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Canadian Plant Disease Survey

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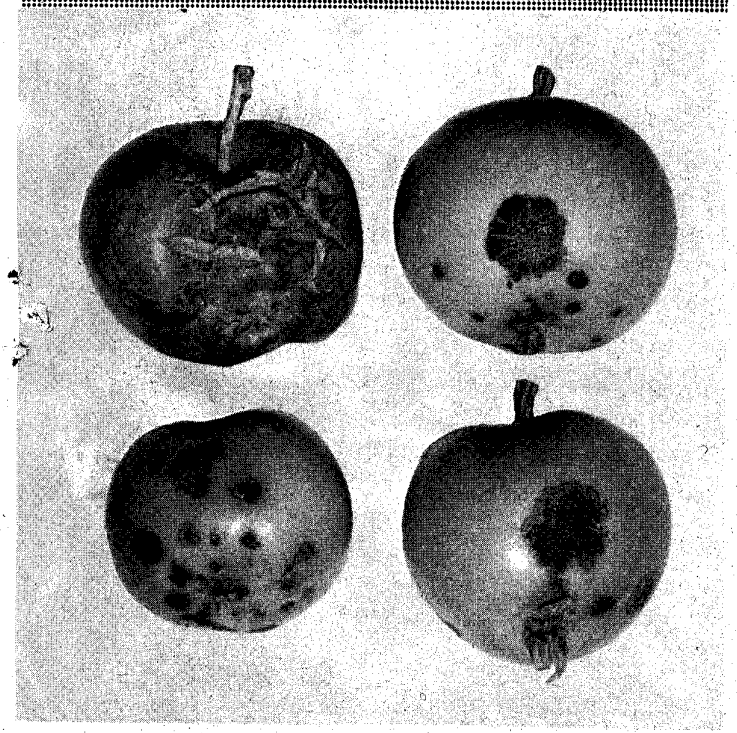

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CANADIAN PLANT DISEASE SURVEY

Volume 42 April 1962 Number 2

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New and Noteworthy Diseases

As in 1960, the cereal rusts were of little consequence in western Canada in 1961. The extremely low incidence of the rusts is attributable to the low level of air-borne inoculum and to the drought conditions that prevailed throughout the growing season. Stem rust of oats was, however, moderate to severe in those districts of eastern Ontario where barberry occurs. Wheat striate mosaic and Agropyron mosaic were identified for the first time in the Prairie Provinces. The former was found to be widely distributed.

Common root rot (Bipolaris sorokiniana, Fusarium spp.) increased in prevalence and severity coincident with the very dry conditions in western Canada. The smuts, like the rusts, were at a very low level. Speckled leaf blotch (Septoria avenae f. sp. avenae was widespread and generally moderate in intensity on oats in the eastern provinces. Net blotch (Drechslera teres) of barley showed an increased incidence over 1960 while scald (Rhynchosporium secalis) decreased. High soil temperatures, particularly in Saskatchewan, resulted in a great amount of leaf banding and heat canker in cereals and flax.

Winter crown rot, caused by a low-temperature basidiomycete, was more prevalent and destructive to alfalfa than for many years. The expanding use of resistant varieties in British Columbia has relegated bacterial blight (Corynebacterium insidiosum) of alfalfa from a disease of major to one of minor importance. Crown bud rot (Rhizoctonia solani, Fusarium roseum, Ascochyta imperfecta) was the most important alfalfa disease in the province, expecially in heavily grazed areas.

Phyllody of clover was generally less severe than in previous years in Quebec and the Maritime Provinces. It was, however, detected for the first time in western Canada at two locations in Alberta. A severe root rot condition in sweet clover (Plenodomus meliloti and Fusarium spp.) caused heavy losses in the spring.

Diseases of flax and rape in western Canada were relatively inconspicuous because of unfavorable weather conditions. Stalk and root rot (Phytophthora megasperma var. sojae) of soybean is still spreading in Ontario where the widely grown variety Harosoy has little resistance. Leaf mottle (Verticillium albo-atrum) was prevalent in the main sunflower-producing areas of Manitoba and caused losses in yield.

The increasing incidence of leaf spot (Cercospora beticola) on sugar beets in Ontario is attributed to the increased use of monogerm seed, which has little resistance. The root nematode (Heterodera schactii) was detected on sugar beets for the first time in the beet-producing area of Alberta. Northern leaf blight (Bipolaris turcicum) of corn was more severe than usual on both field and sweet corn in western Ontario.

The incidence of aster yellows in susceptible vegetable crops in eastern Canada was considerably less than in recent years. The northern root-knot nematode (Meloidogyne hapla) continues to spread and cause losses to vegetables in Ontario and Quebec. Fuscus blight (Xanthomonas phaseoli var. fuscans) of bean was identified for the first time in Canada in one field in Ontario. A

considerable acreage of brussels sprouts in Ontario was severely affected by blackleg (Phoma lingam). In all cases studied the presence and severity of the disease could be attributed to short rotational practices.

Leaf blights (Alternaria dauci and Cercospora carotae) of carrot were widely distributed and caused damage in Quebec and Nova Scotia. Bacterial blight (Xanthomonas carotae), which is of sporadic occurrence in Canada, occurredon carrots in Quebec. Another seed-borne pathogen (Pseudomonas apii) was found on celery in the same province.

Cucumber scab (Cladosporium cucumerinum) again caused heavy losses in Ontario, Quebec, New Brunswick and Nova Scotia. Downy mildew (Pseudoperonospora cubensis) of cucumber was reported, for the first time in western Canada, from Alberta. A serious localized outbreak of parsnip canker (Itersonilia perplexans) caused heavy losses in Nova Scotia. Powdery mildew (Erysiphe polygoni) was heavy on peas in western Canada. Serious losses were sustained in canning pea crops in irrigated areas in southern Alberta from root rot caused by various soil pathogens.

Bacterial ring rot (Corynebacterium sepedonicum) was the greatest single cause of rejection of seed potato fields in 1961 with the highest incidence occurring in Quebec. Blackleg (Erwinia atroseptica) was very severe in central Ontario and increased in incidence in Prince Edward Island. Late blight (Phytophthora infestans) was responsible for a considerable amount of tuber rot in Quebec, New Brunswick and Nova Scotia.

Root rot (Fusarium solani f. cucurbitae) caused severe losses to processing pumpkins in one district in Ontario. Black root (Aphanomyces raphani) was severe on radish in muck soil in coastal British Columbia. Losses from storage rot (Mycosphaerella melonis) in squash were reported from the same province. Skin spot (Rhizoctonia solani) was severe on swede turnips in storage in Nova Scotia.

Fruit and stem rot (Botrytis cinerea) of greenhouse tomato crops was unusually high in incidence in both western Ontario and Nova Scotia. Pink root rot (Pyrenochaeta terrestris) was reported, for the first time in Canada as a disease of tomatoes, when it caused extensive losses in greenhouse plantings in British Columbia. Wilt (Verticillium dahliae) of tomatoes, eggplant and other vegetable crops is now considered to be the most destructive soil-borne pathogen in western Ontario. Spotted wilt, a virus disease, was encountered for the first time in tomatoes in Nova Scotia.

Powdery mildew (Podosphaera leucotricha) was heavy on apples in the Interior of British Columbia following a mild winter. Blast (Pseudomonas syringae) was identified for the first time on apple in Canada, in Ontario. Apple scab (Venturia inaequalis) was generally well controlled in the fruit-growing districts with the exception of pin-point scab late in the season.

Blossom blight and brown rot (Monilinia fructicola and M. laxa) on stone fruits was not serious in either the main producing areas of British Columbia or Ontario. Powdery mildew (Podosphaera clandestina) of sour cherries was common in Ontario. Rhizopus rot (R. nigricans) was unusually prevalent in stored peaches in British Columbia. Peach canker (Valsa spp.) was very common in peach following two successive cold winters in western Ontario.

Crown gall (Agrobacterium tumefaciens) caused heavy losses in com-

Raspberry spur blight was severe in Nova Scotia and western Ontario. Fusicoccum canker (F. putrefaciens) was general on highbush blueberries in the coastal areas of British Columbia. Leaf rust (Pucciniastrum myrtilli) was extremely severe on native blueberries on Cape Breton Island, Nova Scotia.

Downy mildew (Plasmopara viticola) of grapes was general and occasionally severe in western Ontario as was powdery mildew (Uncinula necator). Red stele (Phytophthora fragariae) of strawberry was found, by surveys, to be widely distributed in the soils of the Lower Mainland of British Columbia and in Nova Scotia. Green petal of strawberries was generally much less severe in eastern Canada than in previous years.

Blossom blight (Monilinia laxa) was reported on Chaenomales japonica, for the first time in Canada, from British Columbia. Phytophthora root rot (P. cinnamoni) continues to cause serious damage to Lawson's Cypress in the same province. Phytophthora ilicis caused losses in holly orchards in British Columbia. Fire blight (Erwinia amylovora) was severe on ornamental Malus species in Alberta. Brown rot (Monilinia demissa) was observed on Prunus demissa in British Columbia for the first time in Canada.

Crown gall (Agrobacterium tumefaciens) was found on cultivated Rhododendron in Nova Scotia. This is believed to be the first North American record. Anthracnose (Gloeosporidiella variabilis) was general and severe on Ribes alpinum in eastern Ontario. Powdery mildew (Sphaerotheca pannosa) was heavy on roses in Ontario and Nova Scotia. The dagger nematode (Xiphinema diversicaudatum) caused damage to greenhouse roses in Ontario. Willow scab and blight (Venturia saliciperda and Physalospora miyabeana) were epidemic in coastal British Columbia and in Nova Scotia.

Rust (Melampsora monticola) was observed, for the first time in Canada, on Euphorbia peplus in British Columbia. Numerous reports were received of the occurrence of anthracnose (Glomerella cingulata) on Ficus spp. Heavy infections of scab (Pseudomonas marginata) and dry rot (Stromatinia gladioli) were reported on Gladiolus from Nova Scotia. Basal stem rot (Botrytis cinerea) caused losses in cuttings of florists' geranium in British Columbia and Quebec. Rust (Uromyces scillarum) affected Scilla in British Columbia and fire (Botrytis tulipae) caused extensive losses in tulips in the same province. Two leaf spots (Centrospora acerina and Cercospora granuliformis) were severe on pansies in commercial plantings in Nova Scotia.

The Weather and its Influence on Plant Disease

The winter of 1960-61 in the coastal areas of the B.C. mainland was again moderate. The minimum temperature recorded at the seacoast in January was 26°F and frost did not occur in February or March. Temperatures later in the spring, however, were below normal and rainfall was heavy in April and May. This combination of weather factors delayed the planting of cash crops and was responsible for many physiological disorders, particularly in early-planted celery and lettuce. Drier, sunny conditions commenced the first week in June and the summer as long and dry. Considerable defoliation took place in trees infected earlier with such foliar diseases as peach leaf curl, apple scab and willow blight. The first killing frost occurred on 3 October at the seacoast and on 22 October in the Agassiz region. Fall precipitation was greater than normal (H.N.W. Toms).

Total precipitation, for the 12-month period between 1 November, 1960 and 31 October, 1961 in the B.C. Interior, was 0.75 inches above the 45-year average. Rainfall was in excess of normal in April, May and July and below normal in June, August and September. Prolonged spring rains in the Kootenays provided ideal conditions for apple scab infections and, at the same time, made spraying operations difficult. Frequent rains in the Okanagan Valley, early in June, were responsible for some severe outbreaks of scab. In most cases, fruit infections appeared early enough for diseased fruits to be removed during thinning operations. Late-season rains favored new infections and pin-point scab was reported from several districts, chiefly on Winesap. Cool, wet, spring weather in the Kootenays also extended the bloom period for cherries and provided favorable conditions for the development of brown rot. In some orchards, 70% of the blossom clusters were affected. Rains during the harvesting of late varieties of cherries favored the development of a fruit rot caused by Pullularia pullulans.

The winter of 1960-61 was both wetter than normal and abnormally mild. The minimum temperature recorded at Summerland was 12°F and the mean temperatures for the months December to May were significantly above the average means. No winter injury or spring frost injury was experienced in the fruit-growing sections of the B.C. Interior. The period of hot summer weather was longer than usual. It began early in June and continued without a break until the end of August. The occurrence of some diseases was decidedly influenced by the prevailing high temperatures.

The exceptionally mild winter permitted the survival of the powdery mildew pathogen, Podosphaera leucotricha, in a large percentage of infected buds. Spring temperatures favored its development on leaves and new shoots, and all varieties were affected to some degree. The long, hot, dry period that began in June provided additional evidence that hot weather tends to retard the symptom expression of certain virus diseases of apple. Symptoms of ring russet and leaf pucker were much less pronounced in 1961 than in 1960 when cool temperatures prevailed early in the season. It is thought that the prolonged period of high summer temperatures might be responsible for the occurrence of a new disorder of Bartlett pear, tentatively called "cottony spot". The same conditions are also believed to be responsible for the low incidence of bull's-eye rot of apples, caused by Neofabraea perennans.

Soil temperatures in June, 1961 reached 80°F at the 6-inch level, some 5 degrees higher than in 1960. This could explain the reduced incidence of onion

smut and Verticillium wilt, which are favored by relatively cool soil temperatures and the increased incidence of Fusarium bulb rot of onions, which is favored by comparatively higher soil temperatures (G.E. Woolliams).

Spring, in northern Alberta, came relatively early and temperatures until Mid-May were near normal. From that time, until the first of September, the average temperature was about 5°F above the long-term normal. Rainfall, from Edmonton south, was much below normal while that north and east of Edmonton and in the Peace River District was adequate. The high temperatures had the effect of decreasing the incidence of scald on barley and stimulating net blotch. They were also probably responsible for the appearance of such diseases as corn smut. The distribution of some diseases, such as bacterial blight of barley, closely followed the rainfall pattern (W.P. Campbell). The weather, during the growing season in southern Alberta, was abnormally dry. Precipitation in June was only 50 per cent of normal. Rains in July helped crop conditions in the dark-brown soil regions but the drought continued in the brown soil zones of southeastern Alberta, a condition that was further aggravated by the second hottest August on record. The effect of the dry conditions on the development of foliage diseases is exemplified by the low incidence of bacterial blight of beans (J.B. Lebeau).

Extreme drought and the absence of dews during the growing season in Saskatchewan militated against the develpoment leaf and stem spots, rusts, and similar diseases in 1961. Common root rot of cereals was favored by the dry conditions as were physiological disorders such as blossom end-rot of tomatoes. Unusually long periods of high temperatures were responsible for extreme heat canker and leaf banding of cereals, flax and garden crops (H.W. Mead, T.C. Vanterpool).

Weather conditions early in the spring in Manitoba were such that it was expected that an average crop might be produced on summerfallow. Surface moisture was in good supply in May and seeding operations were hampered by cool, wet weather. Precipitation between 1 April and 8 May was 38 per cent above normal and the mean temperature was 2.5°F below normal. Total precipitation by 12 July was, however, 54 percent less than normal and the mean temperature was 4.2°F above normal. The lack of precipitation and the higher than normal temperatures in June and July resulted in an early harvest of about a one-half normal crop of cereals.

Rust spore showers were recorded on 24 and 27 June but the hot, dry weather precluded any widespread rust infection. A trace of wheat leaf rust was found at Morden on 11 July but by 9 August only scattered infections were present in farmers' fields. Wheat stem rust was found on 24 July, about a month later than normal. Oat stem rust was found on 1 August and mere traces of crown rust of oats and leaf rust of barley were found near Altona on 9 August. None of the cereal rusts developed appreciably and damage was negligible except possibly in a few late fields sown to susceptible varieties. Leaf spots and other plant diseases were likewise suppressed by the unfavorable climatic conditions (W.L. Gordon).

In southwestern Ontario, an unusually high incidence of Botrytis stem rot in greenhouse tomatoes that occurred during April and early May was correlated with soft growth brought about by low light intensities in earlier months. The total hours of sunshine in the Harrow area for the months of February, March and April were 15, 22, and 45 percent, respectively, below normal.

The occurrence of tobacco etch virus was again shown to be related to aphid infections which are, in turn, influenced by weather conditions. The cool, wet spring in 1961 delayed the build-up of aphid populations. The virus, consequently, was not transmitted from overwintering hosts to such susceptible crops as burley tobacco and pepper until they had almost reached maturity. Late season spread caused little loss. The same cool, moist spring weather is considered to have predisposed the foliage of such crops as potatoes, cucumbers, onion and tomato to infection by species of Alternaria.

Frequent rain showers and abnormally high temperatures in late August and early September favored a heavy outbreak of Stemphylium blight in many crops of tomatoes. Its occurrence is rare in southern Ontario (C.D. McKeen).

Considerable winter injury to peaches followed the very dry open fall of 1960 in the Niagara Peninsula, Ontario. The same condition, combined with a record heavy 1960 crop and a late outbreak of powdery mildew predisposed many vineyards to similar injury.

Spring development in 1961 was ten days to two weeks later than normal with considerable rainfall. Severe apple-scab infection periods occurred on 12-15 May, 31 May - 2 June, 8-10 June and 20-21 June. Primary infections were numerous but with the advent of warm weather in July the activity of the disease declined. Despite frequent showers in August there was little further development or spread of scab.

The prolonged wet period of 20-21 June occurred just before the bloom period of grapes and was critical for the extensive development of downy mildew infections. The disease remained active in July and August rains spread infection to new growth. Rains on successive days in early June favored the spread and development of the shoot-lesion phase of the dead arm disease of grapes. Warm, dry weather in September was favorable for the rapid build-up of grape powdery mildew (G.C. Chamberlain).

Total rainfall of twenty-nine inches between early April and late November in southwestern Quebec influenced the development of apple scab. There were ten primary infection periods and some heavy losses were incurred. Late-season rains resulted in the development of some pin-point scab (R. Desmarteau). Late blight of potato was not serious in Quebec until after the advent of heavy rains in August. Precipitation excesses over normal ranged from forty to eighty percent in the Gaspe, Eastern Townships and the Lake St. John regions. Late blight spread rapidly and many fields were defoliated. Losses from tuber rot were high (H. Genereux).

Weather conditions in New Brunswick throughout the planting, growing and harvesting seasons were abnormal and, for the most part, unfavorable for potato production. Cold weather and heavy rainfalls delayed planting in some districts until mid-June. Summer rainfall was excessive in many areas of the province and late blight was general by late August. Heavy September and October rains resulted in a considerable amount of late blight tuber rot. The crop was harvested in a muddy, wet condition and rots caused by secondary organisms were prevalent in storage (C.E. Robinson).

Temperatures in late April and early May in Nova Scotia were below normal. Perithecia of the apple scab organism developed very slowly and the first ascospore discharged occurred on 13 May. Apple buds also developed slowly and the first scab infection period was on 16-17 May. Foliage scab, which probably developed from this infection period, was observed on 6 June. Five infection periods of varying intensity occurred in May; four

heavy and one moderate infection periods were recorded in June, and one moderate and three light in July. The latter part of July and most of August were very dry, preventing any spread of scab. There were some prolonged wet periods in late August and early September and considerable late-season scab appeared, particularly on McIntosh (R. G. Ross).

The growing season in Prince Edward Island was characterized by high rainfall in June followed by drought conditions during July and most of August. Precipitation in September and October was normal and temperatures were above normal. Conditions in the spring were favorable to initial apple scab infection but lack of moisture during the summer militated against secondary spread. Low soil moisture was unfavorable to infection of crucifers by the clubroot organism. For the second year in succession, late blight of potato failed to cause serious economic losses. Low rainfall and low humidity delayed its appearance until September. Little tuber rot was encountered in the main plantings of Sebago. Drought conditions proved favorable to the development of powdery mildew on a number of crops and ornamentals (G. W. Ayers).

I. DISEASES OF CEREAL CROPS

WHEAT

BLACK POINT (Alternaria spp.). Samples of common and durum wheat, examined at Winnipeg, were found to contain many "black point" kernels which were permeated to a greater extent than usual. Plating tests showed that the discolored seeds were usually infected with species of Alternaria only (H.A.H. Wallace).

LEAF SPOT (Ascochyta sorghi) was recorded in tr.-sl. amounts in wheat varieties at Kyle, Tugaske and Swift Current, Sask. (B.J. Sallans). E. Müller (Phytopath. Zeitschrift 19: 403-416. 1952) has described the perfect stage of A. sorghi Sacc. in Europe and assigned it to Didymella exitalis (Mor.) Müller. The perfect stage has not been recorded in North America (D.W. Creelman).

COMMON ROOT ROT (Bipolaris sorokiniana, Fusarium spp.) was sl.-mod. in a plot of Ridit wheat at Vancouver, B.C. (H.N.W. Toms); it was tr.-sl. at 19/19 illustration stations in n. Alta. and 43-tr. 18-sl. 7-mod./68 farmers' fields in n. and c. Alta. Most of the mod. infections were in the Camrose area (W.P. Campbell). In s. Alta. it was rated 12-tr. 5-sl. 2-mod./22 spring wheat and 9-tr. 7-sl. 7-mod./25 winter wheat fields. F. culmorum was the dominant Fusarium species (J.S. Horricks, T.G. Atkinson). The incidence of common root rot in Sask. increased in 1961 coincident with the drought. Average disease ratings for crop districts 1-9 respectively were 11.88; 16.46; 17.66; 11.96; 8.78; 12.36; 11.87; 8.77, and 8.83 for a provincial average of 12.08, compared with 9.14 and 10.64 for 1959 and 1960 (B.J.S.).

STRIPE (Cephalosporium gramineum) was collected on Jones Fife wheat at Hillspring, Alta. (J.S.H., T.G.A.). The specimen (DAOM 87351) agreed well with previous collections from N.B. and Ont. This is the first report, to the Survey, of Cephalosporium stripe of wheat from western Canada (D.W.C.). It was also seen in a few fields of winter wheat in western Ont. (D.W.C.).

