IV. DISEASES OF FRUITS CROPS

A. POME FRUITS

APPLE

HEART ROT and CANKER (Daedalea unicolor) apparently caused the death of one tree in an orchard at Hemmingford, Que. The fungus, identified by Dr. Mildred K. Nobles, was isolated from the wood and also induced to fruit on the wood in a damp chamber. According to her records the fungus was isolated in 1934 from an apple tree that had been cut down at St. Catharines, Ont. (H.N. Racicot).

FIRE BLIGHT (Erwinia amylovora). A mod. infection was found on crabapple trees in several gardens in Edmonton, Alta. (W.P. Campbell, A.W. Henry) and sev. damage was present in several plantings of crabapple at Brooks and in one at Warner (M.W. Cormack). Fire blight was 2-tr. 3-sev./15 trees of Sandow in the variety orchard at the Sub-station, St. Clothilde, Que.; no blight was seen on any other variety (H.N. Racicot). A few trees were affected in nurseries at Rougemont and St. Hilaire (L. Cinq-Mars). As a result of an orchard and nursery survey carried out in June and July in w. N.S., specimens suspected of being affected by fire blight were sent to the laboratory, Kentville, for determination. Six samples of pear twigs and 2 of apple were received. Five proved to be affected by black rot (Sphaeropsis malorum) and 2 by European canker (Nectria galligena); one specimen showed severe damage to the foliage by red mite. Symptoms of fire blight were not observed and all the plate cultures made from the samples failed to show fire blight bacteria. It can only be concluded that fire blight is not present in apple and pear trees in N.S. (J.F. Hockey).

SOOTY BLOTCH (Gloeodes pomigena) was observed on fruits of Northern Spy from Chatham and of Greening from Grimsby, Ont. (G.C. Chamberlain).

RUST (Gymnosporangium clavipes). Only a tr. was seen in 3 demonstration orchards in Kings and Annapolis counties, N.S., in spite of heavy production of basidia on the juniper (J.F. Hockey.).

DIE-BACK (Nectria cinnabarina). A light infection was seen on Rome Beauty at Rockland, N.S. (R.G. Ross).

EUROPEAN CANKER (Nectria galligina). See report under Black Rot.

BLACK ROT (Physalospora obtusa) was found on a few trees in a nursery at Rougemont, Que. (L. Cinq-Mars, R. Crete). Three Cortland trees were found sl. damaged by some canker-forming pathogen at Stanley, N.B.(S.R. Colpitts), A few diseased limbs collected later after the trees were heavily pruned were sent to Ottawa. About 150 chips from these branches were made; 18 isolations of Sphaeropsis malorum Peck and 12 of Cylindrocarpon mali (Allesch.) Wr. were obtained. The latter fungus is the conidial state of Nectria galligena (Ruth Horner).

POWDERY MILDEW (Podosphaera leucotricha). Foliage of Jonathan, McIntosh, Newtown and Stayman were heavily infected in all districts of the south Okanagan, N.C. New shoots were also blighted.. Fruit was rarely

infected but the perfect stage was found on the fruit of Newtown and McIntosh (D.L. McIntosh).

Observations made since 1951 at the Sub-station, Smithfield, Ont., on apple seedlings being produced under the breeding program for scab resistance have indicated that the scab resistant seedlings, which receive no fungicide, were attacked in various degrees by powdery mildew. As no information was available on the importance of the disease in Ont. and Que. in orchards in which no fungicide was applied, a survey was made of apple tree nurseries in the two provinces. Such nurseries are usually only sprayed once or twice early in the season. From the results of one year's survey it appears that powdery mildew is more prevalent in s.w. Ont. than in Que. Although it was not observed on bearing trees, it was rather sev. on 4-year-old Yellow Transparent and Cortland at Strathroy, Ont. (J.B. Julien).

BROWN ROT (?Sclerotinia fructicola) affected scattered fruits of Cox's Orange and McIntosh at Queens Bay and Robson, B.C. Entrance was through codling moth tunnels and cracks in the skin caused by apple scab (D.L. McIntosh).

SILVER LEAF (Stereum purpureum). A few affected trees were seen in a nursery at Rougemont, Que. (L. Cinq-Mars).

SCAB (Venturia inaequalis) was sev. on the leaves and fruit in a 100-tree orchard of Early McIntosh at Sardis, B.C.; most of the fruit sold as culls (I.C. MacSwan). Scab was sev. on both fruit and foliage of most varieties in all districts of the B.C. Interior where scab is normally present. Heavy losses also occurred in the Vernon, Kelowna, and Oliver districts of the Okanagan valley. Losses from pin-point scab were substantial. A large proportion of the crop was reduced in grade on account of scab (D.L. McIntosh). Sl. infected crabapple fruit were received from Acadia Valley, Alta. (M.W. Cormack). Sev. infection in a planting at Halbstadt, Man. (J.E. Machacek). Scab was epidemic in many Ont. orchards and caused total loss of fruit in some. The season was a most difficult one in which to secure effective control of the disease. At St. Catharines in the laboratory orchard of McIntosh, scab infection ranged from 2.3 to 44% of the fruit scabbed depending on the sprays used. No fruit were harvested from unsprayed trees, the foliage was 100% scabby and leaf fall was considerable (G.C. Chamberlain). Weather conditions were mod. favourable for the development of apple scab in s.w. Que. in the spring of 1953. A light infection occurred 26-28 April and heavy infections on 14-15 May and 4-6 June with other light infections in May and June. Very dry weather in the later months prevented most late season scab. In general well sprayed orchards were almost free of scab, but other orchards where spraying operations began late or were poorly timed up to 25% of the crop was scabby. (L. Cinq-Mars, R. Crete). A random survey of 9 orchards in s.w. Que. showed that several growers (who applied 2-3 applications of an organic mercurial) secured clean crops, but many others failed to get fair results. Infection on McIntosh ranged from 0.2% to 87% of scabby fruits (R. Desmarteau). Infection was sev. in an orchard examined in Rimouski Co. (H. Genereux).

