VI. DISEASES OF ORNAMENTAL PLANTS

ACONITUM - Monkshood

Yellows (Callistephus virus 1) severely damaged 8 plants in a garden at Fredericton, N. B. (D. J. MacLeod).

ALTHAEA - Hollyhock

Rust (Puccinia malvacearum) was found in gardens throughout the Okanagan Valley, B. C., but caused less damage than usual, probably because of the dry season (G. E. Woolliams). It was severe in a garden at Fort Macleod, Alta. (M. W. Cormack). Plants in a garden at Ottawa, Ont., were 100% infected on 31 July (H. S. Thompson). Specimens were received from Quebec, Que., where it was stated to be severe in a garden (J. E. Jacques). Rust was heavy even on the youngest leaves of specimens received from Mouth of Keswick, York Co., N. B., in early August (H. S. Thompson). Infection was 100% and damage severe in a garden at Kentville, N. S., by 20 June. These plants have been infected for a number of years. Pustules are evident each year in April. Malva neglecta in the same garden is also heavily infected every year (D. W. Creelman). Infection ranged from trace to very heavy throughout P. E. I. (R. R. Hurst).

ANTIRRHINUM - Snapdragon

Grey Mould (Botrytis cinerea). Infection was a trace in a greenhouse in Queens Co., P. E. I., in late April (R. R. Hurst).

Downy Mildew (Peronospora antirrhini) was present in seedlings grown by the Public Works Dept., Red Deer, Alta., in early May. Some seedlings were killed. Reported only from Ont. (A. W. Henry).

Oospores were plentiful in the leaves, which suggests that the pathogen may be soil-borne. It may also occur in trash with seed. The conidia measured 28.5-31.5 x 16.5-21.0 microns, further proof of the variability already discussed (P. D. S. 29:101) Note that in this earlier report Dr. Baker's figures from spores in Calif. were unfortunately given as 21-99 microns long; the figures should read 21-29 microns (D. B. O. Savile).

Rust (Puccinia antirrhini) was seen in most parts of the Okanagan Valley, B. C., but the dry season prevented serious damage (G. E. Woolliams). It was moderately heavy on Golden Queen at St. Catharines, Ont., in September (W. G. Kemp).

Root Rot (Pythium sp.) killed several plants in a garden at Lethbridge, Alta. (M. W. Cormack).

Yellows (Callistephus virus 1) infected 7% of the plants in a plot at the Laboratory, Fredericton, N. B. (D. J. MacLeod).

AQUILEGIA - Columbine

Leaf Spot (?Actinonema (Phyllosticta) aquilegiae). A moderate infection occurred at Ste. Anne de la Pocatiere, Que. in September (D. Leblond). See P. D. S. 25:108.

Powdery Mildew (Erysiphe polygoni) was seen in gardens in most parts of the Okanagan Valley, B. C., but usually did not develop until after flowering (G. E. Woolliams). It was moderately heavy at Ste. Anne de la Pocatiere, Que., on 30 Sept. (D. Leblond).

ARBUTUS

Leaf Spot (Monochaetia sp.) was common on madrona, A. menziesii, at North Saanich, B.C. (W. Jones).

ARMERIA - Thrift

Leaf Spot (Septoria armeriae Allescher) was recently shown by T. E. T. Bond (Trans. Brit. Mycol. Soc. 35:81-90. 1952) to be the cause of disease of a cultivated thrift, Bees Ruby (?A. gaditana x A. maritima), in England. The pathogen was described from northern Greenland on A. maritima var. sibirica. Although there is no record of its occurrence under cultivation in Canada, it may be noted that it was found, for the first time in continental North America, at Great Whale River, Que., on the Hudson Bay coast, in 1949, on A. maritima var. labradorica. Infection was very light and was found only in the examination of plants infected by Uromyces armeriae. A trace has since been found in a phanerogamic specimen from Nome, Alaska. The pycnidia agree well with Bond's description and illustrations, and the spores are rounded at the ends and usually uniseptate. Allescher gave the spore length as 9-25 microns, and Bond gives 8-30 microns. In the Alaska specimen the spores are 24-50 microns long, and in those from Great Whale River they are 44-90 microns long. Despite these differences, we unquestionably are dealing with a single species, which presumably is circumpolar (D. B. O. Savile).

ASTER

Downy Mildew (Basidiospora entospora). Infection was 75% on A. novae-angliae at Curry's Corner, Hants Co., N.S. First report from N.S. (D. W. Creelman).

Powdery Mildew (Erysiphe cichoracearum). A. novi-belgii vars. Blue Gem and Blutenschirn were severely attacked at the Botanical Garden, Montreal, Que. (J. E. Jacques).

BEGONIA

Grey Mould (Botrytis cinerea) caused severe rotting of leaves and flowers of a white-flowered begonia at Richelieu, Rouville Co., Que. (J. E. Jacques).

