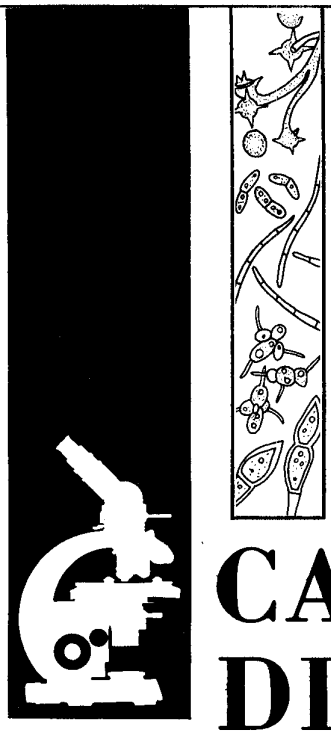
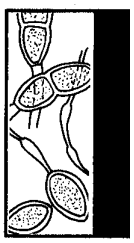
VOL.47, No.2, JUNE, 1967



CANADIAN PLANT DISEASE SURVEY



EDITOR: D.W. CREELMAN

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RESEARCH BRANCH CANADA DEPARTMENT OF AGRICULTURE

VOL.47, No.2, JUNE, 1967

CANADIAN PLANT DISEASE SURVEY

RESEARCH BRANCH CANADA DEPARTMENT OF AGRICULTURE

CONTENTS

1. D.B.O. SAVILE. Book review 31

2. D.W. CREELMAN. Summary of the prevalence of plant diseases in Canada in 1965. A compilation.

(a) New and noteworthy diseases 31

(b) Diseases of cereal crops 33

(c) Diseases of forage and field crops 37

(d) Diseases of vegetable crops 44

(e) Diseases of fruit crops 53

(f) Diseases of trees and shrubs 60

(g) Diseases of herbaceous ornamentals 64

(h) Host index 67

(i) Appendix "A". Index of contributors 69

"The Canadian Plant Disease Survey is a periodical of information and record on the occurrence and severity of plant diseases in Canada. It will also accept other original information such as the development of methods of investigation and control, including the evaluation of new materials. Review papers and compilations of practical value to phytopathologists will be included from time to time. It will not accept results of original research suitable for publication in more formal scientific journals".

BOOK REVIEW

An annotated index of plant diseases in Canada and fungi recorded on plants in Alaska, Canada and Greenland.

by I.I. Conners

Canada Department of Agriculture Publication # 1251. 381 pp. 1967. Queen's Printer, Ottawa, Canada. $8.50.

This volume includes both Canadian records of all diseases of cultivated plants (including nematode infections and physiological disorders); and also all published records of the occurrence of saprophytic and parasitic fungi on native and introduced vascular plants in Canada, Alaska and Greenland. It is difficult to say which of these two classes of data will be most widely used; but it is safe to say that both will be of great benefit to a wide range of biologists.

The primary breakdown is by genera of plants, which are listed alphabetically. Under each genus the included species are listed with English and French common names, approximate range, and an identifying number for reference under the fungus, other organism or condition. Under each fungus or disease entry the geographic area is given along with appropriate bibliographic references. Notes of varying length are included on history, control, etc., of major diseases, varying from a few lines to about 2500 words, which greatly increase the usefulness of the book to plant pathologists and workers in related fields. The index is very complete, and it should be noted that a repeated page number warns the user when the organism is reported on two hosts. The bibliography includes nearly 1300 references.

As one who watched the evolution of this book over several years, much of the time under most distracting circumstances, I can say without hesitation that it has been a very great undertaking, painstakingly and meticulously executed with a degree of precision that would be impossible for anyone without Ibra Conners' unusually dedicated approach.

The literature coverage is essentially complete to the end of 1964. As an example of the value of such detailed coverage, I may point out that for the plurivorous saprophyte Mycosphaerella tassiana there are some 180 citations. The names of the fungi have been very thoroughly revised. The host names have usually been well checked, but a few recent revisions have been excluded. (I am embarrassed to find I omitted to provide names in Saxifraga to replace a few revised after I wrote up their rusts.)

Such a book can never stay up to date, and many new records have appeared during its two years in press. It has also been impossible to include a vast number of unpublished records. However, this book will be a primary source of records for fungi and diseases in the northern half of North America for many years.

It is scarcely conceivable that, in nearly 400 double-column pages of fairly small print, there should be no typographic errors. A few have survived the attention of D. W. Creelman, who edited the book, the author, and several volunteers who helped from time to time; but those that I have seen have been very minor. Readers may note that the reference 571 at the foot of the first column of p. 3 should read 511.

The printing is clear, the binding allows the book to lie open at any page without "massage", and in all respects the book is simple to use.

D. B. O. Savile
Plant Research Institute,
Ottawa.

NEW AND NOTEWORTHY DISEASES

The cereal rusts, although generally widespread in Western Canada, caused little damage except in late-seeded fields. The incidence of common root rot (Bipolaris sorokiniana, Fusarium spp. remained at normal levels on wheat in Saskatchewan but caused moderate to heavy losses in barley in Alberta. Browning root rot (Pythium spp.) was present in many winter wheat fields in Ontario. Eye spot (Selenophoma donacis) was reported, for the first time in Canada, on durum wheat in Saskatchewan. The incidence of aster yellows virus in oats in Manitoba was the highest ever recorded. Barley yellow dwarf virus was commonly found in fields of wheat, oats and barley in the same province.

Bacterial wilt (Corynebacterium insidiosum) was commonly found in alfalfa stands in British Columbia and southern Alberta and new infestations of the bulb and stem nematode (Ditylenchus dipsaci) were found in southern Alberta. Leaf spot (Stemphylium loti) was reported, for the first time in Canada, on birdsfoot trefoil from Quebec. Northern anthracnose (Kabatiella caulivora) was destructive on red clover in northern Alberta and the same host was severely affected by common leaf spot (Pseudopeziza trifolii f. sp. trifolii-pratensis in Quebec. Clover phyllody virus was commonly seen in alsike and ladino clovers in Quebec and New Brunswick.

Stem rot (Sclerotinia sclerotiorum) caused extensive damage to yellow mustard in Saskatchewan and was more prevalent than usual on rape in Western Canada. Leaf and pod spots (Alternaria brassicae and A. raphani) were prominent on rape in the Prairie Provinces and particularly serious in Manitoba. Brown stem rot (Cephalosporium gregatum) and bacterial blight (Pseudomonas glycinea) were commonly observed in soybean fields in Ontario. A previously

unobserved head abnormality was seen in most sunflower fields in Manitoba.

Root and stalk rots (Fusarium graminearum) of field corn were more prevalent than in recent years in western Ontario. Black root rot (Thielaviopsis basicola) was destructive in tobacco seed beds in Ontario but field losses were light. Pole rot, caused by Rhizopus spp. and bacteria was frequently encountered.

Fusarium root rot and sclerotinia wilt caused damage in most bean fields in Ontario and halo blight (Pseudomonas phaseolicola) was troublesome on beans for processing in Quebec. Club root (Plasmodiophora brassicae) continues to be a problem in cruciferous crops in British Columbia's Fraser Valley. Molybdenum deficiency was severe on early cabbage varieties in western Newfoundland.

Root-knot nematode (Meloidogyne hapla) was reported to have caused severe damage to carrots in western Nova Scotia. Severe infections of aster yellows virus occurred on the same crop in Ontario and New Brunswick. Bacterial blight (Pseudomonas apii) was more prevalent than usual on celery in Quebec. Cucumber scab (Cladosporium cucumerinum) caused significant losses in Quebec and New Brunswick. Verticillium dahliae was prevalent in plantings of eggplant and pepper in British Columbia and Ontario.

Lettuce big-vein virus was reported for the first time from British Columbia. Basal rot (Fusarium oxysporum f. cepae) caused appreciable losses in onion crops in British Columbia, Ontario and Quebec and sour skin (Pseudomonas cepaica) was found, for the first time in Canada, in stored onions in Ontario,

Bacterial ring rot (Corynebacterium sepedonicum) reached epidemic proportions in seed potato fields in Manitoba but showed a marked decrease in incidence in Prince Edward Island. Violet root rot (Helicobasidium purpureum) was reported on potatoes from Prince Edward Island. Losses from late blight (Phytophthora infestans) were negligible in all potato-growing areas. Heavy infections of wart (Synchytrium endobioticum) were common in Newfoundland.

Bacterial canker (Corynebacterium michiganense) was responsible for serious losses in both the spring and fall greenhouse tomato crops in western Ontario. Buckeye rot (Phytophthora parasitica) was severe in many fields of tomatoes in the same province.

Scab of apple and pear (Venturia inaequalis, V. pirina), for the second successive year, caused no economic losses in commercial crops. Fire blight (Erwinia amylovora), previously unknown in Nova Scotia, was found to be widely distributed in pear orchards and was found as well on apple and hawthorn. Powdery mildew (Podosphaera leucotricha) was severe on susceptible apple cultivars in British Columbia and Ontario and was also reported for the first time in commercial orchards in Nova Scotia. Symptoms of virus diseases of apples in British Columbia were generally moderate but freckle pit of Anjou pear was more evident than for some years.

Coryneum blight (Stigmina carpophila) caused widespread spotting of apricots and peaches in British Columbia orchards and bacterial spot (Xanthomonas pruni) caused losses in the same crops in southern Ontario. Gray mold (Botrytis cinerea) was responsible for losses in stored cherries in British Columbia but the incidence of rots caused by Monilinia fructicola and Rhizopus nigricans was low in both Eastern and Western Canada. Heavy infections of powdery mildew (Podosphaera clandestina) occurred on sour cherry in British Columbia and Ontario. It was also recorded, for the first time, in Nova Scotia. Canker caused by Valsa spp., caused significant damage in peach orchards in Ontario. A bacterial blight attributed to Pseudomonas syringae has become established in raspberry plantings on the British Columbia mainland.

Red stele (Phytophthora fragariae) continues to be a problem in some areas of British Columbia. Symptoms of green petal of strawberry (clover phyllody virus) were widespread and severe in eastern Quebec and in the Maritime Provinces. Intensive surveys showed that few fields were free of the disease and plant losses were high.

Leaf spot (Septoria caraganae) was destructive on windbreaks of Caragana arborescens in the Prairie Provinces. Twig blight (Phomopsis juniperovora) damaged cultivated junipers in British Columbia and Ontario. Dutch elm disease (Ceratocystis ulmi) has spread eastward to within ten miles of the Nova Scotia border.

Among new records of parasitic fungi were the following: Alternaria passiflorae on Passiflora, Mycosphaerella nigro-maculans on cranberry and Phyllosticta vaccinii on highbush blueberry in British Columbia, Stemphylium floridanum on chrysanthemum and Phyllosticta dracaenae on dracaena in Ontario and Colletotrichum gloeosporioides on eggplant in Quebec.

DISEASES OF CEREAL CROPS

WHEAT

LEAF SPOT (Ascochyta sorghi) was present in two collections from Cupar and Langham, Sask. (B. J. S.). *

SPOT BLOTCH (Bipolaris sorokiniana). Trace infection was recorded at Two Hills, Alta. (L. J. P.). Infection was 5% in 1/15 fields examined in Man. (W. A. F. H.).

COMMON ROOT ROT (Bipolaris sorokiniana, Fusarium spp.) caused 15 - 25% damage at New Norway, mod. damage at Rocky Mountain House, slight damage at Barrhead and Blackie; it was general in the St. Paul district and observed at Lethbridge, Bittern Lake and Islay, Alta. (A. W. H., D. S.). It was rated 2-tr. 2-sl. 1-mod. in fields n. and n. e. of Edmonton (L. J. P.). Ratings were 3-tr. 1-sl./4 spring wheat and 10-tr. 14-sl. 1-mod. in winter wheat fields in s. Alta. (J. S. H., T. G. A.). Its incidence in Sask. was average, being slightly down from 1965 and considerably lower than in 1964. The ratings for crop districts 1 to 9, respectively, were: 13.46, 10.45, 16.46, 11.24, 4.81, 10.74, 8.87, 4.23, and 8.79. The disease was especially light in the northeast and eastern crop districts 8 and 5 and considerably heavier than usual in southern areas (B. J. S.).

ERGOT (Claviceps purpurea) was prevalent in s. w. Alta. causing appreciable losses (A. W. H., D. S.). Trace amounts were recorded in early Aug. in 11/216 fields inspected in Sask. (R. D. T.).

ANTHRACNOSE (Colletotrichum graminicola) occurred in a patchy fashion in fields at Vulcan, Alta. Damage was probably light (A. W. H., D. S.).

YELLOW BLOTCH (Drechslera tritici-repentis) was prevalent on seedlings of 'Pembina' at Lasalle, Man., light on mature crops in Man. and mod. on durum wheat in s. w. Sask. The varieties 'Golden Ball' and 'Pelissier' appeared more susceptible than other varieties in plots at Regina (W. C. McD.).

POWDERY MILDEW (Erysiphe graminis). Infection was light on 'Gaines' wheat in plots nr. Abbotsford, B. C. (H. N. W. T.). It was rated 1-mod./4 spring wheat and 2-tr. 1-sl. in winter wheat fields in s. Alta. (J. S. H., T. G. A.). Very little mildew was seen in e. Ont. (R. V. C.).

HEAD BLIGHT (Fusarium spp.). A trace of infection was seen in experimental plots at Glenlea, Man. (W. A. F. H.).

TAKE-ALL (Gaeumannomyces graminis (Sacc.) Arx & Oliver = Ophiobolus graminis Sacc.) caused mod. damage at Bashaw and Bittern Lake, was widespread in a crop on summerfallow at Wildwood, light at Barrhead and observed at Fairview and Okatoks, Alta. (A. W. H., D. S.). It was rated 1-sl. 1-tr. in fields n. and n. e. of Edmonton and 1-tr. in winter wheat in s. Alta. (J. S. H., T. G. A.). Take-all caused 1% damage at Elfros in Sask. and traces occurred at Carrot River, Nipawin, Kerrobert, Unity, Marcelin, Melfort and Scott. Specimens were received from 2 fields at Rosthern, Sask. in which losses of 1% and 5% were reported (B. J. S., R. D. T.).

BASAL GLUME ROT (Pseudomonas atrofaciens). Trace amounts were observed in 3 fields in s. e. Sask. and a specimen was received from the same area (R. D. T.).

STEM RUST (Puccinia graminis f. sp. tritici) appeared much later than usual in Man. It developed slowly and by the end of the season only traces were seen on susceptible varieties and wild grasses although it was widely distributed throughout Man., Sask. and s. Alta. Cultivated varieties suffered little or no damage (G. J. G.). It was rated 3-sl./4 spring wheat and 1-tr. in winter wheat fields in s. Alta. (J. S. H., T. G. A.). Traces occurred in only 3/212 fields surveyed in Sask. (B. J. S.). Traces were seen in 1/9 fields nr. St. Catharines (T. R. D.) and it was generally scarce in e. Ont. although somewhat more plentiful on late-seeded crops and on winter wheat planted as a spring crop (R. V. C.).

LEAF RUST (Puccinia recondita) was widespread in Western Canada by late July but infections were much lighter than normal. Heavy infections were observed later but development was too late to have much effect on yield (D. J. S.). Infection was severe on 'Ridit' in plots at Abbotsford, B. C. and caused a 50% reduction in yield. It was also sev. on 'Gaines' but losses were not as heavy (H. N. W. T.). Infections were recorded at Stettler, Bruderheim and Athabasca in n. Alta. (A. W. H., D. S.). It was rated 9-tr. 3-sl. 2-mod. in fields examined n. and n. e. of Edmonton (L. J. P.) and 5-tr. 1-sl. on winter wheat fields in s. Alta. (J. S. H., T. G. A.). Infections were widespread in Sask. by mid-August. Leaves were dried up but losses were not significant because leaf destruction occurred after the heads were well filled (B. J. S.). Infection ranged from 1-10%

* see Appendix "A" for list of contributors, their, addresses and affiliation.

on 100% of the plants in 8/22 fields examined in Man. on 21 July (W. A. F. H.). It was trace on 'Manitou' and 'D-184' and heavy on 'McMurachy' at St. John's West, Nfld. (G. A. N.).

STRIPE RUST (Puccinia striiformis). Trace infections were seen in one winter wheat field in s. Alta. (J. S. H., T. G. A.).

BROWNING ROOT ROT (Pythium spp.) was observed in fields at High River and Hardisty, Alta. (A. W. H., D. S.). Specimens were received from Kelvington, Avonhurst and Balcarres, Sask. (B. J. S., R. D. T.). It was prevalent in many fields of winter wheat in Essex and Kent counties in s. w. Ont. Plant recovery was good after nitrogen was applied to promote late spring growth (C. D. McK.).

EYE SPOT (Selenophoma donacis (Pass.) Sprague & Johnson) occurred with yellow blotch and speckled leaf blotch on durum wheat in s. w. Sask. (W. C. McD.). This is the first report, to the Survey, of S. donacis on wheat in Canada. Sprague lists it as occurring on wheat in Idaho and Wash. It has been reported in Canada on Agropyron, Elymus, Festuca and Poa (Ed.).

GLUME BLOTCH (Septoria nodorum). 'Park' wheat was commonly affected at widely separated points in Alta. It was also seen at Victoria, B. C. (A. W. H.). Trace to slight infections occurred at scattered points throughout Sask. with mod.-sev. infections in the northeastern zones (R. D. T.).

SPECKLED LEAF BLOTCH (Septoria spp.) was recorded at Coutts (A. W. H.) and traces were seen at Ashmont. Alta. (L. J. P.). It was rated 1-tr./4 spring wheat and 1-sl. in winter wheat fields surveyed in Sask. (J. S. H., T. G. A.). S. avenae f. sp. triticea occurred in 62/215 fields surveyed in Sask. It was generally slight in intensity with its greatest degree of severity in the western zones (R. D. T.). The disease was observed on durum wheat leaves in s. w. Sask. (W. C. McD.).

DWARF BUNT (Tilletia contraversa). Traces were seen in one winter wheat field in s. Alta. (J. S. H., T. G. A.).

COMMON BUNT (Tilletia foetida) was seen in trace amounts in 2 winter wheat fields in s. Alta. (J. S. H., T. G. A.).

LOOSE SMUT (Ustilago tritici). Traces occurred in 3/208 fields of common wheat surveyed in Sask. In 7 fields of durum wheat, 3 showed 1% infection and 1 had a trace (B. J. S.). Three/75 common wheat fields examined in Man. averaged one infected head per field. Seven/16 durum fields averaged 1.4% infection with some showing up to 8% (J. J. N.).

BACTERIAL BLACK CHAFF (Xanthomonas translucens). 'Park' wheat appeared particularly susceptible in Alta. where 15% of the plants were affected at Bittern Lake and 5-10% of the plants at Islay. It was also sev. at Barrhead, general at St. Paul and Elk Point, and light at Okatoks, Stettler, Olds and Buck Lake (A. W. H., D. S.). It was found in experimental plots but not in farmers' fields in Man. In increase plots of 'Manitou' at Winnipeg it was present in a patchy distribution with a trace to 90% of the leaf area destroyed on affected plants. Infection was slight in plots of 'Marquis' at Glenlea (W. A. F. H.).

BARLEY YELLOW DWARF (barley yellow dwarf virus). Trace infections were seen in 13/50 fields surveyed in Man. (C. C. G., P. H. W.).

SOIL-BORNE MOSAIC. What appeared to be soil-borne mosaic was observed on 20% of the plants in 2 fields at Lowe Farm, Man. Attempts to transfer it mechanically were unsuccessful (W. A. F. H.).

STREAK MOSAIC (wheat streak mosaic virus) was found on occasional plants in 8/20 winter wheat fields surveyed in s. w. Ont. in Nov. (L. F. G., G. C. M.).

STRIATE MOSAIC (wheat striate mosaic virus) was seen in 2/50 commercial fields examined in Man. Infection was less than 1% (C. C. G., P. H. W.).

SPLOTCH (physiological) was rated 1-sl. 2-mod. /7 durum fields examined in s. w. Sask. (R. D. T.).

CHEMICAL INJURY. Slight herbicide injury occurred in 92/215 fields surveyed in Sask. This unusually high incidence of injury was apparently due to a delay in the application of herbicides because of wet weather. Damage was most evident in crop districts 5, 6, 8 and 9 (B. J. S.). Damage from herbicides was rated at 5% in a field at Shediac, N. B. (S. R. C.).

CHLOROTIC BANDING (high-temperature injury) was observed at Innisfree, Elk Point, Vegreville and Ferintosh, Alta. (A. W. H., D. S.). Temperatures of 87 and 89° F on June 18 and 20 are thought responsible for the slight injury seen in 2/8 fields examined in Man. (W. A. F. H.).

LOW-TEMPERATURE INJURY was rated 1-sl. 2-mod. 3-sev./12 fields surveyed in s. Alta. (J. B. L.).

OATS

ANTHRACNOSE (Colletotrichum graminicola). Some infection was observed at Spruce Grove, Alta. (A. W. H., D. S.).

LEAF BLOTCH (Drechslera avenacea) was recorded at Vegreville, Alta. (L. J. P.); light infections were seen in n. e. Man. (W. C. McD.) and mod.-sev. infections occurred on 'Fundy' oats at St. John's, Nfld. (G. A. N.).

POWDERY MILDEW (Erysiphe graminis). Trace infections were seen in 1/8 fields examined in the St. Catharines district, Ont. (T. R. D.).

ROOT ROT (Fusarium spp.) killed 4% of the plants in plots at Saskatoon and 1% in plots at Regina, Sask. (B. J. S.).

