VI. DISEASES OF ORNAMENTALS

ARBUTUS

LEAF SPOT - *Microsphaerella arbuticola* (Pk.) House
B.C.- This leaf spot was general on Vancouver island and in the lower Fraser valley. The damage was severe, but it was less than in 1930. (W. Newton)

CARAGANA

LEAF SPOT - *Septoria Caraganae* (Jacz.) Died.
Alta.- This leaf spot caused some leaf drop at Edmonton.

Sask.- Light to heavy infections of this leaf spot were noticed on all Caragana hedges examined in Saskatoon and at the Forestry Farm, Sutherland. It caused slight premature defoliation. As usual only mature leaves were attacked.

Man.- Leaf spot caused some defoliation at Winnipeg in 1931. This is the first report of this disease from Manitoba.

CARNATION (*Dianthus Caryophyllus*)

RUST - *Uromyces Dianthi* (Pers.) Niessl
B.C.- Rust was general on Vancouver island; the damage was slight.

CHINA ASTER (*Callistephus*)

YELLOWS - Virus
B.C.- Yellows was rare on Vancouver island. Damage was slight. The disease was also reported from Summerland.

Alta.- Yellows was often common in gardens throughout the province. The disease was often severe.

Sask.- Yellows was severe in all parts of Saskatoon. In the City Gardens, over 50 per cent of the plants were affected. All the plants were diseased in a bed 50 x 10 ft. at the University. In the Aster section of the Flower Show, there were few entries on account of the disease. It was also prevalent at Indian Head.

Man.- Yellows was severe at the Agricultural College, in Winnipeg, and elsewhere.

A good many marigolds (Calendula) turned yellow and the heads only partly developed as in aster yellows or more commonly did not properly expand at all at the Agricultural College, in Winnipeg, and other places (G.R. Bisby).

Que.- Over 90 per cent of the plants were affected with yellows in an experimental bed at Cap Rouge. The eleven varieties present were about equally infected. Tarnished plant bug may have caused some of the injury.

A single plant of Scabiosa was found affected with yellows in the same garden at Cap Rouge.

N.B.- Yellows was widespread and destructive throughout the province.

Yellows affected a number of other garden flowers at the Experimental Station, Fredericton. The following notes on infection, damage, etc. were supplied by Mr. D.J. MacLeod: Ageratum, 50 per cent affected; Calendula, all the marigolds affected and severely damaged, flowers seriously disfigured; Cape Marigold (Dimorphotheca), 100 per cent affected, damage severe; Coreopsis, 50-100 per cent affected, damage severe, yellows common in York county; Dahlia, occasionally infected, damage slight; Everlasting (Helichrysum), all varieties affected 100 per cent, damage severe; Gaillardia, severely affected; Marigold (Tagetes) all varieties affected 100 per cent, damage severe; Treemallow (Lavatera) 10 to 30 per cent affected, damage severe; Zinnia, 25 per cent affected, damage severe.

P.E.I.- This disease is so destructive that it is practically impossible to grow garden asters.

WILT - Fusarium conglutinans Woll. var. Callistephi Beach

B.C.- Wilt was general on Vancouver island and in the lower Fraser valley. The damage was severe. It was also reported from Summerland.

Alta.- The disease was observed at Edmonton.

Sask.- A trace of wilt was noted in the beds at the University, Saskatoon. A moderate infection was also seen in a city

garden at Saskatoon.

Ont.- Wilt was again widespread and serious in western Ontario. Some aster growers reported that 100 per cent of their plants were destroyed. In the gardens inspected, 8 to 15 per cent of the plants were infected (J.E. Howitt).

Aster wilt was general in Lincoln and York counties.

Que.- In general the light coloured varieties were most affected (up to 30 per cent) by wilt in the experimental garden at Cap Rouge. Some misses occurred in the rows, but it may have been due to cut worms.

N.B.- Wilt was general throughout the province. The damage was mild to severe.

STEM and FLOWER BLIGHT - Botrytis cinerea Pers.
B.C.- This disease was general on Vancouver island and in the lower Fraser valley. The damage was slight.

STEM ROT - Corticium Solani (Prill. & Del.) Bourd. & Galz.
B.C.- Stem rot was general, but caused slight damage on Vancouver island and in the lower Fraser valley.

RUST - Coleosporium Solidaginis (Schw.) Thüm.
N.B.- China aster was moderately infected in the plots at Fredericton. The damage was slight.

CHRYSANTHEMUM

BLOSSOM BLIGHT - Botrytis cinerea Pers.
B.C.- Blossom blight was rare on Vancouver island.

