## V. DISEASES OF TREES AND SHRUBS

ACER - Maple

Anthracnose (Gloeosporium apocryptum). Severely infected leaves of A. platanoides were received from St. Foy, Quebec Co., Que., where the disease was said to be very prevalent. It was seen in the municipal nursery and several private estates at Montreal (J. E. Jacques).

Coral Spot (Nectria cinnabarina). A trace occurred on A. saccharinum at Kentville, N. S. (C. L. Lockhart).

Tar Spot (Rhytisma punctatum) was light to general on A. macrophyllum at Vancouver, B. C. (H. N. W. Toms). It attacked 50% of the leaves of two small trees of A. saccharinum at Canaan, Kings Co., N. S. It was later seen on A. pensylvanicum and A. spicatum, but not on A. rubrum on which R. acerinum was present (D. W. Creelman).

AESCULUS - Horsechestnut

Leaf Blight (Guignardia aesculi) was heavy on A. hippocastanum throughout P. E. I. (G. W. Ayres).

AMELANCHIER

Black Leaf Curl (Apiosporina collinsii) affected many shrubs in the North Saanich district, B. C. (W. Jones). Infection was moderate in wild stands at Edmonton, Alta. (T. R. D.)

BETULA - Birch

Die-Back (cause unknown). Planted and native yellow and white birch are rapidly disappearing from all parts of P. E. I. as a result of die-back. Many trees are removed each year in Charlottetown (R. R. Hurst).

CHAMAECYPARIS - Cypress

Die-Back (Cytospora ?pinastri) caused slight damage to C. pisifera at Kentville, N. S. (D. W. Creelman).

Root and Crown Rot (Phytophthora ?lateralis) caused considerable damage to C. lawsoniana in a nursery in the Fraser Valley, B. C. (W. R. Foster)

CORNUS - Dogwood

Crown Rot (Phytophthora cactorum) killed two trees near Victoria, B. C. (W. R. Foster).

CORYLUS - Hazelnut

Catkin Deformation. The trouble reported in P. D. S. 29:95 has been identified by Dr. Paul Miller, Corvallis, Oregon, as due to the filbert bud mite, Eriophyes avellanae (H. N. W. Toms).

COTONEASTER

Rust (Gymnosporangium clavipes). Pycnia were abundant on fruit, but not leaves, at Morden, Man., on 14 June (A. M. Brown).

Dark Berry (Phytophthora cactorum) was seen in the fall wherever C. horizontalis was found in coastal B. C. (W. R. Foster).

CRATAEGUS - Hawthorn

Grey Mould (Botrytis cinerea) attacked 75% of the blossoms of C. oxyacantha at Kentville, N.S. (D.W. Creelman).

Leaf Spot (Cercoseptoria crataegi (Ell. & Ev.) Davis). Infection was 75-100% and damage moderate on C. macrosperma at Steam Mill and Canard, N.S. (D.W. Creelman). This fungus does not seem to have been reported previously in Canada. It is apparently a somewhat variable species. It was described by Ellis and Everhart as Cylindrosporium. Davis stated that Cercosporella mirabilis Peck was identical, but Dearness claimed that Peck's fungus was Cylindrosporium brevispina Dearn. Weiss (P.D.R. 25:108-109. 1941) recognizes Cylindrosporium crataegi (W. Va.), C. brevispina (Calif. to Mont. and Wash.), and Cercosporella mirabilis (Colo., N.Y., Wis.) (D.B.O. Savile).

Leaf Spot (Entomosporium thuemenii) affected 50% of the leaves of C. oxyacantha at Kentville, N.S., in August. In October var. rosea, which had been most severely affected, showed premature defoliation (D.W. Creelman).

Rust (Gymnosporangium clavariaeforme) was heavy on fruit and pedicels of C. oxyacantha at the Station and in several gardens at Kentville, N.S. (D.W. Creelman).

FRAXINUS - Ash

Anthracnose (Gloeosporium aridum) caused moderate damage to F. americana at Lansdowne, Digby Co., and Noel, Hants Co., N.S. (K.A. Harrison, D.W. Creelman). Reported from N.S. as G. irregulare. It is doubtful whether the several small-spored species described on ash are distinct. Most authors treat the complex under the name G. aridum, but G. fraxineum Peck is actually the oldest name (D.B.O. Savile)

Rust (Puccinia sparganioides) caused extremely severe damage to about 40 trees of F. americana in an area of one square mile at Hillaton, Kings Co., N.S. (D.W. Creelman).

