IV. DISEASES OF FRUIT CROPS

APPLE

SCAB - Venturia inaequalis (Cke.) Winter
Fusicladium dendriticum (Wallr.) Fuck.

B.C.- The perfect stage of the fungus was found fruiting on dead twigs of Winter Banana on Apr. 9, at Saanichton. The ascospores were being discharged at that time.

In the Kootenay Lake district Mr. J.W. Eastham has kindly given the results of counts on unsprayed trees: McIntosh at Willow Point, of 1,300 apples on the tree, 1,151 or 87.1 per cent were scabby; McIntosh near Nelson, of 358 apples, 98.8 per cent were scabby; Cox Orange at Queens Bay, of 19 apples, 37 per cent scabby; Rome Beauty, of 271 apples, 90.8 per cent scabby. At Willow Point considerable loss occurred from "pin-head" scab on sprayed trees. It developed on the apples just before they were picked and to some extent afterwards, while they were still in the packing house. In the sprayed plots of Cox Orange at Queens Bay, 3 trees bore 453,447 and 435 apples respectively, which suggested that the set of fruit has been greatly reduced by scab.

In the Salmon Arm district, the sprays were generally not applied early enough and the rainfall was unusually heavy in the spring. In consequence, apple scab was serious, the losses aggregating at least $10,000. At Vernon in some orchards scab caused slight damage, while in others it was severe. It was also reported from Armstrong, Enderley and in the south Okanagan. In the latter district it is very rare.

Ont.- In Lincoln county apple scab appeared in epidemic form this year. In some orchards the crop was a total loss. McIntosh, Greening and Baldwin were by far the most susceptible varieties. In one orchard of McIntosh under oberrvation, the following data were collected: sprayed trees, July 15, 7.3 per cent of the foliage and 1.7 per cent of the fruit infected; Sept. 21, at harvest time, 61 per cent of the fruit infected; unsprayed trees, July 15, 86.8 per cent of the foliage and 96.8 per cent of the fruit infected; Sept. 1, 100 per cent of the foliage and fruit infected. Conditions were especially favourable for late midsummer infection. First ascospore discharge was recorded on Apr. 13; free discharge on Apr. 18. In Western Ontario scab was generally prevalent, but in the Georgian Bay and Northumberland districts the disease was not severe (G.C. Charberlain).

Que.- Apple scab was prevalent again in 1932 on McIntosh and Fameuse in Western Quebec. Last spring perithecia were very numerous in most orchards. Mature perithecia were found about May 1,

a few days later than in 1931. The first ascospore discharge, however, occurred only about May 20 and scab infections were found on June 5.

In contrast to the spring of 1931, no sepal infection occurred. Primary infection was also less common. In the majority of well-sprayed orchards, where the 5 sprays advised by the "Quebec Spray Service" had been applied, very little scab was present except in the tops of trees. But in August there appeared many new infections which were followed by heavy outbreaks of pin-head infection in September. This fall, the only scab-free orchards were those, which had been very thoroughly sprayed in the spring. In unsprayed orchards, 90 per cent of the fruit were scabby (F. Godbout).

In eastern Quebec apple scab heavily infected the fruit in unsprayed orchards, the crop being a total loss in most localities. First ascospore discharge was noted at Ste. Anne de la Pocatière on May 23 and primary scab infection was observed on the leaves on June 11. In the experimental orchard, fruit infection was as follows: Duchess, 0.06 per cent, Salome 1.0; Wealthy, 1.5; Melba, 3.8; Fameuse, 7.7; McIntosh, 11.4, and St. Lawrence, 12.5 (C. Perrault).

N.B.- Scab caused only slight damage on the Experimental Station, Fredericton. Unsprayed trees (check) of McIntosh and Fameuse were only slightly infected with scab.

N.S.- Apple scab was generally light in well sprayed orchards. Some late infection appeared on winter varieties and was severe in some orchards, 40 to 50 per cent of the fruit being affected. The late infection was probably spread by the heavy gale on Sept. 17. (J.F. Hockey)

P.E.I.- Scab was readily kept in control, where the orchards were properly sprayed. It was observed in the 3 counties on several varieties.

FIRE BLIGHT - Bacillus amylovorus (Burr.) Trev.

B.C.- A light blossom infection of fire-blight was observed at Summerland and Penticton, principally on Jonathan, King and Spitzenburg varieties.

Sask.- Twig infections of fire-blight were observed in the University orchards, Saskatoon. Bacterial exudate was abundant; the damage was nil. This appears to be the first report of this disease for Saskatchewan.

Man.- A specimen affected with fire-blight was received from Morden at the Ottawa laboratory.

Ont.- In Lincoln county, fire-blight was observed several times. It appeared to be more prevalent than usual. It also caused moderate damage in orchards at Gananoque and Galt.