Powdery Mildew (?Erysiphe cichoracearum). A specimen with severe leaf necrosis was received from Perth, Ont., in April; a second case was said to have been observed (D. B. O. Savile). About 10% of the leaves were infected in a large window box at Ottawa in August (H. S. Thompson). Spotting occurred on petals and leaves of tuberous begonias in many window boxes at Montreal, Que., in June; and traces were seen on Angelwing begonias at the Botanical Garden (J. E. Jacques).

Bacterial Blight (Xanthomonas begoniae). Leaf lesions developed in March 1953 on rooted slips from an old plant at Ottawa, Ont. Isolations yielded a rather pale isolate, which, however, produced typical lesions 4 days after inoculation. Successful inoculation occurred through needle punctures and, particularly through the leaf margin (I. L. Conners, M. D. Sutton).

BERBERIS - Barberry

Bacterial Leaf Spot (Pseudomonas berberidis (Thornberry & Anderson) Stapp). A slight infection was recorded in a nursery at St. Lazare, Que., on B. thunbergii. Previously reported only from Ottawa, Ont. (P. D. S. 11: 96) (I. L. Conners).

Rust (Puccinia graminis). Only slight infections were recorded on B. vulgaris in Carleton and York Co., N. B. (J. L. Howatt). Twenty-five per cent of the leaves of a single bush at Parrsboro, N. S., bore aecia (D. W. Creelman, I. V. Hall). Rust was general on bushes at Southport, P. E. I. (R. R. Hurst).

Wilt (Verticillium dahliae). A trace caused slight damage to B. vulgaris var. atropurpurea in Queens Co., P. E. I. (R. R. Hurst).

CACTUS

?2,4-D Injury. A house cactus (genus?) was sent in from Saskatoon, Sask., on 8 Oct., with proliferation at the nodes; 2,4-D injury suspected (T. C. Vanterpool).

CALENDULA

Yellows (Callistephus virus 1) infected 17% of the plants in a border at the Station, Fredericton, N. B. (D. J. MacLeod). Infection was 12% at Rockland, Kings Co., N. S. (J. F. Hockey); and 100% at Kentville, appearing somewhat later than usual but completely ruining garden plantings (K. A. Harrison). Infection ranged from trace to 100% in Queens Co., P. E. I. (R. R. Hurst).

CALLISTEPHUS

Rust (Coleosporium solidaginis) severely damaged a large bed of C. chinensis at Ottawa, Ont. (J. A. Parmelee).

Wilt (Fusarium oxysporum f. callistephi) was destructive in a planting at Winnipeg, Man. (A. M. Brown). Specimens were received from Weston, and Toronto, Ont., and Valois, Que. In the last case chrysanthemums and snapdragons in the same bed were also attacked by a wilt; Fusarium was isolated from the China aster, but not from the other plants, although the symptoms suggested that it was responsible (H. S. Thompson).

Yellows (Callistephus virus 1) affected up to 50% of the plants in several gardens at Lethbridge, Alta. (M. W. Cormack). Specimens were received from Ile a la Crosse, a settlement in extreme northern Sask., but, in general, the disease was less prevalent than in many years (R. J. Ledingham). Infection was 72% in a garden at Fredericton, N. B. (D. J. MacLeod). Infection was 60% at Rockland, N. S. (J. F. Hockey), and was 100% at Kentville by mid September (K. A. Harrison). Yellows was a trace to 100% on all varieties in Queens and Prince Co., P. E. I. (R. R. Hurst).

CAMPANULA

Rust (Coleosporium campanulae) was heavy on wild C. rapunculoides in Verulam Twp., Victoria Co., Ont., in August (J. A. Parmalee). Infection was moderate to heavy on this host in a few gardens at Ottawa in September. It was also heavy near Thurso, Que., in plants spreading from a garden along

a highway cutting in June. In this location snow cover was probably heavy, enabling abundant uredinia to overwinter. The race attacking C. rotundifolia was also found in several wild colonies of this host in e. Ont. (D. B. O. Savile).

Wilt (Sclerotinia sclerotiorum) killed 20% of a seed planting of Canterbury bell, C. medium, at Keating, B. C., in July (W. Jones).

CHRYSANTHEMUM

Crown Gall (Agrobacterium tumefaciens) was found on one plant of C. morifolium originating from Ont., in a greenhouse at Victoria, B. C. (W. E. McKeen). Ten plants of marguerite, C. frutescens, in two window boxes at Vancouver were all infected, but without apparent damage (H. N. W. Toms).

Powdery Mildew (Erysiphe cichoracearum) was a trace on C. morifolium var. Dr. Enguehard in the Laboratory greenhouse, St. Catharines, Ont., in June (W. G. Kemp).

