VI. DISEASES OF ORNAMENTAL PLANTS

ACONITUM - Monkshood

Yellows (Callistephus birus 1, eastern strain). Sev. yellows was observed in 11 plants in a garden in Fredericton, N.B. (D.J. MacLeod).

ALTHAEA

Rust (Puccinia malvacearum) was common on hollyhock on Vancouver Island, B.C.; rust pustules present on the leaves in January (W. Jones). Infection was sev. at Edmonton and Taber, but sl. at Lethbridge, Alta. (W.P. Campbell, F.R. Harper). Specimens from Maple Creek, Sask., collected 1 August showed infection by both rust and a Leaf Spot (Septoria malvicola). The epiphyllous spots sometimes occurred directly over a hypophyllous rust pustule. According to R.C. Russell both diseases are new to Sask. (J.A. Parmelee). Conditions this summer were very favourable for the development of rust in Ont. and Que. Numerous specimens showing light to heavy infections were received (H.S. Thompson). A sev. infection was seen on Malva neglecta at St. Catharines, Ont. (T.R. Davidson). A rusted specimen received from a private garden in Montreal, Que. (P. Duval). Plants were rather heavily affected with rust at St. Eustache, Ste. Anne de Bellevue, St. Chrysostome and Franklin Centre (R. Crete). Sl. infection at Charney (H. Genereux). Rust was sev. on A. rosea at Kentville, N.S. (C.O. Gourley). Mod. infection in several plantings about Charlottetown, P.E.I. (J.E. Campbell).

ANEMONE

Rust (Tranzschelia pruni-spinosae) was general in May on mixed varieties of A. ?coronaria at Brentwood, B.C. (W. Jones, D.B.O. Savile).

ANTIRRHINUM - Snapdragon

Rust (Puccinia antirrhini) was heavy on snapdragons at St. Eustache, Ste. Anne de Bellevue, St. Chrysostome and Franklin Centre, Que. (R. Crete). Sev. infected plants were received from Montreal (P. Duval).

Yellows (Callistephus virus 1) sev. affected 1% of the plants in a garden in Fredericton, N.B. (D.J. MacLeod).

BEGONIA

Grey Mould (Botrytis cinerea). Affected leaves received from Queens Co., P.E.I., showed fructifications typical of Botrytis (J.E. Campbell).

Powdery Mildew (?Erysiphe cichoracearum) was heavy on tuberous begonias in a garden at Toronto, Ont. Light-mod. infections were common in gardens at Ottawa. The wet season was favourable for the development of the disease (H.S. Thompson). Infection was so heavy that all the plants died in a commercial greenhouse at Chatham, N.B. (S.R. Colpitts).

Bacterial Blight (Xanthomonas begoniae) was general and caused sev. damage to tuberous begonias in a commercial greenhouse in Victoria, B.C. Plants were growing under unsanitary conditions; no spraying had been done (W. Jones).

CALENDULA

Yellows (Callistephus virus 1). Infections of 2-5% were seen in 3 gardens examined in Fredericton, N.B. (D.J. MacLeod). Every plant was affected by yellows in late September in a small bed at Kentville, N.S. (K.A. Harrison).

CALLISTEPHUS - China Aster

Wilt (Fusarium oxysporum f. callistephi) caused sev. damage in a garden at Medicine Hat, Alta. (F.R. Harper).

Yellows (Callistephus virus 1) caused mod.-sev. damage in many gardens in Lethbridge, Alta. (M.W. Cormack). Yellows was epidemic in early sown china asters, but was noticeably less prevalent in later plantings at Saskatoon, Sask. The virus also affected Tagetes, Zinnia, Phlox, Petunia, Mathiola, and Chrysanthemum. The following weeds were also found infected at Saskatoon: Canada fleabane (Erigeron canadensis L.), Toadflax (Linaria vulgaris Hill), Russian pigweed (Axyris amaranthoides L.), leafy spurge (Euphorbia esula L.), goatsbeard (Tragopogon dubius Scop.), purple cockle (Agrosterma githago L.), Lupinus sp., tansy (Tanacetum vulgare L.), catchfly (Silene sp.), stinkweed (Thlaspi arvense L.). Leaf hoppers, including Macrosteles fascifrons (Stal) 1/ were reported by the entomologists to be abundant and widespread this summer (T.C. Vanterpool). Yellows affected the dwarf variety Kirkwell Finest Mixed in the laboratory beds, St. Catharines, Ont. (W.G. Kemp). About 30% of the plants in the border at the Station, Fredericton, N.B., were affected by yellows (D.J. MacLeod).