POWDERY MILDEW - Oidium Chrysanthemi Rabh.
B.C.- Powdery mildew was general on Vancouver island and in the lower Fraser valley. The damage was severe.

DAHLIA

MOSAIC - Virus

P.E.I.- Traces of mosaic occurred at the Experimental Station, Charlottetown. The diseased plants were badly dwarfed, and matured early or died. This disease is evidently carried over in the tuber as sets from infected plants have consistently yielded diseased plants in the last three years.

TUBER ROT - Bacterial

N.B.- A bacterial rot affected about 5 per cent of the tubers in the plots at Fredericton.

ENGLISH IVY

LEAF SPOT - Colletotrichum trichellum (Fr.) Duke
(=Vermicularia trichella Fr.)

B.C.- This leaf spot is general on Vancouver island. The damage is slight (W. Newton).

An examination of the specimens sent by Dr. Newton showed that the fruit body is a typical acervulus on which are borne the spores and the stout setae. In the absence of a pycnidium we have followed Miss Duke in placing the fungus in the genus Colletotrichum. (I.L. Conners & A.S. Hill)

FLOWERING CURRANT (Ribes aureum)

WHITE PINE BLISTER RUST - Cronartium ribicola Fischer

Que.- A trace of rust was found at L'Assomption.

GERANIUM (Pelargonium)

LEAF SPOT - Cercospora Brunkii Ell. & Ev.

Ont.- This leaf spot was destructive to two kinds of geraniums in a greenhouse at Belleville. The identification of the fungus was confirmed by Dr. C. Chupp. This report is apparently the first Canadian record.

ROOT ROT - Pythium de Baryanum Hesse var. Pelargonii H. Braun

Man.- This disease appeared in a greenhouse at Winnipeg. A

culture of the pathogen made by Dr. Bisby was compared with an authentic culture of the above named species and no difference could be found between them. This probably is the first report for Canada (T.C. Vanterpool).

GLADIOLUS

SCAB - Bacterium marginatum McCull.
B.C.- Scab was general on Vancouver island and in the lower Fraser valley.

Alta.- Scab was found at Vermilion.

Que.- One hundred per cent of the crop was affected and severely damaged in a garden in Jacques Cartier county. The bulbs were planted on new land, but were not treated.

N.B.- Scab caused moderate damage to gladioli at the Experimental Station, Fredericton.

HARD ROT - Septoria Gladioli Pass.
B.C.- Hard rot was general on Vancouver island and in the lower Fraser valley. The damage was moderate.

N.B.- Hard rot caused moderate damage at Fredericton.

MOSAIC - Virus
B.C.- Mosaic was general, but did slight damage on Vancouver island and in the lower Fraser valley.

GOLDENGLOW (Rudbeckia)

POWDERY MILDEW - Erysiphe Cichoracearum DC.
Ont.- Powdery mildew is quite common on goldenglow at Ottawa.

HOLLYHOCK (Althaea)

RUST - Puccinia Malvacearum Bert.
B.C.- Rust was general on Vancouver island and in the lower Fraser valley. The damage was slight. The disease was also abundant at Summerland.

Ont.- Rust was severe in a garden at Rodney.

Que.- Rust was abundant about Montreal. The damage was probably slight. It was quite common on the lower leaves at Lennoxville, Abbotsford, and Ste. Anne de la Pocatière.

N.B.- Rust was general on hollyhocks throughout the province, causing serious damage to the plants.

P.E.I.- Rust infections varied from a trace to very heavy, causing slight to severe damage in Prince and Queens counties. Bordeaux liquid spray reduced the amount of infection. Lime sulphur spray and sulphur dust caused early defoliation.

ROOT ROT - Plenodomas Meliloti Dearn. & Sanford

Alta.- Two cases of root rot were reported at Edmonton.

Sask.- Specimens affected with Plenodomas were collected by A.R. Brown at Regina. The plants may have been winter killed, but Plenodomas was probably responsible in part for their death. (P.M. Simmonds)

LEAF SPOTS

Ascochyta parasitica Fautr. was found fruiting on small gray spots on the upper side of the leaves at Abbotsford and Lennoxville, Que. The infection was heavy in the latter collection. A few spots on a few leaves collected at Abbotsford were caused by Ascochyta althaeina Sacc. & Bizz.

WILT - Sclerotinia sp.

N.B.- Seventy-five per cent of plants were affected by wilt. The damage was slight.

HONEYSUCKLE (Lonicera)

LEAF BLIGHT - Glomerularia Corni Pk.

Ont.- Leaf blight caused a slight infection on escaped bushes of Lonicera tatarica at Ottawa. The identification of the fungus was confirmed by Dr. G.R. Bisby.

