IV. DISEASES OF FRUIT CROPS

A. POME FRUITS

APPLE

CALYX-END ROT (Botrytis cinerea). Specimens were received at Summerland from Edgewood, B.C. (D.L. McIntosh).

END ROT (Coniothyrium fuckelii) was tr. on McIntosh at Berwick, N.S. C. fuckelii was isolated from a few fruits (J.F. Hockey).

FIRE BLIGHT (Erwinia amylovora) was sev. in the Edmonton, Alta. district. Bee population was high at blossom time (W.P. Campbell).

BROWN ROT (Monilinia fructicola) was reported from St. Nicholas, Que. The specimens examined showed evidence of Botrytis cinerea as well (D. Leblond).

BLACK ROT (Physalospora obtusa). Mod. infection was seen on young Cortland trees at Dunham, Que. (L. Cinq-Mars). Fruit of Macoun from cold storage at Rougement, Que. was affected in April (R. Crête).

POWDERY MILDEW (Podosphaera leucotricha) is widespread in the coastal areas of B.C. and annually causes sev. injury to foliage and to current season's terminals (W.R. Orchard). In Essex Co., Ont. it is quite general in orchards where organic fungicide sprays are used. One or two pre-bloom sulfur sprays have failed to check the disease in these orchards and considerable killing of terminals and russeting of fruit is occurring on susceptible varieties such as Jonathan (R.W.W.). In the laboratory orchard at St. Catharines, Ont. mildew was general on terminal leaves. On unsprayed trees 54% of the foliage was affected. In sprayed plots infections ranged from 3% in plots with a full sulfur program to 40% where no sulfur was used. Mildew was reported from most apple growing districts of Ont. affecting the varieties Cortland, Jonathan, Toleman and McIntosh (G.C. Chamberlain). Sl.-mod. infections were seen on Cortland at Dunham, Que. McIntosh in the same orchard was unaffected (L. Cinq-Mars). It was sev. on Cortland at Rougemont, Que. (R. Crête). Mildew was 7-sl. 1-mod./8 Que. nurseries inspected in 1958 (J. Ringuet).

SCAB (Venturia inaequalis). Some early infections were seen in the Creston Valley, B.C. on terminal growth but hot, dry weather during the summer effectively checked further development. Infected fruit was found only in inadequately sprayed orchards (J.M. Wilks). Unsprayed McIntosh at St. Catharines, Ont. had 30-40% foliage infection and 90%

fruit infection. Scab-free fruit was produced in plots sprayed with organic fungicides. Reports from the apple growing districts of Ont. indicate that scab was generally less important than usual and that spray programs were generally effective (G.C.C.). Specimens were received from widely separated areas in Que. (D. Leblond). Infection was 20% on Wealthy at Riviere - x Chiens, 30% on Wealthy and 50% on Fameuse at St. Pierre Isle Orleans, Que. (L.J. Coulombe). Scab was generally well controlled in N.B. in 1958 but inadequate or poorly timed spray programs resulted in some sev. infections. Pin-point scab was widespread at harvest. Some unsprayed trees were defoliated by July (S.R. Colpitts, J.L. Howatt). Apple scab was very sev. in N.S. in 1958. The first ascospore discharge was recorded 24 April and the first infection period 28-30 April. Primary scab lesions were first observed 20 May. Five infection periods occurred in May and timing of sprays was made difficult. June was fairly dry with only 1 mod. and 1. sev. infection period while in July there were 2 mod. and 2 sev. infection periods. Considerable late season scab developed in many commercial orchards particularly on McIntosh (R.G. Ross).

Ascospore discharge of the Apple Scab Fungus in Prince Edward Island in 1958

Carl Willis

Studies on the discharge of ascospores by the apple scab fungus Venturia inaequalis (Cke.) Wint. in relation to primary spring infection were begun on 6 May, 1958 and continued for a sixty-day period. A farm orchard of about twenty trees, situated near Charlottetown and comprised of several varieties, was chosen for the project. These trees, unsprayed in 1957, had been severely attacked by the scab fungus with the result that the ground was littered with leaves in which the fungus had over-wintered. The smeared slide technique was employed in detecting and determining the relative extent of ascospore discharges.

Ascospore discharge took place over a 20-day period beginning 18 May and ending 6 June. Four periods of appreciable discharge took place, the first extending over a 3-day period, 18 May to 20 May the second and heaviest over the 2-day period 25 May to 26 May the third lasting but one day, 2 June and the fourth lasting but 1 day, 6 June. Trace discharges were found on 6 other days. All periods of discharge were marked by abundant rainfall and near normal temperatures. The first apparent infection showed on leaves of unsprayed trees on 6 June following a 20-day germination period marked by frequent showers and cool nights.

Table 14

Ascospore Discharge[1]

Period of Discharge	Number of Ascospores
May 18 to May 20	305
" 21	Trace
" 23	Trace
" 25 to May 26	742
" 28	Trace
" 29	Trace
June 2	573
" 6	470
" 14	Trace
" 22	Trace

[1]Figures are relative, being the total number of ascospores observed on ten high power microscope fields of the specimen slides.

In general, apple scab was severe in unsprayed and poorly sprayed orchards in the P.E.I. in 1958.