Que.- Fire-blight was prevalent throughout the province in 1932, being more widespread than in 1931. It was less severe in the Rougemont, St. Hilaire, Oka and St. Joseph du Lac districts, while there was an increase in the Abbotsford, Chateauguay, Hemmingford, Franklin Centre and Montreal Island districts. It was present in Portneuf, Quebec and Levis, L'Islet and Kamouraska counties, being severe in one orchard at Village des Aulnaies, L'Islet county. The disease occurred almost entirely as twig infections. Blossom infection was observed on some Alexanders and Fameuse trees at Abbotsford, and on some Fameuse trees at Hemmingford. On the whole, little damage was caused.

BLACK ROT - Physalospora malorum Shear
(Sphaeropsis malorum Pk.)

Ont.- A scattered infection of black rot was observed in a block of Greenings in Lincoln county.

Que.- Black rot slightly infected leaves of several varieties especially Alexander at Macdonald College. A trace was found on the fruit of the same variety at Chateaugyay. Traces of black rot are found on the fruit every year especially in neglected orchards.

N.S.- A trace of black rot was found on the fruit in an orchard in Kings county.

P.E.I.- A very severe leaf spot infection of black rot was present on wild trees at Marshfield. The disease was very common this year.

CORKY CORE - Physiological

Que.- On about 12 trees of McIntosh, a few to 60 per cent of apples were affected with corky core at Macdonald College.

N.S.- About 4 per cent of fruit were affected with corky core in certain fertilizer plots at Kentville. It was found only in

McIntosh trees growing on soils which have received much lime and phosphate, but little nitrogen.

DROUGHT SPOT - Physiological

B.C.- Drought spot as well as corky core and die back increased in prevalance and spread to orchards not previously affected in the Okanagan valley. It is probably the most important disease in this region. As the fruit are usually unsaleable the losses this year were very heavy. In one orchard where a careful estimate was made, the loss was assessed at 25 per cent of the crop.

Que.- Drought spot affected 80 per cent of fruit on two trees of Fameuse and a slight amount occurred on several others at Macdonald College. The same trouble is also present at Oka (see 1931 Survey, p. 62).

RUST - Gymnosporangium spp.

Ont.- Three leaves fairly heavily marked by rust were sent from Campbellford to the Ottawa Laboratory. Pycnia only were present. A specimen of red cedar bearing telia of Gymnosporangium Juniperi-virginianae Schw., was sent from Morpeth.

Que.- A special survey of the prevalence and distribution of rust on apple was made in eastern Quebec. The only species of rust affecting apples observed in this district was Gymnosporangium clavipes Cke. & Pk. (G. germinale (Schw.) Kern). In sprayed orchards rust was scarce, but in neglected orchards or on wild trees, as high as 80 per cent of the fruit have been found affected. The disease was present through the region and although it does not cause appreciable loss to the growers, it is increasing slowly from year to year. Some varieties such as Wolf River, St. Lawrence and Wealthy appeared to be more susceptible than others. The symptoms also varied with the variety, but on all varieties observed, the part invaded by the rust mycelium took on and kept a deep green colour. Early varieties such as Montreal Peach, Yellow Transparent, etc. are rarely found affected; on other varieties rust infections may be found, but the later the variety the later it is in the season before the rust appears. At best, aecia were only imperfectly formed at anytime, which suggests that the apple is not a congenial host for this year.

On Amelanchier both G. clavipes and G. clavariaeforme (Jacq.) DC. were found in abundance. All the bushes were severely infected along the roadsides and in the fields and woods. Fifty to 100 per cent of the fruits were infected, both species of rust being common, while 10 to 25 per cent of the leaves were infected

with G. clavariaeforme. Infection on the Amelanchier was observed early in July, five weeks to two months before it could be detected on apple.

Gymnosporangium clavipes was also found on Crataegus, but much less frequently than on Amelanchier; 5 to 20 per cent of the fruits were infected.

Gymnosporangium Juniperi Lk. (G. cornutum (Pers.) Arth.) was found on Sorbus americana. All trees examined bore some infected leaves. No infection was observed on the fruit. The aecia matured from 4 to 8 weeks after the other rusts.

Juniperus communis var. depressa the alternate host of these 3 rusts, grows extensively from Levis to Rimouski (C. Perrault).

Specimens of the three rusts on their respective hosts, of apple, Amelanchier, Crataegus and Sorbus sent by Mr. Perrault confirm the above findings. In addition, Professor Campagna sent specimens of the telia of all three on J. communis var. depressa besides aecia on the above mentioned hosts. He also sent aecia of G. clavipes on Aronia melanocarpa. Near Wrightville the aecia of G. clavipes were found in abundance on the fruits of most Crataegus species. On some bushes, of evidently a different species, the new shoots were badly infected, so much so that the bushes were stunted and bore no fruit. Aecia were rather scattered on these. Leaves on some species showed a few infections, but development had ceased after the pycnia were formed and the diseased tissue was dead at the time of examination (I. L. Conners)

POWDERY MILDEW - Podosphaera leucotricha (Ell. & Ev.) Salm.

B.C.- Powdery mildew was general, but the infection was light at Saanichton. It was very prevalent in some sections of the Okanagan valley. By marking the fruit it caused considerable loss this year.

