IV. DISEASES OF FRUIT CROPS

A. POME FRUITS

APPLE

CROWN GALL (Agrobacterium tumefaciens). Infections in nursery stock in the Okanagan Valley were somewhat lighter than in 1960, averaging about 1-2%. There were, however, some pockets of very heavy infection (L.E. Lopatecki),

FIRE BLIGHT (Erwinia amylovora) was generally present in the Edmonton area (W, P, Campbell, W. P. Skoropad) and 3 sev. infections were seen in s. Alta. (P.E. Blakeley), Fire blight was conspicuous at Indian Head, but was less plentiful than usual at Saskatoon, Sask. (T.C. Vanterpool). It was observed in 2 widely separated orchards in Essex Co., Ont. The variety Jonathan was the most severely affected and, in one orchard, several mature trees were heavily cut back (J. Cutcliffe). Specimens were received frorn a home garden in Ottawa, Ont. (P.K. Basu).

BARK CANKER (Myxosporium corticola) affected 20 mature trees at Quadra Island, nr. Campbell River, B.C. Infection was only superficial and no damage was done to the trees (R.G. Atkinson).

EUROPEAN CANKER (Nectria galligena). The conidial stage was found fruiting at the edges of cankers around pruning wounds on trunks and main limbs of McIntosh and Golden Russet at Kentville, N. S. The organism was isolated (C. L. Lockhart).

ANTHRACNOSE (Neofabraea malicorticis). Tree damage was sev. to 20 McIntosh trees in one section of an orchard at Salmon Arm, B.C. This disease is now of rare occurrence in the Salmon Arm district (L.E. L.).

PERENNIAL CANKER (Neofabraea perennans). Damage at Westbank and Kelowna, B.C. was more extensive than usual with cankers showing extensions of 4-5 feet and occasional girdling of limbs. It appeared limited to young McIntosh trees in several orchards' (L.E. L.).

BULL'S-EYE ROT (Neofabraea perennans). Incidence in the 1960 crop in storage was very low in the Okanagan Valley, B.C. following a dry harvest period (L.E. L.).

STORAGE ROT (Penicillium sp.). About 5% of the fruit of Cortland were affected in storage at Fredericton, N.B. Bruising was an important factor (S.R. Colpitts).

COLLAR ROT (Phytophthora cactorum). Several apple trees in 12 orchards in the Summerland and Penticton, B. C. districts were killed by collar rot infections in the rootstocks. MM106 and MVII roots were particularly susceptible. Infection of shoots of MM104 growing from layered branches occurred at Summerland (D. L. McI.).

POWDERY MILDEW (Podosphaera leucotricha). Specimens were received from home gardens in Vancouver, B.C. (N.N.W. Toms). Weather conditions in the B. C. Interior favored the development of powdery mildew and the foliage of most commercial varieties was heavily infected although there was little damage to the fruit.. Jonathan, McIntosh, Yellow Transparent and Rome Beauty were sev. affected (D. L. McI.). A few scattered infected blossom clusters were observed at St. Catharines in mid-May. Affected blossoms failed to open. Disease development later in the season was mod. Unsprayed trees showed a general infection of terminal growth (G. C. Chamberlain).

BLAST (Pseudoinonas syringae) occurred in a nursery in Mountain Twp., Dundas Co., Ont. The organism was identified by J.A. Carpenter, Ont. Agr. College. This disease, though reported on pears, has not previously been reported on apple in Canada (J.A. Clark, D. W. Creelman).

CALYX-END ROT (Sclerotinia sclerotiorum). Very light infections were seen on McIntosh in orchards scattered throughout the Annapolis Valley, N.S. (R.G. Ross).

CANKER (Stigmina negundinis) was found on one limb of a McIntosh nursery tree at Summerland, B. C. (D. L. McI.).

SCAB (Venturia inaequalis). Infection was general in home gardens in Vancouver, B.C. Hot, dry weather later in the season caused considerable defoliation of affected trees (H. N. W. T.). Scab was prevalent in most districts in the B.C. Interior and was sev. in some districts where frequent and prolonged rainy periods, early in the season, prevented spray applications (D. L. McI.). Crabapples were affected in the Edmonton, Alta. area (W.P.C.). No serious infection periods were experienced in the pre-bloom and bloom periods in Essex Co., Ont. Control was not difficult and the 1961 crop was practically scab-free (J.C.). Scab was abundant on unsprayed trees at St. Catharines, Ont. At harvest, 88% of the fruit was scabbed, Fruit infection on sprayed trees ranged from 0-3.5% and foliage infection from tr.-6% (G. C. C.). Infected leaves were received from Westmeath, Ont. and Verdun, Que. (P.K. B.). Conditions were extremely favorable for scab development in s.-w. Que. Twenty-nine inches of rain fell between early April and late Nov. at Farnham and 10 primary infection periods occurred. Although most commercial growers obtained good control, a few suffered mod-sev. losses: Pinpoint scab affected some orchards in the Farnham district (R. Desmarteau). Some sev. infection periods occurred in May and early June in York and Queens counties, N. B. Orchards receiving inadequate sprays were heavily infected. Pin-point scab was more prevalent than in 1960 (S.R.C.). Because of low temperatures in April and May in N. S., perithecia developed very slowly. The first spore discharge was recorded on 13 May, the first infection period was 16-17 May, and the first foliage scab was seen on 6 June. There were 5 infection periods in May, 5 in June and 4 in July. There was little spread of scab in late July and in *hug*. Considerable late-season scab developed, particularly on McIntosh (R. G.R.). Scab was satisfactorily controlled in commercial orchards in P.E.I. but unsprayed trees showed sev. infection (G.W. Ayers).

