edwards. Edwards resigned in 1959 and was replaced by J.M. Selwood.

The superintendents secretary in 1946 was Dorothy Butler, who was replaced by Jean Eddy in 1947. Eddy transferred to Entomology in 1956 and was replaced by Ruth Stoney, who held the position until 1974.

In 1949 the accounts clerk, Allan Calvert, resigned and was replaced by John F Baillie. By 1955, with the continuing growth of the station, Vivian Wolfe was hired as an assistant clerk. She was replaced in 1957 by Howard Schwab.

The secretary assigned to Food Processing Section from 1945 to 1951 was Dorothy MacDonald. When she resigned, she was succeeded by Ingrid Peterson, who stayed until 1953. Peterson was replaced by Rita Hermiston in 1953. Secretaries in Horticulture Section were Velva Wright from 1949 to 1951, Jean Skippings from 1952 to 1954, and Emily Cockell, who was hired in 1955. Cockell also handled the secretarial duties for Plant Nutrition, Soil, and Irrigation Section from 1958 to 1965, when she resigned.

The boardinghouse continued to be the center of the stations social activities. Mrs. Fletcher, who managed the boardinghouse until 1946, was replaced by Eva Meadows. Her husband, Clarence, worked as a tractor operator until 1967, when he retired. Anne Bullock operated the boardinghouse from 1948 to 1949, and her husband, John, was employed as a carpenter on the station. John Manning and his wife, Charlena, who had managed the boardinghouse from 1934 to 1944, returned to manage it together from 1950 to 1952.

Operating the boardinghouse by private contract with the constant changing of operators was troublesome and in 1952, mainly at the instigation of Lyall Denby, it became a cooperative. The residents hired a cook and assumed all administrative responsibilities for its operation. The cooperative idea seemed to work well and the residents felt they were getting better service. Hired to operate the boardinghouse were Mrs. Morgan from 1952 to 1954, Marge Harding from 1954 to 1957, and Nellie Mojelski from 1957 to 1960.

In 1946, Frank Fletcher, who worked in the Poultry Division and drove the school bus for the station, resigned and was replaced by A.H.G. (George) Ryman. With the phasing out of the poultry program, Ryman worked in the ornamentals area and continued to drive the school bus. In 1949 when orchard foreman Donald Strachan retired Ryman was promoted to this position. Harold Smith retired in 1952. Ryman succeeded to the farm foreman's position and held it until his retirement in

1984. Filling the orchard foreman's position vacated by Ryman was H.J. (Bert) Pelham, who held the position until 1973.

Bill Nelson, one of the original carpenters on the station retired in 1951 and was replaced by W. Armstrong from 1951 to 1955, W. Ross in 1956, and Frank Maddochs from 1956 to 1962. The painter Billie Atkinson retired in 1956 and was replaced by R. Wilburn. John Embree retired in 1955 and was replaced for 2 years by G. Patterson and by W. Teunion from 1958 to 1973.

The need for permanent photographic records of the stations research was becoming apparent. S.R. (Steve) Cannings, who had been working as a plant pathology technician since 1950 and was taking most of the scientific photographs for the farm, was classified as a full-time photographer. Many of the good-quality photographs appearing in this history as well as the preservation, filing, and storage of many of the older photographs may be directly attributed to Cannings.

Other employees who came during the era from the war to reorganization included Frank Carey, irrigator from 1945 to 1969 when he died; C. Mel Raham, teamster-tractor operator from 1946 to 1965; Nat Conley, 1948-1952; Ernie Derringer, 1942-1950; Ron Dixon, carpenters helper from 1957 to 1974; Reg Smith, 1947-1962; M. McKechnie and Henry Abeling, 1952-1955; Carl Radomske, 1954-1964; Gunnar Rasmussen, 1956-1976; W. Norman Shaw, 1958-1981; Cyril Stent, 1955-1959; and Sergio Bertolami, 1958-1960. C.L. (Chuck) Miller was hired as a tractor operator in 1955 and still holds the position. Aaron Sawatski was also hired as a tractor operator and he is still on staff.

The end of World War II saw the advent of sprinkler irrigation. Jack Wilcox and his team in Plant Nutrition, Soils, and Irrigation Section tackled the myriad of problems associated with this new technology. The project included testing sprinkler heads, comparing sprinkler versus furrow irrigation, and studying soil moisture conditions produced by sprinkler irrigation. His small team was soon enhanced by the hiring of J.L. (Jack) Mason in 1947 and J.M. (Jackie) McDougald in 1948. Mason had worked at the farm as a summer student prior to his full-time appointment. McDougald replaced C.L. (Clarence) Lackey, who was appointed food processing technician in October 1947. In 1950, J.L. (Jim) Brown was hired as an assistant for Mason. Spencer Dyson returned in 1948 to manage the Kelowna substation, and in June 1950 J.R. (Jimmy) Newton was hired to assist him.

M. (Max) McGibbon was hired in 1953. With assistance from Jim Brown, he concentrated his efforts on fertilizer and water recommendations for tomatoes. McGibbon resigned in 1959 due to ill health; he died shortly thereafter Jimmy Newton worked for Wilcox from 1953 until 1956, when he transferred to the Entomology Division. He was replaced by D.M. (Dave) Munn. In 1954 Jim Brown also transferred to the Entomology Division.

Other projects initiated by the soils staff included tests of herbicides around trees for vegetation control; an orchard nutrient survey (leaf analyses); determination of orchard irrigation requirements, using electrical resistance blocks for moisture determination; and phosphorus fertilization requirements at Creston, B.C.

Construction of the new soils building was completed in January 1958 at a cost of \$240 713. It was so designed that with future additions it would be the nucleus of a larger building complex for all disciplines on the farm. The building also housed the animal husbandry and chemistry staff for a time, until their new building was completed in 1960,

After the war, as with other sections, a great increase in staff of the Food Processing Section occurred. Charlie Strachan, who had spent the war years in Ottawa, Ont., and Kentville, N.S., working on special food preservation techniques for the war effort, returned to Summerland to work in the section until July 1956, when he was appointed superintendent of the Morden Research Station. Clarence Lackey was hired in 1948 to assist Moyls and Strachan. Also in 1948 the food

chemistry and food microbiology units of the Science Service were established at Summerland and were housed with the Food Processing Section, This move saw the addition to the staff of microbiologist John Bowen in 1948, chemist John Ruck in 1949, and Eric Smith and John Kitson in 1950. In 1952, Dorothy Britton was hired as a home economist to operate the newly constructed test kitchen. Dugal MacGregor replaced Charlie Strachan when he became the director of the Morden Research Station.



Creston substation, constructed in 1957.



Food Processing staff, 1953: *Back row:* J. Bowen, C. Lackey, J. Ruck, F Plunkett. *Front row:* F.E. Atkinson, C. Strachan, A. Moyis, R. Hermiston, F Corbitt.



Dorothy Britton and Adrian Moyls assessing fruit pie fillings.

The staff of the Food Processing Section prided themselves on the spirit of cooperation that existed between them and the industries they served. That spirit of cooperation still exists. During this era the section's close association with private industry, including the grower-owned cooperatives, resulted in many problems being solved. Two of the major hurdles overcome were the development of quality control methods used to determine the amount of vitamin C in clarified apple juice and the technological development of commercial production of opalescent apple juice in Canada. The Food Processing Section also became closely associated with the Engineering Section of the station in the design and construction of new types of food processing equipment. Much of the equipment used in the pilot plant was constructed on the farm, a tribute to the ingenuity and cooperation of the staff.

Many projects were worked on by the Food Processing Section, including the following: heat penetration of tomatoes during the canning process, to ensure sterilization; retention of color in canned cherries; preparation of candied fruit, canned fruit pie fillings, and canned pickled cherries; chemical analyses of many food constituents; development of vacuum chambers for canning; determination of optimum maturity of various fruits for canning; utilization of gas-fired equipment; lye peeling of peaches; development of fermented apple cider; preparation of canned candied apples; storage tests of fruit pie fillings; apple juice extraction tests; spin cooling of jams; preparation of apricot-orange-apple drinks; establishment of color standards for sweet cherries; determination of an optimum pH range for canned tomatoes; preparation of cooked plums; different formulations of fruit cocktail; preparation of apple-cranberry sauce and concentrated apple juice; blends of apple juice (using different varieties); tests of yeasts; vacuum jams; pickles; storage tests of commercially produced cider; mincemeat spoilage; apple butter; tree fruit wines; and recipes for using Okanagan fruits.

After World War II, the headquarters of Tree Fruit Entomology was transferred from Vernon to Summerland. By that time, Dennys had died and Venables and Heriot had retired. At first the laboratory was located in a slightly remodeled general store on Lakeshore Road in Lower Summerland. The staff after the war consisted of James Marshall, head; C.V.G. Morgan, biology of orchard mites; M.D. Proverbs, biology and control of stone fruit insects; D.B. Waddell, development and assessment of orchard spray applicators; and R.S. Downing, chemical control, with emphasis on orchard mites. A chemistry group was also added with J.M. McArthur and K. Williams. Their research included determination of spray residues, characterization of spray deposits from orchard sprayers, and analysis of human blood for pesticide accumulation. Technicians included E. Brinton, chemistry; G.F. Lewis chemical control; and G.D. Halvorson, sprayer evaluation. The stenographer was Elizabeth Theed.