HALO BLIGHT (Pseudomonas coronofaciens) was rated 8-sl./22 fields examined in Sask. Affected fields were widespread in distribution (R. D. T.). Infection ranged from tr.-mod. in 3/18 commercial fields surveyed in Man. It was also seen in experimental plots at Morden. The organism was isolated and found pathogenic (W. A. F. H.). It was rated 1-tr. 3-sl./8 fields nr. St. Catharines (T. R. D.) and was plentiful early in the season in e. Ont. (R. V. C.).

CROWN RUST (Puccinia coronata f. sp. avenae) was found in 2/22 fields surveyed in Sask. (B. J. S.). It was first observed in Man. on 18 July. Maximum intensities of 10-25% were reached in commercial fields by the end of July but losses in Western Canada were negligible except for slight to moderate losses in some late-sown fields. Traces only were found in rust nurseries in Alta. Infections were heavy near buckthorn infestations in s. e. Ont. and in the Guelph area. It was slight in the nursery at Lennoxville, Que. but none was found in the Maritime Provinces (G. F.). Crown rust was plentiful at maturity in e. Ont. (R. V. C.).

STEM RUST (Puccinia graminis f. sp. avenae) was first found in Man. at the end of July and its subsequent development was relatively slow. Losses generally, were negligible except in a few late fields that had moderate to severe infections. In Eastern Canada only the nurseries at Appleton and Ottawa, Ont. and La Pocatière, Que. had mod.-sev. infections (J. W. M.). Infection was severe at maturity in e. Ont. especially at Ottawa. In barberry areas its occurrence was spotty, with occasional heavy infections (R. V. C.). In Que. seed board tests only the plots at Huntingdon and Lennoxville had noticeable infections (D. L.).

SPECKLED LEAF BLOTCH (Septoria avenae f. sp. avenae). Slight infections were recorded in 2/22 fields surveyed in n. e. Sask. (R. D. T.). It was prevalent late in the season in e. Ont. Early-seeded crops escaped much of the infection (R. V. C.).

LOOSE SMUT (Ustilago avenae) was rated 1-tr./31 fields surveyed in Man. (J. J. N.) and 3-tr./5 at Centreville and Moncton, N. B. (S. R. C.). Light infections were seen on 'Exeter' at St. John's West, Nfld. (G. A. N.).

COVERED SMUT (Ustilago kolleri). Trace infections were seen in 1/21 fields surveyed in Man. (J. J. N.).

RED LEAF (barley yellow dwarf virus). Of 29 fields surveyed in Man., 15 had trace infections and 1 had 1% (C. C. G., P. H. W.).

BLUE DWARF (oat blue dwarf virus) was seen in experimental plots nr. Winnipeg but none was observed in commercial fields in Man. (C. C. G., P. H. W.).

BLAST (physiological). Traces were seen nr. St. Paul, Alta. (L. J. P.). Trace to moderate amounts were observed in 11/22 fields surveyed in Sask. (R. D. T.). About 2% of the plants of 'Shefford' oats were affected in a field at Macdonald College, Que. (H. G.).

CHEMICAL INJURY. Herbicide injury was noted in 4/22 fields surveyed in Sask. (B. J. S.).

CHLOROTIC BANDING (high soil temperatures) was observed on 2% and 5% of the plants in 2/5 fields surveyed in Man. (W. A. F. H.).

GRAY SPECK (manganese deficiency) was sev. at La Crête and seen in trace amounts at Bluffton and Two Hills, Alta. (A. W. H., L. J. P.).

BARLEY

SPOT BLOTCH (Bipolaris sorokiniana) was rated 1-sl./12 fields examined in s. Alta. (J. S. H., T. G. A.). Slight-mod. infections occurred in the north-central and northeastern zones of Sask. occurring in 6/28 fields surveyed (R. D. T.). It was light in the north and moderate in s. Man. (W. C. McD.). Dry weather in e. Ont. kept infections at a very low level (R. V. C.). The seedling blight stage of the disease affected 75% of the barley in a mixed planting of barley and oats at Bear River, N. S. The 5-acre field had been sown in 1965 to barley which showed poor growth (C. O. G.).

COMMON ROOT ROT (Bipolaris sorokiniana, Fusarium spp.). Damage was sev. at Vulcan, Athabasca, Stettler and St. Paul, mod. at Conrich, slight at Trochu and observed at Sunset House, Rycroft, Lacombe, Westlock and Duvernay, Alta. (A. W. H., L. J. P.). It was rated 4-tr. 2-sl./12 fields examined in s. Alta. (J. S. H., T. G. A.).

ERGOT (Claviceps purpurea) was observed in 4/28 fields examined in Sask. Ratings were 2-tr. 2-sl. One of the latter fields had 4% infection (R. D. T.).

Traces were seen in a field at Macdonald College, Que. (H. G.).

POWDERY MILDEW (Erysiphe graminis) was rated 1-sl./12 fields examined in s. Alta. (J. S. H., T. G. A.) and traces were found in plots at Regina and Saskatoon, Sask. (B. J. S.).

TAKE-ALL (Gauemannomyces graminis). A moderate infection was seen north of Edmonton, Alta. (L. J. P.).

LEAF RUST (Puccinia hordei). Traces were present in 2/26 fields examined in Sask. (B. J. S.) and in 1/4 seen in the St. Catharines area, Ont. (T. R. D.). It was observed only in late-planted fields in e. Ont. (R. V. C.). Infection varied from sl.-sev., depending on variety, at St. John's West, Nfld. (G. A. N.).

STEM RUST (Puccinia graminis) occurred in only 10/34 rust nurseries in Canada and was generally light except at Appleton, Ont. where all varieties of barley were attacked. These infections were presumably caused by rye stem rust which also attacks barley including those varieties resistant to wheat stem rust. 'Montcalm' is susceptible to wheat stem rust which appears to have caused most of the infection on that variety (G. J. G.).

NET BLOTCH (Pyrenophora teres) was rated 3-tr. 1-sl. 1-mod. in fields n. and n. e. of Edmonton (L. J. P.) and was observed at Rocky Lane, Athabaska, Olds, Stettler, Brownvale, Peace River and Fairview, Alta. (A. W. H., D. S.). Ratings in s. Alta. were 4-sl. 1-mod. 6-sev./12 fields examined (J. S. H., T. G. A.). It was slight in plots at Regina and very severe on 'Jubilee' in plots at Saskatoon, Sask. A third crop of 'Haanchen' and a field of seedlings were severely diseased in the Saskatoon area. The disease was detected in 20/28 fields surveyed in Sask. and was most prevalent in the northern zones (B. J. S., R. D. T.). Infection was moderate to severe in Man. (W. C. McD.).

SCALD (Rhynchosporium secalis) was rated 3-tr. 1-sl. 2-mod. 1-sev. in fields n. and n. e. of Edmonton (L. J. P.). Infection was 40% at Brownvale, general at Stony Plain and observed at Camrose, Fairview, Eckville, Okatoks, Peace River, Calgary, Smith, Strathmore and Stettler, Alta. (A. W. H., D. S.). Ratings were 1-tr. 1-mod./12 fields examined in s. Alta. (J. S. H., T. G. A.). Average damage was slight in 9/28 fields surveyed in Sask., mainly in the north-central zones (R. D. T.). Trace to light infections were seen in n. e. Man. (W. C. McD.).

SPECKLED LEAF BLOTCH (Septoria passerinii). Trace-mod. infections were observed in 8/28 fields examined in Sask., mainly in the central and northern zones (R. D. T.). It was moderate to severe in all parts of Man. (W. C. McD.).

COVERED SMUTT (Ustilago hordei). Ratings in 4/28 fields in Sask. were: 1-tr. 1-1% 1-2% 1-2.5% (B. J. S.). Infection averaged 0.1% in 5/56 fields in Man. It ranged up to 2% (J. J. N.).

FALSE LOOSE SMUT (Ustilago nigra). Infection ranged up to 5% and averaged 0.2% in 5/56 fields surveyed in Man. (J. J. N.).

LOOSE SMUT (Ustilago nuda) caused a 10% yield reduction at Milk River, moderate damage at Gwynne and was observed at Calgary and Falher, Alta. It was rated 1-tr. 1-sl. in fields n. & n. e. of Edmonton (A. W. H., L. J. P.). Ratings in Sask. were 5-tr. 3-2 to 3%/28 fields surveyed. The variety 'Gateway 63' was reported to show 5% infection in several fields nr. Regina and 'considerable loose smut' in a number of fields at Smeaton (B. J. S.). Eighteen / 56 fields surveyed in Man. showed an average infection of 0.6% with infection ranging up to 6% (J. J. N.). It was quite prevalent on susceptible varieties in e. Ont. (R. V. C.). Infection ranged from 0.5 - 9.8% on 15 lines and varieties in plots at La Pocatière, Que. (H. G., G. St. P.). Light infections were seen at St. John's West, Nfld. (G. A. N.).

BACTERIAL BLIGHT (Xanthomonas translucens) was observed in trace amounts in some experimental plots at Saskatoon, Sask. (R. D. T.). None was seen in commercial fields in Man. (W. A. F. H.).

ASTER YELLOWS (aster yellows virus). Incidence in commercial fields in Man. in 1966 was the highest on record. Infection ranged from trace-6.5% with a mean of 3.2% for 25 fields. Macrosteles fascifrons was much more abundant than usual (C. C. G., P. H. W.).

STRIPE MOSAIC (barley stripe mosaic virus). Half the plants showed symptoms in one field in Man. It was also seen in experimental plots nr. Winnipeg (C. C. G., P. H. W.).

BARLEY YELLOW DWARF (barley yellow dwarf virus) was rated 3-tr. 1-1%/32 fields surveyed in Man. (C. C. G., P. H. W.).

HEAD BLIGHT (cause undetermined) was extensive at Falun and was observed at Trochu and Smith, Alta. (A. W. H., D. S.).

BORON TOXICITY caused 40% damage in a field at Port Elgin, N. B. (S. R. C.).

CHEMICAL INJURY. Herbicidal injury was seen in 9/32 fields in Sask. (B. J. S.).

CHLOROTIC BANDING (high soil temperatures). Trace amounts of heat banding were seen in Man. in late June (W. A. F. H.).

RYE

ERGOT (Claviceps purpurea). Thirty % of the plants were reported diseased in a field at Biggar and infection was slight in one at Choiceland (R. D. T.). At St. John's West, Nfld., 'Tetra Petkus' had 1-4 sclerotia per head on 10% of the heads (G. A. N.).

STEM RUST (Puccinia graminis). A light infection was seen at Edmonton, Alta. (A. W. H., D. S.). In rust nurseries it was rated 10% at Creston, B. C. and Lethbridge, Alta., tr. in e. Ont. and Que. except at Appleton, Ont. where it reached 60% (G. J. G.).

LEAF RUST (Puccinia secalina). Trace to slight infections were general throughout Sask. (B. J. S.).

SPECKLED LEAF BLOTCH (Septoria secalis) was observed on rye at Strathmore, Alta. (A. W. H., D. S.).

BACTERIAL BLIGHT (Xanthomonas translucens) was seen in 2/2 fields examined in Man. On individual plants the leaf area destroyed ranged up to 40%. The strain isolated caused heavy infection on 'Prolific' rye but only limited infection on 'Titan' barley and 'Thatcher' wheat. It caused no infection on oats (W. A. F. H.).

DISEASES OF FORAGE AND FIELD CROPS
A. Forage Legumes

ALFALFA

BLACK STEM (Ascochyta medicaginis). Infection was rated 4-tr. -sl. 1-sl. -mod. /50 fields surveyed in the Creston, B. C. area (E. J. H.). It was observed in the Pincher Creek, Peace River, Champion and Edmonton districts in n. Alta. (A. W. H., D. S.), rated 2-mod. /5 fields in c. Alta. (B. B.) and caused sl. damage in a field nr. Morinville, Alta. as well as in a field nr. Saskatoon, Sask. where 75% of the plants were infected, mainly the lower leaves (G. A. P.). The disease was common in all parts of Que. Damage was more severe in fields cut twice or more (C. A.).

WINTER CROWN ROT (low-temperature basidiomycete). Ratings were 1-sl. 6-mod. 8-sev. /15 fields surveyed in s. Alta. (J. B. L.).

LEAF SPOT (Cercospora zebrina) was observed in a few fields in Que. in 1965 and 1966 (C. A.).

BACTERIAL WILT (Corynebacterium insidiosum). In a survey of alfalfa fields in B.C. the disease was rated as follows: 7-tr. -sl. 11-sl. -mod. 11-mod. -sev. /50 in the Creston area, 2-sl. -mod. 2-mod. -sev. /6 in the Kamloops district, 1-tr. -sl. /3 at Agassiz, 1-sl. -mod. 3-mod. -sev. /5 in the lower Okanagan. In s. Alta. it was rated 15-tr. -sl. 28-sl. -mod. 22-mod. -sev. /79 in the Lethbridge area (E. J. H.). It was occasionally observed in Que. in surveys in 1965-66 but was judged to be of little importance (C. A.).

BULB AND STEM NEMATODE (Ditylenchus dipsaci) was rated tr. -mod. in 13/79 fields examined in the Lethbridge, Alta. area. Six of these represented new infestations (E. J. H.).

CROWN BUD ROT (Fusarium spp., Rhizoctonia solani, Ascochyta medicaginis). Incidence and distribution of the disease was as follows in B. C.: 23-tr. -sl. 13-sl. -mod. 7-mod. -sev. /50 fields in the Creston area, 3-tr. -sl. 3-sl. -mod. /6 near Kamloops, 2-sl. -mod. /3 at Agassiz, 3-tr. -sl. 1-sl. -mod. /4 nr. Grand Forks and 1-tr. -sl. 4-sl. -mod. /5 in the lower Okanagan area. In s. Alta. it was rated 19-tr. -sl. 53-sl. -mod. 7-mod. -sev. /79 fields surveyed (E. J. H.).

LEAF SPOT (Leptosphaerulina briosiana) was seen in scattered fields in Que. in 1965-66 but appeared to be of little importance (C. A.).

YELLOW LEAF BLOTCH (Leptotrochila medicaginis). Ratings in the Creston, B. C. area were 8-tr. -sl. 5-sl. -mod. 1-mod. -sev. /50 fields surveyed (E. J. H.). Slight damage was encountered in 1/5 fields examined in c. Alta. (B. B.). It was observed in several fields in Que. in 1965-66 (C. A.).

DOWNY MILDEW (Peronospora aestivalis). Infection was mod. at Bluffton (A. W. H.) and slight in a field at Lacombe, Alta. (B. B.).

COMMON LEAF SPOT (Pseudopeziza trifolii f. sp. medicaginis-sativae) caused slight damage at Two Hills and Champion (A. W. H., D. S.) and in 2/5 fields seen in c. Alta. (B. B.). It was the most prevalent foliar disease encountered in Que. in surveys in 1965-66, occurring in most fields. It caused defoliation in late-cut fields (C. A.).

LEAF SPOT (Stagonospora meliloti) was seen occasionally in Que. in 1965-66 (C. A.).

LEAF SPOT (Stemphylium botryosum) was occasionally encountered in surveys in Que. and caused some damage where it occurred (C. A.).

ROOT ROT (various organisms) is a disease of major importance in Que. and was frequently encountered in surveys. Damage was most severe in old stands and the disease was more serious in 1965 than in 1966, possibly because of a lack of snow cover (C. A.).

WITCHES'-BROOM (alfalfa witches'-broom virus). Trace infections were seen in 1 field nr. Creston and slight infections in 2 in the lower Okanagan district of B. C. (E. J. H.).

VIRUS DISEASES (undetermined). Several conditions tentatively thought to be of virus origin were occasionally seen in Que. surveys. They caused some damage (C. A.).

MINERAL DEFICIENCIES. Deficiencies of boron, potassium and phosphorus were occasionally encountered in Que. The damage caused did not seem important (C. A.).

BIRDSFOOT TREFOIL

LEAF SPOT (Stemphylium loti Graham) was found in one field in Que. (C. A.). This organism has not previously been reported on Lotus in Canada (Ed.).

COMMON CLOVER

BLACKSTEM (Ascochyta ? medicaginis) caused slight damage and also a leaf spotting on red clover in 4/15 red clover fields and mod. stem damage in 2/10 alsike fields in c. Alta. The organism cultured from alsike appeared different from that cultured from red clover. (B. B.). The identity of the species of Ascochyta affecting forage legumes in Canada seems still to be in doubt and critical taxonomic studies are needed (Ed.).

SOOTY BLOTCH (Cymadothea trifolii). Trace infections were recorded in 2/12 alsike and 1/14 red clover fields in c. Alta. (B. B.). It was found on red, alsike and ladino clovers in Que. surveys. Infection was most widespread and severe on alsike and was more common in 1965 than in 1966 (C. A.).

POWDERY MILDEW (Erysiphe polygoni). Moderate damage was observed in 3/10 alsike and 8/14 red clover fields in c. Alta. (B. B.). It occurred on red, ladino and alsike clovers in Que. and was most prevalent and severe on red clover (C. A.). Moderate infections were commonly observed on red clover in the Fredericton area (D. W. C.) and 30% damage occurred in a field of red clover at Hartland, N. B. (S. R. C.).

ROOT ROT (Fusarium spp.). Fusarium avenaceum, F. culmorum and F. oxysporum caused severe damage to roots of alsike clover in Que. in 1965. Most of the damage occurred in the Lower St. Lawrence and Lake St. John districts. Damage was less severe in 1966 (C. A.).

NORTHERN ANTHRACNOSE (Kabatiella caulivora) caused an estimated 50% damage to red clover at Sunset House, Alta. (A. W. H., D. S.). Ratings on red clover in c. Alta. were 2-tr. 3-mod. 1-sev./14 fields surveyed (B. B.).

BLACKSTEM (Phoma trifolii) was seen in about half the red clover fields surveyed in Que. in 1965-66, causing some apparent damage (C. A.).

COMMON LEAF SPOT (Pseudopeziza trifolii f. sp. trifolii-pratensis) caused considerable damage in 50% of the red clover fields examined in Que. (C. A.).

CROWN ROT (Sclerotinia ? sclerotiorum) caused traces of damage to red clover at scattered locations throughout Que. (C. A.). This should probably be attributed to S. trifolii (Ed.).

LEAF BURN (Leptosphaerulina trifolii (Rostr.). Petr. = Sphaerulina trifolii Rostr.) occurred on red, white and ladino clover in plots and along roadsides at Vancouver, B. C. The condition has been observed in other years in the same area but has been mistaken for frost damage. Virus-infected plants seem more susceptible and most of the leaves become necrotic by the end of October. In non-virus-infected plants, necrosis does not become general except in older leaves. The organism has not previously been reported from B. C. but is known from Alaska, Sask. and Man. (M. J. P., H. S. P.).

TARGET SPOT (Stemphylium sarcinaeforme) was seen in all red clover fields surveyed in Que. in 1965-1966. It was sev. in 1965 and sl.-mod. in 1966. It is probably the most serious disease of red clover in the province (C. A.).

RUST (Uromyces trifolii) was rated 2-tr./10 alsike fields in c. Alta. It appeared later than usual in 1966 and became widespread in Sept. at Lacombe (B. B.). Rust was occasionally observed on red clover in Que. surveys but appeared to be of little importance (C. A.).

PHYLLODY (clover phyllody virus). Slight to moderate infections were commonly observed on ladino and alsike clovers in Kamouraska Co., Que. It was also recorded in Bellechasse Co., at Deschambault and St. Urbald, Portneuf Co. and St. Roch, L'Islet Co. (H. G.). It was seen in a few fields of red clover and half the fields of ladino in Que. surveys in 1965-66 but did not seem to be as prevalent as in earlier years (C. A.). Phyllody could be found with ease in alsike and white clover along Highway #2 between Edmundston and Fredericton, N. B. In the Fredericton area it was prevalent on red, white and ladino clovers on the Research Station and in farmers' fields (D. W. C., H. S. T.).

PROLIFERATION (clover proliferation virus) was found in 2/10 fields of alsike clover examined in

c. Alta. and was occasionally seen on roadside plants (B. B.).

OTHER VIRUS DISEASES. Virus-like symptoms were seen in half the red clover and some of the ladino fields surveyed in Que. There was some apparent damage in red clover but little in ladino (C. A.).

ROOT ROT (various organisms) was judged to be more severe on red than on alsike clovers in Que. There was also more damage in 1965 than in 1966 (C. A.).

MINERAL DEFICIENCIES. Phosphorus and potassium deficiencies in red clover and magnesium deficiency in ladino clover were occasionally encountered in Que. surveys (C. A.).

WINTER KILLING caused 30% damage in low areas of 4 fields visited nr. Salisbury, N. B. (S. R. C.).

SWEET CLOVER

BROWN ROOT ROT (Plenodomus meliloti) caused severe damage in a field at Lacombe, Alta. (B. B.).

B. Oil-seed Crops

FLAX

RUST (Melampsora lini) caused 1-2% damage in 1/6 fields surveyed in Alta. The affected field was nr. Barrhead (G. A. P.).

BROWNING AND STEM BREAK (Polyspora lini) was present in a specimen of 'Bolley' flax received from Melfort, Sask. (G. A. P.).

PASMO (Septoria linicola). Specimens were received from Melfort, Sask. (G. A. P.).

ASTER YELLOWS (aster yellows virus). Two fields at Saskatoon showed 1% and 10% infection, respectively and it was present in moderate amounts in a field nr. Armit, Sask. (B. J. S., G. A. P.).