Rust (Puccinia chrysanthemi Roze) slightly infected C. morifolium in a garden at Saanichton, B. C., in November (W. Jones). Starting from a few rusted cuttings, originating from Leamington, Ont., this disease became general and quite severe in a greenhouse at Montreal, Que., by the time it was inspected on 24 Nov. (J. E. Jacques). These are the first reports of this rust to the Survey, and the only previous Canadian specimen in the herbarium is one collected at Vineland, Ont., 17 Dec. 1914, by W. A. McCubbin. The latter is responsible for the Ontario record in N. Am. Flora; but Arthur's statement, in the Manual of the Rusts that the species occurs "throughout the United States and Canada where the host is cultivated" does not seem to be fully applicable to Canada. The increasing popularity of garden varieties may, however, alter the picture (D. B. O. Savile).

CLEMATIS

Root Knot (Meloidogyne sp.). One plant of C. sp. in a garden at Westmount, Que., was so heavily infected that the leaves were chlorotic and wilted (N. P. Beaudoin).

Yellows (?virus). A specimen from Napanee, Ont., was conspicuously yellowed (H. S. Thompson, M. D. Sutton). Suspected yellows has been reported from Man. (P. D. S. 12:88), but there seem to be no proven virus diseases on Clematis.

CLIVIA

Anthracnose (Colletotrichum himantophylli Kabat & Bubak) was present on senescent leaves of Clivia (Himantophyllum) miniata, Amaryllidaceae, sent by Dr. H. T. Güssow from Victoria, B. C., in March 1953 (J. W. Groves, I. L. Conners).

DAHLIA

Crown Gall (Agrobacterium tumefaciens). Specimens were brought to the Laboratory, St. Catharines, Ont. in November (W. G. Kemp). Light infections, with slight damage, were found in the following varieties at Charlottetown, P. E. I.: Anode, Azura, Blue Horizon, Croyden's Radiance, Deuil de Roi Albert, Monarch of the East, Pink Giant, and Radiance (J. E. Campbell).

Ring Spot (virus). Infection was light at Charlottetown, P. E. I. (J. E. Campbell).

Stunt (virus). A trace was seen in a border at the Station, Fredericton, N. B. (D. J. MacLeod).

DELPHINIUM

Fasciation (?Corynebacterium fascians). A trace occurred in a garden at Saskatoon, Sask. (T. C. Vanterpool).

Powdery Mildew (Erysiphe polygoni) was severe in a planting at Winnipeg, Man. (A. M. Brown). Leaves and shoots received from Thurso, Que., were heavily mildewed. Traces occurred at the Botanical Garden, Montreal on the variety Mrs. Newton Lees (J. E. Jacques). It was heavy and caused severe damage to several varieties in gardens at Charlottetown, P. E. I. (R. R. Hurst, J. E. Campbell).

Bacterial Blight (Pseudomonas delphinii). Many small black lesions, with water-soaked margins were seen on the new leaves and stems of perennial delphinium at St. Catharines, Ont., on 29 April (W. G. Kemp). A few plants were severely spotted at the Botanical Garden, Montreal, Que. (J. E. Jacques). A moderate infection occurred at Charlottetown, P. E. I. (D. B. Robinson).

DIANTHUS

Leaf Spot (Alternaria dianthi) was moderately heavy on 22 varieties of sweet william, D. barbatus, at Deschambault, Que., on 24 Sept. (D. Leblond). As previously noted (P. D. S. 20:83. 1947) most records of Alternaria on D. caryophyllus seem to be assignable to A. dianthicola, but the predominant fungus on a specimen sent by Mr. Leblond is assignable to A. dianthi, and it seems to be an active parasite (J. W. Groves, D. B. O. Savile).

Rust (Uromyces caryophyllinus). A slight infection was seen in a greenhouse at Edmonton, Alta. (T. R. D.).

EUPHORBIA

Collar Rot (Pythium sp.). Pythium sp. was isolated from a collar rot of young cuttings of poinsettia (E. ?pulcherrima) sent in from Leamington, Ont., in December. Bacteria were also present but were apparently secondary (W. G. Kemp).

FILIPENDULA

Powdery Mildew (Sphaerotheca humuli) was severe on half the plants of F. rubra in a garden at Ottawa, Ont., on 26 June (H. S. Thompson).

GAILLARDIA

Yellows (Callistephus virus 1) affected 6% of the plants in a garden at Fredericton, N. B. (D. J. MacLeod).

GLADIOLUS

Leaf Spot (Curvularia lunata (Wakker) Boed.) was found on gladiolus for the first time in Canada when it was isolated from lesions on corms from

Montreal, Que. Inoculations produced both the corm rot and leaf spot symptoms. Since it was first reported in Florida in 1948, this disease has become widespread in the United States. It is regarded as primarily a disease of hot, humid climates. (J. A. Parmelee). It is possible that infected corms have been occasionally overlooked in previous years, because some of the incipient lesions conspicuously resemble those of hard rot (D. B. O. S.).