A light discharge of ascospores occurred near Fredericton, N.B. on 14 May, when the apple buds had reached the pre-pink stage of development. During May and the greater part of June rain fell frequently in the St. John River valley and made timely application of spray difficult unless sufficient equipment and labour were available to cover the orchard within 2-3 days. The summer was

dry and no further infection occurred. In orchards where the applications were properly timed, the crop was free of scab.

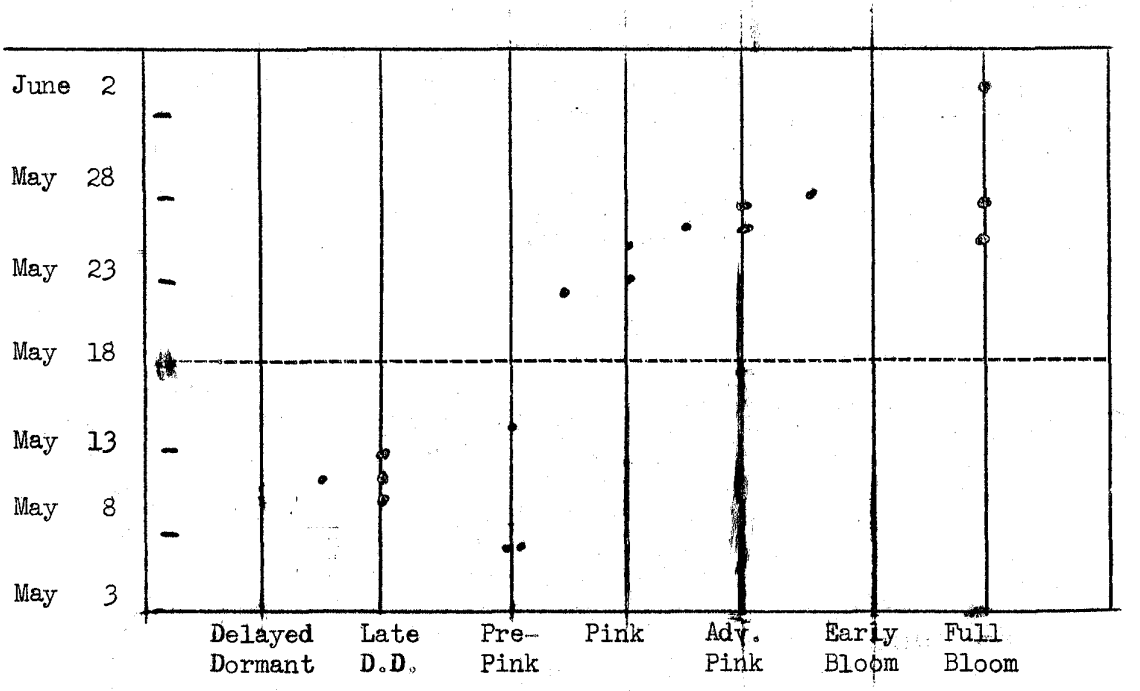
Table 17. Primary Ascospore Discharge and Stage of Apple Bud Development for the Years 1934 to 1953 in the Saint John River Valley.

Year	Primary Ascospore Discharge	Bud Development of McIntosh Variety
1934	May 11	Late Delayed Dormant
1935	May 22	Pre-pink to Pink
1936	May 4	Late Delayed Dormant
1937	May 10	Late Delayed Dormant
1938	May 12	Late Delayed Dormant
1939	May 27	Advanced Pink
1940	May 25	Pink
1941	May 23	Pink
1942	May 25	Full Bloom
1943	June 3	Full Bloom
1944	May 27	Full Bloom
1945	May 7	Pre-pink
1946	May 26	Advanced Pink
1947	May 28	Advanced Pink to Early Bloom
1948	May 26	Pink to Advanced Pink
1949	May 7	Pre-pink
1950	May 11	Dormant to Early Pre-pink
1951	May 7	Delayed Dormant to Late D.D.
1952	May 7	Delayed Dormant
1953	May 14	Pre-pink

Records have been kept of the dates of ascospore discharge in the Saint John River valley for the last 20 years, 1934 to 1945, at the Laboratory of Plant Pathology and since 1946 at the N.B. Department of Agriculture. Because of limited labour and equipment in camparison to the size of the orchards, it is most important that the growers know when primary ascospore discharge takes place. From then on they try to keep their orchard covered with spray during periods of spore discharge and infection. These dates of primary discharge and stage of apple bud development for the last 20 years are shown in Table 17 (S.F. Clarkson). These data are shown graphically in Fig. 4. The mean date of primary discharge is May 18, when the trees are in the pre-pink to pink stage. As might be expected there was a general advance of bud development with the date when spore discharge took place. No careful analysis of scab severity in relation to its date of appearance has been made, but in general its precocious appearance is apt to increase the difficulties of control (I.L. Conners).

The open winter of 1952-1953 favoured the early development of perithecia of V. inaequalis in N.S. Early in April when trees were in the silver-tip stage of development, ascospores reached maturity. The first infection period occurred when early varieties were at the mouse-ear stage. Subsequent infection periods were frequent and sometimes prolonged for 90 hours.

Fig. 4. Stage of apple bud development at primary ascospore discharge for the years 1934-1953 in the Saint John River Valley, N.B.



Ascospore discharge ceased about mid-June but conidia were found on 11 May and increased the scab potential through the bloom period. July, August and September provided several severe infection periods of 2 and 3 days duration. Some sprayed orchards that appeared free from fruit scab on 30 June had from 30 to 90 per cent scab on the fruit by mid-September. In the laboratory spray plots excellent control was obtained by 6 well timed applications on Cortland, Golden Delicious, Red Delicious and Spy (J.F. Hockey). Scab was sev. on unsprayed trees in the Waterford Valley area and at Topsail, Nfld. (G.C. Morgan).

S.J. Hughes (Can. J. Bot. 31:560-576. 1953) has shown that the correct name for the imperfect state of Venturia inaequalis is Spilocea pomi Fr. Its annellate conidiophores distinguish the genus from Fusicladium (see V. pirina on pear) (I.L.C.).