CHEMICAL INJURY. Herbicide injury caused 1-2% damage in 1/6 fields surveyed in Alta. (G. A. P.). Affected specimens were received from Holdfast and Brooksby, Sask. Damage at the latter location occurred as strips in the field (B. J. S.).

HEAT CANKER caused traces of damage at Melfort, Sask. (G. A. P.).

MUSTARD

WHITE RUST (Albugo cruciferarum) was found on Brassica kaber var. pinnatifida nr. Annaheim, Sask. (G. A. P., T. C. V.).

STAGHEAD (Albugo cruciferarum, Peronospora parasitica). Some damage was recorded at Vulcan, Alta. (A. W. H., D. S.).

LEAF AND POD SPOT (Alternaria brassicae, A. raphani). Traces of damage were seen in 2/8 fields surveyed in Sask. The condition also occurred on Thlaspi arvense and Lepidium sp. nr. Melfort, Sask. (G. A. P., T. C. V.).

BASAL STEM ROT (Fusarium acuminatum, F. poae, Rhizoctonia solani) was seen in trace amounts at Cudworth, Sask. (G. A. P., T. C. V.).

BLACK LEG (Plenodomus lingam) occurred in all 5 fields surveyed in Sask. (G. A. P., T. C. V.).

STEM ROT (Sclerotinia sclerotiorum) was the most conspicuous disease of yellow mustard encountered in Sask. with 63% of all fields showing infection and 38% being rated mod.-sev. In a few fields nr. Annaheim and Middle Lake, 75% of the stems were rotted in low-lying areas (G. A. P., T. C. V.).

RAPE

WHITE RUST (Albugo cruciferarum). Moderate infections were recorded in 3/6 fields surveyed in c. Alta. Foliar infection was more prevalent than usual (B. B.). It was observed in 79% of the 52 rape fields surveyed in the Prairie Provinces. Infection in fields was rated 15%-tr. 25%-sl. 29%-mod. 10%-sev. The disease was destructive, particularly at Morinville, Redwater and Vermilion in Alta. and at Saskatoon, Duck Lake and Wakaw in Sask. Fusarium spp., Alternaria brassicae, A. raphani and Peronospora parasitica were associated with Albugo on the hypertrophies (G. A. P., T. C. V.). Moderate infections caused an estimated 3% damage on 'Arlo' in the Swan River Valley, Man. It was prevalent throughout the area (W. C. McD.).

STAGHORN (Albugo cruciferarum, Peronospora parasitica). Infections were extensive at Tawatinau and were also recorded at High River, Sexsmith, Grande Prairie and Athabasca, Alta. (A. W. H., D. S.). Traces were seen in all fields surveyed in c. Alta. and damage was moderate in two (B. B.).

LEAF, STEM AND POD SPOT (Alternaria brassicae, A. raphani) caused moderate damage in 2/6 fields surveyed in c. Alta. Pods were severely infected in one field. Infection was common on heads affected by staghead (B. B.). Ratings in 52 fields surveyed in the Prairie Provinces were 13%-tr. 38%-sl. 17%-mod. 4%-sev. Leaf spots were evident in many fields in the Humboldt-Melfort area of Sask. in June. Stem and pod spots were plentiful in Aug., particularly in the Swan River area of Man. (G. A. P., T. C. V.). The outbreak in Man. was the worst since 1956. Damage was estimated to be 20% in the Swan River Valley (W. C. McD.).

ROOT ROT (Fusarium spp.) was observed at Clairmont and Belloy (A. W. H., D. S.) and specimens were received from Olds, Alta. with the lower stems completely rotted (B.B.). F. acuminatum was isolated from affected plants at Saskatoon, Sask. (G. A. P., T. C. V.).

RING SPOT (Mycosphaerella brassicola) was not seen in fields surveyed in Alta. in 1966 (B. B.). Ratings were 27%-tr. 27%-sl. 15%-mod. in 52 fields surveyed in the Prairie Provinces where the disease was less severe than in 1965. It seems to attack older, senescent plants more than younger ones (G. A. P., T. C. V.).

DOWNY MILDEW (Peronospora parasitica). Infection in 52 fields examined in the Prairie Provinces was rated 2%-tr. 8%-sl. 10%-mod. 2%-sev. The conidial state was more conspicuous than for a number of years (G. A. P., T. C. V.).

CLUBROOT (Plasmodiophora brassicae). The variety 'Essex' was 75% infected at Comfort Cove, Notre Dame Bay, Nfld. Plants showed a pronounced clubbing of the taproot (O. A. O.).

BLACKLEG (Plenodomus lingam). Trace to slight infections occurred in 71% of the 52 fields examined in the Prairie Provinces. It was particularly evident in the Annaheim-Lake Lenore districts of Sask. Thlaspi arvense was also infected in most centers of rape production in Alta. and Sask. (G. A. P., T. C. V.).

STEM ROT (Sclerotinia sclerotiorum) was more prevalent in the Prairie Provinces than in 1965. Ratings of 52 fields were: 13%-tr. 12%-sl. 10%-mod. 4%-sev. (G. A. P., T. C. V.).

ASTER YELLOWS (aster yellows virus). Ratings of 52 fields in the Prairie Provinces were: 33%-tr. 6%-sl. 6%-mod. It was particularly heavy in plots at Saskatoon. Aster yellows was also observed on Brassica kaber var. pinnatifida in a rape field nr. Margo, Sask. and on Thlaspi arvense in a mustard field at Cudworth, Sask. (G. A. P., T. C. V.). It was prevalent in all parts of Man. where damage ranged from 1-5%. In a late plot of breeders' seed at Winnipeg damage was 25% (W. C. McD.).

CHEMICAL INJURY from 2, 4-D drift was encountered in Sask. and Man. See Can. Plant Dis. Surv. 46:4. p. 118, 1966 for illustrations of two types of injury (G. A. P., T. C. V.).

INTUMESCENCE (water congestion) was observed at Humboldt, Sask. See Can. Plant Dis. Surv. 46:4. p. 119, 1966 for illustration (G. A. P., T. C. V.).

SOYBEAN

BROWN STEM ROT (Cephalosporium gregatum). This disease has not been found in significant amounts in s. w. Ont. in recent years. A survey in mid.-September, 1966, when plants were in some stage of senescence, revealed symptoms, consisting of internal basal stem browning in 45% of the fields. The pathogen was recovered from stem bases in 83% of the fields (J. H. H.).

ROOT AND STEM ROT (Phytophthora megasperma var. sojae) has been well controlled in Ont. by the use of resistant varieties such as 'Harosoy 63'. No new races of the fungus have been found (J. H. H.).

BACTERIAL BLIGHT (Pseudomonas glycinea) was present in Ont. fields from July to September. By mid-September, 92% of the fields surveyed had diseased plants and 80% of the leaves on these plants had blight lesions (J. H. H.).

BROWN SPOT (Septoria glycinea) was again observed in Ont. only on primary leaves. Sixty % of the fields surveyed were affected and 60% of the primary leaves on affected plants showed symptoms (J. H. H.).

SUNFLOWER

DOWNY MILDEW (Plasmopara halstedii) destroyed 35-60% of the plants in 4 fields nr. Altona, Man. but elsewhere in the province the disease was absent or occurred in trace amounts only (J. A. H.).

RUST (Puccinia helianthi) was virtually absent in Man. in 1966 although all varieties except 'Admiral' are susceptible (J. A. H.).

STEM ROT (Sclerotinia sclerotiorum) affected 10-15% of the plants in a 40-acre field at Bon Accord, Alta. The field had been planted to barley in 1965 and to rape in 1964 (A. W. H., D. S.). Little was seen in Man. in 1966 (J. A. H.).

LEAF MOTTLE (Verticillium dahliae) occurred in most sunflower fields in Man. but the percentage of infected plants was generally less than 10%. Damage was slight (J. A. H.).

HEAD PROLIFERATION (cause unknown) occurred throughout the sunflower-growing districts of Man. where most fields, irrespective of variety, showed 3-5% affected heads. In one field, 22% of the plants were affected. The symptoms were of two types. In the one type, instead of having one large head, the plant had two or three abnormally small heads; each head was borne on a separate peduncle. In the other type only one peduncle occurred but one or two heads grew through another one and the resulting structure gave the impression of one, single, misshapen head with one or two bulged areas. A portion of such a head might be sterile. The particular growing conditions in 1966, a virus, or minute amounts of 2, 4-D or similar herbicide are possible causes. The condition was unknown to two visiting Russian sunflower workers (J. A. H.).

C. Root Crops

SUGAR BEET

LEAF SPOT (Cercospora beticola). A number of fields in the Chatham area of s. w. Ont. were moderately to severely infected. The disease appeared about mid-July and considerable defoliation had occurred in several fields by harvest (C. D. McK.).

LEAF SPOT (Ramularia beticola) was widespread in stands of bolted seed plants of the monogerm variety 'CS-42' in the Ladner, B. C. area. This variety is more susceptible than others grown in the district. Probably the reduction in seed production was slight (H. N. W. T.).

BORON INJURY affected a number of roots obtained from several fields in the Wallaceburg, Ont. area. Precipitation was exceedingly low in the affected area in June, July and August (C. D. McK.).

DROWNING. About 8% of the plants died in a 2-acre field at Woodslee, Ont. about 2 weeks after a 4-inch downpour on 12 July. The tips of the primary roots of affected plants decayed (C. D. McK.).

FASCIATION (genetic) was seen in the monogerm variety 'CS-42' in the Ladner, B. C. district in early August. Terminal flags were quite striking shortly before seed maturity and while plants were still erect. The actual reduction in seed yield would be less than 1% (H. N. W. T.).

D. Miscellaneous Crops

BUCKWHEAT

ASTER YELLOWS (aster yellows virus) affected 1-2% of the plants in a field at Regina, Sask. (B. J. S.).

FIELD CORN

EAR ROTS (Fusarium spp.). Damage from F. graminearum and F. moniliforme was seen only occasionally in s. w. Ont. in 1966 and was much less than that experienced in the cool, wet autumns of 1964 and 1965 (L. F. G., C. G. M.).

ROOT AND STALK ROT (Fusarium graminearum) was more prevalent than in 1964 and 1965, associated probably with good conditions for maturing the ears. Some fields of very early hybrids contained up to 75% of plants with stalk rot (L. F. G., C. G. M.).

RUST (Puccinia sorghi). A moderate amount of rust was observed at Macdonald College and at Deschambault, Portneuf Co., Que. in Sept. (R. I. B.).

STREAK MOSAIC (wheat streak mosaic virus) which was first reported on corn at 2 sites in s. w. Ont. in 1965 was found at a further site at the Research Station, Harrow in 1966. It was also found on occasional plants in 8/20 winter wheat fields examined in Nov. (L. F. G., G. C. M.).

RED-STRIPED PERICARP (cause unknown) was very common throughout the corn belt of Ontario and was found as far east as Guelph but was not seen at Kemptville or Ottawa (L. F. G., G. C. M.).

TOBACCO

LEAF SPOTS (Alternaria spp.). Spots caused by A. spp. were observed on flue-cured tobacco in Ont. in combination with other leaf spots suspected to be of a physiological nature. Damage, generally, was not severe (S. K. G.). Affected specimens were received from two fields in the St. Thomas area of Elgin Co., Ont. (C. D. McK.).

SORE SHIN (Rhizoctonia solani) caused slight losses of flue-cured tobacco on a few farms in Ont. (S. K. G.).

DAMPING-OFF (Rhizoctonia solani, Pythium spp., Fusarium spp.) was common in seedbeds in Ont. but the overall loss was only an estimated 2%. The disease was effectively controlled by the organic mercury fungicide Morsodren (S. K. G.).

POLE ROT (Rhizopus spp. and bacteria). Rotting of leaves during curing was frequently encountered in Ont. Although the overall losses were not high, they were high on some farms. The disease was encountered in kilns that had been filled with immature or wet leaves, where sticks were overcrowded or where too many sticks were placed in a kiln (S. K. G.).

BLACK ROOT ROT (Thielaviopsis basicola) was more destructive in seedbeds in Ont. than in 1965 because of cold spring weather. Severe losses occurred in beds sterilized with allyl alcohol in successive years. Field damage, at 3%, was less than in 1965 but the disease was severe on heavy or poorly drained soils. Weather was warmer after planting (S. K. G.).

MOSAIC (tobacco mosaic virus). There was a very high incidence of mosaic in one 4-acre field of burley tobacco nr. Leamington, Ont. The plants became infected soon after they were set out and the loss was heavy (C. D. McK.).

OTHER VIRUS DISEASES. Ringspot, etch and streak were observed in trace amounts in some flue-cured fields in Ont. but they caused only negligible losses. Tobacco veinal necrosis virus was not found in 1966. Effective eradication of perennial weed hosts is credited for its disappearance (S. K. G.). No tobacco etch was seen in Essex Co., Ont. for the first time in 20 years. Traces of streak, ringspot and potato Y viruses were noted (C. D. McK.).

CHEMICAL INJURY. Improper application of agricultural chemicals, either in the greenhouse or

the field, caused considerable losses on some farms. Atrazine injury occurred in some fields where corn had been growing the previous year. Injury was also evident following aerial applications of D. D. T. (S. K. G.). Too strong a dosage of Morsodren caused damage to plants in a seedbed in Essex Co. (C. D. McK.).

FROST caused an estimated 10% damage in flue-cured fields in Norfolk and bordering counties in Ont. in mid-September (S. K. G.).

WEATHER FLECK (atmospheric pollution). Losses from weather fleck in Ont. were estimated at 1-2%. Most of the damage occurred in areas bordering Lake Erie (S. K. G.).

E. Cultivated and Other Grasses

AGROPYRON - Wheatgrass

CULM SMUT (Ustilago hypodytes) occurred on 25-40% of the flowering stems on roadside plants of A. repens at Trout Creek Point nr. Summerland, B. C. (G. E. W.).

HORDEUM MOSAIC (hordeum mosaic virus) was isolated from A. trachycaulum collected at Warner and Jefferson, Alta. × Agrohordeum macounii was also infected at Jefferson (J. T. S.).

BROMUS - Bromegrass

ERGOT (Claviceps purpurea). Examination of 10 plants each of 7 introductions of Bromus species at Saskatoon, Sask. revealed the following infections: B. macrostachys 1-sl./10; B. oxyodon 2-sl./10; B. altensis, B. patulus 4-mod./10; B. inermis × B. pumpellianus 5-mod./10; B. squarrosus, B. secalinus 6-mod./10. Damage was mod.-sev. in a block of the strain 'S-6733' planted late in May at Saskatoon. Ergots weighed 56g and seed weight was only 125g (J. D. S.).

MOLD (Curvularia geniculata) occurred on seed imported from the Botanical Garden, Godolla, Hungary. Its identity was confirmed by R. A. Shoemaker (J. D. S.).

LEAF BLOTCH (Drechslera bromi) caused moderate damage in 1/3 fields observed in c. Alta. in late August (B. B.). The mean rating in 157/233 fields surveyed in Sask. was 2.0 using a 0-4 scale where 0 = no disease. There were 7 very severe infections and most severe cases occurred in parkland and parkland/forest soil zones. The majority of the observations were made on common brome and its derivatives and most of the locations examined were north of latitude 53° N. Of 32 species in plots at Saskatoon only B. laevipes, B. uniloides and B. bieberstenii showed slight infections on a few plants (J. D. S.). Leaf blotch was occasionally encountered on B. inermis in Que. (C. A.).

BACTERIAL BLIGHT (Pseudomonas and Xanthomonas spp.) occurred in trace amounts in a field at Lacombe, Alta. (B. B.). Infection was found on 10/2500 clones of B. inermis at 233 locations in Sask. Only one clone was severely damaged, that at Saskatoon. Average damage was slight with a few clones classed as moderate (J. D. S.).

LEAF RUST (Puccinia recondita). Infection was slight to moderate on B. pumpellianus and its subspecies dicksonii in plots at Saskatoon, Sask. It was slight on B. bieberstenii and B. arduennsis (J. D. S.).

SCALD (Rhynchosporium secalis) was rated trace to slight in 120/233 fields of B. inermis in Sask. It was found in practically every field examined after the beginning of August. It was severe on some clones of common brome in plots at Saskatoon. Strain 'S-6324' adjacent to severely infected barley showed some plants with heavy infection (J. D. S.).

LEAF SPOT (Selenophoma bromigena) caused minor damage in 2/3 fields examined in c. Alta. (B. B.). The average rating in 141/233 fields of B. inermis surveyed in Sask. was 1.6 using a scale of 0 to 4 where 0 = no disease. The sampling was biased because most of the fields examined were north of latitude 53° N and most severe infections occurred south of that latitude. Of the 18 introductions of Bromus spp. in plots at Saskatoon only 4 were infected as follows: B. angrenicus 7-sl./10; B. inermis variety 'Manchar', B. inermis × B. pumpellianus and B. pumpellianus 3-mod./10 (J. D. S.).

BLACK NODE (Septoria sp. and Fusarium spp. associated) caused moderate damage in 2 fields of B. inermis in Sask. All blocks of strain 'S-6733' at Saskatoon had some clones with black nodes associated with thick and brittle stems. The variety 'Redpatch' at Melfort, Sask. showed black node but it was not associated with thick stems (J. D. S.). For illustrations of this condition see Can. Plant Dis. Surv. 46:4. p. 124, 1966 (Ed.).

LEAF SPOT (Sporotrichum sp.) caused trace to moderate damage in 10/233 fields of B. inermis surveyed in Sask. There was no definite geographic distribution but it was found from Big River to Outlook. The most severe infection was at Melfort on 'Saratoga' fertilized with 33/0/0 (J. D. S.). This leaf spot is illustrated in Can. Plant Dis. Surv. 46:2. p. 124, 1966 (Ed.).

HEAD SMUT (Ustilago bullata) was general on B. tectorum in the Summerland, B. C. district (G. E. W.).

INTERVEINAL CHLOROSIS (cause undetermined) was moderate in 3 fields of B. inermis in Sask. Symptoms consisted of white or yellow interveinal spots mainly on non-flowering shoots. Affected tissues later became necrotic (J. D. S.).

DACTYLIS - Orchard grass

POWDERY MILDEW (Erysiphe graminis) was occasionally seen on D. glomerata in surveys in Que. (C. A.).

HORDEUM - Wild barley

MOSAIC (hordeum mosaic virus). H. jubatum was found infected at Warner and Jefferson, Alta. (J. T. S.).

PHLEUM - Timothy

ERGOT (Claviceps purpurea) occurred on a farm on Westham Island, nr. Ladner, B. C. where it had been seen previously. This is the first report to the Survey of its occurrence on Phleum in B. C. (H. N. W. T.).

EYE SPOT (Heterosporium phlei) caused minor damage in 5/5 fields examined in c. Alta. Damage was moderate in all 7 fields of 'Climax' timothy surveyed in the Melfort-Nipawin seed growing area in Sask. (J. D. S.). It also caused moderate damage in the St. John's, Nfld. area (O. A. O.).

BROWN STRIPE (Passalora graminis) was occasionally encountered on timothy in Que. in 1965 and 1966 (C. A.).

LEAF SPOT (Selenophoma donacis). 'Climax' timothy was moderately infected at La Pocatière, Kamouraska Co. and severely infected at Caplan', Bonaventure Co., Que. The severity of infection at Caplan was probably influenced by high relative humidity (C. A.).

POA - Bluegrass

MELTING-OUT (Drechslera poae) caused some damage to Merion bluegrass at Lacombe, Alta. (A. W. H., D. S.).

MOSAIC (virus). A light green to pale yellow mosaic was seen on Poa palustris at Nobleford, Alta. Tests proved the condition to be caused by a virus apparently unlike any others known in Canada (J. T. S., T. G. A.). See Slykhuis and Atkinson, Can. Plant Dis. Surv. 46:2. 147, 1966 for a list of grass species successfully inoculated. (Ed.).

NECROTIC MOTTLE (oat necrotic mottle virus) caused a slight chlorotic mottle on the youngest leaves of a small proportion of Kentucky bluegrass plants at one site in Man. Transmission tests, however, proved 93% of the plants to be infected (C. C. G., P. H. W.).

LAWNS AND TURF

SNOW MOLD (low-temperature basidiomycete). Damage was rated 2-sl. 2-mod. 6-sev./13 turf areas surveyed in Alta. (J. B. L.). It caused some damage at Olds, Alta. (A. W. H., D. S.). Injury was noted in 3 lawns at Fredericton, N. B., but the pathogen involved was not determined (S. R. C.).

ANTHRACNOSE (Colletotrichum graminicola) was observed on lawn grasses at Grande Prairie, Alta. (A. W. H., D. S.).

MELTING-OUT (Drechslera poae) caused some injury at Barnwell, Alta. (A. W. H., D. S.) and damage was rated 2-sl./13 turf areas in s. Alta. (J. B. L.).

POWDERY MILDEW (Erysiphe graminis). Infections were seen in lawns at Edmonton and Fort Vermilion, Alta. (A. W. H., D. S.). Specimens of infected perennial bluegrass were received from Ste. Foy, Que. (D. L.).

FUSARIUM BLIGHT (Fusarium roseum f. cerealis) was mod. in 1/13 turf areas examined in s. Alta. (J. B. L.).

FAIRY RINGS (Marasmius oreades) were seen in lawns at Bathurst and Fredericton, N. B. (S. R. C.).

BROWN PATCH (Rhizoctonia solani) was observed in lawns at Fairview, Alta. (A. W. H., D. S.).