ERGOT (Claviceps purpurea). Trace infections were observed in plots at Evansburg and Vegreville and it was 3-tr. 1 - sev. in the Lloydminster area, Alta. (W.P.C.). Up to 10% of the heads of spring wheat in a field nr. Ottawa, Ont. were infected. It is suggested that infection may have come from a nearby heavily infected stand of Agropyron repens (R.V. Clark).

SEEDLING BLIGHT (Drechslera tritici-repentis). Infection was general and heavy on winter wheat in Renfrew Co., Ont. in May in fields where wheat had been planted for the second consecutive year. Bipolaris sorokiniana was present to a lesser degree (R.V.C.).

POWDERY MILDEW (Erysiphe graminis). Ridit wheat was slightly affected in plots at U.B.C., Vancouver (H.N.W.T.). A sl. infection was seen north of Grande Prairie, Alta. (W.P.C.). In s. Alta. it was 3-tr./25 winter wheat and 2-tr. 3-sl. 2-mod./22 spring wheat fields (J.S.H., T.G.A.)

and tr. on winter wheat at Cardston (W.A.F. Hagborg). Infection was very heavy on winter wheat in the Ottawa, Ont. area affecting, in some varieties, even the head (R.V.C.).

TAKE-ALL (Ophiobolus graminis) was 1-tr. 1-mod./75 fields in c. Alta., both infections near Camrose (W.P.C.) and 1-tr./22 spring wheat fields in s. Alta. (J.S.H., T.G.A.).

HEAD DISCOLORATIONS (Nigrospora sphaerica, Septoria nodorum). Isolations from mod. affected heads at Winnipeg, Man. yielded N. sphaerica which proved to be pathogenic on wheat heads, attacking chiefly the lemmas. Samples from Carman, Man., where the condition was sev. in patches, with a shrivelling of grain, yielded S. nodorum. Several cultures were severely pathogenic on Pembina and Selkirk in controlled tests. A similar condition was observed in 1954 (C.P.D.S. 35:4. 1955) (W.A.F.H.).

BASAL GLUME ROT (Pseudomonas atrofaciens). Two tr. infections were seen north of Grand Prairie, Alta. (W.P.C.) and it was tr. on Selkirk at the Pas, Man. (W.A.F.H., G.J. Green).

*STEM RUST (Puccinia graminis) was tr. at Kyle and Adanac and sl. at Glidden, Sask. Its incidence was at an all time low in the province (B.J.S.). It was mod.-sev. on both winter and spring wheat at Ottawa (R.V.C.), and was sev., but appearing late in the season, at Ste. Anne de la Pocatiere, Que. (R.O. Lachance).

LEAF RUST (Puccinia recondita). Slight infections occurred in plots at U.B.C., Vancouver (H.N.W.T.), It was tr. on 2 varieties in plots at Vegreville and was 8-tr. 2-sl. e. and n.-e. of Edmonton, Alta. (W.P.C.). Traces were found in 11 fields in w. and n.-w. Sask. (B.J.S.). It was mod.-sev. on both winter and spring wheat at Ottawa (R.V.C.).

BROWNING ROOT ROT (Pythium arrhenomanes). One mod. infection occurred in 22 spring wheat fields surveyed in s. Alta (J.S.H., T.G.A.).

GLUME BOTCH (Septoria nodorum) was 15-tr. 6-sl. 1-sev./75 fields surveyed in n. and c. Alta. It was also tr.-sl. at 5/19 illustration stations (W.P.C.). A perfect stage of S. nodorum in Europe, Leptosphaeria nodorum Müller, was described in 1952 (Müller, E., Phytopath. Zeitschrift 19: 403-416. 1952.) (D.W.C.).

SPECKLED LEAF BLOTCH (Septoria tritici). Trace -sl. infections were recorded at Wanham and Cheddarville, in n. Alta. and it was 2-tr. 3-sl. in c. Alta. (W.P.C.). Infection was 1-tr./22 spring wheat fields in s. Alta. (J.S.H., T.G.A.). Sl.-mod. infections were general in the area Big River - Green Lake to Reford and Biggar in Sask. (B.J.S.). It was 2-tr./7 fields visited in Man. (G.J.G.), and light but general in the Ottawa, Ont. area (R.V.C.).

*For a more complete account of the distribution of this and other cereal rusts in Canada in 1961, the reader is referred to the article "Cereal Rusts in Canada in 1961" by Green and Samborski. (Can. Plant Dis. Survey 42:1:1 1962)

COMMON BUNT (Tilletia caries, T. foetida) was 1-sl./25 winter wheat fields in s. Alta. The infected field was at the Research Station, Lethbridge (J.S.H., T.G.A.). No bunt was found in 193 fields examined in Sask. (R.C. Russell). Bunt was apparently not widely distributed in the 1961 crop in western Canada, since only 0.05% of wheat carloads graded in the three months, Aug.-Oct. graded "smutty" (W. Popp.).

LOOSE SMUT (Ustilago tritici) was sl. on 1 variety in plots at Buffalo Head Prairie and was 1-tr. 1-5% in the Peace River district, Alta. (W.P.C.). It was sl. in a field at Dewberry and mod. in one nr. Calgary, Alta. (W.P. Skoropad). Five /193 fields in Sask. showed tr.-1% infection (R.C.R.). Most fields examined in Man. were free of loose smut. Tr. infections were seen in durum and 2-6% in Lee (W.P.).

BARLEY YELLOW DWARF (Barley yellow dwarf virus). Infection was 3-tr. 1-sl./25 winter wheat and 1-sev./22 spring wheat fields in s. Alta. (J.S.H., T.G.A.). It was tr. on 1-5% of the plants in a field at Whiskey Gap and sl. on 18% of the plants in another at Fort McLeod, Alta. A single affected plant was seen at Swift Current, Sask. (W.A.F.H., J.T. Slykhuis), and it was tr. on Ramsey at the Pas, Man. (W.A.F.H., G.J.G.). Trace infections were seen on durum and common wheat at Winnipeg (W.A.F.H., H.A.H.W.). For a complete review of BYDV incidence in Canada in 1961 see "Smith, H.C., Can. Plant Dis. Survey 41:5. 344. 1961." (D.W.C.)

SOIL-BORNE MOSAIC of winter wheat occurred again extensively north, west, and southwest of Toronto, Ont. (J.T.S.). For a complete account of this disease see: Slykhuis, J.T. "The cause and distribution of mosaic diseases of wheat in Canada in 1961" Can. Plant Dis. Survey 41:5. 329. 1961)D.W.C.).

STREAK MOSAIC was 3-tr./25 winter wheat and 1-tr. 1-mod./22 spring wheat fields in s. Alta. (J.S.H., T.G.A.). It was tr. in winter wheat at Cardston, Barrons, and Bassano, Alta. (W.A.F.H., J.T.S.). See also: Slykhuis, J.T., Can. Plant Dis. Survey 41:5. 329. 1961 (D.W.C.).

STRIATE MOSAIC. A trace infection was seen in 1/22 spring wheat fields in s. Alta. (J.S.H., T.G.A.) and on durum wheat at Winnipeg, Man. (W.A.F.H.). See also: Slykhuis, J.T., Can. Plant Dis. Survey 41:5. 329. 1961 (D.W.C.).

CHLOROSIS (possibly of virus origin). An account of this previously undescribed disease is given by J.T. Slykhuis, Can. Plant Dis. Survey 41:5. 329. 1961 (D.W.C.).

CHEMICAL INJURY. Negligible damage, consisting of a branching of heads, was caused by 2, 4-D at Quinton, Sask. (T.C. Vanterpool).

HAIL DAMAGE was moderate at Glenwood, Alta. (W.A.F.H., J.T.S.).

LEAF BANDING (high surface-soil temperatures) was very sev. in Sask. in June (T.C.V.) (Can. Plant Dis. Survey 41:5. 306-309. 1961). Many fields were affected in the Kindersley-Merid areas of Sask. (B.J.S.).

LEAF BLOTCH (physiological) was 1-mod./25 winter wheat fields in s. Alta. (J.S.H., T.G.A.). It was 2-mod. 2-sev./12 fields of Ramsey surveyed in Sask. (B.J.S.).

TIP BURN (heat and drought) caused sl. damage in a field at Reford, Sask. (B.J.S.).

OATS

SEEDLING BLIGHT (Bipolaris sorokiniana). A 1% infection was seen at Indian Head, Sask. (B.J. Sallans).

COMMON ROOT ROT (Bipolaris sorokiniana, Fusarium spp.) was 4-tr./19 illustration stations and 4-tr./65 farmers' fields in n. and c. Alta. (W.P. Campbell). It was 1-tr./10 s. Alta. fields (J.S. Horricks, T.G. Atkinson). At Winnipeg, Man., Garry was sev. affected while Exeter in an adjacent plot was not. The Fusarium spp. involved were F. poae, F. equiseti and F. oxysporum var. redolans (H.A.H. Wallace, W.L. Gordon).

ANTHRACNOSE (Colletotrichum graminicola) was mod. on Fundy, Glen, M.C. 6846, Q.O. 1-6, Q.O.3-1, Q.O.3-2 and Shefford, and sl. on Ajax, Garry, G.A.82, G.A.85 and G.A.91 in plots at St. Charles de Caplan, Que. (D. Leblond).

LEAF BLOTCH (Drechslera avenacea) was tr.-sl. at 9/19 illustration stations and 8-tr. 9-sl. in 65 fields in n. and c. Alta. (W.P.C.). Infection was 2-tr. 1-sl. 1-mod. in s. Alta. (J.S.H., T.G.A.). Mod. infections occurred on Fundy at the Exp. Farm, St. John's West, Nfld. (O.A. Olsen).

BROWN STRIPE (Passalora graminis). A report from N.B. (C.P.D.S. 41:2. 44. 1961) was incorrectly designated as the first report of this disease on oats in Canada. It had previously been reported from Ont. (C.P.D.S.25: 7. 1949) and Alta. (C.P.D.S. 30: 9. 1952) (D.W. Creelman).

HALO BLIGHT (Pseudomonas coronaficiens). Trace -sl. infections were recorded at 14/19 illustration stations and it was 12-tr. 3-sl./65 fields in c. and n. Alta. (W.P.C.). It was recorded in 2/10 fields in Sask. (B.J.S.), and was noted, in varying degrees of intensity, in plots in the Ottawa, Ont. area. Infection was obviously seed-borne (R.V. Clark).

CROWN RUST (Puccinia coronata) was light but general in the Ottawa, Ont. district (R.V.C.) and was sev. in a late-planted field at Berwick, N.S. (K.A. Harrison). Light infections were general in Aug. west of Summerside, P.E.I. (J.E. Campbell).

STEM RUST (Puccinia graminis). Infection was sl. on Eagle and Victory oats at Oyster River, Vancouver Island, B.C. (H.N.W. Toms). Stem rust was generally light in the vicinity of Ottawa, Ont., but was heavy in areas near barberry (R.V.C.). Late-sown fields in the lower St. Lawrence district of Que. had mod. infections. It was sl. on early-sown fields (R.O. Lachance). A 7-acre field at Coldbrook, N.S. was 100% infected (C.L. Lockhart). It was sev. on late-planted crops in n.-w. Queens Co., (J.E.C.), and mod. on Fundy and sev. on Victory at Charlottetown, P.E.I. (J.D.E. Sterling).

SPECKLED LEAF BLOTCH (Septoria avenae f. sp. avenae) was present in 2/10 Sask. fields (B.J.S.). Infection was 100% and damage mod. in a field of Shield (Foundation) oats at the C.E.F., Ottawa, Ont. (M.D. Sutton, M.E. Elliott). It was considerably heavier in the Ottawa district than in 1960 although less sev. than in some preceeding years (R.V.C.). Infection was general in P.E.I. and levels were extremely variable depending on planting dates. Early-planted fields were sev. affected and late-planted ones only slightly. The average damage was mod. (J.D.E.S.)..

STUNT NEMATODE (Tylenchorhynchus maximus) was recorded on oats from Finch, Ont. and Buckingham, Que. (R.H. Mulvey) (C.P.D.S. 41:5. 357. 1961).

SMUTS (Ustilago avenae, U. kolleri) were 3-tr. 1-20%/65 fields in n. and c. Alta. The sev. infected field was north of Elk Point (W.P.C.). Only 1/11 fields examined in Sask. was affected (R.C. Russell) and only a trace was seen in 1 field in Man. (W. Popp.). Many fields in P.E.I. showed 1-2% infection (G.W. Ayers). Sl. infections were seen at Doyles on the west coast of Nfld. (O.A.O.).

RED LEAF (barley yellow dwarf virus) was tr. in a field n.-e. of Dawson Creek, B.C. (W.P.C., D.W.C.). Trace infections were seen at The Pas, Portage la Prairie and Winnipeg, Man. (W.A.F. Hagborg, H.A.H.W., G.J. Green). Red leaf was sev. and caused heavy damage in late-sown fields in the Lake St. John, Lower St. Lawrence and Gaspé regions of Que. Frequently heading was suppressed. Experimental plots at St. Charles de Caplan were rendered completely useless (R.O.L.). See also: Smith, H.C., Cdn. Plant Dis. Survey 41:5. 344. 1961) (D.W.C.).

WHEAT STREAK MOSAIC was seen in one oat field adjacent to an infected wheat field in s. Alta. (J.S.H., T.G.A.).

BLAST (physiological) was tr.-sl. at 17/19 illustration stations and 20-tr. 20-sl. 4-mod. 4-sev./65 farmers' fields in n. and c. Alta. (W.P.C.). In s. Alta it was 2-tr. 1-sl. /10 fields (J.S.H., T.G.A.) Two/10 fields were sl. affected in Sask. (B.J.S.). It was tr. on Fundy at Nappan, N.S. (K.A.H.) and sl. on Abegweit in Queens Co., P.E.I. (J.E.C.).

CHEMICAL INJURY (probably 2, 4-D). Sev. injury occurred in a field nr. Waskatenau, Alta. Florets were sterile and the nodes, especially the lower ones, were enlarged (W.P.C.).

GRAY SPECK (Manganese deficiency) was rated as 3-tr. 5-sl. 1-mod. 2-sev. on high-organic soils in the Peace River District of B.C. and Alta. The most sev. symptoms seen were at High Prairie, Alta. (W.P.C.). Slight symptoms were more observed at McGrath, Alta. (W.A.F.H., J.T. Slykhuis). The occurrence of gray speck in s. Alta. is largely restricted to pockets of organic soil in the foothills region where sev. symptoms are often observed. Mod. symptoms were seen in 1961 on oats grown on silty-sandy loam at Wardner, B.C. Eagle was sev. affected whereas Glen showed no symptoms (J.S.H., T.G.A.). Symptoms were seen on low-lying land west of Spalding, Sask. (T.C. Vanterpool).

LEAF BANDING (high surface-soil temperatures) was sev. in June in Sask. (T.C.V.).

BARLEY

COMMON ROOT ROT (Bipolaris sorokiniana, Fusarium spp.) was tr. at most of the 19 illustration stations visited in c. and n. Alta., with mod. infections at Olds, Vermilion, Vegreville and Athabasca. Ratings were 33-tr. 27-sl. 11-mod./106 farmers' fields (W.P. Campbell). In s. Alta. ratings were 5-tr. 1-mod./11 fields (J.S. Horricks, T.G. Atkinson). The average disease rating in 30 Sask. fields was 11.5. Ratings were high on the open plains but lower in the north (B.J. Sallans). Slight infections were general on Charlottetown 80 in P.E.I. (J.D.E. Sterling).

SPOT BLOTCH (Bipolaris sorokiniana). Trace infections were occasionally found in late-maturing fields in Man. (H.A.H. Wallace).

ERGOT (Claviceps purpurea) was tr. in plots at Vegreville, Alta. (W.P.C.) and was tr. in a field at Meadow Lake, Sask. (B.J.S.).

NET BLOTCH (Drechslera teres) was found at 16/16 illustration stations in c. and n. Alta. ranging from 3-tr./9 varieties at Buffalo Head Prairie to 4-mod. 5-sev./10 varieties at Vermilion. It was rated 24-tr. 22-sl. 29-mod. 23-sev./106 farmers' fields. Net blotch seems to have been favored over scald by the above-normal summer temperatures and was more serious in c. than in n. Alta. (W.P.C., W.P. Skoropad). Mature ascocarps (Pyrenophora teres) were found, for the first time in Alta., on overwintered barley straw (L.J. Piening) (Can. Plant Dis. Survey 41:5. 299-300. 1961). Two tr. infections were recorded in 11 fields in s. Alta. (J.S.H., T.G.A.). Ratings were 2-tr. 5-sl. 5-mod. 2-sev./30 fields in Sask. The disease was confined to the n.-w. areas of the province (B.J.S.). In Man., it was 4-tr. 1-sl. 1-mod./11 fields (G.J. Green).

POWDERY MILDEW (Erysiphe graminis). Slight infections occurred on Vantage in plots at Oyster River, B.C. (H.N.W. Toms). Infection was light but general in the Ottawa, Ont. district (R.V. Clark). A 90% infection was seen in July at Ste. Anne de Bellevue, Que. (R.O. Lachance).

STEM RUST (Puccinia graminis). Infection was heavy but late at Ottawa, Ont. (R.V.C.) and was sl. on Vantage at Charlottetown, P.E.I. (J.E. Campbell).

LEAF RUST (Puccinia hordei) was heavier than normal at Ottawa, Ont. (R.V.C.). Mod. infections were recorded on Parkland, Montcalm and Vantage at Charlottetown, P.E.I. (J.E.C.).

SCALD (Rhynchosporium secalis) was found at 15/16 illustration stations in c. and n. Alta., ranging in intensity from 1-tr./7 varieties at High Prairie to 1-mod. 7-sev./9 varieties at Cheddarville and Vermilion. In farmers' fields, it was 2-tr. 20-sl. 12-mod. 5-sev./106. Its incidence was lower than usual; this may be associated with higher summer temperatures in 1961 (W.P.C.). Ratings were 2-sl./30 fields in n.-w. Sask. (B.J.S.). In Seed Board tests at St. Sebastien, Frontenac Co., Que. it was tr. on O.A.C. 21 and Parkland; sl. on O.B.12, O.B.13, O.B.16 and York and mod. on Montcalm. No infection was seen on M.C.247 and Ott. 5069-40 (D. Leblond).

SPECKLED LEAF BLOTCH (Septoria passerinii) was mod.-sev. on 6/10 varieties in plots at Vegreville and 1-tr./8 at Keg River and High Prairie, Alta. and was 3-tr. 3-sl. 2-mod./106 farmers' fields in c. and n. Alta. (W.P.C.). In n.-w. Sask. it was 1-tr. 2-sl./30 fields (B.J.S.), while ratings in Man. were 1-tr. 2-mod./8 fields (G.J.G.).

COVERED SMUT (Ustilago hordei). Only 6 trace infections were seen in 106 fields in n. and c. Alta. One field s.-w. of Edmonton had 20% smutted heads (W.P.C.). One sl. infection in 11 fields was seen in s. Alta. (J.S.H., T.G.A.). Only 2/34 Sask. field were infected, but both with high percentages, 1-10% and 1-15%. Obviously this seed was not treated (R.C. Russell). It was more prevalent in Man. than in 1960 (W. Popp).

LOOSE SMUT (Ustilago nuda, U. nigra) was tr. at 8/16 illustration stations in c. and n. Alta. The variety H53-1409 had 5-10% infection at 3 stations. In farmers' fields it was rated 19-tr. 2-1%. 2-2%. 2-3%. 1-4%. 3-5%. 1-6%. 1-7%. 2-8%. and 1-10%/106. (W.P.C.). Eighteen /34 Sask. fields showed infections ranging from tr.-10% (R.C.R.). In Man., U. nigra was more prevalent and U. nuda less prevalent than in 1960 (W. P.). Some varieties, including York, were quite heavily infected at Ottawa, Ont. (R.V.C.).

BACTERIAL BLIGHT (Xanthomonas translucens) was recorded at 5 illustration stations in c. Alta. and was rated 6-tr. 3-sl. 1-mod./106 farmers' fields in c. and n. Alta. The heaviest infection was at Vegreville (W.P.C.).

ASTER YELLOWS (Callistephus virus 1). Severe infections occurred on a few plants of Parkland at Portage la Prairie and Morden, Man. It was also found on Sask-5653 at Winnipeg. The virus was artifically transferred to Callistephus by P.H. Westdal (W.S. Chelack, W.A.F. Hagborg). This is the first record of natural infection of barley by aster yellows in Canada (D.W.C.).

STRIPE MOSAIC (barley stripe mosaic virus) was 1-tr./11 s. Alta. fields (J.S.H., T.G.A.). It was tr. at Aldersyde, Alta. (W.A.F.H.). All plots of O.A.C. 21 in the Co-operative Test at Morden, Man., were infected (H.A.H.W.).

YELLOW DWARF (barley yellow dwarf virus). One field nr. Fort St. John, B.C. showed sl. infection (W.P.C.). It was 3-sl./11 s. Alta. fields (J.S.H., T.G.A.). In tests at Brandon, Man., all plots of Keystone, Fort, NDB-117, OB-1310 and 5748-52 were infected. OB-23-3, OB-23-4, OB-13-10 5750, UM57-959 and UM58-256 were usually infected. Husky had less and Keystone more infection than in 1960. Sl. infections were also observed on several varieties at Winnipeg and Morden (H.A.H.W.). See also: Smith, H.C. (Can. Plant Dis. Survey 41:5. 344. 1961).

CHEMICAL INJURY. An application of the herbicide, Carbyne (4-chloro-2-butynyl-N-(3 chlorophenyl carbamate), on a field in Man. caused serious injury. The appearance of the injury resembled spot blotch (H.A.H.W.).

LEAF BANDING (high surface-soil temperature) was especially sev. in Sask. in 1961. Barley was the most severely affected of the cereals (T.C. Vanterpool).