DAPPLE APPLE (virus), which was first found in Delicious at Kaleden, B.C. in 1959, has been experimentally transmitted to McIntosh, Natural spread has been observed in Delicious (M. F. Welsh, F. W. J. Keane).

LEAF PUCKER (virus). Symptoms in foliage and fruit of McIntosh were milder in the Okanagan Valley, B.C. than in 1960. (M.F. W., F. W. L. K.).

MOSAIC (virus) was observed in 3 adjacent McIntosh trees at Summerland (F.W. L.K.) and in 5-year old Golden Delicious trees at Oliver, B.C. (J. M. Wilks).

STEM PITTING (virus), in latent form, has been shown to have spread by natural means to trees of Spartan and Virginia Crab in the Okanagan Valley, B.C. (M.F.W., F.W.L.K.).

FRUIT BLOTCH (? virus) was again found in orchards of the red strain of Stayman in the Olcanagan Valley, B.C. Symptoms were generally less sev. than in 1960. Probable transmission, both of the fruit symptoms and the associated leaf-flecking symptom, has been obtained. Somewhat similar symptoms, in severe form, were found on the fruit of one Delicious tree in 1960 and 1961 (M. F. W., F. W, L.K.).

RING RUSSETTING (? virus) in Newtown was less prevalent than in 1960 in the Okanagan Valley, B. C. and the symptoms were milder (M. F. W., F. W. L. K.).

BITTER PIT (physiological). Specimens were received for diagnosis from Glasgow, Ont. (P.K. B., J.B. Julien).

CALYX-END INJURY (? spray injury). Affected fruits of McIntosh and Yellow Transparent were received from several orchards in Norfolk Co., Ont. It is believed that the injured fruits, which were mostly on the lower parts of the trees, were weakened by frost or near-freezing temperatures during bloom (G. C. C.).

CHEMICAL INJURY (ammonia gas). Three thousand bu. of McIntosh apples in a cold storage plant in the Two Mountains district of Que. were ruined following a leakage of ammonia from the refrigerating system. The fruits were covered with superficial, minute, circular, medium-brown spots that resulted from the infiltration of the gas through the lenticles. The diagnosis was confirmed by Dr. M. Szkolink, Geneva, N. Y. (R. D.).

CHEMICAL INJURY (oil and DDT). Spray mixture, dumped from a disabledplane engaged in spraying for spruce bud worm control, caused sev. defoliation and fruit-drop in an orchard at Keswick, N.B. (S.R.C.).

FROST INJURY. Temperatures of 29.5" on 30-31 May in s.-w. Que. caused considerable damage, Early varieties, such as Yellow Transparent and Duchess showed frost banding and extensive russetting at the calyx end of the fruit. Counts made in an orchard at Farnham showed 21% damage on Yellow Transparent and 69% on Duchess. The variety Cortland suffered

considerable damage in an orchard at Frelighsburg. McIntosh was in the calyx stage when the frost occurred and there was an estimated reduction in yield of 30% (R. D.).

HAIL DAMAGE severely damaged fruit and caused some splitting of bark in orchards at Keswick, N. B. in July (S.R. C.).

LIME-INDUCED CHLOROSIS was sl. -mod. on apples and crabapples in several gardensin St. James and Winnipeg, Man. (B. Peturson).

SCALD (physiological) affected 75% of Cortland apples held under poor storage conditions at Fredericton, N. B. (S.R. C.).

WATER CORE (physiological) affected 15-20% of the fruit of Greening at Fonthill, Ont. Watercore areas were extensive, especially on larger sized fruit and on trees with a light crop (G. C. C.).

PEAR

FIRE BLIGHT (Erwinia amylovora) was generally at a low ebb in the Okanagan Valley, B.C. in 1961. Heavy infections occurred, however, in a number of orchards in the Penticton-Naramata bench area following hail damage. Infection was confined to fruits and produced sev. rotting in some orchards (L.E. Lopatecki). Only a few infected twigs were seen in Bartlett orchards in Essex Co., Ont. after heavy infections in the past 3 seasons. Weather conditions during bloom were not favorable for its development (J. Cutcliffe),

SOOTY BLOTCH (Gloeodes pomigena) was common in the St. Catharines, Ont. district, Many infected fruits were received for diagnosis (G. C. Chamberlain),

SIDE ROT (Phialophora sp.). Infection on Anjou was confined to fruit from one lakeside orchard at Vernon, B.C. Practically 100% of the fruit with skin punctures developed rot in storage (L.E. L.). This disease has not been previously reported to the Survey. P. malorum (Kidd & Beaum.) McColloch has been reported as the cause of a storage rot of pears in Wash. and Oreg. (D. W. Creelman).

BLAST (Pseudomonas syringae) occurred in two Barlett orchards in Essex Co., Ont. The organism was identified by J.A. Carpenter, Ont. Agr. College (J.C.).