1/ From a study of the nearctic species of Macrosteles (Homoptera: Cicadellidoe) Bryan P. Beirne (Canadian Ent. 84:208-232. 1952), concludes that the correct name of the 6-spotted leaf hopper, which was referred to by most North American authors as Cicadula sexnotata before 1937 and subsequently as Macrosteles divisa, is Macrosteles fascifrons (Stal) (I.L.C.).

CAMELLIA

Blight (Pestalotia sp.). Affected specimens of C. japonica were intercepted in a shipment from Oregon. Numerous ascervuli developed in the moist chamber. Affected leaves were off-colour and somewhat twisted (W. Jones).

CHRYSANTHEMUM

Grey Mould (Botrytis cinerea) caused a stem rot and wilt in one variety of C. morifolium in a greenhouse on Lulu Island, B.C. A 10% loss was estimated in a planting of 500 plants. Infection took place through the wounds made on the stem when the plant was disbudded (I.C. MacSwan).

Leaf Spot (Septoria chrysanthemella) sl. infected C. morifolium in a home garden in N. Vancouver, B.C. (A.D. Henderson, W. Jones). Sl. damage in a greenhouse in Lethbridge, Alta. by Septoria sp. (M.W. Cormack).

Yellows (Callistephus virus 1) affected a few plants of Spangler at Weston, Ont. The plants were started outdoors and then transplanted to raised greenhouse benches. After about 6 weeks, the plants were stunted and pale and the blooms a green colour (W.G. Kemp).

Stunt (virus) was suspected in Alexander Cummings, a hardy variety, at Port Burwell, Ont. Typical stunt symptoms appeared on healthy Pink Mistletoe 4 months after the infected plants were grafted on the indicator plants (W.G. Kemp).

Topple (non-parasitic) affected two varieties, Christmas Star and Christmas Greeting in a greenhouse at Regina, Sask. There was a collapse of the pedicels of many of the lateral heads (R.J. Ledingham). It is believed to have been brought about by physiological drought. This occurs when night temperatures are very low and day temperatures are permitted to rise rapidly. As temperatures rise rapidly during morning hours, conditions are favourable for rapid loss of water from the tops of the plants. On the other hand, soil temperature rises only slowly and on account of slow uptake of water by the roots, the lost water cannot be replaced rapidly enough. Collapse occurs at the upper limits of the pedicel as these vascular tissues are the most recently formed and movement of water is at the slowest rate. Christmas Star is a susceptible variety (A.P. Chan).

CYCLAMEN

Grey Mould (Botrytis cinerea) caused a sl. spotting of the flowers on 2 plants received from a commercial florist at Sarnia, Ont., on 1 Nov. (W.G. Kemp).

Soft Rot (Erwinia carotovora). The leaf petioles and flower peduncles of plants from Sarnia, Ont., were affected by soft rot. The rot had almost completely destroyed the corm of one extremely dwarfed plant (W.G.K.).

DAHLIA

Crown Gall (Agrobacterium tumefaciens). An affected plant received from the Station, Swift Current, Sask. (R. J. Ledingham, W. A. F. Hagborg).

Mosaic (Dahlia virus 1): 2% of the dahlia plants in a plot at the Station, Fredericton, N. B., showed sev. mosaic (D. J. MacLeod).

DAPHNE

Leaf Blight (Marssonina daphnes). Infection was sev. on leaves of D. mazereum in a nursery at Vancouver, B. C. (W. Touzeau, W. Jones).