BARK DECAY. At Chatham, N.B. 13/36 trees were girdled by organisms apparently originating in compost piled around the bases of the trees (S.R.C.).

HAIL. An area of about 1 sq. mi. containing 20,000 trees at Rougemont, Que. was affected by a heavy hail storm on 26 July. On most trees about 50% of the fruit was cracked and rendered unsaleable (R. Crête).

RUSSETING. The effects of frosts and spray injuries were widespread in N.B. in 1958 (S.R.C.).

SOGGY BREAKDOWN (non-parasitic). McIntosh and Cortland samples at the retail level at Jonquiere, Que. in March were affected (D. Leblond).

MAGNESIUM DEFICIENCY was seen in 6 Que. nurseries. In 2 of these, on light soils, the condition was sev. at the end of the season (J. Ringuet).

Pome Fruit Virus Diseases in British Columbia

M.F. Welsh and F.W.L. Keane

The apple virus investigations initiated at Summerland in 1953 have produced results in 1958 that indicate the common occurrence of several viruses in commercial apple plantings in British Columbia. The virus that causes stem pitting in a number of hardy apple body stock varieties has been demonstrated to be carried in commerical apple trees of Golden Delicious, Rome Beauty, Red Delicious and Red Winesap.

The presence of the rubbery wood virus has been demonstrated in Red Delicious in commercial orchards and is strongly suspected in clones of several other varieties. A virus obtained from a clone of Rome Beauty when transferred to Virginia Crab caused dwarfing and decline, and another virus from two clones of Viriginia Crab caused a leaf mottle in Prunus tomentosa. Evidence has been obtained that would indicate that the rubbery wood virus is distinct from the stem pitting virus.

Transmission tests have shown that a fruit pitting condition in Flemish Beauty pear is caused by a virus distinct from the stony pit virus, since it could not be transmitted to the variety Bosc.

PEAR

FIRE BLIGHT (Erwinia amylovora) was generally mod. in the Creston Valley, B.C. but sev. in some orchards where proper control practices were not carried out (J.M. Wilks). It was not a problem in the Niagara Peninsula, Ont. but specimens of diseased wood from the Georgian Bay district were seen (G.C. Chamberlain).

LEAF SPOT (Septoria pyricola) caused some defoliation at Toronto, Ont. (G.C.C.).

SCAB (Venturia pirina) was mod. in Flemish Beauty at St. Catharines, Ont. and caused blemishes on 15-20% of the fruit (G.C.C.). Sl.-mod. infections were seen in Kamouraska Co., Que. (R.O. Lachance). Specimens were received at Kentville from Pictou and Halifax Counties, N.S. (J.F. Hockey).

ANJOU PIT (cause unknown). This disease, also known as cork spot was sev. on d'Anjou pears in the Okanagan and Similkameen Valleys of B.C. Industry officials estimated that one-quarter to one-third of the d'Anjou crop was affected. This fruit pitting occurs in varying degrees of

severity in a few scattered orchards each year. In most orchards it occurs in only some seasons with crops of normal fruit in the intervening years. In 1958 it was more common and more sev. than in any previous season, especially in districts from Kelowna north. Two lines of investigation have been in progress at Summerland for several years: (1) to determine the effect of rootstock type on disease incidence and, (2) to determine whether or not the disease is of virus origin (M.F. Welsh).

LEAF SCORCH (physiological) is a fairly common condition in the St. Catharines district of Ont. where it affects only the variety Bartlett. Foliage assumes a reddish-brown coloration and leaves eventually dry out and die. It is considered to be related to shallow rooting and the occurrence of hot, dry weather (G.C.C.).

B. STONE FRUITS

APRICOT

BLOSSOM AND TWIG BLIGHT (Monilinia laxa). A small percentage of trees in a few orchards at Osoyoos, Okanagan Falls, Penticton and Summerland were affected (D.L. McIntosh).

VERTICILLIUM WILT (V. albo-atrum). All the trees in a newly planted block of 3-year old stock were affected at Trout Creek Point, B.C. (G.E. Woolliams).

Twisted Leaf of Cherry and Ring Pox of Apricot

T.B. Lott and F.W.L. Keane

Twisted leaf of cherry and ring pox of apricot have, for some years, been spreading slowly in the Okanagan and Similkameen Valleys of B.C. The two diseases frequently occur together in the same locations. It was shown experimentally that inoculum from diseased cherries often produced ring pox on apricot, and inoculum from ring pox infected apricots produced twisted leaf in cherry. It was also shown that the common native chokecherry could be a symptomless carrier of the twisted leaf virus. Chokecherries growing in locations where one or both of the diseases were present in commerical orchards were indexed on Bing cherry and on apricot. Ring pox appeared on some but not all of the apricots and twisted leaf on some but not all of the cherries. This work confirmed the fact that the viruses causing twisted leaf and ring pox were present in chokecherries growing adjacent to infected orchards. Further work is in progress to test for the presence of the viruses in chokecherries growing at some distance from commerical orchards.

CHERRY

CORYNEUM BLIGHT (Clasterosporium carpophilum) occurred in a home garden at Vancouver, B.C. (H.N.W. Toms).