SCAB (Venturia pirina). Several specimens of diseased fruit from home gardens were received at Vancouver, B. C. (H. N. W. Toms). Scab was heavy on Bartlett at Wainfleet, Ont., rendering much of the fruit unsaleable and fruit infection on unsprayed Flemish Beauty at St. Catharines was 75% (G.C.C.). A trace infection was seen at Keswick, N.B. in July (S.R. Colpitts).

ANJOU **PIT** (cause unknown) was mod.-sev. on Anjou in the Okanagan Valley, B.C. Losses were heavy, up to 20% in some orchards, but not as heavy as in 1958 (J.M. Wilks). Two of ten Anjou trees at St. Catharines had 100% of the fruit pitted and deformed. Nearby Bosc, Flemish Beauty and Bartlett were not affected (G. C. C.).

COTTONY SPOT (cause unknown) was sev. in some lots of Bartlett shipped to canneries in the Summerland, B.C. area. The symptoms, consist of a white, corky layer under the skin, mostly around the stem-end of the fruit and extending one-eighth to one-quarter of an inch into the flesh. The condition is tentatively called "cottony spot" (J.M.W.).

FRECKLE **PIT** AND GREEN STAIN (cause unknown). The two conditions usually occur together but may occur separately. The freckle pit condition consists of a green pitting around the calyx-end of the fruit while the green stain condition consists of a dark-green discoloration primarly concentrated at the stem-end. It caused the culling of up to 50% of the fruit of Anjou in some orchards in the Okanagan Valley, B. C. (J.M.W.).

B. STONE FRUITS

APRICOT

CORYNEUM BLIGHT (Stigmina carpophila). An unusually high incidence of this disease was observed in the Harrow, Ont. district. Striking varietal differences in susceptibility were noted (C.D. McKeen).

TWIG AND BLOSSOM BLIGHT (Monilinia fructicola). Incidence was slightly higher than usual in the Harrow, Ont. district (C.D. McK.). Damage to bloom was extensive on the variety Naramata at Vineland, Ont. Infection extended into twigs, killing the bark and causing cankers (G.C. Chamberlain).

RING POX (virus) was generally light in the Okanagan-Similkameen, B.C. areas but was sev. on individual trees in some orchards, particularly on the varieties Wenatchee, Tilton and English Moorpark (T.B. Lott, F.W.L. Keane).

CHERRY

GRAY MOLD (Botrytis cinerea). Infection was sl. on Van in an orchard at Westbank, B. C. where irrigation sprays were wetting the lower branches (L.E. Lopatecki).

BLACK KNOT (Dibotryon morbosum) was common in the Quebec City area and specimens were received from Point au Pic, Charlevoix Co., Que. (D. Leblond). Its occurrence was general in N. B. (S.R. Colpitts). Damage was sev. on unsprayed Montmorency trees in the vicinity of Charlottetown, P.E.I. (G.W. Ayers). von Arx (Acta Bot. Neerl. 3: 86. 1954) stated that the asci-gerous stage of this organism is congeneric with Apiosporina Hoehn. and has made tho new combination Apiosporina morbosa (Schw.) v. Arx (D.W. Creelman).

LEAF SPOT (Higginsia hiemalis). Heavy defoliation of sour cherry trees resulted from leaf spot in the Niagara Peninsula in some commercial orchards where the spray program was incomplete. Infection on unsprayed trees at St. Catharines was 36% and, on sprayed trees, 6% (G. C. Chamberlain). It was prevalent in N. B. (S.R.C.). Trace infections occurred at Kentville and Annapolis Royal, N. S. (C.O. Gourley). Defoliation of unsprayed trees at Charlottetown, P.E.I. was partial to complete by late Sept, Trees sprayed with Cyprex retained their foliage until early Nov. (G.W.A.).

In a recent paper, "Über Cylindrosporium padi" (Phytopath, Zeitschrift 42: 161-166. 1961), von Arx has placed the conidial stages of a number of the leaf-spotting scolecosporous fungi on Prunus, including Cylindrosporium padi (Lib.) Karst., C. hiemalis Higgins, C. lutescens Higgins and C. pruno-phorae Higgins in the genus Phloeosporella Hoehn. and reduced them to synonomy with Phloeosporella padi (Lib.) v. Arx. He concludes that the ascigerous stage of P. padi, known as Higginsia hiemalis (Higg.) Nannf. (Coccomyces hiemalis Higgins), is identical with the earlier described Pseudopeziza jaapii Rehm. P. jaapii Rehm is the type species of the genus Higginsia Nannf., but this latter name is not valid because it is a later homonym of Higginsia Pers. (Rubiaceae). He proposes the new name Blumeriella for the ascus stage and makes the combination Blumeriella jaapii (Rehm) v. Arx for the fungus on Prunus. The invalidity of the name Higginsia has been apparent for a number of years and the need of another generic name for the ascigerous stages of these fungi recognized. There is, therefore, no reason not to adopt the proposed name Blumeriella for the perfect stages of the various Cylindrosporiums on Prunus. There is, however, no indication in the paper cited here as to the extent that von Arx has studied the North American species of Cylindrosporium described by Higgins. They may be identical with C. padi of Europe, but I would hesitate, at this time, to take up the binomial Blumeriella jaapii for the organism causing leaf spot and shot hole of cherries in North America (D. W. C.).