BITTER PIT (non-parasitic) was unsually prevalent in 1952 in orchards and tree run apples in the Georgian Bay area, Ont. Sev. symptoms were noted in Northern Spy at harvest time. Immediate processing was advised to avoid excessive loss in storage. The Spy crop was generally well coloured but bitter pit was noticeable in even highly coloured fruits (C.B. Kelly). About 10% of the fruit of Northern Spy in the laboratory orchard, St. Catharines were affected (G.C. Chamberlain). An appreciable amount occurred in Northern Spy and late varieties prior to harvest in N.S. Most of the affected crop was salvaged by the processors (J.F. Hockey).

SPRAY INJURY. Russetting was very prevalent in many orchards in N.B. especially where Bordeaux Mixture was applied in the pre-pink or the immediate

post blossom sprays (J.L. Howatt). For the first time in 6 years, sulphur scald was noted in the laboratory plots at Rougemont, Que.; less than 1% of the fruit were affected (L. Cinq-Mars).

SUNSCALD (non parasitic) affected a single tree in an orchard of 40 at Ste. Anne de la Pocatiere, Que. (R.O. Lachance). Three trees were killed and many others showing injury in a McIntosh orchard at Stanley, N.B., under poor cultural practice (S.R. Colpitts).

WATER CORE (non-parasitic) affected 6-8% of the fruit in a Delicious planting in Lincoln Co., Ont. (G.C. Chamberlain).

PEAR

FIRE BLIGHT (Erwinia amylovora). The epidemic that began suddenly in 1948 in the Kootenays and Creston valley subsided in 1952. A few cankers appeared in 1953 in scattered orchards, the loss being of no economic importance. Annual inspections are being continued by the B.C. Department of Agriculture to ensure proper pruning out of cankers in winter (M.F. Welsh, J.M. Wilks). Isolated outbreaks occurred in the Okanagan Valley. Infections were numerous in late or secondary bloom. Losses were relatively light (D.L. McIntosh). A sev. outbreak occurred as a result of spur infection in an 8-acre block of vigorous 15-year-old Bartlett in Wentworth Co., Ont. About 60% of the trees were infected and in 10% the heavier wood was involved. Scattered infections were also noted in 8-year-old Bartlett trees in Lincoln Co. (G.C. Chamberlain). Fire blight will cause the loss of 2-3 trees and a few branches in about 1,800 trees principally Bartlett at Collingwood (C.B. Kelly).

SOOTY BLOTCH (Gloeodes pomigena). A few affected fruits received from Vineland, Ont. (G.C. Chamberlain).

RUST (Gymnosporangium clavariaeforme). Severe infection was observed on a Japanese root-stock variety, Pyrus calleryana, at Kentville, N.S. (J.F. Hockey).

SCAB (Venturia pirina) was sev., affecting 25-50% of the fruit in the Fonthill-Fenwick district in Ont. It is common on Bartlett and Flemish Beauty; the fruit rather than the foliage was affected (G.C. Chamberlain). A sl. infection was observed at Ste. Anne de la Pocatiere, Que. (H. Genereux). Severe infection occurred on unsprayed trees of Clapps Favorite at Kentville, N.S. (D.W. Creelman). Scab was fairly general on the foliage of a few pear trees in a commercial orchard at Southport, P.E.I. (J.E. Campbell). S.J. Hughes (Can. J. Bot. 31:560-576. 1953) points out that the correct specific name of the imperfect state, with its denticulate conidiophores, of V. pirina is Fusicladium pyrorum (Lib.) Fuckel (I.L.C.).

LEAF SPOT (Fabraea maculata). A sl. infection in a nursery on Lulu Island, B.C. (W.E. Woods, W. Jones). Affected leaves collected during nursery inspection were received from Thornhill and Leamington, Ont. (H.S. Thompson).

B. STONE FRUITS

APRICOT

CORYNEUM BLIGHT (Clasterosporium carpophylum) caused sev. spotting of the fruits in all unsprayed orchards in the Kootenays and Creston Valley, B.C. Timing of the shuck-fall spray was critical; when too early the proximal portions of the fruit were covered by the shucks, received no spray and became infected later, but when too late the tips of the fruits were already infected before the spray was applied (M.F. Welsh, J.M. Wilks).

POWDERY MILDEW (?Podosphaera oxyacanthae) spotted a small percentage of the fruit on trees, almost exclusively Perfection, at the Station, Summerland, B.C.; the leaves were not attacked (D.L. McIntosh).

WILT (Verticillium albo-atrum) attacked several 4-5-year-old Perfection trees in an orchard at Osoyoos, B.C.; some trees were sev. wilted and appeared to be dying (G.E. Woolliams).

CHERRY

BLACK KNOT (Dibotryon morbosum). Specimens on Prunus pensylvanica were collected at Lac la Biche, Alta., by W.J. Cody and R.L. Gutteridge (D.B.O.S.). Several home-garden trees of plums and cherries showed the knots in St. John, Iberville, Chambly and Rouville counties, Que. (R. Crete). Black knot was common and sometimes severe in the Quebec and Ste. Anne de la Pocatiere districts (D. Leblond). Black knot was heavy on sour cherry at St. John's and Topsail, Nfld.; at one time cherries and plums were grown on a commercial scale at Lethbridge, but almost all the trees have since been killed by black knot (G.C. Morgan).

LEAF SPOT (Higginsia hiemalis) was unusually sev. on all varieties in the West Kootenays, B.C. causing complete defoliation in some orchards. Lesions on the fruit pedicels reduced fruit size (M.F. Welsh, J.M. Wilks). Leaf spot caused complete defoliation of sour cherry orchards in the Fonthill and Fenwick districts,Ont. It was also prevalent at Hamilton and in Halton Co. and caused considerable yellowing and defoliation. Below the escarpment in Lincoln Co., the disease caused only mod. defoliation by late September. It was particularly severe in nursery rows of young trees long before it appeared in orchards. It was also noted near Hamilton on sweet cherry (G.C. Chamberlain). Leaf spot caused 25-40% premature defoliation in young sour cherries at Tupperville, N.S.; sweet cherries were not nearly as severely affected (C.O. Gourley).