WEATHERING. Due to severe lodging, weathering was very severe in the Ottawa Valley. The condition of all grain; barley, oats and spring wheat, was very poor and some fields were not harvested (R.V.C.).

RYE

COMMON ROOT ROT (Bipolaris sorokiniana, Fusarium spp.). Three fields in crop district 8 in Sask. were moderately affected (B.J.Sallans).

ERGOT (Claviceps purpurea). Infection was 4% on Prolific in Rust Nursery plots at Ste. Anne de la Pocatiere, Que. (R.O. Lachance). Tetra Petkus was 15% infected at Nappan, N.S. A nearby plot of Dominant had a mere trace of infection (K.A. Harrison). Infection was 3-5% on Prolific at Charlottetown, P.E.I. (J.E. Campbell).

POWDERY MILDEW (Erysiphe graminis) was sev. on Storm at the University, Vancouver, B.C. (H.N.W. Toms).

STEM RUST (Puccinia graminis) was sl.-mod. on Prolific in plots at Charlottetown, P.E.I. (J.E.C.).

LEAF RUST (Puccinia recondita). Slight-mod. infections developed in a 1-acre plot of Storm at the University, Vancouver, B.C. (H.N.W.T.). It was sl. on Prolific in plots at Charlottetown, P.E.I. (J.E.C.).

YELLOW DWARF (barley yellow dwarf virus) was found at Ottawa, Madoc and Norwood, Ont. (H.C. Smith) (Can. Plant Dis. Survey 41:5. 344. 1961).

II. DISEASES OF FORAGE AND OTHER FIELD CROPS

A. FORAGE LEGUMES

ALFALFA

BLACK STEM (Ascochyta imperfecta) was generally sl. in s.-c. B.C. (E.J. Hawn) and sl.-mod. throughout the Peace River district of B.C. and Alta. (W.P. Campbell). Continuous dry weather checked its development in Sask. and disease incidence was only 12-tr./20 fields (H.W. Mead). Infection ranged from tr.-mod., depending on variety, at St. Charles de Caplan, Que. (D. Leblond).

WINTER CROWN ROT (low-temperature basidiomycete) was much more prevalent and destructive in Sask. in 1961 than for many years. Fifteen/20 fields surveyed were affected with up to 50% of the plants killed in a few fields. The same organism caused sev. damage to lawns (H.W.M.).

BACTERIAL WILT (Corynebacterium insidiosum) was found in 34% of fields examined in s.-c. B.C. compared with 78% in 1956. It was rated 11-tr.-sl. 15-sl.-mod. 8-mod.-sev./89 fields in s.Alta. and 4-mod./12 in the Maple Creek district in Sask. (E.J.H.)

STEM NEMATODE (Ditylenchus dipsaci) was 4-tr. 3-sl.-mod./89 fields in s.Alta. (E.J.H.).

CROWN BUD ROT (Fusarium roseum, Rhizoctonia solani, Ascochyta imperfecta) was the most prevalent alfalfa disease observed in s.-c. B.C., particularly in irrigated areas. Infections were rated 36-tr.-sl. 41-sl.-mod. 8-mod.-sev./89 fields in s. Alta. and 3-tr.-sl. 3-sl.-mod./12 in the Maple Creek and Maryflat areas of Sask. (E.J.H.).

YELLOW LEAF BLOTCH (Leptotrochila medicaginis) was sl. in s.-c. B.C. (E.J.H.).

DOWNY MILDEW (Peronospora aestivalis). Slight infections occurred in s.-c. B.C. (E.J.H.) and 1 very light infection was seen in 20 fields examined in Sask. (H.W.M.)

COMMON LEAF SPOT (Pseudopeziza trifolii f. sp. medicaginis-sativae) was rated as sl. in s.-c. B.C. (E.J.H.) and was tr.-sl. in fields in the Peace River district of B.C. and Alta. (W.P.C.). One infected field was seen in n.-e. Sask. (H.W.M.) and the disease was common as light infections throughout P.E.I. (J.E. Campbell).

LEAF SPOT (Stemphylium botryosum) caused serious defoliation in late Sept. in several fields near Wallaceburg, Ont. (C. D. McKeen).

WITCHES' BROOM (virus). Slight infections were seen in s.-c. B.C. (E.J.H.).

BORON DEFICIENCY was observed in the Nicola Valley, nr. Merrit, B.C. (G.E. Woolliams). It was also mod. in fertilizer plots at Lennoxville, Que. (R.O. Lachance).

POTASSIUM DEFICIENCY was mod. in fertilizer plots at Lennoxville, Que. (R.O.L.)

COMMON CLOVER

WINTER CROWN ROT (low-temperature basidiomycete) Two/9 red clover fields visited in the Peace River district of B.C. and Alta. had tr. infections (W.P. Campbell). Four/8 red clover fields in Sask. showed mod. damage with infection ranging from 10-40% in the Squaw Rapids area in n.-e. Sask. It was also sev. in 2 alsike fields n.-e. of Nipawin (H.W. Mead).

ROOT ROT (Cylindrocarpon ehrenbergii). The fungus was fruiting on decayed red clover roots in the Nipawin, Sask., area. Damage was trace (H.W.M.).

POWDERY MILDEW (Erysiphe polygoni) was found on red clover cover crops in some orchards nr. Summerland, B.C. (G.E. Woolliams). It was 1-tr. 1-sl. 2-sev./9 red clover fields in the Peace River district of B.C. and Alta. and 1-sev./15 alsike fields (W.P.C.). Infection was general in Oct. on the lower leaves of red clover in P.E.I. (J.E. Campbell).

NORTHERN ANTHRACNOSE (Kabatiella caulivora) was 5-tr. 2-sl. 2-sev./9 red clover and 1-tr./15 alsike fields in the Peace River district of B.C. and Alta. (W.P.C.).

BLACK STEM (Phoma ? trifolii E.M. Johnson & Valleau). A Phoma was collected on alsike at Beaverlodge, Alta. (W.P.C.). According to Weiss and O'Brien (U.S.D.A. Handbook 165: p. 274. 1960), more than one Phoma is reported on clover, but the precise position of these in Ascochyta - Phoma - Stagonospora complex on Leguminosae is not yet determined (D.W. Creelman).

ROOT LESION NEMATODE (Pratylenchus penetrans) was found in red clover at the Cent. Exp. Farm, Ottawa, Ont. (R.H. Mulvey (C.P.D.S. 41:5. 357. 1961).

BASAL ROT (Sclerotinia sclerotiorum). Specimens were received from Agassiz, B.C. for identification (M.J. Pratt).

LEAF SPOT (Stemphylium sarcinaeforme) was rated 1-tr. 1-sl. 3-sev. /15 alsike fields in the Peace River district of B.C. and Alta. (W.P.C.) and was general as slight infections on red clover in P.E.I. (J.E.C.).

RUST (Uromyces trifolii). Light infections were general on red clover in P.E.I. (J.E.C.).

MOSAIC (virus) was found in tr.-sl. amounts in alsike in farmers' fields and at Experimental Stations in Alta. (W.P.C.). It was mod. on alsike at St. Flavien, Lotbiniere Co., Que. (D. Leblond).

PHYLLODY (virus). Affected alsike plants, 1-year old, in single spaced plots at Beaverlodge, Alta., showed sev. symptoms. No phyllody was seen in commercial seed fields in the area or elsewhere in the Peace River district (W.P.C., D.W.C.). Two mod. and 2-sev. infections were seen at Lacombe, Alta. (W.P.C.). Ladino plants, infected with phyllody in 1960, were completely winter-killed at Normandin, Que. in the winter of 1960-61. In other parts of the province, damage was less sev. than in recent years (R.O. Lachance). Phyllody was seen in Kings Co., N.S. but not as commonly as in 1960 (K.A. Harrison). A specimen of red clover, forwarded for identification from Queen's Co., P.E.I., appeared to be affected by phyllody (J.E.C.).

OTHER VIRUS DISEASES. Bean yellow mosaic virus was common in red clover plots at the Range Station, Kamloops, B.C. At Summerland, B.C., alfalfa mosaic, clover yellow mosaic and white clover mosaic viruses were heavy in ladino (M.J.P.).

POTASSIUM DEFICIENCY was sev. on alsike in a field at St. Flavien, Lotbiniere Co., Que. (D.L.).

SWEET CLOVER

ROOT ROT (Plenodomus meliloti and Fusarium spp. associated). Many second-year stands of all varieties of sweet clover were badly damaged in Sask. in the spring of 1961 and the average damage was mod. in 31/36 fields examined. Pycnidia of P. meliloti were present on more than 50% of the roots examined from the Waldheim and Wakaw areas but not on lesioned roots in the Nipawin area. Several species of Fusarium were also regularly isolated. Recovery was good in areas where even light rainfall occurred. Controlled experiments are underway to test the pathogenicity of the various isolates (H.W. Mead).

B. OIL-SEED CROPS

FLAX

WILT (Fusarium oxysporum f. lini) was 3-tr./10 varieties in plots at Keg River and 4-tr./8 at Manning, Alta. and was 2-sl. 1-mod./14 farmers' fields in the Fort Vermilion, Alta. district (W.P. Campbell).

RUST (Melampsora lini) was sl.-mod. on Redwing in plots at Blueberry Mountain and tr. at High River, Alta. It was 2-sl. 1-mod./14 fields in the Fort Vermilion, Alta. area (W.P.C.). Rust was sl. in a field at Alliance and caused complete loss of a crop nr. Barrhead, Alta. (W.P. Skoropad). A trace was seen in 1 field at Shipman, Sask. (B.J. Sallans).

STEM CANKER AND ROOT ROT (Rhizoctonia praticola) was 7-tr./27 varieties in plots at Beaverlodge and 1-tr./7 at Blueberry Mountain, Alta. and was 1-tr. 1-sl./14 fields in the Peace River district of B.C. and Alta. (W.P.C.).

ASTER YELLOWS (Callistephus virus 1). Trace infections were noted northward of Saskatoon, Sask. It was more conspicuous than in the past four years (T.C. Vanterpool). It was also tr. at Homewood, Man. (W.A.F. Hagborg).

HEAT CANKER. Reports and specimens of heat injury to flax seedlings were received from the Kindersley-Merid area of Sask. It was also noted at White Fox (B.J.S.), and caused considerable damage in c.-Sask. (T.C.V.). Damage was rated at 10-15% at Emerson and Brandon, Man. (B. Peturson).

MUSTARD

LEAF SPOT (Alternaria sp.) was seen in experimental plots at Melfort, Sask. (T.C. Vanterpool).

RAPE

WHITE RUST (Albugo cruciferarum) was rated 1-tr. nr. Lloydminster and 1-sl. nr. Red Deer in 18 fields in Sask. and Alta. (W.P. Campbell). In Sask. it was conspicuous only nr. Meadow Lake on the northern fringe of the crop area. It was less sev. than in 1960 but was generally distributed (T.C. Vanterpool).

WHITE RUST-DOWNY MILDEW COMPLEX (Albugo cruciferarum, Peronospora parasitica) was found in amounts ranging from tr.-25% in crops north and east of Edmonton, Alta. Most fields had about 2% infection (W.P. Skoropad).

LEAF BLIGHT (Alternaria spp.). Trace infections were seen in the northern areas of Sask. and at Melfort (T.C.V.).

POWDERY MILDEW (Erysiphe polygoni) was sev. in experimental greenhouses and sprinkler-irrigated plots at Saskatoon, Sask. (T.C.V.)

RING SPOT (Mycosphaerella brassicicola) was developing well in late Aug. at Meadow Lake and in n.-e. Sask. (T.C.V.)

BLACK LEG (Phoma lingam). The presence of this disease in n. Sask. was confirmed through isolation of the causal organism (T.C.V.).

ROOT ROT (Rhizoctonia solani) was 3-sl./14 fields in n. and c. Alta. (W.P.C.).

STEM BLIGHT (Sclerotinia sclerotiorum). A tr. infection was seen in Sask. (T.C.V.).

ASTER YELLOWS (Callistephus virus I). Trace-sl. infections were seen in many fields in n. Sask. and tr. infections only further south (T.C.V.).

CHEMICAL INJURY. Moderate damage was suffered in a field adjacent to a wheat field sprayed with 2,4-D at Brancepeth, Sask. (T.C.V.).

SAFFLOWER

LEAF SPOT (Alternaria carthami) infected 40% of the lower leaves and caused mod. damage in plots at the Cent. Exp. Farm, Ottawa, Ont. (M.D. Sutton, M.E. Elliott).

SOYBEAN

STALK AND ROOT ROT (Phytophthora megasperma var sojae) continues its steady encroachment on more and more of the soybean-growing areas in western Ontario. It is anticipated that the situation should be remedied in a year or two with the release of a resistant variety from the Harrow Station. The variety Harosoy, now widely grown, is not resistant (A.A. Hildebrand).

MANGANESE DEFICIENCY caused appreciable damage in western Ontario, particularly in Essex Co. This is a perennial problem that can be controlled by the early application, as a spray, of $MnSO_4$ at 6-8 lb./acre in 20 or more gallons of water (A.A.H.).

SUNFLOWER

LEAF MOTTLE (Verticillium albo-atrum) was prevalent in the main sunflower-producing area between Morden and Altona, Man. Estimates of prevalence and damage (in brackets) in 11 fields surveyed were: 1-trace; 2-10% (slight); 5-25-30% (severe); and 1-100% (very severe). Outside this area only tr.-10% infections were found in 6 fields. The disease was an important factor contributing to yield reductions other than those that could be attributed to drought (J.A. Hoes, W.C. McDonald).

C. ROOT CROPS

SUGAR BEET

LEAF SPOT (Cercospora beticola). After being of negligible importance for a number of years in w. Ont., this disease is again becoming a matter of concern. Appreciable damage was incurred, especially in Kent Co., in 1961. The increased use of monogerm seed, plants from which have little resistance, is blamed for the increase in Cercospora leaf spot (A.A. Hildebrand).

ROOT NEMATODE (Heterodera schactii) was found in Alberta for the first time. Only 1/721 fields inspected was affected (E.J. Hawn).

ROOT ROT AND LEAF SPOT (Phoma betae) A slight infection was observed in a field nr. Coaldale, Alta. (F.R. Harper).

D. MISCELLANEOUS CROPS

BUCKWHEAT

GRAY MOLD WILT (Botrytis cinerea) was sev. on a slope near woodland at Ange Gardien, Montmorency Co., Que. (D. Leblond).

FIELD CORN

NORTHERN LEAF BLIGHT (Bipolaris turcicum (Pass.) Shoemaker) affected many fields in Essex and Kent counties, Ont. Its increasing incidence and severity are compelling growers to ensile their corn before it is properly mature (A.A. Hildebrand). Some heavy infections were reported from the Woodslee, Ont. area (D.W. Creelman).

STALK ROT (causal organisms unidentified) was reported to be very sev. in the Morden, Man. district and resulted in considerable stalk breakage (D.W.C.).

TOBACCO

BROWN LEAF SPOT (Alternaria longipes) is rapidly becoming a serious disease in w. Ont. (Z.A. Patrick, L.W. Koch (C.P.D.S. 41:5. 374. 1961). A few plants were severely damaged at Buctouche, N.B. (K.M. Graham, E.A. Grant).

NORTHERN ROOT-KNOT NEMATODE (Meloidogyne hapla) was found in 6 samples from Mt. Brydges and 2 from Houghton, Ont. Damage was mod.-sev. (W.B. Mountain, R.M. Sayre (C.P.D.S. 41:5. 376. 1961).

SOUTHERN ROOT-KNOT NEMATODE (Meloidogyne incognita) infested tobacco seedlings in a greenhouse at Leamington, Ont. (W.B.M., R.M.S. (C.P.D.S. 41:5. 376. 1961).

ROOT-LESION NEMATODE (Pratylenchus penetrans) occurred in 126 samples submitted to Harrow, Ont. It is widely distributed in s.-w. Ont. and the acreage treated with nematicides has increased from 50 in 1958 to 1500 in 1961 (W.B.M., R.M.S. (C.P.D.S. 41:5. 376. 1961).

BED ROT (Rhizoctonia solani, Pythium spp.) occurred in small patches in greenhouses in s.-w. Ont. Overall damage was less than 5%. (Z.A.P., L.W.K. (C.P.D.S. 41:5. 374. 1961).

SORE SHIN (Rhizoctonia solani, Pythium spp.) was sev. in 1961 in s.-w. Ont., necessitating the replanting of at least 10% of the fields (Z.A.P., L.W.K. (C.P.D.S. 41:5. 374. 1961).

BLACK ROOT ROT (Thielaviopsis basicola) was observed in a few seedbeds in s.-w. Ont. It was more common in the field than in 1960 and caused considerable stunting early in the season (Z.A.P., L.W.K. (C.P.D.S. 41:5. 374. 1961).

VIRUS DISEASES affected a few scattered plants in s.-w. Ont. and losses were negligible. The following viruses were observed: tobacco mosaic, etch (on burley only), cucumber mosaic, streak, ring spot, alfalfa mosaic, curly top, potato Y and mottle (Z.A.P., L.W.K.(C.P.D.S. 41:5. 374. 1961).

CHEMICAL INJURY. Fumes from Pentox, used to treat all wooden parts of a new greenhouse at Woodside, Kings Co., N.S. caused sev. damage to tobacco seedlings. Young plants were completely killed. Lettuce, cabbage and cauliflower in the same house were also affected (K.A. Harrison).

WEATHER FLECK (air pollution) continues to be one of the most serious disorders of flue-cured tobacco in Ont. (Z.A.P., L.W.K. (C.P.D.S. 41:5. 374. 1961).

YELLOW PATCH (excess nutrients) was common in seedbeds in Ont. just after germination (Z.A.P., L.W.K. (C.P.D.S. 41:5. 374. 1961).

E. CULTIVATED AND OTHER GRASSES

AGROPYRON

Stem smut (Ustilago spegazzinii) affected 10% of the plants of A. repens along a roadside at Trout Creek Point, B.C. (G.E. Woolliams).

AGROSTIS

Powdery mildew (Erysiphe graminis) was prominent on Agrostis sp. at Alces River, B.C. (W.P. Campbell)

Stem rust (Puccinia graminis agrostidis) was mod. on Agrostis sp. in turf grass at Lethbridge, Alta. (J.B. Lebeau).

BROMUS

Purple-brown blotch (Stagonospora bromi) was collected on B. inermis at Matapedia and Carleton, Que. A Leptosphaeria stage appeared to be associated with it. A third fungus, presumed to be Hendersonia crastophila Sacc. was also present on the material (D. Leblond).

Ergot (Claviceps purpurea) was found on B. inermis in the area north and east of Edmonton, Alta. (W.P. Campbell).

CALAMAGROSTIS

Ergot (Claviceps purpurea) was common on C. canadensis north and east of Edmonton, Alta. (W.P. Campbell).

DACTYLIS

Eye-spot (Selenophoma donacis). Infection was sl.-sev., depending on variety, in varietal trials of D. glomerata at Ste. Anne de la Pocatiere, Que. (D. Leblond).

PHLEUM

Anthracnose (Colletotrichum graminicola) was generally mod., but sev. in some patches in test plots at St. Charles de Caplan, Que. (D.L.).

Eye-spot (Heterosporium phlei) was sev. on second growth of P. pratense at the Exp. Farm, St. Charles de Caplan, Que. (D. Leblond) and was mod. at the Exp. Farm, St. John's West and at Colinet, Nfld. (O.A. Olsen).

Tar spot (Phyllachora graminis) was general on timothy in experimental plantings at St. Charles de Caplan, Que. (D.L.).

Stripe smut (Ustilago striiformis). Trace infections were seen in a field nr. Lindsay and in another nr. Peterborough, Ont. (D.W. Creelman).

POA

Powdery mildew (Erysiphe graminis). Late-season infection was heavy on P. pratensis in shaded areas of a lawn at Ottawa, Ont. (D.W. Creelman) and was also heavy on Kentucky blue at St. John's, Nfld. in Oct. (O.A. Olsen).

SETARIA

Kernel smut (Ustilago neglecta) was prevalent on millet growing as a weed in orchards nr. Summerland, B.C. (G.E. Woolliams).

LAWNS AND TURF

Snow mold (low-temperature basidiomycete). Damage was sl. in 4 areas of turf grass in the Lethbridge, Alta. district (J.B. Lebeau) and was sev. in lawns at Saskatoon, Sask. (H.W. Mead).

Fading-out (Curvularia sp.) was sev. in 1 turf area at Lethbridge, Alta. (J.B.L.).

Powdery mildew (Erysiphe graminis). Heavy outbreaks developed, particularly on new lawns, at Saskatoon, Sask. in Aug. and Sept. Damage was suffered in most cases (T.C. Vanterpool).

Die-back (Fusarium nivale, Pythium sp.). The two organisms were isolated from affected areas in a large acreage of turf, grown for lawn sodding, at Hatzic, B.C. (H.N.W. Toms, H.S. Pepin, N.A. MacLean).

Melting-out (Helminthosporium spp.). Damage was sl. in 3 turf areas at Lethbridge, Alta. (J.B.L.).

Fairy ring (Marasmius oreades). Three sl.-mod. infestations in pasture lands were seen and damage to turf was rated 20-sl. 1-sev./21 areas surveyed (E.J. Hawn, J.B.L.). One large ring, about 6 ft. in diam. was seen in a lawn at Ottawa, Ont. (D.W. Creelman). About 25% of the area of a lawn at Ste. Anne de la Pocatiere, Que. was damaged (R.O. Lachance). A lawn at Charlottetown, P.E.I. was affected (J.E. Campbell).

III. DISEASES OF VEGETABLE AND FIELD CROPS

BEAN

GRAY MOLD (Botrytis cinerea) was tr. at Millville, N.B. (S.R. Colpitts). Trace infections were seen in canning crops in Kings Co., N.S. but damage was negligible (K.A. Harrison). Similar trace infections were observed in Queen's Co., P.E.I. (J.E. Campbell).