BROWN ROT (Monilinia fructicola), In the lower Arrow Lake, B.C. region, 70% of the blossoms were infected in unsprayed orchards. Infection did not, however, spread to green fruit and fruit rot at harvest was negligible (L.E. L.). Both blossom blight and fruit rot were of minor importance in the Niagara Peninsula, Ont. (G. C. C.). About 1% infection occurred on fruit at Kentville, N. S. (C. O. G.).

CROWN ROT (Phytophthora cactorum). Ten-15% of the trees in a 10-year old orchard at Penticton, B.C. are affected. Some trees are dead, or nearly so, and others have 1 or more dead or dying branches (G.E. Woolliams).

POWDERY MILDEW (Podosphaera clandestina) was common in most sour cherry orchards in the Vineland, Ont. district but infection was late and caused little damage, (G. C. C.).

STORAGE ROT (Pullularia pullulans) caused losses in storage to cherries from orchards in the Winfield and Westbank, B.C. districts where rain occurred during harvest. Infections appeared at the calyx-end of intact fruit. Damage ranged from sl. -sev. depending on crop maturity at harvest and the amount of rain in the area (L.E.L.).

WITCHES' BROOM (Taphrina cerasi). Perennial witches' brooms occur widely on sweet cherry trees in home gardens in the Vancouver, B.C. area and on old farms in the lower Fraser Valley (H.N. W. Toms). It was sl. on Van and Bing at Oyamn and Penticton, B. C. (G.E. W.).

WILT (Verticillium albo-atrum) affected about 35% of the trees in a 10-12-year old planting of Bing and Van at Penticton, B. C. Affected trees were sickly and had small leaves. The woody tissues showed the vascular browning typical of the disease (G, E. W.).

LAMBERT MOTTLE (virus). Only a few affected trees, particularly of the variety Lambert, are known in the Okanagan-Similkameen, B.C. areas (T.B. Lott, F.W.L. Keane),

LITTLE CHERRY (virus). Symptoms were very mild on Bing and occasionally sev. on Lambert in the West Kootenays, B.C. In general, a mod. amount of infection was observed (J.M. Wilks). It was unreported in the Qkanagan-Similkameen areas (T. B. L., F. W. L. K.).

RASP LEAF (virus) is now known from only 1 orchard in Okanagan-Similkameen Valleys, B. C. It was not found in a re-examination of scattered orchards where it was formerly serious and has apparently been eradicated from these sites by the removal of diseased trees,. Pronounced symptoms of an unusual type have occasionally been observed and transmission from this material has resulted in extremely mild expressions of symptoms of rasp leaf. There are indications that the rasp leaf virus can be transmitted to apple, but the disease is not known to occur in commercial apple orchards (T.B. L., F.W. L.K.).

SMALL BITTER CHERRY (virus) is present, but is not commercially significant, in the southern districts of the Okanagan Valley, B.C. No new reports were received in 1961 (T.B. L. , F. W. L.K.).

TWISTED LEAF (virus) was sev. in indivual trees in a few orchards in the Okanagan-Similkameen Valleys, B. C. It appears to be spreading slowly (T.B.L., F.W.L.K.).

CHEMICAL INJURY. Severe burning, yellowing, and leaf drop occurred in an orchard in the Niagara Peninsula, Ont. when a liquid fertilizer, 2-18-20 at 2 gal./160 gal. was added to a captan-arsenical spray. Complete defoliation resulted one week after the application (G. C.C.).

PEACH

BROWN ROT (Monilinia fructicola). Diseased specimens, probably imported, were received from Montreal, Que. (P.K. Basu). It was not a factor in N.S. orchards in 1961, but some rot developed in storage (C.O. Gourley).

RHIZOPUS ROT (R. nigricans) was particularly prevalent in stored peaches from the southern areas of the Okanagan Valley, B.C. (L.E. Lopatecki).

POWDERY MILDEW (Sphaerotheca pannosa) affected scattered fruits of Vedette at St. Catharines, Ont. and reports were received of its occurrence throughout the Niagara Peninsula (G.C. Chamberlain).

LEAF CURL (Taphrina deformans). Many reports were received of its occurrence in home gardens in Vancouver, B.C. (H.N.W. Toms). Infection was general in the B.C. Interior but caused no commercial loss (D. L. McIntosh). A few young Elberta trees in a new planting at Jordan, Ont. showed a general mod. infection (G.C.C.). Specimens were received from Aylmer, Que. (P.K.B.). Traces only were observed in sprayed orchards in Kings, Halifax and Lunenberg counties, N.S. but unsprayed trees were sev. affected (C.O.G.).

CANKER (Valsa sp.) was very common in peach orchards in s.-w. Ont. following the cold winters of 1958-59 and 1960-61. Limb breakage and loss of bearing wood was sev. in many mature plantings. Younger blocks were also affected and, in some orchards, up to 20% of the trees were removed (J. Cutcliffe).