Ont.- Powdery mildew was prevalent on the new growth in an orchard in Lincoln county; the foliage was somewhat dwarfed and the new growth stunted.

N.S.- Powdery mildew was reported on seedlings at Kentville.

ANTHRACNOSE - Pezicula malicorticis (Jacks.) Nannf.
(Cryptosporiopsis malicorticis (Cordley) Nannf.

B.C.- Cox's Orange Pippin was severely infected with anthracnose at Saanichton. The disease is increasing slightly in prevalence in the Salmon Arm district.

CROWN ROT - Non-parasitic

B.C.- Crown rot was reported as follows: Summerland, still prevalent and severe in many orchards; Penticton, no great increase, but still very prevalent; Westbank, increasing in prevalence; North Okanagan, not as prevalent as in the South Okanagan, but still severe.

Ont.- Crown rot was prevalent in a block of Northern Spy in Peel country; the affected trees were dying. In an orchard of Gravenstein, Ontario, McIntosh and Duchess in Lincoln county, 60 per cent of the trees are affected with crown rot. The damage was severe; practically all the Duchess were dead and many trees had one half of three quarters of the trunk girdled.

TWIG BLIGHT - Nectria cinnabarina (Tode) Fr.

N.S.- A light infection of twig blight was found on Rome Beauty and Ben Davis in two orchards at Kentville. The disease is conspicuous, but not serious; it follows, frequently, injury to the fruit spurs at picking time.

SOOTY BLOTCH - Gloeodes pomigena (Schw.) Colby

N.S.- A trace of sooty blotch was present in sprayed orchards in Kings county, while 100 per cent of the fruit were infected on wild trees.

FLY SPECK - Leptothyrium Pomi (Mont. & Fr.)Sacc.

N.S.- In neglected orchards in Kings county, 100 per cent of the fruit were infected, while in sprayed orchards, a trace was present on fruit near the ground.

ROT - Hypholoma appendiculatum (Bull.) Fr.

B.C.- A rot caused by the above species was reported from Penticton.

PINK ROT - Tricothecium roseum Lk.

Ont.- Pink rot was found in Lincoln county in orchards where scab was severe.

P.E.I.- Pink rot heavily infected Fameuse apples that were scabby in Queens county; the damage was severe.

SILVER LEAF - Stereum purpureum (Pers.) Fr.

N.S.- Silver leaf has been very scarce the past few years,

but it is again appearing on occasional trees. It was observed in 3 orchards of 5 to 8 year old trees.

BITTER PIT - Non-parasitic

B.C.- Bitter pit was reported from the southern Okanagan valley.

N.B.- Bitter pit was found scattered throughout the province but it was most prevalent on light soils. In some orchards up to 50 per cent of the apples were affected and on individual trees all fruit was injured; the varieties were Wellington, Stark, Wolf River, Blenheim, Twenty-ounce Pippin and Balwin.

SUN SCALD - Non-parasitic

Ont.- A few of the exposed apples were affected with sun scald in a block of Greening in Lincoln county. The loss was negligible on account of the heavy crop.

BROWN ROT - Sclerotinia americana (Worm.) Nort. & Ezekiel

Ont.- A light infection of brown rot was present in a block of Pippin in Lincoln county. It appeared that the rot followed insect punctures.

JONATHAN SPOT - Non-parasitic

B.C.- Jonatham spot was reported from the south Okanagan valley.

CROWN GALL - Pseudomonas tumefaciens (Sm. & Towns.) Duggar

B.C.- Crown gall was reported to be widespread in an orchard in the south Okanagan valley.

N.S.- A single seedling was found infected with crown gall in Kings county.

PERENNIAL CANKER - Gloeosporium perennans Zeller & Childs

B.C.- Very few new infections of perennial canker developed this year in southern Okanagan valley. In old cankers further spread was controlled to a considerable degree.

FROST INJURY

N.S.- Two moderate to severe frosts were experienced in May.

The first occurred when the buds were at the pre-pink stage and the second when the blossoms were about one third open. These frosts caused a total loss of crop in some orchards; the leaves were curled and the blossoms dropped. Fruit bud formation was good on these trees during the summer.

HAIL INJURY

N.S.- A hail storm caused severe cutting and marking of the fruit on about 100 acres of orchard land in Kings county; the fruit were severely reduced in grade.

APRICOT

BLIGHT - Clasterosporium carpophilum (Lév.) Aderh.
(= Coryneum Beijerinckii Oud.)

B.C.- Fruit were sent in to the Provincial Laboratory profusely spotted with reddish sunken spots from the Lilooet district. The correspondent stated that the fruit had been unsaleable for the past 3 years. Typical spores of the fungus were found in the lesions. This is, I believe, the first authentic record from the interior of British Columbia, although the disease is known at the coast both at Vancouver and near Victoria. It is, however, of negligible importance so far. (J.W. Eastham)

DROUGHT SPOT - Non-parasitic

B.C.- A slight amount of drought spot was present in all districts of the south Okanagan valley. The Blenheim variety was most susceptible.