DELPHINIUM

Powdery Mildew (Erysiphe polygoni) affected plants in a garden at St. Catharines, Ont. (G. C. Chamberlain).

Bacterial Blight (Pseudomonas delphinii) affected 20% of the plants in a garden at Quebec, P. Q.; a 10% infection was noted in a nursery near Montreal (J. Ringuet). The disease caused sev. damage to a planting in a garden at Kentville, N. S. (D. W. Creelman).

DIANTHUS

Grey Mould (Botrytis cinerea) caused a bud blight on a few plants of carnation Northland only in a greenhouse in Sarnia, Ont. (W. G. Kemp).

Leaf Spot (Heterosporium echinulatum) Sl. affected carnations in a greenhouse in Brantford, Ont. This disease does not appear to have been recorded in Eastern Canada before (J. A. Parmelee).

Rust (Uromyces caryophyllinus). A mod. infection was recorded on carnation in a garden at Duncan, B. C. (W. Jones). A sl. infection was observed in single greenhouses at Sarnia, and Leamington, Ont. (W. G. Kemp). A sev. infection was checked in a greenhouse in Montreal, Que., by spraying with zineb at 10-day intervals (J. E. Jacques). Rust was heavy on carnations in greenhouse beds at Chatham, N. B.; 80% of the plants failed to bloom (S. R. Colpitts). A few plants were affected in a greenhouse at Oxford, N. S., in May (D. W. Creelman). A sl. infection was seen on carnations in a greenhouse at Southport, P. E. I., on 27 August (J. E. Campbell).

Pimple (Xanthomonas oryzae (Uyeda & Ishiyama) Dowson var. dianthi Thomas & Dickens). In May 1954, specimens of carnation (D. caryophyllus) received from a greenhouse in Leamington, Ont., showed small, clear pimple-like spots on the leaves and stems. The infection was reported to be fairly heavy on the variety Northland, but no others were affected. The cuttings had originally come from H. Yoder, Wooster, Ohio. The symptoms were similar to those described for carnation pimple by W. D. Thomas, Jr., and L. E. Dickens (Colorado Flower Growers' Assoc. Bull. 37. Nov. 1952 and Plant Dis. Reptr. 37:634-635. 1953.). A bacterium was isolated from the material by W. D. Sutton and

the pathogenicity of the organism was demonstrated by inoculating unnamed carnation seedlings growing in the Horticulture greenhouses. Typical symptoms developed about 3 weeks after inoculation. After 3 months there was no further spread. When the crop at Leamington was seen there had been no further spread (A.P. Chan). As far as I can determine, the variety dianthi has yet to be formally published. (I.L.C.).

Mosaic (virus) was noted on a few plants of sweet rocket (D. barbatus) at Vineland, Ont. (T.R. Davidson).

?2,4-D Injury. Sev. distortion of the leaf tips and abnormal development of the buds of Pimpernell carnation were observed in a greenhouse at Leamington, Ont. The circumstantial evidence strongly suggested that the plants had been injured by 2,4-D. (W.G. Kemp).

GLADIOLUS

Core Rot (Botrytinia draytoni (Buddin & Wakef.) Seaver). In a shipment from Holland inspected at Southport, P.E.I., on 2 Dec. hard rot (q.v.) sev. infected corms of Leeuwenhorst, but 2-5% of the corms also showed core rot. In a small lot of Pretoria corms, 12% were affected (J.E. Campbell). The transfer of the fungus from Sclerotinia to Botrytinia was made by F. J. Seaver in his North American Cup-fungi (Inoperculates), p.62. 1951 (I.L.C.).

