VI. DISEASES OF ORNAMENTAL PLANTS

ALTHAEA ROSEA - Hollyhock

Leaf Spot (Cercospora althaeina) was severe on some plants at the Laboratory, Winnipeg, Man. (W.L. Gordon). This leaf spot was heavy on small plants and on the lower leaves of large ones, causing some defoliation, in one garden at Westboro, Ont.; previously reported from Man. and P.E.I. (D.B.O. Savile).

Rust (Puccinia Malvacearum) was common on hollyhocks at Summerland, B.C., and elsewhere in the district (G.E. Woolliams, H.R. McLarty). Rust was severe at Winnipeg, Man.; in one location some plants were killed (W.L.G.). At Ottawa and Westboro, Ont., rust was definitely heavier in some gardens than in 1943; pustules were sometimes confluent over the entire surface of a leaf. The relatively poor growth due to the drought made the injury conspicuous. Abundant inoculum from 1943 may have contributed to the epidemic but frequent gentle sprinklings of gardens during hot weather was the principal factor (D.B.O. Savile). A severe infection was seen on a private estate at Ste. Hyacinthe, Que. (J.E. Jacques). Rust was very heavy in many borders in Queens Co., P.E.I. (R.R. Hurst).

ANTIRRHINUM - Snapdragon

Basal Rot (Fusarium sp.). Damage in a planting at Edmonton, Alta., was apparently caused by Fusarium sp. (A.W. Henry). Isolations from wilting plants at Winnipeg, Man., yielded F. oxysporum, F. Equiseti and Cylindrocarpon radicicola (W.L. Gordon).

Rust (Puccinia Antirrhini) was moderately heavy at the Station, Summerland, B.C. (H.R. McLarty). Severe infection occurred in mixed "A. nanum compactum" (presumably a dwarf form of A. majus) in a garden at Edmonton, Alta.; in adjacent rows of the rust-resistnat Du Barry, infection was a trace to slight (M.W.C.).

Leaf Spot (Septoria Antirrhini) slightly affected volunteer plants in late April, in N. Saanich Co., B.C. (W. Jones).

AQUILEGIA - Columbine

Powdery Mildew (Erysiphe Polygoni) affected nearly all plants at the Station, Summerland, B.C., and was present but not serious at various locations in the Okanagan Valley (G.E. Woolliams, H.R. McLarty).

Root Rot (cause unknown) caused severe damage in the horticultural plots at Lethbridge, Alta. (G.B. Sanford).

Mosaic (Cucumis virus 1) affected one plant out of six of A. formosa in the Arboretum, Ottawa, Ont. (D.B.O. Savile).

ARTEMISIA

Powdery Mildew (Erysiphe Cichoracearum) was moderately heavy on some leaves of A. sp. at Morden, Man. (W.L. Gordon).

Leaf Spot (Phyllosticta sp. = ?Phoma ferruginea Sacc.) was moderately abundant on some leaves of A. sp. at Morden, Man.; spores 4-6 x 2-5 microns; first report to the Survey (W.L. Gordon).

ASTER

Rust (Coleosporium Solidaginis) was heavy on the leaves of some plants at Morden and Winnipeg, Man. (W.L. Gordon).

Dodder (Cuscuta Gronovii) killed several plants of michaelmas daisy (?A. novae-angliae) at Charleswood, Man. (W.L. Gordon).

Powdery Mildew (Erysiphe Cichoraceamm) was moderately heavy on many plants of A. novae-angliae at the Station, Summerland, B.C. (H.R. McLarty). It was moderately heavy on some plants of Aster spp. at the University, Winnipeg, Man. (W.L. Gordon). A. novae-angliae vars. Red Cloud and Barr's Pink, and A. novi-belgii var. Beechwood Challenger were heavily infected late in the summer at the Botanical Garden, Montreal, Que.; the hybrid Glory of Colwall was lightly infected (J.E. Jacques).

Rust (Puccinia Asteris) slightly infected some plants of Aster sp. in a garden at Winnipeg, Man. (A.M. Brown).

Leaf and Stem Blight (Ramularia Asteris) was severe on Aster sp. at Morden and on A. ericoides at Winnipeg, Man.; first report in the Survey (W.L. Gordon).

Leaf Spot (Septoria atropurpurea) was moderate on Aster spp. at Winnipeg, Man. (spores 67.5-102.5 x 2.5-3 microns), and at Morden (spores 37.5-47.5 x 2 microns) (W.L. Gordon).

BELAMCANDA - Blackberry-Lily

Leaf Spot (Heterosporium Iridis). A light general infection occurred on B. chinensis at Brandon, Man. (W.L. Gordon).

BERBERIS - Barberry

Rust (Puccinia graminis). At the Botanical Garden, Montreal, Que., aecia were abundant on B. heteropoda, and present in small numbers on B. aggregata, B. brachypoda, B. Poireti var. weichangensis, B. sibirica, and B. Tischleri; rusted Agropyron repens was abundant nearby (J.E. Jacques). See also under stem rust of oats.

BERGENIA

Leaf Spot (Phyllosticta sp.) was extensive on B. cordifolia at Morden, Man.; spores 10.5-15 x 2.5-3 microns; first seen in 1934 (P.D.S. 14:91 under Saxifrage) and several times seen since but never in fruit. A number of doubtfully distinct species of Phyllosticta have been described from Saxifrage and related genera, but all seem to have much shorter and somewhat narrower spores (W.L. Gordon).

BOLTONIA

Streak (virus) was severe in the border at the Station, Fredericton, N.B. (D.J. MacLeod).

CALCEOLARIA

Spotted Wilt (Lycopersicum virus 3) caused moderate damage to plants at the Botanical Garden, Montreal, Que.; infection is thought to have originated from diseased salvias that were placed in the same house (J.E. Jacques).

