## VI. DISEASES OF ORNAMENTAL PLANTS

### ALYSSUM

Wilt (*Sclerotinia* sp.) lightly affected sweet alyssum in one garden at Edmonton, Alta.

### ARBUTUS

Leaf Blight (*Mycosphaerella arbuticola*) is general on Vancouver island, B.C., and causes rather serious damage to the leaves.

### ASTER

Rust (*Coleosporium Solidaginis*) was heavy on 25 seedlings of *A. Frikarti* imported from Westminister, Md., to Winona, Ont.

Downy Mildew (*Basidiophora entospora* Roze & Cornu) was collected on *A. novae-angliae* along the Humber River, near Toronto, Ont., and det. by G.D. Darker (4712)

### BARBERRY (*Berberis*)

Stem Rust (*Puccinia graminis*) was lightly infecting the bushes at the University, Winnipeg, Man., on June 22. Barberry bushes (*B. vulgaris*) that had been heavily infected in the spring with rust, were found near Great Village, and at River John, N.S.; near Salisbury, at West Bathurst, Douglastown and Shediac, N.B. and near Charlottetown, P.E.I. In every instance stem rust was severe on oats in the vicinity (I.L. Conners). Rust was very common on *B. vulgaris* var. *purpurea* in Grand Pre Memorial Park, N.S.

Wilt (*Verticillium* sp.) caused the death of *B. Thunbergii* plants brought from Winona, Ont. to the Laboratory. (G.C. Chamberlain)

### BEGONIA

Blight (*Botrytis* sp.). Four tuberous begonias were diseased in one garden at Charlottetown, P.E.I.

### BELLFLOWER (*Campanula*)

Rust (*Coleosporium Campanulae*) was collected on *C. rapunculoides*, roadside, Clementsport, N.S. by Albert Roland (4944) and on the same host at Kleinburg, Ont. by G.D. Darker (4670).

BOX (Buxus sempervirens)

Leaf Blight (Macrophoma Candollei) caused considerable leaf defoliation at Agassiz, B.C. (W. Jones)

BRACHYCOMBE

Yellows (virus). Infection was moderate, but the damage slight in York county, N.B.

BUCKTHORN (Rhamnus)

Crown Rust (Puccinia coronata). The remains of aecia were found on R. cathartica at Fredericton, N.B., Bridgeport, and Wolfeville, N.S. and were apparently centres for crown rust outbreaks on oats. A moderate infection was found in Queens county, P.E.I.

BUTTERFLY FLOWER (Schizanthus)

Yellows (virus) caused severe damage to 10% of the plants at Lincoln, N.B.

CALLA LILY (Zantedeschia)

Basal Rot (Erwinia carotovora) affected 10% of plants in a greenhouse at Haney, B.C. (W. Jones)

CALENDULA

Stem Rot (Sclerotinia sclerotiorum) was severe on a trace of the plants in Queens county, P.E.I.

Yellows (virus) was widespread and sometimes very severe in P.E.I.

CANYON POPPY (Romneya)

Wilt (Sclerotinia sclerotiorum) was found killing the older plants of R. Coulteri in a garden at Whonnock, B.C. Young sucker plants were apparently unaffected.

CARAGANA

Leaf Spot (Septoria Caraganae) was moderate at Saskatoon, Sask. causing defoliation.

CARNATION

Rust (Uromyces caryophyllinus) caused slight damage to 10% of the plants in a greenhouse at Burnaby, B.C. It

caused slight to severe damage in greenhouses in Fredericton, N.B. All plants were lightly infected in the greenhouse at the Nappan Station, N.S. as they were coming into bloom in November and the rust persisted all winter reducing growth and bloom. (K.A. Harrison)

CHINA ASTER (Callistephus)

Yellows (virus) was reported as follows: 10% of the plants were affected at the Summerland Station, B.C.; moderate infection at Morden, Man.; trace at the L'Assomption Station, Que.; throughout N.B., causing usually severe damage; so troublesome in P.E.I. that it was practically impossible to grow them.

Wilt (Fusarium conglutinans var. Callistephi) was found as follows: affected 10% of the plants at the Summerland Station, B.C.; very prevalent in Ont., many growers losing 20% or more of their plants. It affected 50% of the plants at Farnham, Que.; the seed had been bought and the plants home grown. The disease was present 5 years ago and no asters had been grown in the interval. A trace of wilt was present at Lincoln, N.B.