Leaf Spot and Corm Rot (Curvularia sp.). After a limited inspection of some 30 acres of gladiolus of one grower at Burlington, Ont., leaf spot was found on only the variety Gaylore, which, however, showed consistently mod. infection. At Huttonville, leaf spot also mod. infected a single variety Lake in a 25-acre planting. As a corm rot this pathogen has given some trouble to a grower at St. Eustache, Que., in Radiance ever since he began growing the variety some 10 years ago. However as the disease has only caused some loss in corms this florist has continued to grow the variety for the cut-flower trade. A second grower in the Montreal area has had considerably more trouble with corm rot and has had to cull his corms heavily to secure clean stock. The leaf spot phase was observed on the foliage last summer in gladiolus of both growers and infection was heavy in limited areas. The disease has not previously been observed in Ont. (H.S. Thompson, J.A. Parmelee).

Dry Rot (Fusarium oxysporum var. gladioli). About 5% of the corms were affected in a shipment of Clingendaal inspected at Southport, P.E.I. Diagnosis confirmed at Ottawa (J.E. Campbell). Dry rot destroyed corms in storage at Montebello, Que. (P. Duval).

Yellows (Fusarium oxysporum f. gladioli). Some root rot observed in the horticulture plots at the University, Edmonton, Alta. (W.P. Campbell).

Penicillium Corm Rot (P. gladioli) caused mod. damage to a large lot of corms stored in Calgary, Alta. (M.W. Cormack).

Hard Rot (Septoria gladioli). About half of 1000 corms each of Clingendaal and Leeuwenhorst were affected in a shipment from Holland inspected at Southport, P.E.I. Corms showed numerous small hard rot lesions many of which bore pycnidia (J.E. Campbell, J.A. Parmelee).

Mosaic (Phaseolus virus 2): 1-6% infection was observed in 4 gardens examined in Fredericton, N.B. (D.J. MacLeod).

HELIANTHUS

Wilt (Sclerotinia sclerotiorum) sev. infected a few plants of H. annuus var. Sun Gold in the laboratory beds at St. Catharines, Ont. Sclerotia were abundant inside the stem of one plant examined (W.G. Kemp).

HYACINTHUS

Yellows (Xanthomonas hyacinthi). A few bulbs were found affected in a field at Brentwood, B.C. (N. Sieffert, W.R. Orchard).

HYDRANGEA

Powdery Mildew (?Erysiphe cichoracearum) caused some damage to plants in a greenhouse at Granby, Que. (J.A. Parmelee).

IRIS

Leaf Spot (Didymellina macrospora). Only sl. infections were noted in 2/16 plantings of bulbous iris on Vancouver Island, B.C.; and none was seen in 4 small plantings inspected on the mainland (N. Mayers). A sl. infection was noted on plants received from Ottawa, Ont. (W.G. Kemp). Leaf spot was sev. on plants at Ste Genevieve de Batiscan, Que. The disease is quite general on plants on sandy acid soil, but is seldom seen on those on alkaline soil (P. Duval). It was observed in 4 Montreal nurseries, where it caused sl.-mod. damage (J. Ringuet).

Bulb Nematode (Ditylenchus dipsaci) was noted in tr. amounts in only 3/16 plantings of bulbous iris inspected on Vancouver Island, B.C. (N. Mayers).

Soft Rot (Erwinia carotovora) was at least one cause of extensive damage that occurred in several plantings at Lethbridge, Alta. (M.W. Cormack). One grower suffered heavy loss from soft rot in his iris at Starrs Point, N.S.; it was apparently spread by the cutting knife (D.W. Creelman).

Wilt (Sclerotinia sclerotiorum). A few plants of bulbous iris were killed down at Keating, B.C. The pathogen was isolated (N. Sieffert, W.R. Orchard).

Mosaic (virus). Roguing has practically eliminated mosaic from planting of bulbous iris on the mainland, B.C.; not a single affected plant was seen. Infections of tr. and .62% were observed in two plantings on Vancouver Island. Apparently natural spread is slow (N. Mayers).

LILIUM

Blight (Botrytis elliptica) caused a sev. infection in one corner of a garden planting of L. regale at Kentville, N.S.; a number of small plants were killed down by the disease (K.A. Harrison).

