IV. DISEASES OF FRUIT CROPS

A. POME FRUITS

APPLE

FIRE BLIGHT (Erwinia amylovora). A specimen of Yellow Transparent was received from Victoria, B. C. (J. B. Julien, H. N. Racicot). A survey in early July indicated little spread in Alta. ; a few severely infected trees were seen, but generally only old cankers could be found (L. E. Tyner). Blight was not prevalent on crab apples at Edmonton (A. W. Henry). It was observed occasionally on crabs at Saskatoon, Sask. , but was not serious (H. W. M.). Seedling crabs with tip blight were received from Moose Range, Sask. , where infection was stated to be heavy in a nursery. Two-year-old trees of Yellow Transparent received from Bowmanville, Ont. ; the rate of infection was low. Moderate infections were seen in several orchards of Northwestern Greening and Tolman Sweet in the Niagara Peninsula (G. C. Chamberlain). Fire blight seemed to be more widespread in Ont. than in recent years. The pathogen was isolated from apple twigs from London, Guelph and Toronto areas (E. H. Garrard). Specimens were received from Seeley's Bay and Strathroy (H. N. Racicot, J. B. Julien). In southwestern Que. blight was limited to isolated trees except for one orchard at Havelock Center (F. Godbout). Infection was a trace at St. Sylvère, Nicolet Co. (H. Généreux). A specimen was received from Fredericton, N. B. (H. N. Racicot).

STORAGE ROT (Gloeosporium spp.). In April 1951, 80% of lesions on Northern Spy and 20% of those on Golden Russet at Kentville, N. S. , yielded pure cultures of G. album (K. A. Harrison). Trace infections of G. fructigenum Berk. , with spore masses greyish, and G. rufomaculans (Berk.) Thuem. , with spore masses pink, were seen at Kentville in Feb. 1951 (J. F. Hockey). The last two organisms are considered by some authorities to be variants of the conidial stage of Glomerella cingulata.

RUST (Gymnosporangium clavipes). Traces of pycnia were found in most orchards examined in N. S. , but aecia were found on only one of several thousand infected fruits. Lesions were on pedicels as well as fruit (J. F. Hockey).

PERENNIAL CANKER (Neofabraea perennans). Limb cankers were general on Newtown and Jonathon in the Kelowna district, B. C. (D. L. McIntosh).

BLACK ROT (Physalospora obtusa) was more general than usual on Northern Spy and King in N. S. , conspicuously affecting the calyx end of the fruit. The fungus followed spray or mechanical injury (J. F. Hockey).

POWDERY MILDEW (Podosphaera leucotricha) was common in the Saanich district, B. C. (W. Jones). It was general on leaves and fruit of Jonathon and McIntosh in the Okanagan Valley, but damage was slight (D. L. McIntosh).

BRANCH ROT (Schizophyllum commune). Specimens were sent in from old orchards at Kindersley and Marshall, Sask. (T. C. Vanterpool).

CANKER (Tympanis conspersa). Specimens with the Pleurophomella stage in fruit were received from Maple, Ont. (G. C. Chamberlain, J. W. Groves). Previously reported from N. S. (P. D. S. 30:96).

SCAB (Venturia inaequalis). A single affected fruit of Wealthy was brought in from Burnaby, B. C., in June (I. C. MacSwan). At Penticton and Kelowna, some leaf infection and pin-point lesions on fruit were seen on McIntosh at harvest (D. L. McIntosh). Scab was moderately heavy (80-90% of fruit) in unsprayed orchards of all varieties in the western Kootenays, but was adequately controlled by lime sulphur in concentrate sprayers. In Creston Valley it was much more severe (90-100% of fruit and heavy defoliation), largely as the result of two wet periods, the first from prepink to late calyx stage and the second from late August to the end of picking. Most growers were able to control spring and summer scab, but pin-point infection was heavy in most orchards. Pin-point scab was much less severe where ferbam with wettable sulphur was substituted for lime sulphur in the second cover spray (M. F. Welsh).

In the Guelph district, Ont., foliage infection was heavy at the end of July except in two small, very carefully sprayed orchards. Except in these two orchards infection of the young fruit was moderate to heavy and many had dropped (C. B. Kelly). Scab was severe on McIntosh and other varieties in most of the Niagara Peninsula. The fruit was worthless in unsprayed and many poorly sprayed orchards, but many growers achieved good control. In the laboratory orchard infection of harvested fruit ranged from 0.35 to 54.1% according to treatment, but unsprayed trees were partially defoliated and no fruit could be harvested (G. C. Chamberlain). In Southwestern Que. scab was quite heavy and losses were heavy in some orchards. In the fall pin-point scab developed in most orchards (F. Godbout). It was kept under fair control except in the Frelighsburg district where prolonged spring rains favoured its early development. In Rouville Co. the main infection periods were 11-12 May, 27-28 May, 14-15 June and 18 June. Most growers sprayed thoroughly and all at the right time; and little spread occurred except for pin-point scab in mid September on late varieties, which resulted from heavy rains. Ferbam controlled pin-point scab better than the wettable sulphurs (L. Cinq-Mars). Scab was heavy on a few trees at St. Thomas, Joliette Co., and moderate at Sacré Coeur, Rimouski Co. (H. Généreux).

At Fredericton, N. B., ascospores were mature on 28 April and discharges took place on 7, 11 and 12 May. Heavy rain in July caused a scab epidemic. Infection ran up to 100% in poorly sprayed orchards, but there was no late, pin-point infection (J. L. Howatt). April was wet and cool in N. B. with almost continuous rain 15-28 April. On 1 May apple buds were in the early delayed dormant stage and ascospores were fully developed in the old leaves. The first ascospore discharge occurred on 7 May when apple buds were in the delayed dormant to late delayed dormant stage. Heavy ascospore discharge occurred on 11 May. Heavy rains occurred from 24 May to 9 June. Scab infection was noted on 8 June at Upper Hampstead, and on 14 June it was very prevalent on unsprayed trees. The weather during the first two weeks

of June, although somewhat cool and cloudy was very favourable for the development of the pathogen. In commercial orchards where sprays could be applied on time or before infection periods, good control of scab was obtained. However, severe infection occurred in a few orchards not properly sprayed. (S. F. Clarkson). In N. S. an open winter allowed early development of the pathogen, mature ascospores being found on 18 April in several parts of the Annapolis Valley. The first infection period was 25-26 April when early varieties were in the green tip stage. The most severe infection periods were 11-13 May, 23-25 May, 28-30 May, 4-5 June and 15-16 June. No ascospores discharged in spore traps after 23 June. Primary infection was seen on 19 May. Heavy infection resulted where sprays were poorly timed or a protective spray was used after rain instead of an eradicant. Several growers had good results in their first use of the new eradicant materials (J. F. Hockey). In P. E. I. scab was extremely severe on unsprayed trees and was serious even in well-sprayed orchards (R. R. Hurst).