BROWN ROT (Monilinia fructicola and M. laxa). A specimen labelled Hansen Bush cherry affected by blossom blight was received from Salmon Arm, B.C.; the pathogen was M. fructicola (D.L. McIntosh). Blossom blight was quite sev. in the West Kootenays; wet weather in May and June resulted in mod. damage from rotting of green and ripe fruit (M.F. Welsh, J.M. Wilks). About 25% of the fruits were infected on dwarf cherries in a nursery at Rougemeont, Que. (L. Cinq-Mars).

POWDERY MILDEW (Podosphaera oxyacanthae) caused sl. injury to the terminal growth of many Montmorency trees in Wentworth Co., Ont. (G.C. Chamberlain).

WITCHES' BROOM (Taphrina cerasi) was general on older trees in rarely pruned farmhouse orchards in the Lower Fraser Valley, B.C. (H.W.N. Toms).

WILT (Verticillium dahliae) symptoms were observed in 202/220 three-year-old seedlings in one block at the Station, Summerland, B.C.; isolated cases were present in other young plantations in the Okanagan Valley (D.L. McIntosh). Two trees were found affected in 2-year-old planting of 1,000 trees in Welland Co., Ontario (G.C. Chamberlain).

LITTLE CHERRY (virus). Symptoms were unusually sev. especially on Lambert in all districts in the Kootenays, B.C. For the first time, little cherry fruits were refused by the processors so that the last market for these cherries has been closed. Several isolated orchards are the only ones not affected (M.F. Welsh, J.M. Wilks).

NECROTIC RING SPOT (virus). About 20% of the trees of an 8-year-old Montmorency orchard in Wentworth Co., Ont. Foliage was small and tattered and little fruit set. The cool damp weather this spring is believed to have increased the severity of the symptoms (G.C. Chamberlain). No extensive survey for virus diseases was made in the Niagara Peninsula this year (I.L.C.).

REVERSION (virus) caused sev. damage in one small orchard of Olivet in Saanich, B.C. (W. Jones).

RUGOSE MOSAIC (virus) was first noted in 1947 in 3 trees of a block of 23 Lambert in the Creston Valley, B.C.; one tree showed symptoms throughout and two trees in only one small branch each. No spread in the ensuing years occurred either through the affected trees or to other trees. In 1953 symptoms appeared in scattered branches throughout the 2 partially infected trees and the disease appeared in 4 additional trees (M.F. Welsh).

X-DISEASE (virus). A single Montmorency tree was found in an orchard in Welland Co., Ont. The fruit were small, pointed, and were not ripening normally. Four clumps of Prunus virginiana in a hedgerow close to the orchard showed typical X-disease symptoms (J.H. Phillips).

CRINKLE (?non-parasitic) affected 4 trees in a block of 20 Black Tartarian in Wentworth Co., Ont.; very light crop on the affected trees (G.C. Chamberlain).

PEACH

CROWN GALL (Agrobacterium tumefaciens) affected 60% of the trees in a shipment of nursery stock in Welland Co., Ont. (G.C. Chamberlain).

SCAB (Cladosporium carpophilum). Small cankers were observed on last year's wood of Early Red Fire at the Station, Kentville and at Wolfville, N.S. Light infections were noted on the fruit in two plantings in Kings Co. (C.O. Gourley, J.F. Hockey.) According to S.J. Hughes (Can. J. Bot. 31:560-576. 1953) the correct name for the peach scab fungus is Fusicladium carpophilum (Thum.) Oud. (I.L.C.).

CORYNEUM BLIGHT (Clasterosporium carpophilum). Dry weather during the usual fall infection period resulted in unusually low incidence of twig cankers

in the Creston Valley, B.C. On the other hand fruit infection was unusually sev. in unsprayed orchards and in those in which a spray schedule had been used for less than 3 years (M.F. Welsh, J.M. Wilks). Several nursery seedlings sent to the laboratory from Oliver bore cankers and gum deposits on the branches (D.L. McIntosh).

BROWN ROT (Monilinia fructicola). A severe case was reported by a home gardener in Vancouver, B.C. (H.N.W. Toms). Losses from brown rot were sev. in stone fruits in the Kootenays this year. Sl. infections occurred in peaches and prunes at Peachland and Summerland in the Okanagan (D.L. McIntosh). The blossom blight phase was of minor importance in the Niagara Peninsula, Ont. In the laboratory orchard 11% of blight occurred in unsprayed trees and 2.5-4.0% in sprayed blocks. Brown rot was quite troublesome in shipments of early and mid-season varieties. Hot dry weather hastened ripening of the fruit. In consequence the market became sluggish and permitted considerable rot to develop. Brown rot of harvested fruit after 7 days in common storage was: unsprayed 59.5%, sprayed 16.3%. In the late season crop, brown rot was of minor importance (G.C. Chamberlain). Sl. infections of blossom blight and brown rot were noted in Kings Co., N.S. (C.O. Gourley).

CROWN ROT (Phytophthora cactorum). Isolated trees killed in youg plantations at Summerland, B.C. (D.L. McIntosh).

POWDERY MILDEW (Sphaerotheca pannosa) caused sl. infection on the fruit in most peach-growing districts in the Okanagan Valley, B.C. Only the oidia were seen (D.L. McIntosh).

LEAF CURL (Taphrina deformans). Wet weather in May and June caused unusually sev. leaf curl on unsprayed trees in the Kootenays, B.C. (M.F. Welsh). The disease was epidemic in the Niagara Peninsula, Ont., in orchards that were poorly sprayed or in which the dormant spray was delayed. Fall-sprayed orchards were free from curl (G.C. Chamberlain). Specimens received from Whitby and Collingwood (C.B. Kelly).