WINTER KILLING. Damage was rated 1-mod. 1-sev./13 turf areas surveyed in Alta. (J. B. L.).

DISEASES OF VEGETABLE CROPS

BEAN

LEAF SPOT (Alternaria tenuis). Bean leaves injured by blowing sand or by other means showed about 2% infection in a field at Auburn, N. S. (C. O. G.).

GRAY MOLD (Botrytis cinerea). Of 11 fields examined in N.B., 2 at Florenceville and Pokiok suffered 1-2% damage (S. R. C.).

ANTHRACNOSE (Colletotrichum lindemuthianum) was observed at Crooked Creek, Alta. (A. W. H., D. S.). Two 3-acre fields of yellow beans in the Kingsville, Ont. area were lightly infected and up to 5% of the pods had to be discarded when graded (C. D. McK.). Infection was seen in 5/11 fields examined in N. B. Beans for processing had only trace infections but at Pokiok 31 acres of the 'Soldier' variety for dry bean production were 90% infected (S. R. C.).

ROOT ROT (Fusarium solani, Rhizoctonia solani). Fusarium root rot caused a significant reduction in plant growth in almost all fields in Ont. but the effect on yield is not known (J. H. H.). Rhizoctonia root rot caused 20% damage in a field previously planted to potatoes at Florenceville, N. B. Plants from deep-planted seed were the most seriously affected (S. R. C.).

HALO BLIGHT (Pseudomonas phaseolicola) was severe in a field nr. Bow Island and in another at Coaldale, Alta. (F. R. H., P. E. B.). Moderate damage was seen at Abernathy, Sask. (R. J. L.). Slight to moderate infections occurred in some 200 acres of canning beans in Rouville Co., Que. In 100 acres examined in the St. Martin area, the average damage was rated at 10% and was mostly confined to the leaves (R. C., V. R. W.). Infections ranged from trace - 14% in 4/7 fields examined in the Millville and Gagetown areas of N. B. (S. R. C.). Localized infections developed in an 11-acre field of 'Harvester' at Caanan, N. S. Roguing of the diseased areas and dry weather kept losses at a low level. (C. L. L.). 'Jacob's Cattle' beans were 100% infected in a field at Morristown, N. S. The crop was a complete loss (C. O. G.).

WILT AND STEM ROT (Sclerotinia sclerotiorum) caused significant losses in about 5% of the white bean fields in s.w. Ont. (J. H. H.). Slight damage was seen in a field at Jemseg, N. B. (S. R. C.) and loss of 25% or more of the plants occurred in a 7-acre field of 'Tendergreen' at Aylesford, N. S. (C. O. G.).

COMMON BLIGHT (Xanthomonas phaseoli). Infections were seen at Fort Vermilion, Smoky Lake and Stony Plain, Alta. (A. W. H., D. S.). A moderate leaf infection was seen at Saskatoon, Sask. (R. M.). Significant losses from bacterial blight, probably common blight, occurred in about 5% of the white bean fields in s.w. Ont. (J. H. H.).

FUSCOUS BLIGHT (Xanthomonas phaseoli var. fuscans). A survey of 965 acres of white beans in Ont. representing 27 seed stocks revealed the following: All foundation plots produced from Michigan breeder 'Sanilac' and 'Seaway' seed were free of blight. Two / 15 registered seed stocks representing their second increase in Canada and 3/12 certified seed stocks representing their third increase in Canada showed traces of blight (M. D. S., V. R. W.). See Sutton and Wallen, Can. Plant Dis. Surv. 46. p. 143, 1966 (Ed.).

BLOSSOM DROP (? excess nitrogen) occurred in a field at Levis, Que. that had had a heavy application of fresh manure (D. L.).

BORON TOXICITY caused heavy damage in a field at Jemseg, N. B. A boron-containing fertilizer had been mistakenly applied at seeding (S. R. C.).

BRONZING (caused undetermined) occurs in almost all plantings of white beans in s.w. Ont. about 10 days before normal senescence and defoliation. The symptoms resemble sunscald except that they are not restricted to the leaves on the surface of the crop's canopy. There is also a resemblance to symptoms of weather fleck, caused by air pollution, except that adjacent fields are commonly found in which only one had affected plants. The non-affected fields have invariably been planted somewhat later than the affected ones. The condition is also common in lima beans (J. H. H.).

CHEMICAL INJURY. 2, 4-D injury was seen in a field at Grande Prairie, Alta. (A. W. H., D. S.).

BEET

SCAB (Streptomyces scabies) was observed in a garden planting at Sackville, N. B. (S. R. C.).

CHEMICAL INJURY. 2, 4-D injury was seen on beets in a planting at St. Paul, Alta. (A. W. H., D. S.).

BRUSSELS SPROUTS

BLACK ROT (Xanthomonas campestris) caused minor losses in a field grown from untreated seed at Rogersville, N. B. (S. R. C.).

WHIPTAIL (molybdenum deficiency). Damage averaged 2% in 2/7 fields examined at Rogersville, N. B. (S. R. C.).

BROAD BEAN

CHOCOLATE SPOT (Botrytis cinerea) was seen on the Experimental Farm, Fort Vermilion, Alta. (A. W. H., D. S.).

CABBAGE

LEAF SPOT (Alternaria brassicae, A. brassicicola). Trace to slight infections developed in experimental plots at L'Acadie, nr. St. Jean, Que. (R. C.).

CLUB ROOT (Plasmodiophora brassicae) continues to be a problem in the Lower Fraser Valley of B. C. in fields with a past history of the disease. Rotation is not always practiced and some cultural practices used tend to perpetuate large amounts of inoculum (H. N. W. T.). Trace to 7% infections were seen in 3/11 fields examined at Maugerville and Sheffield, N. B. (S. R. C.).

BOTTOM ROT (Rhizoctonia solani) caused 15% losses in a field at Maugerville, N. B. (S. R. C.).

DAMPING OFF (Rhizoctonia solani) killed 40% of the seedlings started in an outside bed at Norton, N. B. (S. R. C.).

SCLEROTINIA ROT (Sclerotinia sclerotiorum) caused some damage at Sangrudo and Winterburn, Alta. (A. W. H., D. S.). Infection in experimental plots at Ste. Clothilde, Que. was less than 1% (R. C.) but losses of 30% were experienced in a field of late winter cabbage at Maugerville, N. B. (S. R. C.).

BLACK ROT (Xanthomonas campestris). Moderate infections were seen in a small field nr. Taber (F. R. H.) and it was reported at Cranford and Lethbridge, Alta. (A. W. H., D. S.).

BORON DEFICIENCY was responsible for the breakdown of 80% of the heads in a field at Sheffield, N. B. (S. R. C.).

OEDEMA (unbalanced water relationships) affected 15% of the cabbages in a field at Norton, N. B. (S. R. C.).

WHIPTAIL (molybdenum deficiency) affected 60-75% of the plants at Pleasantview in the Notre Dame Bay region and at Cartyville in western Nfld. Half-grown plants of early varieties showed yellowing, stunting and cupping of leaves aggravated as well by warm, dry weather. Spraying with a molybdate solution and subsequent rainfall partially corrected the condition (O. A. O.).

CARROT

LEAF BLIGHT (Alternaria dauci). Moderate infections were prevalent in late fields in the LaSalle area nr. Windsor, Ont. (C. D. McK.). Infections were rated 7-tr. 9-sl. 4-mod. 1-sev./22 fields surveyed in s. w. Que. Four of the fields, in which rotation had not been practiced, showed infection as early as 23 June (T. S., R. C., L. M. T.). Trace to slight infections were seen in all 7 fields examined in N. B. (S. R. C.) and only trace infections were found in growers' fields in N. S. (C. O. G.).

BLACK ROT (Alternaria radicina) caused minor damage to stored carrots at Port Williams, N. S. (C. O. G.).

GRAY MOLD ROT (Botrytis cinerea) was observed at Ponoka, Alta. (A. W. H., D. S.).

LEAF BLIGHT (Cercospora carotae). Infections in fields in s. w. Que. were rated 9-tr. 9-sl. 2-mod./22 (T. S., R. C., L. M. T.). In Kings Co., N. S. it was 3-tr./6 (C. O. G.).

ROOT-KNOT NEMATODE (Meloidogyne hapla). Infection was extremely high in two 4-acre fields at Nictaux West, Annapolis Co., N. S. In one field, 80% of the carrots were unsaleable and in the other, 60% (C. L. L.). This nematode has not previously been reported on carrots from N. S. (Ed.).

STORAGE ROT (Sclerotinia sclerotiorum). S. sclerotiorum in association with Candida kruzei (Cast.) Berkh. has been established as the cause of a storage rot of carrots in the Edmonton, Alta. area (D. S.). See Stelfox, Can. Plant Dis. Surv. 46:146. 1966 for discussion (Ed.). Affected specimens were received from Lotbiniere, Que. (D. L.). S. sclerotiorum associated with Botrytis cinerea caused a breakdown in a harvested crop at Sheffield, N. B. This grower practices continuous cropping of carrots. Losses at harvest were estimated at 12% (S. R. C.). A light infection was present on a crop harvested from muck soil at Aylesford, N. S. (C. O. G.).

ASTER YELLOWS (aster yellows virus) was observed on farms at Alexandria and Pemberton, B. C. (H. N. W. T., N. S. W.). Slight infections were seen in the Saskatoon, Sask. area. The disease seems to be increasing in Sask. (R. J. L.). Severe infections, up to 75% in some fields, occurred throughout the LaSalle muck soil areas in Essex Co., Ont. (J. R. C., C. D. McK.). It was rated 12-tr./22 fields in s. w. Que. (T. S., R. C., L. M. T.) and infections were widespread in N. B., the most severe being one of 35% at Sackville (S. R. C.). Three to 5% of the plants were affected in fields at Lethbridge and Musgravetown in the Bonavista Bay district of Nfld. (O. A. O.).

CAULIFLOWER

CLUB ROOT (Plasmodiophora brassicae). Traces were seen in a crop at Sheffield, N. B. (S. R. C.).

BORON DEFICIENCY was thought responsible for the breakdown of 10% of the heads in a field at Sheffield, N. B. (S. R. C.).

MAGNESIUM DEFICIENCY affected a few plants at the Experimental Farm, St. John's West, Nfld. (O. A. O.).

CELERY

EARLY BLIGHT (Cercospora apiicola). Trace amounts were found in 3/12 fields surveyed in s. w. Que. (T. S., R. C., L. M. T.).

ROOT-KNOT NEMATODE (Meloidogyne hapla) occurred in trace amounts in 1/12 fields surveyed in s.w. Que. (T.S., R.C., L.M.T.) and on roots of plants in a greenhouse at St. Isadore, Que. (A.E.S.).

BACTERIAL BLIGHT (Pseudomonas apii) was more prevalent than usual in s.w. Que. with infections ranging from trace to moderate (T.S., R.C., L.M.T.).

PINK ROT (Sclerotinia sclerotiorum) caused traces of damage in 2/12 fields surveyed in s.w. Que. (T.S., R.C., L.M.T.).

LATE BLIGHT (Septoria apii). One/12 fields in s.w. Que. showed traces of damage (T.S., R.C., L.M.T.).

ASTER YELLOWS (aster yellows virus) was found in trace amounts in 9/12 fields surveyed in s.w. Que. (T.S., R.C., L.M.T.).

MOSAIC (virus). Traces were seen in 5/12 fields examined in s.w. Que. (T.S., R.C., L.M.T.).

BORON DEFICIENCY caused minor losses in a field in s.w. Que. (T.S., R.C., L.M.T.).

MANGANESE DEFICIENCY occurred in trace amounts in 7/12 fields surveyed in s.w. Que. (T.S., R.C., L.M.T.).

CHINESE CABBAGE

ASTER YELLOWS (aster yellows virus). A severe infection was seen in a planting at Saskatoon, Sask. (G.A.P., T.C.V.).

CUCUMBER

LEAF SPOT (Alternaria cucumerina) developed early in Aug. at Ladner, B.C. but did not develop to the serious proportions it did in 1965 (H.N.W.T.). Infections ranging from trace to severe were seen in plantings in Kings Co., N.S. (C.O.G.).

GRAY MOLD (Botrytis cinerea). Both stem canker and blossom infection became serious in a few spring greenhouse crops in Essex Co., Ont. (C.D. McK.). It was present in trace to moderate amounts on fruits in 7/37 fields examined in the Maugerville and Sheffield districts of N.B. It could have followed scab infection (S.R.C.).

SCAB (Cladosporium cucumerinum) affected about 5% of the fruits of a slicing variety in a planting nr. Steveston, B.C. A pickling variety in the same field was unaffected (H.N.W.T.). A severe infection at St. Roch, L'Islet Co., Que. caused the loss of 25% of the fruit (H.G.). Scab was seen in 22/37 fields surveyed in N.B. in August. Infections in individual plantings ranged from trace to 70% although resistant varieties stood up well (S.R.C.). Traces were seen at Kentville, N.S. (C.O.G.).

POWDERY MILDEW (Erysiphe cichoracearum) developed on a greenhouse crop at Rogersville, N.B. but damage was light since cropping was nearly completed (S.R.C.).

ANGULAR LEAF SPOT (Pseudomonas lachrymans) was reported from High Prairie and Edmonton, Alta. (A.W.H., D.S.). Infections were rated trace to 10% in 29/37 plantings examined in N.B. (S.R.C.).

MOSAIC (cucumber mosaic virus). In plots at Acadie, Que., 'Ashley', 'Hybrid Ashley', 'Palomar' and 'Windermore' were severely diseased, 'High Mark II' and 'Exposition' were slightly affected and 'Challenger' showed only traces of infection. A field at St. Jean was completely destroyed (L.J.C.). Mosaic was severe in fields at St. Foy and Neuville, Que. in August (D.L.). Trace to severe infections were seen in 11/37 fields examined in N.B. (S.R.C.).

CHEMICAL INJURY. 2,4-D injury completely destroyed a planting at Oromocto, N.B. (S.R.C.).

OEDEMA (improper water relationships). Specimens were received from Ste. Angele de Laval, Nicolet Co., Que. (D.L.).

EGGPLANT

ANTHRACNOSE (Colletotrichum gloeosporioides Penz. = Gloeosporium piperatum Ell. Ev.). Specimens were received from a local market in Quebec City, Que. There was no information as to where the crop was grown (D.L.). *This organism has not* previously been reported on eggplant in Canada but was reported once on sweet pepper from s.w. Ont. (Ed.).

WILT (Verticillium dahliae) was seen in most plantings in the Okanagan Valley, B.C. (G.E.W.). Moderate to severe infections were seen in 4 fields in Essex Co., Ont. Because of the high incidence of wilt in recent years very few fields were planted to eggplant (C.D. McK.).

LETTUCE

RUST (Puccinia extensicola). Older leaves of both head and leaf lettuce in greenhouses and out of doors were moderately infected in two of three market gardens and in one private garden visited in June at Saskatoon, Sask. (F.T., R.M.).

BOTTOM ROT (Rhizoctonia solani) caused minor damage in market gardens on muck soil nr. Vancouver, B.C. from May to early June (H.N.W.T.). It affected 2% of the plants in experimental plots at Ste. Clothilde, Que. (R.C.).

DROP (Sclerotinia sclerotiorum) killed up to 3% of the plants in the early crop on muck soil market gardens nr. Vancouver, B.C. Rotation is not practiced. The mid-season crop seems less susceptible

(H. N. W. T.). Damage was 20% in a field at Maugerville, N. B. on land in continuous truck garden crop production for the last 16 years (S. R. C.).

ASTER YELLOWS (aster yellows virus). Trace infection was seen in 1/12 fields examined in s. w. Que. (T. S., R. C., L. M. T.) and 3-5% infection occurred in experimental plots at Ste. Clothilde (R. C.). Up to 4% infection was seen in 2/6 fields visited at Maugerville, N. B. (S. R. C.).

BIG VEIN (lettuce big-vein virus). Symptoms resembling big vein have been noticed for several years in market gardens on muck soil in the Vancouver, B. C. area, mainly on the early crop. Seed of the variety 'Penn Lake' was grown in pots in the greenhouse in soil taken from beneath affected plants. Some of these seedlings showed chlorosis and a type of parallel venation indicating transmission of this soil-borne virus (R. S. S.). This is the first record of big vein from B. C. All earlier reports have been from s. w. Ont. with the exception of one from Que. (Ed.).

TIPBURN (physiological) affected 95% of the plants of the variety 'Imperial' in a field at St. Philip's, nr. St. John's, Nfld. The condition became apparent just as the heads were coming to full size (O. A. O.).

MUSKMELON

POWDERY MILDEW (Erysiphe cichoracearum) became prevalent near the end of harvest in two fields at Leamington, Ont. (C. D. McK.).

SUDDEN WILT (cause undetermined). Sudden wilting of foliage occurred in 3 fields totalling 13 acres at Leamington, Ont. The condition developed in fusarium-resistant varieties and in fields that had been planted to melons every second year for ten or more years. Considerable root rot was associated with the trouble (C. D. McK.).

ONION

PURPLE BLOTCH (Alternaria porri). Infections were rated 4-tr. 3-mod./22 fields examined in s. w. Que. (T. S., R. C., L. M. T.).

NECK ROT (Botrytis allii) affected a small percentage of the crop in the Okanagan Valley, B. C. Open pollinated varieties were more susceptible. Warm, dry weather during harvest kept losses at a less than normal level (G. E. W.). Some infection was seen at St. Albert, Alta. (A. W. H., D. S.). Losses of 8% occurred in onions stored at Maugerville, N. B. (S. R. C.). Onions grown in muck soil and stored at Waterville, N. S. suffered slight losses. The same grower had a 40% loss in 1965 (C. O. G.).

LEAF BLIGHT (Botrytis squamosa) was rated 6-tr. 8-sl. 1-mod. 1-sev./22 fields surveyed in s. w. Que. (T. S., R. C., L. M. T.). Onions in storage at Sherrington, Que. showed 20% rot by mid-January. There was a defect in the curing process after the onions were stored (L. J. C.).

BASAL ROT (Fusarium oxysporum f. cepae) caused the loss of 10/500 tons of onions at Cloverdale, B. C. The estimated value of the crop lost was 11-12 thousand dollars (H. N. W. T.). Losses in the Okanagan Valley ranged from 5-50% in individual crops. Losses were heaviest in hybrid varieties (G. E. W.). Symptoms of basal rot appeared suddenly in Spanish onions after heavy rain in mid-July in Essex Co., Ont. Losses in some fields were 10-15% (J. R. C.). The disease was more prevalent than usual in s. w. Que. (T. S., R. C., L. M. T.).

SOUR SKIN (Pseudomonas cepacia Burkh.) was found in a 6-lb. package of cooking onions from bulk storage at Leamington, Ont. It was not serious. (C. D. McK.). This disease has not been previously reported in Canada. The U. S. D. A. Index of Plant Diseases lists it as occurring in N. Y. (Ed.).

PINK ROOT (Pyrenochaeta terrestris). From 50-90% of the bulb crop in most fields in the Okanagan Valley, B. C. showed slight to severe pink root infection (G. E. W.). Trace infections were seen in 1/22 fields examined in s. w. Que. (T. S., R. C., L. M. T.).

WHITE ROT (Sclerotium cepivorum). Some diseased bulbs were found on fall-seeded 'Sweet Spanish' onions in a field nr. Kelowna, B. C. The affected field had previously been planted with fall-grown transplants originating at Walla Walla, Washington (G. E. W.). There was considerably less white rot encountered in s. w. Que. than in 1962 and 1965 when July temperatures were much lower than normal (T. S., R. C., L. M. T.).

SMUT (Urocystis magica) was seen in most fields in the Kelowna, B. C. area (G. E. W.) and traces were found in 6/22 fields surveyed in s. w. Que. (T. S., R. C., L. M. T.).

PEA

LEAF AND STEM SPOT (Ascochyta pinodella). Trace infections occurred on leaves and stems of plants in Experimental plots at Kentville, N. S. (C. O. G.). Infections occurred in several fields of peas for processing in P. E. I. (W. L. S.).

GRAY MOLD (Botrytis cinerea) was observed in a planting of Rocky Mountain House, Alta. (A. W. H., D. S.).

POWDERY MILDEW (Erysiphe polygoni). Foliar infection was 100% in a planting on Lulu Island, B. C. in early October (H. N. W. T.). It was observed at Hairy Hill and Wainwright, Alta. as well as at Macklin, Sask. (A. W. H., D. S.). Moderate infections

were seen at Saskatoon, Sask. (R. J. L.). Varying degrees of infection were seen throughout N. B. in Aug. but losses were light because the pea crop was past its peak (S. R. C.).

WILT (Fusarium oxysporum f. pisi) destroyed a 10-acre field at Canning, N. S. (C. O. G.).

ROOT ROT (Fusarium spp., Pythium spp., Rhizoctonia solani) caused moderate damage in several garden plots at Lethbridge, Alta. (F. R. H.). Fusarium sp. was responsible for slight damage at Yorkton, Sask. (R. J. L.) and losses in early-planted gardens in the Moncton, N. B. area ranged from 8-35% (S. R. C.).

DOWNY MILDEW (Peronospora pisi). Large patches in a 5-acre field at Medford, N. S. were severely infected. Affected plants didn't mature (C. O. G.).

BACTERIAL BLIGHT (Pseudomonas pisi). Trace infections were seen at two locations in a 1-acre verification trial at Cobden, Ont. (V. R. W.).

ROOT AND STEM ROT (Rhizoctonia solani) affected 75% of the plants in a 3-acre field at Welsford, N. S. causing severe losses. R. solani was the predominant organism isolated (C. O. G.).