MOSAIC (virus). A single grafted tree of Early McIntosh was seen at Waterdown, Ont. (G. C. Chamberlain). Three Bethel trees at the Station, Fredericton, N. B., that have shown a marked interveinal mottle for 11 years continue to make normal growth. A seedling in the Laboratory orchard has shown severe leaf mottling and distortion. It is now severely dwarfed and the fruit is very small (D. J. MacLeod).

BITTER PIT (physiological) affected 5% of the fruit of a few trees of Northern Spy in Lincoln Co., Ont. (G. C. Chamberlain). Affected specimens of very large fruit from young, vigorous trees of Delicious were brought in from Coldbrook, N. S.; but in general there was very little loss from bitter pit this year (K. A. Harrison).

CHLOROSIS (lime-induced iron deficiency). In many localized areas in the Okanagan Valley, B. C., apples and other tree fruits are severely affected. The soil in such areas is usually very moist, especially in spring, and there is a marked tendency for salts to accumulate (C. G. Woodbridge).

CHLOROSIS (manganese deficiency) was severe in several areas, and slight to moderate deficiencies were found in most sections of the Okanagan and Similkameen Valleys, B. C. The deficiency can be cured by spraying with manganese sulphate (C. G. Woodbridge).

CROWN ROT (cause undetermined). Several mature trees of Joyce in Glanford Twp., Wentworth Co., Ont., showed extensive rotting at the crown, poor growth and die-back. The trees were on low, poorly drained land; but Cortland, Delicious, McIntosh, Northwestern Greening and Tolman Sweet were unaffected (G. C. Chamberlain).

DROUGHT SPOT, etc. (boron deficiency) affected the complete crop of a few trees of McIntosh and Winesap at Yale, B. C., on sandy soil from which boron is readily leached (C. G. Woodbridge). All the fruit of two trees was severely affected at St. Thomas, Joliette Co., Que. (H. Généreux, R. O. Lachance). One

lot of McIntosh purchased at Charlottetown, P. E. I., showed 1% corky core. Four specimens brought in showed external cork (R. R. Hurst).

LEAF BLOTCH (magnesium deficiency) has been recognised in the Okanagan Valley, B. C., for many years, but control was not achieved until this year. Six sprays of 2% magnesium sulphate were needed. Soil applications have been ineffective. The trouble caused loss of the crop of affected trees of Newtown (C. G. Woodbridge).

LITTLE LEAF and ROSETTE (zinc deficiency) was again noted on apple in the Okanagan Valley, B. C., and was seen for the first time on pear, prune, peach and cherry. It was also seen on apple in the Creston Valley for the first time. Summer sprays of 1 lb. zinc oxide per 100 gal. greatly reduced the symptoms (C. G. Woodbridge).

MALFORMATION (?poor pollination). Flat-sided and pear-shaped McIntosh apples were abundant in N. B. (J. L. Howatt).

RUSSETTING (spray injury). Bordeaux mixture used for the early sprays, during cool weather with slow drying, caused about 20% of the fruit to be russetted in many orchards in N. B. (J. L. Howatt).

SILVER LEAF (cause undetermined) affected scattered trees in the Okanagan Valley, B. C. (D. L. McIntosh).

STEM END ROT (cause undetermined) was general on McIntosh in Queens Co., P. E. I. It is suspected to have been the result of excessive rain and poor growing conditions (R. R. Hurst).

PEAR

FIRE BLIGHT (Erwinia amylovora) was generally severe on Bartlett and Flemish Beauty in the Okanagan Valley, B. C., and was also seen on Anjou. Fruit infection and limb girdling were common (D. L. McIntosh). In Creston Valley, in the Kootenays, a few trees are lost each year, especially Bartlett and Flemish Beauty but the rate of loss has dropped in the last two years. Winter pruning, enforced by the provincial Dept. of Agriculture, seems to have been generally successful in spite of wet weather at blossom time. A few serious pockets of blight remain, especially where a number of small orchards are grouped together and enforcement is more difficult. Pear production in Creston Valley has dropped since 1947, despite increased planting, and horticultural officials attribute the decline to fire blight (M. F. Welsh). Blossom and twig blight was seen in a few Bartlett orchards in the Niagara Peninsula, Ont. Several trees of Clapp's Favorite in Ontario had 1/3 to 1/2 of the wood killed although adjacent Bartlett and Flemish Beauty were almost unaffected (G. C. Chamberlain). Fire blight seemed to be more widespread than usual in Ontario. The pathogen was isolated from pears from the Waterford, Markham, Listowell, Collingwood and Waterdown areas (E. H. Garrard).

LEAF SPOT (Mycosphaerella sentina). Infected leaves were received from a nursery near Fonthill, Ont. (G. C. Chamberlain).

POWDERY MILDEW (Podosphaera leucotricha). Infection was moderate but damage slight on Flemish Beauty in Creston Valley, B. C. (M. F. Welsh).

TWIG BLIGHT (Sclerotinia fructicola). A trace was found at Pictou, N. S.; first report to the Survey on pear (K. A. Harrison).

SCAB (Venturia pirina). A single affected fruit was brought in from Burnaby, B. C. (I. C. MacSwan). Foliage and fruit infection was heavy on Flemish Beauty in Creston Valley, but the variety is not widely grown (M. F. Welsh). Moderately heavy fruit and leaf infection occurred on Bartlett in an orchard in Glanford Twp., Wentworth Co., Ont. The unusually heavy infection of this relatively resistant variety seemed to be due to close planting (15 ft. x 15 ft.), vigorous growth, poor air circulation due to sheltered and low situation, and interplanting with Flemish Beauty (G. C. Chamberlain). Single unsprayed trees of Bartlett and Clapp's Favorite were more heavily infected than in any recent year at Kentville (K. A. Harrison).