CALENDULA

Yellows (Callistephus virus 1) attacked odd plants of C. officinalis at Winnipeg, Man.; first Man. record in this host (W.L. Gordon). See also under Callistephus.

CALLISTEPHUS CHINENSIS - China Aster

Rust (Coleosporium Solidaginis) was generally moderate but heavy on some leaves at Winnipeg, Man. (W.L. Gordon). Little or no rust occurred at Ottawa, Ont. (D.B.O. Savile).

Wilt (Fusarium oxysporum severely damaged half of a mixed planting in a garden at Agassiz, B.C. (W. Jones). Fusarium was isolated from severely damaged plants in Sandwich East Twp., Ont., where 60% were affected (J.J. Miller). Late in the season wilt was prevalent in the vicinity of Guelph, Ont. (J.E. Howitt).

Yellows (Callistephus virus 1) was severe at Lethbridge and Innisfail, Alta., and in several gardens at Edmonton (M.W.C.). Yellows appeared to cause considerable damage throughout Ont., as specimens were received from many widely separated localities (J.E. Howitt). Yellows was common on China aster in York, Sunbury, Queens and Westmorland Co., N.B. A florist at Sussex had only a minimum of yellows on Callistephus, Calendula and Phlox Drummondii within a cage covered with a special "tobacco cloth", whereas Callistephus and Calendula in the open near the cage were severely attacked. A number of weeds were commonly affected as follows: Chrysanthemum Leucanthemum, York and Sunbury Co.; Leontodon autumnalis and Plantago major, York, Sunbury, Queens, Westmorland, Albert and Carleton Co.; Erigeron annus, the above and Northumberland Co. C. Leucanthemum was first seen affected on June 6 when 18% of plants in a hay field at Fredericton were visibly diseased; at this date 19% of E. annuus in a pasture at Fredericton were infected; these two plants appear to be the principal overwintering hosts in N.B.; the virus was repeatedly transmitted from them to Callistephus in the spring. Four per cent of L. autumnalis in a lawn at Fredericton were infected (D.J. MacLeod). The following ornamentals were severely affected by yellows in P.E.I.: Calendula, Callistephus, Coreopsis, Cosmos, Dahlia, Gaillardia, Schizanthus, Tagetes. "By spraying these plants daily at dusk with strong Black Leaf 40 I am able to avoid most of this trouble in dahlias and to some extent in other plants" (R.R. Hurst).

CAMPANULA

Rust (Coleosporium Campanulae). Very little rust developed on C. rapunculoides at Ottawa, Ont., in contrast to the situation in 1943. Although the dry season unquestionably contributed to this meagre development, it is thought that inadequate snow cover, by hindering the overwintering of uredinia, also played an important part. A heavy infection was found on June 28 in a colony of escaped plants on a north-east slope in the Arboretum, where snow cover was probably abundant; this colony had not been observed previously, but it is almost certain that the rust had overwintered in it, since it was plentiful at this time although no rust occurred either in colonies between this one and the nearest pines or on the pines. A rusted specimen of C. rapunculoides was received from Bellechasse, Que. (D.B.O. Savile).

Leaf Spot (Phyllosticta ?carpathica Allesch.) was heavy on some leaves of C. sp. at Morden, Man.; spores 7.5-15 x 2.5-3 microns, rarely 1-septate. Grove (British Stem and Leaf Fungi 1:11, 297) suggests that Ph. carpathica is a phase of Ascochyta carpathica. This is the first report in the Survey of Phyllosticta on Campanula, but Ascochyta sp. was reported from Morden in 1942 (P.D.S. 22:98). (W.L. Gordon).

CANNA

Root Rot (bacteria associated). Of a shipment of canna roots from Toronto planted at Winnipeg, Man.; 80% failed to grow; bacteria were abundant in the roots (W.A.F. Hagborg).

CENTAUREA

Leaf Spot (Septoria centaureicola var. brevispora) was fully as heavy as in 1943 in a garden at Westboro, Ont., and was more widespread; sprinkling may have offset the effects of the dry season (D.B.O. Savile).

Yellows (Callistephus virus 1) was severe in Centaurea sp. in the border at the Station, Fredericton, N.B. (D.J. MacLeod).

CHRYSANTHEMUM

Spotted Wilt (Lycopersicum virus 3) infected a small percentage of plants at the Botanical Garden, Montreal, Que., but destruction of diseased plants soon checked its spread (J.E. Jacques).

Yellows (?Callistephus virus 1). Late in the fall a single clump of C. monspeliense in the Arboretum, Ottawa, Ont., produced pale, attenuated shoots from the base, suggestive of a recent infection (D.B.O. Savile).

CIMICIFUGA - Bugbane

Mosaic (virus) severely damaged about a dozen plants of C. japonica at the Botanical Garden, Montreal, Que. (J.E. Jacques).

CLEMATIS

Leaf Spot (Septoria Clematidis) was severe and destructive to C. ligusticifolia at Brandon and Morden, Man. (W.L. Gordon).

CLEOME

Crown Rot (Fusarium sp.). A giant spider plant (?C. spinosa) in the grounds at the Station, Summerland, B.C. was affected; Fusarium fruited abundantly on the surface of the rotted tissue (H.R. McLarty).

COREOPSIS

Yellows (Callistephus virus 1). See under Callistephus.

COSMOS

Yellows (Callistephus virus 1). See under Callistephus.

DAHLIA

Mosaic (virus) was seen at Winnipeg, Man., on a plant grown from a tuber purchased in B.C.; the disease spread to adjacent plants (T. Johnson).

Spotted Wilt (Lycopersicum virus 3) was severe on plants at the Botanical Garden, Montreal, Que.; infection is thought to have occurred in spring in the greenhouses where the disease was common (J.E. Jacques).

Stunt (virus) severely affected odd plants at Reston, Man. (W.L. Gordon). Seven cases of stunt were noted in P.E.I. (R.R. Hurst).

Yellows (Callistephus virus 1). See under Callistephus.