RUST (Uromyces fabae). Traces were seen throughout a 1-acre field at Cobden and on 'Improved Laxton's Progress' in Nepean Twp., Ont. (V. R. W.). A late infection caused little damage in a planting at Chatham, N. B. (S. R. C.).

PEPPER

STEM CANKER (Botrytis cinerea) caused stunting of a few plants in a garden at Lethbridge, Alta. (P. E. B.).

WILT (Verticillium dahliae) was found in most commercial plantings in the Okanagan Valley, B. C. with infection ranging from 1-10% (G. E. W.). All fields in the Harrow-Leamington area, Ont. were infected and the incidence of wilt ranged from 10-90%. Losses were heavy in some fields (C. D. McK.).

BLOSSOM-END ROT (physiological) affected up to 10% of the fruit in Okanagan Valley, B. C. fields (G. E. W.). Minor damage occurred in a planting at Sheffield, N. B. (S. R. C.).

POTATO

EARLY BLIGHT (Alternaria solani). Nearly all fields in the Cariboo and Interior regions of B. C., except those of 'Netted Gem' showed some infection. One crop of 'Norland' was completely dead by early July (R. J. N. M.). It was reported from many areas in Alta. (A. W. H., D. S.). Infections were rated 16-sl. 9-mod./87 seed fields in Sask. (B. H. W.). Ratings were 228-sl. 30-mod. 7-sev./889 seed fields in Que. occurring mainly in the Chicoutimi and Lake St. John areas where it occurred in 58% of the 208 fields inspected and caused some decrease in yield (G. E.). Many of the seedlings under test at Les Buissons, Que. were susceptible. The seedling 'F-6368' was severely infected wherever it was grown (H. G.). It appeared at maturity in most fields in the early potato producing area at Jemseg, N. B. but caused little loss (S. R. C.). Infections were generally trace in N. S. (R. C. L.).

BLACK DOT (Colletotrichum coccodes) was seen occasionally in seed fields in N. S. but not to the same extent as in 1965 (R. C. L.) and traces were encountered in a few fields in Kings Co. in Sept. (C. O. G.).

RING ROT (Corynebacterium sepedonicum) was found on one farm in the Cariboo region, B. C. (R. J. N. M.). Trace to slight infections were found on 35% of the farms surveyed in the Lethbridge and Calgary areas, 24.2% of those in the Edmonton area and 22.9% of those in the Brooks area of Alta. (A. W. H., D. S.). It was detected at Saskatoon, Rosthern, Fairy Glen and Langham, Sask. (R. J. L.). Incidence was extremely high in Man. in 1966. Only 686/2500 acres entered for certification were free of the disease. Large quantity importations of seed and inadequate sanitary measures are probably responsible for the increase in ring rot in 1965 and 1966 (R. C. Z., C. W. W.). It was detected in 23/26 samples of seed stock and in 40/48 samples of table stock received at Winnipeg for diagnosis (W. A. F. H.). Ring rot was found on one farm in the Guelph, Ont. area (J. W. G.) and caused the rejection of 73/899 seed fields in Que. (G. E.). Infected specimens were received from Montmorency, Levis, Portneuf and Matane counties, Que. (D. L.). Five/370 seed fields were rejected in N. S. and infection ran as high as 20% in some table stock fields (R. C. L.). There was a marked decrease in incidence in seed crops in P. E. I. in 1966 (J. E. C.).

BLACKLEG (Erwinia atroseptica) was found in all areas of B. C. but was serious only in the Pemberton district (R. J. N. M.). It was commonly found in all parts of Alta. (A. W. H., D. S.) and presented a serious problem in s. Alta. (F. R. H.). Infection was seen in 39/87 seed fields in Sask., mainly in the n. e. portion of the province (B. H. W.). Its incidence was variable but generally light in the early potato crop in the Harrow-Leamington district of Ont. (C. D. McK.). It was found in 539/889 fields in Que. Although less prevalent than in recent years, it was still responsible for 53 rejections (G. E.). Blackleg caused the complete breakdown of a lot in storage at Jemseg, N. B. (S. R. C.). It was found in 76/370 seed fields in N. S. and caused the rejection of five (R. C. L.). Its incidence in P. E. I. was considerably higher than in 1965. More than twice as many fields were rejected (J. E. C.) and although general in Nfld., infection rarely exceeded 2% (O. A. O.).

SOFT ROT (Erwinia carotovora) was encountered in several field and garden plantings in s. Alta. Lenticel rot was found in one crop of 'Netted Gem' at Taber (F. R. H.). Losses were heavy in the crop of a 6-acre field of 'Sebago' in storage at Harrow, Ont. Infection developed around the lenticels of tubers that were not sufficiently mature at harvest (C. D. McK.).

DRY ROT (Fusarium spp.) was seen at Lacombe, Kelsey, Star and Beiseker, Alta. (A. W. H., D. S.). A slight infection was observed in plots at Winnipeg, Man. (W. A. F. H.). Losses of 2-10% were common, mostly in 'Keswick' and 'Cherokee', in the stored 1965 crop at shipping points in Que. It was also seen in a few bin lots, mostly of 'Keswick', in the 1966 crop (G. E.). A few specimens infected by F. sambucinum f. 6 and F. coeruleum were received for diagnosis at Kentville, N. S. In most cases infection followed bruising or cracking (C. O. G.). Dry rot was seen in a number of crops in P. E. I., particularly in early-harvested 'Sebago'. Two successive dry summers seem to have contributed to its higher incidence (J. E. C.).

VIOLET ROOT ROT (Helicobasidium purpureum Pat. stat. perf. of Rhizoctonia crocorum (Pers.) DC. ex Fr.) was found in a field of 'Kennebec' in P. E. I. (J. E. C.). It has been previously been reported on potato only from B. C., Sask., Alta. and Ont. (Ed.).

SILVER SCURF (Helminthosporium solani). Slight infections were noted in many potato lots at spring shipping inspections (G. E.).

RHIZOCTONIA (Pellicularia filamentosa). Infections were general throughout B. C. and it caused considerable damage in the Cariboo district. The overall ratings in the province were 125-sl. 45-mod. 18-sev./258 fields (R. J. N. M.). It was reported from Gordondale, Viking, Didsbury, Camrose, Strathcona and Innisfree, Alta. (A. W. H., D. S.) and was seen in most seed fields in Sask. (B. H. W.). Incidence in the Guelph, Ont. area was at normal levels (J. W. G.). Rhizoctonia was present in most lots inspected in the spring with some moderate to severe infections occurring in the Lower St. Lawrence district, particularly in 'Green Mountain' and 'Keswick'. Ratings in the 1966 seed crop were 177-sl. 15-mod. 3-sev./889 fields. It was recorded in 125/386 bin lots inspected (G. E.). Incidence was low in field inspections in N. S. but some slight infections were seen at bin inspection (R. C. L.). It was common in P. E. I. on tubers of early-maturing varieties, particularly 'Irish Cobbler' (J. E. C.). Infections were generally slight to moderate in Nfld. The stem canker phase is the most frequent symptom expression (O. A. O.).

PINK ROT (Phytophthora erythroseptica) occurred on 'Kennebec', 'Norgold Russet', and 'Netted Gem' at several coastal points in B. C., sometimes associated with late blight in tubers. Although the damage was less than 1%, the cost of labor for regrading in storage was considerable (N. S. W.).

LATE BLIGHT (Phytophthora infestans) was seen in B. C. only on the Lower Mainland and in the Pemberton area. Tuber rot was severe in some lots (R. J. N. M.). Light infections occurred at Winterburn and on the western outskirts of Edmonton, Alta. (A. W. H., D. S.) and there were a few minor outbreaks in the Guelph, Ont. area (J. W. G.). Losses from tuber rot in the 1965 crop in storage in Que. were 1-2% and field incidence in 1966 was considerably less than for many years, being observed in only 41/889 fields inspected. Its first appearance was three weeks later than in 1965. Tuber rot was seen in 25/386 bin lots (G. E.). Infected tubers were received from Montmorency, Portneuf and Matane counties (D. L.). Late blight was virtually absent from N. B. and P. E. I. for the third successive year (S. R. C., J. E. C.). A trace of late blight tuber rot was reported from Colchester and Cape Breton counties, N. S. (R. C. L., C. O. G.). The disease was well established in most areas of e. Nfld. by 23 Aug. and some fields suffered up to 70% defoliation. Tuber rot was serious in 'Green Mountain'. Late blight was not reported from w. Nfld. (O. A. O.).

LEAK (Pythium ultimum) was found in 2 lots of 'Kennebec' at spring shipping inspection and in 25/386 bin lots inspected in Que. in the fall of 1966. It was most prevalent and severe in 'Green Mountain' (G. E.). It was severe in a small planting of 'Golden Russet' in wet soil at La Pocatière, trace on 2 seedling lines at L'Assomption and severe on 'Green Mountain' in storage at Cacouna, Temiscouata Co., Que. (H. G.). It caused 25% loss in 'Cherokee' interplanted in a young 10-acre orchard at Melvern Square, N. S. Tubers broke down within a week of harvest (C. O. G.). Traces were found in storage in P. E. I. (J. E. C.).

POWDERY SCAB (Spongospora subterranea) was seen in a few lots in Que. Slight to moderate infections were recorded on 'Green Mountain' and on some seedlings at La Pocatière, (G. E., H. G.).

COMMON SCAB (Streptomyces scabies) was seen in B. C. only in the Cariboo district (R. J. N. M.). It was found in many localities in n. Alta. (A. W. H., D. S.) but its incidence was lower than normal in Sask. (B. H. W.). Common scab was found in all areas of Que. but was most prevalent in the Lower St. Lawrence, Chicoutimi and Lake St. John areas. Incidence was rated 210-sl. 45-mod. 11-sev./386 seed fields. A few infections were rated 20-40% (G. E.). A large crop in Bagot Co., Que. was 90% infected (H. G.). It was widespread and occasionally severe in N. B. (S. R. C.) and particularly severe in some areas in Yarmouth, Pictou and Cumberland counties, N. S. Deep pitted infections were frequently seen (C. O. G.). Scab was more prevalent than in 1965 in P. E. I. but in only a few cases was it a problem (J. E. C.). It was generally light to moderate in Nfld.

One severely infected crop was seen at Robinson's on the west coast (O. A. O.).

WART (Synchytrium endobioticum) was moderate to severe throughout Nfld. with the heaviest infections occurring on the east coast (O. A. O.).

WILTS (Verticillium spp., Fusarium spp.). Traces only were seen in B. C. on the Lower Mainland and on Vancouver Island and specimens were received for diagnosis at Summerland (R. J. N. M., G. E. W.). They were rated trace in 28/87 seed fields inspected in Sask. (B. H. W.). V. albo-atrum affected 5% of a crop of 'Kennebec' at Winkler, Man. This is the first positive report of this species occurring in Man. Most of the Verticillium found in Man. is V. dahliae (J. H. H.). Both V. albo-atrum and V. dahliae were isolated from wilted plants in a number of fields in the Harrow-Leamington district of Ont. (C. D. McK.). Wilts were found in 104/889 fields inspected in Que. They were most prevalent in 'Kennebec' (G. E.). Trace infections were seen in 34/370 seed fields in N. S. Some table stock fields, particularly of 'Kennebec', had severe infections (R. C. L.). Approximately 85% of the plants of one Fredericton seedling in a block trial at Starr's Point, N. S. were infected with V. albo-atrum (C. O. G.). Incidence decreased in P. E. I. in 1966 (J. E. C.).

HAYWIRE (aster yellows virus) occurred in B. C. to a greater extent than in any previous year. As many as 25% of the plants were infected in some fields (N. S. W.). See Wright, N. S. Can. Plant Dis. Surv. 46:121-122. 1966 for a more complete account (Ed.).

PURPLE TOP WILT (aster yellows virus). Traces were seen in 2/87 fields inspected in Sask. (B. H. W.) and a slight infection was seen at Prince Albert (R. J. L.). It was slight in a field at Dugald, Man. (W. A. F. H.) and its incidence was higher than normal in the Guelph, Ont. district (J. W. G.). Traces were seen in a number of seed fields in N. S. (R. C. L.) and there was a considerable increase in incidence in P. E. I., especially in 'Sebago'. Affected fields had 5-25% infected plants (J. E. C.).

LEAF ROLL (virus) was general but light in B. C. Most infections occurred on the Lower Mainland (R. J. N. M.). It was frequently encountered in n. Alta. (A. W. H., D. S.) but its incidence in Sask. was lower than in 1965 (B. H. W.). It was seen in 176/889 fields inspected in Que. (G. E.) and in 125/370 in N. S. (R. C. L.). It was less common in P. E. I. than in 1965 (J. E. C.).

MOSAIC (virus). Infections were generally light in B. C. but there was a marked increase in its incidence on the Lower Mainland (R. J. N. M.). Traces only were found in 3/87 seed fields in Sask. (B. H. W.) although slight damage was seen in fields at Scott and Saskatoon (R. J. L.). Incidence ranged up to 3% in the Leamington, Ont. area in several fields of 'Irish Cobbler' grown from Minnesota seed stock (C. D. McK.). Mosaic was recorded in 356/889 seed fields in Que. and caused the rejection of 107 (G. E.). Rugose mosaic was extremely severe in a small planting at Chipman, N. B. (S. R. C.). Mosaic occurred in 79/370 seed fields in N. S. (R. C. L.) and incidence in P. E. I. was at about the 1965 level (J. E. C.).

SPINDLE TUBER (virus). A slight amount was seen in a garden at Saskatoon (J. D. S.) and it was found in 2/87 seed fields in Sask. (B. H. W.). It was found in 3/889 fields and in 7/386 bin lots inspected in Que. (G. E.). More spindle tuber was seen in N. S. than in recent years, particularly in 'Kennebec' (R. C. L.) and more fields were rejected in P. E. I. than in 1965 (J. E. C.).

WITCHES' BROOM (virus). Traces were found in seed fields in most districts in B. C. (R. J. N. M.) and a trace was seen in 1/87 seed fields in Sask. (B. H. W.).

ELEPHANT HIDE (cause undetermined) occurred in slight amounts in a field at Biggar, Sask. The symptoms fit the description given by Peters, Can. Plant Dis. Surv. 46:99. 1966 (R. J. L.).

FROST INJURY occurred in 24% of the bin lots inspected in Que. compared to 90% in 1965. Losses were estimated to be less than 1% (G. E.).

GIANT HILL (genetic) was occasionally observed in 'Green Mountain', 'Netted Gem' and 'Irish Cobbler' in N. S. (R. C. L.).

INTERNAL BROWN SPOT (physiological) was seen in a crop grown on light, sandy soil at Chauvin, Alta. (A. W. H., D. S.).

MAGNESIUM DEFICIENCY. Symptoms were severe in a crop at Clarenville, Nfld. (O. A. O.).

RADISH

LEAF SPOT (Alternaria raphani). A slight infection was seen at Saskatoon, Sask. (G. A. P., T. C. V.).

DOWNY MILDEW (Peronospora parasitica) caused traces of injury in 1/15 fields surveyed in s. w. Que. (T. S., R. C., L. M. T.).

RHUBARB

LEAF SPOT (Ascochyta rhei). A severe infection was observed in a planting nr. Ottawa, Ont. (V. R. W.).

CROWN ROT (Pythium sp.). A species of Pythium was isolated from affected plants at Edmonton, Alta. (A. W. H., D. S.).

RED LEAF (cause unknown) was observed at Innisfail, Alta. (A. W. H., D. S.).

RUTABAGA

STORAGE ROT (Botrytis cinerea) caused 10% losses to roots in storage at Sussex, N. B. The relative humidity in the storage was very high (S. R. C.). At Harbor Grace, Nfld., 7-8% of the roots of 'Laurentian' in storage were affected (O. A. O.).

DOWNY MILDEW (Peronospora parasitica). Specimens were received from St. Anselme, Dorchester Co., Que. in Aug. An earlier crop on the same field had been free of the disease (D. L.). A 3-acre field at Port Williams, N. S. had a 50% infection on the older leaves (C. O. G.) and infection ranged from 20-60% in plantings at Pleasantview, Lethbridge and St. John's, Nfld. (O. A. O.).

CLUB ROOT (Plasmodiophora brassicae). Affected specimens were received from Champlain and Quebec counties, Que. (D. L.). Infections ranging from trace to 40% were common in N. B. The new variety 'York' showed good resistance except for the presence of small clubs in one planting at Oromocto (S. R. C.). A severe infection was seen on 'Laurentian' at Argyle Shore, Queen's Co., P. E. I. (G. W. A.). Clubroot is a continuing problem in Nfld. and moderate infections were common throughout the province in 1966. 'York' was infected at Cupid's in the Conception Bay area (O. A. O.).

SKIN ROT (Rhizoctonia solani). Specimens were received from L'Islet, Champlain, Saguenay and Temiscouata counties, Que. (D. L.). Damage was slight in a crop at Fredericton Junction, N. B. (S. R. C.), trace in one at Grand Pré, N. S. (C. O. G.) and slight to moderate in one at Argyle Shore, P. E. I. (G. W. A.).

SCAB (Streptomyces scabies). Severe scab lesions developed on 80-90% of the roots of an unknown variety at Long Pond in the Conception Bay area, Nfld. Trace infections only have been seen in the past (O. A. O.).

BROWN HEART (boron deficiency) affected 100% of the roots at St. Stephen, N. B. where rutabagas were planted on land not cultivated for 30 years (S. R. C.).

BLACK HEART (cause unknown) has been observed intermittently for several years in Nfld. It is characterized by a grayish black, watery discoloration of the flesh. No external symptoms are evident and the disorder has been confined almost entirely to 'Laurentian'. About 1% of the crop at Lethbridge in the Bonavista Bay district was affected in 1966 (O. A. O.).

CHEMICAL INJURY. Spray drift of 2, 4-D caused some damage at Grande Prairie, Alta. (A. W. H., D. S.).

CRACKING (cause undetermined). A horizontal cracking, followed by what appeared to be a superficial bacterial rot affected 30% of the roots in a planting of 'York' at Heatherton on the west coast of Nfld. (O. A. O.).

SALSIFY

WHITE RUST (Albugo tragopogonis). A moderate infection was seen in a garden planting at Rougemont, Que. (R. C.).

SPINACH

DOWNY MILDEW (Peronospora farinosa). Infection was lighter than usual in market gardens at Musqueam, nr. Vancouver, B. C. (H. N. W. T.).

YELLOWING (nutrient deficiency) was general on the lower leaves of a second crop at Beauport, Que. The first crop was normal (D. L.).

SQUASH

STORAGE ROT (Sclerotinia sclerotiorum, Fusarium spp.) caused traces of damage at Sussex, N. B. (S. R. C.).

SWEET CORN

EAR ROT (Diplodia maydis) was found on a few specimens received from the Lower Fraser Valley, B. C. This disease, reported from Ont., has not previously been found in B. C. (H. N. W. T.).

STALK ROT (Nigrospora oryzae) was found in trace amounts at Outlook, Sask. in a field under irrigation (J. D. S.).

SMUT (Ustilago maydis). Specimens were received from Cristina Lake, B. C. (G. E. W.), Hays, Alta. (A. W. H., D. S.) and Saskatoon and Drake, Sask. (R. J. L., R. M.).

TOMATO

EARLY BLIGHT (Alternaria solani). Infection ranged from 15-20% on fruit of 'Glamor', 'Fireball' and selection '29-70-89' in plots at Acadie (L. J. C.) and affected leaves were received from a greenhouse crop in Asbestos, Que. (D. L.). It was seen in 8/11 fields visited at Sheffield, N. B. and defoliation was severe in 2 fields (S. R. C.). Severe collar rot symptoms developed in a 5-acre irrigated field at Canning, N. S. (C. O. G.).

FRUIT ROT (Alternaria tenuis). Traces of damage only occurred at Vernon, B. C. There was little fruit cracking and rainfall was light during harvest (G. E. W.).

STEM ROT (Botrytis cinerea). Incidence was about normal in greenhouse crops in the Leamington, Ont. area (C. D. McK.) and slight at Sheffield and Hampstead, N. B. (S. R. C.).

LEAF MOLD (Cladosporium fulvum) was observed in both spring and fall greenhouse crops in Essex Co., Ont. where susceptible varieties were grown under poor cultural conditions (C. D. McK.). Traces of infection were seen in a crop at Lincoln, N. B. (S. R. C.).

ANTHRACNOSE (Colletotrichum coccodes). Visible infection was less than 1% at harvest at Vernon, B. C. but 5-20% of the fruit developed rot in storage (G. E. W.). Anthracnose was prevalent in the early basket crop in the Harrow-Leamington area of Ont. toward the end of harvest. Although its incidence in the canning crop in s. w. Ont. was variable, it was reported to be slightly lower than usual (C. D. McK.). Field infections at Ste. Foy, Que. were inconspicuous but severe fruit rotting developed after a short time in storage (D. L.). Slight infections were seen on 'Stokesdale' at the Research Station, Kentville, N. S. (C. O. G.).