BLACKBERRY

ORANGE RUST - Gymnoconia Peckiana (Howe) Trotter

Ont.- This disease was frequently found in plantations in Lincoln county; 10 per cent of the young canes were attacked in a plantation of Eldorado.

Que.- Orange rust was observed in Laval, Chateauguay and Rouville counties; the damage was negligible. A specimen was also received from Ste. Agathe des Monts; the spores germinated by a germ tube.

P.E.I.- Wild blackberries infected with orange rust were found in all 3 counties.

BLUEBERRY

CROWN GALL - Pseudomonas tumefaciens (Sm. & Towns.) Duggar

B.C.- A specimen affected with what appeared to be crown gall was found on one plant of the Harding variety on Lulu Island. The plants were originally from New Jersey.

CHERRY

SHOT HOLE - Higginsia hiemalis (Higg.) Nannf.
(Cylindrosporium hiemalis Higgins)

Ont.- Shot hole was very prevalent and severe causing practically complete defoliation of young trees of both sweet and sour varieties in a nursery in Welland county.

N.S.- Shot hole caused severe defoliation of sweet cherry trees in the Bear River district; good control was obtained in sprayed orchards.

P.E.I.- Shot hole caused severe damage to sweet, sour and wild cherries in Queens county. The leaves were decidedly yellowed as well as showing the usual symptoms. (R.R.Hurst.)

BROWN ROT - Sclerotinia americana (Worm.) Nort. & Ezekiel

B.C. - In 1928 in the Kootenay Lake district, a consideralbe amount of brown rot was found on sweet cherries, as high as 20 per cent of the fruit being affected on individual trees. This was the first brown rot noticed in this important cherry area. It was recognized that the rot was different from that in the Fraser valley, where the latter is destructive every season. No further specimens were found until this year, when a little was observed although the injury was not important commercially. From a cultural study of the isolated organisms it seems certain that the Kootenay species is Sclerotinia cinerea Schroet. S. cinerea also causes a destructive blossom blight around Victoria, but this injury has not been noticed in the Kootenays. (J. W. Eastham)

N.S.- Fifteen per cent of the crop was destroyed by brown rot in the Station orchard, Kentville.

BLACK KNOT - Dibotryon morbosum (Schw.) Theiss & Syd.

Black knot was reported as common on wild cherries in Quebec, New Brunswick, Nova Scotia in Prince Edward Island.

WILT - Verticillium sp.

Ont.- Fifteen per cent of the sweet cherry trees were affected

and dying from wilt in an orchard in Lincoln county.

WINTER INJURY - Non-parasitic

Ont.- Seventy-five per cent of the trees of Schmidt sweet cherry showed winter injury in an orchard in Lincoln county. Sunken areas in the bark were found girdling the trunks and limbs with abundant gumosis. Affected parts were dying or dead, but few trees will succumb. The soil was stoney and damp with a south-west exposure. Black Tartarian showed resistance. The injury probably took place in the winters of 1929 and 1930.

DIE-BACK - Non-parasitic

B.C.- Die-back was more prevalent this year in all the cherry growing districts of the south Okanagan valley.

FRUIT SPLITTING - Non-parasitic

B.C.- The splitting of the fruit at harvest time considerably reduced the amount of marketable fruit in the southern Okanagan valley.

CURRANT

WHITE PINE BLISTER RUST - Cronartium ribicola Fischer

Ont.- White pine blister rust was severe in all plantings of black currants in Lincoln county, causing defoliation. It was also severe in one plantation in Peel county.

Que.- This rust was severe causing defoliation by Sept. 15, at Macdonald College. The rust was found on most wild currant bushes examined in early summer, and severe defoliation of cultivated currant occurred in many places in the Montreal district in the fall.

N.B.- White pine blister rust was widespread on both wild and cultivated species of currants.

N.S.- This rust moderately infected a small plantation in a farm garden in Halifax county.

P.E.I.- White pine blister rust was prevalent in the 3 counties of the province on both cultivated and wild Ribes. It caused moderate to severe defoliation of black currant late in the season.

SEPTORIA LEAF SPOT - Mycosphaerella Grossulariae (Fr.) Lindau
(Septoria Ribis Desm.)

Sask.- A few leaves were moderately infected with Septoria leaf spot in the University gardens, Saskatoon; 40 to 50 per cent of the leaves were similarly affected at the Experimental Farm, Indian Head.

P.E.I.- A very heavy infection of Septoria leaf spot was found in a garden in Queens county, Sept. 11.

ANTHRACNOSE - Depranopeziza Ribis (Kleb.) v. Höhn.
(Gloeosporidiella Ribis (Lib.) Petr.)

Alta.- A heavy infection of anthracnose was observed on red currant in a garden at Edmonton.

Sask.- Anthracnose caused 75 to 90 per cent defoliation of red and white currants by July 22 at the Experimental Farm, Indian Head. Black currants and gooseberries nearby were unaffected.

P.E.I.- Anthracnose caused a trace to moderate infections in Queens and Prince counties.

POWDERY MILDEW - Sphaerotheca mors-uvae (Schw.) Berk. & Curt.