DAPHNE

Leaf Spot (Marssonina Daphnes) was received from Canard, Kings Co., N.S., where it was causing severe defoliation; previously reported from B.C. (J.F. Hockey, I.L. Conners).

DELPHINIUM

Powdery Mildew (Erysiphe Polygoni) was much less severe at Ottawa, Ont. than in 1943. Specimens were received from Lakefield, Que.; the grower stated that all twenty clumps in his garden were similarly affected; these plants (?D. cultorum) looked as though systemically infected by a downy mildew, the upper internodes being generally reduced to less than one quarter inch in length and blossoms being completely inhibited; a heavy infection evidently was initiated early in the season; the plants were almost completely covered with perithecia; the grower stated that the season was dry until late July (D.B.O. Savile). Powdery mildew was general but light at the Botanical Garden, Montreal, Que. (J.E. Jacques).

Crown and Root Rot (Sclerotium Delphinii) killed several plants at Outremont, Que.; specimens showed brown, spherical sclerotia in and on the decayed tissue (J.E. Jacques, conf. F.L. Drayton).

DIANTHUS

Leaf Spot (Heterosporium echinulatum). At Brentwood, B.C., infection was heavy on foliage and moderate on stems of seed plants of sweet william (D. barbatus) var. Scarlet Beauty (W. Jones). Leaf spot was heavy on several plants of carnation (D. caryophyllus) received from a greenhouse at Vancouver, B.C. in December (D.B.O. Savile).

Rust (Uromyces caryophyllinus) was light to moderate on carnations in a greenhouse and in an outdoor planting at Edmonton, Alta. (M.W.C.). Rust was severe on all varieties of carnation in a commercial greenhouse at Montreal, Que., in November (J.E. Jacques).

DIMORPHOTHECA - Cape Marigold

Yellows (Callistephus virus 1) infected odd plants of D. aurantiaca at Brandon, Man.; first report on this host (W.L. Gordon).

ERYNGIUM - Sea Holly

Foot Rot (cause undetermined) attacked odd plants of E. alpinum at Brandon, Man. (W.L. Gordon).

ERYTHRONIUM

Rust (Uromyces heterodermus) was abundant locally on E. grandiflorum in E. and W. Saanich Co., B.C. (W. Jones).

ESCHSCHOLZIA

Yellows (Callistephus virus 1) attacked odd plants of E. californica at Brandon, Man.; first report to the Survey on this host (W.L. Gordon).

FILIPENDULA - Meadowsweet

Powdery Mildew (Sphaerotheca Humuli) was heavy on the leaves of nearly all plants of F. rubra at the Botanical Garden, Montreal, Que. (J.E. Jacques).

GAILLARDIA

Smut (Entyloma Compositarum) was severe and general on G. aristata at Morden, Man., but none was found at Winnipeg (W.L. Gordon). Supplementing the information given last year (P.D.S. 23:106), it may be stated that four Man. collections of gaillardia smut have now been examined and all prove to

be typical E. Compositarum. Smut was abundant in the gardens of the Division of Horticulture, C.E.F., Ottawa, Ont.; it also occurred in three gardens at Westboro, one at least being a new outbreak; falcate conidia were generally abundant when examinations were made, but acicular conidia were also found (D.B.O. Savile).

Yellows (Callistephus virus 1) was moderately abundant in the border at the Station, Fredericton, N.B. (D.J. MacLeod).

GLADIOLUS

Yellows (Fusarium oxysporum). Specimens were received from Medicine Hat, Alta.; the grower stated that 0.5% of his plants were affected (D.B.O. Savile). Yellows was reported from North Battleford and elsewhere in Sask. (H.W.M.). It was more widespread and injurious in Man. than ever before, 25% of plants being not infrequently destroyed; it is causing alarm among large growers (W.L. Gordon). Specimens were received from Reston and Strathclair, Man., and Larder Lake, Sault Ste. Marie and Guelph, Ont., with losses up to 10% being reported. Yellows has unquestionably increased greatly in the last few years, partly due to the scarcity of high grade stock, which has resulted in diseased stock finding a ready market (D.B.O. Savile). Yellows was sent in from three localities in Ont. and was also quite prevalent in certain varieties at O.A.C., Guelph (J.E. Howitt).

Penicillium Rot (P. Gladioli) caused some damage to bulbs in storage at Winnipeg, Man.; the organism was readily isolated (W.J. Cherewick, W.L. Gordon). Several dozen corms, of many varieties, were attacked at the Botanical Garden, Montreal, Que. (J.E. Jacques).

Scab (Pseudomonas marginata) caused slight damage in several gardens at Edmonton, Alta. (M.W.C.). It caused severe damage in stored corms of many varieties at the Botanical Garden, Montreal, Que. (J.E. Jacques).

Dry Rot (Sclerotinia Gladioli). Diseased corms were received from Kelowna, B.C. (G.E. Woolliams, F.L. Drayton). Severe damage was seen in a garden in Calgary, Alta. (A.W. Henry). Specimens were received from Blackfalds and Calgary, Alta., and Summerberry, Sask. (D.B.O. Savile).

Flecking (?physiological). Affected plants of Picardy were received from a florist at Montreal, Que., in Sept.; according to Dr. F.L. Drayton this trouble has recently become common in Picardy at this time of year (D.B.O. Savile).

HELIANTHUS - Sunflower

Powdery Mildew (Erysiphe Cichoracearum) was heavy on H. tuberosus at Morden, Man.; first Man. record on this host (W.L. Gordon). Sunflowers were moderately infected at the Botanical Garden, Montreal, Que. (J.E. Jacques).

Rust (Puccinia Helianthi). Infection was light at the Botanical Garden, Montreal, Que. (J.E. Jacques).

Wilt (Sclerotinia sclerotiorum) affected about 10% of the plants in the border at the Station, Summerland, B.C. (H.R. McLarty).