Grey Mould (Botrytis sp.). Botrytis sp. was found associated with a stem blight or wilt in gardens in Charlottetown, P.E.I.

Powdery Mildew (Erysiphe Cichoracearum) slightly affected a few plants at the Summerland Station, B.C.

CHRYSANTHEMUM

Yellows (virus). Almost all clumps were severely affected at the Fredericton Station, N.B. It was severe on Louisa A. Mayo, a greenhouse variety at Charlottetown, P.E.I.

Powdery Mildew (Erysiphe Cichoracearum) was very destructive on several greenhouse sorts at Charlottetown, P.E.I., but it was successfully checked by dusting with sulphur.

CLEMATIS

Septoria Leaf Spot (S. Clematidis) slightly infected C. ligusticifolia at Morden, Man.

CLARKIA

Rust (Pucciniastrum Epilobii) slightly infected C. elegans at the Charlottetown Station, P.E.I.

COCKSCOMB (Celosia)

Yellows (virus) was severe on C. plumosa at the Fredericton Station, N.B. The colour of the blooms were bleached in the affected plants.

COLUMBINE (Aquilegia)

Crown Rot (Sclerotinia sclerotiorum) was rather severe in one garden in Charlottetown, P.E.I.

CONE FLOWER (Rudbeckia)

Yellows (virus). Infection was moderate but affected plants were damaged severely in York county, N.B.

DAHLIA

Virus Diseases. Stunt affected 10% of the plants at the Summerland Station, B.C. Mosaic and Stunt were general in a commercial planting in Welland county, Ont. Plants were severely dwarfed with mottling, the symptoms varying with the variety. In a planting of mixed varieties in Queen Victoria Park, Niagara Falls, several plants of Jersey's Beacon showed mosaic and ring spot. Stunt was prevalent in Pompons and affected also Jane Cowl, Maude Adams, Jersey's Beauty, Kathleen Norris and Satan at Charlottetown, P.E.I.

EVERLASTING (Helichrysum)

Yellows (virus). Almost all clumps were severely affected at the Fredericton Station, N.B.

Leaf Spot (Phyllosticta sp.) slightly affected H. bracteatum at the Charlottetown Station, P.E.I.

FLOWERING ALMOND (Amygdalus)

Leaf Curl (Taphrina deformans). Diseased specimens were received from Bolton, Ont. (H.N. Racicot)

FLOWERING CRAB (Pyrus glaucescens)

Scab (Fusicladium dendriticum) was collected on the Humber River near Toronto, Ont., and det. by G.D. Darker.

GAILLARDIA

Yellows (virus) moderately affected and slightly damaged gaillardia at the Fredericton Station, N.B.

GERANIUM

Leaf Spot (Phytomonas Geranii Burkh.) severely infected G. sanguineum at Winnipeg, Man. (W.A.F. Hagborg). This is the first record of its occurrence in Canada.

GERANIUM (Pelargonium)

Leaf Curl (virus) was found in a greenhouse at Fonthill, Ont. The disease has been reproduced by grafting (G.C. Chamberlain). "According to the Dominion Botanist, the disease has been found in Ontario for the past 10 years at least" (G.H. Berkeley, Can. Hort. & Home Magazine, p. 108, April, 1938).

GLADIOLUS

Scab (Phytomonas marginata) affected less than 1% of the corms in 5 plantings in the Saanich peninsula, B.C. It was also present in P.E.I.

Bacterial Blight (Phytomonas gummisudans). A trace to a light infection was present at Lacombe and Edmonton, Alta.

Hard Rot (Septoria Gladioli) infected a trace to 4% of the corms at Charlottetown, P.E.I.

Root Rot (cause unknown) was widespread in Sask. and did much damage to some varieties. At Winnipeg, Man., infection was general in gardens where gladioli are grown extensively. It was especially evident following a wet spring.

Basal Rot (Fusarium sp.) infected up to 8% of the plants of Pfetzers Triumph in a small area in a planting in the Saanich peninsula, B.C.

Penicillium Rot (P. sp.) was found affecting injured corms at Charlottetown, P.E.I. in May.