BACTERIAL CANKER (Corynebacterium michiganense) caused some damage in a planting at Medicine Hat, Alta. (F. R. H.). Bacterial canker presented a real threat to the greenhouse industry in the Leamington, Ont. area in 1966. It also occurred in a number of fields grown for canning and early basket crops. Canker was present in the 1966 spring crop in every greenhouse establishment where it had occurred in the 1965 fall crop with the incidence ranging from a trace to 100%. A more widespread outbreak was experienced with the 1966 fall crop. In spite of grower compliance with recommendations from the Harrow Research Station concerning sanitation and preventative measures, canker re-appeared in the fall at every establishment where it occurred in the spring crop as well as at several previously unaffected establishments. More than 45 individual growers were affected. Although the source of canker at each establishment was somewhat obscure, it was obvious in some greenhouses that the disease was introduced on infected transplants, some of which had been grown outside and became infected at the time of the severe rainstorm on 12 July. Losses in the fall crop were again variable, ranging up to 100% and depending to a considerable extent on the time of infection and the care taken to prevent spread. Transmission, under greenhouse conditions, is mainly by plant handling and to a lesser extent by sprinkler irrigation (C. D. McK.). Slight damage occurred at Abbotsford and 20% damage at St. Cesaire, Que. (L. J. C.).

WILT (Fusarium oxysporum f. lycopersici) was seen in trace amounts in plots at Acadie, Que. (L. J. C.).

ROOT-KNOT NEMATODE (Meloidogyne hapla) caused severe symptoms on the roots of most plants in a greenhouse crop at St. Isadore, Que. (A. E. S.).

LATE BLIGHT (Phytophthora infestans) was found in a garden at Edmonton, Alta. (A. W. H., D. S.). None was reported from eastern Canada for the first time in many years (Ed.).

BUCKEYE ROT (Phytophthora parasitica) developed in severe proportions in some fields in Essex Co., Ont. following a 5-inch rainfall and subsequent flooding in mid-July (J. R. C.).

DAMPING-OFF (Rhizoctonia solani) was seen at Desmarais, Alta. (A. W. H., D. S.).

LEAF SPOT (Septoria lycopersici). Infections were observed in a few early basket crops at Leamington, Ont. The incidence of this disease has been much reduced in recent years since the adoption, by most growers, of a regular spray schedule (C. D. McK.).

WILT (Verticillium dahliae) occurred in the Okanagan Valley, B. C. in greenhouses where the soil had not been sterilized and in fields not planted with resistant varieties or strains (G. E. W.). It occurred in patches in a greenhouse planting at Peace River (A. W. H., D. S.) and was seen affecting a few plants in garden plantings at Lethbridge and Medicine Hat, Alta. (F. R. H., P. E. B.). It was observed in a greenhouse crop at Grand Pré. N. S. (C. O. G.).

SHOESTRING (cucumber mosaic virus) caused damage estimated at 40% in a greenhouse crop of 'Vantage' and 'Veegan' at Trenton, N. S. All plants were infected (C. L. L.).

MOSAIC (tobacco mosaic virus) occurred in both greenhouse and field-grown crops in the Okanagan Valley, B. C. (G. E. W.) and in most spring and fall greenhouse crops in the Leamington area, Ont. A severe fruit mottle was observed in one affected fall crop (C. D. McK.). Specimens were received from Thetford Mines, Que. (D. L.) and a greenhouse crop at Homestead, N. B. was 10% infected (S. R. C.).

GRAY WALL (tobacco mosaic virus). The first harvest from one N. B. crop had 10% of the fruit affected. The later crop showed no damage (S. R. C.).

SPOTTED WILT (tomato spotted wilt virus). All fruits of one plant of 'Glamor' were affected at Acadie, Que. (L. J. C.).

BLOSSOM-END ROT (physiological) was seen in most field and greenhouse crops in the Okanagan Valley, B. C. but losses were not economically important (G. E. W.). Some damage occurred at Red Deer, Botha and Edmonton, Alta. (A. W. H., D. S.). It was more prevalent than usual in the fall greenhouse crop in Essex Co., Ont. particularly in the variety 'WR-25' (C. D. McK.). Traces of the disorder were observed at L'Assomption, Que. (L. J. C.) and it was severe in a planting at Scotchtown, N. B. (S. R. C.).

BLOTCHY RIPENING (physiological) was commonly seen in greenhouse crops in the Okanagan Valley, B. C. (G. E. W.) and in most greenhouse crops in the Leamington, Ont. area in November and early December. It also tends to become prevalent toward the

end of the spring crop each year (C. D. McK.).

CATFACE (physiological). This disorder and generally rough fruit were common in the first pickings of most crops in N. B. (S. R. C.).

CHEMICAL INJURY. Damage from 2, 4-D was observed at Edmonton, Leduc, Cayley, Grande Prairie and Calgary, Alta. (A. W. H., D. S.).

MAGNESIUM DEFICIENCY. Symptoms were severe on 90% of the plants of a greenhouse crop of 'Vetomold' at St. John's West, Nfld. (O. A. O.).

SUNSCALD was observed on a few plants at Winnipeg, Man. (W. A. F. H.).

DISEASES OF FRUIT CROPS
A. Pome Fruits

APPLE

CROWN GALL (Agrobacterium tumefaciens) affected a few trees on 'Beautiful Arcade' rootstock in a nursery at Wolfville, N. S. (R. G. R.).

GRAY-MOLD ROT (Botrytis cinerea) is becoming more important in the Okanagan Valley, B. C. since the introduction of water immersion dumpers. Some damage occurred at Kelowna, mainly on 'Delicious' which has an open calyx (L. E. L.).

CANKER (Cytospora sp.) was seen at Camrose, Two Hills and Bon Accord, Alta. (A. W. H., D. S.).

FIRE BLIGHT (Erwinia amylovora). The only report of fireblight in the Okanagan Valley, B. C. in 1966 was from Kamloops (L. E. L.). It was reported from 19 localities scattered throughout Alta. (A. W. H., D. S.). Fireblight was prevalent on apples and crabapples in the Saskatoon, Sask. area but damage was generally slight (R. J. L.). Incidence was low in the Niagara Peninsula, Ont. in 1966 (J. N.). Cankers, confirmed to be those of fireblight, were found in apple orchards adjacent to infected pear orchards at 7 locations in the Annapolis Valley, N. S. Its presence has not previously been confirmed in that province (C. O. G., C. L. L., R. E. C. L.).

BULL'S-EYE ROT (Gloeosporium perennans). Infection of 'Newton' apples was very light in the Summerland, Penticton and Naramata areas of B. C. (L. E. L.).

QUINCE RUST (Gymnosporangium clavipes). Trace infections were seen on 'Cortland' and 'Delicious' at La Pocatière (H. G.) and slight to moderate infections occurred at St. Jean Port Joli, L'Islet Co., Que. (D. L.).

CORAL CANKER (Nectria cinnabarina) caused moderate damage to limbs of 'Red Delicious' in an orchard at Aylesford, N. S. (R. G. R.).

EUROPEAN CANKER (Nectria galligena). Traces of damage were seen in 2 orchards in the Gagetown, N. B. area (S. R. C.).

ANTHRACNOSE (Neofabraea malicorticis) caused severe distortion of older branches on a neglected tree in a home garden at Richmond, Lulu Island, B. C. (H. N. W. T.).

PERENNIAL CANKER (Neofabraea perennans). Extension of existing cankers on 'Newtown' was much less than that of the previous season, probably because of the relatively mild winter of 1965-66 (L. E. L.).

COLLAR ROT (Phytophthora cactorum) killed 'M II', 'MM III' and 'MM 104' rootstocks at Summerland, B. C. (D. L. McI.).

POWDERY MILDEW (Podosphaerea leucotricha). Infection was general on tips of new growth in late summer in home gardens in the Vancouver, B. C. area (H. N. W. T.). It was prevalent and severe on foliage of susceptible varieties in the Okanagan Valley, B. C. (D. L. McI.). 'Jonathen' was extremely severely infected in an orchard in Gosfield South Twp., Essex Co., Ont. Leaves were 100% infected and it also caused fruit deformity and russeting. 'Delicious' and 'McIntosh' in the same orchard were less severely affected (J. R. C.). It developed in some orchards of 'McIntosh' in the Niagara Peninsula, Ont. in May and June but defoliation was not serious (J. N.). Damage was moderate to severe on terminals of 'Cortland' at Greenwich and Rockland and slight on 'Gravenstein' at Greenwich, N. S. This is the first report from N. S. of powdery mildew in bearing commercial orchards. Previous occurrences have been on seedlings (R. G. R.).

CALYX-END ROT (Sclerotinia sclerotiorum) caused traces of damage at Pokiok and Gagetown, N. B. (S. R. C.). A corky, dry rot was found on the calyx end of 'Delicious' apples in several orchards in the North Okanagan and Salmon Arm districts of B. C. (D. L. McI.). The symptoms, as described, are strongly suggestive of sclerotinia rot (Ed.).

SCAB (Venturia inaequalis) was common on foliage and fruits in Vancouver, B. C. home plantings (H. N. W. T.). Fruit infection reached 50% in a 'McIntosh' orchard at Maidstone, Essex Co., Ont. where an inexperienced orchardist used too little fungicide at improper times (J. R. C.). Little scab developed in the Niagara Peninsula, Ont. because of dry weather (J. N.). A 10-25% foliar infection caused slight damage in an orchard at La Pocatière, Que.

(H. G.). Infections were very light and caused only traces of damage in commercial orchards in N. B. although uncared-for trees were heavily infected (S. R. C.). In N. S., scab infection at harvest ranged from a trace to 3% on the varieties 'McIntosh' and 'Cortland'. (C. O. G.). Most fruits were scabbed on unsprayed trees at Manuels and Bay Roberts, Nfld. (O. A. O.).

MOSAIC (virus). Pronounced symptoms were seen on 2 trees in an orchard nr. Smithville, Ont. (T. R. D., W. R. A.).

LEAF PUCKER (virus). Symptoms on 'McIntosh' were moderate to severe at Summerland and Kelowna and moderate at Cawston, B. C. (M. F. W.).

RING RUSSETING (virus). Symptoms on 'Newtown' were very mild at Naramata and at Summerland at the lake level; moderate at Oliver and at higher levels at Summerland and severe at Penticton and Kaleden, B. C. These variations in symptom expression can probably be attributed to different temperatures during bloom in the various districts (M. F. W.).

SUNKEN BLOTCH (cause unknown). This condition, characterized by sunken, purple skin blotches with necrotic flesh underlying, occurred on the fruit of many trees in 8 or more orchards in the Oliver-Osoyoos district of the Okanagan Valley, B. C. The varieties 'Winesap', 'Stayman' and 'Delicious' were affected with the condition being especially serious on 'Winesap'. There was no apparent correlation with nutrition or water relations (M. F. W.).

BITTER PIT (physiological) caused severe losses in early varieties in 2 orchards nr. Fredericton, N. B. (S. R. C.).

CORKY CORE (boron deficiency) was moderate to severe in 2 orchards at St. Pacome, Kamouraska Co., Que. (D. L.).

FRUIT COLOR BREAK (cause unknown). Fruits on 2 trees of 'Northern Spy' at Aylmer, Ont. exhibited green stripes of varying widths extending from the calyx toward the stem. These stripes persisted in the ripening fruits. Some of the leaves developed irregular, chlorotic patterns (T. R. D., W. R. A.).

FRUIT DEFORMITY (? early frost). Elongate, flattened and misshapen fruits were common in 'McIntosh' in the Picton and Brighton areas, Ont. and a somewhat different deformity seen in 1965 was again evident on several varieties at Collingwood (T. R. D., W. R. A.). Malformed fruit was again encountered in most N. B. orchards but the condition was not nearly as severe as in 1965 (S. R. C.).

IRON DEFICIENCY was the suspected cause of chlorosis at Ponoka, Drumheller, Calgary and Warburg, Alta. (A. W. H., D. S.).

MAGNESIUM DEFICIENCY caused some leaf drop in 2 orchards at Gagetown, N. B. (S. R. C.). A mineral deficiency, possibly of magnesium, was seen at Westlock and Edmonton, Alta. (A. W. H., D. S.).

STORAGE SCALD. Specimens were received from Ste. Foy, Que. (D. L.). Scald was very severe on a lot of 'Cortland' stored by mistake under controlled atmosphere storage at Keswick, N. B. (S. R. C.).

WINTER INJURY was the probable cause of cankering of apple at Winnipeg, Man. A basidiomycete and the Cytospora stage of a Valsa were also present (W. A. F. H.). A high incidence of dieback of leaders in a new orchard at Keswick, N. B. was attributed to winter injury. (S. R. C.).

PEAR

LEAF SPOT (Coniothyrum pirinum). Affected leaves were received from Huntingdon, Que. (D. L.).

FIRE BLIGHT (Erwinia amylovora). Infections were generally light throughout the Okanagan Valley, B. C. and late-season spread did not occur (L. E. L.). Fire blight was found in all 17 pear orchards surveyed in the Annapolis Valley, N. S. in 1966. Several trees in one orchard were killed by the disease and severe cankering was evident on others. This is the first report of fire blight from N. S. (C. O. G., C. L. L., R. E. C. L.). See Gourley, Lockhart and Layne. Can. Plant Dis. Surv. 46:4. pp. 139-142, 1966 for a more complete account (Ed.).

PHYTOPHTHORA ROT (Phytopthora cactorum). Green fruits of 'Bartlett' pear were infected in an orchard nr. Summerland, B. C. (D. L. McI.).

FRUIT ROT (Sclerotinia sclerotiorum). Fruit from 3 orchards at Woodsdale, north of Kelowna, B. C. developed dark, sunken spots in storage. The organism isolated resembled S. sclerotiorum in culture except that the sclerotia were sparse and very small. Infections probably came from infected windfalls (L. E. L.).

SCAB (Venturia pirina). Trace infections occurred at Keswick and Cocagne River, N. B. (S. R. C.).

CORKY PIT (virus) occurred in fruit from one tree in a Vancouver, B. C. home garden. The symptoms were similar to those described by Keane and Welsh, Plant Dis. Reptr. 44:8. pp. 636-638. 1960. The fruit tended to break down in common storage more rapidly than healthy fruit from the same tree (H. N. W. T.).

FRECKLE PIT (virus). Symptoms were more severe on 'Anjou' pears in the Okanagan Valley, B. C. than they have been for several years. In many cases the entire crop of infected trees was unmarketable. Weather conditions appear to affect the severity of symptom expression (J. M. W.).

QUINCE

FRUIT SPOT (Fabraea maculata). Spotting occurred on fruit from the lower Fraser Valley, B. C. (H. N. W. T.).

B. Stone Fruits

APRICOT

FRUIT SPOT (Cylindrosporium sp. indet.) caused pronounced, sunken black spots on a few fruits at Peachland, B. C. No perfect state was found (L. E. L.). A similar undetermined species of Cylindrosporium was reported on apricot fruit from B. C. in 1948 (Ed.).

BROWN ROT (Monilinia fructicola) developed on fruit left unpicked in some orchards at Summerland, B. C. (L. E. L.).

BROWN ROT (Monilinia laxa). Infection was light in one tree at Salmon Arm, B. C. (L. E. L.). See also under cherry (Ed.).

CORYNEUM BLIGHT (Stigmina carpophila) caused widespread spotting on several varieties throughout the orchard districts of B. C. (L. E. L.).

WILT (Verticillium dahliae) was found in Okanagan Valley, B. C. orchards where it had occurred in other years (G. E. W.).

BACTERIAL SPOT (Xanthomonas pruni). Damage was moderate to severe on susceptible varieties in Essex Co., Ont. Fruit infection was heavy on 'Earliril', 'Veecat', 'Viceroy' and 'Perfection'. Defoliation was severe on 'Earliril'. 'Alfred' and 'Farmingdale' showed noticeably less infection (B. N. D., J. R. C.).

RING POX (apricot ring pox virus). Infection was less than 1% in 5/17 orchards with a history ARP occurrence in the Okanagan Valley, B. C. (A. J. H.).

CHERRY

BLACK KNOT (Apiosporina morbosa). Affected specimens were received from St. Isidore, Dorchester Co., Que. (D. L.). In a small planting at Gagetown, N. B., 7 trees were infected, 5 of which had been killed (S. R. C.).

GRAY MOLD (Botrytis cinerea) was the most prevalent rot of cherries in B. C. in 1966. It developed in storage on particularly soft fruit from the Kelowna area (L. E. L.).

SHOT HOLE (Higginsia hiemalis) was not a serious problem in the Niagara Peninsula, Ont. in 1966 (J. N.). About 10% infection was seen in an orchard nr. Moncton, N. B. (S. R. C.).

BROWN ROT (Monilinia fructicola). Although the disease was kept to a low level in most N. S. orchards a few that were unsprayed or that received only 1 or 2 sprays had up to 10% infection (C. O. G.).

BROWN ROT (Monilinia laxa). Fruit in an isolated orchard at Salmon Arm in the Shuswap district of B. C. was heavily infected. Infection was also found in neglected peach and apricot trees near this orchard. The cherries had been badly split by rain (L. E. L.). This organism has been reported at various times from apple in the Kootenays and from stone fruits on Vancouver Island and has been the cause of some difficulty in exporting B. C. fruit to some countries. It should be emphatically stated that it has never been found in the Okanagan Valley but only in regions geographically isolated and climatically distinct from the Okanagan (Ed.).

POWDERY MILDEW (Podosphaera clandestina). Some severe infections were seen on sour cherries at different locations in the Okanagan Valley, B. C. (G. E. W.). Heavy foliage infections were common in the Niagara Peninsula, Ont. (J. N.). Infection was rated 2-sl. 4-mod. 1-sev. in surveys of nurseries in Que. (J. R.). The variety 'Montmorency' had 50% of the terminal growth infected in an orchard at Kentville, N. S. (C. O. G.). This is the first report to the Survey of this disease on sour cherry in N. S. (Ed.).

BACTERIAL CANKER (Pseudomonas morsprunorum). There has been no spread of this disease in N. S. beyond the 2 originally infected orchards and none has been found on wild Prunus species. The cool, wet conditions conducive to its spread have not occurred in the last 2 seasons (C. O. G.).

WILT (Verticillium dahliae) was found in both sweet and sour cherries in the Okanagan Valley, B. C. It recurred in orchards where it had been found in other years (G. E. W.).

LAMBERT MOTTLE (virus) occurred in 3/9 sweet cherry orchards examined in the Okanagan Valley, B. C. at a rate of 1-3 trees per orchard. Six newly infected trees were found (A. J. H.).

LITTLE CHERRY (virus). Severe symptoms were seen in all commercial sweet cherry varieties in the Kootenay Valley, B. C. Several promising seedlings from the cherry breeding program produced good quality fruit despite inoculation with little cherry virus (J. M. W.).

YELLOWS (virus). Weather conditions in the spring of 1966 favored the symptom expression of sour cherry yellows virus in most parts of the Okanagan Valley, B. C. Random tests of 42 trees, 5 years of age or older, from 4 orchards showed that not

more than 8 were free of the virus (A. J. H.). The variety 'Montmorency' was 100% infected at Tupperville, N. S. (C. O. G.).

FRUIT DEFORMITY (cause unknown). Six 'Lambert' trees in an orchard at Winfield, B. C. were found to be mildly to severely affected by a fruit deformity syndrome. The trees showed no symptoms of twisted leaf. A sap-transmissible virus has been isolated from the most severely affected tree (A. J. H.).

SUNSCALD caused injury to limbs of cherry trees at Ange Gardien, Montmorency Co., Que. (D. L.).

PEACH

CROWN GALL (Agrobacterium tumefaciens). Infection ranging from 10-100% caused 40% damage to 2-year-old plants in a nursery at Harrow, Ont. The identity of the rootstocks is not known but the scion varieties included 'Jubilee', 'Elberta', 'Sunhaven', 'Early Elberta', 'Envoy', 'Kalhaven' and 'Babygold-7' (B. N. D.).

BROWN ROT (Monilinia fructicola). With no stone fruit crop in 1965, the carryover of brown rot in the Okanagan Valley, B. C. was very light. Infections appeared late in the season at Summerland and Naramata but no brown rot was reported south of Penticton. It was not a problem in commercial crops but some heavy infections developed on neglected garden trees (L. E. L.). Low rainfall during bloom in the Niagara Peninsula, Ont. resulted in a negligible amount of blossom blight which was in turn reflected in a low incidence of fruit rot (J. N.). Traces only were seen in King's Co., N. S. probably because of the dry weather in late summer (C. O. G.).

FRUIT ROT (Phytophthora cactorum) affected green fruits of 'Veteran' peach in an orchard at Summerland, B. C. (D. L. McI.).

FRUIT ROT (Rhizopus nigricans). Incidence was low in the Okanagan Valley, B. C. in fruit picked for the fresh fruit trade and negligible in canning fruit treated with Botran (L. E. L.). Its incidence was also very low in the Niagara Peninsula, Ont. (J. N.).

CORYNEUM BLIGHT (Stigmina carpophila) was widespread in the peach and apricot growing districts of B. C. (D. L. McI.). A few infected fruits were received from an orchard at Kingsville, Ont. Incidence was reported to be low (C. D. McK.).

LEAF CURL (Taphrina deformans) was of little importance in the Vancouver, B. C. area (H. N. W. T.). Infection was severe on 'Dixired', 'Early Elberta' and 'Loring' and particularly heavy on 'Sunhaven' in a 10-acre orchard of 6-7-year-old trees at Harrow, Ont. Preventative sprays had not been used (B. N. D.). Trace infections were common in commercial orchards and small plantings in Kings Co., N. S. Severe infections were seen in several unsprayed home plantings of 1 and 2 trees (C. O. G.).

CANKER (Valsa spp.) caused severe dieback of twigs in one orchard in Essex Co., Ont. and a moderate amount in several others. A hail storm in the fall of 1965 provided wounds for infection courts and tree growth was retarded by a cool spring (J. R. C.). In the Niagara Peninsula, Ont. approximately 10% of the peach fruit buds were lost due to the girdling of 1-year-old wood by Valsa spp. This is attributed to the unusual growing conditions of the previous fall that favored not only the late maturation of wood but the establishment of the fungi in such areas as leaf scars (J. N.).