Scab (Pseudomonas marginata) was seen on corms received, 1 May, from Beloeil, Que. (J. E. Jacques). A 100% infection with severe damage was seen in corms in Kings Co., P. E. I., in April (R. R. Hurst).

Core Rot (Sclerotinia draytoni) caused very serious losses, estimated at $2000, to a grower at Montreal, Que., in the field in 1951, and in storage in the following winter. Examination of many of the corms in the spring of 1952 suggested that infection had in some instances spread down through the vascular tissue from the foliage into the corm (H. S. Thompson). Core rot destroyed 4% of a lot of corms, examined in April, in Queens Co., P. E. I. (R. R. Hurst). We have, after some delay tried to adopt uniformly Whetzel's system of nomenclature for the Sclerotiniaceae, which seems to be meeting with increasing acceptance by mycologists. The present organism should go in the genus Botryotinia, but no formal recombination appears to have been made for it. There has also been some question as to the identity of the Botrytis from which Sclerotinia draytoni was obtained. (See McClellan, Baker and Gould. Phytopath. 39:260-271. 1949). Dr. Drayton and Dr. Groves found single ascospore cultures of S. draytoni to be identical with B. gladiolorum; but Dennis and Wakefield described their organism as producing narrower conidia more like those of the inadequately described B. gladioli. There is reason to believe that differences in culture medium and mounting medium largely account for the apparent anomalies, and that S. draytoni is, in fact, the perfect stage of the core rot pathogen (D. B. O. S.).

Dry Rot (Stromatinia gladioli) was slight in a greenhouse at Sidney, B. C., and severe in a 1-acre commercial planting on Lulu Island. In the latter, loss was 20% in the varieties Allard Pearson, Bit of Heaven, Elizabeth the Queen, Invictus, Lady Jane, Paradise, Spotlight, and True Love (W. Jones, I. C. MacSwan). Dry rot caused severe losses to a grower in Montreal, Que. (J. E. Jacques).

Mosaic (viruses). A survey of a 4-acre field in the Niagara Peninsula, Ont., showed 20% of the 1366 plants to be infected with mosaic mottlings. Infected plants were found in the following varieties: Commando, Corona, Harvest Moon, Kestrel, Magnolia, Mighty Monarch, Mrs. Mark's Memory, Myrna, Rosa Van Lima, and Stardust. Infection ranged from 0.4% in Corona to 99% in Mighty Monarch (G. H. Berkeley). Phaseolus virus 2 caused a faint mosaic in 3 gardens at Fredericton, N. B. (D. J. MacLeod). Four mosaic-infected plants were seen in a garden plot of mixed varieties at Kentville, N. S. Commercial plantings seemed to be comparatively free from viruses owing to continual roguing (J. F. Hockey). G. H. Berkeley (Phytopath. 43:111-115. 1953) describes and illustrates the symptoms of several viruses on gladiolus in Ontario.

Storage breakdown (lack of oxygen) severely damaged 60% of a lot of stored corms at Charlottetown, P. E. I., examined in May (R. R. Hurst).

HYACINTHUS - Hyacinth

Soft Rot (Erwinia carotovora) had destroyed a small lot of bulbs submitted in May from East Royalty, Queens Co., P. E. I. (R. R. Hurst).

Yellows (Xanthomonas hyacinthi). Infection was 12% in Bismark and 33% in Renaissance, in Jan. 1952, in a greenhouse at Victoria, B. C. The bulbs had been imported in 1951 (J. Bosher).

HYDRANGEA

Powdery Mildew (? Erysiphe cichoracearum) caused a premature brown spotting of petals of H. arborescens var. grandiflora at the Botanical Garden, Montreal, Que. (J. E. Jacques).

Leaf Spot (Phyllosticta hydrangeae Ell. & Ev.). A specimen was received from Quebec, Que., on 3 Sept. (D. Leblond). Not previously reported to the Survey, but we have one specimen from Winnipeg, Man. (D. B. O. S.).

Oedema (physiological). Leaves and young shoots were stated by a grower at Bagotville, Chicoutimi Co., Que., to be severely affected in January (J. E. Jacques).

IBERIS - Candytuft

Rust (Puccinia subnitens). Aecial infection was a trace on I. umbellata in a greenhouse at Saskatoon, Sask., on 5 June; presumably from nearby Distichlis spicata (T. C. Vanterpool, D. B. O. Savile).

IRIS

Bacterial Leaf Blight (Bacterium tardicrescens) was general in German irises at the Botanical Garden, Montreal, Que. (J. E. Jacques).