HELICHRYSUM - Everlasting

Yellows (Callistephus virus 1) was severe in the border at the Station, Fredericton, N.B. (D.J. MacLeod).

HELIOPSIS

Yellows (Callistephus virus 1) severely damaged several plants of H. scabra gratissima at Morden, Man.; first record in the Survey on Heliopsis (W.L. Gordon).

HESPERIS - Rocket

Downy Mildew (Peronospora Hesperidis E. Gäum.) caused heavy leaf spotting and some killing of lower leaves of H. matronalis at Ottawa, Ont., in June in a bed that had been freely sprinkled; traces were seen elsewhere, but the disease soon disappeared with continued dry weather. The spring infection was presumably an aftermath of the wet season in 1943, but the plants were not under observation at that time. Conidia measured 21-30 x 18-27 microns, agreeing well with Gäumann's description; P. parasitica, to which this organism was formerly assigned, was collected locally at about the same time on Capsella Bursa-pastoris and yielded conidia 19.5-24 x 15.5-19.5 microns; first report to the Survey (D.B.O. Savile).

HYACINTHUS - Hyacinth

Bulb Eelworm (Ditylenchus dipsaci) was found in several plantings of common hyacinth (H. orientalis in coastal B.C., but caused no serious losses; hot water treatment was used in some cases (R.J. Hastings).

HYPERICUM - St. Johnswort

Blight (Gloeosporium cladosporioides Ellis & Halsted) was severe on leaves and flowers of a plant of H. Ascyron at Morden, Man.; first report to the Survey (W.L. Gordon); in the herbarium on H. virginicum from Ont.

IBERIS - Candytuft

Club Root (Plasmodiophora Brassicae). A trace was seen in a garden in Queens Co., P.E.I.; first report to the Survey on this host (R.R. Hurst).

IRIS

Eelworm (Ditylenchus dipsaci). The commercial iris stock in coastal B.C. is receiving regular hot water formalin treatments, which should reduce the small percentage of eelworm infection and also reduce fungous diseases (R.J. Hastings).

Soft Rot (Erwinia carotovora). Moderate to severe damage occurred at Lethbridge and in one garden at Edmonton, Alta. (M.W.G.). Odd plants were severely affected at Brandon, Man. (W.L. Gordon). One plant of Chalice and two of Mildred Presby were attacked at the Botanical Garden, Montreal, Que. (J.E. Jacques).

Leaf Spot (Heterosporium Iridis). The fungus was found sporulating freely on leaves in a garden in N. Saanich Co., B.C. (W. Jones). There was little leaf spot in coastal B.C. this year in commercial plantings; greater attention to drainage is believed to be a factor, and the regular treatments for eelworms may help to reduce it (R.J. Hastings). Leaf spot was general in the Okanagan Valley, B.C., but did not cause serious injury (G.E. Woolliams). Slight to moderate damage was seen in several gardens at Edmonton, Alta. (M.W.G.). A heavily infected specimen was received from Moose Jaw, Sask. Leaf spot could hardly be found in most gardens at Ottawa, Ont., until Sept. when a scattering appeared (D.B.O. Savile). This disease was very prevalent in gardens in the neighbourhood of Guelph, Ont. In some instances the foliage was almost completely destroyed by it early in the fall (J.E. Howitt).

Bacterial Leaf Blight (Phytomonas tardirescens). Lady Foster was lightly attacked at the Botanical Garden, Montreal, Que. (J.E. Jacques).

Mosaic (virus) varies greatly in the iris stocks in coastal B.C.; some have only about 1%, others up to 95% infection. Some virus-free stock is being developed (R.J. Hastings).

LATHYRUS

Streak (Erwinia lathyri) caused severe damage to sweet pea (L. odoratus) in several gardens at Edmonton, Alta. (M.W.C.). Infection ranging from a trace to 70% were seen in Queens Co., P.E.I., all varieties being affected; this disease is discouraging many sweet pea growers (R.R. Hurst).

Foot Rot (Fusarium oxysporum associated) killed 75% of a small planting of sweet pea at Winnipeg, Man., by Aug. 2; F. oxysporum was isolated (W.L. Gordon).

Powdery Mildew (Microsphaera diffusa) caused slight to heavy damage on all varieties of sweet pea in Queens Co., P.E.I. (R.R. Hurst).

Downy Mildew (Peronospora Lathyri-palustris) was general on L. Nuttallii in N. Saanich Co., B.C. (W. Jones).

Root Rot (?Rhizoctonia Solani) was reported on sweet pea from several localities in P.E.I.; 25% loss occurred in one garden (R.R. Hurst).

Bud Drop (excess nitrogen) caused slight to severe damage to sweet peas in Queens and Prince Co., P.E.I.; it is very troublesome (R.R. Hurst). Either excess nitrogen or a high ratio of nitrogen to phosphorus can cause this trouble. The practice of putting manure in the bottom of sweet pea trenches commonly causes bud drop; the roots often reach the manure just when the buds are forming, and the plants are thrown back into vegetative growth (F.L. Drayton).

Oedema (?unbalanced water relations). Most of the vines of L. latifolius in a garden near Ottawa, Ont., showed irregular white blisters on the laminae and long white streaks on the leaf veins; leaves tended to split along the affected veins (D.B.O. Savile).

LIGUSTRUM - Privet

Powdery Mildew (Microsphaera Alni) was common on privet at the Station, Fredericton, N.B. (D.J. MacLeod).

LILIUM - Lily

Mosaic (virus). Affected specimens of L. sp. were received from the Station, Lethbridge, Alta. (D.B.O. Savile).

LIMONIUM - Sea Lavender

Blight (Botrytis sp.). Considerable blossom blight and die-back occurred in a garden at Victoria, B.C. (W. Jones).