ANTHRACNOSE (Colletotrichum lindemuthianum) was sev. on the variety Slicer at Tofield, Alta. (W.P. Skoropad). Damage was sl. at Millville, N.B. (S.R.C.). Infections were very light in P.E.I. crops (J.E.C.).

ROOT ROT (Fusarium solani f. phaseoli) was generally sl. in w. Ont. but, in a few sev. affected fields, losses were 15-20 bu./acre (G.H. Clark, R.N. Wensley (C.P.D.S. 41: 5, 363, 1961).

HALO BLIGHT (Pseudomonas phaseolicola) was tr.-mod. in the vicinity of Edmonton, Alta. (W.P. Campbell) and was widespread in beans for processing in the Lethbridge area (F.R. Harper). Halo blight and common blight were mod. on Seaway, Sanilac and Michelite in 23/30 fields examined in Kent Co., Ont. (M.D. Sutton). P. phaseolicola caused 25% leaf and 5% pod infection in 2 fields at Strathroy and 100% leaf and 25% pod infection in 2 at Brucefield, Ont. The organism was isolated and identified by phage typing (M.D.S.). Infection was 50% in a garden at Ste. Anne de la Pocatiere, Que. (R.O. Lachance). An early infection at Millville, N.B. threatened heavy losses (S.R.C.). Some sev. infections were seen in gardens in Kings Co., N.S., but canning crops were relatively free of infection (K.A.H.).

STEM ROT (Rhizoctonia solani). Specimens were received from Ste. Anne de la Perade, Champlain Co., Que. (D. Leblond).

WILT AND ROT (Sclerotinia sclerotiorum) was more prevalent than usual in w. Ont. In sev. affected fields losses were estimated to be 5-10 bu./acre (G.H.C., R.N.W. (C.P.D.S. 41:5. 363. 1961). Tr. infections were noted in a market garden nr. Charlottetown, P.E.I. (J.E.C.).

RUST (Uromyces phaseoli) was rarely seen in w. Ont. and losses were slight (G.H.C., R.N.W. (C.P.D.S. 41:5. 363. 1961).

COMMON BLIGHT (Xanthomonas phaseoli) was identified in 2 fields at Brucefield, Ont. Leaf infection was heavy and pod infection was 25% (M.D.S.).

FUSCOUS BLIGHT (Xanthomonas phaseoli var. fuscans (Burkh.) Starr & Burkh.). One affected plant was found in a 40-acre field of Sanilac grown for registration at Blenheim, Ont. (M.D.S.). This disease has not been previously reported in Canada (D.W.C.).

MOSAIC (virus) was tr. in plots at Fort Vermilion, Alta. (D.W.C.). It was of rare occurrence in w. Ont. and, when seen, was mainly on Michelite (G.H.C., R.N.W. (C.P.D.S. 41:5. 363. 1961). A sev. infection occurred on Kentucky Wonder at Kentville, N.S. in a garden near infected gladiolus (K.A.H.).

CHEMICAL INJURY from fertilizer was sev. enough to cause the replanting of a 10-acre field at Hillaton, N.S. (K.A.H.).

FROST INJURY. Frosts on 30-31 May caused sev. injury to beans and other crops at Ste. Clothilde, Que. (R. Crête).

SUNSCALD was general in July in the Chilliwack area, B.C. (H.N.W. Toms) and was the most important disorder of bean in w. Ont. in 1961. (G.H.C., R.N.W. (C.P.D.S. 41:5. 363. 1961).

WIND INJURY. Wind and drifting sand caused severe blasting in sandy fields at Cambridge, N.S. (K.A.H.).

BEET

SCAB (Streptomyces scabies) was sl. in several gardens nr. Edmonton, Alta. (W.P. Campbell); heavy on Detroit Red in a garden at Ste. Anne de la Pocatiere, Que. (R.O. Lachance), and sl. on Ruby Queen at Kentville, N.S. (K.A. Harrison).

BORON DEFICIENCY caused a trace of damage on Ruby Queen and Early Wonder at Kentville, N.S. (K.A.H.).

BROAD BEAN

FUSARIUM WILT (F. oxysporum f. fabae). An affected specimen was received from Chicoutimi, Que. (D. Leblond).

MOSAIC (Bean yellow mosaic virus). Infection was 10% in a 30-ft. row in a garden at Vancouver, B.C. (H.N.W. Toms).

BROCCOLI

SOFT ROT (Erwinia carotovora) caused about 2% damage in a crop in N.B. (S.R. Colpitts).

BRUSSELS SPROUTS

BLACKLEG (Phoma lingam). Two 60-acre fields north of Toronto had an average of 25% infection in early Aug. In both cases, brussels sprouts had been grown on the same land for three or more years. The plants were started in field seed-beds which had previously grown sprouts (L.V. Busch). This constitutes a first report to the Survey of P. lingam on this crop (D.W.C.).

BLACK ROT (Xanthomonas campestris) was sev. in a 4-acre field at St. Paul l'Ermite, Que. (J. Simard, R. Crête, T. Simard).

WHIPTAIL (Molybdenum deficiency). Slight- mod. symptoms were seen at the Exp. Farm, Fort Vermilion, Alta. (D.W. Creelman, W.P. Campbell).

CABBAGE

BLACK LEAF SPOT (Alternaria brassicicola, A. brassicae) was sl. in a 2-acre field nr. Ste. Clothilde, Que. (R. Crête). Infection was general but light on basal leaves of cabbage in the Maugerville, N.B. district. A few heads were found with a black rot of the inner leaves (K.M. Graham).

GRAY MOLD (Botrytis cinerea). Trace infections were seen at Maugerville, N.B. causing a rot of the inner leaves. Sclerotia and conidia were present (K.M.G.).

CLUB ROOT (Plasmodiophora brassicae). Infection was mod. on specimens received from Robson, B.C. (G.E. Woolliams). A small garden at Ste. Anne de la Pocatiere was completely destroyed (R.O. Lachance). The disease is widespread in Kings, Hants and Halifax counties, N.S. Control is maintained by 5-7 year rotations (K.A. Harrison).

DAMPING-OFF (Rhizoctonia solani) was tr. in transplanted seedlings at Coldbrook, N.S. (K.A.H.).

WHIPTAIL (Molybdenum deficiency) caused mod. damage at Fort Vermilion, Alta. (D.W. Creelman, W.P. Campbell). It was sev. at St. David's in w. Nfld. (O.A.O.).

BLACK SPECK (non-parasitic). Severely affected specimens were received from a Quebec City, Que. market. The disorder was associated with improper storage conditions (D. Leblond).

OEDEMA (non-parasitic) was sev. on specimens from St. Lambert, Que. (D.L.).

CARROT

ALTERNARIA BLIGHT (Alternaria dauci). Infection was 3-tr. 5-sl. 3-mod. 3-sev./33 fields on muck soil south of Montreal (J. Simard, R. Crête, T. Simard (C.P.D.S. 41:5. 353. 1961), and was widely distributed, causing some damage, in Kings Co., N.S. (K.A. Harrison).

BLACK ROT (Alternaria radicina) affected about 50% of a lot of carrots stored in sand nr. Victoria, B.C. (R.G. Atkinson).

CERCOSPORA BLIGHT (Cercospora carotae) was 3-sev. 3-mod. 6-sl./33 muck soil fields south of Montreal (J.S., R.C., T.S. (C.P.D.S. 41:5. 353. 1961). Infection was 10% in a field at Sheffield, N.B. (K.M. Graham, C. Smith). It developed very rapidly in Sept. and Oct. in Kings Co., N.S. Growers who sprayed with zineb or maneb obtained good control. Late in the season, Alternaria blight was also present in many fields (K.A.H.).

SOOTY MOLD (Chalaropsis thielavioides Peyrone) caused considerable damage to bagged, washed carrots in cool storage in a warehouse at Vancouver, B.C. (H.N.W. Toms, S.J. Hughes).

ROOT-KNOT NEMATODE (Meloidogyne hapla). Infestations of the northern root-knot nematode in the Thedford, Jeanette's Creek and Bradford Marshes was much the same as in 1960. Sev. damage was encountered, however, on sandy soil at Alliston, Ont. (W.B. Mountain, R.M. Sayre (C.P.D.S. 41:5. 376. 1961). Damage was 2-tr. 1-sl. 3-sl. - sev./33 muck soil fields south of Montreal, Que. (J.S., R.C., T.S.).

SCLEROTINIA ROT (S. sclerotiorum). Infected specimens were received from St. Damien, Bellechasse Co., Que. (D. Leblond). Trace infections were seen in Kings Co., N.S. (K.A.H.) and in a market garden and in storage at Charlottetown, P.E.I. (J.E. Campbell).

SCAB (Streptomyces scabies) was extremely sev. on a small percentage of carrots grown on peat soil at Caribou Bog, Kings Co., N.S. Potatoes grown on the same area the previous year were scabbed (K.A.H.).

BACTERIAL BLIGHT (Xanthomonas carotae) caused mod. damge in a field at Ste. Clothilde, Que. The organism, in this case, was obviously seed-borne (J.S., R.C., T.S.).

ASTER YELLOWS (Callistephus virus 1). Infections of 1-3% were observed in plots on the Exp. Farm, Fort Vermilion, (D.W. Creelman), and was prevalent in gardens in the Edmonton, Alta. area (W.P. Campbell). Foliage symptoms were sl. and hairy root tr. in a home garden in Ottawa, Ont. (D.W.C.). Infection was 1-5% and the average damage sl. in the Ste. Clothilde and Sherrington areas (J.S., R.C., T.S.); specimens were received from Beauport and Ange Gardien (D.L.); and ratings were 2% in the Lake St. John and Quebec areas, 4% at Ste. Anne de la Pocatiere, and 11% in the Gaspé region, Que. (R.O. Lachance). Infection was tr. at Oromocto, N.B. (S.R. Colpitts). Its incidence in Kings Co., N.S. returned to normal after the sev. outbreak in 1960. Damage ranged up to 5% in fields visited. Vectors were abundant by mid-June (K.A.H.). The disease was not as serious in P.E.I. as in 1960, although some fields showed 10-30% infection (J.E.C.). A fairly heavy infestation of leafhoppers developed in e. Nfld. in 1961 and mod. infections occurred at St. John's, Brigus and Eastport (O.A. Olsen).

CAULIFLOWER

CLUB ROOT (Plasmodiophora brassicae). A light infection was present on all the plants in a field at Cole Harbor, N.S. but damage was slight (K.A. Harrison).

DROP (Sclerotinia sclerotiorum) caused mod. losses in 4/6 fields examined in the St. Remi - St. Eustache regions, Que. (J. Simard, R. Crête, T. Simard).

BORON DEFICIENCY affected 10% of a crop at Sussex, N.B. (S.R. Colpitts) and was more sev. than usual in Kings and Halifax counties, N.S. Numerous cases of brown curds were reported (K.A.H.).

CHEMICAL INJURY. Drift of 2, 4-D from a sprayed grain field injured all plants, about one-half of them severely, in a field at East Hall's Harbor, N.S. (K.A.H.).

WHIPTAIL (Molybdenum deficiency). Damage was sev. at Hay River, N.W.T. and at the Exp. Farm at Fort Vermilion, Alta. in July. Curds were not forming and leaves were badly cupped and wrinkled. There appeared to be distinct varietal differences in the degree of symptom expression (D.W. Creelman, W.P. Campbell). Trace - sl. symptoms were seen at Cole Harbor, N.S. (K.A.H.). Interveinal chlorosis was sev. in young plants grown for transplants nr. Kensington, P.E.I. The condition was corrected with a spray application of sodium molybdate (J.E. Campbell). It was sev. at St. David's in w. Nfld. (O.A. Olsen).

CELERY

EARLY BLIGHT (Cercospora apii). Infections were rated as 3-tr.-sl. 3-mod./13 fields examined in the Ste. Clothilde - Sherrington - St. Remi, Que. districts. Average damage was slight (J. Simard, R. Crête, T. Simard).

DAMPING OFF (Rhizoctonia solani and Pythium spp.) caused an average loss of 20% in 20 cold frames inspected at Sherrington, Que. (R.C.).

LATE BLIGHT (Septoria apii). Infection ranged from 10-30% and damage was sl. in fields at Ste. Clothilde and St. Remi, Que. (J.S., R.C., T.S.).

BACTERIAL BLIGHT (Pseudomonas apii). Three fields of the variety Utah B-10, planted with plants from the same seed source, suffered mod. damage at Ste. Clothilde and Sherrington, Que. Field infections were 30-60% (J.S., R.C., T.S.).

PINK ROT (Sclerotinia sclerotiorum) caused slight damage in a field at St. Remi, Que. (J.S., R.C., T.S.)

ASTER YELLOWS (Callistephus virus 1) was tr. in 2/8 fields at Sherrington, Que. (J.S., R.C., T.S.).

CHEMICAL INJURY. The herbicide MCPB (4-(2-methyl, 4-chlorophenoxy) butyric acid) applied at an advanced stage of growth and at too high a concentration caused mod. damage in a field at Sherrington, Que. (J.S., R.C., T.S.).

CUCUMBER

LEAF SPOT (Alternaria spp.). Several specimens were received at Vancouver, B.C. in July and Aug. A. tenuis was associated with the spotting (H.N.W. Toms). Leaf blight, caused by A. cucumerina became prevalent at Harrow, Ont. toward the end of harvest (C.D. McKeen). Alternaria sp. was present on a specimen received from Lunenburg, N.S. (K.A. Harrison).

SCAB (Cladosporium cucumerinum). Incidence was high on the Burpee hybrid variety in several fields in the Harrow, Ont. area. As in 1959, low night temperatures predisposed the crop to scab. There is evidence that a longer crop rotation is required to reduce losses in this district (C.D. McK.). Many lots of slicing varieties offered for sale in the markets and retail stores at Ottawa, Ont. were affected (D.W. Creelman), and specimens were received at Ottawa for identification (P.K. Basu). Slight infection was seen in a plastic greenhouse at Iberville (R. Crête); it was common in the Quebec district and specimens were received from Thetford Mines and Asbestos, Que. (D. Leblond). Serious losses were reported in Rimouski Co., Que. whereas in the vicinity of Ste. Anne de la Pocatiere, where the variety Wisconsin SR-6 was grown, no disease was observed. The previous crop had been a total loss (R.O. Lachance). Crops in York, Sunbury and Queen's counties in N.B. were heavily infected and some were a complete loss (S.R. Colpitts). A crop at Bridgewater, N.S. was a complete loss. The disease destroyed young fruits as they set and caused cankers on the vines (K.A.H.). Light infections were seen on the scab-resistant slicing variety Highmoor at the Exp. Farm and in a market garden at Charlottetown, P.E.I. (J.E. Campbell).

BACTERIAL WILT (Erwinia tracheiphila) caused the loss of 15-20% of the plants in a 2-acre field nr. St. Catharines, Ont. (J.F. Bradbury).

POWDERY MILDEW (Erysiphe communis) appeared in June and July in a few greenhouse crops and was prevalent on several field crops in the Harrow-Leamington area in Ont. Effective control was obtained where crops were sprayed with maneb (C.D. McK.). It was frequently seen as trace infections in Kings Co., N.S. but rarely caused trouble. (K.A.H.).

ROOT ROT (Fusarium sp.) killed plants in July and Aug. in market gardens in the Lulu Island and Vancouver, B.C. districts (H.N.W.T.).

ANGULAR LEAF SPOT (Pseudomonas lachrymans) was sl.-mod. in a market garden at Peace River, Alta. (D.W.C., W.P. Campbell) and was mod. in one field examined in s. Alta. (P.E. Blakeley). It was sl. in a plastic greenhouse in mid-June at Iberville, Que. The seed had not been treated with mercuric chloride (R.C.). Several infected garden crops were reported in Kings Co., N.S. (K.A.H.).

DOWNY MILDEW (Pseudoperonospora cubensis). Infection was sl. in 1 field in s. Alta. (P.E.B.). This disease has been previously reported in Canada only from Ont. and Que. (D.W.C.).

DAMPING-OFF (Rhizoctonia solani) affected 20% of approx. 2000 plants in a greenhouse in the Fraser Valley, B.C. (R.G. Atkinson).

WILT (Sclerotinia sclerotiorum). Losses of 50% occurred in 2 large commercial greenhouses at Summerland, B.C. in May. Infection was seen on both fruit and stems and sclerotial development was abundant (G.E. Woolliams).

MOSAIC (virus). Trace infection was seen in plots at the Exp. Farm, Fort Vermilion, Alta. (D.W.C., W.P.C.). Mosaic was light in a plastic greenhouse at Iberville, Que. (R.C.). In N.S., little mosaic was seen in commercial fields but on the Exp. Farm, Kentville, it was sev. and by Sept. most varieties were dead, although several mosaic-resistant varieties such as Ashe and Jet were still green. Apparently there is an infected perennial host nearby as a similar situation occurred there in 1959 (K.A.H.).

NECROSIS VIRUS was found in s.-w. Ont. in 2 greenhouses where it had been found in previous years. Damage was slight (C.D. McK.).

CHEMICAL INJURY, caused by an excess of the nematicide, D-D, resulted in sev. stunting of plants at Kingston, N.S. (K.A.H.).

HEAT CANKER. Wilting, and constriction of stems at ground level, occurred during periods of high soil temperatures at Saskatoon, Sask. (T.C. Vanterpool).

LOW TEMPERATURE INJURY caused mod. damage to foliage in a market garden at Peace River, Alta. (D.W.C., W.P.C.).

EGGPLANT

ROOT-KNOT NEMATODE (Meloidogyne hapla) was responsible for sl.-sev. injury to 17 samples received from the Harrow-Leamington area of Ont. (W.B. Mountain, R.M. Sayre (C.P.D.S. 41:5. 376. 1961).

ROOT-LESION NEMATODE (Pratylenchus penetrans) was present in 65/65 fields sampled in the Harrow-Leamington area of Ont. (W.B.M., R.M.S. (C.P.D.S. 41:5. 376. 1961).

WILT (Verticillium dahliae) reduced yields in a number of crops in s.-w. Ont. (C.D. McKeen).

LETTUCE

GRAY MOLD (Botrytis cinerea) was much less troublesome than usual in Kings Co., N.S. Trace - 1% infections were seen at Grand Pré in July (K.A. Harrison).

DOWNY MILDEW (Bremia lactucae). Infection was rated 1-tr. 2-sl. -mod./17 muck soil fields south of Montreal (J. Simard, R. Crête, T. Simard (C.P.D.S. 41:5. 353. 1961). Several fields at Cole Harbor, N.S. were 100% infected in Sept. but plants were heading and would produce an acceptable yield (K.A.H.).

BIG VEIN (Olpidium sp. and tobacco necrosis virus associated). Three fields of early summer lettuce at Leamington, Ont. failed to head properly where infection was 50% or higher (C.D. McKeen).

BOTTOM ROT (Rhizoctonia solani) was 1-tr./11 fields examined at Sherrington, Que. (J.S., R.C., T.S. (C.P.D.S. 41:5. 353. 1961). A light infection was present in a transplanted crop of 10,000 heads at Grand Pré, N.S. (K.A.H.).

DROP (Sclerotinia sclerotiorum). Trace infections were seen in head lettuce in plots on the Exp. Farm, Fort Vermilion, Alta. (D.W. Creelman). It was 1-tr. 2-sl.-mod./17 fields examined nr. Montreal (J.S., R.C., T.S. (C.P.D.S. 41:5. 353. 1961). Commercial plantings in Kings Co., N.S. were comparatively free of drop and none was seen in the extensive plantings at Cole Harbor, Halifax Co. (K.A.H.).

ASTER YELLOWS (Callistephus virus 1). Trace - sl. infections were seen in head lettuce at the Exp. Farm, Fort Vermilion, Alta. (D.W.C.). It was 3-tr./14 muck soil fields in the Sherrington - Farnham area (J.S., R.C., T.S.), and ranged from 12-14% in aster yellows gardens at Caplan and St. Joachim, Que. (R.O. Lachance). Infection was tr. in a garden at Oromocto, N.B. (S.R. Colpitts). A late, field-sown planting at Grand Pré, N.S. was mod. infected. No leafhopper control had been applied. At Cole Harbor, where the lettuce crop was a complete loss in 1960, most growers made weekly applications of 5% malathion dust and obtained good control. One unprotected field showed 60% infection and a few, where control measures were not carefully applied, showed 5-20% yellows (K.A.H.). Unsprayed fields in P.E.I. showed 15-40% infection but losses were generally lighter than in 1960 (J.E. Campbell).

MOSAIC (virus) was 1-tr./11 fields at Sherrington, Que. (J.S., R.C., T.S.). Infection of 3-5% in a market garden at Cornwall, P.E.I. was unusually high for the province (J.E.C.).

CALCIUM DEFIENCY was rated as 1-tr. 3-sev./14 fields at Sherrington and Farnham, Que. Some recovery of plants followed a spray application of calcium carbonate (J.S., R.C., T.S.).

TIP-BURN (physiological) was 2-mod./11 early-seeded fields at Sherrington, Que. (J.S., R.C., T.S.).

MELON

LEAF SPOT (Alternaria cucumerina) caused early defoliation of a few unsprayed crops in s.-w. Ont. Adequate control was obtained with zineb or maneb sprays (C.D. McKeen).

ANTHRACNOSE (Colletotrichum lagenarium) was sev. on a few unsprayed crops in s.-w. Ont. Foliage, stem and fruit infections were observed (C.D. McK.).

MUSKMELON

WILT (Fusarium oxysporum f. melonis). Variable losses were found in a few fields where resistant varieties were not being grown. Such highly-resistant varieties as Iroquois, Harvest Queen and Harper hybrid were unaffected (C.D. McKeen).