Variegation (?virus). Variegation and leaf distortion occurred on a small tree of F. americana at Kentville, N.S. The cause was not definitely determined (D.W. Creelman).

GLEDITSIA - Honey Locust

Canker (Cucurbitaria elongata (Fr.) Grev.). This organism was associated with a canker on G. triacanthos at Bath, near Napanee, Ont. Reported from Ohio by J.D. Diller and R.W. Davidson (U.S.D.A. P.D.R. 34:234-235. 1950) (M.K. Corbett). The fungus is represented from London, Ont., by F. Columb. 716 on Robinia pseudoacacia (I.L. Conners).

JUGLANS

Crown Gall (Agrobacterium tumefaciens). A light infection on branches of J. regia was seen at Annapolis Royal, N.S. (D.W. Creelman).

Leaf Spot (Gnomonia leptostyla (Marssonina juglandis) was moderately heavy, causing partial defoliation, on a single walnut (?J. nigra) at Montreal, Que. (J.E. Jacques).

JUNIPERUS - Juniper

Die-Back (Cytospora ?dubyi assoc.). Infection was 10% on J. sabina at Kentville, N.S., In March (D.W. Creelman).

Rust (Gymnosporangium spp.). G. clavariaeforme was seen on a few trees in a garden at Courtenay, B. C. (W. Jones). Galls of G. betheli were common on J. scopulorum at Morden, Man., and G. clavipes was moderately heavy on J. communis var. depressa close to infected Cotoneaster (q. v.) (A. M. Brown). G. clavipes and, especially, G. clavariaeforme were common in N. S. on J. communis var depressa. G. clavariaeforme, only, was found on plants in an orchard (J. F. Hockey).

Needle Cast (Lophodermium juniperinum). Infection was a trace on J. communis var. depressa at Kentville, N. S. (J. F. Hockey).

PICEA - Spruce

Rust (Chrysomyxa spp.). A specimen of C. weirii on P. engelmanni, collected in June 1950 at Burton, B. C., was received from A. K. Parker. Needle rusts, apparently mostly C. ledicola and C. empetri, were very heavy at St. Anthony, Nfld., on hillsides kept moist for long periods by sea fog; but generally two or more telial hosts were present and mixed infections often occurred, making it impossible to assess the importance of individual species exactly. C. ledi var. cassandrae was moderatly heavy on Chamaedaphne, and C. chiogenis and C. ledi var. rhododendri were scarce on Chiogenes hispidula and Rhododendron lapponicum respectively. This is the first report of the latter rust east of Hudson Bay. Of particular interest was the finding of C. woronini at St. Anthony, where it was uncommon on both P. glauca and on P. mariana, always in association with telial witches' brooms on Ledum groenlandicum. With the finding of this rust on L. groenlandicum it becomes evident that it is to be expected further south than had been anticipated. It should be sought in humid coast forest regions such as the Queen Charlotte Is. and coastal northern B. C. (D. B. O. Savile).

PINUS - Pine

Root Rot (Armillaria mellea). Rhizomorphs were abundant at the base of a young, dying tree of P. sylvestris at Kentville, N. S. Mycelial mats were present under the bark (J. F. Hockey). Although there are several specimens in the Herbarium taken in association with pines this is our first report of definite infection of P. sylvestris.

Blister Rust (Cronartium ribicola). A single infected tree was found in a stand of young Pinus strobus at the Station, Kentville, N. S. (C. O. Gourley). Occasional infections were seen in Kings Co., P. E. I. (R. R. Hurst).

PLATANUS

Anthracnose (Gnomonia veneta). Leaves of P. occidentalis, with typical lesions bearing the Gloeosporium stage, were collected by W. R. Foster at the Empress Hotel, Victoria, B. C. It was collected at the same site by Dr. H. T. Güssow in 1937 (I. L. Conners). It was heavy on P. occidentalis at Niagara-on-the-Lake, Ont., and was found on young, recently planted trees at Niagara Falls. A much lighter infection, on the leaves but not on the twigs, was later found in a planting of what is almost certainly P. acerifolia, the London plane tree, near Chippawa, on the Niagara River boulevard; this species seems to be much more resistant than the native P. occidentalis (R. W. Sheppard).