CANKER (Valsa spp.). About half the trees in an orchard of Red Haven in Lincoln Co., Ont., were affected by sev. cankers on limbs and trunk about the crotch; vigour was poor and fruit failed to size. The variety lacks sturdiness and is extremely susceptible to canker (G.C. Chamberlain). A cankered twig bearing pycnidia was received from W.R. Foster, Victoria, B.C. (I.L.C.). Canker (Cytospora leucostoma) caused sl. damage to Early Red Fire at Wolfville, N.S. (C.O. Gourley).

WILT (Verticillium albo-atrum) slightly affected several 7-8 year-old trees in a commercial orchard at Osoyoos, B.C. (G.E. Woolliams).

BACTERIAL BLIGHT (Xanthomonas pruni) lightly affected the leaves of Early Red Fire trees in the Grand Pre area, (C.O. Gourley).

X-DISEASE (virus). Ten trees, all Vidette, showed typical symptoms and partial defoliation in an orchard in Lincoln Co.; a single Vidette tree was found diseased in Wentworth Co., Ont. (G.C. Chamberlain).

SPRAY INJURY. Peach trees scattered through a pear orchard in Lincoln Co., Ont., showed heavy shot-hole and much defoliation from copper sprays applied to the pears (G.C. Chamberlain).

PLUM

BLACK KNOT (Dibotryan morbosum). Sev. infection of all 30 trees in a 4-year-old orchard at Chilliwack, B.C. (I.C. MacSwan). Only a few knots were present in an orchard of Grand Duke and Monarch at Collingwood, Ont., when the orchard was pruned in the winter 1952-53. On 28 Aug. from 5 to 12 knots per tree were present requiring the pruning away of considerable fruiting wood in some trees. Nearest neglected plums reported to be 300 yards away (C.B. Kelly). The disease was found on a few trees in a 2-acre block of Stanley prune and in a planting of 200 mazzard budded stock in a nursery in Lincoln Co. (G.C. Chamberlain). Although black knot causes some damage to plums in Que., it is less common and sev. than on cherries (D. Leblond). Black knot was sev. in a young orchard of Japanese plums at Wolfville, N.S.; the knots were not removed in the last 2 years (C.O. Gourley). A sl. infection was seen in a commercial orchard at Southport, P.E.I. A tr. was observed [illegible] at the Upton farm, near Charlottetown (J.E. Campbell). Black knot was heavy in gardens at St. John's and elsewhere in Nfld. (G.C. Morgan).

SHOT HOLE (Higginsia prunophorae) was sev. at La Trappe, Que. in 1952 (Fr. M. Claude). The disease was general on several varieties in an orchard at Southport, P.E.I. (J.E. Campbell).

BROWN ROT (Monilinia fructicola) was sev. in one home garden at Comax, B.C. (W. Jones). Apparently the disease was unusually sev. in home gardens in the Vancouver area, up to 75% of the fruit being reported infected (H.N.W. Toms). A sl. infection was already noted on 25 June in the station orchard, Kentville, N.S. (C.O. Gourley). A mod. infection was noted on cultivated plum and chokecherry growing nearby at Charlottetown, P.E.I. (J.E. Campbell).

PLUM POCKETS (Taphrina communis). Affected fruits were received from gardens at Trossachs, Redvers, and Aylsham, Sask.; apparently infrequent but where established sev. damage may result (R.J. Ledingham, T.C. Vanterpool). The entire crop of a large tree was lost at Berthier, Montmagny Co., Que. (D. Leblond). Plum pockets caused mod. damage to all trees in a small Burbank planting at Clarence, N.S. (D.W. Creelman).

PRUNE DWARF (virus) was observed in 2 Burbank trees at the Station, Kentville, N.S. The virus has been present in one tree for the last 3 years but was noticed for the first time this year in the second, only a few branches of which showed the strap-shaped mottled leaves (C.O. Gourley).

FRUIT SHRIVEL (cause unknown), which has been sev. in some years in the Kootenays, B.C., was not evident this year. On the other hand it was unusually sev. in early varieties and Italian prunes in the Okanagan Valley (M.F. Welsh, J.M. Wilks).

GUMMOSIS (non-parasitic) caused mod. damage on one variety at Southport, P.E.I.; the trouble is believed to be caused by lack of boron, the trees being over fertilized with nitrogen (J.E. Campbell).

SAND CHERRY

BLOSSOM BLIGHT (Monilinia fructicola) has been sev. for several years on this tree planted in the Canard area, N.S., and left unsprayed; an adjacent morello-type cherry showed only a trace.

C. RIBES FRUITS

CURRANT

GREY MOULD (Botrytis cinerae) caused a die-back of twigs on a few currant bushes in a home garden at Sidney, B.C. (W. Jones).

WHITE PINE BLISTER RUST (Cronartium ribicola) was heavy on leaves of black currant received from Princeton, B.C. (D.L. McIntosh). This rust was sev. on black currant, causing the death of the leaves in the University garden, Fort Garry, and at Charleswood, Man. A mod. infection occurred on red currant and wild Ribes spp. at Clearwater Bay, Ont. (W.L. Gordon). The rust was noticed on Victoria black currant at the Station, Kentville, N.S. on 17 June (C.O. Gourley).

ANTHRACNOSE (Pseudopeziza ribis) was affecting 25% of the red currant fruits received from a garden at Knowlton, Que. (J.B. Julien).

POWDERY MILDEW (Sphaerotheca mors-uvae). Sl. infection in the Univ. plots, Edmonton, Alta. (T.R. Davidson). Sev. damage to a few bushes in gardens at Lethbridge and Cardston (M.W. Cormack). Terminal growth infected and stunted in 4 bushes of O-396 black currants in Lincoln Co., Ont. (G.C. Chamberlain). Relatively heavy on Coronet, Crusader and Kerry at the Station, Kentville, N.S. (C.O. Gourley).

GOOSEBERRY

LEAF SPOT (Mycosphaerella ribis) mod. infected Pixwell in a nursery stand at Southport, P.E.I. (J.E. Campbell).

RUST (Puccinia caracina DC.) was observed on several varieties at the Station, Kentville, N.S. (C.O. Gourley). The above name is the valid one for the rust previously called P. caricis (P. pringsheimiana).