ONION

PURPLE BLOTCH (Alternaria porri) was much more sev. than usual in most sweet Spanish onion crops in Essex Co., Ont. Regular spray applications with maneb reduced damage appreciably (C.D. McKeen).

NECK ROT (Botrytis allii). Losses were comparatively light in the Okanagan Valley, B.C. due to excellent weather conditions before and during harvest (G.E. Woolliams). Infected specimens were received from Levis, Que. (D. Leblond). Traces only were seen in Kings Co., N.S. Its incidence in the area has been very low in the past two hot, dry growing seasons (K.A. Harrison).

GRAY MOLD (Botrytis cinerea) was present, causing mod. damage in most unsprayed onion fields south of Montreal, Que. (J. Simard, R. Crête, T. Simard (C.P.D.S. 41:5. 353. 1961). The dried tops of mature onions on the Caribou Bog, Kings Co., N.S. were full of sclerotia of B. cinerea. No bulb rot was evident (K.A.H.).

BULB AND STEM NEMATODE (Ditylenchus dipsaci). Nine acres on 3 farms in the Leamington, Ont. area were infested (W.B. Mountain, R.M. Sayre (C.P.D.S. 41:5. 376. 1961).

BULB ROT (Fusarium oxysporum f. cepae). Infection ranged from 1-10% in fields in the Kelowna, B.C. district (G.E.W.) and was 2% in a field of several acres nr. Winnipeg, Man. (B. Peturson). It was tr. on Autumn Spice at Aylesford, N.S. (K.A.H.).

ROOT-KNOT NEMATODE (Meloidogyne hapla). Two acres of onions on the Thedford Marsh, Ont. were badly stunted (W.B. Mountain, R.M. Sayre (C.P.D.S. 41:5. 376. 1961).

DOWNY MILDEW (Peronospora destructor) was present in most onion fields in the muck soil area south of Montreal, Que. and the average damage was rated as moderate. It was sev. in several unsprayed fields (J.S., R.C., T.S.). Trace infections were seen in most gardens at Ste. Anne de la Pocatiere, Que. Premature death of tops was prevalent but proper curing could save the crops. Some gardens were 60% infected (R.O. Lachance).

ROOT-LESION NEMATODES (Pratylenchus spp.) were recovered from onions from the Okanagan Valley, B.C. (R.H. Mulvey (C.P.D.S. 41:5. 357. 1961).

DAMPING-OFF (Pythium sp.) occurred in thickly-planted fields of Silverskin at Kelowna, B.C. following unusually heavy rains in May. As high as 50% of the plants were killed in some fields. Damping-off of onions has not been previously observed in the Okanagan Valley (G.E.W.).

SMUT (Urocystis cepulae) was more widespread in the Kelowna, B.C. district than in 1960 but the rate of infection was generally lower. Some untreated plantings, however, had as high as 60% infection (G.E.W.).

YELLOW DWARF (virus). Up to 50% of the early bunching onions in several fields at La Salle, Ont. were affected and rendered unfit for sale. The virus overwintered in the bulbs which had been purchased from growers in the Leamington and Jeanette's Creek marshes (C.D. McK.).

PARSNIP

CANKER (Itersonilia perplexans). A serious outbreak of canker was observed in parsnips from a 20-acre field in Kings Co., N.S. Some barrels in storage had 30% of the roots rendered unfit for sale and it is feared that losses in the crop will probably reach 4000 bushels. The source of infection has not been determined. No wild parsnips grow in the area and the field was exceptionally free of weeds (K.A. Harrison).

ASTER YELLOWS (Callistephus virus 1). Several diseased plants were noted in a garden nr. Edmonton, Alta. (W.P. Campbell).

PEA

FOOT ROT (Ascochyta pinodella) was tr.-mod. in several fields in the Ottawa Valley, Ont. One field showed 25% damage (V.R. Wallen (C.P.D.S. 41:5. 365. 1961).

LEAF AND POD SPOT (Ascochyta pisi) was tr. in 1 small field of Arthur peas at Ottawa, Ont. (V.R.W. (C.P.D.S. 41:5. 365. 1961). It was observed in 2 gardens at Moncton, N.B. (S.R. Colpitts). A specimen was seen at Kentville, N.S. but none was observed in commercial fields (K.A. Harrison). It was lighter than usual in P.E.I., no doubt due to unusually dry conditions in midsummer (J.E. Campbell).

GRAY MOLD (Botrytis cinerea) occurred at Berwick, N.S. in a field with very heavy growth. Infection started in senescent leaves and spread to stems. The overall damage was light (K.A.H.).

ANTHRACNOSE (Colletotrichum pisi). Trace infections were seen in several fields in the Ottawa Valley, Ont. (V.R.W. (C.P.D.S. 41:5. 365. 1961).

POWDERY MILDEW (Erysiphe polygoni) was sev. on late peas and general on all peas late in the season in the Edmonton, Alta. region (W. P. Campbell). Most garden peas showed mod.-sev. infections in the latter part of the season in the region of Saskatoon (R. J. Ledingham), and specimens were received from St. Front, Sask. (T. C. Vanterpool). Infection was heavy on Little Marvel in a garden at Winnipeg, Man. (H. A. H. Wallace). It was general in garden plantings in N.B. (S.R.C.).

MYCOSPHAERELLA BLIGHT (M. pinodes) was tr.-mod. in several fields in the Ottawa Valley, Ont. (V.R.W. (C.P.D.S. 41:5. 365. 1961).

DOWNY MILDEW (Peronospora pisi) was 2-tr./11 canning crop fields at Taber and tr. in 2 garden plots at Lethbridge, Alta. (F.R. Harper). A light, general infection occurred in the Berwick, N.S. area following a period of cool, damp weather in July. A late planting of Sweet Sixteen was heavily infected in Sept. Crop was reduced and quality was lowered (K.A.H.).

SCLEROTINIA BLIGHT AND ROT (S. sclerotiorum) was seen in 2 fields in the Ottawa Valley, Ont. It had not been previously recorded in Ont. (V.R.W. (C.P.D.S. 41:5. 365. 1961).

RUST (Uromyces fabae). Crops in several fields in the Ottawa Valley, Ont. had tr.-mod. infections on leaves and stems (V.R.W. (C.P.D.S. 41:5. 365. 1961). It was tr. on most varieties in the Berwick, N.S. area. It appears each season but does little damage (K.A.H.).

ROOT ROT (various pathogens). Slight damage was seen at Hay River, N.W.T. and in plots at the Exp. Farm, Fort Vermilion, Alta. (D.W. Creelman, W.P.C.). Root rot was the cause of the complete loss of over 100 acres of canning peas in 11 fields at Taber, Alta. Isolations from roots collected in the 11 Taber fields yielded a high frequency of Fusarium spp. from all fields. Rhizoctonia solani and Pythium spp. were recovered in low frequency from 7 of the fields. Infection at Lethbridge was tr.-sl. (F.R.H.). R. solani caused slight damage in a garden at Moose Jaw, Sask. (R.J.L.). Fusarium spp. caused tr.-25% damage in gardens in N.B. (S.R.C.) and a light infection of Fusarium occurred in a garden plot at Kentville, N.S. (K.A.H.).

MOSAIC (virus). Trace amounts were seen in a market garden at Hay River, N.W.T. (D.W.C., W.P.C.), and in Creamette in a field on the C.E.F., Ottawa, Ont. (V.R.W.). Sweet Sixteen was infected in late plantings in a garden at Kentville, N.S. (K.A.H.).

STREAK (virus) was sev. in a field of Arthur at the C.E.F., Ottawa, Ont. Half the plants failed to set seed. A field of Creamette at the same location had tr. infection (V.R.W. (C.P.D.S. 41:5. 365. 1961). The variety Peter Pan was 50% infected in 2 fields at Berwick, N.S. Both were from the same seed source. The variety Alderman was sev. affected in a 5-acre field in Pictou Co., N.S. (K.A.H.).

CHEMICAL INJURY. Injury from the herbicide Avadex (2, 3, dichloroallyl diisopropylthiocarbamate), carried over in the soil from a spring application in 1960, occurred in 1 field of peas planted in 1961. Symptoms included decreased germination, stunting, and thick, distorted leaves (W.C. McDonald).

PEPPER

ANTHRACNOSE (Colletotrichum coccodes). Infected fruits were found, late in Sept., in several fields nr. Harrow, Ont. (C.D. McKeen).

DAMPING-OFF (Rhizoctonia solani) caused the loss of a few seedling plants in May at Fonthill, Ont. (G.C. Chamberlain).

WILT (Verticillium dahliae). Scattered infections occurred in several fields in the Harrow - Leamington area in s.-w. Ont. (C.D. McK.).

BACTERIAL SPOT (Xanthomonas vesicatoria). Seed-borne infection gave rise to a few infected plants in propagation beds in s.-w. Ont. Field-setting of such plants resulted in some field infections (C.D. McK.).

ALFALFA MOSAIC VIRUS was found as tr.-1% infections in several fields in Essex and Norfolk counties, Ont. (C.D. McK.).

CUCUMBER MOSAIC VIRUS. A few infected plants were observed in each of 4 fields in Essex Co., Ont. (C.D. McK.).

TOBACCO ETCH caused 100% infection in late summer in a few fields in the Harrow - Leamington, Ont. district (C.D. McK.).

BLOSSOM-END ROT (physiological) affected about 5% of the plants in a garden at New Minas, N.S. (K.A. Harrison).

POTATO

The data presented in Tables 1-3, pertaining to Seed Potato Certification in Canada were supplied by the Plant Protection Division, Production and Marketing Branch, Canada Department of Agriculture. As in 1960, the principal causes of rejection of seed fields were the bacterial diseases, ring rot and blackleg, and the virus diseases, mosaic and leaf roll. It must be pointed out that the majority of the reports of diseases presented in this section refer to and reflect accurately the disease situation in the seed potato industry. Similar reports on the large table stock acreage are not readily available and it must be assumed that the disease picture in that crop would be more serious than in the seed crop where more stringent control measures are practiced (D.W. Creelman)

Table 1. Seed Potato Certification
Acreage Passed by Variety and Province - 1961

Variety	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.-Alta.	B.C.	Totals
Sebago	22,049	32	467	49	298	12	27	22,934
Kennebec	1,424	192	4,729	683	150	197	113	7,488
Katahdin	620	8	4,799	217	158		4	5,806
Netted Gem	19	37	1,169		4	1,448	1,656	4,333
Red Pontiac	144	24	2,174			417	32	2,791
Irish Cobbler	2,259	31	63	48	38	281		2,720
Green Mountain	430	26	96	1,435	6		45	2,038
Fundy	576	23	138		5	15	2	759
Keswick	48	17	351	179	118		3	716
Norland			1		14	585	13	613
Cherokee	208	19	70	43	36	11		387
Warba	55	11	4	1	9	192	95	367
Waseca						153	14	167
Chippewa	3	1	39		90	2		135
Avon	36	13	40		2			91
Huron		6	27		24		20	77
Canso	54			1				55
Early Ohio						54		54
Others	19	20	27	10	1	129	74	280
Total	27,944	460	14,194	2,666	953	3,496	2,098	51,811
1960 Crop	26,375	529	13,734	4,819	1,078	3,383	3,021	52,939

Table 2. Seed Potato Certification
Summary of Fields and Acres Entered and Passed - 1961

	FIELDS			ACRES		
Province	Entered	Passed	Percent Passed	Entered	Passed	Percent Passed
P.E.I.	5,518	4,857	88.0	31,626	27,944	88.3
N.S.	295	262	88.8	541	460	86.0
N.B.	2,008	1,827	90.9	16,074	14,194	88.3
Que.	1,082	663	61.2	4,849	2,666	54.9
Ont.	471	354	75.1	1,451	953	65.6
Man.	147	131	89.1	1,876	1,723	91.7
Sask.	84	76	90.4	409	333	81.4
Alta.	249	158	63.4	2,179	1,440	66.1
B.C.	567	381	67.1	2,870	2,098	73.1
Totals	10,421	8,709	83.6	61,875	51,811	83.7

Table 3. Seed Potato Certification
Fields Rejected on Field Inspection - 1961

Prov.	Leaf Roll	Leaf Mosaic	Bacterial Ring Rot	Black-leg	Wilts	Adjacent Diseased Fields	Misc.	Total
P.E.I.	19	56	57	123	27	18	233	533
N.S.	13	3			1	5	3	25
N.B.	2	57	51	8			22	140
Que.	14	135	141	52	2	15	12	371
Ont.	53	16	4	17	12	10	8	120
Man.	2		6		2		6	16
Sask.			1	1			3	5
Alta.			11			1		12
B.C.	102	1	5	10	1	13	45	177
Total	205	268	276	211	45	62	332	1,342

EARLY BLIGHT (Alternaria solani) was generally sl.-mod. in B.C. with a few sev. infections in the Kootenays and Okanagan districts (N. Mayers). Some late infections were seen in n. Alta. (E.C. Reid) while 47/178 fields in s. Alta. showed sl.-mod. infections (R.P. Stogryn). Tr. infections were recorded in n. Sask. (A. Charlebois) and it was sl.-mod. in a few fields in n.-w. Ont. (D.J. Petty). Early crops in Essex Co., Ont. suffered considerable foliage injury where top growth was heavy (C.D. McKeen). Infection was 49-sl. 2-mod./75 fields in e. Ont. (E.H. Peters). Its incidence in Que. was much greater than in 1960, especially in the Chicoutimi and Lake St. John regions. Ratings were 202-sl. 30-mod. 5-sev./1,119 fields (G. Ethier). It was sev. on Green Mountain and Keswick in St. Andre sandy soil; sl.-mod. on many seedlings at Ste. Foy and sev. on F5552 at L'Assomption, Que. (H. Genereux). Incidence in N.B. was less than in recent years (C.E. Robinson). In N.S., it was mod. on Keswick in Antigonish Co. and in all fields of Hunter in Colchester Co. (R.C. Layton). Infection was heavy on several varieties at Bay Roberts, Nfld. (O.A.O.).

GRAY MOLD (Botrytis cinerea) affected the foliage of Keswick in 1 field in the Barrie, Ont. district (H.W. Whiteside).

BLACK DOT (Colletotrichum coccodes). The pathogen was isolated from many discolored stems in the Guelph, Ont. district by L.V. Busch (G.B. Scott). Twelve % of 172 sampled Green Mountain tubers bore sclerotia at Ste. Anne de la Pocatiere (J. Santerre). Trace infections developed on potato haulms in a greenhouse at Kentville, N.S. (C.O. Gourley).

BACTERIAL RING ROT (Corynebacterium sepedonicum) was the greatest single cause of rejection of certified seed potato fields in Canada in 1961 (D.W. Creelman). It was found in 5 seed fields in B.C. and 35 others were rejected on suspicion of infection. Twenty-six farms growing table stock were found infected (N.M.). In s. Alta., 11/178 fields were rejected (R.P.S.) and in Sask., 1/84 seed fields were affected although ring rot was sev. in a number

of table stock fields (A.C.). It caused the rejection of 6/147 fields in Man. (D.J.P.) and of 2/64 fields in w. Ont. (G.B.S.). In Que., 141/1,119 fields were infected. This marked decrease, from 222/1,039 fields in 1959 is largely attributed to the greater use of quaternary ammonium disinfectants and to provincial aid with equipment for sterilization (G.E.). Ste. Anne de la Pocatiere, Que., all seedlings from Fredericton and many varieties, when knife-inoculated, showed wilt symptoms and striking tuber symptoms. Weather conditions were highly favorable for symptom expression. Teton showed 10% tuber infection while Saranac was practically free of symptoms (H.G.). Ring rot incidence in N.B. was less than in 1960; 51/2,008 fields were rejected (C.E.R.) while a decided increase was recorded in P.E.I. where 57/5,518 fields were rejected. Sixty-two other fields were turned down as contact cases. The increase is believed due to the increased use of mechanical seed-cutting and planting machinery (G.C. Ramsay). It was found in only 1 field in N.S. (R.C.L.). Ring rot was widespread in Nfld. and was found in many localities where it had not been previously known, including the Codroy Valley, Eastport, St. John's, Bay Roberts, Musgravetown, Lewisport and Brigus. Vine symptoms were quite evident but tuber rot was not heavy (O.A.O.).

POTATO ROT NEMATODE (Ditylenchus destructor) was identified in tubers from Ellerslie, P.E.I. This does not represent an extension of its known distribution in the province (R.H. Mulvey (C.P.D.S. 41:5. 357. 1961).

BLACKLEG (Erwinia atroseptica). Incidence in the coastal areas of B.C. increased over 1960 levels. Six seed fields in the province were rejected (N.M.). A tr. infection was seen in Warba at Hay River, N.W.T. and it was tr.-sl. at Peace River, Alta. (D.W.C., W.P. Campbell). Although occurring in tr. amounts only in n. Alta. (E.C.R.), it was rated tr.-sl in 137/178 s. Alta. fields (R.P.S.). It was found in 22% of Sask. seed fields (A.C.); was tr. in some Man. fields, and was found in 20% of inspected fields in n.-w. Ont. (D.J.P.). Eleven/312 fields in the Barrie, Ont. district were rejected; it was seen in most fields in the London, Ont. district (F.J.H.), and in most Sebago fields in the Guelph district (G.B.S.). It was generally tr. in e. Ont. with 3/71 fields rejected (E.H.P.). A survey of approximately 1,000 acres of potatoes in the Alliston, Ont. area, during the month of August, revealed a high incidence of bacterial blackleg, the amount varying from a trace to over 50% in some fields. Plants in advanced stages of infection were black to their stem tips and many of the tubers were rotting in the hills. (L.V. Busch). In Que., 660/1,119 fields had some infection with 52 fields rejected (G.E.). Eight fields were rejected in N.B. Tuber rot was prevalent in Red Pontiac (C.E.R.). It was most prevalent in Sebago in N.S. where 68/295 seed fields were affected (R.C.L.), and, in P.E.I., blackleg was the principal cause of rejection of seed fields. There was an increased incidence over 1960 (G.C.R.). At Charlottetown, Norgleam was found to be highly susceptible to blackleg. Tuber rot was prominent (J.E. Campbell). Infection was 1-10% in the Codroy Valley, at Terra Nova, Lethbridge and St. John's, Nfld. (O.A.O.).

SOFT ROT (Erwinia carotovora). The amount of bacterial soft rot seen in the Barrie, Ont. district was somewhat less than usual (H.W.W.). A 5,000 bbl. storage house of Kennebec at Sheffield Mills, N.S. had scattered pockets of breakdown. Damp potatoes with a trace of late blight were stored in large bins. Kennebec is subject to soft rot when not properly dried before storage (K.A. Harrison).

DRY ROT (Fusarium spp.). Ten % of the tubers of a planting of Warba at Saanichton, B.C. rotted in the rows. F. caeruleum was isolated from the affected tubers (R.G. Atkinson). Badly rotted specimens of Irish Cobbler were received from a chip manufacturer in s. Man. The accompanying letter indicated considerable losses (D.W.C., J.W. Scannell). The incidence of F. sambucinum f. 6 was high, up to 44%, in seed brought to w. Ont. from P.E.I. (G.B.S.). Inspectors in e. Ont. reported appreciable losses in imported P.E.I. table stock potatoes (D.W.C.). Losses in the 1960 Que. crop ranged from 2-7% in storage. Keswick was the most susceptible variety, especially when bruised (B. Baribeau) It was sl. in 4 bin lots of Keswick from the 1961 Que. crop. (G.E.). In N.B. a few lots of Sebago and Keswick from the 1960 crop showed small percentages of dry rot (C.E.R.). Storages losses caused by F. sambucinum f. 6 were sev. in Prince Co., mod. in Queens Co. and sl. in Kings Co. in the 1960 P.E.I. crop. It appears not to be serious in the 1961 crop (G.W. Ayers).

ROOT ROT (Fusarium sambucinum f. 6). The variety Fundy, in a planting nr. Saskatoon, Sask., had a considerable number of wilted plants with the roots and stem-bases rotted. Numerous isolations showed F. sambucinum to be dominant (R.J. Ledingham, W.L. Gordon).

STEM-END BROWNING AND VASCULAR DISCOLORATION (Fusarium and Colletotrichum spp. associated). Two carloads of Netted Gem table stock from N.B. showed 15% of this disorder three days after arrival in Toronto. It resembled net necrosis but Fusarium and Colletotrichum were isolated (K.M. Graham).

SILVER SCURF (Helminthosporium atrovirens) was found, especially on smooth-skinned varieties, in the Barrie, Ont. district (H.W.W.). It was sl. in a few Green Mountain seed lots in Que. (G.E.), and a random sample of Irish Cobbler tubers from St. Joachim de Tourelle in the Gaspe were 100% infected (J.S.).

RHIZOCTONIA (Pellicularia filamentosa). In B.C., 88% of the seed fields were infected, with some sev. infections in the Interior and on Vancouver Island (N.M.). Sl. infection was seen on Warba at Hay River, N.W.T. (D.W.C., W.P.C.). It was tr. at Fort Vermilion and sl. in 3 fields at Peace River, Alta. (D.W.C.); sl.-mod. in all certified fields in n. Alta. (E.C.R.) and in 95% of s. Alta. fields (R.P.S.). In Sask., it was mod. in some irrigated fields (A.C.). In Ont., it was present in all varieties in the Barrie area (H.W.W.); occurred in most fields in the London district (F.J.H.); caused about 5% damage in the Guelph district (G.B.S.), and was rated 56-sl. 14-mod./75 e. Ont. fields (E.H.P.). In Que., 184/1,119 inspected fields were affected. In bin inspections, it was rated 208-sl. 35-mod. 5-sev. (G.E.). Infection was sl.-25% on many Fredericton

seedlings grown at Ste. Anne de la Pocatiere and L'Assomption, Que. (H.G.). Losses were negligible in N.B. (C.E.R.) and in N.S. it was sev. in only 1 seed field of Bliss Triumph although it was reported to be sev. in many table-stock fields, causing stand reductions of 5-10% in many early-planted crops (R.C.L.). Rhizoctonia stem canker caused considerable damage and reduced yields in e. Nfld. (O.A.O.).