Alta.- Medium to severe damage was caused by powdery mildew in 2 gardens in Edmonton. Light damage was also reported on Viking.

Sask.- A heavy infection of powdery mildew was observed on the upper young leaves and stems of black currant at the University gardens, Saskatoon.

GOOSEBERRY

ANTHRACNOSE - Gloeosporidiella Ribis (Lib.) Petr. f. sp.
Grossulariae (Kleb.) Nannf.

B.C.- Anthracnose was reported from Sorrento.

Sask.- The lower leaves on the bushes were moderately infected with anthracnose causing slight defoliation in the University gardens at Saskatoon.

P.E.I.- Anthracnose moderately infected the gooseberries in a garden in Queens county.

SEPTORIA LEAF SPOT - Mycosphaerella Grossulariae (Fr.) Lindau (Septoria Ribis Desm.)

Sask.- Septoria leaf spot was common, but caused slight damage at Indian Head.

Ont.- This leaf spot was prevalent in one garden in York county.

POWDERY MILDEW - Sphaerotheca mors-uvae (Schw.) Berk. & Curt.

B.C.- Powdery mildew was very destructive in all districts in the southern Okanagan valley, especially on European varieties. It was also reported to be severe at Summerland and Lytton.

Sask.- Powdery mildew was severe at Rosthern. Specimens were received from Gillespie.

CLUSTER CUP RUST - Puccinia Pringsheimiana Kleb.

N.S.- Specimens heavily infected with this rust were sent from Amherst to the Kentville laboratory.

GRAPE

BLACK ROT - Guignardia Bidwellii (Ell.) Viala & Rav.

Ont.- A scattered infection of black rot was observed on the Roger variety in a vineyard in Welland county.

DOWNY MILDEW- Plasmopara viticola (Berk. & Curt.) Berl. & de Toni

Ont.- Downy mildew was prevalent on Agawan, a very susceptible variety, in Lincoln county. The disease is quite general in unsprayed vineyards.

Que.- Downy mildew moderately infected one variety among several at the Macdonald College. It was also noticed at St. Joseph du Lac, Chateauguay and Hemmingford; the leaves were moderately attacked, but the fruit was very seldom affected.

POWDERY MILDEW - Uncinula necator (Schw.) Burr.
Ont.- A scattered infection was reported on Concord in Wentworth county and on Agawan in Lincoln.

DEAD ARM -Fusicoccum viticolum Redd.
Ont.- Scattered, light infections of dead arm were found on Concord in a number of vineyards in Lincoln county. A moderate infection was found also on Concord at Springbank, Middlesex county.

LOGANBERRY

SPUR BLIGHT - Didymella applanata (Niessl.) Sacc.
B.C.- Spur blight was patchy in and caused slight damage to loganberry plantations at Gordon Head, Royal Oak and Saanichton.

SEPTORIA LEAF SPOT - Mycosphaerella Rubi Roark
(Septoria Rubi West)
B.C.- This leaf spot is general and heavily infects loganberry plantations on Vancouver island. No plantation has been found free of the disease and usually every leaf is infected (W. R. Foster).

ANTHER AND STIGMA BLIGHT - Haplosphaeria deformans Syd.
B.C.- Three per cent of the anthers and stigmata were blighted in a patch of loganberry at Royal Oak. The fungus was identified by Dr. Dearness. As far as I know, this is the first report of this fungus on loganberry and also the first of its occurrence in North America. (W. R. Foster)

FRUIT BLIGHT - Cause undetermined
B.C.- Fruit blight caused from 5 to 70 per cent damage in plantations visited on Vancouver island.

PEACH

SCAB - Cladosporium carpophilum Thüm
Ont.- Scab was widespread in Granthan Tp., Lincoln county. In one orchard of Rochester, 50 to 75 per cent of the fruit was scabby.

Que.- Peach leaves affected with scab were sent to the Ottawa laboratory from Laval county.

LEAF CURL - Taphrina deformans (Berk.) Tul.

B.C.- Leaf curl was prevalent at the Experimental Station, Saanichton. According to the prevalence of the disease, the varieties were classified as follows: Rochester, Early Caawford and Hale's Early, very susceptible; White Alexander, Triumph and J.H. Hale, moderately susceptible and Stanwick, slightly susceptible. The disease was also widespread in the southern Okanagan valley, but it was not severe, only occasionally checking tree growth and attacking the fruit.

Ont.- Leaf curl was first found at Vineland Station on May 15. The disease was prevalent throughout Lincoln county, chiefly on trees, which had not been sprayed. Contrary to other years, fruit infection was much more common.

POWDERY MILDEW - Sphaerotheca pannosa (Wallr.) Lév. var. Persicae Woron.

B.C.- For the past two years powdery mildew has been quite serious on both foliage and fruit at Saanichton.

The disease was unusually severe this year at the Experimental Station, Summerland. The clingstone varieties were the most severely diseased, the young shoots and much of the fruit being affected. All the young nursery stock was also affected. In addition, powdery mildew was prevalent on many of the nectarines being grown at the Station. Some of the fruit and many of the terminal shoots were affected.