WILT (Verticillium albo-atrum). Incidence was very low in young peach orchards in Essex Co., Ont. compared to that in previous seasons. Even young orchards that were sev. infected in 1960 showed little evidence of the disease (J.C.). Scattered trees in a 3-year old planting of Red Haven at St. Davids, Ont. showed sev; wilting (G.C.C.).

BACTERIAL SPOT (Xanthomonas pruni). Some leaf infection occurred in s.-w. Ont. but losses from fruit infection were negligible. Its incidence was considerably lighter than in the past 2 seasons (J.C.).

WART (virus). The smooth type of peach wart was found in 1961, for the first time, in a single tree at Summerland, B.C. Some years ago the rough type of wart was found at Osoyoos. These are the only known occurrences of the disease in B.C. (T.B. Lott, F.W.L. Keane).

WESTERN X-DISEASE (virus). This disease, which from 1939-49 was the most serious virus disease of peach in the sputhern part of the Okanagan Valley, has not been observed for a number of years (T.B. L., F.W. L.K.).

CREASE OR SUTURE WART (cause unknown) has been known for years in the Okanagan Valley but has not been considered important. In 1961, it was reported in many orchards and in several varieties, particularly Red Haven. Damage was serious in some orchards but fruit unfit for the fresh fruit trade was in some cases satisfactory for canning, The condition appears to be inherent in certain trees and careful selection of propagating material appears to be the indicated control (T.B. L,, F.W. L.K.). Symptoms were observed on 1 tree in a Vancouver, B.C. garden (H.N.W. T.).

PLUM

FRUIT SPOTTING (Alternaria sp.). A species of Alternaria was isolated from spots on Lombard and Reine Claude fruits from several locations in the Niagara Peninsula, Ont. Microscopic examination showed only a limited invasion of fruit tissues by the fungus (J.F. Bradbury, H.S. Willison).

BLACK KNOT (Dibotryon morbosum) continues to be sev. on untended trees in the Vancouver, B.C. area (H.N. W, Toms). It was general and occasionally sev. in N. B. (S.R. Colpitts), Infections were sev. on unsprayed trees and traces were found in most cared-for orchards in the Annapolis Valley and the South Shore areas of N.S. (C.O. Gourley). Damage was sev. on unsprayed trees in P.E.I. (G.W. Ayers),

PLUM POCKETS (Taphrina communis). Trace infections occurred on Burbank at Upper Dyke, Kings Co., N.S. (C.O.G.).

PRUNE

BLACK KNOT (Dibotryon morbosum). Knots were common on Italian and Stanley prune, particularly the latter, at Port Weller, Ont. (G.C. Chamberlain).

C. RIBES FRUITS

CURRANT

BLISTER RUST (Cronartium ribicola). Infection was rated at 60% in a planting at Moncton, N. B. (S.R. Colpitts).

POWDERY MILDEW (Sphaerotheca mors-uvae). Slight-mod. infections were seen at Consort at Fort Vermilion, Alta. Other varieties in the planting were unaffected (D.W. Creelman).

GOOSEBERRY

POWDERY MILDEW (Sphaerotheca mors-uvae). Fruit infection was sev. on specimens examined at Saanichton, B. C. in June. Twenty-five-100% of the fruit surface was affected. Cleistothecia with asci were developed but ascospores had not yet differentiated (R.G. Atkinson). Several bushes in a garden at St. Catharines, Ont. were heavily infected and the fruit rendered useless (G. C. Chamberlain). Specimens were received from Trois Pistoles, Que. with the fungus fruiting freely on the berries (D. Leblond), and infection was mod. on an unknown variety at Botwood, Nfld. (O.A. Olsen).

D. RUBUS FRUITS

RASPBERRY

CANE GALL (Agrobacterium rubi). Slight-mod. infection was recorded in a planting of black raspberries at Kamloops, B.C. (L.E. Lopatecki).

CROWN GALL (Agrobacterium tumefaciens). Specimens with a mod. infection were received from Richmond, Ont. (P.K. Basu). Infection was extremely heavy on Trent, Viking, Newburg and Early Red in a propagating nursery at Cambridge, N.S. (C. O. Gourley, K.A. Harrison (C. P.D.S. 41:5. 297. 1961).

GRAY-MOLD WILT (Botrytis cinerea) was mod.-sev. on Herbert, Newburg and Viking at the Plant Protection Station, Ste. Foy, Que. (D. Leblond). Most canes of one seedling selection at Kentville, N.S. were affected (K.A.H.),

SPUR BLIGHT (Didymella applanata) was noted at 2 locations in the Peace River district, Alta. (D. W. Creelman, W. P. Campbell). Extensive lesions were present on 75% of the new canes in a planting of Latham at St. Catharines, Ont. (G. C. Chamberlain). It was sev. in a planting at Port Williams, N. S.; many buds had not formed laterals'and new growth was showing infection. This disease is found in most raspberry plantings in N.S. and up to 100% of the canes may be affected, depending on the density of the stand (K.A.H.).

ANTHRACNOSE (Elsinoë veneta). Infection was general and sev, in the Niagara Peninsula, Ont. (G. C.C.). Specimens were received from Roxton Falls, Shefford Co., Que. (D. L.). Infections' ranging from tr.-50% are prevalent in home plantings in N. B. (S. R. Colpitts).