In the years from 1946 to 1959, there were a number of changes in research emphasis and in the staff. Marshall became interested in efficient spray application and worked to develop a sprayer that would provide effective coverage without the use of large volumes of water. His work led to the commercial manufacture and use of low-volume sprayers, which were unique to British Columbia. To assist with this work Al McMechan, an engineer, was appointed to the staff and Gordon Halvorson was assigned to the sprayer development project. Wesley Davis was transferred from the farm crew to assist Marshall with the work on spray application.

One of the most important projects undertaken during those years was the codling moth sterility project. The idea came from the success of the U.S. Department of Agriculture's screwworm eradication program and M.D. Proverbs was placed in charge of the research on control of the codling moth by the release of sterile males. He was assisted by Jim Newton.



D. MacGregor, J. Bowen, T. Atkinson, and E. Smith testing cider.



Apparatus designed to test efficiency and spray patterns of concentrate sprayers.

Walter Wilde was appointed to investigate insect vectors of little cherry disease at the Creston substation. Don Logan was the technician appointed to assist him. During this period, Waddell left Summerland to accept a position in Ottawa and Pat Pielou was appointed to work on aphid biology and control. Bernice Carty was added to the staff as a technician for Pielou.

In those days, efforts of the Entomology Section were not restricted to insects. Jim Marshall's interest in orcharding in general led him to champion several operations not in the field of entomology. Among them were spray thinning, high-density planting, and the use of bins instead of boxes for harvesting. These three operations are now standard practice in Okanagan Valley orchards. In 1948 a new laboratory was built on Summerland Experimental Farm land on the shores of Okanagan Lake. The same laboratory with some additions and renovations is still the headquarters of the Entomology group of the Plant Pathology-Entomology Section.

After the war a major concern of the Plant Pathology Section was the spread of virus diseases. Because of the lack of funds and human resources for research on their control during the war, several virus diseases had spread almost unchecked. One in particular, little cherry, which first showed up in 1933, had destroyed the cherry industry in the Kootenays and its spread to the Okanagan Valley was feared. As a consequence, in 1946, Maurice Welsh and Harry Andison were sent to Creston to establish a joint plant pathology-entomology research program. They rented a two-room apartment for their headquarters and some land for their experiments, and acquired the equipment and supplies needed to conduct their studies by any available means. The only official equipment they had was a microscope that McLarty had purchased in 1921. In their first summer at Creston their rented apartment was destroyed by fire. Later, the department provided them with a 7-m trailer, which served as an office, a laboratory, a kitchen, and as sleeping quarters. This was the beginning of the Creston substation and served as such until 1957, when the department erected an office-laboratory building and greenhouse.



Entomology staff;
1958.



Bill Wotton, Bob Rogers, and Harold McLarty in virus station greenhouse;
1956.

Welsh and Andison's studies were fraught with problems. In particular, to do research on little cherry disease virus-free trees were necessary and there were very few of these left in the area. However, they worked on the following problems: Was little cherry disease transmissible to other fruit? Was it harbored in wild cherries? Would any chemical treatment reduce symptoms? Were there any resistant cherry varieties? How was the virus transmitted? They determined that only cherries were affected, and that wild cherries and the ornamental Japanese flowering cherry harbored the disease. Andison originally suspected the apple mealybug as a carrier but a parasite had been released in the Kootenays to control apple mealybug and when Andison set up experiments the apple mealybugs always died.

Andison left the Plant Pathology Section to become superintendent of the Saanichton Research Station and was replaced in Creston by D.B. (Dave) Waddell. In 1948 J.M. Wilks was appointed student assistant to Welsh, furthered his education during the winter months, and replaced Welsh at Creston when Welsh returned to Summerland in 1954. Waddell returned to the Summerland entomology laboratory and was replaced by W.H.A. (Walt) Wilde.

Also working on field crops at Creston in the 1940s was Gordon Thorpe, who was replaced by Frank Chapman from Lethbridge Research Station in 1946. He was assisted by A.B. Cole. Other work done at Creston included research on apple scab, brown rot, coryneum blight, spray work, and pesticide trials with insects.

Soon after World War II it was realized that horticulturists who were trying to propagate and supply disease-free stock to the orchardists could not grow their plants next to areas where virologists were busily working with diseased trees. To overcome this problem an isolation orchard was established about 3 km south of the main farm. Tommy Lott was put in charge of laying this out with the assistance of Bill Smith, who worked at the virus orchard from 1949 to 1978. The winter of 1949/1950 was one of the most severe on record; Okanagan Lake completely froze over. The farm suffered severe tree loss and all the newly planted trees at the virus orchard had to be replaced.

In 1947 a summer student in the Horticulture Section, D.L. (Dave) McIntosh, was encouraged to study pathology and in 1948 he replaced Fitzpatrick, who had transferred to Vancouver.

Office staff of Plant Pathology Section in the period 1946-1959 included Gladys Beeman, Doreen Adams, Florence Agur, Marion Woodbridge, Molly Pelham, Anne Aiken, Joan Zimmerman, and Pearl Reid.

Other staff members included Jim May, Harold Burdon, Anne Carney, S.R. (Bob) Morgan, Bill Wotton, Alf Baron, Steve Cannings, Bob Rogers, Atlee Hanson, Tom Racicot, Stan Skipplings, and Fred Keane.

As mentioned earlier, Welsh returned to Summerland, and took up the duties of officer in charge, as McLarty's health was failing. C.G. Woodbridge resigned in 1954 and was replaced by his assistant J.A. (Jack) Stewart. McLarty retired in 1956 and was replaced by L.E. Lopatecki.

From 1946 to 1959 the Plant Pathology laboratory was concerned with many diseases, the most important ones probably being little cherry and apple scab. Fortunately, little cherry had not yet spread to the Okanagan Valley. Insecticidal sprays had decreased its spread, which lent credence to the theory that there was an insect vector involved. Another disease, crown rot, was occurring more commonly in apples and was also increasing in stone fruits. Studies were done on varietal susceptibility of cherries to the disease as well as rootstock susceptibility in apples. Verticillium wilt had become serious in stone fruits as well as in vegetables. A program in cooperation with Denby in the Vegetable Section was initiated to develop resistant varieties of tomatoes and peppers, because chemical control methods had proven ineffective. A study to determine the host range of this disease was also done. Other diseases studied were onion downy mildew, black rot of carrot, botrytis neck rot of onion, and halo blight of beans. Fruit diseases that were researched included fire blight, perennial canker, apricot jacket rot, powdery mildew, twisted leaf and Lambert mottle of cherry, ring pox of apricot, leaf pucker, brown rot, and crown gall in nursery stock. Stem rot in geraniums and other diseases of ornamentals were studied as well. A study of algae control in irrigation systems was also done.

Much of the research on control methods of these diseases centered on use of chemicals, as many chemicals developed during the war turned out to have a practical use in agriculture. Intensive studies of physiological disorders caused by deficiencies in minor elements such as manganese, zinc, and iron were conducted in cooperation with the chemists seconded to the laboratory.

It was realized that rootstocks and scions for propagation of fruit trees should be virus-free. Methods for determining the presence of viruses in fruit tree propagation stocks were developed. It also was discovered during this era that heat treatments destroy viruses of budwood and rootstocks.

Over the years, the presence on the farm of several more or less autonomous research laboratories had provided the superintendents of the farm and the officers in charge of the laboratories with numerous administrative problems. All shared a common resource, the farm. Budgeting of finances and human resources was complex, and cooperative research projects were difficult. In April 1959 the Experimental Farms Service, which included the Horticulture, Food Processing, Animal Husbandry and Forage Crops, and Soils and Irrigation sections, was reorganized into one unit with the Science Service, which included the Entomology and the Chemistry and Plant Pathology sections, under one director, and renamed the Research Station, Research Branch, Canada Department of Agriculture, Summerland, B.C.

The purpose of the station was "to solve through research and application, the problems encountered by producers of fruits and vegetables, by processors in utilization of fruits and vegetables, and by dairymen in the prevention and management of bloat in dairy cattle."

CHAPTER 6

Reorganization--building the station--1959-1974

The first order of business at Summerland after reorganization was the appointment of a new director. Charlie Bishop had transferred to Ottawa and Tom Anstey had become the director of the Lethbridge Research Station.

The new appointee was Charlie Strachan, who had worked in the Food Processing Section at Summerland from 1929 to 1956 and since then had been the superintendent of the experimental farm at Morden, Man. Responsibilities of the position had grown considerably with reorganization. The station now consisted of 10 sections--Agricultural Engineering, Animal Science--Chemistry,

Field Crops (at Creston substation), Entomology, Fruit and Vegetable Processing, Plant Pathology, Pomology, Soils, Vegetables and Ornamentals, and Administration.

One aspect of reorganization was the restructuring of accountability for secretarial and maintenance staff so that they all came under the Administration Section. In 1959 Peter Fillipoff became the first administrative officer at the station. Operation of the station had now become a complex task; there were 112 full-time employees as well as postdoctoral students and student assistants. In order to aid Strachan with this job the section heads met regularly to discuss problems and assist the director in the formulation of station policies.

The Administration Section now consisted of the following: Fillipoff, administrative officer; Baillie and Schwab, clerical staff; Eddie, Setter, Stoney, Snowden, and Cockell, secretarial staff; Cannings, photographer; Ryman, farm foreman; Pelham, orchard foreman; Tewnion, Baron, and Rogers, maintenance staff; Wright, McKenzie, and Davis, caretakers; Maddocks, carpenter; Wilburn, painter; Meadows, Raham, Radomiski, and Hartskamp, tractor operators; Carey, Rasmussen, and Miller, irrigation staff; and Smith, Sawatski, Skippings, Downes, Charman, Shaw, Kwak, Dixon, Bertolomi, and others, farm crew.