LUPINUS

Eye Spot (Ovularia lupinicola) was general in flowering lupine plants in a home garden on Salt Spring Island, B.C. (W. Jones).

LYTHRUM

Leaf Spot (Septoria lythrina Peck) was heavy on specimens of the variety Morden Pink sent from Port Burwell, Ont. This disease has not previously been reported to the Survey (H. S. Thompson).

MENTHA

Yellows (Callistephus virus 1) was found on four plants of spearmint (M. spicata) in a garden at Fredericton, N.B. (D. J. MacLeod).

NARCISSUS

Neck Rot (Botrytis narcissicola) is usually present in small amounts in plantings on the mainland, B.C. Infections of .5% and .7% were observed in 2/9 plantings on Vancouver Island (N. Mayers).

Bulb Nematode (Ditylenchus dipsaci) was noted in 3/63 fields inspected on the mainland, B.C. Fourteen growers of certified stock have the nematode in their commercial plantings as follows: sl. infestations in 9, mod. in 3 and sev. in 2. In addition to standard control measures, the hot-water formalin treatment and rotation, 8 growers are attempting to eradicate the nematode by spot fumigation. A sl. nematode infestation was found in 1/9 plantings on Vancouver Island (N.M.).

Basal Rot (Fusarium bulbigenum). Only traces were seen in fields inspected in B.C.; the weather was generally cool and sky overcast with the result that soil temperatures were low (N.M.).

Root-Lesion Nematode (Pratylenchus penetrans). Experiments on the control of this nematode are being continued on a farm at Cloverdale, B.C., where it is causing appreciable loss (N.M.).

Leaf Scorch (Stagonospora curtisii) caused sev. damage in 2 fields on the mainland, B.C.; one was 2-year-old planting and the other very weedy. In other fields it was present in small isolated patches, except in those planted with bulbs that were given the hot water treatment before planting last fall. These fields were free of scorch (N.M.).

White Streak and associated virus diseases were present in every planting of King Alfred inspected in B.C. This year no mainland planting showed over 2.5% infection whereas 1/9 of the Island plantings revealed more than the permitted 2.5%. The light infection in the Mainland plantings was possibly due to masking which occurs when growing conditions are good (N.M.).

Mosaic (virus). Traces were present in every planting in B.C., but the highest infection recorded was 1.2%. However, some varieties not entered for certification are seriously infected (N.M.).

PACHYSANDRA

Leaf Spot (Volutella pachysandricola B.O. Dodge). A mod. infection was found on plants in a shipment of plants from New York inspected en route to Port Burwell, Ont. Specimens were submitted to P.L. Lentz, U.S. Dept. of Agriculture, who identified the fungus as V. pachysandricola, which has previously been reported on the stems of the host (H.S. Thompson).

PAEONIA - Peony

Blight (Botrytis paeoniae) caused sl. damage in a garden at Lethbridge, Alta. (M.W. Cormack).

Ring Spot (virus). A few plants were found affected at Guelph, Ont.; it appeared to cause little injury to the plants (W.G. Kemp).

Stunt (cause undetermined): 7% of the plants in a plot at the Station, Fredericton, N.B., showed sev. stunt (D.J. MacLeod).

PELARGONIUM - Geranium

Leaf Curl (Pelargonium virus 1). About 5% of 1000 plants were affected in a greenhouse at Victoria, B.C. (W. Jones). An affected specimen was received from the city horticulturist, Regina, Sask. (R.J. Ledingham). The disease was general in plants being kept as stock plants in a greenhouse at Leamington, Ont.; no serious damage apparent (W.G. Kemp). Two plants were found affected in a greenhouse in Fredericton, N.B. (D.J. MacLeod).

Mosaic (Cucumis virus 1): 4 plants were found affected in a greenhouse in Fredericton, N.B. (D.J. MacLeod).

PETUNIA

Yellows (Callistephus virus 1) sev. affected 1% of the plants in the border at the Station, Fredericton, N.B. (D.J. MacLeod).