Ont.- Powdery mildew was prevalent on young peach nursery stock at Cedar Springs, causing stunting of growth.

BROWN ROT - Sclerotinia americana (Worm.) Nort. & Ezekiel

Ont.- At the experimental orchard at St. Catharines the check plots showed the following percentages of affected fruits: less than 5 per cent, Vidette, Valiant; 5-10 per cent, South Hanen, Crawford, J.H. Hale, St. Joyn, June Elberta; 10-20 per cent, Elberta, Rochester.

BLIGHT - Clasterosporium carpophilum (Lév.) Aderh. (=Coryneum Beijerinckii Oud.)

B.C.- Blight was common on the Experimental Station plots at Saanichton and caused moderate damage; Rochester, Early Crawford, Alexander and Hale's Early were the most severely affected, while tanwick, J.H. Hale and Triumph suffered slightly.

WILT - Verticillium sp.

Ont.- Wilt was found in seven different orchards in Lincoln

county. In one block of 2 to 3 year old trees, 25 per cent were affected; in another block of 40 trees interplanted with tomatoes 4 trees were affected on one side.

HEART ROT - Schizophyllum commune Fr.

Ont.- Heart rot caused by Schizophyllum commune, developed on a 5 year old Elberta tree following wounds in Lincoln county.

SPRAY INJURY - Non-parasitic

Ont.- Burning of foliage due to arsenical sprays caused the defoliation of 75 per cent of the leaves in a block of Rochester in Lincoln county.

PEAR

FIRE BLIGHT - Bacillus amylovorus (Burr.) Trev.

B.C.- Fire blight was severe and widespread at Westbank even where care was taken in the application of control measures; trees were lost in many blocks. At Penticton, it was not widespread early in the season, but few pear blocks were free of the disease at the end of the season. At Summerland, fire blight was widespread, but not severe, while at Olive it was found in several orchards.

Ont.-Twig blight was prevalent on 95 per cent of the trees in an orchard of Bartlett and Clapps Favourite in Lincoln county. Damage was severe as 50 per cent of the trees bore large limb cankers. Specimens affected with fire blight were received from Napanee and Willowdale.

Que.- In eastern Quebec fire blight was found only at St. Roch; 50 per cent of the trees were dying.

SCAB - Venturia pyrina Aderh.

Ont.- All the fruit was unmarketable on account of scab in an orchard of Flemish Beauty in Lincoln county; the foliage was also badly scabbed and much twig injury occurred.

Que.- Wherever scab susceptible pears were not sprayed in the Montreal district the fruit was heavily infected and the crop was unmarketable.

N.B.- Scab infections were light in sprayed orchards but some unsprayed trees were found, where the whole crop was scabby.

P.E.I.- Scab caused slight to severe damage on leaves and

fruit on Flemish Beauty in an orchard in Queens county. Some twig injury also occurred.

LEAF SPOT - Mycosphaerella sentina (Fr.) Schroet.
(Septoria piricola Desm.)

Ont.- The leaves were reported to be heavily infected with leaf spot, causing defoliation of the trees at Locust Hill. Specimens affected with leaf spot were also received from Campbellford.

P.E.I.- A moderate infection of leaf spot was reported.

DROUGHT SPOT - Non-parasitic

B.C.- Drought spot was on the increase in the southern Okanagan valley and was quite serious this year. It is usually confined to a few tress in any one orchard.

POWDERY MILDEW - Podosphaera leucotricha (Ell. & Ev.) Salm.

B.C.- Powdery mildew was fairly widespread in the southern Okanagan valley, but it was not serious this year.

PLUM

BLACK KNOT - Dibotryon morbosum (Schw.) Theiss. & Syd.

Ont.- Several trees were reported severely affected with black knot at Locust Hill.

Que.- In eastern Quebec from Montmagny to Rivière du Loup black knot severely affects all the trees in uncared-for orchards, the trees often being killed. In orchards where the trees are being heavily pruned, the disease is gradually disappearing. Wild plums in the Montreal district are also heavily infected.

PLUM POCKETS - Taphrina Pruni (Fuck.) Tul.

Alta.- Plums were lightly to moderately infected with plum pockets at Brooks.

BROWN ROT - Sclerotinia americana (Worm.) Nort. & Ezekiel

B.C.- A very heavy crop of plums on 2 Pound's Seedling trees showed much brown rot at Vancouver in August, although most of the fruit was still green. Fruit on other unidentified varieites were clean. Brown rot due to S. americana is always present on the lower mainland of British Columbia, but it was more severe then usual this year.

Que.- About 60 per cent of fruit on two trees at Chateauguay Basin were affected with brown rot. In eastern Quebec, brown rot was present in all orchards where no spraying was done; sometimes 100 per cent of the fruit being attacked. In sprayed orchards a trace to 25 per cent of the fruit rotted.

N.S.- Brown rot caused slight damage at Kentville.

SHOT HOLE - Higginsia prunophorae (Higg.) Nannf.
(Cylindrosporium prunophorae Higgins)

N.B.- Specimens heavily affected with shot hole were sent from Benoit to the Ottawa laboratory.