BLACK KNOT (Dibotryon morbosum). Specimens on sour cherry were received from La Malbaie, Quebec City and Duchesnay, Que. (D. Leblond), and was sev. on Montmorency at Ste. Anne de la Pocatiere, Que. (R.O. Lachance).

BITTER ROT (Glomerella cingulata) was particularly sev. on sour cherry throughout the lower St. Lawrence district of Que. (D. Leblond).

SHOT HOLE (Higginsia hiemalis). Sl. infections were observed in July in the St. Catharines district, Ont. The disease became more sev. in the fall and caused partial defoliation in Oct. It was generally less serious than in recent years (G.C. Chamberlain). Shot hole was recorded from Quebec City, Mont Joli and Montmagny, Que. (D.L.). Unsprayed trees at Kentville, N.S. were completely defoliated (C.O. Gourley).

BLOSSOM AND TWIG BLIGHT (Monilinia fructicola). Bing had 13% infection at St. Catharines, Ont. (G.C.C.). Early Rivers at Tupperville and most varieties at Kentville, Grand Pre and Round Hill, N.S. were 1-2% infected with resultant die back of twigs (C.O.G.).

BROWN ROT (Monilinia fructicola, M. laxa). Diseased fruit from Vernon, B.C. was infected with M. laxa. At Osoyoos, 20% of the fruit on a few trees in 1 orchard were infected with M. fructicola (D.L. McIntosh). Bing was 20% affected at harvest at St. Catharines, Ont. (G.C.C.), and was 50% rotted on an unsprayed tree at Kentville, N.S. (C.O.G.).

POWDERY MILDEW (Podosphaera oxyacanthae) was seen on a few young nursery trees at Ocean Park, B.C. (H.N.W.T.). Unsprayed trees of Montmorency and Sam in the Creston Valley, B.C. had 60% of the new growth affected (J.M. Wilks), and infections were found throughout the Summerland, B.C. district on young leaves and fruit. Affected fruits were much smaller than healthy fruits (G.E. Woolliams). It was commonly encountered in the St. Catharines, Ont. district causing a curling of terminal leaves (G.C.C.).

VERTICILLIUM WILT (V. albo-atrum). Wilt was found in bearing sweet cherry trees in several orchards in the Summerland, B.C. district (G.E.W.).

LITTLE CHERRY (virus). Symptoms were sev. on Lambert in the Creston Valley, B.C. rendering much of the crop unmarketable. Bing was only mildly affected (J.M.W.).

Little Cherry and K.+S. Disease

T.B. Lott and F.W.L. Keane

Kwanzan and Shiro-fugen flowering cherries at Summerland, B.C. were indexed for the virus causing K.+ S. disease. This virus causes a disease in sweet cherry very similar to little cherry. The indexing showed that the stocks of Kwanzan in use at Summerland were infected but that the Shiro-fugen stocks were not. The Kwanzan stocks have been eliminated.

Despite the proximity of the Kwanzan stocks to sweet cherry trees of bearing age and to the indexed stocks of Shiro-fugen there was no evidence of natural spread of the K.+S. virus from Kwanzan to sweet cherry or Shiro-fugen. Flowering cherries are present to a limited extent as ornamentals throughout the Okanagan Valley. It appears probable that the K.+S. virus, similar to, and perhaps identical with, the little cherry virus, is now present and has been present for years in at least some of the flowering cherry trees. In the absence of spread to sweet cherries, and in the absence of symptoms in the flowering cherries, the K.+S. virus could remain present and undetected in the flowering cherries indefinitely.

Little cherry is as yet unreported in the Okanagan and Similkameen Valleys.

Yellows and Necrotic Ring Spot of Cherry

T.R. Davidson

In the Niagara Peninsula leaf symptoms of yellows accompanied by leaf drop was widespread in 1958 but not as sev. as in 1957. Etch symptoms of necrotic ring spot were somewhat more prevalent than in 1957 but did not reach the proportions of 1956. Weather conditions in the spring of 1958 seem to have favored the development of yellows rather than ring spot symptoms.

Spread of these diseases appears to depend upon the age of trees, internal inoculum and isolation from diseased orchards. The greatest spread occurs in orchards 5-10 years of age. One non-isolated virus-free orchard remained healthy for 4 years but in the fifth year 4.5% of the trees

became diseased. A similar orchard with minimum isolation of 100 yards also remained healthy for 4 years. However, in the fifth year 1% of the trees developed disease. In contrast, the spread of virus diseases in a third orchard without isolation and containing an initial internal inoculum of 3% diseased trees has been 4, 5, 7, 16 and 3% in each of the five years respectively.

Other Observations

One English Morello tree at Kentville, N.S. was sev. infected with yellows (G.O. Gourley).

GUMMOSIS (cause undetermined). A few branches of 1 tree in a home garden at Vancouver, B.C. bore linear lesions quite different from those of bacterial canker (H.N.W.T.). A gummosis of undetermined origin was also observed at Loretteville, Que. (D. Leblond).