POCKET ROT (Phoma sp.). One tuber from an unnamed potato seedling at Fredericton, N.B. developed a depressed area about the size of a thumb nail in which a flaky, black rot developed. A Phona-like fungus was isolated (K.M.G.). The fungus was examined at Ottawa but specific determination could not be made. Phoma tuberosa Melhus, Rosenbaum and Schultz has been described (Jour. Agr. Res. 7:213-254. 1916) as causing a rot with similar symptoms in Maine. It is considered to be of little economic importance (D.W.C.).

LATE BLIGHT (Phytophthora infestans). One mod. infection in the Interior and 2 mod. cases on the Lower Mainland were seen in B.C. (N.M.). A few sl.-sev. infections occurred in n.-w. Ont. (D.J.P.); it was widespread in the Barrie district (H.W.W.); sl. in a few fields in London area (F.J.H.); general, though not serious, with some tuber rot, in w.-Ont. (G.B.S.); and 10-sl. 4-mod./75 seed fields and widespread on table stock in e. Ont. (E.H.P.). It was first observed in the Mont Laurier district of Que. on 18 July, about 2 weeks earlier than in 1960. Spread was general and steady through late July and Aug. and by late Aug. it was epidemic throughout the province. Tuber infection was seen in all varieties, including the blight-resistant Kennebec and Keswick. Foliage infection in unsprayed fields was 15-100% and losses 15-30% of the crops. Tuber rot was reported in 62% of the bin lots inspected in the fall (G.E.). In N.B., late blight was first observed on 12 July in Victoria Co. Some spread occurred in July and early Aug. and top-killing began by mid-Aug. Little, if any, tuber rot occurred in lots top-killed by the first week in Sept., but in lots top-killed later, rot ranged from 0-50%. Katahdin was the most seriously affected variety followed by Kennebec. Losses were considerable (C.E.R.). Late blight was first reported in N.S. in the Scott's Bay area on 20 July. By 17 Aug. it was general in that district and, by Sept., throughout the province. Tuber rot reached serious proportions with some bin lots 100% infected. Total losses may range from 15-25% of the seed crop (R.C.L.). The first infections were observed about a month later than normal in P.E.I. Total infection was negligible until mid-Sept. Tuber losses in the province were sl. (L.C.C.). A mod.-sev. infection was seen in 1 field at Manuels, Nfld. (O.A.O.).

LEAK (Pythium ultimum). Considerable losses were sustained in crops harvested in hot weather in the Fraser Valley, B.C. (N.M.). Four badly infected tubers were received from Levis, Que. (D.L.). Infections was sl. in a 10-acre field of Green Mountain and in some Maine seedlings at Ste. Anne de la Pocatiere, Que. (H.G.). Some leak developed in a lot of Fundy, harvested during warm weather, at Bedford, P.E.I. (J.E.C.).

STEM ROT (Sclerotinia sclerotiorum) was tr. on Sebago at the Exp. Farm, St. John's West, Nfld. (O.A.O.).

POWDERY SCAB (Spongospora subterranea) was generally sl. in the 1960 Que. crop in storage but 4 bin lots in the Lake St. John area showed mod. amounts (B.B.). It was sl.-mod. in a few bins from the 1961 Que. crop (G.E.). It was tr. on Green Mountain in wet soil at Ste. Anne de la Pocatiere, Que. (H.G.). and sev. in 2 plots at Scott's Bay, N.S. (R.C.L.).

COMMON SCAB (Streptomyces scabies) was mod. on specimens of Pontiac from Nakusp, B.C. (G.E. Woolliams) and some sev. infections were seen in the Cariboo and c. B.C. (N.M.). It was tr. in plots at Fort Vermilion, Alta. (D.W.C.). Some scab was present in all crops of Warba and some sl. infections were seen in Netted Gem fields in n. Alta. (E.C.R.), while it was rated 18-tr.-sl./178 s. Alta. fields (R.P.S.). Some lots were sev. affected in Sask. (A.C.) and it was sl.-mod. in a few fields in Man. (D.J.P.). It was found in many seed lots in Ont. (H.W.W., F.J.H., E.H.P.). Scab was generally sl. in the stored 1960 crop in Que. though a few infections of 30-70% were found (B.B.). It was less prevalent in the 1961 crop, although a few serious infections ranging up to 60% were seen (G.E.). In N.B. its incidence was somewhat lower than in recent years (C.E.R.) and it was generally mod. in P.E.I. (G.C.R.). Infection was variable in Nfld., ranging from light to heavy (O.A.O.).

WART (Synchytrium endobioticum). Disease development was light in e. Nfld. in 1961 due to the dry summer. Rainfall was more abundant in w. Nfld. but infections were scattered (O.A.O.).

WILTS (Verticillium albo-atrum, Fusarium spp.). In B.C., 2 fields were rejected in the coastal area (N.M.). It was present in 32% of the fields inspected in n. Alta., mostly on Netted Gem (E.C.R.) and in 46/178 s. Alta. fields (R.P.S.). In Sask., it was tr.-1% in 31% of the seed fields (A.C.) and in Man. it was tr. in 13% of the fields inspected, causing the rejection of two (D.J.P.). Wilts are increasing in the Barrie, Ont. area, especially in Kennebec and Keswick (H.W.W.). In e. Ont., 9/71 fields were rejected (E.H.P.). A considerable increase in the incidence of wilts over 1960, especially in Kennebec and Keswick, was noted in Que. (G.E.). A 10-acre field of Kennebec at Ste. Catherine, Portneuf Co., Que. was 5% infected (H.G.). Sixty-two/2,008 fields in N.B. had some infection (C.E.R.) while in N.S. 88/295 fields were affected (R.C.L.). A table stock field of Netted Gem at Coldbrook, N.S. had 50% of the plants affected (C.L, L.). There was a decrease in the overall incidence of wilts in P.E.I. in 1961 although more fields were rejected (G.C.R.). A 30% infection was seen in Kennebec at Freetown, P.E.I. (G.W.A.). Wilt was tr. on Fundy at the Exp. Farm, St. John's West, Nfld. (O.A.O.).

LEAF ROLL (virus) was again a problem in the Fraser Valley, B.C. and there was a considerable increase in the Okanagan Valley (N.M.). Sl. amounts were seen in plots at Fort Vermilion, Alta. (D.W.C.); it was tr. in 45% of the fields inspected in n. Alta. (E.C.R.) and tr.-sl. in 85/178 s. Alta. fields (R.P.S.). It was tr.-sl. in 55% of Sask. fields (A.C.) and tr. in 17% of inspected fields in Man. (D.J.P.). It was the most serious disease encountered in the Barrie, Ont., district, causing the rejection of 29/312 fields (H.W.W.) and it also caused the rejection of 22 fields in w. Ont. (G.B.S.). In e. Ont.

2/71 fields were rejected (E.H.P.). In Que., leaf roll increased slightly over 1960 (G.E.). Seedlings F 5649 and F 5663 were sev. affected in regional trials at a number of Que. stations (H.G.). It was tr. in 107/2,008 N.B. fields (C.E.R.); it showed a definite increase over 1960 in N.S. (R.C.L.), and increased slightly in P.E.I. (G.C.R.).

MOSAIC (virus) was not a problem in B.C. in 1961 (N.M.). It was tr. at Hay River, N.W.T. and sl. at the Exp. Farm, Fort Vermilion, Alta. (D.W.C., W.P.C.). Tr. infections occurred in seed fields in both n. and s. Alta. (E.C.R., R.P.S.) and in 12% of Sask. fields (A.C.). In Ont., it caused the rejection of 6/312 fields in the Barrie district (H.W.W.); 5 fields in w. Ont. (G.B.S.), and 5/71 fields in e. Ont. (E.H.P.). There was a slight increase over the 1960 level and a marked increase over 1959 in Que. where 135/1,119 fields were rejected (G.E.). Incidence in N.B. was about the same as in 1960 (C.E.R.) and, mosaic was recorded in 148/295 fields in N.S. (R.C.L.). There was less mosaic in P.E.I. than in 1960 (G.C.R.). Rugose mosaic was heavy in Green Mountain at Cormack and Winterbrook, and on Irish Cobbler at Brigus South, Nfld. Mild mosaic was seen in most areas in the province (O.A.O.).

PURPLE TOP (virus). Low percentages were found in 11% of the fields inspected in n. Alta (E.C.R.) and it was 4-tr./178 s. Alta. fields (R.P.S.). Its incidence was less in the Barrie, Ont. district than in 1960 (H.W.W.). Sl. infections were seen on Huron, Norgleam and a number of Fredericton seedlings at Ste. Anne de la Pocatiere and on several seedlings at Ste. Foy, Que. (H.G.). It was tr. in a few fields in N.B. (C.E.R.) and N.S. (R.C.L.) while in P.E.I. it was about 5% in Sebago with negligible amounts in other varieties (G.C.R.).

SPINDLE TUBER (virus) was found in tuber index plots at Brooks and a 50% infection was found in 1 field in s. Alta. (R.P.S.). In Sask., it was seen in 9/84 fields, causing 1 to be rejected and 2 reduced to certified grade (A.C.). This disease may become a problem in Sask. although to date it appears to be confined to a few localities (R.J. Ledingham). It was observed as tr. infections in Ont. fields (H.W.W., G.B.S., F.J.H.), and was found in 10/480 bin lots in Que. (G.E.). Seventeen fields were rejected in N.B. compared to 6 in 1960 (C.E.R.); it caused 2 rejections in N.S. (R.C.L.) and was less evident in P.E.I. than in 1960 (G.C.R.).

STREAK (virus) A very severe type of streak necrosis, involving the whole plant, affected a planting of Huron at Canning, N.S. (K.A.H.).

WITCHES BROOM (virus) Trace amounts occurred in 5% of B.C. seed fields (N.M.). It was sl. in about 40 acres of table stock at Peace River, Alta. (D.W.C.) and tr. in 23% of the seed fields in n. Alta. (E.C.R.).

YELLOW DWARF (virus) was observed in 1 field at Temiskaming, Ont. (H.W.W.).

GIANT HILL. Trace amounts were seen in 6/178 fields in s. Alta. (R.P.S.), in the northerly part of the Barrie, Ont. district (H.W.W.) and in most Green Mountain fields in N.S. (R.C.L.).

BLACK SPOT, thought to be caused by pressure bruising caused the rejection of several lots of Kennebec seed potatoes in N.B. during the spring shipping season (C.F.R.). Several varieties were affected at East Florenceville, Grand Falls and Hartland, N.B. (K.M.G.).

ENLARGED LENTICELS (? excess soil moisture) was observed on specimens received from St. Amable, Vercheres Co., Que. (D.L.).

FROST. Early frosts were thought to be responsible for stem-end discoloration in 33 crops in the Cariboo and c. B.C. (N.M.). Heavy damage occurred in May at Sherrington, Que. when temperatures fell to 21° F. (R. Crête). Oct. frosts also caused 5-10% losses in 125/480 bins examined in Que. (G.E.). Certified seed trucked into N.S. from P.E.I. in May showed discoloration in 10% of the tubers (K.A.H.). A carload of P.E.I. potatoes at Cornwall, Ont. was badly damaged in Jan. Tubers were broken down and Sclerotinia sclerotiorum had invaded them (D.W.C.).

HOLLOW HEART was found in a number of Kennebec and Netted Gem crops in B.C. (N.W.). It was sev. on Fredericton seedling F 4519 at a number of stations in Que. (H.G.).

INTERNAL SPROUTING, following the use of sprout inhibitors, was seen in stored potatoes in Ont. (L.V. Busch) and caused losses of up to 40% in a few lots in Que. (B.B.).

LIGHTNING INJURY was sev. in a 30-ft. circle in a field at Waterville, N.S. (K.A.H.).

MAGNESIUM DEFICIENCY was diagnosed as the cause of intervenal necrosis in samples received from Ste. Sabine, Bellechasse Co., Que. (D.L.). Sl. injury was observed at Ste. Anne de la Pocatiere and in Portneuf Co., Que. (H.G.). It was evident in many localities in e. Nfld. (O.A.O.).

MANGANESE TOXICITY was sl.-mod. on a number of varieties on St. Andre sandy loam in L'Islet Co., Que. Symptoms were most sev. on Keswick and Norgleam (H.G.).

PUMPKIN

POWDERY MILDEW (Erysiphe communis) was commonly found on senescent leaves late in the season in the Okanagan Valley, B.C. (G.E. Woolliams).

ROOT ROT (Fusarium solani f. cucurbitae Snyd. & Hans.). In the Whitby, Ont. district, numerous reports of a sev. root rot condition in processing pumpkin were investigated in 1960-61. Several growers lost 50% or more of their plants before marketable fruits were produced. The pathogen has been isolated and identified (B.H. McNeill).

RADISH

BLACK ROOT (Aphanomyces raphani) caused losses ranging from 10-50% in some 2-3 acres on muck soils at Cloverdale and Vancouver, B.C. The damage occurred during a cool, wet period (H.N.W. Toms, H.S. Pepin).

COMMON SCAB (Streptomyces scabies). Heavily infected specimens were received from Rosthern, Sask. (R.J. Ledingham).

RHUBARB

CROWN GALL (Agrobacterium tumefaciens) was found on a single plant at Burlington, Ont. when plants were dug in Nov. (J.F. Bradbury).

SOFT ROT (Pseudomonas sp.). A species of Pseudomonas was consistently isolated from affected tissues of crowns of plants dug earlier than normal nr. Burlington, Ont. It is thought that warm weather may have been a contributing factor (J.F.B.).

FROST caused mod. damage to a planting at West Brome, Que. Affected tissues were later invaded by soft-rot bacteria and molds such as Botrytis cinerea (J. Simard, R. Crête, T. Simard).

SQUASH

STORAGE ROT (Alternaria? tenuis). Chilling to 36°F caused by the failure of a heating unit, predisposed 2,500 crates of Golden Delicious and Royal Acorn squash to Alternaria rot at Berwick, N.S. Loss was complete. The variety Butternut, which had been frosted in the field and stored in the same room, showed about 2% infection (C.L. Lockhart).

STORAGE ROT (Colletotrichum coccodes). Several squash were affected at Kentville, N.S. They were from a garden with a history of C. coccodes on potatoes and tomatoes (K.A. Harrison).

STORAGE ROT (Colletotrichum lagenarium) was tr. on Golden Delicious in storage at Berwick, N.S. (C.L.L.).

POWDERY MILDEW (Erysiphe communis) was commonly found, late in the season, in the Okanagan Valley, B.C. (G.E. Woolliams). Heavy infections were present on breeding lines in a greenhouse at Kentville, N.S. (K.A.H.).

STORAGE ROT (Mycosphaerella melonis) caused discrete, sunken, circular lesions up to 1 inch in diameter, frequently coalescing to larger lesions and penetrating approx. 1/2 in. below the epidermis on Sweetmeat squash in storage at Sidney, B.C. Surface fruiting was abundant. Three-4% of the stored squash were affected (R.G. Atkinson). Considerable losses from Mycosphaerella rot in storage were reported from the Lower Fraser Valley, B.C. (H.N.W. Toms).

LEAF SPOT (Septoria cucurbitacearum). In July, the cotyledons of every plant in a planting at Kentville, N.S. carried 1-10 lesions and a few primary leaves were infected. The disease spread slowly, and by mid-Oct. many leaves were heavily infected and dying prematurely (K.A.H.).

SWEDE TURNIP

SURFACE ROT (Fusarium avenaceum) affected 200 bu. of swedes in storage in Kings Co., N.S. The roots were rendered unsaleable (C.L. Lockhart, W.L. Gordon).

WILT (Fusarium sp.). One area in a field of Laurentian at St. John's, Nfld. was heavily infected (O.A. Olsen).

DOWNY MILDEW (Peronospora parasitica) was sl. in a field at Napierville, Que. (J. Simard, R. Crête, T. Simard).

BLACK LEG (Phoma lingam) was sev. on roots from storage in March at St. Laurent, Ile Orleans, Que. (D. Leblond) and tr. on Laurentian in Nov. at Eastport, Nfld. (O.A.O.).

CLUB ROOT (Plasmodiophora brassicae). A specimen was received from St. Evariste, Que. (D.L.). Infection was heavy and necessitated the replanting of a field at Bathurst, N.B. (S.R. Colpitts). It was light on most roots in a field at Cole Harbor, N.S. (K.A. Harrison). Infection was sev. in 3 fields, planted in May or early June, in Queen's and Kings counties, P.E.I. Fields planted later in June escaped infection due, no doubt, to drought conditions that prevailed until late Aug. (G.W. Ayers). Club root was generally light in e. Nfld. but heavy in some low areas where moisture was in good supply (O.A.O.).

SKIN SPOT (Rhizoctonia solani). Eighty barrels of early-harvested Laurentian at Grand Pre, N.S. were so badly infected that they were fit only for fodder (K.A.H.).

SCLEROTINIA ROT (S. sclerotiorum). An infected specimen was received from a market in Quebec City, Que. (D.L.).

SCAB (Streptomyces scabies) was tr. in a crop at Plaster Rock, N.B. (S.R.C.).

STORAGE ROT (various organisms). Roots removed from storage at St. Laurent, Ile Orleans, Que. were more than half affected by one or more of the following organisms: Phoma lingam, Rhozoctonia solani, Cylindrocarpon sp., Fusarium spp. Oospora sp., Penicillium spp., Rhizopus nigricans, Verticillium sp., Erwinia carotovora and Xanthomonas campestris (D.L.).

MOSAIC (virus) was tr.-sl. at the Exp. Farm, Fort Vermilion, Alta. (D.W. Creelman).

BROWN HEART (boron deficiency). Specimens were received from New Richmond and Douglastown, Que. (D.L.). One field of Laurentian at Cole Harbor, N.S. was 75% affected (K.A.H.). Brown heart was sev. in plots receiving no boron at Charlottetown, P.E.I. Ten lb./acre of borax gave complete control (J.E. Campbell). Swedes grown on newly-cleared land at Marystown, Nfld. were 90-95% affected. No boron had been applied (O.A.O.).

CALCIUM-MAGNESIUM DEFICIENCY. A cupping and marginal burn of leaves of seedlings at East Gore, N.S. was diagnosed as calcium-magnesium deficiency. The soil pH in the 3-acre field was 4.2 (K.A.H.).

MOLYBDENUM DEFICIENCY was sev. on swedes and other cruciferous crops at St. David's, Nfld. (O.A.O.).

SWEET CORN

STEWART'S DISEASE (Bacterium stewartii). One variety, in a replicated test at the Exp. Farm, Beaverlodge, Alta., was 100% infected. The corn was grown under a plastic mulch and soil temperatures in May and June were over 100°F. The symptoms were typical. Its appearance in the single variety suggests seed-borne infection (D.W. Creelman, W.P. Campbell).

LEAF BLIGHT (Bipolaris turcicum) caused extensive leaf necrosis in many late plantings of sweet corn in Essex Co., Ont. Infection was widespread by late Sept. and yield was much reduced in affected fields (C.D. McKeen).

SMUT (Ustilago maydis) was seen in a garden nr. Edmonton, Alta. (W.P. Skoropad) and 1 specimen was received at Saskatoon, Sask. (R.J. Ledingham).

TOMATO

EARLY BLIGHT (Alternaria solani) was mod.-sev. in a market garden at Peace River, Alta. (D.W. Creelman). It was sev. in several fields in Sunbury and Queens counties, N.B., causing fruit rot and defoliation (S.R. Colpitts). In N.S., early blight was not serious in commercial fields but was sev. in plots at the Exp. Farm, Kentville (K.A. Harrison).

GRAY MOLD FRUIT AND STEM ROT (Botrytis cinerea). There was an unusually high incidence of stem rot in greenhouse tomatoes in s.-w. Ont. in April and May (C.D. McKeen). Fruit rot affected 10% of a crop at Oromocto, N.B. after a prolonged wet period (S.R.C.). It was the most serious disease of greenhouse tomatoes in Hants and Kings counties, N.S. in 1961. In one greenhouse, 50% of the plants had stem cankers and 3% of the plants were killed. Production was affected in both counties (K.A.H.).

LEAF MOLD (Cladosporium fulvum). Some plants in a planting of Vinequeen at Falmouth, N.S. were completely susceptible. The seed was apparently a mixed lot. It was also tr. in Pinehurst, Lunen, Co. Growers

are of the opinion that Thylate, used to control gray mold, gives some measure of control of leaf mold (K.A.H.).

ANTHRACNOSE (Colletotrichum coccodes). Adequate spray programs, using maneb as a fungicide, gave reasonably good control of anthracnose in both the basket and canning crops in Essex and Kent counties, Ont. (C.D. McK.). It was less troublesome in the field in Kings Co., N.S. than in past seasons (K.A.H.). although it was the most common rot encountered in storage (C.L. Lockhart).

BACTERIAL CANKER (Corynebacterium michiganense) affected 5-10% of the plants in a 12-acre field at Lillooet, B.C., causing some loss in yield (G.E. Woolliams). A 2-acre field of staked tomatoes at Leamington, Ont. was 50% infected and a heavy loss was sustained. A high incidence of Verticillium in the field aggravated the losses (C.D. McK.). A trace infection was observed in a crop nr. Welland, Ont. (J.F. Bradbury).

WILT (Fusarium oxysporum f. lycopersici). Two greenhouses in s.-w. Ont. showed a high incidence of infection that resulted in a 40% loss in yield (C.D. McK.).

ROOT-KNOT NEMATODE (Meloidogyne arenaria arenaria) was recovered from a greenhouse crop at London, Ont. (R.H. Mulvey, (C.P.D.S. 41:5. 357. 1961).