Leaf Spot (Didymellina macrospora). At Gordon Head and North Saanich, B. C., leaf spot appeared to be more general than in 1951. The discoloration of the foliage materially reduced the market value of the cut bloom (W. Jones). Traces were found in every planting on Vancouver I. inspected for certification except for a heavy infection in one small plot. Traces occurred in all plantings in the lower mainland (N. Mayers). Specimens from Rawdon, Montcalm Co., Que., on 30 July, were severely spotted and the leaves partly killed (J. E. Jacques). Infection was a trace on all varieties in some gardens at Charlottetown, P. E. I. (R. R. Hurst).

Soft Rot (Erwinia carotovora) attacked odd plants at the Botanical Garden, Montreal, Que. (J. E. Jacques).

Mosaic (virus). Infection was 0.5% and 0.7% in two plantings of bulbous iris entered for certification on Vancouver I, B. C., and was a trace in all plantings on the lower mainland. It is still the leading cause of rejection for certification, but the percentage of plots passing has risen encouragingly (N. Mayers).

LATHYRUS

Fasciation (Corynebacterium fascians). Specimens of L. odoratus var. Early Spencer submitted to the Laboratory, Winnipeg, Man., were severely fasciated. Symptoms were typical of infection by C. fascians and bacterial rods were abundant in the tissues. A gram positive organism was isolated but its pathogenicity has not yet been proved (W. A. F. Hagborg).

Streak (Erwinia lathyri) caused severe damage to L. odoratus in two gardens at Lethbridge, Alta. (M. W. Cormack).

Leaf Spot (Ramularia deusta). R. lathyri Cooke & Shaw (Mycol. 44:803. 1952) appears to be an addition to the extensive synonymy for this species given by Baker et al. (Mycol. 42:403-422. 1950). See also P. D. S. 30:127 (D. B. O. Savile).

LILIUM - Lily

Mosaic (virus). All plants of L. canadense at the Botanical Garden, Montreal, Que., were infected and had to be discarded (J. E. Jacques).

Necrotic Fleck (?latent lily virus and Cucumis virus 1) affected most of the plants of a clone of L. candidum in a garden at Vancouver, B. C. Bolting rosettes showed all leaves flecked and older leaves necrotic on 30 April. See Brierley et al, Florists' Review, 4 Sept. 1947, fig. 1 (H. N. W. Toms).

?Rosette (virus). Specimens of L. ?monadelphum received from L'Assomption, Que., on 1 May, showed nearly normal lower leaves but a dense rosette of chlorotic leaves above. There was no downward curling of the leaves, perhaps because it was still early in the season. The bulbs and roots were sound. Thirty plants were said to be affected. The foliage was said to dry up, and the plants to flower sparsely and the blooms to slough off (D. B. O. Savile).

LOBULARIA

Yellows (virus) affected a few plants of sweet allysum, L. maritima, in gardens at Charlottetown, P. E. I. The vector could not be found (R. R. Hurst).

LUPINUS - Lupine

Leaf Spot (Ovalaria lupinicola). O. lupini Cooke & Shaw (Mycol. 44: 802. 1952) does not seem to be distinct from this organism. See P. D. S. 26:86. 1947 (D. B. O. Savile).

MERTENSIA - Lungwort

Grey Mould Blight (Botrytis cinerea) severely damaged all plants of M. virginica in a garden in Queens Co., P. E. I. (R. R. Hurst).

NARCISSUS

Smoulder (Sclerotinia narcissicola) was negligible in plantings entered for certification in B. C. (N. Mayers). Like S. draytoni this species is a typical Botryotinia, but no combination appears to have been made.

Basal Rot (Fusarium spp.). Traces were found in one commercial stock on Vancouver I., B. C., at shipping time. None was found in any plantings entered for certification in the lower mainland, but one grower found several infected bulbs in his stock (N. Mayers).

Scorch (Stagonospora curtisii). Primary infection was very light in B. C. Some secondard infection occurred in early June, but there was little further spread (N. Mayers).

Decline (virus) was seen in all 14 plantings inspected on Vancouver I., B. C.; in 6 infection was less than 2.5%, 5 were rejected for other causes

and not re-inspected, and in 3 infection was 3.5-4.6%. It was also seen in all 53 plantings in the lower mainland, but in 46 it was less than 2.5%; the remaining 7 ranged from 4.0 to 13.5% (N. Mayers).

Mosaic (virus) was a trace in 8/14 plots inspected on Vancouver I., B.C.; in the others it ranged from 0.25 to 1.4 (av. 0.65%). Traces, only, were seen in all plantings in the lower mainland (N. Mayers).

PAEONIA - Peony

Blight (Botrytis paeoniae) was severe in a garden at Lethbridge, Alta. (M.W. Cormack). Traces were seen in many gardens at Edmonton (T.R.D.), and moderate damage in one (A.W. Henry). All new growth was destroyed in an entire bed at Cole Harbour, Halifax Co., N.S. Infections of 10-20% caused moderate damage in two gardens at Kentville (D.W. Creelman, H.A.L. MacLaughlan). Blight was heavy in several gardens at Charlottetown, P.E.I., and one report was received from Summerside (R.R. Hurst).

