V. DISEASES OF TREES AND SHRUBS

ABIES - Fir

Needle Blight (Hypodermella nervata Darker) was heavy on small trees of A. balsamea and trace to moderate on large ones near Stapleton, Carleton Co., Ont., 25 May (D.B.O. Savile).

Witches' Broom (Melampsorella Cerastii). A single large broom was seen on A. balsamea at Moose Factory, Ont. (D.B.O. Savile).

Timber Rot. Preliminary investigations in northern N.B. indicate that Stereum sanguinolentum is responsible for much of the decay of A. balsamea, although Corticium galactinum, Polyporus balsameus and Poria subacida also cause important losses (V.J. Nordin).

ACER - Maple

Anthracnose (Gloeosporium apocryptum) occurred on leaves of soft maple (?A. saccharinum) at Montreal, Que. (J.E. Jacques).

Twig Blight (Nectria cinnabarina). A specimen was received from Windsor, N.S. (J.F. Hockey).

Tar Spot (Rhytisma spp.). R. acerinum was light on soft maple at St. Vincent de Paul, near Montreal, Que., in July. A plantation of A. rubrum was heavily attacked at Ste. Anne de la Pocatiere, Que., as it has been regularly for some years (A. Payette). R. punctatum was prevalent on A. macrophyllum at Thetis L., near Victoria, B.C., and at Stanley Park and Point Grey, Vancouver (H.N.W. Toms).

Heat Injury. Following the hot spell of 1-8 Aug. in Sask., new growth of A. Negundo showed mottling, chlorosis and distortion, due to marginal injury, of the leaves. Affected twigs only occasionally showed normal growth late in the season. This trouble was seen at Saskatoon and Smeaton and specimens were sent in from Humboldt and Moose Jaw (T.C. Vanterpool).

AESCULUS - Horsechestnut

Leaf Blight (Guignardia Aesculi) was rather heavy in the vicinity of Charlottetown, P.E.I. It is possible that the weakening effect of yearly attacks by this pathogen may have been partly responsible for the destruction by wood-destroying fungi of many fine horsechestnuts that used to grace Charlottetown (R.R. Hurst).

AMELANCHIER

Black Leaf Curl (Apiosporina Collinsii) was very prevalent and appears to be spreading in the Edmonton district, Alta. (L.E. Tyner).

BETULA - Birch

Timber Rot (Poria obliqua). A heart rot of western white birch (B. papyrifera var. commutata) in B.C. was found to be associated with Poria obliqua. Large, black, clinker-like, sterile sporophores were found issuing from knots on the main stem of pole-sized trees. The fungus was associated with stem cankers and also was found to be capable of killing sapwood and causing a heart rot almost identical with that due to Fomes igniarius (R.E. Foster).

Die-Back (cause unknown) is now ubiquitous in the Maritime Provinces. In N.B. most commercial stands are of little commercial value, due to excessive die-back mortality. The disease is equally serious in Cumberland and Colchester Counties, N.S., and in other parts of that province it threatens to eliminate birch as a competitive commercial hardwood species. The disease is less conspicuous in the hardwood stands of Cape Breton Island; however, here as elsewhere in N.S. the mortality and degree of injury appear to be increasing steadily. It has now been established that initial symptoms develop in the absence of activity by the bronze birch borer, Agrilus anxius although the insect is undoubtedly important in hastening the death of weakened trees.

Considerable speculation has resulted as to the factor or combination of factors that may be responsible for this initial decline in birch. Some of the possible factors that have been suggested are as follows: Sub-normal precipitation; excessive opening of stands from logging practices, death of associated hardwood species such as beech, repeated infestations by various insects; a combination of the foregoing factors; virus; fungus. Foresters of the Nova Scotia Department of Lands and Forests are concentrating their efforts on ecological and physiological phases of the problem. The possibility that a virus or group of viruses may be involved is being investigated by United States pathologists attached to the Division of Forest Pathology, New Haven, Conn. The pathogenicity of any of a number of fungi has not yet been established. This phase of the problem is receiving the attention of the staff of the Dominion Laboratory of Forest Pathology, Fredericton, N.B. (V.J. Nordin). Except for young trees, white birch free from die-back are now seldom seen in Queens Co., P.E.I. (R.R. Hurst).

CORYLUS - Filbert

Catkin Deformation (cause unknown). Material was brought in to the Laboratory in August from a garden at Vancouver, B.C., in which the staminate catkins were greatly deformed and swollen into a clavate shape. A detailed examination failed to reveal any fungus. A similar condition was seen in the University orchard plots in Aug. 1947. Some deformed catkins shed pollen in November, but others failed to mature pollen and dropped off during the winter (H.N.W. Toms).