Food Processing staff; 1960.



Harvesting forage.



D. Younghusband tending calves; 1960s.

In 1960 the need for a full-time plumber was recognized and Les Somers was hired to fill the position. Bob Rogers was later (1970) to assist him. In 1961 Ray Wilburn, a painter, died; he was replaced by Harry Kent, who held the position until 1972, when he was replaced by John Koster. Maddocks, the carpenter, died in 1962 and was replaced by Ralph Smith. Smith held the position until retirement in 1973, when he was replaced by Charlie Leinor. The need for a full-time electrician was realized and Hugh Ballantyne was hired in 1964. This large group underwent many staff changes between 1959 and 1974. In 1960, Bertolomi and Charman resigned, followed by Reg Smith in 1962, Ed Wright and John Kwak in 1963, and Radomski and Hartskamp in 1964. Raham retired in 1964, McKechnie died in 1966, Meadows retired in 1967, Carey died in 1969, and Downes retired in 1970. Also in 1970, Leif Elvedahl retired as foreman of Kelowna substation. He was replaced by Clive Owen, who had been on staff since 1966. Tewnion retired in 1973 and was replaced by Gunther John. The orchard foreman, Bert Pelham, also retired in 1973 and was replaced by Dave Basham. In 1974, Clarence Lackey transferred from the Food Processing Section to look after plans and specifications, and Art Dewith was added to the operations crew. In 1974 Dixon retired after 17 years service.

People who were hired during this era included Ed Brennan in 1960, who transferred to Plant Pathology in 1969-1 Alf Gobie (1960-1965); David Scott (1960-1965); J. Alf Schaber, who transferred from Kelowna in 1960; Ed Joy (1961-1967); Tom Crowley (1959-1969); Alf Bonaldi in 1962; R.I. (Bobby) MacDonald in 1963; Ben Brown (1963-1965); Les Rogers (1962-1964); Les Roberts (1964-1974); Stan Jones (1964-1974); Otto Farnholz (1964-1978); Don Orr (1964-1974); Harold Jackson (1966-1970); Phil Taylor (1968-1974); Herb Blomgren (1968-1975); John Berben (1969-1975); Frank Morrow (1969-1973); Lawrence Rohachuk (1970-1974); and many others for short periods of time.

The librarian, J. Selwood, transferred to Kentville in 1960 and Rita Hermiston acted in that capacity until Nora J. Dowling was appointed early in 1961. In 1962 Dowling resigned and from then until

1966 Jean Eddie performed the duties of librarian. In 1966 Bill Anderson was appointed to this position and stayed about 2 years.

In February 1969 the library was moved from the office building to the directors house, which eased the space situation not only for the library staff but also for the office staff. Dr. and Mrs. Harold Madsen have the distinction of being the last tenants of the superintendents house. In 1970 Joe Lavery was appointed librarian and held the position until 1976.

The directors secretary throughout this period (1959-1974) was Ruth Stoney. The administrative officer, Phillipoff, transferred to Ottawa in 1964. He was replaced by Al Swain in 1965 and was assisted by Jim Marshand, as office manager, who became the administrative officer when Swain resigned in 1967. Marshand held the position until 1970, when he resigned and was replaced by Ernie Bell. Rose Miles was appointed to the position of office manager and held that position until she retired in 1977. Marge Douglas was hired as a statistics clerk in 1966 and retired in 1974.

The secretary assigned to the Plant Pathology Section in 1959 was Nora Setter, who held the position until her retirement in 1977. She also performed secretarial duties for the Soils Section from 1970 on. The secretary for the Soils Section was Emily Cockell until 1965, when she was replaced by Vi Matte. Matte transferred to Entomology Section in 1967, and was replaced in Soils Section by Colleen Podas until 1969. Eve Lyon then filled in for a short time and was replaced by Linda Brown in 1969.

The Food Processing Sections secretary was Rita Hermiston, who worked for the section periodically from 1953 until 1964. In 1965 it was decided to combine the secretarial duties for the Food Processing and Pomology sections. Dorothy Zowty held this position until she transferred to the main office as assistant accounts clerk in 1969. Gwen Banks then served as secretary for Food Processing and Pomology sections until she died in 1970, and Linda Brown transferred from the Soils Section to fill the position.

Others who performed secretarial duties during this period included Marj Snowden (1959-1960); Hilda Schwab (1961-1964); Anne Aitken and Carol Robinson (1963-1965); Darlene Knodel (1960-1963); Bernice Ferris (1964-1966); Athena Lakes (1962-1963); Anne Nelson (1967-1969); Averil Bottelier (1970-1974); and Terry Kickbush (1972-1974).



One set of identical calves collected throughout British Columbia--used in bloat studies.

The accounts personnel also went through several changes during this period. Howard Schwab resigned in 1964 and was replaced as assistant accounts clerk by Mary Hundert. She replaced John F Baillie as chief accounts clerk when he retired in 1967. Dorothy Zowty was then transferred to fill the assistant accounts clerk position vacated by Hundert. When Hundert resigned in 1971, Zowty was promoted to accounts clerk, and the assistant accounts clerk position was filled by Pat Simmons until 1972, followed by Iris Latremouille until 1974.

The period 1959 to 1974 saw a marked change in the character of the research station. Up until then the station had been the center of activities for many of the staff because they lived in housing located on the station. A new departmental policy dictated that, except where programs such as livestock or security made it essential to have staff living on research stations, government-owned housing was to be phased out. In 1963 the boardinghouse, the herdsman's cottage, and the

gardeners cottage were either torn down or sold. These old buildings generated many fond memories over the years and, unfortunately, Phillipoff, the administrative officer, was criticized unfairly by some of the staff for having them sold or demolished. This policy change signaled the end of the type of camaraderie amongst the staff that came from working and living closely together. The farm foreman's house became a workshop for plumbing and electrical work, and the assistant superintendent's house was renovated and used as a conference hall. The Looneys were the last tenants of the farm foreman's house.



Fire practice; 1962.



Apple storage studies. Don Fisher (right), head of Pomology Section, examines storage quality of Red Delicious apples with Stan Porritt and Earl Edge.



Wilcox's evaporimeter Brian Baille, summer student.

During 1964 and 1965, the station irrigation system was upgraded by the installation of a pump house, which had three 130-kW (175-hp) electric motors driving three 10-stage 20-cm turbine pumps, each capable of pumping 3865 L/minute up the 183 m elevation to the irrigation reservoir above the station. This eliminated the need for the booster pump system, which had been used since 1934. The mid-1960s also saw the main road to the station straightened and upgraded. The new road was 2011 m long, 8.5 m wide, and built at a cost of \$52 700.

In 1970 the staff were saddened by the sudden death of their director, Charlie Strachan. Harold Madsen was called upon to serve as acting director until a new appointment was made. Upon returning from a work transfer to Saint-Jean-sur-Richelieu, Que., in 1971, the head of Pomology Section, D.V. Fisher, accepted the position of director. Fisher had been an integral part of the station and of the Pomology Section since 1933 and had a thorough knowledge of the Okanagan fruit industry.

One of the major policies Fisher introduced to the station was that of flexible hours. Conversion of the cow barn to a conference hall was initiated during this period, although the renovations were not completed until later.

In 1972, due to an unusually late spring and a heavier than usual snowpack, Trout Creek overran its banks and flooded the flats below the main station. The only problem caused by this flood was the loss of the bridge on the back road leading to the station. During 1974 and 1975, the creek bed was dredged and dykes were built and, as a consequence, flooding has not reoccurred. The bridge for the back road was not rebuilt.

In 1973 probably the most serious injury to a staff member at the research station occurred when Richard Davis was knocked off a tractor by a tree limb. He subsequently lost an arm and seriously injured his legs when the mower he was operating passed over him. It is a credit to Davis that he recovered from this trauma and continued to be a valued staff member until 1978, when he resigned.

The Pomology Section was one of the more stable units and at reorganization consisted of Fisher, as head of the section, assisted by Bud Trussel; Stan Porritt, assisted by Earl Edge; Karlos Lapins, assisted by Hans Schmid; Milton Weiss, assisted by Bob Killick; and Bert Pelham, as orchard foreman. In 1962 Weiss resigned and was replaced by Don Heinicke, and Valdis Lejins was hired to assist Lapins and Schmid with the intensified breeding program. In 1965, Mike Meheriuk, a

biochemist, was hired to work on postharvest physiology. Heinicke resigned that year and was replaced in 1966 by N.E. Looney. Lejins resigned in 1966 and was replaced by Marge Schulze, formerly a technician at Swift Current Research Station.

No major staff changes occurred in Pomology Section until 1971, when Fisher became director. At this time the vegetable program was discontinued and Denby and his technician, Irvine, transferred to the Pomology Section, Denby taking over Fisher's area of work. Fisher's technician, Bud Trussel, was also assigned to Denby at this time. Irvine resigned in 1973 and Lapins retired in 1974. His replacement was David Lane, who had worked as a summer student at the station for several years.

Pomology and viticulture research at Summerland includes three major areas: breeding to develop new tree fruit and grape varieties; cultural practices to obtain optimum fruit quality and increase yields; and harvesting and storage.