WILT (Verticillium dahliae) was found in the Okanagan Valley, B. C. mainly on young trees in orchards with a previous history of the disease (G. E. W.).

BACTERIAL LEAF SPOT (Xanthomonas pruni). Surveys in s. w. Ont. showed that the incidence of this disease is relatively high and that it is established in many young orchards. Many varieties suffered defoliation with 'Kalhaven', 'Envoy' and 'Dixired' being the most severely affected. The disease appeared early, developed very slowly until mid-July and spread rapidly after that date (B. N. D., J. R. C.). Its distribution in the Niagara Peninsula, Ont. was scattered and its intensity was slightly more severe than usual. Fruit of standard 'Elberta' was lightly infected at harvest at Vineland and 'California Clingstone' had 5% of the fruit heavily infected at St. David's (J. N.). X. pruni was isolated from cankers on peach trees at Acaciaville, N. S. (C. O. G.).

PLUM

BLACK KNOT (Apiosporina morbosa) continues to occur on old plum trees on Lulu Island, nr. Vancouver, B. C. Neither pruning nor spraying is practiced yet the trees survive and produce enough fruit for home use (H. N. W. T.). Nine trees of the variety 'Mont Royal' were infected in a nursery at Repentigny, L'Assomption Co., Que. (J. R.). It was seen on wild and cultivated plum trees in most parts of N. B. At Queenstown, 17/33 trees were diseased and 5 had been killed (S. R. C.). Many neglected plum trees are severely infected in King's Co., N. S. (C. O. G.).

BROWN ROT (Monilinia fructicola). Affected specimens were received from Vancouver, B. C. (H. N. W. T.). Infection was 20% on the variety 'Mount Royal' at Charlottetown, P. E. I. (G. W. A.).

PLUM POCKETS (Taphrina communis). Specimens were received from Montmagny (D. L.) and infection was severe at St. Eleuthiere, Kamouraska Co., Que. (C. A.). Traces were seen at Moncton, N. B. (S. R. C.) and several trees of a Japanese variety at Middleton, N. S. were 100% infected (C. O. G.).

C. Ribes Fruits

CURRANT

BLISTER RUST (Cronartium ribicola) was observed on a total of 70 red and black currant bushes in 9 nurseries surveyed in Que. (J. R.).

CLUSTER-CUP RUST (Puccinia caricina) occurred on currants at Barrhead, Alta. (A. W. H., D. S.).

POWDERY MILDEW (Sphaerotheca mors-uvae) was seen on black currant at Summerland, B. C. (G. E. W.) and at Three Hills, Alta. (A. W. H., D. S.). Infection was heavy on black currant at Gloverstown in the Bonavista Bay district of Nfld. (O. A. O.).

GOOSEBERRY

ANTHRACNOSE (Drepanopeziza ribis). Heavy infections were observed on gooseberry at Forestville, Saguenay Co., Que. (G. B. O.).

CLUSTER-CUP RUST (Puccinia caricina) was observed on gooseberry at Barrhead, Alta. (A. W. H., D. S.).

POWDERY MILDEW (Sphaerotheca mors-uvae). Specimens were received from Pincher Creek, Alta. (P. E. B.) and Levis, Que. (D. L.).

D. Rubus Fruits

LOGANBERRY

LEAF AND CANE SPOT (Septoria rubi) affected 5-10% of the leaves of both thorned and thornless varieties in the Saanich Peninsula, B. C. (H. S. P.).

CANKER (cause undetermined). A canker condition of current season's canes has occurred in B. C. for the last several years. Later death of the canes is associated with winter injury. The symptoms resemble those of spur blight. Up to 75% of the canes were affected in one planting in 1966 and the amount of killing will depend on the severity of the 1966-67 winter (H. S. P.).

RASPBERRY

GRAY MOLD (Botrytis cinerea) caused some damage at Red Deer, Alta. (A. W. H., D. S.) and in a few plantings at St. Raphael, Bellechasse Co., Que. (J. R.).

SPUR BLIGHT (Didymella applanata) was particularly noticeable on 'Willamette' and other commercial varieties in the Lower Fraser Valley, B. C. in 1966 (H. S. P.). Infection was seen at Bentley, Berwyn and Spirit River, Alta. (A. W. H., D. S.). It caused slight damage at Arborfield (R. J. L.) and specimens were received from Assiniboia, Sask. where 100% of the plants were reported to be infected (R. M.). Heavy damage was seen in a planting at Chatham, N. B. (S. R. C.) and infections were generally light in Kings and Annapolis counties, N. S. Slight infections only were seen on the susceptible variety 'Newburgh' (C. O. G.).

ANTHRACNOSE (Elsinoë veneta). Infected plantings were seen at Lacombe, Round Hill and Grande Prairie, Alta. (A. W. H., D. S.). Damage ranged from a trace to 15% in 3/11 plantings examined in N. B. (S. R. C.). Slight infections were observed in all plantings examined in Kings and Annapolis counties, N. S. (C. O. G.).

ORANGE RUST (Gymnoconia peckiana). A heavily infected specimen of a wild raspberry plant was received from the province of Que. (V. R. W.).

CANE BLIGHT (Leptosphaeria coniothyrium) was seen in plantings at Berwyn, Derwent and Round Hill, Alta. (A. W. H., D. S.). Trace infections only were encountered in N. S., even in uncared-for garden plantings (C. O. G.).

LEAF SPOT (Mycosphaerella rubi). Infection was slight to moderate on an unknown variety at Billtown, N. S. (C. O. G.).

LATE YELLOW RUST (Phragmidium rubi-idaei). The aecial stage was seen in a home garden in Vancouver, B. C. The infected variety was probably an old one since the rust is rarely seen on the currently used commercial varieties (H. N. W. T.). Specimens were received from Lacolle, St. Jean Co., Que. (D. L.) and 10% of the fruit was infected in a planting at Narrows, N. B. (S. R. C.).

BACTERIAL BLIGHT (? Pseudomonas syringae) was seen in all parts of the upper section of the Lower Fraser Valley, B. C., where it occurred on several varieties. One grower with a 2-year history of the disease in his planting obtained control by using three sprays of Bordeaux mixture. The last portion of the crop in infected plantings was lost following an increase in disease activity after heavy June rains (H. S. P.).

POWDERY MILDEW (Sphaerotheca macularis) was slight on 'Latham', moderate on 'Carnival' and 'Rideau' and severe on 'Tweed' on plants grown for certification at Lavaltrie, Berthier Co., Que. 'Viking' was also severely infected at St. Amable, Verchères Co. (J. R.).

WILT (Verticillium albo-atrum). Thirty % of the plants were infected in a nursery nr. Montreal, Que. (J. R.).

LEAF CURL (virus). Infection was slight in a planting at Wakaw, Sask. (R. J. L.).

MOSAIC (virus). Infection ranged from a trace to 8% in 8/11 plantings examined in N. B. (S. R. C.) and three plants were infected in a planting of foundation stock at South Berwick, N. S. (C. O. G.).

IRON DEFICIENCY was reported in plantings at Wetaskiwin, Calgary, Sangudo, Vauxhall, High Prairie, Leduc, Taber, Calgary and Edmonton, Alta. (A. W. H., D. S.). A specimen was also received from Cardston, Alta. (P. E. B.).

MAGNESIUM DEFICIENCY developed in a commercial planting of 'Newburgh' at St. Raphael, Bellechasse Co., Que. following a heavy application of potassium (J. R.).

WINTER INJURY was seen in most parts of N. B. but the damage was not as severe as in 1965 (S. R. C.).

E. Other Fruits

CRANBERRY

RED LEAF (Exobasidium vaccinii). A heavy infection was observed in a 3-year-old planting at Pitt Meadows, B. C. A heavy fertilizer program may have predisposed the plants to infection (H. N. W. T., H. S. P.).

BLACK SPOT (Mycosphaerella nigro-maculans Shear) occurred on 5% of the fruits in a 3-year-old planting at Pitt Meadows, B. C. Cuttings had been imported from the nearby State of Washington where the disease occurs but is not considered important (H. S. P.). This is the first report of this disease in Canada and its occurrence points out again the dangers of importing live plant material without ensuring that it is absolutely free of disease (Ed.).

BLUEBERRY

CROWN AND CANE GALL (Agrobacterium tumefaciens) continues to occur in highbush blueberry plantings in the Lower Fraser Valley, B. C. There seems to be a correlation between the age of the planting and the incidence of the disease (H. S. P.).

RED LEAF (Exobasidium vaccinii). Damage ranged from a trace to 2% in all 7 fields of lowbush blueberries examined at Pennfield, N. B. Its incidence seems to be increasing in older fields (S. R. C.). Incidence was less than 1% at Pidgeon Hill and more than 10% at Nappan, N. S. (C. L. L.). Red leaf was more prevalent than usual in fields at Avondale, Nfld. (O. A. O.).

CANKER (Godronia cassandrae f. vaccinii) was general on susceptible highbush varieties throughout the Lower Fraser Valley, B. C. It was less common in older plantings (H. S. P.).

MUMMY BERRY (Monilinia vaccinii-corymbosi) was prevalent on highbush blueberries throughout the Lower Fraser Valley, B. C. and occurred in some districts where it had not previously been reported. Some growers reported a heavy loss of fruit but those who applied calcium cyanamid at the recommended time obtained good control. The apothecial state was observed for the first time in B. C. (H. S. P.). Traces were seen in a highbush planting at Sheffield Place, King's Co., N. S. (C. L. L.).

CANKER (Phomopsis vaccinii) caused 50% damage in a new planting of highbush blueberries at Kingston, N. S. The plants had apparently been weakened by extremely dry conditions after they were set out in 1965 (C. L. L.).

LEAF SPOT (Phyllosticta vaccinii Demaree and Wilcox). The variety 'Burlington' in a planting at Pitt Meadows, B. C. was 80-90% infected. As the season progressed there was partial defoliation. The grower reported that he had seen this zonate leaf spot on the same variety in the last two seasons. A somewhat similar leaf spot, accompanied by defoliation, had been noted in propagation beds in the 1950's but the pathogen was never identified (H. N. W. T., H. S. P.). This is the first report of the occurrence of this disease in Canada (Ed.).

WITCHES' BROOM (Pucciniastrum goeppertianum) was observed in trace amounts in most lowbush fields in N. B. but at 3 sites nr. Sackville, representing about 225 acres, infection was heavy (S. R. C.). Infection was generally light on native blueberries at Avondale, Nfld. (O. A. O.).

LEAF SPOT (Septoria sp. indet.) caused traces of damage at East Mines, Colchester Co., N. S. (C. L. L.).

FASCIATION (genetic) was seen in part of a large highbush planting at Pitt Meadows, B. C. Symptoms were not severe but affected canes protruded into the lanes between rows hindering normal cultural practices. It is thought that the grower had accidently perpetuated the problem by propagating affected cuttings (H. N. W. T.).

CHEMICAL INJURY. A slight amount of arsenical injury, consisting mostly of spotting on leaf margins, occurred following the application of an arsenical dust for maggot control at East Mines, Colchester Co., N. S. (C. L. L.).

GRAPE

CROWN GALL (Agrobacterium tumefaciens) affected 25% of the plants of 'Golden Muscat' in a vineyard at Oliver, B. C. Most of the plants of many varieties that were severely affected in 1965 showed no sign of active gall growth (A. J. H.).

DOWNY MILDEW (Plasmopara viticola). Dry weather in the Niagara Peninsula, Ont. kept the incidence of this disease at very low levels (J. N.).

POWDERY MILDEW (Uncinula necator) was observed in 17/26 vineyards surveyed in the Okanagan Valley, B. C. 'Himrod' and some, but not all, of the Vitis vinifera varieties were affected. The disease was less severe in the southern portions of the Valley where high summer temperatures prevail (A. J. H.). It developed rapidly in the Niagara Peninsula, Ont. in August but was serious only in a few inadequately sprayed vineyards (J. N.).

STRAWBERRY

GRAY MOLD (Botrytis cinerea) caused minor losses in plantings at Didsbury and Lethbridge, Alta. (P. E. B., F. R. H.). Some severely diseased plants were received from the Winnipeg, Man. area (W. A. F. H.). Incidence was low in the Niagara Peninsula, Ont., presumably because of dry spring weather (J. N.). Gray mold was seen in 21/42 fields examined in N. B. but losses were serious in only 2 plantings (S. R. C.). Infections were light in most areas of N. S. Dry weather and improved cultural practices are assumed to be responsible for reducing the amount of fruit rot (C. O. G.).

LEAF SCORCH (Diplocarpon earliana). Trace infections were seen in 11/42 plantings examined in N. B. (S. R. C.).

LEAF BLOTCH (Gnomonia fructicola). Severe infections developed in both new and old plantings of the varieties 'Sparkle' and 'Gorella' in late August and September at Billtown and Kentville, N. S. Infection averaged 75% (C. O. G.).

LEAF SPOT (Mycosphaerella fragariae) caused slight damage at Lake Lenore and Lashburn, Sask. (R. J. L.). Infection ranged from a trace to 70% in 37/42 plantings surveyed in N. B. Seven of the fields suffered defoliation and crop reduction (S. R. C.). It was not a problem in King's Co., N. S. early in the season but some moderate infections were seen on first-year plantings by mid-September (C. O. G.).

RED STELE (Phytophthora fragariae) continues to be a problem in B. C. wherever strawberries are grown in low-lying, poorly drained fields (H. S. P.). Trace infections only were seen in commercial plantings in N. S. In variety trials at the Research Station, Kentville and at Acaciaville the varieties 'Acadia', 'Cavalier', 'Cambridge', 'Favorite', 'Senga Sengana' and 'Gorella' were infected. No infection was found on 'Temple', 'Sparkle', 'Redcoat' and seedling 'K59-8' (C. O. G.).

POWDERY MILDEW (Sphaerotheca macularis) was general on susceptible varieties in B. C. Some minor fruit infections were observed (H. S. P.). The variety 'Cavalier' was moderately affected at Kentville and severely affected in the Melvern Square area, N. S. (C. L. L.).

WILT (Verticillium dahliae) affected 10-20% of the plants in a commercial planting of 'Redcoat' and 'Cavalier' at St. Charles, Bellechasse Co., Que. (J. R.). Infection in mid-July in a planting at Waterville, N. S. was rated as follows: 'Acadia' - 3%, 'Guardsman' - 10%, 'Redcoat' - 18%. The disease progressed until 60% of the planting was affected and the plants were plowed under (C. L. L.). A field of 'Redcoat' that followed a crop of potatoes at Middleton, N. S. suffered 25% loss of plants (C. O. G.).

ROOT ROT (various organisms) caused slight damage in a garden planting at Medicine Hat, Alta. (P. E. B.). Slight injury were seen in 17/42 fields surveyed in N. B. The injury was accentuated by dry conditions at fruiting (S. R. C.).

GREEN PETAL (virus) was recorded in many fields in the Lower St. Lawrence region of Que. with the disease being especially serious in Kamouraska and Bellechasse counties. Striking symptoms were evident during the first two weeks of July. Infections of 50 and 60% were seen at St. Pascal and Rivière Ouelle in third-crop fields. At La Pocatière infections ranged from 10-50% in 8 second and third crop fields planted with certified stock. In 10 fields visited at St. Charles and La Durantaye, Bellechasse Co., infection ranged from 10-50 percent. Three first-crop fields originating from certified stock were 10-20% infected. On the other hand no green petal was found in 10 fields surveyed at Beaumont, some 10 miles farther west. Traces were seen at St. Arsène, Témiscouata Co., a 10% infection was recorded in a small planting at Ste. Louise, L'Islet Co. and a garden planting at St. Anselme, Dorchester Co. was 100% infected. In all cases clover plants growing in or around the affected fields showed symptoms of clover phyllody. Striking phyllody symptoms were also observed on Potentilla recta L. growing as a weed in an infected strawberry field at La Pocatière (H. G.). An infected specimen was received from Ste. Angele de Laval, Nicolet Col, Que. (D. L.). This, according to our records at Ottawa, represents the most westerly extension of green petal disease (Ed.). Detailed surveys of 42 new commercial plantings in the Maritime Provinces, set in 1966 with plants from growers producing certified stock, showed only 2 plantings to be free of green petal. Thirty-nine of the plantings examined were in Kings, Yarmouth, Digby, Cumberland, Annapolis, Pictou and Colchester counties, N. S., two in N. B. and one in

P. E. I. Infections ranged from 0.1 to 11.7% with a mean of 1.5%. Approximately 500-2000 plants per field were individually examined. Ten new plantings set with growers own stock had infections ranging from 0.2 to 14.6% with a mean of 4.2% infected plants. While it is thus obvious that plants from certified growers carry significantly less green petal, they are by no means free of the disease. Only 1/18 picking fields examined was free of the disease and infection in the others ranged from 0.5 to 30%. The heaviest infections seen were at Durham, Pictou Co., N. S. and at Smithport, P. E. I. It was noted that infected plants seldom survived beyond late September. In addition to Macrosteles fascifrons Stål, Aphrodes bicinctus (Schrank) was found in association with strawberry plants in sufficient numbers to be considered an important vector in the Maritime Provinces (H. T. S., A. A. McN.). Incidence in P. E. I. was particularly high in 1966. Varieties in replicated trials at Charlottetown showed 5-100% infection. (C. B. W., L. S. T.). See Willis & Thompson. Can. Plant Dis. Surv. 46:4. 137. 1966 (Ed.).

CHEMICAL INJURY. Some injury was seen in simazine-treated fields in N. B. where overlapping of applications occurred. At Blissville, the herbicide eptan caused severe injury to mother plants and their ability to runner (S. R. C.).

DISEASES OF TREES AND SHRUBS

ACER - Maple

CANKER (Cytospora ambiens) caused damage on 10% of the trees of A. saccharinum in a nursery at Peterborough, Ont. (A. E. S.).

ANTHRACNOSE (Gloeosporium apocryptum). Infection was severe on A. saccharum in a stand at Ottawa West and moderate on the same host at Ridgeway, Ont. (A. E. S.). It caused severe browning of individual trees of A. saccharum and A. rubrum throughout the Annapolis Valley, in Inverness Co., and in most villages from Glenholme to Parrsboro, N. S. Less severe infections were seen in s. e. N. B. (G. A. V. S.).

LEAF SPOT (Phleospora aceris). Specimens of affected A. saccharum were received from Ste. Germaine, Dorchester Co., Que. (D. L.). This fungus, reported as Ascochyta ? aceris Lib. should be assigned to Phleospora as pointed out by Savile. Can. Plant Dis. Surv. 25:101. 1946 (Ed.).

LEAF SPOT (Phyllosticta minima). Many trees of A. saccharum had moderate infections at Ridgeway, Ont. (A. E. S.).

CHEMICAL INJURY. Drift from herbicide applications caused distortion of leaves and marginal leaf scorching of A. negundo at Kinistino and Saskatoon, Sask. (R. M.).

DETERIORATION of roadside maples was recorded throughout s. Ont. but was less conspicuous than in previous years (B. W. D.). In Que., many of the roadside maples that were severely affected in 1965 died in 1966. Leaf scorch and early leaf fall on the remaining trees were, however, much less severe than in preceeding years (G. B. O.).

AESCULUS - Horsechestnut

LEAF BLOTCH (Guignardia aesculi) was commonly seen but generally light in intensity throughout N. S. (G. A. V. S.).

AMELANCHIER

RUST (Gymnosporangium clavariiforme). Slight to moderate infections were observed at La Pocatière and St. Pacome, Que. (D. W. C.) and at St. John's West, Nfld. (O. A. O.).

CARAGANA - Pea tree

LEAF SPOT (Septoria caraganae) was common on C. arborescens in Man. and Sask., especially in the grasslands areas where the host is widely used in shelterbelts. It completely defoliated a number of hedges in s. w. Sask. seriously reducing their effectiveness as windbreaks (J. G. L.).

FROST INJURY was responsible for twig and bud mortality of Caragana shrubs in a nursery nr. Chicoutimi, Que. (G. B. O.).

CATALPA

WILT (Verticillium dahliae). The pathogen was isolated from an affected branch of C. speciosa at Penticton, B. C. (G. E. W.).

CHAMAECYPARIS - Cypress

ROOT ROT (Phytophthora cinnamomi). Foliar symptoms were evident on 12/183 shrubs of C. lawsoniana var. elwoodii in a planting at Victoria, B. C. The affected plants will eventually die (R. G. A.).

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* The diseases reported in this section are mainly those of shade trees and ornamental shrubs, although occasional reference is made to diseases of native forest trees. For a more comprehensive report of tree diseases in Canada the reader is referred to the Annual Reports of the Forest Insect and Disease Survey published by the Canada Department of Forestry, Ottawa, Ontario.

COTONEASTER

FASIATION (genetic). Symptoms reappeared on the terminal growth of shrubs tentatively identified as C. horizontalis on the University campus, Vancouver, B. C. The condition was present before 1964 but affected growth was killed by severe winter temperatures and it did not occur in 1965 (H. N. W. T.).

CRATAEGUS - Hawthorn

FIRE BLIGHT (Erwinia amylovora) was observed in 3 nurseries in Que. (J. R.). Infected shrubs were found, adjacent to infected pear trees, at 4 locations in the Annapolis Valley, N. S. (C. O. G., C. L. L., R. E. C. L.).