PHLOX

Powdery Mildew (Erysiphe cichoracearum) was general on P. paniculata at Kentville, N.S.; one planting was sev. affected (D.W. Creelman).

Blight (?virus) was sev. on P. paniculata in many gardens in Montreal, Que., including the Botanical Garden (P. Duval). A tr. was found on the border at the Station, Fredericton, N.B. (D.J. MacLeod).

RHODODENDRON

Leaf Blister (Exobasidium vaccinii). Affected azalea leaves were received from a home garden in Chilliwack, B.C. (I.C. MacSwan).

Leaf Spot (Phyllosticta sp.). A mod. infection was found on a few rhododendron shrubs in a home garden at Keating, B.C. (W. Jones).

ROSA

Crown Gall (Agrobacterium tumefaciens). An affected specimen sent in from Bengough, Sask. (T.C. Vanterpool). At Montreal, Que., crown gall killed a few rambling rose plants obtained from a B.C. nursery (P. Duval). An affected Dolly Varden plant was received from Montague, P.E.I. Galls occurred all along the stem of a climbing rose brought in from Kensington (J.E. Campbell).

Grey Mould (Botrytis cinerea) was observed causing a bud blight in the variety Banchee at Winnipeg 26 July. It is quite common at Winnipeg after heavy rains followed by bright sunshine (J.E. Machacek). A sl. infection was noted in a small garden at Ste Anne de la Pocatiere, Que. (H. Genereux).

Brown Canker (Cryptosporium minimum Laubert) was causing sev. damage on a few bushes at Royal Oak, near Victoria, B.C. A specimen (DAOM 45521) collected 8 June was sent to Ottawa where the determination was confirmed by comparison with the type and with a specimen collected at Hood River, Oregon, determined by Anna E. Jenkins and verified by R. Laubert; the specimens were loaned from the U.S. National Collections. Pustules very numerous, rupturing the epidermis; spores hyaline, alantoid, 14.4-19.2 x 2.4-3.2 microns. Reported by Anna E. Jenkins (Plant Dis. Reptr. 18:157. 1934) from Oregon and Pennsylvania. First report of its occurrence in Canada (W. Jones, Ruth Horner).

Black Spot (Diplocarpon rosae) is troublesome every year on hybrid tea roses in many rose gardens in St. Catharines and at Niagara Falls, Ont. The McGrady roses are highly susceptible and suffer extensive defoliation (G.C. Chamberlain). A mod. infection was observed at the Montreal Botanical Garden and diseased specimens were received from Pointe Claire, Que. (P. Duval). Black spot was common on escaped R. Eglanteria growing in neglected pastures and along stone fences at Franklin Centre (L. Cinq-Mars). Black spot mod. infected hybrid tea roses at Bridgewater, N.S. (D.W. Creelman).

Rust (Phragmidium montivagum) was common on wild roses in Edmonton, Alta. (W.P. Campbell). A tr. (Phr. speciosum) was found at Mahone Bay, N.S. (D.W. Creelman).

Powdery Mildew (Sphaerotheca pannosa) was particularly sev. on Crimson Rambler and Dorothy Perkins at St. Catharines, Ont. (G.C. Chamberlain). The disease was mod. on 6 bushes of climbing roses in Rockcliffe Park (H.N. Racicot). Powdery mildew was present on roses in the Montreal Botanical Garden and on specimens received from St. Basil le Grand, Que. (P. Duval). The disease was heavy on a few bushes at Chatham, N.B. (S.R. Colpitts). A mod. infection occurred on a climbing rose at Kentville, N.S., and at Belvedere, P.E.I. (J.E. Campbell).

2,4-D Injury. Affected leaves were received from a rose garden in Vancouver, B.C. (I.C. MacSwan).

SAINTPAULIA

Powdery Mildew (?Erysiphe cichoracearum) was found affecting several plants in a home at Leamington, Ont. When the oidea were used to inoculate cucumber, the fungus attacked the latter and sporulated (C.D. McKeen).