GOLDEN GLOW (Rudbeckia)

Root or Crown Rot (cause unknown) caused slight damage at the University, Saskatoon, Sask.

GODETIA

Rust (Pucciniastrum Epilobii) slightly infected a species of Godetia at the Charlottetown Station, P.E.I.

HOLLYHOCK (Althaea rosea)

Rust (Puccinia Malvacearum) was general at the Summerland Station, B.C. being moderate on the cut-leaf varieties and severe on the others. It infected heavily 90% of the plants at Winnipeg, Man. by Sept. 30. Rust was general throughout N.B. causing severe damage in many cases. At Kentville, N.S. it was causing severe defoliation in a garden on May 24; it was severe at Kingsport in July. Infection was very late this year in P.E.I. not showing up until August and September. All 1936 plants died from winter injury, thus it was not until the seedlings had made some growth that infection could take place.

HONEYSUCKLE (Lonicera)

Blight (Glomerularia Lonicerae) was slight to moderate at the L'Assomption Station, Que. It occurred mostly on L. tatarica, but it was also present on other species (H.N. Racicot). Specimens of the disease were received from Kings and Albert counties, N.B. In each case the owner claimed that the disease caused considerable damage (J.L. Howatt). Blighted L. tatarica leaves were received from Little York, P.E.I. (H.N. Racicot)

Powdery Mildew (Microsphaera Alni) was slight at Saskatoon, Sask. and was recorded once at Charlottetown, P.E.I.

HYDRANGEA

Powdery Mildew (Oidium sp.) was general in a commercial greenhouse at Haney, B.C. and caused slight damage.

IRIS

Leaf Spot (Didymellina macrospora (Heterosporium gracile) was reported as follows: damage severe in undrained low areas in two plantations in Saanich peninsula, B.C.; infection moderate to heavy on Seminole, Gold Imperial, Zua, Albatross, Grachus, Nancy Lee, Prosper Laugier and Monseignor at Morden Station, Man.; trace at L'Assomption Station, Que.; moderate to severe at the Fredericton Station, N.B.; very common on P.E.I.

Rhizome Rot (Erwinia carotovora) was recorded as follows: causing slight damage in one lot of Iris in Sask.; severe in some gardens at Winnipeg, Man., where a Botrytis sp. was also associated with the rot; prevalent in Queens county, P.E.I.

Winter Injury. Iris suffered severely at Ottawa, Ont. in the winter of 1936-37. Iris ordinarily is one of our hardiest plants. (I.L. Conners)

Ink Disease (Mystrosporium adustum Massee) caused moderate damage on Imperator in one small 2-year-old planting at Victoria, B.C. (R.J. Hastings and J.E. Bosher). This is a new disease for Canada.

Nematode (Ditylenchus dipsaci) affected about 1% of the bulbous iris on Vancouver island. It also affected 6.6% of White Excelsior in a half-acre plantation at Langley, B.C. (W. Jones and R.J. Hastings)

LARKSPUR (Delphinium)

Powdery Mildew (Erysiphe Cichoracearum) was severe on some plants at the Summerland Station. A moderate infection was present at Peace River, Alta. It caused slight to severe damage in York county, N.B.

Bacterial Blight (Phytomonas Delphinii) was present on larkspur throughout N.B. and damage was severe in York, Sunbury and Saint John counties. Complaints concerning this disease were received from several gardens in P.E.I.; it was specially severe during the hot weather after the blooming period. (R.R. Hurst)

Crown Rot (cause unknown) was severe in a garden at Winnipeg, Man.

LILAC (Syringa)

Powdery Mildew (Microsphaera Alni) was prevalent in the southern counties of N.B. Traces were noted in P.E.I.

Blight (Phytomonas Syringae). Scattered twigs were affected in Lincoln county, Ont. (G.C. Chamberlain). Blight was severe on several hedges near Fredericton and Saint John, N.B. It was first noted on May 29 at Marysville. (J.L. Howatt & S.F. Clarkson)

Grey Mould (Botrytis cinerea) caused severe damage on lilacs at Charlottetown, P.E.I. It was severe as twig

blight on a hedge at Red Head, N.B.; it was associated with bacterial blight (J.L. Howatt and S.F. Clarkson)

Mosaic (virus). One white lilac at Kentville, N.S., has shown a streaked mottling for several years. (J.F. Hockey)

LILY (Lilium)

Blight (Botrytis elliptica) caused complete defoliation in a small area in a planting of L. candidum near Victoria, B.C. A severe infection was present on L. bulbiferum and L. candidum var. Salonika at Morden, Man. It affected 4 plants of L. candidum out of 15 at Charlottetown, P.E.I.