PEACH

SCAB (Cladosporium carpophilum). Numerous scab spots occurred on the stem end of fruit of Golden Jubilee in an orchard at St. Catharines, Ont. In another the complete crop of 6 trees was badly blemished (G.C. Chamberlain). At Canard, N.S. the scab organism produced small cankers on peach twigs (C.O. Gourley).

CORYNEUM BLIGHT (Clasterosporium carpophilum) caused sl. damage to a tree in a home garden at Vancouver, B.C. (H.N.W. Toms). Light infections were seen on unsprayed trees in the Creston Valley, B.C. (J.M. Wilks).

DIE BACK (Cytospora leucostoma) was sl. at Grand Pre and Wolfville, N.S. (C.O.G.).

BLACK KNOT (Dibotryon morbosum). Tr. infections occurred at Grand Pre, N.S. (C.O.G.).

BLOSSOM AND TWIG BLIGHT (Monilinia fructicola) was tr. in home garden in Vancouver, B.C. (H.N.W.T.). Infection was 5% on Vedette at St. Catharines, Ont. (G.C.C.).

BROWN ROT (Monilinia fructicola). Between 25 and 62% of Vedette fruit held in common storage for 5 days at St. Catharines, Ont. was affected (G.C.C.). A tr. infection was seen at Woodville, N.S. (C.O.G.).

RHIZOPUS ROT (R. nigricans) destroyed a third of the fruits in a packed basket at St. Catharines, Ont. (G.C.C.).

The Post-Harvest Treatment of Peaches for Processing

T. B. Harrison

Fruit rots can cause serious losses in harvested peaches held at the farm until soft ripe for the processor. Infection generally appears at the stem end which is occasionally torn at picking.

In 1958 fruit was available from Elberta trees which had been sprayed with sulphur and DDT three weeks before harvest. Fruit dips were prepared using three commercial fungicides at the following rates in 100 gallons of water (a) captan, 2 lbs., (b) Cyprex, 1 lb., and (c) wettable sulphur, 6 lbs. A water dip served as a control. Harvested fruits were dipped for one minute in each of the preparations and were then stored in either (1) the orchard, (2) the packing shed, or (3) a darkened potato cellar.

After seven days the stored fruit was examined for the presence of rots and infected fruits were set aside of positive identification of the organism concerned. Rot in unprotected fruits held in the orchard exceeded 50 per cent. The fungicidal dips reduced this wastage by one half. Unprotected fruits stored in the packing shed were about 25 per cent rotted and those receiving the fungicidal treatment showed less rot. In the cellar, under uniform day and night temperatures of about 62°F, the differences between treatments were negligible. Sulphur treated fruit did not become infected. The cellar, in contrast to the packing shed and particularly the orchard, was not infested with fruit flies Drosophila spp.

Rhizopus sp. was the causal organism most frequently encountered with some brown rot, Monilinia fructicola, evident on sulphur treated and unprotected fruits. This trial demonstrated that environmental conditions are of considerable importance in the post-harvest ripening of peaches, that fungicidal dips will reduce post-harvest losses from rots under adverse conditions, and that Rhizopus sp. rather than Monilinia fructicola may be the principal rot organism involved.

POWDERY MILDEW (Sphaerotheca pannosa) affected the shoot tips of a dozen trees in the University orchard, Vancouver, B.C. and was seen on fruit from a home garden in Vancouver (H.N.W.T.). It caused blotchy spotting on 50% of the fruits of several varieties at Beamsville, Ont. in a low area where air drainage was poor (G.C.C.). Powdery mildew was seen for the first time in N.S. All varieties in all orchards examined at Woodville and Kentville were affected to the extent of 1-5% of the fruit. Application of sulfur fungicides checked its development (R.G. Ross, C.O.G.).

Powdery Mildew of Peach

G.O. Gourley

On the 15 July, 1958, an abnormal spotting was noticed on the fruit of a peach tree growing in a home garden at Kentville, N.S. This proved on examination to be a species of powdery mildew, possibly Sphaerotheca pannosa (Wallr.) Lev. Cleistothecia were not produced on the peach fruit.

Subsequent examinations of commercial peach orchards revealed that powdery mildew was present on the fruit in all orchards visited ranging in intensity from a trace to approximately five per cent. Mildew was not found on the twigs, buds or leaves of the peach tree. Infected areas on the fruit ranged from barely visible greyish spots to spots of 1-1 1/2 inches in diameter.

A survey of the variety trial orchard situated on the Kentville Experimental Farm showed that the possibility of varietal resistance to powdery mildew is quite remote. Of the 68 varieties examined 58 had mildew infection on the fruit, seven had no fruit and three had less than a dozen peaches per tree. Since this is the first time that powdery mildew has been found on the peach in Nova Scotia it is difficult to explain the sudden widespread infection that occurred in 1958.

An application of sulfur fungicide, on the recommendations of the Kentville laboratory, arrested the growth of established infections and no new infections developed on sprayed trees. The color of the infected areas, after the fungicidal application, gradually faded until at harvest the spots were scarcely discernible.

LEAF CURL (Taphrina deformans) affected 10 trees early in April in the University orchard, Vancouver, B.C. (H.N.W.T.). A few unsprayed trees at Port Weller, Ont. were almost 100% infected.. No leaf curl was seen in sprayed orchards (G.C.C.). Infection was sev. at Woodville Mills, P.E.I. (J.E. Campbell). In N.S. dormant sprays of ferbam or Bordeaux did not give complete control in 1958. Specimens were received from most peach growing areas of the Annapolis Valley (C.O.G.).