DIE BACK (boron deficiency). Bartlett trees at Yale, B. C., showed a sudden blossom wilt in June, during full bloom, and developed typical die-back. Analyses indicated a normal boron content of the soil but a very low content for the affected tissues. Low soil moisture is believed to have interrupted boron transfer through the soil. The trees recovered later in the season (C. G. Woodbridge).

LITTLE LEAF and ROSETTE (zinc deficiency). See under Apple.

SUMMER WILT (cause unknown). A condition known locally as summer wilt was first seen at Yale, B. C., in 1948 when only a few trees were affected. No new cases were seen in 1949 or 1950. In 1951 many trees of most varieties were affected in many districts, but there was no evident pattern in the distribution of affected trees in any one orchard. The leaves shrivel, blacken and die, many usually falling, and the crop fails to size up. Tissues of other parts of the trees appear healthy (G. C. Woodbridge).

THIN WOOD (cause unknown) Affected trees of Bartlett, in B. C., make profuse thin and spindly sucker growth, and bear almost no fruit (C. G. Woodbridge).

B. STONE FRUITS

APRICOT

CORYNEUM BLIGHT (Clasterosporium carpophilum). Infection was very heavy on all varieties of apricot and peach in Creston Valley, B. C., 100% of fruit being affected in unsprayed orchards. Heavy fall rains in 1950 favoured canker development. During the severe winters of 1949-50 and 1950-51 many unsprayed and severely cankered trees were killed or seriously damaged, whereas sprayed trees

in adjacent orchards were undamaged. It appears that much of the killing of apricot and peach in the Kootenays attributed to winter injury has occurred only because the trees were weakened by Coryneum blight (M. F. Welsh).

CANKER (Valsa sp.). Branch and limb killing followed infection by Valsa sp. through pruning stubs at Niagara-on-the-Lake, Ont. (G. C. Chamberlain).

WILT (Verticillium albo-atrum). The pathogen was isolated from the affected trees of Moorpark at Osoyoos, Summerland and Vernon, B. C. (G. E. Woolliams).

FROST INJURY. The apricot crop was reduced to about 10% of normal in the Okanagan Valley, B. C., by an exceptionally severe frost on the night of 19 April, during bloom, which killed the ovaries. The minimum at the Summerland Experimental Station was 14° F.

SILVER LEAF (cause undetermined) was severe in June on some apricots in the southern part of the Okanagan Valley, B. C., following very low winter temperatures (D. L. McIntosh). The association of silver leaf with winter injury has been noted previously (P. D. S. 24: 84. 1945).

CHERRY

DIE BACK (Cytospora sp. associated) caused slight damage to sweet cherry at Kentville, N. S. (C. O. Gourley).

BLACK KNOT (Dibotryon morbosum) was heavy on sour cherry at one location in Queens Co., P. E. I. No other reports were received, but it was heavy on wild Prunus (R. R. Hurst).

SHOT HOLE (Higginsia hiemalis) was light on foliage of all sweet cherry orchards examined in the Boswell--Kootenay Bay Section of the Kootenays, B. C., but no pedicel infection was seen (M. F. Welsh). Shot hole was heavy at Arkona, Middlesex Co., the Niagara Peninsula and near Hamilton, Ont., on sweet and sour cherries, and caused partial defoliation in late summer (G. C. Chamberlain). It caused considerable defoliation of young trees in a nursery at Rougemont, Que. (L. Cinq-Mars). Infection ranged from trace to heavy in Prince Co., P. E. I. (J. E. Campbell).

CROWN ROT (Phytophthora cactorum). The pathogen was isolated from the bark of a girdled tree of Van sweet cherry at the Station, Summerland, B. C. (D. L. McIntosh). First report to the Survey on this host.

POWDERY MILDEW (Podosphaera oxyacanthae) was general on sucker growth of Bing and Lambert sweet cherries throughout the Summerland area, B. C. (D. L. McIntosh). Seedling sweet cherries were infected at Seton Lake (G. E. Woolliams). All sweet cherry varieties were very lightly infected in the Kootenays (M. F. Welsh). Infection was a trace on tip growth of young Montmorency sour cherries in Wentworth Co., Ont. (G. C. Chamberlain). Several trees of Montmorency were heavily infected at Smiths Falls (H. N. Racicot).

BLOSSOM BLIGHT and BROWN ROT (Sclerotinia fructicola and S. laxa). Blossom infection was moderately heavy on sweet cherries in the West Kootenay district, B. C., and there was some rotting of green fruit; but dry weather at picking time checked its spread. No brown rot was noted in Creston Valley (M. F. Welsh). At the laboratory, St. Catharines, Ont., blossom and stem rot (S. fructicola) on sweet cherries was: Yellow Spanish 22.0%, Velvet 17.0%, Gov. Wood 6.8%, Schmidt 6.4%, Black Tartarian 3.2%, Elkhorn 2.8%. Brown rot became increasingly important during the sweet cherry harvest, averaging about 5% on 10 July and 10-15% on 17 July (G. C. Chamberlain). S. fructicola fruited on specimens of Hansen's bush cherry sent in from Abbotsford, Que. (H. N. Racicot, J. B. Julien).

LEAF CURL and WITCHES' BROOM (Taphrina cerasi). A seedling sweet cherry at Crawford Bay, B. C., had most of the foliage affected and was of no commercial value (M. F. Welsh). Mix (Univ. Kans. Sci. Bull. 33, pt. 1, no. 1. 1949) indicates that T. minor, regarded as the cause of cherry leaf curl, is not distinct from T. cerasi, the witches' broom pathogen (D. B. O. S.).

WILT (Verticillium sp.). Affected orchards of Montmorency sour cherry were seen in June near Waterdown, Fonthill, Vineland and St. Catharines, Ont. In some, but not all, cases cherries are known to have followed or been interplanted with tomatoes. Growth was stunted, leaves were small and delayed, and wood was typically discoloured. Six trees of Hedelfingen sweet cherry were partly defoliated in a mixed planting in Wentworth Co., but Windsor was unaffected (R. S. Willison, G. C. Chamberlain).

LITTLE CHERRY (virus). Symptoms were less severe than usual in most sweet cherry orchards in Creston Valley, B. C., probably because the crop was drastically reduced by spring frosts. The variety Van, now in commercial production in two orchards, bore a normal crop and showed no symptoms. Elsewhere in the Kootenays symptom severity was about average. Some Bing could be sold as fresh fruit in a year of short crops, but most were processed. The crop was normal to heavy in most orchards. The crop of Van was very heavy at Kaslo and quality lower than usual, but all fruit reached the standard for sale as fresh fruit (M. F. Welsh).