LOBELIA

Wilt (Sclerotinia sp.). A heavy infection was noted in one garden at Edmonton, Alta.

Root Rot (Fusarium sp.) was also prevalent at the same place.

LUPINE (Lupinus)

Root Rot (Fusarium avenaceum associated). Odd plants of blue lupine were affected at Brandon, Man.

Yellows (virus). Infection was moderate, but the damage was severe on affected plants at the Fredericton Station, N.B.

MEZEREUM or FEBRUARY DAPHNE (Daphne mezereum)

Leaf Spot (Marssonina Daphnes (Desm. & Rob.) P.Magn.) was fairly general in the Point Grey district of Vancouver, B.C.; it caused moderate defoliation (J. Menzies and J.W. Eastham). This fungus was determined as Gloeosporium mezereum Cke. in 1936.

Die Back (Fusarium avenaceum). A Fusarium was fruiting on a dead branch from a garden in Westboro, Ont. The fungus was identified by Dr. W.L. Gordon. (I.L. Conners)

Wilt (Botrytis sp.). Eight to 10% of the plants in a hedge at Kentville, N.S., were damaged. Trichothecium roseum was also found fruiting on the dead branches, but it was believed to be secondary. (J.F. Hockey)

MALTESE CROSS (Lychnis)

Leaf Spot (?Septoria Lychnidis). Slight infection was seen at L'Assomption, Que. on L. chalcedonica. Material not examined (H.N. Racicot).

MARIGOLD (Tagetes)

Yellows (virus). Almost all plants of African marigold were severely affected at the Fredericton Station, N.B.

NARCISSUS

Leaf Scorch (Stagonospora Curtisii) caused slight damage in one plantation at Bradner, B.C.

Nematode (Ditylenchus dipsaci). The average infection is 1% on Vancouver island, B.C.; in a few plantings as high as 50% of the plants were affected. Nematodes were also found at Bradner. (R.J. Hastings and W. Jones)

Grey Disease (virus). Five per cent of the plants were affected at Bradner, B.C.

NEMESIA

Yellows (virus). A few plants were affected at the Fredericton Station, N.B.

PANSY (Viola)

Powdery Mildew (Sphaerotheca Humuli) was relatively heavy at the Summerland Station, B.C.

PEONY (Paeonia)

Blight (Botrytis Paeoniae) was found as follows: Many plants dying down from blight in a garden at Abbotsford, B.C.; moderate infection on one variety at Morden, Man.; blight caused moderate damage in the University garden, Saskatoon, Sask. being definitely more prevalent on some varieties than others. Blight was very prevalent in Ont. about the time peonies were coming into bud; several plantations were seen in which a high percentage of the buds were destroyed. Conspicuous brown blotches were also present on the buds throughout N.B. The peonies at the Fredericton Station were sprayed on June 2 and June 12 with Copper-Hydro "40", one ounce to one gallon of water. These applications kept the disease in control until the flowering period was over (J.L. Howatt

and S.F. Clarkson). Blight was recorded from Kentville, N.S. It was very common and destructive in P.E.I. (R.R. Hurst)

Leaf Blotch (Cladosporium Paeoniae) was severe at Agassiz, B.C. on Duchesse d'Orleans. (W. Jones)

Leaf Spot (Septoria Paeoniae var. berolinensis) was severe on Modeste Guerin and Asa Gray at the Agassiz Station, B.C. A trace developed at Morden, Man.

Leaf Spot (Cercospora sp.). A few plants were found affected at Vancouver, B.C. (J.W. Eastham). This may be C. variicolor Wint. which was originally described from Missouri and is known from a few other central States. (I.L. Conners)

Root Knot (Heterodera marioni). A number of plants moderately affected in 1936 were severely diseased in 1937 and removed at Charlottetown, P.E.I.