LATE BLIGHT (Phytophthora infestans). Infection was sl.-mod in field plots at the University, Vancouver, B.C. It did not appear until late Sept. (H.N.W. Toms). Late crops in Kings Co., N.S. began to show some infections after 1 Oct. but the disease was not a problem in commercial fields in 1961 (K.A.H.). A rapid build-up occurred late in the season in P.E.I. and affected some unsprayed plantings (J.E. Campbell).

BUCK-EYE ROT (Phytophthora parasitica). The causal organism was isolated from fruits of the lower clusters of a greenhouse crop nr. Stoney Creek, Ont. The soil had not been sterilized (J.F.B.).

ROOT-LESION NEMATODE (Pratylenchus penetrans). High populations of this nematode were present in 3 fields in the Leamington, Ont. area (W.B. Mountain, R.M. Sayre (C.P.D.S. 41:5..376. 1961).

PINK ROOT ROT (Pyrenochaeta terrestris). Characteristic pinkish, diffuse lesions developed on the roots of about one-half of the plants in a 20,000 sq. ft. planting in a greenhouse in the Fraser Valley, B.C. Some wilting resulted. The organism produced a rot of cortical tissues but the vascular system remained healthy. Typical pycnidia with setae developed profusely on the lesions on roots stored under water in a refrigerated room and on potato-dextrose agar. The organism was isolated in pure culture (R.G. Atkinson). This is the first report, to the Survey, of P. terrestris on tomato in Canada (D.W.C.).

DAMPING-OFF (Rhizoctonia solani) caused the loss of 3-5% of seedlings of the varieties Vogue and Globemaster in a greenhouse at Fonthill, Ont. (G.C. Chamberlain).

COLLAR ROT (Sclerotinia sclerotiorum) was tr. in a commercial greenhouse at Summerland, B.C. (G.E.W.), in a greenhouse at Grand Pré, and in field plots at Kentville, N.S. (K.A.H.).

LEAF SPOT (Septoria lycopersici). A specimen was received from Levis, Que. (D. Leblond).

GRAY LEAF SPOT (Stemphylium solani). Many fields of canning tomatoes in Essex Co., Ont. showed mod.-sev. infections by late Sept. (C.D. McK.).

WILT (Verticillium spp.). Affected plants of staked varieties were received from 2 home gardens at Ladner, B.C. (H.N.W.T.). Progress of the disease was checked by continuous hot weather in the B.C. Interior (G.E.W.). There was evidence of infection by V. dahliae in most of the early basket crops in Essex Co., Ont. and a variable incidence was observed in many canning crop fields. This organism is now considered to be the most destructive of the soil-borne pathogens in s.-w. Ont. (C.D. McK.) V. albo-atrum caused serious losses in a small greenhouse at Dublin Shore and tr. infections were seen in 2 greenhouses at Falmouth and in 1 at Grand Pré, N.S. A sev. outbreak also occurred in variety trials at the Research Station, Kentville. The variety Stokesdale produced a crop despite the infection (K.A.H.).

BLOTCHY RIPENING (virus) was sev. in commercial greenhouse crops on Vancouver Island, B.C. Some heavy economic losses were sustained (R.G.A.). Traces were seen in s. Alta. (P.E. Blakeley). It was not as sev. as in past seasons in N.S. (K.A.H.).

BROWN WALL (tobacco mosaic virus). Symptoms of this disease were found in fruits from several greenhouse and field crops in s.-w. Ont. (C.D. McK.).

MOSAIC (tobacco mosaic virus) occurred as infections of 1-10% in most commercial fields in the Okanagan, Thompson and Upper Fraser Valleys, B.C. (G.E.W.). Nearly 100% of the plants in most greenhouse crops in s.-w. Ont. were affected. Infection in field crops was of a much lower order (C.D. McK.). A trace of mosaic was seen in a greenhouse at Gagetown, N.B. (S.R.C.). It also affected 100% of greenhouse plants in Hants and Kings counties, N.S. (K.A.H.).

SPOTTED WILT (virus) affected 2% of the plants in a crop of Stokesdale at Kentville, N.S. A number of fruits, as they ripened, showed typical circular, yellow spotting. Affected plants were weaker than normal and produced fewer fruits. The diagnosis was confirmed by B.H. McNeill. Spotted wilt has not previously been encountered in N.S. (K.A.H.).

STREAK (virus). Infection was 100% in 2 new commercial greenhouses constructed on a site planted to potatoes in 1960. Yield was reduced by at least 40% (C. D. McK.). A few plants in a greenhouse at Pinehurst, N.S. were affected (K.A.H.).

BLOSSOM-END ROT (physiological) occurred to a slight extent in many fields in the B.C. Interior (G.E.W.). Two slightly affected plantings were seen in s. Alta.(P.E.B.). The hot, dry summer in Sask. aggravated the disorder. In a few plantings, 50% or more of the fruits were a complete loss (R.J. Ledingham). Damage was sl. at Winnipeg and was 10% in a planting at St. Boniface, Man. (B. Peturson). Sev. damage was incurred in a greenhouse at Kingston, N.S. following inadequate watering by an automatic watering system. Appreciable losses in the field crop in Kings Co. occurred because of extremely dry weather during July and Aug. (K.A.H.). It was of common occurrence in home gardens in P.E.I. (J.E.C.).

CATFACE (non-parasitic). A specimen was received from Three Rivers, Que. (D.L.). About 3% of the fruit of the variety Quebec 5 was affected at Oromocto, N.B. (S.R.C.).

CHEMICAL INJURY. Severe foliage injury resulted at Pinehurst, N.S. when borax was applied as a spray to plants that were not setting fruit properly (K.A.H.).

CHEMICAL INJURY (2, 4-D). Drift from a nearby sprayed lawn caused damage to tomatoes in a home garden at Vancouver, B.C. (H.N.W.T.).

FROST INJURY. Frost on 30-31 May caused mod.-sev. injury to tomatoes and other crops at Ste. Clothilde, Que. Some 20% of tomato plants in cold frames were killed (R. Crête).

INTERNAL BREAKDOWN (cause unknown) affected 20-25% of the fruit in a canning crop nr. Welland, Ont. Because affected fruits could not be separated from sound ones without cutting, the canner was forced to reject the entire crop. There was no evidence of 2, 4-D injury and no virus could be isolated from affected plants (J.F.B.).

IRREGULAR RIPENING (physiological). A combination of bright sunlight and high temperatures in the B.C. Interior seemed responsible for the disorder. Considerable financial losses were incurred (G.E.W.).

TURNIP

SOFT ROT (Erwinia carotovora). Injury to white turnips by cultivating equipment apparently provided infection courts for the organism which caused some damage at East Gore, N.S. (K.A. Harrison).

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 from 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 (Pseudomonas 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 Aug. 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.L. 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 Okanagan 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 disabled plane 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 gardens in 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 (I.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 ascigerous stage of this organism is congeneric with Apiosporina Hoehn. and has made the 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. prunophorae 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 Oyama 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 Okanagan-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 southern 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, R.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. (D.L.). Infection was about 2% in a planting of Viking at Kentville, N.S. The raspberries were set on land previously planted to Kennebec 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 Kentville, 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 (Exobasidium 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 caused 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 MILDEW (Uncinula necator) 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 caused no 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. Lawrence 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.).

V. DISEASES OF TREES AND SHRUBS*

ACER - Maple

Coral canker (Nectria cinnabarina) caused mod. damage on A. platanoides at St. John's, Nfld. Some branches appeared to have been killed (O.A. Olsen).

Leaf spot (Phleospora aceris) was very sev. on A. saccharum in maple sugar bush at Piopolis, Frontenac Co., Que. Premature defoliation was probable (D. Leblond).

Tar spot (Rhytisma acerinum) was mod. on A. ginnala at St. James, Man. (B. Peturson).

Windscorch (physiological). Many complaints were received from home gardeners of damage to A. palmatum in Vancouver, B.C. In some cases 100% of the foliage was dried-out and scorched (H.N.W. Toms).

AESCHYNANTHUS

Root-knot nematode (Meloidogyne incognita incognita) was recovered from specimens from Dundas, Ont. (R.H. Mulvey (C.P.D.S. 41:5. 357. 1961).

AESCULUS - Horsechestnut

Leaf blotch (Guignardia aesculi). Infection at Kentville and in Yarmouth Co., N.S. was extremely heavy in Aug. and Sept. (C.O. Gourley, K.A. Harrison). Leaf blotch was general and occasionally sev. in P.E.I. (J.E. Campbell).

Coral canker (Nectria cinnabarina) was sev. on trees in St. John's Nfld. (O.A. Olsen).

BERBERIS - Barberry

Anthracnose (Gloeosporium berberidis) was sev. on hedges of B. vulgaris in Quebec City, Que. (D. Leblond).

Root-knot nematode (Meloidogyne hapla) was recovered from B. thunbergii atropurpurea at Strathroy and from Berberis sp. from Toronto, Ont. (R.H. Mulvey (C.P.D.S. 41:5. 357. 1961).

BETULA - Birch

Anthracnose (Gloeosporium sp.). Infected specimens were received from Montreal, Que. The causal organism was thought to be G. betulae-luteae Sacc & Dearn. (P.K. Basu).

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* Diseases referred to in this section are mainly those of shade trees and ornamental shrubs, although occasional reference is made to diseases on native forest trees. For a more comprehensive report of tree diseases in Canada, the reader is referred to the Annual Reports of the Forest Insect and Disease Survey, published by the Forest Entomology and Pathology Branch, Canada Department of Forestry, Ottawa, Ont. (D.W. Creelman).

CARAGANA - Pea-Tree

Crown rot (Fusarium solani). An infected specimen of C. arborescens was received from Carleton, Bonaventure Co., Que. (D.L.).

CHAENOMALES - Japanese Quince

Blossom blight (Monilinia laxa). Two bushes of C. japonica, out of several in a garden at Sidney, B.C., were affected in the latter part of the bloom period (R.G. Atkinson). This is the first Canadian record of brown rot blossom blight on Chaenomales (D.W.C.).

CHAMAECYPARIS

Root rot (Phytophthora cinnamomi). All 80 plants of C. lawsoniana in an ornamental nursery nr. Victoria, B.C. showed varying degrees of foliar necrosis and 4 plants had been killed. P. cinammomi was isolated from affected plants. This nursery has a history of heavy infestation with Phytophthora (R.G. Atkinson).

CORNUS - Dogwood

Leaf spot (Ascochyta cornicola Sacc.) was collected on C. stolonifera at Ste. Anne de la Pocatiere, Que. Sporulation was sparse, but the few conidia seen measured 10-15 x 3-4μ and fitted the description of A. cornicola (D. Leblond). This disease has not been previously reported to the Survey (D.W.C.).

Blossom blight (Gloeosporium sp.) was mod.-sev. on bracts and floral parts of C. nuttallii at Saanichton, B.C. Its distribution was general in the area, possibly due to the prolonged, wet spring. Sporulation on the bracts was profuse (R.G. Atkinson). This constitutes the first record of a Gloeosporium sp. on Cornus in Canada (D.W.C.).

Powdery mildew (Phyllactinia guttata (Fries) Lév.=P. corylea (Pers.) Karst.) was common on Cornus spp. in the Edmonton, Alta. district. Affected leaves turned red and dropped prematurely. Numerous cleistothecia were formed in mid-Aug. (W.P. Skoropad). Previous reports, to the Survey, of powdery mildew on Cornus, have all been from B.C. (D.W.C.).

CRATAEGUS - Hawthorn

Leaf blight (Fabraea maculata). Trees of C. oxyacantha in home gardens at Chilliwack and West Vancouver, B.C. suffered sev. defoliation (H.N.W. Toms).

Rust (Gymnosporangium globosum). Specimens of infected leaves of C. oxyacantha variety "Lavelli" were received from a nursery at Niagara Falls, Ont. (G.C. Chamberlain).

DAPHNE

Twig blight (Botrytis cinerea). The organism was found on diseased twigs received from Vernon, B.C. (G.E. Woolliams).

Anthracnose (Marssonina daphnes). Three bushes of D. mezereum in an ornamental border at Saanichton, B.C. were completely defoliated. The same

bushes were defoliated in 1960. Bushes of D. burkwoodii, also known as "Somerset" showed no sign of infection (R.G. Atkinson). It continues to be damaging at Vancouver, B.C. Little attempt is made to control it. (H.N.W. Toms).

FRAXINUS - Ash

Rust (Puccinia sparaganoides). Many trees were infected in the areas around Digby Basin and the Annapolis River in w. N.S. Many mature trees had died as the result of rust infection in previous seasons (K.A. Harrison).

HEBE

Root rot (Pellicularia filamentosa) killed 1 plant of H. cupressoides (Veronica cupressoides) in a garden at Victoria, B.C. An extensive mat of white mycelium developed under the bark in the crown region (R.G. Atkinson).

HYDRANGEA

Gray mold (Botrytis cinerea) caused an inflorescence blight and was the probable cause of a leaf spot on H. paniculata in a greenhouse at Saskatoon, Sask. (R.C. Russell).

Powdery mildew (Erysiphe communis) was extremely heavy on hydrangeas at Devon, N.B. (S.R. Colpitts).

ILEX - Holly

Leaf spot and Stem canker (Phytophthora ilicis). Thirty % of the trees in a closely-planted, 50-year old orchard of 450 trees nr. Victoria, B.C. were infected in the winter of 1960-61. Most infected trees showed mod. leaf spotting and stem cankering but a few suffered sev. defoliation and killing of twigs. The site of the orchard is at sea level and soil conditions in winter are wet. Air drainage is also poor. A sawdust mulch, applied five years ago before the adoption of a clean fallow practice, undoubtedly permitted infested soil and spores to be splashed on the lower limbs from whence the disease has spread to 6-8 ft. above ground (R.G. Atkinson).

LONICERA - Honeysuckle

Leaf blight (Herpobasidium deformans). Infected specimens were received from Montreal, Que. (D.W. Creelman).

Powdery mildew (Microsphaera penicillata var. lonicerae). A heavy infection was observed on a hedge at the Cent. Exp. Farm, Ottawa, Ont. (D.W.C.).

Variegation (? virus). A single bush on the grounds of the Dominion Observatory, Ottawa, Ont. was sev. affected. Others in the near vicinity seemed normal (D.W.C.).

MALUS - Ornamental Crab

Fire blight (Erwinia amylovora) was sev. in Edmonton, Alta. in the spring. Many mature ornamentals were killed or damaged (W.P. Campbell).

Scab (Venturia inaequalis). Diseased specimens were received from Waterloo, Ont. (P.K. Basu).

PARTHENOCISSUS - Ivy

Leaf spot (Phyllosticta ? viticola). A brown, circular leaf spot was prevalent on P. tricuspidata (Boston Ivy) at Vineland Station, Ont. Spots were brown with a darker margin and pycnidia were abundant in the center of many of the spots. Conidia were ovoid and hyaline (W.G. Kemp).

Powdery mildew (Uncinula nector) was sl. on a vine of P. quinquefolia (Virginia Creeper) at Ottawa, Ont. (D.W. Creelman).

PINUS - Pine

Gall rust (? Cronartium quercuum). Galls, resembling those caused by C. quercuum were found on a large proportion of the trees of P. sylvestris at Maitland, Annapolis Co., N.S. Some galls were up to 3 inches in diameter. There was no evidence that they were of insect origin (K.A. Harrison).

Blister rust (Cronartium ribicola) affected 10% of the trees in a young stand of P. strobus at the Research Station, Kentville, N.S. A number of these 5-7 year old trees have died as a result of rust infection (C.O. Gourley). Infection was heavy on a white pine at Charlottetown, P.E.I. (J.E. Campbell).

PRUNUS - Flowering Cherry

Black knot (Dibotryon morbosum). Specimens were received from Sherbrooke, Que. (D. Leblond). Prunus nigra, grown as an ornamental at Halfway River, N.S., was sev. infected. Some 60% of the branches bore knots (C.O. Gourley).

Brown rot (Monilinia demissa (Dana) Honey. A species of chokecherry, Prunus demissa, was heavily infected at the virus experimental orchard nr. Summerland, B.C. About 50% of the leaves were affected and, despite profuse sporulation, infection did not spread to surrounding cherry, apricot, peach and plum trees (L.E. Lopatecki). M. demissa is confined to Prunus demissa and, until this record, was known only from the type locality in Washington State (D.W.C.).

Blossom and Twig blight (Monilinia laxa) was observed on Prunus subhirtella var. pendula at Saanichton, B.C. Twigs were killed back to the extent of 12-18 inches (R.G. Atkinson).

Blast (Pseudomonas syringae). Specimens were received from several gardens in n. and w. Vancouver, B.C. (H.N.W. Toms).

PYRUS - Mountain Ash

Fire blight (Erwinia amylovora) was reported, and specimens were received from Edmonton, Alta. (W.P. Campbell). Infection was mod. on a tree at St. John, N.B. (K.M. Graham).

Rust (Gymnosporangium cornutum). A sl. infection was present on leaves of P. decora at Clearwater Bay, Ont. It was much less prevalent than in most seasons, probably because of the exceptionally dry weather (W.L. Gordon).

QUERCUS - Oak

Leaf blister (Taphrina caerulescens). Light infections were seen on oak at the Exp. Farm, Charlottetown, P.E.I. (J.E. Campbell).

RHAMNUS - Buckthorn

Crown rust (Puccinia coronata agrostidis). Aecia were first seen 1 June on a single tree of R. frangula on the grounds of the Dominion Observatory, Ottawa, Ont. Crown rust on this host has been previously reported from N.S. and N.B. (D.W. Creelman).

RHODODENDRON

Crown gall (Agrobacterium tumefaciens). Infection was found on an F_1 hybrid of R. smirnowii x R. catawbense at Kentville, N.S. No previous reports of crown gall on Rhododendron from North America could be found although it has been reported from England (K.A. Harrison).

Leaf gall (Exobasidium vaccinii). Diseased specimens of azalea were received from Vancouver, B.C. (H.N.W. Toms). Fleshy galls affected the flower parts and unopened buds of 19/50 azalea plants in a greenhouse at Hamilton and on 1/50 plants at Fonthill, Ont. (W.G. Kemp).

Leaf rust (Pucciniastrum myrtilli) was found on 1 of approximately 100 plants of Rhododendron hybrids at Kentville, N.S. It caused a fine spotting of the upper leaf surface and spores were borne on the lower surface (K.A.H.). This is the first report, to the Survey, of P. myrtilli on Rhododendron (D.W.C.).

RHUS - Sumac

Dieback (Tubercularia vulgaris). Branch cankers caused sl-mod. killing at Thetford Mines and a sev. trunk infection, resulting in defoliation, was observed at Quebec City, Que. (D. Leblond).

RIBES - Flowering Currant

Anthracnose (Drepanopeziza variabilis Müller, Hütter & Schüepp. stat. conid. = Gloeosporidiella variabilis (Laub.) Nannf.). Severe infections, that resulted in considerable defoliation, were reported on a number of hedges of R. alpinum at Ottawa, Ont. In one instance, repeated applications of captan failed to hold the disease in check (H.S. Thompson, P.K. Basu, D.W. Creelman).

Powdery mildew (Sphaerotheca mors-uvae) was sev. in a hedge of R. alpinum at Edmonton, Alta. (W.P. Skoropad). It affected 10% of the plants in one hedge at Ottawa, Ont. and another was 50% infected with considerable distortion of terminals (D.W.C.).

ROSA - Rose

Black spot (Diplocarpon rosae). Infection was heavy on a specimen received from Ottawa, Ont. (P.K. Basu). Infection was 80% and defoliation sev. at Black's Harbor, N.B. (S.R. Colpitts). A sl. infection was seen at St. John's, Nfld. (O.A. Olsen).

Rust (Phragmidium sp.) was tr. in a home garden at St. James, Man. (B. Peturson).

Powdery mildew (Sphaerotheca pannosa) was extremely sev. on a large planting of the variety Chalice in a greenhouse at Winona, Ont. All plants were affected and 25% of the blooms were discarded while the remainder were graded low. The variety Better Times was less severely affected (W.G. Kemp). Late season infection was mod. in a home garden at Ottawa, Ont., but it occurred too late to cause any damage (D.W. Creelman). Specimens showing sev. damage to buds were received from Levis, Que. (D. Leblond). It was general in N.B. (S.R.C.). Powdery mildew was sev. on rambler roses at Kentville and specimens were received from Halifax and Chester, N.S. (C.O. Gourley). It was more prevalent at Charlottetown, P.E.I. than it has been for a number of years (J.E. Campbell).

Dagger nematode (Xiphinema diversicaudatum) was a problem in at least 4 greenhouses between Toronto and Windsor, Ont. in the winter 1961-62. In one house, flower production was reduced by 25%. The affected varieties were grafted on Manette rootstock. The nematode is believed to have been introduced on plants imported from Arizona, California or both, since it is not indigenous to Ont. Good control and plant response were obtained through the application of Nemagon at 5 1/2 oz/1000 sq. ft. of bench (J.L. Townshend).

SALIX - Willow

Twig blight (Marssonina kriegeriana) was seen on S. babylonica at Vancouver, B.C. (H.N.W.T.) and on Salix sp. at Grand Bay, N.B. (K.M. Graham).

Scab and Twig blight (Venturia saliciperda, Physalospora miyabeana) was epidemic in April and May in the southern part of Vancouver Island and in the coastal areas of the B.C. mainland. Salix vitellina var. aurea and S. babylonica suffered sev. blighting of leaves, cankering of small twigs and killing of entire branches (R.G. Atkinson). It caused considerable defoliation of S. babylonica at Vancouver, B.C. during an extended period of hot, dry weather (H.N. W. Toms). Willow blight was sev. in the Annapolis Valley, N.S. early in the season. Good control was obtained at Grand Pre Memorial Park by the use of Phygon at 1/2 lb/100 gal. (K.A. Harrison).