NECROTIC LEAF SPOT (virus). Severe shock symptoms were seen on about 10% of a block of 6-8 year-old Montmorency sour cherries in the Niagara Peninsula, Ont. (G. C. Chamberlain).

RASP LEAF (virus). A few trees (less than 1%) were affected in a 2-3 year old Montmorency block in Lincoln Co., Ont., not previously surveyed. The disease was first recorded in another orchard in 1950. Rasp leaf of sweet cherry (?virus) affected 2/345 trees of Windsor in a Lincoln Co. orchard surveyed for 5 years (R. S. Willison).

Table 10. Virus Disease Survey of Sour Cherry Orchards

Symptom or disease	Repeat surveys Frequency in 1951 No.	%	New in 1951 No.	%	New surveys, 1951 No.	%
Cherry yellows (suspected)	47	2.5	38	2.0	48	3.8
Cherry yellows	294	15.5	72	3.8	344	27.4
Shock symptoms*	17	0.9	13	0.7	2	0.2
Etching, etc. (chronic necrotic ring spot)	240	12.6	101	5.3	1	0.1
Rasp leaf	4	0.2	1	0.05	7	0.5
Mottle and ring patterns	30	1.6	27	1.4	1	0.1
Narrow leaf (?)	5	0.3	5	0.3	4	0.3
Green ring yellows	7	0.4	0		0	0
Abnormal fruits**	0		0		1	0.1
Tatter leaf (suspected)	13	0.7	13	0.7	0	0
Total	657	34.6	270	14.2	408	32.5
Combinations of symptoms	55	2.9	120	6.3	3	0.2
Trees visibly affected 1951	602	31.7	150	7.9	405	32.3
Trees previously affected but symptomless in 1951	364	19.2			-	-
Trees "healthy" 1947-1951	935	49.1			851	67.7
Total trees surveyed	1901	100.0	-	-	1256	100.0
Grand Total	1371 diseased 43.4%	+	1786 "healthy" 56.6%	= 3157 trees = 100.0%		

*7 trees showed shock after showing symptoms in previous years.

**In addition to that associated with green ring yellows infection.

Table 11. Virus Disease Survey of Sweet Cherry Orchards

Symptom or disease	Repeat surveys Frequency in 1951 No.	%	New in 1951 No.	%	New surveys 1951 No.	%
Mottle, ring and line patterns	377	30.6	77	6.3	163	20.8
Necrotic spotting (small spots)	19	1.5	13	1.0	20	2.6
Tatter leaf	84	6.8	13	0.1	27	3.5
Tatter leaf (suspected)	16	1.3	11	0.9	20	2.6
Crinkle or pseudo-crinkle	282	22.9	228	18.5	18	2.3
Little leaf (?)	11	0.9	11	0.9	14	1.8
Rasp leaf	4	0.3	4	0.3	1	0.1
Mild rugose mosaic (?)	2	0.2	0	0	0	0
Lambert 'spot'	1	0.1	1	0.1	2	0.2
Total	796	64.6	358	29.1	265	33.9
Combinations of symptoms	154	12.5	253	19.8	43	5.5
Trees visibly affected in 1951	642	52.1	105	9.3	222	28.4
Trees previously affected but symptomless in 1951	359	29.1	-	-	-	-
Trees "healthy" 1947-1951	231	18.8	-	-	561	71.6
Total trees surveyed	1232	100.0			783	100.0
Grand Total	1223 diseased		+ 792 "healthy"		= 2015	
	60.7%		+ 39.3%		= 100.0%	

Dr. R.S. Willison has communicated his observations in a special report, "Virus Disease Survey in the Niagara Peninsula, Ont."

Tables 10 and 11 summarize the data for 1951. There is indication of multiple strains of necrotic ring spot and yellows of sour cherry. Symptom expression varies from year to year and from orchard to orchard, but does so independently for these two diseases. Green ring yellows spreads very slowly if at all. Most of the sour cherry orchards consist of Montmorency. The figures for some diseases of sweet cherry change greatly from year to year because of variations in masking and symptom expression. The figures for pseudo-crinkle are subject to revision, owing to difficulty in diagnosis. Little leaf, not previously recorded, is suspected to be due to a virus; the crop is affected.

CROWN AND ROOT INJURY (lack of drainage). Wet soil and poor aeration were apparently responsible for damage to 15-20% of the trees in a Montmorency orchard near St. Thomas, Ont.; some trees were dying when examined in June. Several scattered cases of the same condition were seen in Lincoln Co. and the Oakville district (R.S. Willison).

CHEMICAL INJURY. Leaf drop occurred in a Montmorency orchard in the Niagara Peninsula, Ont., in June, following a late application of cyanamid (G.C. Chamberlain).

FROST INJURY. The sweet cherry crop was reduced to about 10% of normal in the Okanagan Valley, B.C., by unseasonably low temperatures just before full bloom. The minima at Summerland for the nights of 19, 20, and 21 April were 14, 19 and 25°F. Almost all ovaries of flowers near the ground were killed, but a higher proportion were uninjured near the tops of the trees (G.E. Woolliams).

LITTLE LEAF and ROSETTE (zinc deficiency). See Apple.

NECTARINE

LEAF CURL (Taphrina deformans). Infected fruit were seen in a home garden at West Vancouver, B.C. Both fruit infection and occurrence of the pathogen on nectarine are uncommon (H.N.W. Toms, I.L. Conners).

PEACH

SCAB (Cladosporium carpophilum) caused some defoliation at the Station, Kentville, N.S. Recorded previously from this district only on fruit (K.A. Harrison).

CORYNEUM BLIGHT (Clasterosporium carpophilum). Fruit lesions caused slight damage at Penticton, B.C. (D.L. McIntosh).

DIE BACK (Cytospora sp.) caused moderate damage at Kentville, N. S., especially to the new growth of young trees (C. O. Gourley).

POWDERY MILDEW (Podosphaera oxyacanthae). Considerable infection occurred on fruit of a few trees in a garden at Salt Spring Island, B. C. (W. Jones).

POWDERY MILDEW (Sphaerotheca pannosa) was prevalent on Golden Jubilee, Elberta and Vedette in Niagara Twp., Lincoln Co., Ont. Many fruit were marked in a small, isolated block (G. C. Chamberlain).