Leaf Spot (Phyllosticta commonsii) was a trace at Kentville, N.S.; spores 6-8.5 x 3-5 microns (J.F. Hockey, D.W. Creelman). We have specimens or reports from Alta., Man. and Que., but not from N.S.

Ring Spot (virus). Plants in a garden at St. Catharines, Ont., produced shoots with striking yellow rings, mottles and irregular patches (W.G. Kemp). Infection was 15% in a planting of a white peony near Ottawa. The plants had been imported the previous year (H.S. Thompson). Two per cent of a plot at the Station, Fredericton, N.B., showed stunting and ring-spotting (D.J. MacLeod). All four plants in a garden at Charlottetown, P.E.I., were infected (R.R. Hurst).

Blossom Blight (genetic) affected several clumps in a garden at Quebec, Que., and was reported from Valleyfield, Marieville and Montreal. This trouble occurs commonly in peonies carrying more than one flower on a stem. Most affected varieties belong to P. emodi, P. veitchii and, especially P. lactiflora (albiflora). According to F.C. Stern (A study of the genus Paeonia. London. 1946), when only one flower develops on a stem of P. veitchii the remains of the others are present as aborted buds in the axils of the leaves. This abortion of flower buds seems, therefore, to be a natural character rather than a pathological effect. Its inheritance remains to be worked out, but it has probably been introduced by A. P. Saunders (Genetics 23:65-110. 1938) with a considerable number of garden hybrids (A. Blain and J.E. Jacques).

PELARGONIUM - Geranium

Crown Gall (Agrobacterium tumefaciens). A specimen was received from Saskatoon, Sask. (T.C. Vanterpool, H.S. Thompson).

Basal Rot (Botrytis cinerea). Infection was trace to 10% in cuttings of several varieties, notably Crerar and National, being rooted in greenhouses at Summerland, B.C., in November (G.E. Woolliams).

Wilt (Verticillium albo-atrum) caused the complete loss of well-grown, potted cuttings in a commercial greenhouse at Vancouver, B.C., in July. Lesions occurred at nodes and the bases of branches. The pathogen was isolated. See D.C. Torgenson (U.S.D.A. Pl. Dis. Reptr. 36:51. 1952) for report of this disease in Oregon (H.N.W. Toms).

Crinkle (virus) was seen in a number of potted plants being used as a source of cuttings in a commercial greenhouse at Hamilton, Ont. (W. G. Kemp).

PHLOX

Powdery Mildew (Erysiphe cichoracearum) became general and light to severe on P. paniculata at Vancouver, B. C., in July during dry weather. It became more severe in the fall (H. N. W. Toms). It was unusually heavy for the time of year on a few plants in a garden at Ottawa, Ont., on 23 July. Almost all leaves bore some lesions (I. L. Conners). Mildew was prevalent in gardens at Lakeside, Montreal, Mominingue and Repentigny, Que. (J. E. Jacques). Infection was 75-100% at Kentville and Kingsport, N. S., on 4 Aug. (D. W. Creelman). It was trace to severe in Queens Co., P. E. I., by 26 Aug. (R. R. Hurst).

Leaf Spot (Septoria phlogis) was heavy and caused much defoliation by 29 July in a planting of mixed varieties of P. drummondii at Ottawa, Ont. There are various records for Septoria leaf spots on this plant under S. drummondii, which is certainly synonymous with S. phlogis; or under S. divaricata, which supposedly has much smaller spores. Specimens suggest that there is a complete intergradation in spore size. The spores of the present specimen are typical of S. phlogis (D. B. O. Savile).

Blight (virus). A trace was found in two plots at the Station, Fredericton, N. B. (D. J. MacLeod).

RHODODENDRON

Rust (Chrysomyxa piperiana (Arth.) Sacc. & Trott.) was collected on R. californicum between Hope and Princeton in s. w. B. C. (W. Touzeau). This is the first definite record of the occurrence of this rust in B. C., but it has been intercepted at Vancouver on plants of R. californicum imported from Oregon. It might cause some trouble where this shrub is planted close to spruce. It may be noted in passing that C. roanensis was reported by J. P. Anderson (The Uredinales of Alaska and adjacent parts of Canada. Iowa State Coll. Journ. of Sci. 26:507-526. 1952) on R. lapponicum near Fort Nelson in extreme northern B. C.; but examination of a fragment of this collection, supplied by the late Dr. Anderson, shows it to be C. ledi var. rhododendri (D. B. O. Savile).