COTONEASTER

Dark Berry (Phytophthora Cactorum) was general on fruit of C. horizontalis at the Station, Saanichton, B.C. Affected fruits contained much mycelium and a few oospores (W. Jones).

Rust (Gymnosporangium clavipes). Fruits of C. acutifolia bearing pycnia of this rust were collected at Morden, Man., by A.M. Brown on 23 June, and aecia were taken at the same location by T. Johnson on 5 July. This appears to be the first report of a Gymnosporangium on Cotoneaster in North America, but several other species attack the genus in Europe and Asia (I.L. Conners).

CRATAEGUS - Hawthorn

Rust (Gymnosporangium clavariaeforme) was heavy on C. Oxyacantha in two gardens at Courtenay, B.C. (W. Jones, I.L. Conners).

FRAXINUS - Ash

Powdery Mildew (Phyllactinia corylea). A large tree of F. pennsylvanica near Guelph, Ont., had almost every leaf severely infected on 5 Oct. (J.D. MacLachlan).

JUGLANS

Bacterial Blight (Xanthomonas juglandis) was common on walnut (J. regia) at Courtenay and North Saanich, B.C. (W. Jones). It was present on the leaves of seven trees in gardens at Agassiz and Chilliwack; large, sunken lesions occurred on the husks at Chilliwack (H.N.W. Toms).

JUNIPERUS - Juniper

Rust (Gymnosporangium Nelsoni) was common on staminate and pistillate cones of J. scopulorum at Macalister, Cariboo district, B.C. (J.M. Macalister, W. Jones).

LARIX - Larch

Rust (Melampsora Bigelowii) was conspicuous on western larch (L. occidentalis) in August, in seedling and sapling stands in south-eastern B.C. Damage was particularly heavy at Cascade Summit, between Rossland and Grand Forks, at about 4500 ft. (R.E. Foster).

MALUS - Apple

Rust (Gymnosporangium sp.). A light infection occurred in October on an ornamental apple at Brentwood, B.C. The spores and peridia do not agree well with those of any of the species known to attack Malus and its exact identity is uncertain (W. Jones, I.L. Conners).

PICEA - Spruce

Rusts (Chrysomyxa spp.). Cone rust, C. Pyrolae, was abundant on both P. Engelmanni and P. glauca var. albertiana in B.C. Damage to the former was most severe near Talla Lake and to the latter in the Prince George - Quesnel region. It seems to have been exceptionally abundant everywhere on both hosts. Needle rust, C. ledicola, was conspicuous between Prince Rupert and Terrace in northern B.C.; damage was most severe on seedlings and saplings (R.E. Foster). C. Empetri and C. ledicola were abundant on the needles and occasional on the cones of P. glauca and P. mariana at Great Whale River, Que. Young spruce must often grow up through a nearly solid cover of Empetrum or Ledum and often suffer serious defoliation under these conditions. Both those rusts must complicate the advance of spruce into the tundra. C. Woronini Tranzschel, which is systemic and perennial, forming small witches' brooms, on Ledum palustre, and is systemic but not perennial in the shoots of spruce, and which lacks uredinia, was found on L. palustre var. decumbens near Dawson, Yukon, and on P. glauca at Great Whale River, Que. This rust has not previously been reported in North America (D.B.O. Savile). (See D.B.O. Savile. North American species of Chrysomyxa. Can. J. Res. In press).

Timber Rot (Fomes Pini), a white pocket rot, is the cause of considerable cull spruce in N.B. (V.J. Nordin).

PINUS - Pine

Rust (Coleosporium Solidaginis) was heavy on 11 June at Britannia, near Ottawa, Ont., on three 3-ft. trees of P. resinosa planted in an old pasture. Trees in the main plantation were unaffected (A.R. Buckley, I.L. Conners).

Blister Rust (Cronartium ribicola) is ubiquitous on P. Strobus in N.B. The incidence in natural stands ranged from 12.2% at Bathurst Lake to 46.0% at Island Lake. Surveys are less complete for N.S., but in the areas sampled incidence ranged from 3.1% at Kentville to 35.0% at Millford (V.J. Nordin).

Rust (Cronartium spp.). It has recently been shown (G.G. Hedgcock and P.V. Siggers. A comparison of the pine-oak rusts. U.S.D.A. Tech. Bull. 978. 1949) that Cronartium Quercuum is restricted to China and Japan. Most of the records in eastern Canada ascribed to that species belong to C. cerebrum Hedgc. & Long; but C. coleosporioides also occurs in Que. and N.B. (D.B.O.S.).

Needle Blight (Hypodermella concolor (Dearn.) Darker) was evident on lodgepole pine (P. contorta var. latifolia) throughout its range in B.C. It was particularly heavy from Prince George to Cache Creek and eastward (R.E. Foster).