Que.- Leaf blight was found at Lennoxville and Ste. Anne de la Pocatière.

POWDERY MILDEW - Microsphaera Alni (Wallr.) Salm. var. Lonicerae (Schlecht.) Salm.

Alta.- Powdery mildew was reported from Kinuso.

Sask.- A fairly heavy infection was present on a few bushes near the Laboratory of Plant Pathology, at Saskatoon.

Que.- Powdery mildew affected all the honeysuckle shrubs at the Experimental Station, Ste. Anne de la Pocatière.

HYDRANGEA

POWDERY MILDEW - Oidium sp.

Sask.- One house plant brought to the Laboratory at Saskatoon on June 4, was being defoliated by powdery mildew. The conidial stage of one of the Erysiphaceae was present in abundance.

IRIS

LEAF SPOT - Didymellina macrospora Kleb. (Heterosporium gracile Sacc.).

B.C.- Leaf spot was general and caused severe damage on Vancouver island.

Sask.- A light infection of leaf spot was present on Sept. 10, on some of the plants in the University garden, Saskatoon. By Sept. 30 infection varied from light to heavy on 25 per cent of the leaves. The mild weather in the interval favoured the spread of the disease.

Que.- Infections of leaf spot varying from a trace to slight were observed at L'Assomption, Lennoxville, Abbotsford, Beebe, and Ste. Anne de la Pocatière.

N.B.- Leaf spot was noted in garden plantings in York county, causing slight to severe damage.

N.S.- Leaf spot caused the death of 20 per cent of the leaves in a small garden in Annapolis county.

P.E.I.- Heavy infection of leaf spot caused severe damage to the leaves in many gardens in Queens county.

RHIZOME ROT - Bacillus carotovorus L.R. Jones
Sask.- A slight amount of rhizome rot was present in the University plots, Saskatoon.

N.B.- Rhizome rot is common and widespread in the province.

CROWN ROT - Sclerotium Delphinii Welch
N.B.- A severe infection of crown rot was found in a garden plot at Sackville.

BULB ROT - Bacillus carotovorus L.R. Jones
B.C.- A bulb rot attributed to Bacillus carotovorus was general on Vancouver island. The damage was considerable. A species of Penicillium was also found associated with bulb rot.

MOSAIC - Virus
Ont.- Mosaic affected quite a number of the plants of Iris tingitana in greenhouses at Toronto and Brampton. The bulbs, from which these plants were grown, were imported from France.

JAPANESE BARBERRY (Berberis Thunbergii)

BACTERIAL LEAF SPOT - Phytomonas Berberidis Thornbery & Anderson
Ont.- This disease has been observed on the Japanese barberry in the Arboretum at Ottawa for the past ten years. (H.T. Gussow).

LARKSPUR (Delphinium)

BACTERIAL BLIGHT - Pseudomonas Delphini (E.F.Sm.) Stapp
B.C.- Diseased leaves sent in for examination from Vancouver were found affected with bacterial blight (G.E. Woolliams).

N.B.- Bacterial blight is common throughout the province. The disease is severe in some gardens.

WILT - Fusarium sp.
B.C.- One per cent of the plants were affected with wilt in a garden at Kelowna.

STEM ROT - Ascochyta sp.
Alta.- Stem rot apparently due to an Ascochyta caused severe injury in a garden at Edmonton.

LILAC

POWDERY MILDEW - Microsphaera Alni (Wallr.) Salm.
Powdery mildew was fairly abundant on lilac at Ottawa, Ont.; Beebe and Ste. Anne de la Pocatière, Que.; and Charlottetown, P.E.I.

LEAF SPOT - Phyllosticta Syringae West.
Que.- About 5 per cent of the leaves were affected with leaf spot at Beebe. On some leaves one or two small spots occurred, on others the spots were large.

LILY

FLOWER BLIGHT - Botrytis sp.
B.C.- Flower blight was general on Vancouver island. The damage was severe.

LUPINE (Lupinus)

RUST - Uromyces Lupini Berk. & Cke.
B.C.- Rust is common on both cultivated and wild species of lupine in the Victoria district, V.I.

POWDERY MILDEW - Erysiphe Polygoni DC.
B.C.- Powdery mildew is present on lupine on Vancouver island.

NARCISSUS

SMOULDER - Botrytis narcissicola Kleb.
B.C.- Smoulder was general, but the damage was slight on Vancouver island.

MOSAIC - Virus
B.C.- Mosaic was general on Vancouver island, but the damage was slight.