CANE BLIGHT (Leptosphaeria coniothyrium). Specimens, showing typical symptoms, were received from Ste. Agathe des Monts, Que. (D. L.).

WESTERN YELLOW RUST (Phragmidium rubi-idaei) was mod-sev. on red raspberries in the Saanich Peninsula, B.C. (R.G. Atkinson) and at Riviere du Loup Que. (R. O. Lachance).

LATE LEAF RUST (Pucciniastrum americanum) caused premature defoliation in plantings of Viking in Kings Co., N.S. Berries were also seriously infected at Kentville (K.A.H.). It was mod. on the same variety in a nursery nr. Charlottetown, P.E.I. (J.E. Campbell).

CROWN ROT (Rhizoctonia solani) affected canes at St. David, Levis Co., Que. (D.L.).

LEAF SPOT (Septoria rubi). Affected specimens were received from Montreal, Que. (D. W. C.).

BLUE STEM (Verticillium albo-atrum). Specimens were received from Cap Rouge, Ste. Luce, Windsor East, and Quebec City, Que. (U. L.). Infection was about 2% in a planting of Viking at Kentville, N. S. The raspberries were set on land previously planted to Kenncbec potatoes (K.A.H.).

MOSAIC (virus). Moderate infections were seen in several varieties at the Exp. Farm, Fort Vermilion, and it was sev. in a planting at Blueberry Mtn., Alta. (D.W.C., W.P.C.). Mosaic was generally present in the Edmonton, Alta. area (W, P. Skoropad). Many home plantings in N.B. are infected with a resulting lowering of yield (S.R. C.).

RINGSPOT (virus) was found for the first time in B.C. in 1961 and was observed only on the variety Willamette in the Chillawack area. Symptoms were distinct during May and June but were completely masked later in the summer, Symptoms were similar to those reported on several raspberry varieties in Wash. and Oregon (P.D.R. 35: 34-37. 1951). The virus is mechanically transmissible and is related to tomato ring spot (R. Stace-Smith).

CRUMBLY BERRY (cause unknown) caused 10-15% loss of the fruit of Viking at Waldeck, Annapolis Co., N. S. The disorder may be of physiological or virus origin. The berries, separate readily into drupelets when picked. It is possible that Viking may be abandonded in this area because of this tendancy and its susceptibility to Pucciniastrum americanum (K.A. H.).

E, OTHER FRUITS

BLUEBERRY

CANKER AND DIEBACK (Diaporthe vaccinii Shear). The conidial stage of this organism was found nr. Digby and at Keritville, N.S. on plants of the highbush variety Bluecrop imported from New Jersey and set out in the spring of 1961. The fungus attacked the main stem and killed about 4% of the plants. This is the first observation in N.S. of extensive cankering by D. vaccinii (C. L. Lockhart).

RED LEAF (Exobasidiurn vaccinii). Infected clones made up about 2% of the area in a 200-acre barren at Tower Hill, N.B. The disease has spread in the area since 1958 (C. L. L.). Infection was light at the Blueberry Sub-Station, Avondale, Nfld. (O.A. Olsen).

CANKER (Fusicoccum putrefaciens). Infection was general on Lulu Island and at Pitt Meadow, B.C. The dry summer conditions causecl many affected plants to wilt and die (H.N.W. Toms). Trace infections were seen on Bluecrop and about 5% on Pioneer and some seedling crosses at Kentville, N. S. (C. L. L.).

TWIG BLIGHT (Monilinia vaccinii-corymbosi). The first infection of the season in N.S. was observed at Canard on 29 May. Infection was rated at 5% at Collingwood, N.S. on 6 June. Immature apothecia were collected under highbush blueberries at Kentville on 2 May (C.L,L.).

WITCHES' BROOM (Pucciniastrum goeppertianum) was present in trace amounts in some 250 acres examined at Tower Hill, N.B. (C. L. L.) and was tr.-sl. at the Blueberry Substation, Avondale, Nfld. (O.A.O.).

LEAF RUST (Pucciniastrum myrtilli). The most severe infection ever recorded in N.S. was seen at Craignish, Inverness Co. All leaves were infected with up to 100 pustules per leaf. It caused early defoliation and appeared to be seriously retarding and depressing fruit bud development (C.L. L.).

MOSAIC (virus). Tr. -1% infection occurred in 1-year old'plants of Coville at Sheffield Mills and 1 infected Pioneer plant was found at Kentville, N.S. (C. L. L.).

STUNT (virus). One infected plant of each of the varieties Pioneer and Katherine were found in an old plantation at the Research Station, Kentville, N. S. (C. L. L.).

CRANBERRY

HARD ROT (Monilinia oxycocci). Infection was about 1% in a bog at Lulu Island, B. C. in Nov. (H.N.W. Toms).

GRAPE

CROWN GALL (Agrobacterium tumefaciens). Aerial galls were found in many young plantings of the variety Seibel 10878 in the Niagara Peninsula, Ont. Abundant small galls were formed, often in ridges extending up to two-thirds the length of the trunk. In some instances, as many as 80% of the vines were affected. In the more severe cases, splitting of the wood occurred and the vines suffered dessication and dieback. Infections were first noted in July, 1960 and they were quite evident at pruning time in 1961. Less serious infections were seen on Pinot Blanc and Gamay and, in a few instances, on Niagara, Agawam, Elvira and Catawba (G.C. Chamberlain).