ROSA - Rose

Crown Gall (Agrobacterium tumefaciens). Slight infections were seen on a few varieties at Victoria, B. C. (W. Jones). A rambler rose, var. Shot Silk, at Vancouver, with canes up to 7 ft. 6 in. long, bore linear galls similar to those caused by A. rubi up to the 6 ft. level, rather than the usual spherical galls near ground level (H. N. W. Toms). Crown gall was a trace to heavy on climbing roses in gardens at Summerside and Charlottetown, P. E. I. (R. R. Hurst).

Grey Mould (Botrytis ?cinerea) prevented buds from opening in specimens received from Parkman, Sask. (T. C. Vanterpool). Grey mould caused severe damage in March in a nursery storage at Charlottetown, P. E. I., containing hundreds of valuable varieties. Poor ventilation was responsible, and when it was corrected a great improvement resulted (R. R. Hurst).

Black Spot (Diplocarpon rosae) caused premature defoliation of hybrid tea roses in Victoria Park, Niagara Falls, Ont., in August. It was also prevalent in many gardens at St. Catharines, in one instance causing complete defoliation by 26 Aug. (G. C. Chamberlain, W. G. Kemp). Traces were seen on Pelse's Rival at the Botanical Garden, Montreal, Que. (J. E. Jacques). It was heavy on specimens submitted from a nursery at Granby, Que., in late August (H. S. Thompson). A 50%, infection caused severe damage at Yarmouth, N. S., in September. It caused severe yellowing and defoliation at Kentville in early October (D. W. Creelman, J. F. Hockey). Black spot was moderately heavy in August at Charlottetown, P. E. I. (R. R. Hurst).

Stem Canker (Leptosphaeria coniothyrium) caused slight damage to var. Mrs. Sam McGredy at Victoria, B. C. (W. Orchard).

Rust (Phragmidium spp.). Leaves infected by P. sp. were received from a garden at Vancouver, B. C., in June (I. C. MacSwan). Specimens of P. speciosum were received from a garden at London, Ont. (F. J. Hudson, I. L. Conners). A 50% infection of P. speciosum caused severe damage at Murder Point, Lunenburg Co., N. S. (D. W. Creelman). P. rosae-pimpinellifoliae caused slight damage at Charlottetown, P. E. I. (J. E. Campbell).

Powdery Mildew (Sphaerotheca pannosa) was light on a few plants of Blaze, a large-flowered climber, at St. Catharines, Ont., in June. It was heavy and caused some leaf distortion on hybrid tea roses at St. Catharines in late August (W. G. Kemp). It was heavy and caused defoliation and weak terminal growth of Crimson Rambler at St. Catharines in August (G. C. Chamberlain). Mildew was heavy on specimens received from St. Jean Baptiste, Rouville Co., Que., in early July; and traces were seen on Pelse's Rival at the Botanical Garden, Montreal (J. E. Jacques). Specimens received from Avonport, Kings Co., N. S., on 9 July were heavily infected, with severe damage to petioles and buds (D. W. Creelman). Infection was heavy on a Crimson Rambler at Charlottetown, P. E. I., in September (R. R. Hurst).

Mosaic (virus) is seen annually on single plants of Karen Poulsen and Kirsten Poulsen hybrid polyanthas in a garden at St. Catharines, Ont., but seems to have little effect on their vigour (G. C. Chamberlain).

SAINTPAULIA - African Violet

Grey Mould (Botrytis cinerea) attacked the leaf blades and petioles of a plant examined at Montreal, Que. (J. E. Jacques).

Root Rot (various organisms associated) is becoming increasingly important at Toronto, Ont., and other localities. Fusarium and certain Phycomycetes have been found responsible in various degrees (H. S. Thompson).

Leaf Curl (virus), causing a downward curling of the leaves, has been seen at Toronto, Ont. Other symptoms, such as dwarfing of the leaves or suppression of leaf hairs, giving a shiny appearance to the foliage, may be associated (H. S. Thompson). The sudden and marked increase in popularity of African violets will inevitably give rise to disease problems. The root rot complex, which is being studied by Mr. Thompson, is a serious limiting factor in production of the plants.

SALVIA

Wilt (Fusarium oxysporum). Specimens received from Windsor, Ont., in August showed blackening of the stem base and vascular browning spreading in some plants to the branch tips. The infection rate was high. The organism, det. W.L. Gordon, was isolated consistently (W.R. Lapp, H.S. Thompson).

SOLIDAGO - Goldenrod

Powdery Mildew (Erysiphe cichoracearum) was very heavy by 2 Sept. on ornamental hybrids, especially Sunshine, at the Botanical Garden, Montreal, Que. (J.E. Jacques).

SYRINGA - Lilac

Grey Mould Blight (Botrytis cinerea) destroyed 30% of the blossoms at Kentville, N.S. Specimens were also received from Canard, Kings Co. (D.W. Creelman).