VERTICILLIUM WILT (V. albo-atrum). Most of the 3-year old trees in a newly planted block of Valient and Jubilee were mod.-sev. affected at Trout Creek Point, B.C. The disease is also present in older trees in

several other orchards in the district (G.E. Woolliams). It caused the loss of 25% of the trees in a 6-acre, 2-year old block in Essex Co., Ont. Tomatoes, peppers and other susceptible crops had been planted on this land for several years prior to the setting out of the orchard (R.W. Walsh). At Virgil, Ont. wilt caused defoliation of 1 side of 8/100 trees (G.C.C.).

WINTER INJURY. In many orchards in Essex Co., trees died from injury attributed to the low temperatures and drying winds of the previous winter. Necrotic areas 3-10 inches wide occurred in the bark of the trunks from ground level to a height of 2 feet. In many cases the trunk was completely girdled. Necrotic spots 10-50 mm. in diameter appeared in the cambium layer of scaffold limbs. Losses ranged from a few to 10% of the trees in orchards of 2-10 acres in size and from 2-12 years of age (R.W.W.).

PLUM

BLACK KNOT (Dibotryon morbosum) occurred in a home garden at Kelvington, Sask. (T.C. Vanterpool). Many trees in the Saint John, N.B. area were sev. affected (S.R. Colpitts). Approximately 25 trees in a neglected plum orchard at Canard, N.S. were killed by the black knot fungus (C.O. Gourley). Damson plum trees were sev. affected in the South East Placentia district of Nfld. (O.A. Olsen).

BLOSSOM AND TWIG BLIGHT (Monilinia fructicola) affected about 1% of the twigs of Magnum Bonum at MacDonald's Corner, N.S. (C.O.G.).

PLUM POCKETS (Taphrina pruni) destroyed 50% of the fruit of trees in a home garden at Ottawa, Ont. (I.L. Conners). Trees in a small orchard at St. Stepehen, N.B. were sev. infected (S.R.C.). Infection was 10% on Burbank at Upper Dyke, N.S. (C.O.G.).

LOW TEMPERATURE INJURY. About 80% of the fruit in a carload of California plums showed internal evidence of protracted storage at temperatures close to 32°F. (J.L. Howatt).

PRUNE

BLACK KNOT (Dibotryon mobrosum). Fellenburg prune trees at Port Weller, Ont. were sev. attacked. Italian prune was much less seriously affected. Scattered infections were reported on Stanley prune at Niagara Falls, Ont. (G.C. Chamberlain).

C. RIBES FRUITS

CURRANT

WHITE PINE BLISTER RUST (Cronartium ribicola) was mod. on 1 red currant bush at Clearwater Bay, Ont. (W.L. Gordon). Infection was heavy at Trois Pistoles, Que. (D. Leblond). It was observed in 7 Que. nurseries. Infection ranged from 5-80% (J. Ringuet). Light infections were seen at St. John's West, Nfld. (O.A. Olsen).

ANTHRACNOSE (Drepanopeziza ribis). A 2% infection caused some defoliation at Waterville, N.S. (C.O. Gourley).

POWDERY MILDEW (Sphaerotheca mors-uvae) occurred on the foliage and fruit of black currants at Summerland, B.C. Cleistothecia developed on the fruit. The disease is common throughout the Okanagan Valley (G.E. Woolliams). Sev. affected specimens were received from 2 localities in northern Sask. (R.J. Ledingham). Infection was tr. on black currants at Trois Pistoles, Que. (D.L.).

GOOSEBERRY

WHITE PINE BLISTER RUST (Cronartium ribicola). Light infections were recorded on several varieties at St. John's West, Nfld. (O.A. Olsen).

RUST (Puccinia caricina) was tr. at Kentville, N.S. (C.O. Gourley).

POWDERY MILDEW (Sphaerotheca mors-uvae). The variety White Smith was sev. infected at Kentville, N.S. and suffered a loss of 50% of the fruit (C.O.G.).

D. RUBUS FRUITS

RASBERRY

CROWN GALL (Agrobacterium tumefaciens) was seen on Viking in 2/27 nurseries inspected in Que. (J. Ringuet).

GRAY MOLD (Botrytis cinerea). Infection of twigs and berries was sl. at Berthier and Ste. Foy and sev. at Lac des Aigles, Que. (D. Leblond).

SPUR BLIGHT (Didymella applanata) was general in the Quebec City area causing varying amounts of damage (D.L.). Specimens were received from Abitibi Co., Que. (L.J. Coulombe). Viking was 15% infected at Berwick, N.S. (C.O. Gourley).