POWDERY MILDEW (Sphaerotheca mors-uvae). Sl. infection at Southport, P.E.I. (J.E. Campbell).

D. RIBES FRUITS

BLACKBERRY

CANE GALL (Agrobacterium rubi) was observed in all commercial plantings of Himalayan blackberry in North Saanichton, B.C. causing injury to about 75% of the plants (W.E. McKeen).

ANTHRACNOSE (Elsinoe veneta) was very sev. on specimen submitted from Columbus, Ont. (C.B. Kelly).

BOYSENBERRY

CANE GALL (Agrobacterium rubi) affected 20-100% of the plants in 3 plantings in the Saanich Peninsula, B.C.; the disease causes death of terminal

portions of some branches and general unthriftiness of the plants (W.E. McKeen).

SEPTORIA LEAF SPOT (Mycosphaerella rubi) caused mod. damage in N. Saanich, B.C. (W.E. McKeen). Sl. infection at Southport, P.E.I. (J.E. Campbell).

LOGANBERRY

CANE GALL (Agrobacterium rubi). All plants infected in 2 fields and tr. in other fields at N. Saanich, B.C. Affected canes split, branches dry up and fruit ripen unevenly (W.E. McKeen).

CROWN GALL (Agrobacterium tumefaciens) occurs in varying amounts in all fields in N. Saanich, B.C.; plants unthrifty and finally die (W.E. McKeen).

SEPTORIA LEAF SPOT (Mycosphaerella rubi). In one planting in the Abbotsford district, B.C., the foliage and fruit dried up before harvest, apparently as a result of infection on the leaves and canes (R. Stace-Smith). Leaf spot caused sl.-sev. damage in the Saanich Peninsula (W.E. McKeen).

ROOT ROT (Phytophthora sp., Pythium sp. and Rhizoctonia solani). All fields on Vancouver Island, B.C., are affected; plants unthrifty and finally die (W.E. McKeen).

Heavy populations of the nematodes, Pratylenchus penetrans, Xiphinema sp. and Pratylenchus sp. were found associated with root rot and decline of plant vigour at Keating. Pratylenchus sp. was present in large numbers in a planting at Victoria; the fruiting canes were drying up. Four species were seen, Criconema sp. and Criconemoides sp. in large numbers and Xiphinema sp. and Pratylenchus sp. in smaller populations, at Brentwood; the grower had already ploughed up part of the planting on account of its lack of vigour (J.E. Bosher).

DRY BERRY (cause unknown) was present in every field examined on Vancouver Island, B.C., causing 25-75% loss of crop. A sev. epidemic occurred this year although the disease was not observed in 1952 (W.E. McKeen). The disease here called "dry berry" caused a drying and necrosis of the whole fruit aggregate and the pedicel, infection occurring during the ripening period according to Dr. Mc Keen . The disease caused by Haplosphaeria deformans, which has also been called dry berry, destroys individual or small groups of drupelets and the remaining drupelets develop normally. The latter disease appears early in the development of the fruit and is much less destructive than the former disease. The disease has also been attributed to a bacterium, Bacillus dessicans W.R. Foster (See P.D.S. 11:71. 1932).

RASPBERRY

CROWN GALL (Agrobacterium tumefaciens). On roguing for virus disease 10% of the Viking plants were found affected in a nursery in Wentworth Co., Ont. (G.C. Chamberlain). Crown gall was found in 4/14 nurseries inspected in Que.; infection was 2-10%. About a third of the plants were infected in a 1/2-acre fruiting plantation of Latham on sandy soil at Abbotsford; the galls

were large and inhibited the growth of the plants (J. Ringuet). Crown gall sev. affected every plant in a planting at Millville, N.B. (S.R. Colpitts). Most of the plants are affected at the Horticultural Station, MacDonald's Corners, and in small plantings in York Co. (P.N.Grainger). An occasional plant was affected in a Viking plantation at Charlottetown, P.E.I. (R.R. Hurst).

SPUR BLIGHT (Didymella applanata) was usually prevalent at Edmonton and sev. affected a 6-year-old patch at Viking, Alta. (A.W. Henry). Mod. infection was observed in a garden at Lethbridge (M.W. Cormack). Spur blight appeared to have already killed the buds on new canes in a planting near Collingwood, Ont., by 23 July (C.B. Kelly). Sl. infection on canes submitted from Belleville, Ont., and in a garden patch at Ste. Clothilde, Que. (H.N. Racicot). The disease was sev. in a home garden at Charlottetown, P.E.I.; the canes were crowded and air drainage poor (J.E. Campbell).

ANTHRACNOSE (Elsinoe veneta) was heavy in a Washington planting in Simcoe Co., Ont. (G.C. Chamberlain). Sev. infection was seen on Madawaska near Collingwood on the fruiting canes and mod. infection later on tips of new canes (C.B. Kelly) Infection very sev. on canes of a purple variety received from Belleville and mod. in a garden at Ste. Clothilde, Que. (H.N. Racicot). Mod. infection on canes, leaves, and petioles of Lloyd George in a planting in Queens Co., P.E.I. (J.E. Campbell).

CANE BLIGHT (Leptosphaeria coniothyrium). Mod. general infection in a planting at Souris, Man. (J.E. Machacek).

SEPTORIA LEAF SPOT (Mycosphaerella rubi). Infection was sev. on the foliage on Viking and other varieties at South Berwick, N.S. (C.O. Gourley) and sl. in a small garden plot at Summerside, P.E.I. (J.E. Campbell).

YELLOW RUST (Phragmidium rubi-idaci) was sev. on the leaves of unsprayed Washington plantings in the Fraser Valley, B.C. early in the season, but a change of weather from spring-like temperatures and frequent rains to normal summer temperatures with dry periods checked its spread, but after the fruit were harvested the disease became sev. on the leaves of new canes and the amount of inoculum for the winter carry-over was heavy. In a Washington planting on Lulu Island application of a dormant spray of lime-sulphur, 1-9, on 16 Feb. and of ferbam 4 lb./100 gallons when the young shoots were 8 inches high on 6 May gave almost 100% control. Adjacent unsprayed plantings were sev. affected. Spraying annually to control this rust on Washington is becoming recognized as a profitable practice by growers in the Fraser Valley. Yellow rust was not seen on Newburg or Willamette (I.C. MacSwan). The rust was found on a few Washington plants in a garden at Summerland (G.E. Woolliams) and was heavy on specimens from Chase (D.L. McIntosh). Rusted specimens received from Peterborough Co., Ont. (C.B. Kelly).