SINNINGIA - Gloxinia

Tuber Spot (Thielaviopsis sp.). A shipment of gloxinia from Michigan was refused entry because 50% of the tubers showed shallow, black, somewhat powdery, circular lesions over the surface of the tuber (J.A. Parmelee).

SYRINGA

Powdery Mildew (Microsphaera alni) was common on lilac in the Niagara peninsula, Ont. (G.C. Chamberlain).

Bacterial Blight (Pseudomonas syringae). An affected specimen received from Naicam, Sask.; bacterial ooze was present (T.C. Vanterpool).

TAGETES

Yellows (Callistephus virus 1) mod. infected "giant" marigold plants at Charlottetown, P.E.I.

TULIPA

Fire (Botrytis tulipae). Both primary and secondary infections were again general throughout plantings in B.C. Secondary fire was prevalent in tulips of two large growers on the mainland; a late frost had affected many buds sufficiently to permit rapid increase of infection. Primary infections were noted in over a third of the plantings on Vancouver Island (N. Mayers). Affected plants brought in from a city garden in Vancouver (I.C. MacSwan). Over 100 plants were affected in a home garden containing about 200 tulips in Lincoln Co., Ont. (W.G. Kemp). Fire was sev. in the test garden at the Botanical Garden, Montreal, Que.; affected specimens received from Riviere du Loup (P. Duval). The disease was present in most small gardens at Kentville (J.F. Hockey) and at Wolfville, N.S. (D.W. Creelman). Fire was general and sev. in Charlottetown, P.E.I.; the weather was wet for prolonged periods (J.E. Campbell).

Bulb Rot (Penicillium sp.). Penicillium sp. was isolated from decaying bulbs brought to the laboratory from Lincoln Co., Ont., on 17 May (W.G. Kemp). In a shipment of 500 bulbs of T. fosteriana var. Red Emperor from Holland showed extensive damage by Penicillium sp. (J.E. Campbell). It seems probable that these bulbs suffered mechanical injury or heating in transit. Under such conditions Penicillium may invade

the bulb and continue to spread after the bulb is planted. Growth or flowering may be prevented (F.L. Drayton).

Root-Lesion Nematode (Pratylenchus penetrans). A tr. infection was present in tulips in a field at Cloverdale, B.C. (N. Mayers, J.E. Bosher).

Root and Bulb Rot (Pythium ultimum). A 100-bulb planting made in the fall of 1952 and again in 1953 were a total loss each year in a garden in Ottawa, Ont. Isolations from the dark grey, more or less watersoaked lesions on the bulb scales yielded P. ultimum (H.S. Thompson). It would appear the site was not well drained (I.L.C.).

Neck Rot (Rhizoctonia solani). A sl. infection was found on plants of Red Pitt and William Pitt forced in the greenhouse at Edmonton and Calgary, Alta. (E.C. Reid, W.R. Orchard).

Grey Bulb Rot (Sclerotium tuliparum). An 18% infection was seen in forced bulbs of Alberio, Bruno Walter and Golden Measure in a greenhouse at Langley, B.C. (W. Touzeau, W.R. Orchard).

Frost Necrosis was noted affecting about 25% of the plants in a bed of Darwin tulips in Queens Co., P.E.I. A heavy frost at night is believed to have caused the injury. It had the appearance of a bacterial infection but no organism was associated with the spots. It agreed with the description given by L.R. Jones and M. Miller (Phytopathology 9:10-11, 1919) (R.R. Hurst).

VIOLA

Powdery Mildew (Sphaerotheca humuli) mod. affected pansies late in the season in 2 gardens at Lethbridge, Alta. (M.W. Cormack).

ZINNIA

Foot Rot (Phytophthora cryptogaea). A few plants of Z. elegans were killed in a home garden at Sidney, B.C. The fungus was isolated and identified as P. cryptogaea (W. Jones).

Yellows (Callistephus virus 1, western strain). Two plants were found affected in a garden in Fredericton, N.B. (D.J. MacLeod).