SCAB - Cladosporium carpophilum Thüm.

Specimens affected with scab were sent from Medicine Hat, Alta., St. Agapit, Que., and Benoit, N.B., to the Ottawa laboratory.

RUST - Tranzschelia Pruni-spinosae (Pers.) Diet.

B.C.- Plum rust was collected at Victoria; it was not destructive.

WILT - Verticillium sp.

Ont.- A trace of wilt was found in a plum orchard in Wentworth county.

GUM SPOT - Non-parasitic

B.C.- Gum spot appeared to have increased this year in the southern Okanagan valley. Victoria was especially susceptible.

RASPBERRY

SPUR BLIGHT - Didymella applanata (Niessl) Sacc.

Alta.- Spur blight caused 15 per cent damage in a plantation at Red Deer.

Ont.- Scattered infections of spur blight were observed in many plantations inspected in southern Ontario. In one planting in Wentworth county, Viking, Cuthbert and Newman were moderately infected.

Que.- Spur blight was prevalent in all the Herbert plantations throughout the province, from 40 to 60 per cent of the plants being moderately affected. In a few crowded plantings in eastern Quebec it was severe. Traces of the disease were found

in a few plantations of Newman and in one of Viking. In one plantation of Cuthbert, the plants were slightly affected and in one of Count, severely so.

SEPTORIA LEAF SPOT - Mycosphaerella Rubi Roark
(Septoria Rubi West.)

Ont.- Septoria leaf spot was common in many raspberry plantations in southern Ontario. It caused slight defoliation in one plantation of Viking in Norfolk county.

Que.- Septoria leaf spot was common on Herbert throughout Quebec, but no appreciable defoliation took place this year.

MOSAIC - Virus

B.C.- Mosaic was general in most plantations in the Fraser valley. Infections ranged up to 5 per cent. It was also reported from Salmon Arm and Sorrento.

Alta.- A light infection of mosaic was reported from Edmonton and Beaverlodge.

Ont.- Mosaic was widespread in southern Ontario. In some plantations as high as 85 per cent of the plants were affected. The disease was more prevalent in Cuthbert and Viking than in other varieties. In one plantation in Wentworth county near Hamilton, where 80 per cent of the plants were affected with mosaic, the disease seriously stunted the plants.

Que.- A slight amount of mosaic was present in the varieites grown at Macdonald College. Traces were found in almost all plantations of Newman; one showed 30 per cent and 2 contained 50 per cent of mosaic. It was also prevalent in Cuthbert, which is grown chiefly on the Isle of Orleans but one planting in Laprairie county had 50 per cent of the plants affected with mosaic. It was also observed in one plantation of Count and two of Herbert.

N.B.- Raspberries were slightly affected with mosaic in a plantation in York county. The disease is widespread on wild raspberries.

N.S.- One to two per cent of the raspberries were affected with mosaic in a plantation at Cambridge.

LEAF CURL - Virus

Ont.- Small amounts of leaf curl were found in widely scattered areas in southern Ontario, chiefly on the Cuthbert variety. In Ontario county, 2 per cent of the plants were

affected in a plantation of Viking, a variety rarely found diseased.

Que.- One per cent of plants were affected with leaf curl in a plantation of Cuthbert at Vaudreuil and a trace in another of the same variety on the Isle of Orleans.

ANTHRACNOSE - Elsinoe veneta (Burkh.) Jenkins
(Gloeosporium venetum Speg.)

Ont.- A plantation of Viking was moderately infected with anthracnose in Norfolk county.

Que.- Anthracnose was found in almost every plantation of Newman. Infection was as follows: trace in a few, moderate in most and severe in a few. Traces of anthracnose were found on Viking and Cuthbert and a slight infection on Brighton.

CANE BLIGHT - Leptosphaeria Coniothyrium (Fuck.) Sacc.
(Coniothyrium Fuckelii Sacc.)

B.C.- Cane blight was general on Vancouver island and the lower Fraser valley.

Ont.- A plantation of Cuthbert was heavily infected with cane blight in Welland county; 8 per cent of canes were killed.

BLUE STRIPE WILT - Verticillium sp.

Ont.- Blue stripe wilt was widespread and prevalent in many plantations in southern Ontario, up to 50 per cent of plants being affected and many being killed. It was found on both red and black raspberries.

YELLOW RUST - Phragmidium Rubi-idaei (DC.) Karst.

B.C.- Heavily rusted leaves were sent from a plantation of Cuthbert at Slocan City to the Summerland laboratory.

LATE YELLOW RUST - Pucciniastrum americanum (Farl.) Arth.

Ont.- Late yellow rust was general on the leaves in a plantation of Viking in Durham county. It was also found to a limited extent attacking the fruits.

Que.- This rust was found on Herbert, Cuthbert and Viking in a plantation at Cookshire. It was heaviest on Viking, the fruits of which were also rusted.

N.S.- Two to 30 per cent of the fruits were rusted in the Experimental Station plots, Kentville.