GREY DISEASE - Virus

B.C.- Grey disease characterized by a light-green or grey mottling of the leaves, was general on Vancouver Island, causing slight damage.

EELWORM - Tylenchus dipsaci (Kühn) Bastian

B.C.- Eelworm was present on Vancouver island, but the damage was slight.

A number of diseased bulbs were received at the Saanichton Laboratory for examination. These bulbs had been graded out from a five acre field near Sidney. Besides bulb flies and bulb mites, two different eelworms were identified. One was Tylenchus dipsaci; the other belonged to the genus Diplogaster. Specimens of the latter were sent to Dr. Steiner, Senior Nematologist, U.S.D.A., Washington, D.C. He kindly identified it as Diplogaster longicaudatus Bütschli. He stated that it is not considered to be the primary agent, but as a secondary agent it plays an important role in the final breakdown of the infected plants. This appears to be the first time that this nematode has been reported in Canada (R.J. Hastings).

PANSY (Viola tricolor)

POWDERY MILDEW - Sphaerotheca Humuli (DC.) Burr. var. fuliginea (Schlecht.) Salm.

B.C.- Powdery mildew was quite severe in a garden near Summerland.

PEONY (PAEONIA)

BLIGHT - Botrytis Paeoniae Oud.

N.B.- Blight is widespread, but the damage is slight.

N.S.- Blight was reported from several parts of the province. One nurseryman reported control of early infections by watering with Semesan solution in the spring.

LEAF BLOTCH - Cladosporium Paeoniae Pass.

Que.- A trace of leaf blotch was collected at L'Assomption.

PETUNIA

MOSAIC - Virus

Sask.- About 5 per cent of the plants were affected with mosaic in a bed, 10 x 50 feet. The affected plants were "bunchy", slightly dwarfed with pale yellow, ruffled leaves. The flowers were smaller than normal, mottled pink and white instead of being a deep solid pink.

WILT - Sclerotinia Sclerotiorum (Lib.) de Bary

Alta.- Wilt caused slight damage to petunias in an Edmonton garden.

PHLOX

LEAF SPOT - Septoria divaricata Ell. & Ev.

Que.- About a dozen plants were found heavily infected in a garden at Beebe.

POWDERY MILDEW - Erysiphe Cichoracearum DC.

Ont.- Powdery mildew was found in a garden in Lincoln county.

ROSE (Rosa)

RUST - Phragmidium spp.

B.C.- Rust was general on roses on Vancouver island; the damage was slight. Specimens collected at Saanichton were infected with Phr. disciflorum (Tode) J.F. James.

Que.- A fairly heavy infection of rust caused by Phr. americanum Diet. was present on 50 per cent of the leaves at Abbotsford. Rust due to Phr. disciflorum was quite common at Beebe and Ste. Anne de la Pocatière.

N.B.- Rust on rose is widespread in York county.

P.E.I.- Rust infection was noted on the varieties grown at the Experimental Station, Fredericton, as follows; heavy, Star of Waltham, Duke of Edinburgh, General Jacqueminot, A.E. Williams, Margaret Dickson, Frau Karl Druschki, Louise Crette, Alfred Colomb, Baron de Rothschild, and Lady Astor; trace, Captain Hayward; none, Crimson Rambler and Edith Cavell. Where the rust was heavy, the older leaves were destroyed. (R.R. Hurst)

BLACK SPOT - Diplocarpon Rosae Wolf
(Actinonema Rosae (Lib.) Fr.)

Sask.- Black spot was present as follows in the University garden, Saskatoon: Persian Yellow, heavy, causing defoliation of the lower leaves; Austrian Yellow, heavy, causing some defoliation; Le Rêve, heavy; Conrad F. Meyers, heavy on lower leaves; Rubrifolia, moderate; Rubrosa, light; Harison's Yellow, growing close to Persian Yellow, no infection.

Ont.- Black spot was prevalent causing defoliation on several varieties in Lincoln county.

N.B.- Black spot was common and widespread in the province. The damage was slight.

P.E.I.- This disease was quite common this season; severe damage in many instances.

POWDERY MILDEW - Sphaerotheca pannosa (Wallr.) Lév.

B.C.- Powdery mildew was prevalent and caused severe damage on Vancouver island. Some mildew was present on practically all varieties and severe on a few at Penticton and Summerland. The disease was more prevalent than usual.

Ont.- Powdery mildew was prevalent and severe over much of the Niagara peninsula. It was rather severe on most varieties in many private gardens at St. Catharines. Control measures were ineffective due to the extremely humid weather.

P.E.I.- Edith Cavell and Margaret Dickson were slight to moderately infected. The disease is seldom serious.