LINARIA - Toadflax

Stem Blight (Colletotrichum vermicularioides Halsted). In a planting in the Arboretum, Ottawa, Ont., from mixed seed of L. purpurea and L. purpurea var. Canon Went, the former was severely blighted, whereas the latter remained uniformly healthy even when contiguous with diseased plants. L. vulgaris, planted for ornament at Westboro, Ont., was also seriously damaged. Both plantings had been liberally sprinkled during the dry weather. Once previously collected on wild L. vulgaris near Ottawa (D.B.O. Savile).

LINUM - Flax

Browning (Polyspora Lini) developed in early Oct. on L. grandiflorum at Saskatoon, Sask. No stem break developed. The plants were grown in the experimental plots and the pathogen was isolated. First report to the Survey on this host (T.C. Vanterpool).

LONICERA - Honeysuckle

Powdery Mildew (Microsphaera Alni) was fairly general in N. Saanich Co., B.C. (W. Jones). A heavily mildewed specimen was received from Dorval Is., Que., with the statement that almost every bush in the community was affected (D.B.O. Savile).

LOTUS

Leaf Spot (Septoria sp.) was heavy in a planting of L. corniculatus var. Double at Morden, Man.; spores were 15.0-27.5 x 1.5 microns, 1-3-septate (W.L. Gordon).

LUPINUS - Lupine

Leaf Spot (Ascochyta ?Pisi Lib. var. Lupini Sacc.) was heavy on some leaves of L. sp. at Morden, Man.; spores 10-20 x 3.7-5 microns, multiguttulate; first record in Man. (W.L. Gordon).

Streak (Pisum virus 2). Two plants of L. albus showing streak were found in a garden at the Station, Fredericton, N.B. The virus was transmitted by sap inoculation to L. albus, L. angustifolius, Pisum sativum, Trifolium pratense, and Vicia Faba. It failed to infect Capsicum annuum, Datura Stramonium, and Nicotiana Tabacum. The affected lupines were severely stunted and generally wilted and died (D.J. MacLeod).

Nitrogen Sickness. Excess nitrogen severely damaged an entire planting of Russell hybrids (L. polyphyllus) in Queens Co., P.E.I. (R.R. Hurst).

MALOPE

Foot Rot (cause undetermined) killed odd plants of M. trifida at Brandon, Man. (W.L. Gordon).

MENTHA

Rust (Puccinia Menthae) moderately affected some plants of M. piperita at the University, Winnipeg, Man.; first record on this host in Man. (W.L. Gordon).

Leaf Spot (Septoria menthicola Sacc. & Letend.) was moderately heavy on M. piperita at the University, Winnipeg, Man.; first record on this host in Man. (W.L. Gordon). Not previously reported to the Survey, but we have records from Alta., Sask., Man. and Que. on Mentha spp.

MONARDA

Rust (Puccinia Menthae) was moderately heavy on some clumps of M. fistulosa at Ottawa, Ont. (D.B.O. Savile).

NARCISSUS

Diseases in commercial plantings in coastal B.C. Botrytis narcissicola, Stagonospora Curtisii and Ramularia vallisumbrosae were of minor importance in field-grown stock due to regular use of the hot water formalin treatment. A one-hour treatment of imported forced stock has not, however, eliminated the bulb eelworm (Ditylenchus dipsaci) and the situation has somewhat deteriorated with respect to this pest. Growers will have to lift early, following one season's growth, and use a three-hour treatment to eliminate the eelworms. Plantings left down two years sustained serious losses.

There appears to have been more basal rot (Fusarium bulbigenum) and basal plate rot of mechanical or physiological origin in 1944. This may have been due to shallow planting and a late harvest, with consequent subjection of bulbs to high soil temperature. Storage in low, ill-ventilated sheds, with temperatures reaching 80° F., increased the incidence of basal rot. However, the 1944 harvest included bulbs from forced planting stock received in 1941 and 1942, and some basal rot may have originated in forcing houses with high temperatures (R.J. Hastings).

NEMESIA

Foot Rot (cause undetermined). Several severely affected plants of N. strumosa were received from Knowlton, Que.; bacteria and various fungi, including Fusarium, were abundant (D.B.O. Savile).

NEPETA

Leaf Spot (Phyllosticta decidua Ell. & Kellerm.) was moderately heavy on N. ucranica at Morden, Man.; spores 4-7 x 2 microns; first report to the Survey (W.L. Gordon).

Leaf Spot (Septoria Nepetae Ell. & Ev.) slightly affected a few leaves of N. ucranica at Morden, Man.; spores 12.5-30 x 1.5 microns; first report to the Survey (W.L. Gordon).

NICOTIANA - Tobacco

Leaf Spot (Ascochyta ?Nicotianae Pass.). A trace occurred on a few plants of N. sp. in a bed at the Laboratory, Winnipeg, Man.; spores 5-12 x 2.5-3 microns; first report to the Survey; Passerini gave no measurements for his fungus (W.L. Gordon).

NIGELLA

Foot Rot (cause undetermined) killed odd plants of love-in-a-mist, N. damascena, at Brandon, Man. (W.L. Gordon).

Yellows (Callistephus virus 1) severely injured odd plants of N. damascena at Brandon, Man. (W.L. Gordon). This appears to be the first record of yellows on this host.

PAEONIA - Peony

Blight (Botrytis Paeoniae). Bud, leaf and stem infection was common at Edmonton, Alta., and severely damaged several plantings (M.W.C.). A specimen was received from the Experimental Station, Lethbridge, Alta. Virtually no bud infection was found in the Ottawa, Ont., district, owing to the dry season, but stem rot was unusually serious; evidently many crowns became infected in the wet summer of 1943, and the dry weather of 1944 drew attention to such infection by inducing wilting (D.B.O. Savile). Blight was heavy in Queens Co., P.E.I. and caused severe damage. In one garden at Charlottetown it was particularly serious; injury was probably aggravated by rank growth of the plants and by their being tightly tied up (R.R. Hurst).