LEAF CURL (Taphrina deformans) was found at Summerland, B. C., on Vedette and other varieties growing within 500 ft. of the lake, but not further from the shore. Scattered infections occurred in the area (G. E. Woolliams, D. L. McIntosh). Throughout the Kootenays heavy spring rains favoured leaf curl and infection was 100% in most unsprayed orchards. The late September sprays of ferbam and wettable sulphur, Bordeaux mixture, or fixed copper, for Coryneum blight, gave excellent control of leaf curl (M. F. Welsh). Scattered infections were seen in Lincoln Co., Ont., where spraying was not timely or thorough. In unsprayed orchards leaf curl was epidemic (G. C. Chamberlain). At Middleton, N. S., a dormant spray with Perenox was ineffective and allowed 50% leaf infection on Red Haven (K. A. Harrison).

WILT (Verticillium sp.). Several cases were found in young plantings of Elberta at St. Catharines and Niagara-on-the-Lake, Ont.; affected trees showed considerable defoliation in July (G. C. Chamberlain).

BARK KILLING (rabbit repellant). The application of a commercial repellant (Rabbit-Scat) to 3-year-old Elberta trees in Lincoln Co., in the fall, was followed by the death of 90% of the trees due to killing of the bark on the trunks. This material has not given rise to complaints when used on other tree fruits. It is believed that the open fall and the grower's cultural practices delayed the onset of dormancy and contributed to the injury (G. C. Chamberlain).

BUD FAILURE (cause unknown). The fruit buds of trees of several varieties in the Okanagan Valley, B. C., started to swell in the spring and then abruptly died and sloughed off (C. G. Woodbridge).

CROWN ROT (lack of drainage). Poor drainage and heavy fall and spring rainfall combined to kill many young trees of Golden Jubilee and Fisher in the Niagara Peninsula, Ont. (G. C. Chamberlain).

LITTLE LEAF and ROSETTE (zinc deficiency). See Apple.

PLUM

SCAB (Cladosporium carpophilum) was severe on some trees, causing almost all the fruit to drop, but only slight on others at Kirks Ferry, Que. (H. N. Racicot).

BLACK KNOT (Dibotryon morbosum). The eradication campaign in the Fraser Valley, B. C., has been continued, mainly in the Chilliwack and Mission--Hatzic areas, with the co-operation of District Agriculturists and Horticulturists, various agricultural organizations, and the Indian Affairs Branch. Publicity has been directed through window displays, talks, press, and radio, and its effect is being reflected in the increased efforts by growers. This eductional program is now being supplemented by a control program. There is much work to be done on private farms, abandoned estates and Indian reservations. It is hoped that abandoned plum and prune trees may be killed by chemical means. It should be emphasized that to date black knot has been found in the Fraser valley only on domesticated plum and prune, except for a trace on apricot (P. D. S. 26:67, and 27:87) at Agassiz. No infection has been found on native Prunus. Italian prune is moderately susceptible and all varieties of plum appear to be highly susceptible (I. C. MacSwan). Specimens of plum were received from Wellandport, Ont., with the statement that it was common in a small planting. A few scattered knots were found in a planting of Stanley prune in Lincoln Co. (G. C. Chamberlain). Black knot was heavy in thickets of wild plum near Kentville, N. S. At the station the spray program keeps the disease in check, but new knots must be cut out of a number of trees each spring (K. A. Harrison). A trace was seen on one tree in Queens Co., P. E. I. (R. R. Hurst).

BROWN ROT (Sclerotinia fructicola). Despite a very light crop, a small amount of rot was found on Stanley prune at Kentville, N. S. Some twig blight was also suspected to be due to S. fructicola (K. A. Harrison).

SILVER LEAF (Stereum purpureum). A tree of Victoria was severely affected at Keating, B. C. (W. Orchard).

PLUM POCKET (Taphrina communis). Infection was reported to be 30% at Pelley and 15% at Struan, Sask. (T. C. Vanterpool). Infection was 100% on Burbank near Berwick, N. S. (C. O. Gourley). Prunox gave no control as a dormant spray on an unidentified variety at Middleton, and infection was 95% (K. A. Harrison).

BACTERIAL BLIGHT (Xanthomonas pruni) was considerably lighter than usual on Burbank at the Station, Kentville, N. S. (C. O. Gourley).

CROWN ROT (lack of drainage). A young block of 60 trees of mixed varieties in the Niagara Peninsula, Ont., showed poor growth in July and some trees were dead. Extensive crown injury was present and was attributed to poor drainage and heavy rainfall. See also Cherry and Peach (G. C. Chamberlain).

LITTLE LEAF and ROSETTE (zinc deficiency). See Apple.

SPRAY INJURY. Cankers on Japanese plum, apparently due to arsenical injury and later invaded by Valsa sp., caused die-back in Clinton Twp., Lincoln Co., Ont. (G. C. Chamberlain).

SWOLLEN NODES (boron toxicity). Boron toxicity symptoms on stone fruits are being studied in sand culture experiments at Summerland, B. C. One symptom on prune and apricot, which has also been seen in the field and in plot tests, is a great enlargement of the nodes (C. G. Woodbridge).

C. RIBES FRUITS

CURRANT

LEAF BLIGHT (Botrytis cinerea) caused the loss of a few lower leaves of Coronet and Crusader black currants at Kentville, N. S. (C. O. Gourley).

WHITE PINE BLISTER RUST (Cronartium ribicola) caused slight damage to black currant in a garden at Sidney, B. C. (W. Jones). Infection was light on Boskoop Giant black currant in Creston Valley, (M. F. Welsh). It was heavy on all 16 varieties of red currant under test at the Station, Kentville, N. S. (C. O. Gourley). Infection was moderate on currants at Springfield, P. E. I. (J. E. Campbell).

ANTHRACNOSE (Drepanopeziza ribis) was severe on specimens from Ottawa, Ont. (A. T. Bolton). It was light on many varieties of red and black currant at the Station, Kentville, N. S. (C. O. Gourley). Infection was light at Springfield, P. E. I. (J. E. Campbell).

SEPTORIA LEAF SPOT (Mycosphaerella grossulariae) was rather general on Coronet black current in Ancaster twp., Lincoln Co., Ont., causing partial defoliation (G. C. Chamberlain).

CANE BLIGHT (Nectria cinnabarina) affected a number of canes in a thicket of escaped plants at Barton, N. S. (K. A. Harrison).