CANE BLIGHT - Leptosphaera Coniothyrium (Fuck.) Sacc.
(Coniothyrium Fuckelii Sacc.)

Ont.- This disease was severe in 1930 on two climbing roses in Lincoln county, destroying more than two thirds of each bush. Other varieties in the immediate vicinity did not seem to be affected.

SALPIGLOSSIS

MOSAIC - Virus

B.C.- What appeared to be mosaic affected several plants in a plot at Summerland.

SNAPDRAGON (Antirrhinum)

RUST - Puccinia Antirrhini Diet. & Holw.

B.C.- Rust was general and severe on Vancouver island. It was also severe in some plots at Kelowna.

Ont.- Rust was very prevalent in all parts of Western Ontario. In many cases hundreds of plants were severely damaged.

YELLOWS - Virus

N.B.- What appears to be yellows is common at the Experimental Station, Fredericton.

WILT - Verticillium spp.

Ont.- Wilt was general and caused the death of many plants in Lincoln and York counties.

STEM ROT - Sclerotinia Sclerotiorum (Lib.) de Bary

Alta.- Stem rot was found in a garden at Edmonton. The damage was slight.

SWEET PEA (Lathyrus)

POWDERY MILDEW - Microsphaera diffusa Cke. & Pk.

Que.- Powdery mildew was quite prevalent at Cap Rouge. A small amount was also present at L'Assomption.

ROOT ROT

Sask.- Sweet peas were severely affected with a root rot as they were coming into flower in the City Gardens, Saskatoon. The peas were sown in a trench in well manured, limed soil and kept well watered. Isolations suggested that the disease was of bacterial nature.

P.E.I.- A root rot, the cause of which was undetermined, was reported several times from each county. Infection varied from 5 to 100 per cent; the damage was often severe.

WHITE MOULD - Erostrotheca multiformis Martin & Charles (Cladosporium album Dows.)

B.C.- On July 5 at Duncan, in the Cowichan district, Vancouver island, a leaf mould was discovered on sweet pea. The

disease was general on plants being grown for exhibition purposes under the Cordon system. It was also severe among the unpruned plants growing in a hollow along a creek, a location, where the temperature and humidity were high. Although the losses were considerable among the exhibition plants and in the general crop in the hollow by the creek, they were insignificant in the rest of the ten-acre block. The general crop was grown staked on brush under ordinary field conditions.

From a study of the symptoms and the associated fungus, it was evident that the disease was identical to the white mould of sweet pea described in England in 1924 by Dowson (1). He named the pathogen, Cladosporium album Dows. In 1928 Martin & Charles (2) described the perfect stage as Erostrotheca multiformis and reported the disease in Massachusetts, New York, and Pennsylvania. As far as it is known, this is the first record of this disease in Canada (R.J. Hastings).

TULIP

BLIGHT - Botrytis Tulipae (Lib.) Lind

P.E.I.- Blight varied from a trace to heavy on late flowering tulips in Queens county; the damage was slight to severe. This disease causes severe damage each year to tulips.

BLUE VERVAIN (Verbena hastata)

LEAF SPOT - Septoria Verbenae Rob. & Desm.

Que.- A dozen plants were severely affected with leaf spot at Beebe. The causal organism agreed with S. Verbenae as described by Saccardo (Syll. 3:537) on V. officinalis except that the spores measured 18-30 x 1.5u instead of 40-45 x 1-1.5u.

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(1) Dowson, W.J. A new disease of sweet peas. Jour. Roy. Hort. Soc. 49:211-221. 1924.

(2) Martin, G.H. & Charles, Vera K. Preliminary studies of the life history of Erostrotheca multiflormis, the perfect stage of Cladosporium album Dowson. Phytopath. 18:839-846. 1928.

VIRGINIA CREEPER (Parthenocissus quinquefolia)

POWDERY MILDEW - Uncinula necator (Schw.) Burr.
Ont.- Powdery mildew was common at Ottawa.

WISTERIA

LEAF SPOT - Phyllosticta Wistariae Sacc.
Que.- About 10 per cent of the leaves were moderately infected at Beebe.

YUCCA

LEAF SPOT - Coniothyrium sp.
N.S. - About 20 per cent of the leaves were affected in a group of plants on the Experimental Station grounds, Kentville. The damage was slight.

ZINNIA

POWDERY MILDEW - Erysiphe Cichoracearum DC.
Ont.- Powdery mildew was general on Zinnia in Lincoln county.

WILT - Fusarium sp.
B.C.- Wilt was present in an experimental plot at Summerland.