POWDERY MILDEW - Sphaerotheca Humuli (DC.) Burr.

Ont.- Powdery mildew generally infected a plantation of Latham in Lincoln county, causing some stunting of growth. This variety appears to be highly susceptible to powdery mildew, but Count and Brighton were also affected.

CROWN GALL - Pseudomonas tumefaciens (Sm. & Towns.) Duggar

Ont.-Crown gall is widespread on raspberries in southern Ontario, but it apparently causes little damage. Ten per cent of the plants were affected in a plantation of Cuthbert in Elgin county. It was also noted on Viking, Latham, Brighton and Count varieties.

N.B.- One specimen affected with crown gall was received from Sussex.

WINTER INJURY - Non-parasitic

Ont.- In a plantation in Lincoln county, 60 per cent of the Viking plants were injured. In the same plantation, Brighton showed no injury, while 30 to 80 per cent of the Cuthbert plants were affected. The addition of nitrate to the plantation in the spring of 1931 resulted in much succulent growth. It is thought that this condition and the presence of mosaic were predisposing factors.

Que.- At Macdonald College from 25 to 35 per cent of the canes suffered from winter injury in a plot of Viking and about 8 per cent were killed to the ground.

STRAWBERRY

LEAF SPOT - Mycosphaerella Fragariae (Schw.) Lindau
(Ramularia Tulasneii Sacc.)

Que.- Leaf spot was first observed at Macdonald College on June 2. Infection was slight to moderate; damage was very slight. In western Quebec the disease was observed in many patches, but the damage was slight.

N.B.- Leaf spot was common in York county, but the damage was slight.

N.S.- Leaf spot infected 75 per cent of the leaves in a field of Senator Dunlop at Masstown, an important strawberry district in recent years, the the owner estimated that the yield was reduced 25 per cent. A portion of the field sprayed with Bordeaux was much cleaner and according to the owner it had yielded more and higher quality fruit. Other fields examined in the district were

similarly affected. At Kentville, leaf spot and drought reduced the strawberry crop by 50 per cent in several plantings.

LEAF SCORCH - Diplocarpon Earliana (Ell. & Ev.) Wolf
(Marssonina Fragariae (Sacc.) Kleb.)

Ont.- Leaf scorch was exceptionally prevalent in Brant, Norfolk, Middlesex and Elgin counties and caused some reduction of crop.

ROOT ROT - Cause undetermined

B.C.- Root rot caused severe damage on a farm in the Gordon Head district. Five species of saprophytic namatodes were found and several fungi were isolated from the diseased tissue, but inoculation experiments with these fungi gave negative results. (R.J. Hastings)

Ont.- Root rot affected 30 per cent of the plants in a planting of Premier in Lincoln county.

N.B.- Root rot was widespread and the damage was severe.

TRANSPORTATION DISEASES

As stated previously these observations were made by Mr. H.A. Cannadine at Saskatoon.

ORANGE - Blue and Green Moulds (Penicillium spp.). Oranges received during the past season have shown some decay due to the common blue and green moulds; some cars have shown considerable shrinkage while others contained high quality fruit and were received at destination in first class condition. The amount of decay is apparently governed, to a large extent, by the condition, age and maturity of the fruit at the time of shipping.

Oranges received during March and April showed considerable spotting at the stem end of the fruit. Samples were sent to Dr. H. S. Fawcett of the University of California, who replied as follows:

"A considerable amount of this spotting at stem end has occurred this year and was probably accentuated by the very wet weather which we had in most of the districts of Southern California during January and part of February. In some cases spots appear to follow very small cracks or rifts in the cuticle of the rind which appear to be most common near the stem end of the fruit. In other cases they may follow slight injuries to the rind at the stem end, due to a little stub or branch standing out close to the fruit. In some cases there

was also hail injury. Into these various injuries a secondary fungus enters, such as Cladosporium, Alternaria, or Colletotrichum and the discolouration results. If the conditions are dry with a small amount of humidity, many of these spots dry and no decay from blue or green mould follows. If, however, the weather is damp and the humidity high, the number of the spots are followed by the appearance of the blue and green mould."

LEMON - The only decay noticed was that caused by the common blue and green moulds (Penicillium spp.).

GRAPEFRUIT - Blue mould (Penicillium sp.) was noted on grapefruit. A stem end rot caused apparently by a fungus was observed on grapefruit.

STRAWBERRY - Black Mould (Rhizopus). Some loss of strawberries resulted from the fruit being over-ripe on arrival or infected with black mould.

APPLE - Apples were cheifly affected with storage troubles such as scald, "soggy breakdown", "internal breakdown" and "internal browning". Badly affected fruits were sometimes rotting with blue mould (Penicillium sp.). Some water core and core rot also occurred.

PEACH and PLUM - Shrinkage in peaches and plums was chiefly due to the fruit being over-ripe, soft and leaky followed by black mould (Rhizopus). For some unknown reason peaches, plums and pears were exceptionally free of brown rot (Sclerotinia americana) this season.

No diseases were noted in pineapples, bananas, prunes, carnberries and grapes.