Leaf Blotch (Cladosporium Paeoniae) was moderate on some leaves, but not general, at Morden, Man. (W.L. Gordon). A light infection occurred on a few varieties at the Botanical Garden, Montreal, Que. (J.E. Jacques).

Leaf Spot (Septoria Paeoniae var. berolinensis) severely damaged a few leaves at Morden, Man. (W.L. Gordon).

Mosaic (virus). A few plants were moderately affected in two plantings at Edmonton, Alta. (W.C. Broadfoot).

Ring Spot (virus) slightly affected a few leaves at Winnipeg and moderately affected a few plants at Fort Garry, Man. (W.L. Gordon). Nine plants were affected in the border at the Station, Fredericton, N.B.; these plants have been under observation for over ten years; they seem to be degenerating as a result of the disease (D.J. MacLeod).

Blossom Failure (cause unknown) severely damaged several varieties at Lethbridge, Alta. (W.C. Broadfoot).

PAPAVER - Poppy

Dodder (Cuscuta Gronovii) attacked odd plants of Iceland poppy, P. nudicaule, at Charleswood, Man. (W.L. Gordon).

Smut (Entyloma fuscum Schroet.) was found at Westboro, near Ottawa, Ont., on corn poppy, P. Rhoeas, in three gardens. Heavy spotting killed many of the leaves and further damage was caused by extensive stem lesions that girdled a number of plants after only one or two flowers had been produced. A light infection was also found on P. orientale in one garden, adjacent to infected P. Rhoeas. On P. orientale, teliospores were sparse and conidia were lacking, and it is possible that the pathogen is not self-sustaining on this host. This European smut has been previously reported in North America from Maine, New Brunswick (Clinton, N. Am. Flora 7:66) Bermuda (Zundel, N. Am. Flora 7:1025) and Iowa (Gilman and Archer, The Fungi of Iowa Parasitic on Plants p. 339) but has never become well established. It is probably carried in seed lots on fragments of infected leaves or capsules (D.B.O. Savile).

Bacterial Blight (Xanthomonas papavericola (Bryan & McWhorter) Starr & Burkh.). A light infection was found on the lower leaves of specimens of P. Rhoeas in the phanerogamic herbarium; the plants were grown in the Arboretum, Ottawa, Ont., in 1940 from seed received from Holland, but the disease was not observed at that time. This is the first report to the Survey on Papaver, but the disease is recorded from B.C. on Meconopsis (P.D.S. 18:105) (D.B.O. Savile).

PARTHENOCISSUS

Powdery Mildew (Uncinula necator) was heavy on some plantings of P. quinquefolia at Morden, Man. (W.L. Gordon).

PELARGONIUM - Geranium

Spotted Wilt (Lycopersicum virus 3) was moderately heavy at the Botanical Garden, Montreal, Que.; about a dozen varieties had to be discarded (J.E. Jacques).

PENSTEMON

Leaf Spot (Ramularia sp.) was severe on many leaves of P. sp. at Morden, Man. (W.L. Gordon).

PETUNIA

Virescence (virus). Greening of the flower parts was seen in seven plants in the border at the Station, Fredericton, N.B. (D.J. MacLeod).

Yellows (Callistephus virus 1). Some of the plants being grown for seed in the district of Grand Forks, B.C., became infected (G.E. Woolliams). Many plants were severely affected at Winnipeg, Man., odd plants were attacked at Brandon, it was severe on both single and double varieties in some plantings

at Morden, and at Clearwater Bay, Ont., infection was 100% with severe injury by the end of the season (W.L. Gordon). Yellows has been reported previously on petunia from Alta., Sask. and N.B.

PHLOX

Powdery Mildew (Erysiphe Cichoracearum) was general on P. paniculata at the Station, Summerland, B.C. (H.R. McLarty). Mildew did not develop fast at Ottawa, Ont., on P. paniculata, probably because of lack of overwintering inoculum. A few clumps became badly disfigured in July, and by the end of the month development was about as severe as in late Sept., 1943. The severe drought in August severely affected perennial phlox, and most plants shed all their lower leaves comprising most of the infected tissue; there was little further development of the disease. P. maculata in the Arboretum at Ottawa showed large patches of mildew on the stems but little on the leaves; bloom is past in this species before mildew can become very conspicuous. Specimens of mildew were received from Levis, Que., on P. paniculata and from Knowlton, Que., on P. Drummondii (D.B.O. Savile).

Blight (?virus) affected 10% of plants in the border at the Station, Fredericton, N.B.; severe defoliation occurred in some clumps (D.J. MacLeod). In one garden at Charlottetown, P.E.I., all plants were affected, there being no bloom and severe defoliation. It is very troublesome and all varieties seem to be susceptible (R.R. Hurst).

Virescence (?virus). A greening of the floral parts of P. Drummondii was common in the border at the Station, Fredericton, N.B. (D.J. MacLeod). A greening similar to that described from N.B. has been seen for a number of years in P.E.I. (R.R. Hurst).

Yellows (Callistephus virus 1) attacked odd plants of P. Drummondii at Brandon, Man. (W.L. Gordon).

POTENTILLA - Cinquefoil

Leaf Spot (Marssonina Potentillae (Desm.) Magn.) was heavy on some leaves of P. fruticosa at Morden, Man.; spores 12.5-17.5 x 5.0-7.5 microns; first report to the Survey (W.L. Gordon).

RIBES

Leaf Spot (Septoria aurea). A light general infection of R. odoratum occurred at Winnipeg, Man. At Morden it was light to heavy on various currants (W.L. Gordon).

ROSA - Rose

Crown Gall (Agrobacterium tumefaciens). A moderate infection was found on roots of a shipment of rose bushes grown at Montreal, Que. (D.B.O. Savile).