The breeding program is designed to produce new and more profitable varieties of all tree fruits and grapes that are particularly suited to the Okanagan Valley climate. As well as using conventional cross-pollination methods for breeding, gamma irradiation of scion and bud material to induce mutations has been used to develop new varieties. New varieties are evaluated for winterhardiness, tree size and growth habit, blooming period, pollination requirements, fruit set, and fruit characteristics.

During the period 1959-1974, new variety introductions included Bright McIntosh, Sinta, Spencer (named after Spencer Dyson, the foreman at the Kelowna substation), Summerland, and Summerred apples, Sierra pear, Early Blenheim and Skaha apricots, and Compact Lambert, Compact Stella, Salmo, Stella, and Summit sweet cherries. Stella was the first self-fertile sweet cherry ever produced and the development of breeding lines for compact growth habit in sweet cherries was a significant development. The plant breeders are constantly on the lookout for sports, or genetic alterations, that occur naturally. Some important varieties that have been developed from sports are the Spur-type McIntosh apples--MacSpur, MoreSpur, and Wijcik.

Research on cultural practices includes the use of dwarfing stocks to control tree size, chemical thinning, photosynthesis and microclimate relationships in orchards, pruning and tree training methods, high-density plantings, cover crops and weed control, regulation of maturity and tree growth with chemical sprays, and the relationship between heat units and fruit maturity.

Harvesting and storage research includes studies of optimum controlled atmosphere storage conditions to best preserve fruit quality, chemical dips to prevent fruit breakdown in storage, segregation of water-core apples by alcohol flotation, determination of cooling rates for optimum fruit storage conditions, and determination of optimum harvest maturity--storage conditions for different varieties of fruit. Harvesting methods are also studied in cooperation with the Agricultural Engineering Section. In fact, all types of horticultural practices are tried and evaluated by this section on all varieties of fruit grown in the area.

During the reorganization Atkinson, MacGregor, Moyls, Britton, Irvine, and Lackey in the Food Processing Section were joined officially by Bowen, Ruck, Kitson, and Smith from Science Service. In 1960 the section celebrated the completion of a new pilot plant and a test kitchen, which greatly improved research conditions.

Some of the major processes developed included a continuous vacuum treatment method for fruits and vegetables; a method for concentrating fruit aromas many thousandfold and fixing the water-soluble components of fruit aromas on sugar polymers; and the roll-therm method of cooking canned products, which enhanced product quality and reduced energy requirements by improving heat penetration. New and improved fruit products were developed in several forms, including

juices, sauces, syrups, purees, flakes, powders, puddings, pie fillings, low-calorie fruit drinks, ciders, wines, and frozen and dried products.

Some staff changes occurred. Irvine resigned and was replaced by Howard Wright in 1962. Ted Atkinson retired in 1965 after 36 years of productive work in food processing in western Canada. Dugal MacGregor served as head of the section until 1971, when he left to work for 2 years as a departmental adviser on food technology in Ghana. John Kitson assumed MacGregor's section head duties at the station. Other staff changes included the retirements of John Ruck in 1971 and Adrian Moyls in 1972. Daryl Woods replaced Moyls in 1973 and Hans Buttkus, a biochemist, joined the staff in 1974.

In 1959, the Creston substation officially became part of the Summerland Research Station. The Field Crops Section at the Creston substation in 1959 consisted of Frank Chapman and his assistant, A.B. Cole. Prior to 1959, the substation had been administered by the Soils Section of the Lethbridge Research Station; however, Chapman generally dealt directly with officials in Ottawa. Work at Creston included tests of winter wheat varieties, determination of nutritional (phosphorus and potassium) requirements of spring wheat, alfalfa varietal differences to applied sulfur, and irrigation effects on alfalfa yield. The facilities were also used by entomologists and plant pathologists working out of Summerland.

In 1970 Chapman moved to Summerland to work with the Animal Science Section on forage crops and in 1974 transferred to the staff of the Kamloops Research Station, although he was still located at Summerland. This, essentially, was the end of Summerland's connection with field crops. Cole continued to manage several long-term research projects at Creston until he retired in 1978.

In 1960, the staff of the Entomology Section at Summerland were as follows: James Marshall, section head; Cecil Morgan, Jinx Proverbs, Ralph Downing, and Pat Pielou, entomologists; Ken Williams and Mac McArthur, chemists; Al McMechan agricultural engineer; Gordon Halvorson, Eric Brinton, Jim Newton, Wesley Davis, George Wardle, and Bernice Carty, technicians; and Jean Eddie, secretary. Several changes soon took place. Walter Wilde and Don Logan were transferred from Creston to study the plant louse, pear psylla, which had become a major pest. Pat Pielou transferred to Ottawa in 1963 and his technician, Bernice Carty, was added to the staff, working with Proverbs on the codling moth sterility program. In early 1964, Walter Wilde resigned, and Don Logan was assigned to the codling moth sterility program. Jim Marshall retired, and Harold Madsen came from the University of California, Berkeley, to replace Marshall. Dave McMullen replaced Walter Wilde. The chemistry group was also changed. McArthur moved to the Animal Science Section to work on bloat in dairy cattle; Ken Williams was placed in charge of chemistry and was assisted by George Wardle; and three new technicians were appointed: Casey Jong, who assisted McMullen on the pear psylla project; Jessica Madsen, who researched San Jose scale with Cecil Morgan; and Ted Moilliet, who assisted Ralph Downing on the mites project.

The research emphasis took a different direction as well. There was great expansion in the codling moth sterility program and studies were initiated on integrated control and pest management.

In 1965, Fred Banham was transferred from Kamloops to Summerland to work on vegetable insects, but when the vegetable program was discontinued in 1967 he was assigned to the control of stone fruit insects, especially the cherry fruit fly, which had become a major problem in the Okanagan Valley. Wesley Davis was assigned as his technician and Lynn Norman was hired as a technician for Madsen.

The codling moth sterility program had reached the stage where field releases were contemplated, and a large rearing facility was constructed at the entomology laboratory site. The team working on the codling moth project included Proverbs, and technicians Don Logan, Jim Newton, and Bernice Carty. The rearing part of the program was headed by Eric Brinton and a new technician, Brenda Connop, was hired to assist him. Many farm crew staff were assigned to the codling moth rearing

program at various times during this period. They included Henry Hauschild, Bill Hill, Clive Owen, and two new appointments, Herb Blomgren and Bill Fletcher.

In 1967, Jean Eddie became the station librarian and Vi Matte was transferred from Soils Section to take her place. In 1970, Ken Williams died suddenly and Alan Gaunce replaced him. A second chemist, Jim MacNeil, was hired in 1972 to work on pesticide residue problems; Mitz Hikichi was later assigned to assist him. Derek Riordon, formerly of the Belleville Research Station was also assigned to this group as a radiology technician.

Among the accomplishments of the Entomology Section during this period were the development of an integrated mite control program that emphasized biological control with less dependence upon chemicals; the use of pheromone traps to monitor codling moth populations, which reduced the number of sprays needed for control; and the development of pest management programs for apples and pears.

In 1973, the chemistry group was moved from the Entomology laboratory to the Animal Science building, which had been vacated when the animal science program on bloat in alfalfa was transferred to Saskatoon. Shortly after the move, James MacNeil transferred to Ottawa and a new technician, Lee Sauls, was added to the chemistry group.

. With reorganization, the Agricultural Engineering Section became a separate entity, although its staff still worked closely with staff in several other sections. Agricultural Engineering Section consisted of Al McMechan, as section head, assisted by Gordon Halverson. In 1967 another engineer, Pete Parchomchuk, was hired and in 1968 Lance Brown was hired as Parchomchuk's assistant. In 1973 an extension to the engineering workshop was completed, which eased the space problem considerably.

Some of the major projects of this group included the development of self-propelled harvesters for tomatoes and fruit; development of more efficient sprayers, among them the tower sprayer, which lessened loss of pesticide to the environment; modifications to packinghouse equipment to reduce damage to fruit during handling; development of the shake and catch method of fruit harvesting, which was later determined not to be a feasible method; the effect of overtree irrigation and rain on spray deposits; determination that pesticide application through overtree sprinklers was ineffective; design of water filtration methods for trickle irrigation; design of sterile codling moth dispersal equipment; and the design and construction of food processing plant equipment. The expertise in this section was utilized by all other sections for the design and construction of research equipment.

After reorganization the Soils Section consisted of Jack Wilcox, section head; Jack Mason and Max McGibbon, researchers; and Dave Munn, Jim Brown, and Jack McDougald, technicians. Leif Elvedahl assisted with the operation of Kelowna substation. McGibbon resigned in 1960. J.A. (Jack) Stewart, who was hired to replace him, almost immediately left on educational leave. In 1961, Hans Korven was transferred temporarily from Swift Current Experimental Farm to work with Soils Section. During 1964 Les Roberts was hired as an assistant at the Kelowna Substation, Stewart returned from educational leave, and E.M. (Betty) Nicholson was hired to assist him. In 1966, D.L. (Dave) Ashby was hired to replace Stewart, who resigned, and D.S. (Dave) Stevenson transferred from Lethbridge Research Station to replace the retiring Jack Wilcox. Jack Mason headed the section after Wilcox retired. B.G. (Brian) Drought transferred from Lacombe Research Station to replace Nicholson as Ashby's technician. Ashby resigned in 1969 and Drought became Mason's technician.