DEAD ARM (Fusicoccum viticola). A block of Seibel 10878 in the Niagara Peninsula, Ont. had 50% of the early shoots, as well as leaves and petioles, infected (G. C. C.).

BLACK ROT (Guignardia bidwelli) was sl.. on foliage and fruit in a planting of Agawam at Stamford, Ont. (G. C. C.).

DOWNY MILDEW (Plasmopara viticola) caused extensive damage in 3 plantings of Seibel 7053 at the Horticultural Exp. Station, Vineland, Ont, This variety, which is extremely susceptible, had 85% of the fruit clusters heavily infected, Infection was 3-10% on clusters of Fredonia, President, Buffalo and Van Buren. It was also general and common on Agawam and Delaware at Niagara-on-the Lake and St. Davids, Ont. Leaves bore multiple coalescing lesions which resulted in large, scorched areas, Secondary infections were numerous on late growth. The disease was sev, in an area receiving aerial application of fungicides (G. C. C.).

POWDERY MI1 DEW (Uncinula nccator) was found on the foliage and occasionally on the fruit of European grapes and hybrid crosses with European parentage at the Research Station, Summerland, B. C. (G. E. Woolliams). It was common and widespread in the Niagara Peninsula, Ont. It developed extensively in early Sept. on Agawam, Elvira, Delaware and Seibel where it was found on fruit pedicels as well as on the berries. The skin of infected berries frequently cracked, permitting mold development. Extensive infection of canes was evident on Seneca and Seibel (G. C. C.). A planting of a purple variety at Wolfville, N. S. was 100% infected (K.A. Harrison).

WINTER INJURY, Many vineyards of Concord in the Niagara Peninsula, Ont, were seriously damaged during the winter of 1960-61. Vines developed slowly in the spring, had weak shoots', stunted chlorotic leaves, and discolored cambium in the trunk and shoots. The injury was most sev. where sulfur had been applied late in 1960 to check an outbreak of powdery mildew. A very heavy crop in 1960 and a dry fall were also important predisposing factors (G. C. C.).

STRAWBERRY

GRAY MOLD ROT (Botrytis cinerea). The variety Redcoat had 3-5% fruit rot at St. Catharines, Ont. (G. C. Chamberlain), Damage was mod.-sev. on Redcoat, Cavalier and Sparkle at St. Jean, Que. There was an average loss of 20% (R.O. Lachance). Infection was heavy by the end of harvest at Gagetown, N. B. (S. R. Colpitts). Trace-sl. infections developed on Redcoat, Cavalier, Sparkle and Catskill, the four main commercially-grown varieties in the Annapolis Valley, N. S. Fungicide applications and dry weather conditions combined to keep losses at a minimum (C.O. Gourley).

LEAF BLIGHT (Dendrophoma obscurans) was sl. in a field at Notre Dame du Lac, Que. (D, Leblond). It was tr. on old foliage of Sparkle at Sheffield Mills, N. S. (C. O.G.).

SLIME MOLD (Diachea leucopodia (Bull,) Rostr.) was collected on leaf pedicels at Poplar, nr. Abbotsford, B.C. It causedno damage. The organism was identified by H.S. Pepin and G.D. Darker (H.N.W. Toms). An unidentified slime mold was seen on strawberries at St. Norbert, Man. (B. Peturson).

LEAF SCORCH (Diplocarpon earliana). Infection was tr. on five varieties at Notre Dame du Lac and sl. on Cavalier and Senator Dunlop at St. Simon, Rimouski Co., Que. Infected specimens were also received from Lotbiniere and Deschambault (D. L.).

LEAF BLOTCH (Gnomonia fructicola). Approximately 10% of the foliage of Sparkle was infected at Sheffield Mills, N.S. Calyx blight, caused by this organism, was seen on about 1% of the fruit of Sparkle in late July at Great Village, N.S. and in a few cases the fungus had invaded the fruit beneath the calyx. This plantation had received 5 applications of captan up to the time the observation was made (C. O. G.).

LEAF SPOT (Mycosphaerella fragariae). A slight infection was seen in a 8-year old planting of Pixie at Hay River, N. W.T. This planting, in an isolated market garden, was amazingly free of disease of any kind. It was bearing a heavy crop of berries in 1961. Several varieties in plots at the Exp. Farm, Beaverlodge, Alta. had sl. infections (D. W. Creelman, W. P. Campbell). A Phyllosticta sp., possible a stage of M. fragariae, was found at Notre Dame du Lac, Que. (D. L.). Leaf spot was general in N.B. (S.R.C.). All leaves of Senator Dunlop, in an inadequately sprayed planting at Lakeville, N.S. were infected. Plant vigor was reduced by about 50%. Cavalier and Louise were also infected. During the hot, dry weather in Aug., the foliage of Sparkle in western N. S. became sev. infected whereas other varieties in close proximity showed, at the most, only tr. infections. It is thought that the outbreak may have been caused by a strain of M. fragariae because the infections developed as tan-colored spots with light-purple borders. This is in contrast to the light centers with dark-purple borders in the usual type of infection (C. O. G.). Cavalier showed extreme susceptibility at Charlottetown, P. E.I., followed by Sparkle and Senator Dunlop (G. W. Ayers). Traces only were seen during the summer at St. John's Nfld., but severity increased somewhat in autumn (O.A.O.).