Powdery Mildew (Microsphaera alni). Traces were seen at the Botanical Garden, Montreal, Que. (J.E. Jacques).

Bacterial Blight (Pseudomonas syringae). Specimens showing typical infection were received from a single bush at Tusket, Yarmouth, Co., N.S. (D.W. Creelman).

TULIPA - Tulip

Fire (Botrytis tulipae). Primary lesions were recorded in 19/54 plots inspected on Vancouver I., B.C. Infection ranged from 0.2 to 2.5 (av. 0.69)%. Secondary infection was later seen in all plantings, the weather having been ideal for spread of the disease. On the lower mainland both primary and secondary fire was general. Heavy frosts, as low as 22°F., in April and May caused considerable damage in many varieties and made exact counts of fire impossible. In general there was a correlation between frost injury and fire damage, perhaps due to frost injury providing infection counts (N. Mayers). Infected blossoms, with many sclerotia on the petals were received on 10 June from Pepperlaw, Ont. Infection appeared to have been heavy (H.S. Thompson). Infection was about 20% in I. fosteriana var. Red Emperor in plantings at the National War Memorial, Ottawa. Leaf and stem lesions were severe. The tunics of the bulbs were firm and intact, but when they were cut off large sclerotia were found beneath. Despite the size of the sclerotia, cultures yielded typical B. tulipae (Constance A. Bowerman, D.B.O. Savile). Fire was stated to be common in a planting at Cheneville, Papineau Co., Que. (J.E. Jacques). Fire was heavy and widespread at Halifax, N.S., according to reports and specimens from the Plant Protection Division. Many entire beds were involved (D.W. Creelman).

Blue Mould (Penicillium sp.) caused severe rot of several bulbs in a lot of bulbs at Charlottetown, P.E.I., in September (A. Raynor, S. McAulay).

Root and Stem Rot (Rhizoctonia solani) caused considerable damage to stems and leaves of tulips in a cold greenhouse at the Station, Saanichton, B.C., in February. Infection took place below soil level in the early stages of growth (W. Orchard). Moore (Brit. Min. Agr. Fish. Bull. 117. 1939)

recorded R. solani causing a rot of plants from bulbs imported from Washington. Weiss and O'Brien (Index of Plant Diseases in the United States, part 4. 1952) report it from Mass., N.Y. and Wash. This appears to be the first report from Canada.

Gray Bulb Rot (Sclerotium tuliparum) destroyed about 500 bulbs of various varieties in a garden at New Westminster, B.C. Large patches in the beds were affected (I.C. MacSwan).

Break (virus). Traces were observed in most plantings inspected in Vancouver I., B.C., and all those on the lower mainland (N. Mayers). It occurred throughout the Okanagan Valley. Many plantings were free, but it varied from slight to severe in others (G.E. Woolliams).

Topple (physiological). In a greenhouse at Victoria, B.C., loss in January was 50% in White Sail and 10% in Her Grace, both imported from Holland (J. Bosher).

Bulb Rot (?wet ground). Tulips in a bed near Ottawa, Ont., failed to make normal growth. Three bulbs submitted were completely rotted; one also bore many sclerotia of what proved to be Botrytis tulipae, although the picture at first suggested Sclerotinia sativa. Heavy rain and ice in early winter is believed to have been responsible (I.L. Conners).

VIOLA

Leaf Spot (Ascochyta violae Sacc. & Speg.). A trace occurred at Keating, B.C., on V. tricolor var. hortensis (W.R. Orchard). Infection was moderate on the same host at Ste. Foy, Que. (D. Leblond). Not previously reported in Canada; but the organism may be a phase of Phyllosticta violae (P.D.S. 25:123).

Crown and Stem Rot (Myrothecium roridum). Infection was 5-10% in 3 fields of pansy at Keating, B.C., in August. The loss in seed production was ca. 8%. This disease is of constant concern to pansy seed growers in southern Vancouver I. (W.R. Orchard).

Powdery Mildew (Sphaerotheca humuli) was prevalent and caused moderate damage to pansies and violas at Saskatoon, Sask., late in the summer (R.J. Ledingham).

ZINNIA

Blight (Alternaria zinniae Pape). Infection was 100% and damage severe in a single block in a large planting at the Station, Kentville, N.S. Leaf lesions were large and very numerous, flower lesions moderately abundant, and stem lesions occasional. The pathogen fruited sparsely but regularly on leaves and florets. Appearance agreed well with that described by Dimock and Osborn (Phytopath. 33:372. 1943) (D.W. Creelman). First report to the Survey. The distribution in this outbreak strongly suggests that the pathogen was introduced with the seed.

Yellows (Callistephus virus I). A trace was found in the border at the Station, Fredericton, N.B. (D.J. MacLeod). All plants in a garden at Charlottetown, P.E.I., were severely damaged (R.R. Hurst).