Irrigation and soil nutrition problems continued to be the main areas of research in this section. A major accomplishment of the section was the determination of irrigation water requirements for tree fruits and grapes. This involved many projects, including studies of factors affecting evaporation and evapotranspiration; development of evaporimeters for determining when to irrigate and how

much to apply; and comparison of over and under tree sprinkler efficiency. Many of the irrigation regimens developed at Summerland have become so commonly used that one forgets the time and effort that was expended in order to develop them. Another significant achievement was characterization of the pH value and salt content of the many irrigation water sources, mountain streams, and lakes in the area. In 1970 work was started on the idea of trickle irrigation, which essentially is a slow, continuous flow of water that keeps the soil around each tree moist at all times. It results in less water use but is fraught with problems, the major one being the plugging of the drippers, or emitters, by algae and salt precipitates.

Major projects were also done on the nutrition of tree fruits in respect to major and minor fertilizer components. An important result of this work was the development of soil and leaf analyses methods to accurately determine quantities of nitrogen fertilizer and minor elements such as boron, calcium, iron, magnesium, manganese, and zinc required for highest production and quality of fruit. Also, the interactions of plant growth regulators, such as Alar, and cover crop management by herbicides with fertilizers were studied.

During this period, Spartan breakdown during storage had become a problem. The spray application of calcium to fruit trees and to harvested fruit was investigated as a preventative measure. The practice of post-harvest treatment with calcium chloride for Spartan apples destined for long-term storage has become common practice in Okanagan packinghouses as a result of this work.

At reorganization the staff of the Plant Pathology Section consisted of Maurice Welsh, section head; and Dave McIntosh, Leighton Lopatecke, Ewart Woolliams, Tommy Lott, Fred Keane, Bill Smith, Atlee Hanson, Harold Burdon, Jim May, Bill Wotton, and Nora Setter. Jack Wilkes, Walt Wilde, and Don Logan were located at Creston substation.

Several staff changes occurred soon after reorganization. Wotton retired in 1962, followed shortly by Keane, and Wilde and Logan were transferred to the Entomology Section at Summerland. Tommy Lott retired in 1965 and Woolliams retired in 1966. Jack Wilkes died in 1967.

Lott's position was filled by A.J. (Juergen) Hansen. Woolliams' position was filled by B.B. Till in 1966, by Shaw Ming Yang in 1967, and by R.M. Rosher in 1969. Rosher resigned in 1975. Walter Greber served from 1963 to 1971, Ed Brennan served from 1969 to 1974, Lee Sawle served from 1967 to 1981, and Gordon Kosakoski served from 1973 to 1974. These four staff members had been employed as technicians.

Welsh, May, and Brennan retired in 1974, and Dave McIntosh assumed the duties of section head.

Research in this section involves observing symptoms of potential conditions; identifying and culturing the causal agent or agents; prescribing control procedures; and engaging in programs whereby control measures are developed, tested, and, if successful, recommended as suitable orchard practice.

Activities have included research on the following: halo blight of bean, stem rot of geranium, onion smut, *Verticillium* wilt of stone fruits, crown rot of fruit trees, pear decline, apple scab, brown rot, bull's-eye rot, virus diseases of apple, fruit pitting of pear, *Rhizopus* rot of peaches, little cherry disease, powdery mildew, perennial canker, fire blight, Blodgett spot of prunes, *Corticium* rot, Brownline decline, cherry rasp leaf virus, and tomato bushy stunt virus (target spot disease) on cherry.

The plant pathology programs at Summerland were dealt a severe setback on Saturday, 16 June 1973. About 8:00 in the morning, Dave Barnard, who lived across Trout Creek canyon from the station spotted smoke and raised the alarm. The station's fire brigade as well as the Summerland

Fire Department were soon on the scene and by 3:00 in the afternoon the fire had been extinguished.

The fire was contained in the west end of the upper floor but due to the age and condition of the building it was decided to demolish rather than repair it. The suspected cause of fire was a bunsen burner inadvertently left on the day before; however, this was never proven. Fortunately for the pathologists, the Animal Science building had been vacated with the termination of that program and they were able to renovate, move into new quarters, and continue with their research.

After reorganization in 1959, several staff changes in the vegetable department occurred. J.S. (John) Mathews was hired as a researcher and worked with Denby on quality evaluation, nutritional effects, and shipping trials on tomatoes until 1965, when he resigned.

Colorful, long-time head gardener, Nat May, retired in 1961. He had always loved the gardens and protected them with a vengeance. One day he observed a woman picking roses from the gardens.

When May accosted her and reprimanded her for picking them, she reminded him that as a taxpayer she owned part of the gardens. May immediately picked up a blade of dead grass and said, "Yes Ma'am, but this is your part." He was well known for his readiness to assist home gardeners with their problems and was always willing to speak at garden clubs, and so forth. He also conducted a radio show every St. Patrick's Day.

Henry Keuning replaced Nat May, and Ed Joy was added to the staff in 1962. Percy Willis retired in 1961 and was followed by Ed Joy and Lew Wright in 1967, and Wilf King in 1968, after an admirable 43 years of service. Walter Greber transferred to the Plant Pathology Section in 1963 and became Woolliams's technician. Doug Irvine was hired in 1967 to replace Wright. Reg Andrews assisted Keuning in the gardens from 1966 until 1974, when he resigned.

In 1960, the upper floor of the Pomology Sections Extension building was finished. This enabled Denby to move from the Administration building to new offices and laboratories connected to his greenhouses. Even with current fiscal restraint Lyall was able to construct a greenhouse by combining two cold frames and putting a roof over them, demonstrating his ability to improvise.

The major part of the work in this section continued to be variety trials. The section also had responsibility for ornamentals and introduced a lavender, Summerland Supreme, in 1960, and a Chrysanthemum, Sunrise, in 1962.

As time progressed the section concentrated on tomatoes, with particular emphasis on breeding for resistance to tobacco mosaic virus, effects of fertilizer regimes on fruit quality, and various preharvest and post-harvest treatments or handling techniques to obtain a better product in the market place. Some of the varieties introduced included Summerdawn, Sumerjet, Starshot, and Sutomi. This section also cooperated with the Agricultural Engineering Section to develop and test small maneuverable picking aids to increase harvest efficiency. However, as the vegetable industry in the Okanagan gradually declined, it no longer merited the concern of the research station. The Vegetable Section was disbanded, with Denby and Irvine transferring to the Pomology section.

The maintenance of the ornamental gardens came under the Administration Section, and ornamental variety trials were discontinued. The size of the gardens was reduced, but they continued to be a magnificent spectacle and the grounds and picnic facilities are still enjoyed by multitudes of tourists each year.

Reorganization saw Miltimore's animal science team of Younghusband, Jardine, Kwak, and Uzick joined by the chemistry group of McArthur and Hikichi. Hikichi had worked as a summer student

since 1954 and full-time since 1957. They were all housed in the recently completed Soils building and remained there until the new Animal Science building was completed in 1960.

The addition of chemists to the research team enabled Miltimore to study chemical changes in rumen metabolism that lead to bloat when ruminants consume alfalfa. Development of the foam stability concept, implications of Fraction 1 protein of alfalfa in causing bloat, and heritability estimates for Fraction I protein relevant to alfalfa breeding were clearly firsts and had a marked effect on the direction of later research on the problem.

In cooperation with Jack Mason in Soils Section, it was determined that occurrence of both conditioned and simple copper deficiency in ruminants in interior British Columbia was induced by the interaction of high sulfur levels and copper storage. Work was also done on selenium levels in British Columbia feeds. In fact, the British Columbia Feed Analysis Service operated out of the research station for 3 to 4 years in cooperation with the British Columbia Beef Cattle Growers' Association and the British Columbia Ministry of Agriculture and Food. Diane Parchomchuk was the first employee attached to this service.

In 1967 Chuck Calnin was hired as Miltimore's technician in addition to overseeing the operation of the British Columbia Feed Analysis Service. Kwak and Jardine resigned in 1963 and were replaced by G. Bergsma (1964-1965), and J. Pauls (1964). Dave Barnard was hired as a herdsman in 1965 and shortly after became a technician. Bill Broadbent worked as a herdsman from 1967 until 1969. He was the last tenant of the assistant superintendents house, now known as Wilcox Hall. Gilbert Kidd and Marie Andrews worked for short periods in the Animal Science Section. Norman Shaw and Richard Davis as well as other members of the farm crew helped at peak periods.

In the 1960s the declining cattle industry in the Okanagan caused the eventual termination of the animal science programs at Summerland. By mid-1967 the main Jersey herd had been transferred to Agassiz. In 1970, Miltimore, Calnin, and Kidd transferred to Kamloops. Miltimore later became the director of the Agassiz Research Station. McArthur finished writing several papers and concluded various projects before retiring in 1974. Uzick transferred to Agassiz, where he still is employed. Hikitchi transferred to Chemistry Section to assist Jim McNeil, and Barnard transferred to the vegetable program under Denby. Pauls transferred to the farm crew, where he stayed until 1976.

The Animal Science building was converted to offices and laboratories and occupied by the Plant Pathology Section after fire destroyed that sections building in June 1973. The barns were converted to carpentry, paint, plumbing, and electrical shops and a conference hall. The corrals were dismantled and the area is now used for storage.

Fisher retired as director in December 1974 and was replaced by G.C. (Glenn) Russell, who had previously been the director of Harrow Research Station and, later, the director of Charlottetown Research Station. Before those appointments he was head of the Soils Section at Lethbridge Research Station.