SPIRAEA

Dieback (Fusarium equiseti), apparently induced by frost injury, was sev. on S. vanhouttei at St. Patrice de Beaurivage, Lotbiniere Co., Que. (D. Leblond).

Lime-induced chlorosis was especially prevalent on Spiraea spp. in the Winnipeg, Man. area. Many plantings were retarded (W.L. Gordon).

SYMPHORICARPOS - Snowberry

Powdery mildew (Microsphaera diffusa). Infection was general in a planting of S. albus on the University Campus, Vancouver, B.C. (H.N.W. Toms).

SYRINGA - Lilac

Crown gall (Agrobacterium tumefaciens). Specimens were received from Ottawa, Ont. from a home owner who stated that several affected plants in a young hedge had died during the summer (D. W. Creelman).

Powdery mildew (Microsphaera penicillata). Infected specimens of S. vulgaris were received from Weston, Ont. (P.K. Basu). A hedge of S. amurensis was heavily infected on the Cent. Exp. Farm, Ottawa, Ont. and the disease was general on S. vulgaris in the Ottawa area (D.W.C.). It was mod.-sev. at Ste. Clothilde, Que. late in the season (R.O. Lachance) and caused some defoliation in a nursery at Kentville, N.S. (K.A. Harrison).

Bacterial blight (Pseudomonas syringae) was mod.-sev. in the spring on Vancouver Island, B.C. (R.G. Atkinson). It was observed at Fredericton, St. John and North Head, Grand Manan, N.B. (K.M. Graham).

TILIA - Linden

Anthracnose (Gnomonia tiliae). Infection was mod. on several trees of T. europaea in the vicinity of Charlottetown, P.E.I. (J.E. Campbell).

ULMUS - Elm

Dutch Elm disease (Ceratocystis ulmi) was identified from trees on the Cent. Exp. Farm by J. Reid of the Forest Biology Laboratory, Maple, Ont. (P.K. Basu).

Leaf spot (Gnomonia ulmea). Infection was sl. on specimens received from Carp, Ont. and Hull, Que. (P.K.B.).

Coral canker (Tubercularia ulmi). An infected specimen of U. pumila was received from Sillery, Que. (D. Leblond).

VI. DISEASES OF HERBACEOUS ORNAMENTAL PLANTS

ALTHAEA - Hollyhock

Rust (Puccinia malvacearum) occurred, to a slight degree, in the Okanagan Valley, B.C. (G.E. Woolliams). It was common in the Quebec City area and specimens were received from Baie St. Paul, and Montreal, Que. (D. Leblond, H.S. Thompson). It was prevalent in N.B. (S.R. Colpitts). Infection was extremely heavy at Shelburne, N.S. (K.A. Harrison) and was lighter than usual in P.E.I. (J.E. Campbell).

AMARYLLIS

Leaf scorch (Stagonospora curtisii). A specimen was received from Renfrew, Ont. (P.K. Basu).

ANTIRRHINUM - Snapdragon

Gray mold (Botrytis cinerea). A number of plants in a greenhouse crop at Falmouth, N.S. were killed by a collar rot caused by B. cinerea (K.A. Harrison).

AQUELIGIA - Columbine

Powdery mildew (Erysiphe polygoni) was common, late in the season, in the Okanagan Valley, B.C. (G.E. Woolliams).

ARABIS - Rock Cress

Downy mildew (Peronospora parasitica) occurs annually on A. albida in a rockery at Vancouver, B.C. Damage is confined to a yellow leaf-spotting and early maturity of older foliage (H.N.W. Toms).

BEGONIA

Gray mold (Botrytis cinerea). Infected specimens were received from Ottawa, Ont. (P.K. Basu).

Powdery mildew (Erysiphe communis). Infection was heavy on specimens forwarded from St. Albert, Ont. (P.K. B.).

Spotted wilt (virus). Four of 12 plants of B. semperflorens were affected at the Research Station, Summerland, B.C. Plants were dwarfed, with deformed, bronzed leaves (G.E. Woolliams).

CALENDULA

Aster yellows (Callistephus virus 1) affected a few plants in a bed at Kentville, N.S. (K.A. Harrison).

CALLISTEPHUS - China Aster

Rust (Coleosporium asterum). Infection varied from sl.-sev. on individual plants at Kentville, N.S. (K.A. Harrison).

Wilt (Fusarium oxysporum f. callistephi). Several infected plants were found in a home garden at Fort Garry, Man. The organism was isolated and identified (B. Peturson).

Aster yellows (Callistephus virus 1) was common in gardens in Edmonton, Alta. and vicinity (W.P. Campbell). Infection spread slowly at Kentville, N.S. but by Oct. up to 50% of the plants in some beds were infected (K.A.H.). The disease was general in P.E.I. but not as sev. as in 1960 (J.E. Campbell).

CHRYSANTHEMUM

Dodder (Cuscuta campestris) was found in a greenhouse at Haney, B.C. (H.N.W. Toms), and occurred in abundance in a St. Catharines, Ont. greenhouse, parasitizing the variety Illini Igloo. Other varieties seemed not to be affected. Parasitized plants showed little or no ill effects at the time of observation (W.G. Kemp).

Powdery mildew (Erysiphe communis). Approximately 80/100 plants of White Indianapolis were mod. infected in a greenhouse at Kingsville, Ont. White Shasta was infected to a lesser degree (W.G.K.).

Root-lesion nematode (Pratylenchus penetrans). Five chrysanthemum greenhouses in the Leamington, Ont. area had high populations of P. penetrans (W.B. Mountain, R.M. Sayre (C.P.D.S. 41:5. 376. 1961).

Rust (Puccinia chrysanthemi) was heavy on most plants of the varieties Iceberg and Bluechip in a greenhouse at Ruthven, Ont. (W.G.K.).

Stunt (virus). Yellow Shasta was 10-15% infected and Taffetta 2-3% infected in a greenhouse at Kingsville, Ont. Flowering of infected White Shasta plants was noticeably delayed (W.G.K.).

CONVALLARIA - Lily-of-the-Valley

Leaf spot (Gloeosporium convallariae). Infection was sl. on a house plant specimen from Ottawa, Ont. (P.K. Basu).

Rust (Puccinia sessilis) disfigured 15% of the foliage in a garden planting at Kentville, N.S. (K.A. Harrison).

CYCLAMEN

Witches' broom (? virus). About 1% of plants of C. persicum, grown from corms imported from Holland, bore many extra leaves giving a witches'-broom effect. The number of flowers was reduced and leaf pedicels were much shortened and somewhat flaccid (H.N.W. Toms).

DELPHINIUM - Larkspur

Powdery mildew (Erysiphe polygoni) was common, late in the season in the Okanagan Valley, B.C. (G.E. Woolliams).

DIANTHUS - Carnation

Rust (Uromyces dianthi). A mod. infection occurred in a greenhouse at Cambridge, N.S. (K.A. Harrison).

Wilt (Verticillium albo-atrum) affected a few plants in a greenhouse crop at Falmouth, N.S. (K.A.H.).

ECHINOCYSTIS - Mock Cucumber

Wilt (Verticillium dahliae). The organism was isolated from E. lobata grown for ornamental purposes at Kelowna, B.C. (G.E. Woolliams).

EUPHORBIA

Rust (Melampsora monticola Mains). Infection was mod. on E. peplus in Victoria City, B.C. Parks. (R.G. Atkinson). This is the first report to the Survey, of this rust on Euphorbia (D.W. Creelman).

FICUS - Rubber Plant

Root rot (Armillaria mellea) killed a plant about 3 inches in diameter at Edmonton, Alta. The rhizomorphs formed a fairly close network underneath the bark and only occasionally penetrated into the host tissue (W.P. Skoropad).

Anthracnose (Glomerella cingulata). Plants of F. decora, shipped by air from Victoria, B.C. to Calgary, Alta. developed sev. symptoms after arrival. The plants had been well watered and wrapped in paper for shipping, creating conditions of high humidity favorable to infection during transit (R.G. Atkinson). A specimen was received from Sylvan Lake, Alta. (W.P. Campbell). Severely affected specimens of F. elastica were received from Ottawa, Ont., Montreal and Desbien, Que. (P.K. Basu), and from Quebec City and Taschereau, Que. (D. Leblond).

GAILLARDIA

Aster yellows (Callistephus virus 1) affected 10% of the plants in a perennial border at Kentville, N.S. The early infection appeared to have been carried over from 1960. Later in the season, several of the affected plants developed "green petal" symptoms. Ray petals were suppressed and the heads were a mass of fine green points. Clover in the vicinity had similar symptoms (K.A. Harrison).

GLADIOLUS

Yellows (Fusarium oxysporum f. gladioli). Infection was 5% in a home garden at Winnipeg and 1% in a park at Fort Garry, Man. (B. Peturson).

Scab (Pseudomonas marginata) was tr. on the variety White Sails at Winnipeg, Man. (B.P.). Infection was heavy on 90% of some 2000 corms at Coldbrook, N.S. The corms had been grown in Halifax Co. Several specimens were also received from gardens in Kentville, N.S. (K.A. Harrison).

Dry rot (Stromatinia gladioli). Corms purchased in Ont. had 94% infection at Kingston, and infection was 2% in a lot at Kentville, N.S. (K.A.H.).

Aster yellows (Callistephus virus 1) was noted in several gardens at Edmonton, Alta. (W.P. Campbell) and was seen on the variety Snow Princess at Kentville, N.S. (K.A.H.).

Mosaic (virus) affected 70% of the plants in a planting at Fort Garry, Man. (B.P.). It was widespread and in some instances sev. in Kings Co., N.S. (K.A.H.).

HYACINTHUS - Hyacinth

Bulb and stem nematode (Ditylenchus dipsaci) was found on bulbs from Victoria, B.C. (R.H. Mulvey) (C.P.D.S. 41:5. 357. 1961).

IPOMOEA - Morning Glory

Wilt (Verticillium dahliae) affected plants in a home garden at Summerland, B.C. (G.E. Woolliams).

IRIS

Leaf spot (Didymellina macrospora). Light infections occurred in a few plantings on Vancouver Island (N. Mayers); it was tr. in 10,000 plants at Brentwood (R.G. Atkinson); and specimens were received from Lumby, B.C. (G.E. Woolliams). Infection was general in the vicinity of Kentville, N.S. Leaves were 50% destroyed by the first of Oct. (K.A. Harrison).

Soft rot (Erwinia carotovora) affected 3/17 plants in a home garden and 23/126 varieties in a test garden at the Plant Research Institute, Ottawa, Ont. were mod.-sev. infected (H. S. Thompson).

LATHYRUS - Sweet Pea

Root rot (Aphanomyces euteiches) was mod. in a planting at Lethbridge, Alta. (J.E. Moffatt).

Powdery mildew (Erysiphe polygoni) was heavy in a garden at Winnipeg, Man. (H.A.H. Wallace).

Wilt (Fusarium sp.) caused sev. damage at St. John's, Nfld. (O.A. Olsen).

Mosaic (virus) completely destroyed a small planting at Kentville, N.S. (K.A. Harrison).

LILIUM - Lily

Blight (Botrytis elliptica). A few Regal lilies at Kentville, N.S. were completely defoliated (K.A. Harrison).

Mosaic (virus) caused sev. stunting of 50% of the Regal lilies in a small planting at Kentville, N.S. (K.A.H.).

LYCHNIS - Campion

Aster yellows (Callistephus virus 1) affected one plant of L. alba at Kentville, N.S. It was dwarfed and had green petals. The typical bladder was suppressed (K.A. Harrison).

NARCISSUS

Smoulder (Botryotinia narcissicola) was found in slight amounts in most plantings on the Lower Mainland of B.C. (N. Mayers).

Bulb and stem nematode (Ditylenchys dipsaci) was receovered from specimens from Saanichton and Victoria, B.C. (R.H. Mulvey (C.P.D.S. 41:5. 357. 1961).

White mold (Ramularia vallisumbrosae). The variety Recurvis was sev. infected in 2 fields on the Lower Mainland of B.C. The stock had not been lifted for 3 years and weather conditions in 1961 were ideal for its spread (N.M.).

Fire (Sclerotium sp.) was responsible for defoliation in some commercial fields on the Lower Mainland of B.C. (N.M.).

Leaf Scorch (Stagonospora curtisii) was found in all fields inspected on the Lower Mainland of B.C., ranging in severity from tr.-20% (N.M.).

Mosaic (virus) was tr. in 3 fields on the Lower Mainland of B.C. (N.M.).

PAEONIA - Peony

Blight (Botrytis paeoniae). A mod. infection was seen at Lethbridge, Alta. (P.E. Blakeley) and a sl. infection was noted at Fort Garry, Man. (B. Peturson). Specimens were received from Levis, Que. (D. Leblond).

Leaf blotch (Cladosporium paeoniae). One plant was sev. infected at Manotick, Ont. No bloom was produced (H.S. Thompson).

Mosaic (virus) affected all the leaves of a single plant of Festiva Maxima at Montreal, Que. Other varieties in the same planting were not affected (H.S.T.). One infected plant was seen at Kentville, N.S. (K.A. Harrison).

PELARGONIUM - Geranium

Gray mold (Botrytis cinerea) caused a basal stem-rot of cuttings and up to 25% loss in greenhouses in the Okanagan Valley, B.C. (G.E. Woolliams). Infection was heavy on specimens received from Ottawa, Ont. and Cote St. Paul, Que. (P.K. Basu). It was sl. on flowers and old leaves at St. Patrice de Beaurivage, Que. (D. Leblond).

Fasciation (Corynebacterium fascians). Fleshy growth was present on the stem bases of many stock plants in a greenhouse at Fonthill, Ont. (W.G. Kemp).

Wilt (Verticillium dahliae) affected several plants in a home garden at Summerland, B.C. (G.E. Woolliams).

Bacterial stem rot (Xanthomonas pelargoni). A few plants of Red Irene in a greenhouse at Fonthill, Ont. showed typical symptoms of stem rot. Vigor was extremely poor (W.G.K.).

Crinkle (virus). Typical symptoms were seen on a plant at St. Patrice de Beaurivage, Lotbiniere Co., Que. (D.L.).

Oedema (physiological) was extremely prevalent on the Irene varieties in a greenhouse range used exclusively to propagate geraniums at Fonthill, Ont. The leaves were covered with watersoaked spots that later became corky. Corky ridges were also found on petioles. The affected plants were closely spaced on benches and humidity was high (W.G.K.).

PETUNIA

Gray mold blight (Botrytis cinerea). Flowers of a red and a white variety in a home garden at Ottawa, Ont. were sev. affected. A purple variety in the same garden was unaffected. The foliage of all three varieties was healthy (H.S. Thompson). Specimens showing a bud blight were received from Levis, Que. (D. Leblond).

Aster yellows (Callistephus virus 1) was light in a planting at Winnipeg, Man. (B. Peturson).

Mosaic (virus) affected 40% of one variety in a mixed planting at Ottawa, Ont. Damage was mod. (D. W. Creelman).

PHLOX

Powdery mildew (Erysiphe communis). Infection was sev. on a specimen received from Cornwall, Ont. (P.K. Basu). Specimens were received from Sillery, Giffard, Quebec City and St. Neree, Que. (D. Leblond), and from Mahone Bay, N.S. (R.G. Ross). Damage to phlox in P.E.I. was more sev. than for a number of years (J.E. Campbell).

Leaf spot (Septoria divaricata). Infection was sev. on the lower leaves of specimens received from Pubnico, N.S. (R.G.R.).

Wilt (Verticillium dahliae) affected perennial phlox in a home garden at Summerland, B.C. (G.E. Woolliams).

SAINTPAULIA - African Violet

Gray mold (Botrytis cinerea) was heavy on a specimen received from Montreal, Que. (H.S. Thompson).

SALVIA

Abnormal growth (physiological). A greenhouse crop at Charlottetown, P.E.I. was reduced by 40-50% because of the failure of plants to produce true leaves or the tendency of young plants to produce several growing points. The cause of the disorder could not be determined (J.E. Campbell).

SCILLA - Spanish Bluebell

Rust (Uromyces scillarum (Grev.) Lév.) was collected on S. hispanica in a neglected 70-year old garden in Victoria, B.C. where bluebell was widely self-sown. Plants in an area of about 100 sq. ft. were infected (H.N.W. Toms) (C.P.D.S. 41:4. 274. 1961).

TULIPA - Tulip

Fire (Botrytis cinerea) was general, both on Vancouver Island and on the Lower Mainland of B.C. Extensive flower spotting resulting from secondary infections caused considerable financial losses to growers on the Saanich Peninsula and on the mainland (N. Mayers). Fire was serious in a number of plantings in Kings Co., N.S. Its incidence increased towards the end of the season because of heavy rains (K.A. Harrison).

Break (virus) was observed at several locations in the Okanagan Valley, B.C. (G.E. Woolliams).

VIOLA - Pansy

Leaf spot (Centrospora acerina). A bed of 10,000 seedlings at Cambridge, N.S. was severely affected in November, though little was seen in October. The same field had had some spots showing heavy damage in the spring crop in June. The fall infection was so severe that it will probably mean a complete loss of the crop. Infection was light in a spring crop at Coldbrook, N.S. (K.A. Harrison).

Leaf spot (Cercospora granuliformis) was sev. on a small planting of pansies at Kentville, N.S. The lesions were large and irregular with indistinct borders (K.A.H.).

Root rot (cause undetermined). Specimens were received from Montreal, Oue. (D.W. Creelman).

ZINNIA

Leaf and stem rot (Alternaria zinniae). Specimens were received from a grower of bedding plants at Virgil, Ont. Lesions were present on both stems and leaves (W.G. Kemp). Infection was extremely heavy in beds at the Central Exp. Farm, Ottawa, Ont. Varietal differences in susceptibility were evident (D.W. Creelman). Specimens were also received from home gardens in Ottawa (P.K. Basu).

Powdery mildew (Erysiphe communis). Some varieties in a large planting at Ottawa, Ont. were 100% infected while others were free of mildew (D.W.C.). Sev. infections were seen in Quebec City, Que. (D. Leblond).

Stem rot (Sclerotinia sclerotiorum). A specimen with typical sclerotia in the infected tissues was received from Summerside, P.E.I. (J.E. Campbell).

Aster yellows (Callistephus virus 1). A light infection was seen in a home garden at Charlottetown, P.E.I. (J.E.C.).

Acer 87
Aeschynanthus 87
Aesculus 87
Agropyron 44
Agrostis 44
Alfalfa 38
Althaea 94
Amaryllis 94
Antirrhinum 94
Apple 72
Apricot 76
Aquilegia 94
Arabis 94
Ash 89
Ash, Mountain 90
Aster, China 95

Barberry 87
Barley 35
Bean 46
Bean, Broad 47
Beet 47
Beet, Sugar 42
Begonia 94
Berberis 87
Betula 87
Birch 87
Bluebell, Spanish 99
Blueberry 82
Broccoli 47
Bromus 44
Brussels Sprouts 47
Buckthorn 91
Buckwheat 43

Cabbage 48
Calamagrostis 44
Calendula 94
Callistephus 95
Campion 97
Caragana 88
Carnation 96
Carrot 48
Cauliflower 50
Celery 50
Chaenomales 88
Chamaecyparis 88
Cherry 76
Cherry, Flowering 90
Chrysanthemum 95
Clover, Common 39
Clover, Sweet 40
Columbine 94
Convallaria 95
Corn, Field 43
Corn, Sweet 68
Cornus 88
Crab, Ornamental 89
Cranberry 83
Crataegus 88
Cress, Rock 94
Cucumber 51
Cucumber, Mock 96
Currant 80
Currant, Flowering 91
Cyclamen 95

Dactylis 45
Daphne 88
Delphinum 95
Dianthus 96
Dogwood 88

Echinocystis 96
Eggplant 52
Elm 93
Euphorbia 96

Ficus 96
Flax 40
Fraxinus 89

Gaillardia 96
Geranium 98
Gladiolus 96
Gooseberry 80
Grape 83

Hawthorn 88
Hebe 89
Holly 89
Hollyhock 94
Honeysuckle 89
Horsechestnut 87
Hyacinth 97
Hyacinthus 97
Hydrangea 89

Ilex 89
Ipomoea 97

Iris 97
Ivy 90

Larkspur 95
Lathyrus 97
Lawns 45
Lettuce 52
Lilac 93
Lilium 97
Lily 97
Lily-of-the-Valley 95
Linden 93
Lychnis 97

Malus 89
Maple 87
Melon 53
Morning Glory 97
Muskmelon 54
Mustard 41

Narcissus 98

Oak 91
Oats 33
Onion 54

Paeonia 98
Pansy 100
Parsnip 55
Parthenocissus 90
Pea 55
Pea, Sweet 97
Pea-Tree 88
Peach 78
Pear 75
Pelargonium 98
Peony 98
Pepper 57
Petunia 99
Phleum 45
Phlox 99
Pine 90
Pinus 90
Plum 80
Poa 45
Potato 57
Prune 80
Prunus 90
Pumpkin 65
Pyrus 90

Quercus 91
Quince, Japanese 88

Radish 66
Rape 44
Raspberry 81
Rhamnus 91
Rhododendron 91
Rhubarb 66
Rhus 91
Ribes 91
Rosa 91
Rose 91
Rubber Plant 96
Rye 37

Safflower 42
Saintpaulia 99
Salix 92
Salvia 99
Scilla 99
Setaria 45
Snapdragon 94
Snowberry 92
Soybean 42
Spiraea 92
Squash 66
Strawberry 84
Sumac 91
Sunflower 42
Symphoricarpos 92
Syringa 93

Tilia 93
Tobacco 43
Tomato 68
Tulip 99
Tulipa 99
Turf 45
Turnip 71
Turnip, Swede 67

Ulmus 93

Viola 100
Violet, African 99

Wheat 30
Willow 92

Zinnia 100