ROOT ROT (complex of Phytophthora, Pythium and Rhizoctonia solani)appears to be present in some plantings on Vancouver Island, B.C. (W.E. McKeen).

ROOT ROT (undetermined, possibly Phytophthora). Several plantings of different varieties in the Fraser Valley, B.C., showed cane symptoms similar to spur blight in late June and many canes wilted and died as the summer progressed. Neither the spur blight nor the cane blight organism was isolated from the affected canes; in consequence the disease was attributed to some root

rot organism. The trouble is restricted to plantings on heavy clay soils (R. Stace-Smith).

LATE YELLOW RUST (Pucciniastrum americanum). A mod. infection was seen in a 2-acre nursery planting of Viking and Latham at Abbotsford; sl. infections were present in 4 other nurseries in Que. (J. Ringuet). A mod. infection was noticed at South Berwick, N.S. (C.O. Gourley).

POWDERY MILDEW (Sphaerotheca humuli). An outbreak caused marked stunting of the terminal foliage and curling of leaves in a Viking planting in Wentworth Co., Ont. (G.C. Chamberlain). A sl. infection was seen in a small planting of Tweed at L'Assomption, Que. (J. Ringuet). A trace occurred on a few canes of Latham (J.E. Campbell) and on Latham and Viking in the same garden in Queens Co., P.E.I. Not previously observed on Viking (R.R. Hurst).

WILT (Verticillium sp.). A 5% infection was observed in a Taylor planting in Lincoln Co. Ont.; entire plants were killed in a low area of the field (G.C. Chamberlain). Wilt was sev. in a planting of 1,200 Viking on low, poorly drained soil at Ste. Foy, Que. Sl.-mod. infection also noticed in 2 Newburgh plantings in the Quebec area (D. Leblond).

LEAF CURL (virus) affected 2 plants in a Taylor planting in Lincoln Co., Ont. (G.C. Chamberlain) and 2% of the plants in a 1/4-acre planting of Viking at Rougemont, Que. (J. Ringuet).

GREEN MOSAIC (virus complex). Mod. infections were observed in plantations of several varieties in the Fraser Valley, B.C.; damage was mod. By using the aphid vector, Amphoraphora rubi, this virus disease, which previously was assumed to be caused by a single virus, was demonstrated to result from the combined infections of at least two virus entities, provisionally called mild mosaic and yellow mosaic (R. Stace-Smith).

MILD MOSAIC (virus). Transmission studies in which the aphid vector, Amphoraphora rubi, and black raspberry seedlings were used demonstrated that the commercial variety Newburg and several non-commercial varieties are carrying a latent virus. The presence of this virus in Newburg in the Fraser Valley, B.C., probably causes little damage (R. Stace-Smith).

MOSAIC (virus). Infection was a tr. in the Univ. plots, Edmonton, Alta. (T.R. Davidson) and sl. in a planting at St. Norbert, Man. (J.E. Machacek). A tr. to 0.5% of the plants were affected in 6/14 plantations inspected in Que. (J. Ringuet). The disease affected 2% of the plants in a Latham planting in York Co., N.B. (D.J. MacLeod). Mosaic infection in Queens Co. P.E.I. (J.E. Campbell).

ROOT ROT was general and caused sev. damage in a planting of Willamette at the Station, Saanichton, B.C.; Pratulenchus sp. were found in the roots (J.E. Bosher).

WINTER INJURY was sev. on 25% of the Lloyd George plants and nil on Viking in a planting in Queens Co., P.E.I.; injury was believed to be due to freezing and thawing (R.R. Hurst).

E. OTHER FRUITS

BLUEBERRY

TWIG BLIGHT (Botrytis cinerea and Monilinia sp.). A survey of many fields in N.B. and N.S. revealed both organisms causing twig and blossom blight. Infection varied from nil to 50% (in the Pennfield area, N.B.) (J.F. Hockey).

WITCHES' BROOM RUST (Calyptospora goeppertiana) was common in N.B. and N.S. in areas where the alternate host Abies balsamea is near. It was most prevalent in solid stands of blueberries with few weeds present (J.F. Hockey). The rust affected 5-20% of the plants of highbush blueberry at Mill Village and Port Mouton, N.S. (D.W. Creelman).

RED LEAF (Exobasidium vaccinii) was commonly observed throughout N.B. and N.S. in the early summer (J.F. Hockey).

POWDERY MILDEW (Microsphaera alni var. vaccinii) was widespread on Vaccinium myrtilloides and V. angustfolium in Queens and Shelburne counties, N.S., but caused little apparent damage. It was also observed on Gaylussacia (D.W. Creelman).

LEAF RUST (Thekopsora vacciniorum) was general on V. angustfolium throughout the areas observed in N.S. It was also collected on Gaylussacia and Rhodora. It is believed that much of the so-called "sterile" leaf spotting observed early in the season is caused by this rust not yet in fruit (D.W. Creelman).

DAMPING-OFF (Verticillium sp.). A few patches, perhaps amounting to 30 feet square, in shaded beds of closely set cuttings of highbush blueberry were affected at Pitt Meadows, B.C. (H.N.W. Toms).

FROST DAMAGE. Flesh of berries of highbush blueberry was discoloured by a late frost on Lulu Island and in the Lower Fraser Valley, B.C., but the fruits appeared to recover with very little drop (R.E. Fitzpatrick).

GRAPE

DEAD ARM (Fusicoccum viticola). Of 1,864 vines of Concord and some Agawan, under observation in Lincoln Co., Ont., 13% bore trunk lesions, which caused more or less stunting growth and sometimes death of arms. In addition, the green shoots on many arms were heavily lesioned depending on the effectiveness of the spray treatment. The disease is widespread and prevalent in the Niagara Peninsula (G.C. Chamberlain).