Black Spot (Diplocarpon Rosae) was present at Salmon Arm, B.C. (G.E. Woolliams). One bush was severely damaged in a garden at Edmonton, Alta. (A.W. Henry). Black spot was prevalent on hybrid teas and hybrid polyanthas in the the Niagara Peninsula, Ont.; some bushes were completely defoliated by mid-Sept. (G.C. Chamberlain). Else Poulsen (multiflora) was severely attacked at the Botanical Garden, Montreal, Que. Many reports and specimens indicated that the disease was severe in the Montreal district (J.E. Jacques).

Stem Canker (Leptosphaeria Coniothyrium). Several well-marked cankers killing the terminal growth, were seen on Clovelly (hybrid tea) at St. Catharines, Ont. (G.C. Chamberlain).

Leaf Spot (Mycosphaerella rosicola (Cercospora r.) became moderately heavy late in the season on R. ?xanthina at Ottawa, Ont.; the bushes had been allowed to spread and the dense growth probably aided infection (D.B.O. Savile).

Rust (Phragmidium spp.). P. disciflorum was common but not severe on hybrid teas at the Station, Summerland, B.C. (H.R. McLarty). P. speciosum caused large cankers on stems of R. sp. received from the Forest Nursery Station, Indian Head, Sask.; it was stated that a single group of plants was involved and that growth was so poor that they were removed (D.B.O. Savile). P. montivagum lightly infected R. blanda at Charleswood, Man. (W.L. Gordon).

Leaf Spot (Phyllosticta ?rosicola Massal.). A slight infection occurred on R. blanda at Charleswood, Man.; spores were 4-6 x 1 micron, compared with 2.5-4 x 1 micron given for P. rosicola; first report to the Survey of Phyllosticta on rose (W.L. Gordon).

Speck (Pilobolus crystallinus). Rose leaves submitted from a greenhouse at Glen Falls, N.B., had many sporangia adhering to both surfaces; woodwork and a thermometer were also heavily spotted (J.L. Howatt).

Powdery Mildew (Sphaerotheca spp.). Sphaerotheca sp. was quite severe on ramblers and slight on hybrid teas at the Station, Summerland, B.C. (H.R. McLarty). A specimen of F.J. Grootendorst (hybrid rugosa) heavily infected with S. pannosa was received from north of Montreal, Que. (D.B.O. Savile).

Mosaic (virus) caused considerable damage to some plants at Morden and severely injured a bush at Stonewall, Man. (W.L. Gordon). A single plant of Kirsten Poulsen (hybrid polyantha) in Lincoln Co., Ont., showed foliage mottling and a distinct breaking of the flower colour (G.C. Chamberlain).

SALVIA

Spotted Wilt (Lycopersicum virus 3). A whole collection at the Botanical Garden, Montreal, Que., comprising many varieties, had to be discarded because of this disease (J.E. Jacques).

SCHIZANTHUS - Butterfly Flower

Yellows (Callistephus virus 1). See under Callistephus.

SEDUM - Stonecrop

Leaf Spot (Septoria ?Sedi Westd.). Infection of Sedum spp. at the University, Winnipeg, Man. was heavy on many leaves; spores 25-47.5 x 1.5 microns. Infection was also severe in a planting at Morden; spores 25-42.5 x 1.5 microns (W.L. Gordon). Diedicke (Kryptogamenflora der Mark Brandenburg 9:508) on the basis of Sydow, Myc. march. 3992, describes the spores as being 20-32 x 1-1.2 microns, but no spore measurements were given in the original description. Fungi Columb. 3081 on S. Telephium, Five Islands, N.S., has spores 19.5-32.5 x 1.0-1.5 microns. Our only other exsiccati material so labelled is Roum. F. Sel. Gall. 29 which is in poor fruit but yielded a Phyllosticta with spores 4-7 x 2-2.8 microns; this is considerably larger than the dimensions of 3 x 1.5 given for P. Aizoi. S. Telephii, described from Finland, has much larger spores, 50-75 x 1.5-2.5 microns (D.B.O. Savile).

SENECIO - Groundsel

Leaf Spot (Septoria Senecionis Westd.) slightly affected S. Jacobea at Glenkeen, N.S. (J.F. Hockey, D.B.O. Savile).

SOLIDAGO - Goldenrod

Powdery Mildew (Erysiphe Cichoraceaarum) lightly infected goldenrod late in the season at the Botanical Garden, Montreal, Que. (J.E. Jacques).

SYMPHORICARPOS - Snowberry

Rust (Puccinia Symphoricarpi) was common on S. racemosa in N. Saanich Co., B.C. (W. Jones).

SYRINGA - Lilac

?Graft Blight (lilac-privet incompatibility). Three bushes at the Station, Fredericton, N.B., showed chlorosis and wilting, followed by death of the lilac but not of the privet. See P.D.S. 22:106 (D.J. MacLeod).

TAGETES - Marigold

Foot Rot (cause undetermined) killed several plants of French marigold, T. patula, at Brandon, Man. (W.L. Gordon).

Yellows (Callistephus virus 1) ruined several plants of T. patula at Clearwater Bay, Ont.; first report on this host from northwestern Ont. (W.L. Gordon). Yellows was severe on Tagetes in gardens at Fredericton, N.B., and vicinity; at the Station symptoms were striking; a yellowing of the youngest leaves was followed by the development of a number of pale spindling shoots at the tops of the plants; in Sept. the chlorotic parts became a vivid purple and remained so until killed by frost (D.J. MacLeod). See also under Callistephus.

TANACETUM - Tansy

Leaf Spot (Ramularia Tanaceti J. Lind) was moderate to severe on T. vulgare at the University, Winnipeg, Man.; recorded by Bisby et al., but this is the first report to the Survey (W.L. Gordon).