RED STELE (Phytophthora fragariae). The results of an early-spring survey for red stele on the Lower Mainland of B.C. were reported by the staff of the Exp. Farm, Agassiz, B.C. The disease was most sev. on Lulu Island where it was found in every field examined. British Sovereign, Marshall, and Northwest appeared to be very susceptible and Puget Beauty less susceptible. Siletz, though examined in several fields where red stele was sev. on other varieties, was affected in only one. Red stele was generally less sev. in the Abbotsford district although serious infections were found in several fields. The most sev. infections there were on British Sovereign, Northwest and Agassiz. Siletz, again, was infected in only one field. It was concluded that red stele is increasing in incidence on the Lower Mainland of B. C. (D. W. C.). Infection in various areas in N.S. was rated as follows: 5% on Senator Dunlop at Hilden, Colchester Co.; 10% on Catskill at East Noel and 40% on the same variety at Windsor, Hants Co.; tr. on Premier and 10% on Cavalier at Berwick and 1-2% on Cavalier and Catskill at Blomidon, Kings Co.; tr. on Sparkle and 5% on Catskill at Chester Basin, Lunenburg Co.; 75-80% on Catskill and Cavalier at Digby and 100% on Catskill at Mavailette, Digby Co. Plant losses in the latter county were extremely heavy (C.O. G.).

ROOT-LESION NEMATODE (Pratylenchus, penetrans) was recovered from strawberry plants from Hatzic, B.C. (R.H. Mulvey (C.P.D.S. 41:5. 357. 1961).

STORAGE ROT (Rhizoctonia sp.). A dense, gray-white mold, identified as a species of Rhizoctonia, not R. solani or R. praticola, by J. W. Groves, had overgrown the roots of strawberries being held at 28-32°F at Fredericton, N. B. for spring planting. Examination revealed extensive cortical rotting. The fungus, when isolated, grew well at 45°F but not at 70-75°F (K. M. Graham).

LEAF SPOT (Septoria aciculosa) was present in a field at Notre Dame du Lac, Que. (D. L.). It could be found in trace amounts in most commercial plantings in Kings Co,, N.S. (C.O.G.).

POWDERY MILDEW (Sphaerotheca macularis), usually observed only in the spring at Vancouver, B.C. was seen in mid-Aug. (H.N.W.T.). It was general throughout a 16-acre planting of Premier and Redcoat at Simcoe, Ont. (G. C. C.). Cavalier and Senator Dunlop had sev, infections at Notre Dame du Lac and specimens were received from Three Rivers and Quebec City, Que. (D. L.). Infection was light on all plants of Catskill and heavy on all plants of Early Dawn at Cambridge, and most plantings of Cavalier at Blomidon and Berwick, Kings Co. , N. S. had about 25% infection. Senator Dunlop at Debert, Colchester Co. was 100% infected with considerable loss in later pickings (C.O.G.). Powdery mildew, in conjunction with yeast infections following hot, humid weather resulted in soft fruit that broke down rapidly in cold storage at Masstown, N. S. (K.A. Harrison). At Charlottetown, P.E.I., high susceptibility was shown by Redglow, Tennessee Beauty, Early Dawn, Ardmore, K60-114 and K60-115, Senator Dunlop was moderately resistant and Sparkle, Redcoat, Catskill, Guardsman and K53-2-38 showed high resistance (G. W.A.).

WILT (Verticillium spp.). Verticillium dahliae affected a few plants in a garden at Summerland, B.C. (G.E. Woolliams). V. albo-atrum caused tr-sl. losses in several commercial fields and home gardens in Kings Co., N.S. In most cases, the wilt occurred in fields that had previously grown potatoes or tomatoes (C.O.G.).

ROOT ROT (various organisms) was tr.-sl. at Hay River, N. W. T. (D.W. C., W. P.C.); 5% in each of 2 fields at St. Norbert and 70% in a 2-acre field at Klefeld, Man, (B. Peturson).

GREEN PETAL (virus) was present in all second-crop plantings but was serious only in third-crop plantings in the lower St. Lawr'ence and Quebec City areas, Que. Infections appeared to be less sev. than in previous seasons (R.O. Lachance). It was found, mainly on Sparkle, in all areas of N.B. with the intensity of infection ranging from tr.-4% (S.R. C.). Infections in N. S. appeared to be less sev. than in recent years. It affected about 3% of a planting of Catskill and Cavalier at Blomidon and caused the loss of 20% of some 3000 plants of Catskill at Cambridge, N.S. In the latter case it is thought that the virus was carried over winter in cold-stored plants, as infection showed within 2 weeks of planting in the spring (C. O.G.). Trace infections were seen in Senator Dunlop at Dromore, P.E.I. (G.W.A.).

JUNE YELLOWS (genetic) was found affecting 5-10% of Premier plants in scattered areas in a planting at St. Catharines, Ont. (G. C. C.).

FROST INJURY. Late spring frosts in the Ottawa, Ont. district caused considerable damage to blossoms. One large commercial grower reported 50% killing of bloom (D. W. C.).