POPULUS - Poplar

Leaf and Twig Blight (Fusicladium radiosum) was very heavy in Queens Co., P. E. I. (R. R. Hurst).

Leaf Spot (Marssonina castagnei). Infection was patchy in Alta., being very heavy on sucker growth of P. tremuloides at Edmonton and Fort Vermilion (L. L. Kennedy, G. B. Sanford).

Rust (Melampsora abietis-canadensis) was very heavy on P. grandidentata at Kentville, N. S., and caused much defoliation. It was moderately heavy on P. tremuloides, causing yellowing and some defoliation (D. W. Creelman).

Twig Blight (?Pseudomonas syringae). A specimen was received from Meadow Lake, Sask. (T. C. Vanterpool).

Yellow Leaf Blister (Taphrina aurea) was common on P. nigra at Sidney, B. C. (W. Jones).

Powdery Mildew (Uncinula salicis). Severely infected young trees were seen on Mount Royal, Montreal, Que. (J. E. Jacques).

PRUNUS

Black Knot (Dibotryon morbosum) caused moderate damage to P. padus at Okotoks, Alta. (A. W. Henry). Traces were seen at Contrecoeur, Vercheres Co., Que., on P. virginiana (J. E. Jacques).

Leaf Spot (Gloeosporium serotinum Ell. & Ev.) caused serious shot-holing and defoliation of P. serotina at Kentville, N. S., in early August (C. O. Gourley). Not previously reported to the Survey or in the herbarium.

Powdery Mildew (Podosphaera oxyacanthae) was noted on P. virginiana var. demissa at Macalister, B. C. (J. Macalister, W. Jones). It was heavy on this host at Brilliant in the Kootenays (M. F. Welsh).

Brown Rot (Sclerotinia fructicola) was heavy on an ornamental cherry in Queens Co., P. E. I. (G. W. Ayres).

Die-Back (Valsa cincta) was light on P. salicina at the Station, Kentville, N. S. (C. O. Gourley).

QUERCUS - Oak

Powdery Mildew (Microsphaera alni). Infection was 10% on Q. borealis at New Minas, N. S., on 4 Nov. (K. A. Harrison).

Leaf Blister (Taphrina coerulescens) was a trace to severe on oaks at Summerside, P. E. I., in late July (R. R. Hurst, D. B. Robinson, I. L. Conners).

RHAMNUS - Buckthorn

Rust (Puccinia coronata). Pycnia were seen on a small bush of R. alnifolia at Morden, Man., on 14 June, and aecia were plentiful on 25 June at Riding Mountain. Aecia were common on R. cathartica at Fort Garry on 12 June. A few aecia on this host at Brandon produced infection on rye, but not oats. A few pycnia were found on leaves of R. davurica in a hedge at Morden. Some aecia, on the average with only two cups apiece, were found on R. utilis at Brandon after a considerable search; the spores infected rye but not oats (A. M. Brown, B. Peturson). G. B. Cummins (U. S. D. A., P. D. R. Supp. 196:540. 1950) records P. coronata on R. utilis in China in 1935, but it is apparently unrecorded as a host in North America (I. L. Conners). Infection was a trace on R. cathartica at Ste-Anne de la Pocatiere, Que. (A. Payette). Only traces of rust were found on R. alnifolia

and R. cathartica in N. B. Traces of P. coronata var. agrostis occurred on R. frangula at Fredericton (J. L. Howatt). R. cathartica was lightly infected at Souris and Summerside, P. E. I. (R. R. Hurst).

SALIX - Willow

Scab (Fusicladium saliciperdum) was severe on the French willows at Grand Pré, N. S., as is usual in years when apple scab is heavy. Ground too wet to support the sprayer during critical periods aggravated the trouble. Infection was 90% by August (K. A. Harrison). Scab was heavy at Bedeque, Charlottetown, and Bay Fortune, P. E. I. (R. R. Hurst).

Anthracnose (Marssonina kriegeriana) caused slight damage to S. babylonica at Sidney, B. C. (J. Bosher, W. Jones).