TULIPA - Tulip

Fire (Botrytis Tulipae). In coastal B.C. 80 plantings inspected showed less than 0.1% and 19 showed over 0.1% infection. This figure is the maximum infection considered satisfactory. Forced tulip planting stocks were found to carry many times more primary lesions than the field-grown stocks; probably the bulbs were not matured under shelter and became infected under damp conditions; they will have to be dipped or given the hot water formalin treatment (R.J. Hastings). In the Okanagan Valley, tulips at Salmon Arm were almost free from fire, and none was seen in the Vernon area; the disease has never been found south of Vernon (G.E. Woolliams). Moderate damage was caused in one garden at Edmonton (M.W.C.).

Fire infected almost 100% of a mixed planting in Lincoln Co., Ont., both blossoms and leaves being severely spotted (G.C. Chamberlain). As many as 5% of the plants in some gardens near Ottawa bore primary lesions, but little or no blossom injury occurred owing to the dry weather (D.B.O. Savile). At the Botanical Garden, Montreal, Que., Von Bade, Fantasy, Mon Tresor and Gris de Lin were very severely affected and nearly all bulbs had to be discarded (J.E. Jacques).

Storage Rot (Penicillium sp.). There was comparatively little storage rot in coastal B.C., owing to improved storage and protection of bulbs by a liberal scattering of peat-sulphur mixture (R.J. Hastings).

Break (virus). Of 26 plantings inspected in coastal B.C., 14 were free of break and the others showed from a trace to 20% (R.J. Hastings). In the Okanagan Valley the situation has changed little, infection being only a fraction of 1% (G.E. Woolliams). Traces were seen in various gardens in the Ottawa district, Ont. (D.B.O. Savile).

VERONICA - Speedwell

Leaf Spot (Ramularia Veronicae Fckl.) was light in one clump and heavy, with considerable damage, in another of V. Teucrium at the Central Experimental Farm, Ottawa, Ont. If, as is probable, the 8 or more species of Ovularia and Ramularia named on Veronica, are all one, R. Veronicae Fckl. Symb. p. 361, 1869, is the valid name. The present collection perhaps best fits R. coccineum (Fckl.) Vestergren (Fusidium c. Fckl. Symb. p. 370, 1869), but adequate examination shows that its range covers those of most of the described species. Spots were purplish, then necrotic, fruiting below; conidiophores 35-115 x 2.2-3.5 microns, 0-6-septate, sometimes branched, with few to many spore scars often in groups of 2 or 3, commonly many in a compact column, ranging from hyaline to deep red, basal knots of mycelium commonly deep red; conidia 5-32.5 x 2-4 microns, with 0-1, rarely 2-3 septa; in branching chains. First report to the Survey (D.B.O. Savile).

Leaf Spot (Septoria Veronicae) was heavy on most plants of V. sp. at Morden, Man.; spores 35-45.5 x 1.5-2 microns (W.L. Gordon).

VINCA - Periwinkle

Rust (Puccinia Vingae) was moderately heavy on some plants of V. major in the greenhouses of the Division of Horticulture, Central Experimental Farm, Ottawa, Ont., in Feb. 1945; several varieties with plain and variegated foliage, were affected (D.B.O. Savile).

VIOLA

Leaf Spot (Cercospora Violae). A large bed of pansies, V. tricolor var. hortensis and horned violet, V. cornuta, was heavily infected at Westboro, Ont.; at least 50% of the leaves showed large lesions and considerable areas were killed; powdery mildew was also present and the total damage was severe; a light infection was found in a second garden. Chupp, in litt., confirms the identity of C. Violae-tricoloris with C. Violae, suggested in P.D.S. 23:117, and gives C. Violae var. minor Rota-Rossi and C. trinotatis Pass. in litt. as additional synonyms. Of the species on Viola recognized by Chupp, C. murina is rare and confined to the U.S.A., C. granuliformis is common in the U.S.A. and is known from Southern Ont. on V. sororia, and C. Violae is common and worldwide (D.B.O. Savile).

Powdery Mildew (Sphaerotheca Humuli). Almost all the pansies at the Station, Summerland, B.C., were completely covered (H.R. McLarty). Infection was light to moderate on several varieties of pansies and violas in a garden at Edmonton, Alta. (M.W.C.). Mildew was heavy on pansies at Kindersley, Sask., and some was seen in gardens at Saskatoon (H.W.M.). It was heavy in a large bed of horned violet and pansy at Westboro, Ont.; in combination with Cercospora Violae the damage was heavy (D.B.O. Savile).

Crown and Root Rot (Sclerotium Delphinii). Pansies growing near diseased Delphinium (q.v.) at Outremont, near Montreal, Que., suffered badly from this disease (J.E. Jacques).

Chlorosis (excess lime) was severe on pansies at West Kildonan, Man. (J.E. Machacek).

VITIS - Grape

Water Scald. On Aug. 19 a large clump of V. labrusca in the Arboretum, Ottawa, Ont., showed a striking necrosis of all horizontal or cupped leaf surfaces that might be expected to retain water. The vine is

spreading on the ground and accordingly many leaves are approximately horizontal. On some leaves the margin of the necrotic area plainly indicated the "high-water mark". The injury is believed to have occurred on Aug. 16, the last day of an exceptionally severe heat wave. At noon, with the thermometer at about 92° F., rain fell briefly from a small, isolated cumulonimbus cloud; the fall was measured as a trace by the Experimental Farm rain gauge about half a mile away, but may have been somewhat more in the Arboretum; the temperature then climbed to a max. of 94° F. (D.B.O. Savile).

ZINNIA

Alternaria Blight (A. Zinniae Pape) was severe and general at the Station, Agassiz, B.C.; first Canadian record (W. Jones).

Stem Rot (Sclerotinia sclerotiorum) was a trace in one planting and moderate in another at East Kildonan, Man.; more than half the plants were killed in a bed at Fort Garry (W.A.F. Hagborg).

Yellows (Callistephus virus 1) was found in 3 plants in the border at the Station, Fredericton, N.B., and in 5 plants in a garden in Sunbury Co. This is apparently the western or California strain of the virus, because Zinnia is stated to be immune to the eastern strain (D.J. MacLeod).