POWDERY MILDEW (Sphaerotheca mors-uvae) was destructive at Donalda and Beverly, Alta. (A. W. Henry). It was heavy on specimens of Ribes glandulosum collected on Brabant I., Great Slave L., by W. H. Lewis; this collection is possibly the northernmost record of the pathogen in Canada (D. B. O. Savile). Black currants were severely affected near Saskatoon, Sask.; rainfall and humidity were above average (H. W. M.). Mildew was moderate on Coronet and Crusader black currants at the Station, Kentville, N. S. (C. O. Gourley) and heavy on specimens of Crusader received from Pasadena, Nfld. (H. N. Racicot).

DIE-BACK (Thyronectria berolinensis (Sacc.) Seaver associated). This fungus fruited abundantly on dead canes of red currant pruned out and lying on the ground at St. Catharines, Ont. The canes had also been attacked by the currant cane borer, and the pathogenicity of the fungus has not been proved (W. G. Kemp). Not previously reported in the Survey, but there are several specimens in the Mycological Herbarium from Ont., and one from Man. on Ribes spp. (I. L. Conners).

GOOSEBERRY

WHITE PINE BLISTER RUST (Cronartium ribicola) was heavy on 13 varieties at the Station, Kentville, N. S., and caused much defoliation (C. O. Gourley).

ANTHRACNOSE (Drepanopeziza ribis) was light on several varieties at the Station, Kentville, N. S. (C. O. Gourley).

POWDERY MILDEW (Sphaerotheca mors-uvae) was heavy on fruit from a garden in the Steveston area, Lulu I., B. C. (N. S. Wright). Infection was light at Lacombe and moderate at Edmonton, Alta. (T. R. D.). Mildew reduced the yield of marketable fruit of English gooseberry by 10% in a planting in Ancaster Twp., Wentworth Co., Ont. (G. C. Chamberlain). Specimens were received from Almonte with the statement that 2% of the fruit was affected (H. N. Racicot). Infection was light on Poorman at Kentville, N. S., destroying some lower leaves (C. O. Gourley).

D. RUBUS FRUITS

BLACKBERRY

CROWN GALL (Agrobacterium tumefaciens). A trace was found at New Minas, N. S. (C. L. Lockhart).

LOGANBERRY

DRY BERRY (Haplosphaeria deformans) was heavy at Egmont, B. C. (R. Stace-Smith).

RASPBERRY

CANE GALL (Agrobacterium rubi). Considerable infection occurred on fruiting canes in a garden at Courtenay, B. C. (W. Jones).

CROWN GALL (Agrobacterium tumefaciens). Specimens of black raspberry with galls spreading up on to the canes were received from Norval, Ont.; possibly due to A. rubi (E. H. Garrard). Crown gall was found in all varieties grown at the Station, Ste. Anne de la Pocatiere, Que. (A. Payette). Galls were found up to 2 ft. from the ground on the old canes of Newburg and Taylor at Kentville, N. S. Infection was about 1% (K. A. Harrison). Infection was a trace on Lloyd George and Viking in a garden at Charlottetown, P. E. I., but the infected plants were severely damaged. Two infected specimens of Lloyd George were brought in (R. R. Hurst).

CANE BLIGHT (Botrytis cinerea) was found at Kentville, N. S., on Newburgh, Taylor, Trent, Viking and Washington grown under sawdust mulch, but plants under clean cultivation were unaffected (J. F. Hockey).

SPUR BLIGHT (Didymella applanata). Almost every cane in a 1/2 acre planting of Madawaska at Port Stanley, Ont., bore 1-3 lesions. The rows were thick and the site had poor air drainage (G. C. Chamberlain). Specimens were received from Belleville and Seeley's Bay (H. N. Racicot). Spur blight was found in 8 fields in southwestern Que. late in the season, but damage was very light (L. Cinq-Mars). A moderate infection was seen at Melvern Square, N. S. in the spring. Several specimens were brought in by growers. Only a trace occurred in the spray plots at the Station, Kentville (K. A. Harrison). A 10% infection was seen on Latham in Prince Co., P. E. I. (R. R. Hurst).

ANTHRACNOSE (Elsinoe veneta). In a varietal planting at Vineland, Ont., Gatineau, Lloyd George, Madawaska, Rideau, Taylor and Trent proved to be very susceptible, over 80% of the canes being moderately to severely affected. Herbert bore a light infection on 20% of the canes. Chief, Cuthbert, Latham and Viking bore a very light infection on less than 5% of the canes (W. G. Kemp). Heavily infected Columbian purple raspberry specimens were received from Prince Edward Co.; the fruit was stated to have dried up (G. C. Chamberlain). A light infection was found at Deschambault, Que. (L. Cinq-Mars). Infection in Levis, Bellechasse and Montmagny Counties was heavy enough to reduce the yield appreciably. The injury was most conspicuous at harvest (O. Caron). At Kentville, N. S., Taylor and Washington proved very susceptible. All varieties are commonly infected but Newburgh and Viking are sufficiently resistant to escape severe damage. It was also reported from Annapolis and Inverness Counties (K. A. Harrison). Infection was trace to moderate on Latham in Queens Co. (R. R. Hurst).

CANE BLIGHT (Leptosphaeria coniothyrium). A number of infected specimens of Viking were brought in from Kings and Annapolis Counties, N. S. (K. A. Harrison).

CORAL SPOT (Nectria cinnabarina). A single infected cane of Trent was seen in a dense planting at Kentville, N. S. (K. A. Harrison).

YELLOW RUST (Phragmidium rubi-idaei) caused considerable damage to Washington at Brentwood and Chemainus, B. C. (W. Jones). Infection was general and heavy on the lower leaves in a 2-acre planting of Washington at Vancouver, B. C. (I. C. MacSwan). Infection was heavy, but caused slight damage, on Washington at Mt. Lehman in the lower Fraser Valley, but in most places the summer was too dry to permit much infection (H. N. W. Toms). Viking was commonly infected in the Midland and Penetanguishene districts, Ont., and suffered some defoliation (G. C. Chamberlain).

LATE YELLOW RUST (Pucciniastrum americanum) was heavy on old canes and light to moderate on new growth of Viking at Guelph, Ont. (C. B. Kelly). Fruit infection was 10% or more in several lots of Viking at Kentville, N. S. Later in the season Viking at the Station was 100% infected and heavily defoliated. Other varieties suffered little defoliation (K. A. Harrison).