Blight (Physalospora miyabeana) was heavy at Grand Pré, N. S.; see under Scab (K. A. Harrison). It was heavy at Bedeque, Charlottetown, and Bay Fortune, P. E. I. (R. R. Hurst).

SORBUS - Mountain Ash

Fire Blight (Erwinia amylovora). Infection was moderate in a tree at Lacombe, Alta. At Edmonton a large tree near an infected crab apple was severely blighted (L. E. Tyner). A specimen was received from near Oakville, Ont. (E. H. Garrard).

TILIA - Basswood

Anthracnose (Gloeosporium tiliae) was heavy on planted trees in Queens and Prince Co., P. E. I. (G. W. Ayres).

TSUGA - Hemlock

Gall (cause unknown). V. J. Nordin (For. Chron. 26:308. 1950) describes a gall of the stems, branches and twigs of T. heterophylla in B. C. It is recorded from Queen Charlotte Is., Cowichan L., Cracoft I. and Vancouver, and in the interior, from Naksup and Blue River. Up to 68% of the understory growth was seen to be affected near Sandspit, Queen Charlotte Is., but timber trees may also be affected. The disease is most abundant in humid situations. The galls appear to originate in the phloem (D. B. O. S.).

ULMUS - Elm

Dutch Elm Disease (Ceratostomella ulmi). In Quebec during 1951, the survey in the outer counties of the infected area was discontinued, and scouting and control work were confined to those cities and towns willing to provide employees who, after instruction by trained personel of the Division of Plant Protection, would examine the elms within their boundaries. Most of the municipalities on the Island of Montreal and the cities of Sherbrooke, Drummondville, Victoriaville, St. Hyacinthe, Lennoxville, and Granby were thus surveyed and a total of 551 trees were found to be infected. This brings the total number of infected trees recorded in the province since the discovery of the disease in 1944 to approximately 9000.

In Ontario, the survey was confined to towns and cities and to the main highways of the more heavily settled districts. Table 12 shows the distribution by counties of infected trees since the disease was discovered in 1948 (Ruth Macrae).

Leaf Spot (Gnomonia ulmea). Some trees of U. americana at Kentville, N.S., were heavily infected, but others near by were unaffected. Infection was 25-50% on U. pumila at Steam Mill and caused much premature defoliation (D. W. Creelman, J. F. Hockey).

Table 12. Dutch Elm Disease in Ontario

| County | 1948 | 1950 | 1951 | County | 1948 | 1950 | 1951 |
|---|---|---|---|---|---|---|---|
| Carleton | 3 | 5 | 13 | Lennox & Addington | - | - | 1 |
| Dundas | 1 | - | - | Peel | - | 1 | 3 |
| Essex | - | 91 | 168 | Prescott | 5 | 1 | - |
| Frontenac | - | 1 | - | Prince Edward | - | 1 | 1 |
| Glengarry | - | 2 | - | Russell | 1 | - | - |
| Grenville | 1 | - | - | Stormont | 3 | - | - |
| Kent | - | - | 2 | Welland | - | 3 | - |
| Leeds | - | 1 | 1 | York | - | - | 1 |
| | | | | Totals | 14 | 106 | 190 |

Coral Spot (Tubercularia ulmea). Specimens of Chinese elm were received from Lachine, Que., where the disease was stated to be severe (J. E. Jacques). A canker on the trunk of a tree of U. pumila 1 1/4 in. diam. was received from Bonaventure (R. Campagna, I. L. Conners). Specimens of U. pumila were received from Sydney and Truro, N.S. (J. F. Hockey, I. L. Conners). U. pumila was severely damaged at Kensington, P. E. I. (R. R. Hurst). All the reports that reach us of serious damage from coral spot evidently refer to Asiatic elms; but, since the reports commonly refer to U. pumila as the Chinese elm, it is generally doubtful whether the plant involved is U. pumila (Siberian elm) or the rather similar U. parvifolia (Chinese elm). The above reports are referred to the former species in the belief that it is the commoner species in cultivation. It is desirable that phanerogamic specimens should accompany diseased twigs in order that the status of the two hosts in relation to the disease can be ascertained (D. B. O. S.).