Ring Spot (virus) caused slight damage in the University gardens, Saskatoon, Sask. Infection was moderate to severe on the following varieties at Morden, Man.: Albatre, Avalanche, Atrosanguinea, Eugenie Verdier, Mme Emile Lemoine, Mme de Verneville, Milton Hill, Stanley, Triomphe de l'Exposition de Lille. The disease was confined to the varieties previously reported affected at the Fredericton Station, N.B. No new varieties were found infected although it was noticed in several gardens in York county. (J.L. Howatt)

Mosaic (virus). Two plants have shown symptoms at Kentville, N.S. for 5 years and have never flowered.

PETUNIA

Yellows (virus). What appeared to be typical yellows was common on a pink variety at Saskatoon, Sask. The plants were yellowed and dwarfed; flowering was inhibited. The disease was very suggestive of China aster yellows. It was reported from Regina by Dr. C.F. Patterson. It has not been observed before in Sask. (T.C. Vanterpool)

PHLOX

Powdery Mildew (Erysiphe Cichoracearum) was rather heavy at the Summerland Station, B.C. It was very prevalent on certain varieties of perennial phlox in Ont. Very heavy infections were noted in many gardens in St. Catharines and vicinity.

Leaf Spot (Septoria sp.). Slight to moderate infection was present in a garden at Edmonton, Alta.

Leaf Spot (Cercospora sp.) was heavy on perennial phlox specimens from Lincoln county, Ont.

Yellows (virus) caused severe damage to perennial phlox in the flower border at the Fredericton Station, N.B. While the affected plants are not much distorted, some stalks of bloom suffer a decided loss of colour. Infection was low in P. Drummondii, in the same garden. (S.F. Clarkson)

ROSE (Rosa)

Rust (Phragmidium spp.) was reported as follows: severe in a nursery at West Vancouver, B.C.; severe on some varieties at Summerland Station; slight infection at Morden, Man.; heavy in Carleton, York, and Sunbury counties, N.B.; slight in June, but heavy in August at the Charlottetown Station, P.E.I.

Black Spot (Diplocarpon Rosae (Marssonina Rosae) was general and caused slight to moderate damage on the lower mainland and Vancouver island, B.C.; it was rather severe on Alberic Barbier, Richmond and Max Jules Grauveaux at Agassiz, B.C. The rose beds in Queen Victoria Park, Niagara Falls, Ont. were almost completely defoliated in August, particularly the Teas; the Hybrid Perpetuals were not as seriously defoliated. Black spot was severe in commercial greenhouses at Fredericton, N.B.; in gardens the damage varied from slight to severe. The following varieties were moderately affected on Sept. 1 at Charlottetown, P.E.I.; Duchess of Athol, Margaret McGredy, Frau Karl Druschki, Mrs. John Lang.

Powdery Mildew (Sphaerotheca pannosa). A slight infection was general on Vancouver island and in the Fraser valley, B.C. A slight infection occurred at Saskatoon, Sask. Powdery mildew was moderate to severe at Winnipeg, Man., and caused some defoliation. The disease was very prevalent in many parts of Ontario. It was especially destructive to certain varieties of ramblers; on many plants the blossoms were completely disfigured by the mildew. The disease appeared unusually early in Lincoln county. Powdery mildew affected a few rambler roses at Fredericton, N.B. The disease was severe only late in the season on rambler roses at Charlottetown, P.E.I.

Crown Gall (Phytomonas tumefaciens) was common at the Sidney Station, B.C.; the damage was apparently nil. It was severe on one Dorothy Perkins at Charlottetown, P.E.I.

Brand Canker (Coniothyrium Wernsdorffiae). Practically all the rose plants were infected for a number of years in a garden at Woodroffe, Ont. Over 90% control was effected by thoroughly spraying the plants with Bordeaux at the time they were laid and covered for the winter. All leaves were stripped off before treatment. (F.S. Thatcher)

Coryneum Canker (Coryneum microstictum Berk.) This fungus was collected by Miss Cynthia Wescott in Victoria Park, Niagara Falls, Ont., July 2, 1929; according to Anna E. Jenkins (Mycologia 29:727. 1937)

Grey Mould (Botrytis sp.) caused severe damage to three plants in a garden at Williamsburg, N.B.