POWDERY MILDEW (Sphaerotheca humuli). A specimen was received from Donalda, Alta. (A. W. Henry). Traces were seen at Lacombe and Edmonton (T. R. D.). An acre of Latham in a sheltered location at Lucan, Ont., was heavily infected and cane growth severely stunted (G. C. Chamberlain). Mildew was seen on Latham in a nursery at Abbotsford, Que. (L. Cinq-Mars).

VERTICILLIUM WILT (V. albo-atrum) killed 15% of a 3-year-old Viking plantation at St. Catharines, Ont. The grower destroyed the whole planting. It was moderately severe in a low area of a 2-year-old Viking plantation in Wentworth Co. This disease is often seen in young plantations. Sunrise has proved very susceptible at St. Catharines (G. C. Chamberlain).

CRUMBLE BERRY (?virus) was found on Washington in the Abbotsford district, B.C. Plants have been taken for indexing (R. Stace-Smith, R. E. Fitzpatrick). Previously reported from Oregon on black raspberries. See Vanghan et al. U.S.D.A. P.D.R. 35:34-37. 1951.

LEAF CURL (virus) severely stunted 2% of a planting of Taylor in Lincoln Co., Ont. (G. C. Chamberlain).

MOSAIC (virus). Between 10 and 20% infection was seen in a 4-year-old 3-acre planting of Viking at Midland, Ont. Infected plants were severely stunted. Infection was 2-5% in Newburgh at Arkona, Ont. Its occurrence in this variety is unusual (G. C. Chamberlain). Mosaic was seen in 10-19 plantings inspected for certification in Que.; infection ranged up to 2% (L. Cinq-Mars). Infection was 7% in a Latham plantation at Upper Maugerville, N.B. (D. J. MacLeod). Infection was 10% in a planting at Frizzleton, N.S. Moderate to severe damage was also reported in plantings at Kentville, Wolfville and Berwick (P. M. Grainger, D. W. Creelman). Mosaic was occasional, but damage severe, in two plantings of Lloyd George at Charlottetown, P.E.I. A trace was seen on Latham in Prince Co. (D. B. Robinson, R. R. Hurst).

ROOT and CROWN INJURY (wet soil). Low-lying areas in several fields or garden patches of Washington were damaged near Vancouver, B.C., during the winter or spring. The succeeding dry summer aggravated the injury (I. C. MacSwan).

E. OTHER FRUITS

BLUEBERRY

CROWN GALL (?Agrobacterium tumefaciens). Galls were found on Burlington, Cabot, Charlotte, Dixie, Stanley and Weymouth varieties in coastal B.C. Bacteria were isolated but not tested for pathogenity. The disease has been seen only in varieties introduced into B.C. in recent years (R. E. Fitzpatrick, I. C. MacSwan). J. B. Demaree and N. R. Smith (Phytopath. 42:88-90. 1952) report the occurrence of what is evidently the same disease, caused by a strain of A. tumefaciens, from N.J., Wash. and B.C. See also P.D.S. 12:68 for a previous report from B.C.

BLOSSOM and TWIG BLIGHT (Botrytis cinerea). Traces were seen in June on Vaccinium angustifolium at Steam Mill and V. corymbosum at Morristown, N.S. (D. W. Creelman). Botrytis sp. was seen commonly in coastal B.C., but apparently only on growth that had been winter-killed (I. C. MacSwan, R. E. Fitzpatrick).

RED LEAF (Exobasidium vaccinii). Infection was 1-5% on Vaccinium angustifolium, V. brittonii and V. myrtilloides at Steam Mill, N.S. (D. W. Creelman).

CANKER (Godronia cassandrae). Atlantic, Jersey and Pemberton seem to be particularly susceptible in coastal B.C. No cankers were seen on the current season's growth, probably because of the extremely dry weather, (R. E. Fitzpatrick, I. C. MacSwan). It was fairly prevalent on high-bush blueberry in the Fraser Valley (W. Trouzeau). Canker caused moderately heavy damage in a commercial planting of high-bush blueberry at Centreville, N.S. (D. W. Creelman).

TWIG BLIGHT (Pullularia pullulans assoc.). Blighted twigs of Vaccinium angustifolium from Charlotte Co., N.B., bore abundant fructifications of P. pullulans, but its relationship to the injury is not known (D. W. Creelman).

TWIG and BLOSSOM BLIGHT (Monilinia vaccinii-corymbosi (Reade) Honey and Botrytis cinerea). Specimens were received from five locations in Charlotte Co., N.B., bearing both pathogens. Several areas of perhaps an acre were stated to be completely dead (D. W. Creelman). Previously reported (P. D. S. 28:91) under Sclerotinia oxycocci.

LEAF RUST (Thekopsora vacciniorum). Specimens of Vaccinium angustifolium from Tower Hill, N.B., were heavily infected and showed considerable defoliation (D. W. Creelman).

CRANBERRY

FRUIT ROTS. The following data summarize identified isolates made from stored fruit in N.S., during several years, in January unless otherwise stated. Auburn, Berwick and Lakeville, 1946: Godronia cassandrae 48.0%, Guignardia vaccinii 6.9, Sporonema oxycocci 6.7, Pestalotia vaccinii 4.7, Acanthorhynchus vaccinii 4.1, Ceuthospora lunata 3.1, Glomerella cingulata 1.0, Diaporthe vaccinii 0.3. Arichat, Richmond Co., 1946: Godronia cassandrae 48.0%, Pestalotia vaccinii 24.0, Ceuthospora lunata 7.0, Glomerella cingulata 6.0, Sporonema oxycocci 4.0, sterile breakdown 10.0. Mountain cranberry (Vaccinium vitis-idaea var. minus), Beaver River, Sept. 1949: Sporonema oxycocci 55%, Guignardia vaccinii 13, Penicillium sp. 8, sterile breakdown 19. Beaver River, 1951: Godronia cassandrae 82.0%, Sporonema oxycocci 15.0, Acanthorhynchus vaccinii 1.0, Botrytis sp. 1.0, Penicillium sp. 1.0. Ceuthospora lunata and Guignardia vaccinii were isolated from other fruits received from Beaver River (K. A. Harrison).

GRAPE

DEAD ARM (Fusicoccum viticola) is widespread in Concord vineyards in the Niagara Peninsula, Ont. Infection was 9.1-16.4, av. 13.0% in 11 plantings of this variety. In single vineyards of other varieties infection was: Agawam 19.1%, Catawba 3.1%, Elvira 5.9%, Westfield 11.5%, (G. C. Chamberlain).