ANTHRACNOSE (Elsinoë veneta). Sev. affected canes from Belleville, Ont. were received at Ottawa (D.W. Creelman). It was observed on Herbert, Newburg and Viking at Ste. Foy, and specimens from Ste. Angele de Laval and Beaumont, Que. were examined (D.L.). It was 1-sl./27 Que. nurseries (J. Ringuet). Anthracnose is common in N.B. An unsprayed plantation of Viking at Sussex, N.B. was 100% infected with some killing of young shoots (S.R. Colpitts). Infection was 2% on Viking, Newburg, Durham and Indian Summer at Berwick, N.S. (C.O.G.). Sev. damage occurred in a planting at Port Lorne, N.S. New growth was sharply reduced and many berries were deformed. At Kentville, N.S. fall cutting and burning of infected canes of a susceptible variety was effective in cleaning up a sev. infection. (K.A. Harrison). Anthracnose was general in P.E.I. in 1958 especially where canes were crowded. Flower stalks and fruit as well as leaves and canes were attacked at Charlottetown causing considerable damage to the crop (J.E. Campbell). Infection ranged from 10-15% at St. John's West, Nfld. (O.A. Olsen).

CANE BLIGHT (Leptosphaeria coniothyrium) was mod. at La Gorgendiere, Que. (D.L.).

LATE LEAF RUST (Pucciniastrum americanum) occurred in 12/27 Que. nurseries (J. Ringuet). It was widespread and destructive in N.B. in 1958. The cool, wet weather seemed favorable for its development. In many cases 50% of the berries were affected (J.L. Howatt). Viking was heavily attacked at New Haven, P.E.I. (J.E.C.). Viking also showed 30% fruit infection at Aylesford and 100% infection in a planting at Kentville, N.S. Many specimens were received at Kentville, for identification (K.A.H.). A 10% infection was seen at Berwick, N.S. (C.O.G.). and tr. infections occurred at St. John's West, Nfld. (O.A.O.).

LEAF SPOT (Mycosphaerella rubi) was tr. on Trent at Melvern Square and Berwick, N.S. (C.O.G.).

VERTICILLIUM WILT (V. albo-atrum) was more prevalent in Essex Co., Ont. than at any time in the last 8 years. In addition to its occurrence on raspberry it was observed on a wide range of hosts including strawberry, tomato, pepper, eggplant, barberry and multiflora rose (R.W. Walsh). It was sev. at Berthier, Que. (D.L.). At Ste. Famille and Ste. Pierre on Ile Orleans and at Chateau Richer, Que. wilt was sl-mod. in poorly drained portions of fields (L.J.C.).

BLUESTEM (Verticillium albo-atrum). Specimens were seen from Dundas, Ont. (G.C. Chamberlain).

LEAF CURL (virus). A plantation at Moncton, N.B. was 75% affected. Plants were stunted and the crop was a near failure (S.R.C.).

MOSAIC (virus) ranged from 0.2-5% in 17/27 Que. nurseries (J. Ringuet). It is widespread in most garden plots in N.B. A 30% infection was recorded in Viking at Gagetown, N.B. (S.R.C.).

TOBACCO NECROSIS VIRUS. This soil-borne virus infected plants both in the greenhouse and in experimental plots at Vancouver and Agassiz, B.C. (R. Stace-Smith).

FROST INJURY. Late spring forsts injured plants at Ste. Angele de Laval, St. Henri and La Ferme, Que. (D.L.).

HEAT AND DROUGHT INJURY. Dry weather affected raspberries generally in Sask. The injury was further aggravated by mite infestation (T.C. Vanterpool).

IRON DEFICIENCY symptoms occurred on second-year canes in 2 home gardens at Lulu Island, B.C. (H.N.W. Toms).

BLACKBERRY

ANTHRACNOSE (Elsinoë veneta). Blackberry canes in a home garden at Southport, P.E.I. did not set fruit. Anthracnose lesions were numerous on leaves and canes and particularly on flower parts (J.E. Campbell).

MAGNESIUM DEFICIENCY. Interveinal and marginal necrosis typical of Mg. deficiency was quite pronounced on blackberry leaves at Tryon, P.E.I. (J.E.C.).

E. OTHER FRUITS

BLUEBERRY

Twig and Blossom Blight of Lowbush Blueberry

C.L. Lockhart

Twig and blossom blight caused by Botrytis cinerea Pers. and Monilinia vaccinii-corymbosi (Reade) Honey was more severe than usual in lowbush blueberries in Nova Scotia during 1958. Blueberries at

Steam Mill and two fields at Lakeville in Kings County were found to be 5 and 2 per cent infected respectively. In a survey in Cumberland County in mid-July, blighted blossoms and mummy berries were found in the Farmington district where the disease had not been observed previously. The Farmington fields showed 2 per cent infection.

A grower at West Brook, also in Cumberland County, reported a heavy infection of twig and blossom blight in a field not dusted while nearby blueberry fields that were dusted showed a satisfactory control of twig and blossom blight.

The blueberry crop in 1958 was about two-thirds of a normal crop and it is estimated that 15 per cent of the loss was due to twig and blossom blight.

Frost damage to lowbush blueberries

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Lowbush blueberry blossoms were damaged by frost on June 9, 1958 in a field at West Brook, Cumberland County, N.S. The plants were near the mid-bloom stage. The petals and stamens turned brown and dropped. On examination it was found that 10 per cent of the ovaries had turned dark due to the frost. The subsequent loss of 95 per cent of the blue berry crop may have been partially due to the loss of pollen when the petals dropped. Several other fields in Cumberland County were visited in mid-July and none were found to have been seriously affected by the frost. Two growers with fields in the Truro area of Colchester County reported severe frost damage. One grower did not attempt to rake his fields and the other had only a 5 per cent crop.