Pole Blight (cause unknown) of western white pine (P. monticola), has gained considerable headway in pole-sized stands in southeastern B.C. It has unquestionably passed for white pine blister rust for some years. Its range seems to be coincident with that of its host in the interior, but it has not been detected on the coast. Workers in the United States have devised an elaborate system of diagnosis in which the sum of numerical ratings of a number of symptoms determines the condition of presumably infected trees. The most reliable indicator seems to be a combination of bark resinosis, flattened bark surfaces, elongated brownish lesions in the cambium beneath flat surfaces, and thinning and yellowing of the foliage in the upper crown. Severely affected trees are readily recognized by their dead, bare tops (R.E. Foster).

POPULUS - Poplar

Yellow Leaf Blister (Taphrina aurea) was general on a few Lombardy poplars (P. nigra var. italica) at Oyster River, B.C. (W. Jones).

PRUNUS

Black Knot (Dibotryon morbosum) was severe on a tree of Prunus sp. at Calgary, Alta. (M.W. Cormack). Specimens of affected P. virginiana were received from Renfrew, Ont. (H.N. Racicot). It varied from trace to very heavy on P. pennsylvanica and P. serotina in Prince and Queens Counties, P.E.I. (R.R. Hurst).

PSEUDOTSUGA - Douglas Fir

Canker (Phomopsis lokoyae) was seen in two places in B.C. on P. taxifolia. One very localized area was in the lower Fraser Valley, north of Haney; the second, in the interior about 300 miles away, extended 23 miles along the highway from Soda Creek to Alexandria. The disease became evident in both areas in early summer, following a very

wet summer in 1948 and a severe winter. Cankers were mostly on the bole, rarely at diameters over 4 in., and were always centred at a branch. Many killed leaders were seen, but death of the tree is to be expected only when the stem of a very young tree is girdled (R.E. Foster).

PYRACANTHA - Firethorn

Scab (Fusicladium Pyracanthae) was general on P. coccinea at the University campus, Vancouver, B.C., causing disfigurement of the fruit (H.N.W. Toms).

QUERCUS - Oak

Rust (Cronartium spp.). See note under Pinus. The pine-oak rust of eastern Canada is referable to C. cerebrum rather than C. Quercuum under which it has been treated in the past (D.B.O.S.).

Leaf Blister (Taphrina coerulescens) was heavy on Q. palustris and light on adjacent Q. borealis planted in the arboretum of the Experimental Station, Ste. Anne de la Pocatiere, Que. (A. Payette).

RHAMNUS - Buckthorn

Rust (Puccinia coronata) was heavy on R. cathartica at Ste. Anne de la Pocatiere, Que. (A. Payette). It was trace to light on the same host at various locations in York, Carleton and Westmorland Counties, N.B. P. coronata var. Agrostis was lighter on R. Frangula at Fredericton than in any year since it has been under observation (J.L. Howatt). Only traces of rust were found on R. cathartica in Queens and Prince Counties, P.E.I. (R.R. Hurst).

SALIX - Willow

Witches' Broom (Diplodina Salicis West.) was seen at Saskatoon and Senlac, Sask., in late summer (E.J. Hawn, T.C. Vanterpool).

ULMUS - Elm

Dutch Elm Disease (Ceratostomella Ulmi). In Quebec during 1949 considerably less scouting and control work was done than in previous years. The disease has now become so well established in the central part of the infected area that further efforts to control it there seemed to be inadvisable, and work was confined to the outer counties of the affected section of the province. In the western part of the infected area there was considerable intensification of the disease in the counties bordering the Ottawa River. In Two Mountains, for example, 110 infected trees were found in 1949 and 8 in 1948, while the corresponding figures for Argenteuil were 26 and 11 and for Vaudrouil 8 and 0. There was some extension of the area of infection towards the south, diseased trees being found in two border counties, Missisquoi and Stanstead for the first time. In the former, infected trees occurred within three miles of the Vermont border and in the latter within 8 miles of the New Hampshire line.

In eastern Ontario, where in 1948 one diseased tree was located and the causal fungus was isolated from 13 dead or dying trees, an increased amount of scouting was done this year. Particular attention

was paid to the examination of elms in the vicinity of the 14 trees mentioned. However, not a single instance either of a diseased tree or of the causal fungus existing saprophytically in a dead tree was found (A.W. McCallum).

Coral Spot (Tubercularia ulmea) was again prevalent at the Botanical Garden, Montreal, Que., in hedges of U. pumila, and these hedges were finally removed. The disease was found in several other areas in Montreal (J.E. Jacques).

Wilt (Verticillium sp.). In late June a tree at Lethbridge showed a severe wilt affecting nearly two thirds of the foliage. V. sp. was isolated (M.N. Grant, Ruth Macrae).