CHAPTER 7

An era of change--1975-1985

The new director, Glenn Russell, faced several challenging problems during the next decade, including planning for and initiating construction of a new office-laboratory building to house the entire staff. On the surface, his problems may have seemed simpler than those of previous directors, who had had a wide range of research programs to manage. Recent reductions in research programs at Summerland left only tree fruits, grapes, and food processing. However, his problems were not simple. Most of the facilities were old and they were still functional only by the

near heroic efforts of the trades and operational staff. Budget and personnel reductions dictated by departmental policy required careful planning and management to maintain productivity and Summerland Research Stations excellent reputation in agricultural research. Russell met these challenges admirably. He retired in October 1985. The final completion of the office-laboratory building and its occupancy by the staff became the responsibility of his successor, D.M. (Dave) Bowden, who transferred from Swift Current Research Station at that time.

Other aspects of life at the research station were changing too. It became mandatory for new research scientists being hired to have a Ph.D. degree. Technicians being hired were also more highly educated, often in a specialty field. Many of the new staff chose not to live in the adjacent community of Trout Creek or in the nearby town of Summerland but rather in the Penticton or Naramata areas, or even as far away as Kelowna, Oliver, or Keremeos. This dispersion eroded the close-knit community spirit that had existed between the research station and Summerland.

The changes were generally made with as little disruption as possible and with the purpose of increasing efficiency. These were years of restraint, as evidenced by a decrease in staff at Summerland of about 25 percent from 1974 to 1984 and the fact that the budget did not increase sufficiently to meet inflationary trends. It is worthy of note that staff reductions mainly affected the support category, with little effect on progress in the research programs, which is a credit to the dedication and abilities of those remaining. Despite these factors, Summerland maintained its publication record, retained its programs, and enhanced its reputation as one of the outstanding horticultural research institutions in the world.

One significant change that took place in 1975 was the signing of the contract that brought the British Columbia Department of Agriculture (now British Columbia Ministry of Agriculture and Food) onto the station for the first time. Four offices were leased in the Soils building and were occupied by a regional horticulturist, an apple specialist, a pathologist, and a secretary-receptionist.

Another important change involved major renovations to the directors residence, which at this time served as the library, to accommodate all the administration staff as well. This greatly improved their working environment. Only the interior was modified. Its stately demeanor and setting in the ornamental garden area made it the obvious choice to serve as headquarters of the station.

The enhanced cooperation and communications between Agriculture Canada and British Columbia Ministry of Agriculture (B.C.M.A.) staff that resulted from the presence of the latter in the Soils building resulted in the decision to bring more B.C.M.A. personnel to the station. Wilcox Hall and the old Administration building, now vacant, were leased to the province, enabling them to bring a plant pathologist, an entomologist, a vertebrate pest control specialist, a 4H specialist, and another horticulturist as well as agricultural economics and crop insurance officers onto the station.

Administration

From 1975 to the present the staff in the main office have undergone almost a complete turnover. Ernie Bell retired as administrative officer in 1977 and was replaced by L.C. (Lorin) Godfrey, who still holds the position. Rose Miles, the office manager, also retired in 1977 and was replaced by Ellene V. (Buddy) Wilson. Wilson resigned in 1982. She was replaced by Lorraine Light, the current office manager.

The need for a personnel clerk became apparent and in 1975 Andre Amyot, was hired to fill this new position. He transferred to the Plans and Specifications position in 1978 and was replaced as personnel clerk by Gail Frazer, who left in 1979. Frazer was replaced by Grace Sawarin and she, in turn, was replaced by Cindy Young in 1982. The current personnel clerk, Jean Corrie, was appointed in 1983.

In 1974 Ruth Stoney retired as the director's secretary. She was replaced by the current incumbent, Helen Mooney. Linda Brown, secretary for the Horticulture building staff, resigned in 1978 and was replaced for short periods by Paulette Shoemaker (1978-1979), Sandi Fleming (1979), Theresa McPhillamey (1980-1981), and Carrie Jensen (1981-1982). Rhonda McLelland currently holds this position. Nora Setter, secretary for the Plant Pathology-Soil Science and Agricultural Engineering staff retired in 1977 and was replaced by Marylyn Wellings. Wellings resigned in 1979 and was replaced by Brigitte Jordan, who had been working in the main office since 1977. She resigned in 1980 and was replaced by Wendy Curr.

From 1975 to 1977 the assistant accounts clerk was Joanne Sologuk, followed by Beth Rimes from 1977 to 1978. Dorothy Zowty, the accounts clerk, resigned in 1978 and was replaced by Grace Sawarin from 1978 to 1979, Vern Bruce from 1979 to 1983, and Karen Newton, the current incumbent. The various occupants of the switchboard operator position were Robin Hardwick (1974-1977), Barb Kreuger (1977-1978), Jennine Crowder (1979-1980), Les Reid (1980-1981), and Jennine Crowder (1982-1984). The current occupant is Jeanette Dick. Linda Chabot was hired in 1979 as administration secretary-word processor operator.

The library also saw some changes in this era. Joe Lavery resigned in 1976 and Jean Eddy (Brinton) filled in again until 1977 when Vivienne B. Smith was appointed as librarian. She resigned in 1983. The present librarian, Kathleen Neer, and an assistant librarian, Heather Beveridge were both appointed to their positions in 1983.

The statistics clerk, Marj Douglas, retired in 1978 and was replaced briefly by Anne Rogers in 1979, by Jenny Owen from 1979 to 1980, and by Angele Hunter from 1980 to 1982. The duties of this position have changed over the years from operating a calculator to operating computer terminals. The station has a DEC VT102 video display terminal, a DEC LA100 printer, a DEC LA36 hardcopy terminal, two Datamyte portable data entry terminals, and two Philips Micom word processor systems. The terminals are connected to a VAX 11/780 minicomputer at the headquarters in Ottawa. The station also has several micro computers that are dedicated to scientific instruments such as gas chromatographs, autoanalyzers, and spectrophotometers. This is probably one of the fastest growing sections on the station as it moves rapidly into the electronic age. Currently operating this equipment is Rick Cheyne, hired in 1984.

In 1974 photographer Steve Cannings retired and his replacement, FL. (Fran) Dolezsar, filled the position until 1977, when he was replaced by the present photographer W.W. (Bill) Fleming.

Operations

In 1975 the operations unit on the station consisted of Ryman, as operations manager; Basham, as orchard foreman-, Lackey, as developer of plans and specifications; Keuning, as head gardener, assisted by Hauschild and Dewith; John, as machinist; Ballantyne, as electrician; Somers, as plumber, assisted by Rogers; Baron, as mechanic; and Leinor, as carpenter. Completing the staff complement were Pauls, Sawatsky, Bonaldi, Miller, Rasmussen, Orr, Schaber, MacDonald, Skippings, Berber, Shaw, Farnholz, and Davis. In 1975, Berber resigned and Harold Domi, Walter Bednard, Mike Abel, Bruce Apolzer, and Bruce Taylor were hired.

In 1976, Pauls retired after 12 years service, mostly in the Animal Science Section, and Rasmussen retired after 20 years service. In 1976 Roger Spirits was hired and in 1977 Chris Gilman and Mark Neufield were added to the staff. In 1977 Alf Bonaldi resigned. Alf Shaber retired in 1977, and at the end of that year Clarence Lackey retired after 29 years service. Andre Amyot transferred from personnel to fill Lackey's position in plans and specifications, a position which was to become highly important with the commencement of a major construction program. In 1978, Willie McTaggart, Jim Opinko, and John Wagner were added to the operations crew; Peter Schofield was hired as a pesticide applicator and Howard Cockell as a mechanic.

Dave Basham resigned in 1978 and was replaced by Don Wright as orchard foreman. Also, in 1978, Richard Davis resigned and Otto Farnholz retired. In 1979, plumber Les Somers retired and was replaced by John Kuck, and McTaggart and Wagner resigned.

In 1980, purchasing procedures and handling procedures of stores and supplies were changed. Keith Silas was hired as storesman and Dale Nilsson was hired to assist him and also to look after the mail room.

A substation foreman was required at Creston and Marten Wesolowski returned from Vancouver Research Station to accept the position. Brent Tiffin and Ken Haddrell were added to the operations crew.

In 1981, Silas resigned as storesman and Charlie Minter was hired to replace him. Norm Shaw retired after working at the station since 1958 and Jim Opinko resigned.

In 1982, electrician Hugh Ballantyne and head gardener Henry Keuning retired. The position of electrician was not filled but the position of gardener was filled by Ken Haddrell in 1984. At the end of 1984 Baron retired after 34 years and Ryman retired after almost 39 years service.

Soil science and agricultural engineering

In 1975 the soils staff consisted of Mason, as section head, Stevenson, and technicians Drought, Munn, and McDougald. Located in the same building but administered by other sections were Douglas, the statistics clerk; Frank Chapman, an agronomist attached to Kamloops Research Station; Dolezar, the photographer; and Derek Riordan, the radioisotope technician. Riordan died suddenly in 1976. In 1977, Eugene Hogue transferred from the research station at Saint-Jean-sur-Richelieu, Que., as a herbicides and vegetation management specialist, and Bill Peters was assigned as his assistant.



Henry Keuning in gardens.