BLACK ROT (Guignardia bidwellii) attacked the fruit of scattered clusters of a single European variety in a vineyard in the Niagara Peninsula, Ont. (G. C. Chamberlain). Infection was severe on a few plants in a garden at Round Hill, Annapolis Co., N.S. (J. F. Hockey).

DOWNY MILDEW (Plasmopara viticola) was moderately heavy on fruit of President and Fredonia at St. Catharines, Ont., following humid weather and frequent showers in early July. It attacked 17.8% of fruit clusters in the unsprayed portion of a Fredonia vineyard, but only 0.63-1.06% in the sprayed portions. Specimens were also received from Kent Co. (G. C. Chamberlain).

POWDERY MILDEW (Uncinula necator). Infection was a trace but perithecia abundant on grapes at Kentville, N. S., but only conidia were formed on adjacent Virginia creeper (D. W. Creelman).

CHEMICAL INJURY. Portland was severely damaged by 2,4-D at Stanhope, P. E. I. (J. E. Campbell).

CHLOROSIS. Sixty percent of vines of Concord in one area of a vineyard in Niagara Twp., Lincoln Co., Ont., showed moderate to severe yellowing in July. The severely affected vines commonly showed marginal leaf scorching. In late summer affected vines largely recovered (G. C. Chamberlain).

STRAWBERRY

GREY MOULD (Botrytis cinerea) was severe during wet weather in early July on the fruit of Gem ever-bearing strawberries in a garden at Saskatoon, Sask. It had not been seen locally for 5 years (T. C. Vanterpool). Infection of stems and green fruit caused moderate loss in a planting of Premier in Niagara Twp., Lincoln Co., Ont. The plants were heavily matted and under a straw mulch (G. C. Chamberlain). The sepals and green fruit of Premier and Senator Dunlap were moderately infected at Windermere, N. S. (C. O. Gourley). Infection was 25% in a planting of Jessie at Chebogue, Yarmouth Co. (J. F. Hockey). A 5% infection of Premier was seen in Queens Co., P. E. I. (R. R. Hurst).

LEAF SCORCH (Diplocarpon earliana) was abundant in fields of Senator Dunlap at St. Pierre, Montmorency Co., Que., but caused little damage (A. Payette). Small amounts were seen in a few fields in southwestern Que. (L. Cinq-Mars). A trace was seen on Senator Dunlap at Berwick, N. S. (D. W. Creelman). Infection was a trace on Senator Dunlap and other varieties in Queens Co., P. E. I. (R. R. Hurst).

LEAF SPOT (Mycosphaerella fragariae) was heavy in a planting at St. Gérard, L'Assomption Co., Que., but caused little damage. Lighter infections were seen in many fields elsewhere (A. Payette). It was general in southwestern Que., but seemed to cause no appreciable damage (L. Cinq-Mars). Infection was 10% in plantings at Mabou and Frizzleton, Inverness Co., N. S. (P. M. Grainger). A trace was seen on Senator Dunlap and other varieties in Queens Co., P. E. I. (R. R. Hurst).

RED STELE (Phytophthora fragariae) is still a major check on production in parts of the Fraser Valley, B. C. Ridging of the plants to improve drainage seems to be the only practical means of control in heavily infested soil. Many plantings in small holdings on the outskirts of Vancouver are severely affected. The increased use of certified plants has done much to limit spread of the disease (I. C. MacSwan). Nearly five million plants were certified in 1951 (W. R. Foster). Infection was 5% in a field of Jessie at Chebogue, Yarmouth Co., N. S., mostly in low areas (J. F. Hockey).

CROWN ROT (Rhizoctonia solani), aggravated by Botrytis cinerea, completely killed 10% of a planting at Ste. Anne de la Pocatière, Que. (A. Payette).

POWDERY MILDEW (Sphaerotheca humuli). Only traces were found throughout Que., but a light infection occurred on Sierra in the greenhouse at Ste. Anne de la Pocatière (A. Payette).

WILT (Verticillium sp.), known for many years from parts of the United States, was found in many parts of Ont. for the first time. Infections ranging from trace to 5% were found at Simcoe, Waterdown, Aldershot, Burlington and Oakville, as well as many points in the Niagara Peninsula. The outer leaves wilt and turn brown, and the whole plant may be killed. Stolons are scarce and the fungus may spread in them to runner plants. Internal discoloration of the crown occurs only in the later stages, but the fungus can be detected earlier by means of sections stained in lactophenol and cotton blue, or by surface-sterilizing the crown, splitting it lengthwise and placing it in a moist chamber when aerial growth will be produced along the vascular tissue. It is not yet certain whether this outbreak is anything more than the result of perfect soil moisture and temperature conditions (D. L. Bailey). Verticillium wilt was seen in Norfolk, Lincoln and Peel Co., in a number of plantings that followed tomatoes or potatoes. It caused poor growth and death of plants (G. C. Chamberlain).

LATENT VIRUSES of a non-persistent crinkle type were detected in apparently healthy British Sovereign and Marshall by indexing on Fragaria vesca (F. C. Mellor, R. E. Fitzpatrick).

MOSAIC (virus). A trace to 2% of mild mosaic was seen in four plantations of Senator Dunlap in Queens and Sunbury Co., N. B. (D. J. MacLeod).

WITCHES' BROOM (?virus). A collection of F. glauca made by W. H. Lewis at Hay River on the south shore of Great Slave L., was bushy, pale, upright, with small leaflets and few flowers. This is possibly the same virus disease that J. B. Demaree and C. P. Marcus (P. D. R. 35: 527-537. 1951) cite as having been recorded from Minn., Wis., Ill. and N. Y. (D. B. O. Savile).

JUNE YELLOWS (genetic breakdown) was seen in several new plantings of Premier in Lincoln and Norfolk Co., Ont., 5-10% of the plants were affected, usually in small patches (G. C. Chamberlain). It affected 2?% of a Premier plantation in Queens Co., N. B. (D. J. MacLeod).

ROOT ROT (cause unknown). Plants of Premier in a poorly drained section of a field at Niagara-on-the-Lake, Ont., made little growth. Fibrous roots were lacking. Wet soil seemed to have aggravated the damage from root rot (G. C. Chamberlain). Root rot was widespread in Que., but was particularly severe at Cap Santé, Portneuf Co. (A. Payette).

WINTER INJURY. Crown and root injury due to low temperatures was common in coastal B. C. (W. R. Foster).