DOWNY MILDEW (Plasmopara viticola) caused light spotting of the leaves in a Delaware planting in Lincoln Co., Ont. In a planting of 18 different hybrids, also in Lincoln Co., only Seibel 7053 showed any infection. In some vines of this hybrid, however, 75% of fruit clusters were destroyed and foliage was also attacked (G.C. Chamberlain). The disease was observed in a garden at Greenfield Park, Que.; dry weather did more damage than the disease (A. Payette).

POWDERY MILDEW (Uncinula necator) was sev. on specimens received from Maple, Ont. (A.T. Bolton). Powdery mildew was heavy on the foliage and fruit

of Pinot Blanc (hybrid) with scattered infections on the other varieties in a test planting in Lincoln Co., Ont. A vineyard of Senaca in the same county was also heavily infected, both the foliage and fruit were attacked and the berries shelling and hardening (G.C. Chamberlain). About 25% of the fruit were affected in a planting of Concord in Kings Co., N.S. (C.O. Gourley).

CHLOROSIS (iron deficiency) occurs annually in Lincoln Co., Ont., in vineyards subject to flooding. In 1953 the chlorosis was less intensive and the affected vines recovered their normal colour more quickly than usual (G.C. Chamberlain).

DEFICIENCY DISORDERS. A 5-acre vineyard of Concord in Lincoln Co., Ont., showed considerable interveinal paling attributed to manganese and magnesium deficiency. In a second vineyard of French hybrid selections marginal scorch associated with potash deficiency was prevalent (G.C. Chamberlain).

2,4-D INJURY. Sev. injury was observed in 3 different plantings in Halton Co., Ont. Near Sheridan, 8 acres of 50-acre vineyard was sev. affected, but some injury could be detected at the farthest point from roadside where spraying was done, a distance of 1,500 feet (C.B. Kelly).

STRAWBERRY

CROWN ROT (Armillaria mellea) caused mod. damage in a small planting on newly cleared land at Comox, B.C. (W. Jones).

GREY MOULD (Botrytis cinerea) caused mod. infection of the berries in a planting at Medicine Hat, Alta. (M.W. Cormack). It caused mod. damage in a patch of Gem ever-bearing strawberries at Connor Creek (A.W. Henry). A sl. infection of the calyx of half-formed berries was seen on 10 June at Grand Lake, N.B. (C.O. Gourley). Decay of the fruit by Rhizopus and B. cinerea caused sl. damage in a few plantings in the Saanich Peninsula, B.C. (W. Jones).

LEAF BLIGHT (Dendrophoma obscurans) caused mod. damage to most varieties grown in the Berwick area and at the Station, Kentville, N.S. Light infections were also observed on Fragaria vesca and F. virginiana (C.O. Gourley, D.W. Creelman).

The slime mould, Fuligo septica was found covering a few plants in Fort Garry, Man. (J.E. Machacek).

LEAF BLOTCH (Gnomonia fructicola) caused mod. infection on Catskill and Temple in a planting at Chester Basin, N.S. Zythia only on the plants, but the perfect state developed regularly in culture (C.O. Gourley).

LEAF SPOT (Mycosphaerella fragariae). A mod. infection was noticed on Premier planting in Lincoln Co., Ont. (G.C. Chamberlain). The disease was present in most of the 40 plantings visited in Joliette and Berthier counties, Que., a 25% infection being recorded in one of Senator Dunlap (A. Payette). Leaf spot was already showing in most plantings in N.B. on 16 June (S.R. Colpitts). Leaf spot caused sev. damage throughout Kings Co., N.S. Infection was already

heavy on the new growth on 21 May (C.O.Gourley). A mod. infection was noted on Louise in the Station plots, Charlottetown, P.E.I. A sl. infection was also seen on F. virginiana at East Point (J.E. Campbell).

POWDERY MILDEW (Sphaerotheca humuli) was heavy on 2 plantings of British Sovereign at Keating, B.C. (W. Jones). The disease was found in a home planting of the same variety at Summerland (G.E. Woolliams).

CRINKLE (virus). A mod. infection was found in a Premier planting at Port Williams, N.S. (C.O. Gourley).

DEGENERATION (virus) affects almost all strawberry plantings in the Creston Valley, B.C. Certified plants of British Sovereign were introduced 3 years ago from the Fraser Valley. Planted close to old diseased plantings, the new plants produced one excellent crop and one fair crop before degenerating to the level of the old plantings. When Dr. R.E.Fitzpatrick inspected the plantings in 1953, he noted that the certified plants remained healthy when the plantings were isolated from old diseased plantings (M.F. Welsh).

FROST caused sl. damage to the blossoms in a Senator Dunlap planting at Woodstock, N.B. (S.R. Colpitts).

ROOT ROT (cause unknown) caused sev. damage in a garden at Calgary, Alta. (M.W. Cormack). Many plantings were sev. affected in the Grand Lake area, N.B. Drought occurred at the peak of production and the yield of the weakened plants was reduced by 30-50% (S.R. Colpitts). Sl. infection was seen at Murray River, P.E.I.; Rhizopus, Fusarium and other fungi were isolated from the diseased roots (J.E. Campbell).

ROOT DECLINE or ROT caused sev. damage in several plantings of British Sovereign investigated in B.C. Parasitic nematodes were found associated with the diseased roots as follows: Abbotsford, Pratylenchus pratensis and Xiphinema sp.; decline observed for some years; four acres of the strawberries were ploughed up and planted to Washington raspberries; growth of the latter reduced by 25%. Exp. Station, Saanichton, Pratylenchus penetrans in large numbers in the roots. Keating, Pratylenchus sp.; growth poor in 4-acre field. The same nematode species alone or together observed in 4 other plantings (J.E. Bosher).

FROST INJURY was mod.-sev. in several districts in the Okanagan Valley. Apparently, the plants were not protected by the usual covering of snow. (W.R. Foster).