Other Observations

RED LEAF (Exobasidium vaccinii) was widespread in most blueberry fields in Charlotte Co., N.B. but damage was sl. (S.R. Colpitts). The average damage caused by red leaf in N.S. was estimated at 3% (C.L.L.). At Avondale and Upper Gullies, Nfld. red leaf was much more prevalent than in 1957 (O.A. Olsen).

FUSICOCCUM CANKER (F. putrefaciens). Crowns of the variety Kengrape at Kentville, N.S. were sev. infected (C.L.L.).

TWIG AND BLOSSOM BLIGHT (Monilinia vaccinii-corymbosi) was general in Charlotte Co., N.B. in 1958 and damp, cool weather prevailed during bloom. The yield reduction attributed to blight was 10% (S.R.C.).

WITCHES' BROOM (Pucciniastrum goeppertianum) was present in all blueberry fields examined in Charlotte Co., N.B. (S.R.C.). Scattered infections were seen in all fields at the blueberry sub-station at Avondale, Nfld. The heaviest infections occurred in the area burned over in the spring of 1958 (O.A.O.).

MOSAIC (virus). One plant of each of the varieties Pioneer and Atlantic was infected at Kentville, N.S. The Atlantic plant showed sev. symptoms (C.L.L.).

STUNT (virus). One 30-year old plant of the Grover variety at Kentville, N.S. was sev. affected and produced little fruit (C.L.L.).

CHEMICAL INJURY. At Sutherland's Lake, N.S. sev. defoliation followed a heavy application of dust containing calcium arsenate for maggot control (C.L.L.).

GRAPE

BLACK ROT (Guignardia bidwellii). Infection on Agawam at Stamford, Ont. was light and a few vineyards at Grassie's Ont. were mod. infected with some berry rot and shelling (G.C. Chamberlain).

DEAD ARM (Phomopsis viticola). Sev. stunting of arm growth was noted in young plantings of Seibel 10878 in the Niagara Peninsula, Ont. This is a new variety which appears to be very susceptible to infection by P. viticola (G.C.C.).

DOWNY MILDEW (Plasmopara viticola). In the absence of protective sprays heavy infections occurred on such susceptible varieties as Van Buren and Fredonia in many small plantations in Essex Co., Ont. It was more sev. and widespread than at any time in the last 8 years (R.W. Walsh). In the St. Catharines district of Ont. the disease was commonly found in vineyards of Fredonia, Buffalo and Van Buren causing a considerable loss of fruit clusters. A complete loss of fruit was sustained in a 200-vine planting of Buffalo despite the application of Bordeaux sprays. Poor timing of the first spray was probably responsible (G.C.C.).

POWDERY MILDEW (Uncinula necator). Mod.-sev. infections occurred on Seneca, Delaware and Agawam in the Niagara Peninsula, Ont. (G.C.C.).

STRAWBERRY

GRAY MOLD (Botrytis cinerea) was sev. in a planting at Fort Garry, Man. About 50% of the blossoms were destroyed (B. Peturson). A few fruits of Premier were rotted at St. Catharines, Ont. (G.C. Chamberlain). It was mod. on Senator Dunlop at Ste. Foy, Que. (D. Leblond). Flower infection and rot of berries was sev. at Gagetown, N.B. The weather at harvest was cool and damp. Plantations with lush growth suffered heavily (S.R. Colpitts). In Kings Co., N.S. Botrytis fruit rot was not serious in 1958. It occurred near the end of the picking season in some irrigated fields (C.O. Gourley).

LEAF BLIGHT (Dendrophoma obscurans) was tr. on Senator Dunlop at Kentville, N.S. (C.O.G.).

LEAF SCORCH (Diplocarpon earliana). The perfect stage was found on overwintered leaves at Kentville, N.S. (C.O.G.).

LEAF BLOTCH (Gnomonia fructicola) caused sl.-mod. injury to foliage in Vancouver Island, B.C. plantings (W.R. Orchard). Infection on hulls of ripe berries of Sparkle was 2% at Kentville, N.S. (C.O.G.).

LEAF SPOT (Mycosphaerella fragariae) was widespread in N.B. fields and in some caused defoliation (S.R.C.). Wild strawberries at Melvern Square, N.S. were 100% infected (C.O.G.). Infection was about 20% on several varieties at St. John's West, Nfld. (O.A. Olsen).

RED STELE (Phytophthora fragariae) is present in many Vancouver Island, B.C. plantings. Damage ranges from sl.-sev. (W.R.O.). At Chester Basin, N.S. Catskill plants in a low, wet area of a field were sev. affected by red stele. Sparkle plants, immediately adjacent but not quite so wet, were entirely free of the disease (C.O.G.).

ROOT-LESION NEMATODES (Pratylenchus penetrans) were found in 24/48 samples from the Fraser Valley and in 8/12 samples from Vancouver Island, B.C. (J.E. Bosher).