Downy Mildew (Peronospora sparsa Berk.) was rather severe on Lord Lonsdale, Margarete Grau, Portadown, McGredy's Peach, and it was also found on Crimson Glory, Lal, Malar Ros, Trigo, Mrs. Henry Morse in West Vancouver, B.C. All the varieties were grown in a sheltered low spot where air drainage was poor and humidity high. A slight infection was also observed on a seedling at Sardis (W. Jones). This is the first report of its occurrence in Canada.

Chlorosis (virus) was found on a few plants of Canary at West Vancouver, B.C.

RUSSIAN OLIVE (Elaeagnus augustifolia)

Rust was general on the hedges at the Summerland Station, B.C. (G.E. Woolliams). The rust is probably Puccinia Caricis-Shepherdiae J.J. Davis, which has been collected on this host at Saskatoon and Rosthern, Sask. (Fraser & Conners, Trans. Royal Soc. Canada series 3, 19:308. 1925 sub. Aecidium arctuum Arth.). (I.L. Conners)

SCABIOSA

Yellows (virus) slightly affected plants in the border at the Fredericton Station, N.B.

SHASTA DAISY (Chrysanthemum maximum)

Leaf Spot (Septoria Chrysanthemi) was fairly general in gardens and borders at Vancouver, B.C.

SNAPDRAGON (Antirrhinum)

Rust (Puccinia Antirrhini) caused a loss of 90% of the crop in unsprayed plots, where the plants were being grown for seed in the Duncan and Victoria district, B.C. It was also general in the Fraser valley and on the lower mainland. Where plants were sprayed with Bordeaux and a good spreader used, production was normal. Two sprays were applied in July. To be effective the lower surface of the leaves should be well covered. Copper containing sprays alone are effective in the coast regions (W.R. Foster and W. Jones). Rust was severe, killing most of the plants at the Summerland Station. Rust was destructive at Charlottetown, P.E.I. during the past season.

Yellows (virus). A few plants were found affected on the campus of the University, Saskatoon, Sask. A few plants only were noticeably affected in the border and beds at the Fredericton Station, N.B.

Wilt (Sclerotinia sp.). Infection was heavy in one garden in Edmonton, Alta.

SPIKE SPEEDWELL (Veronica spicata)

Yellows (virus) affected 80% of the plants and caused considerable distortion of flowers and foliage at the Fredericton Station, N.B.

STATICE

Yellows (virus) slightly but definitely affected Statice at the Fredericton Station, N.B.

STOCK (Matthiola)

Wilt (Sclerotinia sp.) caused a heavy infection in one garden at Edmonton, Alta.

Yellows (virus) affected only a few plants at the Fredericton Station, N.B.

SWEET PEA (Lathyrus)

Streak (Erwinia Lathyri) was very destructive last year in the blooming season at Charlottetown, P.E.I.

Root Rot (Fusarium spp.). A trace to a slight infection was present in several gardens at Edmonton, Alta.

Root Rot (Rhizoctonia sp.) was noticed at Charlottetown, P.E.I.

Powdery Mildew (Microsphaera diffusa) affected practically all varieties in late August at Charlottetown, P.E.I.

Wilt (Verticillium albo-atrum). The fungus was found on the roots of several affected plants at the Kentville Station, N.S.

Damping Off (Pythium sp.) slightly affected in late June, sweet pea plants, which had been hilled up above the roots. The roots were sound, but the basal part of the stem which was buried when the plants were hilled became decayed. Pythium was isolated (G.W. Ayers).

TOAD FLAX (Linaria)

Wilt (Sclerotinia). Moderate infection was found in one garden at Edmonton, Alta.

TULIP (Tulipa)

Blight (Botrytis Tulipae) was first observed on Vancouver island at Sidney, B.C. in mid-March. It was slightly more prevalent than in 1936. On the lower mainland it was general and caused much damage in gardens and some plantings. The disease was rather unimportant this year in P.E.I., but it was present in many gardens.

Break (virus) was slightly on the increase in the Victoria area, B.C. (R.J. Hastings). Traces of break were noted in 3 gardens at Charlottetown, P.E.I.

VERVAIN (Verbena)

Yellows (virus) slightly affected the plants at the Fredericton Station, N.B.

ZINNIA

Wilt (Fusarium sp.) affected 25% of the plants at the Summerland Station, B.C.

Yellows (virus). An occasional plant was found affected in a garden at Saskatoon, Sask. Yellows varied from slight to severe in different groups of plants at the Fredericton Station, N.B.