At this time, the staff of the Agricultural Engineering Section consisted of McMechan, section head, assisted by Halvorson; and Parchomchuk, assisted by Brown. The section was to undergo a complete turnover beginning with the retirement of McMechan in 1977.

Early in 1978, the Agricultural Engineering and Soils Science sections were amalgamated under a new section head, Dave Stevenson. Brown resigned in 1978 and Gerry Owen transferred from Canfarm Service Agency, Guelph, Ont., to fill the position. Gerry Neilsen was added to the research staff in 1978 and late that year Leigh Moyls was hired to fill the engineering position vacated by McMechan. Jack Mason retired at the end of 1978 and Paul Hoyt transferred from the Beaverlodge Research Station to fill the position in 1979.

In 1980 the size of the Soil Science and Agricultural Engineering Section increased further when Gaunce, Wardle, and Sawle were transferred to the section from Entomology Section. Halvorson

retired in 1980 and was replaced by Ray Gayton. Dave Munn also retired in 1980 and was replaced by Annemarie Cornelsen.

McDougald transferred to Pomology to assist Lane, and Schulze transferred to soils to assist Neilsen in 1981. Sawle resigned in 1981; his position was not filled. Also, in 1981, Parchomchuk joined the Canadian International Development Agency for a 2-year term in Sri Lanka. When he returned in 1983 he decided to take educational leave at Davis, Calif. Technician Gayton then transferred to the Food Processing Section to fill the position vacated by the retirement of Howard Wright.

Several projects were begun in the section during this period. The completion of the lysimeter facility in late 1974 enabled researchers to study drainage and leaching under orchard conditions. In 1978 a study began of major plant nutrients in soils as they affect production and quality of fruits, and in 1979, soil acidity problems caused by intense use of nitrogen fertilizers and irrigation were studied. In 1980 the development of more efficient drying systems for production of fruit leathers was started in cooperation with the Food Processing Section and private industry. Also that year, investigation of plastic mulches and cover crop management systems in vineyards was initiated.

Trace element studies were intensified in 1981 and in the following year studies were begun on the feasibility of application of fertilizers with trickle irrigation. Testing of plastic covers for cherry trees to prevent fruit splitting due to rain was also initiated.

Entomology

This period was again marked by changes in research emphasis and in personnel. Cecil Morgan retired in 1974 but was not replaced, and Jessica Madsen was assigned as a technician to Fred Banham. Lynn Norman resigned and Jim Brown was transferred from Soils Science Section to Entomology as a technician for Harold Madsen. Wesley Davis retired, followed shortly by Ted Moilliet.

The program on control of codling moth by the release of sterile males reached its peak in 1978 with the release of moths in 800 ha of the Similkameen Valley. The method proved to be technically feasible, but high costs forced its curtailment. Previous to that, Eric Brinton had retired and was replaced by Colin Campbell. When the sterility program was phased out, Don Logan became a technician for Ralph Downing, and Bernice Carty was assigned to Harold Madsen. Bill Fletcher and Herb Blomgren were given positions elsewhere on the station. Henry Hauschild retired and was replaced by Otto Hansen.

During this period, the integrated mite control program became the accepted method of controlling mites on apples, and pest management had reached the point where professional managers were operating in the Okanagan. Little cherry disease had invaded the Okanagan Valley and Dave McMullen determined that the apple mealybug was the vector of the disease. Fred Banham developed a control program for cherry fruit fly that emphasized the use of sticky board traps for proper timing of sprays. Jim Brown retired and Ray Palmer replaced him. Bernice Carty also retired, and Lee Sauls resigned.

In 1978, Harold Madsen became associate director and Dave McMullen took his place as head of the Entomology Section. Ralph Downing retired in 1979; he was replaced by Jerry Vakenti for 1 year. Vakenti then became a technician and replaced Jessica Madsen, who resigned. In February 1980, the Entomology and Plant Pathology sections were amalgamated under the leadership of Dave McMullen and the chemistry group was moved to the Soils Section. In late 1980, Proverbs retired. Nello Angerilli was hired to work on mite control and San Jose scale, and Arnold Dyck was

hired to replace Proverbs. In 1982, Frances FitzGibbon was hired to assist Fred Banham. In 1984, Don Logan, Otto Hansen, and Harold Madsen retired.

Pomology and viticulture

In 1975, the Pomology Section (previously known as the Horticulture Section) consisted of Porritt, as head, Meheriuk, Lane, Looney, Denby, and technicians Edge, Schmid, Schulze, Killick, and Trussel.

In late 1974 the staff of the entire station were saddened by the death of Bud Trussel and his wife in a car accident. Bud Trussel had been a valued member of the staff since 1957. In 1975, Marten Wesolowski was hired to replace him and joined Dave Barnard in assisting Lyall Denby with his new grape breeding and stone fruit management programs. In 1975, Norm Looney assumed the duties of section head. In 1976, Mitz Hikichi transferred to the section as laboratory manager, a position he still holds.

Barnard resigned in 1978 and Wesolowski accepted a position at Vancouver Research Station. They were replaced by Brenda Scott and Richard MacDonald, with MacDonald spending half his time assisting in the Food Processing Section. In 1979, Stan Porritt retired after more than 30 years of service. The next year, Eugene Hogue transferred from the Soils Section and in 1980 became the section head of Pomology. His technician, Bill Peters, also transferred to the section. Bob Killick retired in 1979 and was replaced by Joan McKellar. Scott resigned in 1980 and was replaced by Rob Brownlee. Hans Schmid retired in 1980 and in 1981 Richard MacDonald was successful in replacing Schmid. MacDonald's position as Denby's assistant was taken by Mike Bouthillier.

In 1981 Jack McDougald was transferred from the Soils Section to assist David Lane, and Marge Schulze transferred to the Soils Section to assist Gerry Neilsen. Harvey Quamme, formerly with the research station at Morden and at Harrow, respectively, was hired to study rootstocks and hardiness and, in 1982, Bill Gibbons was recruited to assist him. In 1983, Jack McDougald retired and Andy Reynolds was hired to study viticulture. In 1984, Bill Gibbons resigned to take a position at Saanichton Research Station.

Several research programs have been initiated in the Pomology Section since 1975. One is a breeding program designed to produce a green apple to replace or compete with the Granny Smith apple. There is now greater emphasis on fruit tree pollination research and the procedure of in vitro culturing of fruit tree varieties to produce self-rooted trees. This procedure could streamline breeding and has already met with some commercial success. Research on angle planting of peach and pear trees in an effort to encourage early and more efficient production has been particularly successful for pears and has attracted considerable commercial interest. A phenology garden has been established, enabling evaluation of year-to-year differences in bloom and harvest dates.

A systematic search for the hormones involved in the regulation of apple tree flowering has led to new information about the role of natural gibberellins in apple tree physiology. Studies are undertaken with many plant growth substances in order to determine the role they play in fruit tree performance, the ultimate goal being their safe, efficient use in the production of tree fruits and grapes.

In 1975, the apricot breeding program was discontinued, as was the irradiation technique for breeding in apple and sweet cherry.

Studies of post-harvest physiology are continuing and at present the section cooperates in these studies with a team of researchers, led by Sam Lau, funded by Federated Okanagan Shippers.

More recent programs include a study of the physiology of cold hardiness, using exotherm analysis, and an increased emphasis on weed control and vegetation management in orchards. New herbicides are screened and their interactions with tree and vine nutrition and productivity are studied.

Many of the research projects are of an ongoing nature such as rootstocks, pruning, training, breeding (particularly grapes in an effort to stem the tide of imports by producing grapes with desirable table and wine characteristics), and variety testing; in essence, all aspects of pomology and viticulture.

Food processing

In 1975, the staff of the Food Processing Section consisted of Kitson, as head; MacGregor, Bowen, Wood, and Buttkus, as scientists; Barnard, Mathias, Smith, and Wright, as technicians; and Britton, as home economist.

In 1976, Wood and Mathias resigned. Mathias was replaced by Madeline Darling in 1976, and in 1977 Gary Strachan replaced Wood. By 1978, Strachan needed more assistance with his energetic wine evaluation program and Barbara Edwards was hired as his technician. Barnard resigned and was replaced by Richard MacDonald. In 1979 Darling resigned and Dorothy Britton retired. Darling was replaced by Marjorie Dever, and Edwards obtained the position vacated by Britton. Edward's former position was filled by Margaret Cliff.

In 1980 Hans Buttkus died at a very early age. His position was filled by Dan Cumming, formerly of Kentville Research Station. Judy Harrison was hired as a technician in 1981. At the end of 1981, John Kitson retired and MacGregor again took up the duties of section head.

In 1982 Howard Wright retired and the next year Ray Gayton transferred from the Agricultural Engineering Section to take his place. Also in 1983, Tom Beveridge was hired to fill the position vacated when Kitson retired, and Edwards resigned. In 1984, MacGregor retired and Cumming assumed his duties as section head.

The research projects in this section are many and diversified and the cliché "from soup to nuts" seems to have some application here. The aim of this section is to increase use of fruit and vegetable crops by developing and improving or modifying processes and processed products. With this in mind, research done in this era includes the development of a new technique for producing dried apple slices, a quick process for glazed apricots, and encapsulation techniques for berry essences. A procedure was worked out whereby fruit nuggets were manufactured, using drum-dried fruit sauce and fruit juice concentrate. Methods were determined for the manufacture of pulpy apple, peach, and apricot juice concentrates. Tests were conducted, using aspartame as a synthetic sweetener in low-calorie fruit spreads, as well as the development of formulae for home preparation of calorie-reduced jams and jellies. Methods of preparing plant juices of acceptable taste and color from leaves of celery, parsley, carrot, lettuce, cabbage, and asparagus trimmings have been developed.