PIN NEMATODES (Paratylenchus sp.) occurred in 5/12 soil samples from strawberry fields at Keating, B.C. (J.E.B.).

CROWN AND ROOT ROT (Rhizoctonia solani). This organism was isolated consistently from plants whose characteristic field symptom was a sudden permanent wilt immediately prior to and during the early fruiting stage. The disease was widespread on the B.C. mainland and Vancouver Island and caused an estimated 5-10% loss of the potential crop (W.R.O.).

POWDERY MILDEW (Sphaerotheca humuli) caused sev. damage on Vancouver Island, B.C. in plantings where preventative sprays were not applied. At Penticton, B.C. the disease caused sl. injury consisting of an indefinitely outlined red-colored lesion. The fungus grows on the lower leaf surface as a very scanty, evanescent growth which can be detected only with the aid of a microscope (G.E. Woolliams). Infection was light in a home garden at Hemmingford, Que. (R. Crête). Tr. infections were seen in several districts in N.S. both in fruiting and nursery plantings. The application of Karathane appeared to provide protection (C.O.G.).

WILT (Verticillium albo-atrum) continues to be a problem in commercial strawberry plantings in B.C. In some cases damage is sev. (W.R.O.). At Port Williams, N.S. 50% of a small planting was infected. The infected plants died (C.O.G.).

GANGRENE (various organisms). Affected plants were observed at St. Laurent, Deschambault, Les Boules and Trois Pistoles, Que. Isolations from affected crowns yielded Botrytis cinerea, Verticillium albo-atrum, Fusarium spp. and other organisms (D. Leblond).

ROOT ROT (various organisms) caused sl. damage to Senator Dunlop at St. Pierre, Isle Orleans, Que. (L.J. Coulombe).

GREEN PETAL (virus) was mod. on Senator Dunlop at Ste. Foy, Que. Yellows symptoms were striking on adjacent carrots, and Callistephus and alsike clover growing amongst the strawberries showed symptoms of phyllody (D.L.). It was tr.-mod. mainly on Senator Dunlop in the lower St. Lawrence and Quebec City districts. In fields in their first year of production tr. infections only were seen. In the second producing year infection was as much as 5-10% while in a few older fields 20-25% of the plants were affected. Green petal does not seem to be a menace since very few growers retain plantings past the second production year (R.O. Lachance). In N.B. it was widespread but did not exceed 2% infection in any of the fields checked (S.R.C.). Green petal was found in all commercial varieties in Kings and Annapolis counties, N.S. Most new plantings had some infection which in some instances ran as high as 5%. The average infection was 2%. Specimens were seen as well from Pictou, Yarmouth, Lunenburg and Cumberland counties (C.O.G.).

TOBACCO NECROSIS VIRUS. This soil-borne virus affected plants in both the greenhouse and experimental plots at Vancouver and Agassiz, B.C. (R. Stace-Smith).

JUNE YELLOWS (genetic breakdown) occurred on Premier affecting about 5% of the plants in fields at Grantham and Port Weller, Ont. Affected plants were stunted (G.C.C.).

CHEMICAL INJURY. The application, in hot weather, of lime-sulfur for powdery mildew control caused sl. injury to the foliage of plants on Vancouver Island, B.C. (W.R.O.).

V. DISEASES OF TREES AND SHRUBS

ABIES - Fir

Witches' Broom (Melampsorella caryophyllacearum). Light infections were observed on A. balsamea at Upton, P.E.I. (J.E. Campbell).

ACER - Maple

Leaf Spot (Phleospora aceris) was sev. on A. pensylvanicum at Ste. Anne de la Pocatiere, Que. (D. Leblond).

Leaf Spot (Phyllostica minima) was mod. on A. rubrum at Ste. Anne de la Pocatiere and specimens on A. saccharinum were received from Quebec City, Que. (D.L.).

Tar Spot (Rhytisma punctatum) was sev. on A. spicatum at Ste. Anne de la Pocatiere, Que. (D.L.).

Frost Injury. Late spring frosts in Que. caused extensive damage to A. saccharinum at Quebec City and to A. saccharum at St. Come de Liniere and St. Jean de Dieu, Que. (D.L.).

AESCULUS - Horse Chestnut

Leaf Blotch (Guignardia aesculi). Leaf blotch was general on horse chestnut in P.E.I. in 1958. (J.E. Campbell). Reports from Amherst, N.S. indicated a 90% infection and sev. defoliation in Aug. (J.F. Hockey). At Kentville, N.S. about 2% of the foliage was infected (C.O. Gourley).

AMELANCHIER

Rust (Gymnosporangium clavariaeforme) was mod. on A. stolonifera at Ste. Anne de la Pocatiere, Que. (D. Leblond) and sl. on Amelanchier sp. in the vicinity of St. John's, Nfld. (O.A. Olsen).

Leaf Spot (Phyllosticta ? paupercula) caused a mod. infection on A. stolonifera at Ste. Anne de la Pocatiere, Que. The spores in this collection were larger than those of P. innumerabilis (D.L.).

Leaf Blotch (Physalospora obtusa) was sl. on A. stolonifera at Ste. Anne de la Pocatiere, Que. (D.L.).