Studies have been done on methods of heat processing fruit in aluminum foil laminate pouches, continuous vacuum treatment of fruits and vegetables during canning, and suitable processing for acid food products packed in retort pouches. Yogurt sauces flavored with apricot, sweet cherry, peach, strawberry, raspberry, loganberry, blackberry, and prune have been developed.

Studies to determine safe ways to lessen or eliminate waste water disposal from processing plants have been completed, and a steam-blanching system that concentrates the effluent has been developed. The development of a method of using potassium hydroxide instead of sodium hydroxide for peeling peaches made waste water useable on agricultural land.

Development of an asparagus aligner, construction and testing of a circular oscillating can agitator, and development of an extrusion process for forming dehydrated fruit snacks are included in the projects that have been worked on jointly by this section and the Agricultural Engineering Section.

One of the major programs in the Food Processing Section, in cooperation with the grape breeders, is the evaluation of wines produced from new varieties. Yeast evaluations are done as well. The use of potassium sorbate in wine to prevent secondary fermentation was also studied.

Another project consisted of storage trials of dehydrated, compressed meat and biscuit bars packed in vacuum in foil laminate pouches and evaluation of the feasibility of these compressed survival rations for use by the armed forces. The entire process for manufacture of commercial fruit leathers as well as the dryers used in this process were developed on the station.

Studies of vacuum aroma concentration of various essences, using the CAVEC (Canada Agriculture Vacuum Essence Concentration) system were continued in this era. Modifying pilot plant equipment, testing mushroom processing techniques, testing breaking pressures of bottles, which lead to the development of safety caps, studying of nutrient migration patterns in canned fruits, apple waxing problems, methods of storing pear juice concentrate to utilize the large amount of cull pears in the valley, and researching ways of developing a nucleic acid analysis to detect little cherry disease complete the myriad of research projects done by this section.

Plant pathology

In 1974 the Plant Pathology Section consisted of Welsh, as section head; Juergen Hansen, McIntosh, Lopatecki, and Rosher, as scientists; Atlee Hansen, Kosakoski, Peters, and Sawle, as technicians; and Jim May, Bill Smith, and Otto Hansen, working at the virus orchard.

Jim May retired in 1974. May's name first appeared on the pay records in 1928. Although he had several breaks in service for one reason or another, he had worked continuously since 1941.

In 1975 there were many changes in this section: Welsh and Lopatecki retired, Rosher and Kosakoski resigned, and Otto Hansen transferred to Entomology. Welsh was replaced as section head by Dave McIntosh. Linda Bottelier was hired as a technician for Juergen Hansen.

Also in 1975, Tom Li was hired and eventually became the valued assistant of John Slykhuis, who transferred from Ottawa in 1976 to fill the position vacated by Welsh. Slykhuis had previously served at Harrow Research Station, at Lethbridge Research Station, where he earned a worldwide reputation for his work with virus transmission by eriophyid mites, and more recently at the Chemistry and Biology Research Institute and the research station at Ottawa.

Peters transferred to Entomology in 1976 to assist Proverbs with the intensified codling moth sterility program, and Sawle followed shortly after to assist Gounce.

In 1977 Bill McPhee was hired as a research scientist to work on tree fruit fungus diseases and Linda Dale was hired to assist him in early 1978. At the end of 1978, Atlee Hansen, Bill Smith, and Dave McIntosh retired. Smith was replaced at the virus station by Art Dewith.

In 1980, the section was combined with Entomology for administrative purposes and Dave McMullen was the section head. Early in 1981, Raj Utkhede was hired to fill the position vacated by McIntosh and soon after, Emmerson Smith, formerly of Lethbridge and Lacombe research stations, was hired to assist him. In 1981, Dale resigned and was replaced by Ray Palmer, who had been in

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the Entomology Section since 1979. McPhee resigned in 1984 and was replaced by Peter Sholberg.

During this era research continued to develop improved methods to isolate and control various plant diseases. One major project completed in cooperation with the Entomology Section was the determination that the vector, or transmitting agent, for little cherry disease was a common insect in Okanagan orchards-the apple mealybug. The disease had spread to the Okanagan and it was feared that the Okanagan cherry industry might suffer the same fate as did the industry in the Kootenays in the 1940s. As there was no known cure for the disease, the only solution was to cut its spread by controlling the apple mealybug population and by removing infected trees,

Work is continuing on virus diseases of tree fruits and grapes and a major achievement of this section is the development of a method whereby viruses can be eliminated from tree fruit propagation stocks by chemotherapy treatment. Research continues on soil-borne diseases, especially crown rot, and several new chemical and biological control methods are showing some promise. A program has been initiated whereby monitoring techniques for plant disease organism populations within orchards and on harvested fruit are being developed in order to predict disease potential and recommend control measures.

More recently, in-depth study of the apple replant problem has begun and some of the interesting findings may prove of value in determining the cause of the disease and in developing a cure for it, which for all plant diseases is the primary objective of this section.

On Saturday, 10 January 1981 Hans Schmid, after completing some weekend work, happened to notice water gushing from under the front door of the Horticulture building. Further investigation revealed that a bunsen burner had inadvertently been left on inside a fiber glass fume hood. Somehow, something caught fire. The fire triggered the automatic sprinkler system, which promptly sprinkled the entire contents of the water reservoir as well as incoming water onto the top floor of the building, controlling the fire.

The bunsen burner was still going when the fire was discovered, but fortunately the sprinklers confined the fire to a single laboratory. Most of the damage to the building was due to, water seeping through the upper floor to the laboratories and offices below. The fact that the sawdust-insulated, wood-frame building, originally built in 1921, was not heavily damaged may be classed as a minor miracle. A catastrophe had been averted and after a few weeks of inconvenience during repairs, the staff could continue with their research programs.

In June 1981 the town of Summerland celebrated its 75th anniversary and at the suggestion of Alan Gaunce (actually at the suggestion of Gaunces wife Doreen) some of the staff felt the station should get involved in the celebrations, since it had played such a large part in Summerland's progress. In fact, it is said that in the early years many of the decisions regarding the operation of the town were made at the farm.

A committee made up of staff members was formed and it was decided to build a float and take part in the parade. Gaunce was elected to put forward the idea to the decision makers and was able to obtain some financial assistance and a lot of time from the staff and summer students to construct the float. The spirit of camaraderie and cooperation that existed and grew during this project had not been seen for some time nor has it been seen since on the station. It seemed that everyone was involved at one time or another in making the project a success. The theme of the float was light-hearted, and depicted a mobile research orchard; it won second prize. During the parade, invitations were received to attend summer parades from Osoyoos to Armstrong but it was decided only to participate in one more, namely the Penticton Peach Festival Parade. The entry took top honors in the comic division and several "absentminded" scientists were interviewed on the local television station.

It was felt that the effort resulted in a major increase in public awareness of the research station as well as a boost to employee morale. It proved that the staff at Summerland were still willing to volunteer their services in order to improve or enhance the image of the research station.

In 1976 the first correspondence occurred between the federal Minister of Agriculture and the provincial Minister of Agriculture regarding the possibility of the province participating in the construction of a joint research facility at Summerland. Since then an agreement has been made and planning and construction begun. Summerland is unique in that the station is not simply constructing a new building, it is renovating the entire research station. In addition to the construction of the new office-laboratory complex the grounds are being landscaped, a few of the existing buildings are being remodeled, some are being demolished, the roads are being repaired, and new utility lines are being installed, in addition to the acquisition of new equipment for the main building.

One unique aspect of the building is that most of the staff have participated in the actual planning. Toward the latter part of this era the intensified planning and eventually the commencement of building in November 1984, tended to bring the staff together and, as completion nears, a mounting anticipation of moving into the new facility is apparent.

The new building will have an area of 12 500 m² and 50 percent of that is planned for specialized laboratory purposes. It is designed to accommodate 135 people. The estimated construction cost is \$27 000 000, with another \$7 000 000 to be spent demolishing or renovating existing facilities. The building is to be furnished with state-of-the-art equipment and for a time, at least, will be considered the most modern, best equipped facility of its type in the world.

It is on this anticipatory note that this history of the Summerland Research Station ends. The station has had a varied and sometimes exciting existence so far. It has had its share of problems but the perseverance of the staff at Summerland to overcome all obstacles has ensured that Summerland Research Station is considered one of the cornerstones of Canadian agriculture.

Appendix I

Superintendents

Experimental Farm

R.H. Helmer	1914-1923
W.T. Hunter	1923-1932
R.C. Palmer	1932-1953
T.H. Anstey	1953-1959

Anstey participated in an exchange program with C.J. Bishop, the superintendent of the experimental farm at Kentville, N.S., from 1958 to 1959.

C.J. Bishop	1958-1959 (on an exchange program with T.H. Anstey)
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Officers in Charge

Plant Pathology Laboratory

H.R. McLarty	1921-1956
M.F. Welsh	1956-1959

Entomology Laboratory

J. Marshall	1938-1959
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Chemistry Laboratory

J.M. McArthur	1954-1959
Directors	
C.C. Strachan	1959-1970
D.V. Fisher	1971-1974
G.C. Russell	1975-1985
D.M. Bowden	1985-