LEAF SCALD (Fabraea maculata). Infection was severe on older trees in the greater Vancouver area, B. C. Summer defoliation was heavy (H. N. W. T.).

RUST (Gymnosporangium clavariiforme) was heavy on C. succulenta and light on other species at the Horticultural Station, Brooks, Alta. (A. W. H., D. S.). Trace infections were common at St. Pacome, Que. (D. W. C.).

DAPHNE

ANTHRACNOSE (Gloeosporium mezereum Cke.). Slight infections were seen on 225 shrubs of D. mezereum in a nursery at Brockville, Ont. (A. E. S.). This disease has not previously been reported from e. Canada but has been observed in B. C. (Ed.).

FRAXINUS - Ash

ANTHRACNOSE (Gloeosporium aridum) was severe on F. americana at some localities in Guysborough, Pictou and Hants counties, N. S. Elsewhere in mainland N. S. and s. w. N. B. infection was common but light. (G. A. V. S.). A heavy infection was seen at Kentville, N. S. and a lighter one at Acaciaville, Digby Co. (C. O. G.).

RUST (Puccinia sparganioides). Infections were much more severe in N. S. than in 1965. It caused severe browning of foliage at South Maitland, Hants Co. and New Canaan, Kings Co. (G. A. V. S.). It was severe at Wolfville, N. S. causing heavy defoliation by late August (C. O. G.).

HYDRANGEA

POWDERY MILDEW (Erysiphe polygoni). Slight infections occurred on 700/1000 rooted cuttings of H. macrophylla at Champigny, Que. (A. E. S.).

JUGLANS - Walnut

WHITE MOLD (Microstroma juglandis). Infection was moderate on a single specimen tree of J. cinerea nr. Kingston, Ont. (D. W. C.).

JUNIPERUS - Juniper

RUST (Gymnosporangium spp.). G. clavariiforme was severe on J. hibernica at Burnaby, B. C. and light infections of both G. clavipes and G. juniperi-virginianae were recorded on J. virginiana in a nursery at Islington, Ont. (A. E. S.).

TWIG BLIGHT (Phomopsis juniperovora) caused a moderate amount of damage to mature plants and cuttings of J. sabina var. tamariscifolia in the Lower Fraser Valley, B. C. In a nursery at Victoria 75% of 1826 rooted cuttings of J. sabina and 40/1880 cuttings of J. sabina cultivar 'Blue Danube' were infected. The cuttings had been taken from diseased parent stock (R. G. A.). It also seriously affected 75/150 plants of J. scopulorum cultivar 'Dewdrop' in a nursery at Hornby, Ont. (A. E. S.).

WINTER INJURY. Severe browning and, in many cases, killing of ornamental junipers and cedars occurred in the Québec City, Que. area (G. B. O.).

LARIX - Larch

CHEMICAL INJURY. Drift of 2, 4-D caused needle distortion of L. laricina in a home garden at Ottawa, Ont. (A. E. S.).

LIGUSTRUM - Privet

CHEMICAL INJURY. Fumes of a growth regulating chemical caused distortion of terminal growth, leaf crinkle and chlorosis and injury at bases of stems in a 1-acre planting of privet in a nursery at Pickering, Ont. (A. E. S.).

LONICERA - Honeysuckle

LEAF BLIGHT (Herpobasidium deformans). Slight to moderate infections were seen in 16 of the Quebec nurseries inspected in 1966 (J. R.).

MALUS - Ornamental Crab

POWDERY MILDEW (Podosphaera leucotricha) was slight to moderate in 6 Quebec nurseries in 1966 (J. R.).

SCAB (Venturia inaequalis). Infection was moderate to severe in 14 nurseries inspected in Que. in 1966 (J. R.).

PICEA - Spruce

WITCHES'-BROOM (Arceuthobium pussilum). Some trees had been killed in a stand of P. glauca at La Pocatière, Que. and there were many brooms in those still living (D. W. C.).

NEEDLE RUST (Chrysomyxa ledicola). A moderately infected specimen was received from Tisdale, Sask. (R. D. T.).

CHEMICAL INJURY. Drift from herbicidal chemicals was seen at Stony Plain, Alta. (A. W. H., D. S.) and caused severe browning of white and blue spruce near cultivated fields at Grand Falls, N. B. (G. A. V. S.).

PINUS - Pine

GALL RUST (Cronartium coleosporioides) was seen on P. spp. at Millet, Alta. (A. W. H., D. S.). Infection was moderate to severe on a planting of Scot's pine nr. La Pocatière, Que. Some trees had been killed. The disease has been known in this planting for 20 years and galls of all ages were present. It was also observed on P. banksiana in the same general area (H. G., L. D.).

GALL RUST (Cronartium quercuum) was found on 4/151 Scot's pine Christmas trees destined for export at Pontypool, Ont. (A. E. S.).

NEEDLE BLIGHT (Scirrhia pini Funk & A. K. Parker) continued to cause mortality in exotic pine plantations on Vancouver Island, B. C. Monterey pine in these plantations has essentially been eliminated. Bishops and cluster pines have suffered smaller losses (A. C. M.).

POPULUS - Poplar

INK SPOT (Ciborinia whetzelii). Affected specimens were received from Loretteville, Que. (D. L.).

CANKER (Cytospora chrysosperma) was reported causing damage at Vauxhall, Claresholm, Red Deer, La Glace, Milo and Camrose, Alta. (A. W. H., D. S.).

CANKER (Dothichiza populea). Infected Lombardy, Carolina and silver poplars ranging in size from 1-8 inches in diameter were observed at scattered locations throughout s. Ont. and on Manitoulin Island (B. W. D.). A few trees of P. balsamifera were infected in a 1-acre nursery planting nr. Toronto, Ont. (A. E. S.). Cankers were common on Lombardy poplars in Que. (G. B. O.).

ANTHRACNOSE (Marssonina populi). Infected leaves of P. deltoides were received from La Pocatière, Que. (D. W. C.).

RUST (Melampsora medusae) was observed at Vulcan, Claresholm, Edmonton, Carsland, Wrentham and High River, Alta. (A. W. H., D. S.). It was widespread in s.w. Sask. in 1966. It was particularly noticeable at Leader, D'Arcy and Maple Creek (R. J. L.).

RUST (Melampsora occidentalis). Trace to slight infections were seen in shelterbelt plantings at Nobleford and Barons, Alta. (F. R. H.).

CANKER (Septoria musiva) was reported from Vauxhall, Eaglesham, Calmar, Vulcan, Two Hills, Peace River, Wetaskiwin and Spirit River, Alta. (A. W. H., D. S.).

LEAF BLISTER (Taphrina populina) was slight on about 10% of the trees of P. nigra var. italica in a nursery nr. Oshawa, Ont. (A. E. S.) and a moderate infection was seen at Port Rexton in the Trinity Bay district of Nfld. (O. A. O.).

SHOOT BLIGHT (Venturia populina) was observed on P. sp. at Ponoka, Calgary and Willingdon, Alta. (A. W. H., D. S.).

PRUNUS - Native and Flowering Cherries

BLACK KNOT (Apiosporina morbosa). P. padus was infected at Calgary, Alta. (A. W. H., D. S.). It was recorded in all regions of Ont. on chokecherry, pin cherry, black cherry, red cherry and domestic plum (B. W. D.). Current infections on pin cherry were common in the Maritime Provinces (G. A. V. S.) and in Nfld. (G. L. W.).

SHOT HOLE (Higginsia hiemalis) was common on chokecherry and pin cherry in Man. and Sask. (J. G. L.). Slight infections were observed on 100/500 trees in a nursery at Carlisle, Ont. (A. E. S.).

IRON DEFICIENCY CHLOROSIS was seen on P. padus at Calgary and Crossfield, Alta. (A. W. H., D. S.).

QUERCUS - Oak

STEM CANKER (Diaporthe leiphaemia) was found on a young tree of Q. robur in a nursery at Peterborough, Ont. The saplings had been imported from Europe in the spring of 1965 (A. E. S.).

ANTHRACNOSE (Gloesporium quercinum). An 80% infection occurred on white oaks at London, Ont. Trees along about a mile of street were affected (A. E. S.).

LEAF BLISTER (Taphrina caerulescens). A moderate infection was seen on Q. borealis at Orsainville, Que. (D. W. C.).

RHAMNUS - Buckthorn

CROWN RUST (Puccinia coronata). Buckthorn bushes along fence rows nr. Guelph, Ont. carried infections. Oats were growing in the area (A. E. S.).

RHUS - Sumac

LEAF SPOT (Cladosporium ? aromaticum Ell. & Ev.). A specimen, affected by a Cladosporium believed to be this species, was received from St. Bruno, Que. (D. L.).

RIBES - Flowering Currant

ANTHRACNOSE (Drepanopeziza ribis). Heavy infections occurred on a gooseberry hedge at Forestville, Saguenay Co., Que. (G. B. O.).

ANTHRACNOSE (Drepanopeziza variabilis) was more severe in nurseries in Que. than usual. Ratings in 21 nurseries inspected were 3-sl. 6-mod. 12-sev. (J. R.).

ROSA - Rose

BLACK SPOT (Diplocarpon rosae). Slight infections were seen at Saskatoon, Sask. (R. J. L.), it was moderate on hybrid tea roses at La Pocatière, Que. (H. G., L. D.) and a severe infection was seen at Moncton, N. B. (S. R. C.).

POWDERY MILDEW (Sphaerotheca pannosa). Infection was severe on most cultivars throughout the season at Summerland, B. C. (M. F. W.).

DAGGER NEMATODES (Xiphinema diversicaudatum) caused slight to moderate reduction in growth of roses in two greenhouse benches at St. Bruno, Que. (A. E. S.).

IRON DEFICIENCY CHLOROSIS was observed at Vauxhall, Alta. (A. W. H., D. S.).

SALIX - Willow

STEM CANKER (Cryptodiaporthe salicella) was found affecting 5/20 trees of S. babylonica in a nursery at Port Hope, Ont. (A. E. S.).

TWIG CANKER (Cytospora chrysosperma) was reported, causing varying degrees of injury, from Edmonton, Taber, Cadogan, Brooks, Stettler and St. Paul, Alta. (A. W. H., D. S.). Nursery inspections showed slight to moderate damage to S. babylonica at Barrie, Ont. and slight damage to S. alba var. tristis at Ottawa and S. tortuosa at Montreal (A. E. S.).

WILLOW BLIGHT (Pollacia saliciperda, Physalospora miyabeana). Heavy infections occurred on young weeping willow trees in a nursery at Champigny, Québec Co., Que. (G. B. O.). Infections were common in N. B. and N. S. Damage was moderate in Northumberland, York, Kings and St. John's counties in N. B. as well as in the Annapolis Valley, N. S. More severe damage was seen at a few locations in Inverness, Pictou, Cumberland, Halifax and Hants counties, N. S. (G. A. V. S.).

IRON DEFICIENCY CHLOROSIS was observed at Vauxhall and Gadsby, Alta. (A. W. H., D. S.).

SAMBUCUS - Elder

POWDERY MILDEW (Microsphaera penicillata). A heavy infection affected 75% of the new growth of Sambucus sp. at Annapolis Royal, N. S. (C. O. G.).

CROWN ROT (Phytophthora citricola) was observed at Two Hills, Edmonton, Leduc, Bon Accord, Three Hills and Fairview, Alta. The organism was isolated from affected shrubs at Three Hills and Fairview (A. W. H., D. S.). See Henry and Stelfox, Can. Plant Dis. Surv. 46: 146. 1966 for a discussion of this disease (Ed.).

SORBUS - Mountain Ash

CANKER (Cytospora spp.) was seen at Two Hills, Lunnford and Edmonton, Alta. (A. W. H., D. S.). A specimen received at Winnipeg, Man. bore abundant pycnidia of C. rubescens (W. A. F. H.). C. leucostoma was identified from cankered S. americana in a nursery at Highland Creek, Ont. (A. E. S.).

FIRE BLIGHT (Erwinia amylovora) was reported from Edmonton and Wetaskiwin in n. Alta. and specimens were received from Lethbridge and Medicine Hat in s. Alta. (P. E. B.). It was found in 23 nurseries in Que. in 1966 with up to 60 trees per nursery affected (J. R.).

RUST (Gymnosporangium cornutum) was commonly seen on mountain ash in e. Nfld. (G. L. W.).

IRON DEFICIENCY CHLOROSIS was observed at Red Deer, Camrose, Edmonton and Cremona, Alta. (A. W. H., D. S.).

SYMPHORICARPOS - Snowberry

POWDERY MILDEW (Microsphaera diffusa). Infection was heavy on a planting of snowberry on the University Campus, Vancouver, B. C. Premature defoliation occurred (H. N. W. T.).

SYRINGA - Lilac

BACTERIAL BLIGHT (Pseudomonas syringae) caused moderate to severe damage to lilacs in St. John's, Nfld. (O. A. O.).

IRON DEFICIENCY CHLOROSIS was observed on lilacs and other ornamentals at Calgary, Alta. (A. W. H., D. S.).

THUJA - Cedar

CHEMICAL INJURY. A mixture of 2, 4-D and 2, 4, 5-T used near a planting of T. compacta and T. occidentalis at Beauport, Que. caused distortion of growth and longitudinal bark splitting (A. E. S.).

FROST caused considerable damage to native and ornamental cedars in Québec City and in the Montreal, Que. area (G. B. O.).

WINTER DRYING. Hedges of cedar, pine and yew were affected at many localities in Ont., especially in the Sault Ste. Marie district (B. W. D.). It was observed in the Quebec City area and was espec-

ially severe at Thetford Mines and Black Lake in Megantic Co., Que. (D. L.).

TILIA - Basswood

LEAF SPOT (Cercospora microsora). Moderate infections were seen on T. americana at Orsainville, Que. (D. W. C.).

ULMUS - Elm

DUTCH ELM DISEASE (Ceratocystis ulmi). For the first time in several years no significant range extensions occurred in Ont. Infections ranged from 3% in the Kemptville area to 60% in the Lake Huron district. At Port Stanley 22/29 trees of English elm, U. procera were infected (B. W. D.). In N. B. the disease was found, for the first time, at Moncton and Sussex, bringing its eastward extension to within 10 miles of the N. S. border. Within its known range, especially in the St. John River watershed, suspect and dead trees are becoming increasingly common (G. A. V. S.).

TAR SPOT (Gnomonia ulmea). All 50 trees of U. parvifolia in a nursery at Campbell's Bay, Ont. bore slight infections (A. E. S.).

CORAL CANKER (Nectria cinnabarina) was reported from Que. on U. pumila at St. Jean (R. C.), Mont Joli (D. L.), Québec City, L'Assomption and St. Pierre (G. B. O.).

CHEMICAL INJURY. Herbicide drift caused a severe marginal leaf scorch on elms at Kinistino, Sask. (R. M.).

DISEASES OF HERBACEOUS ORNAMENTALS

ALTHAEA - Hollyhock

RUST (Puccinia malvacearum) occurred throughout the Okanagan Valley, B. C. but infection was much lighter than usual probably because of the warm, dry summer (G. E. W.). It was seen in several plantings at Sackville, N. B. (S. R. C.).

AQUILEGIA - Columbine

POWDERY MILDEW (Erysiphe polygoni) was general in the Okanagan Valley, B. C. Infection did not appear until late in the season (G. E. W.).

IRON DEFICIENCY CHLOROSIS was observed on columbine as well as on Iceland poppy, Papaver nudicaule at Balzac, Alta. (A. W. H., D. S.).

BEGONIA

POWDERY MILDEW (Erysiphe cichoracearum) caused moderate damage to tuberous begonias at Saskatoon, Sask. It has become a recurring problem in the area (R. J. L.).

CALLISTEPHUS - China Aster

ASTER YELLOWS (aster yellows virus) occurred on C. chinensis at Alexandria, Pemberton and Vancouver, B. C. (H. N. W. T.).

WILT (Fusarium oxysporium f. callistephi) was seen at Calmar, Alta. (A. W. H., D. S.) and nr. North Battleford, Sask. (R. M.).

CHRYSANTHEMUM

GRAY MOLD (Botrytis cinerea) caused traces of damage in a half million chrysanthemum cuttings for export at Leamington, Ont. (A. E. S.).

RUST (Puccinia chrysanthemi). Trace infections were seen in one bed in a greenhouse at Leamington, Ont. (A. E. S.).

LEAF ROT (Stemphylium floridanum Hannon & Weber) caused a rotting of the lower leaves of newly rooted plants in a greenhouse at Rosemere, Que. The cuttings originated in Florida. The isolate was determined by R. A. Shoemaker and confirmed by Weber (A. E. S.). See Phytopathology 53: 749. 1963 (Ed.).

COSMOS

ASTER YELLOWS (aster yellows virus) was observed on C. bipinnatus at Alexandria, Pemberton and Vancouver, B. C. (H. N. W. T.).

DAHLIA

GRAY MOLD (Botrytis cinerea). Affected buds were received from Levis, Que. (D. L.).

MOSAIC (virus). Eleven / 30 plants in a garden at Gagetown, N. B. were affected and were removed (S. R. C.).

DELPHINIUM - Larkspur

POWDERY MILDEW (Erysiphe polygoni). Infections were seen at Spirit River and Warburg, Alta. (A. W. H., D. S.).

ASTER YELLOWS (aster yellows virus). Affected specimens were observed at Turtleford, Sask. (R. M.).

DIEFFENBACHIA

BACTERIAL BLIGHT (Xanthomonas dieffenba-

chiae) infected all 240 plants in a shipment originating in Florida. All plants had to be destroyed after 2 months in a greenhouse at Burnaby, B. C. (A. E. S.).

DRACAENA

LEAF SPOT (Phyllosticta dracaenae Griff. & Maubl.). Heavy infections developed on part of a shipment of red dracaenas from Florida at Ottawa, Ont. The severity of the disease was aggravated by a heavy infestation of spider mites (A. E. S.). This is the first record of this disease in Canada (Ed.).

FICUS - Rubber Plant

ANTHRACNOSE (Glomerella cingulata). Affected specimens were received from Hanna, Alta. (A. W. H., D. S.).

GLADIOLUS

CORM ROT (Fusarium oxysporum f. gladioli) affected 50% of the corms of the cultivar 'Goldette' grown for export at Vankleek Hill, Ont. (A. E. S.).

LEAF SPOT (Phyllosticta ? gladioli Ell. & Ev.). A Phyllosticta, tentatively identified as P. gladioli, was found on specimens received from Sherbrooke, Que. (D. L.).

MOSAIC (virus) was observed at Flatbush, Alta. (A. W. H., D. S.).

WHITE BREAK (virus). Affected plants were received from Sherbrooke, Que. for diagnosis (D. L.).

IRIS

BLUE MOLD ROT (Penicillium sp.) caused moderate damage to half of an imported shipment of 'Wedgewood' corms at Langley, B. C. (A. E. S.).

LATHYRUS - Sweet Pea

ROOT ROT (Fusarium sp.) caused traces of damage in a planting at North Battleford, Sask. (R. J. L.).

LILIUM - Lily

BOTRYTIS BLIGHT (Botrytis elliptica) was observed at Bashaw, Alta. (A. W. H., D. S.). The disease appeared in July and persisted until harvest in the hardy lily collection at the University of Saskatchewan, Saskatoon. The cultivars were rated for amount of disease on 21 July and 3 Aug. On the basis of these inspections cultivars were classed as follows: VERY RESISTANT; 'Rose Dawn', 'Burnished Rose', 'Cardinal', 'Mahogany Mauve', 'Snowdrop' and 'Black Butterfly'. RESISTANT; 'Jasper', 'White Gold', 'White Princess', 'Bright Orange', 'Rose Queen', 'Pink Charm', 'Rosalind', 'Edith Cecelia', 'Bronze Queen', 'Lillian Cummings', 'Enchantment', 'Edna Kean', 'Earlibird', 'Wild Fire', 'Pink Champagne', 'Honey Queen', 'Rosemarie', 'Brown Ivory', 'Rosy', Lilium maxwellii and L. tenuifolium. MODERATELY SUSCEPTIBLE; 'Orchid Queen', 'Lemon Queen', 'Primrose Lady', 'Fuchsia Queen', 'Rose Cup', 'Crimson Queen', 'Red Torch', 'Dunkirk', 'Red Bird', 'Red Knight', 'Delicious', Lilium wilmottiae and L. amabile. SUSCEPTIBLE; 'Crimson Beauty', 'Indian Red', 'Rusty', 'Rosabelle', 'Sunshine' and 'Warrior'. VERY SUSCEPTIBLE; 'Apricot Glow' and 'Fuchsia Lady'.

LYCHNIS - Campion

LEAF SPOT (Phyllosticta lychnidis). Infection was light on 16/40 plants in a nursery at Ottawa, Ont. (A. E. S.). It is generally believed that this is a spore stage of Septoria lychnidis Desm. (Ed.).

MYOSOTIS - Forget-me-not

POWDERY MILDEW (Oidium sp.) was observed in May at Summerland, B. C. on plants growing in a well shaded area. By July all visible foliage was affected. No cleistothecia developed (G. E. W.). See Can. Plant Dis. Surv. 39: 89. 1960 for a discussion of this fungus and its possible disposition (Ed.).

PAEONIA - Peony

BOTRYTIS BLIGHT (Botrytis paeoniae) was observed at Edmonton, Gordondale and Willingdon, Alta. (A. W. H., D. S.) and specimens were received from Murray Bay, Que. (D. L.).

ROOT-KNOT NEMATODE (Meloidogyne hapla) infested all the roots of a lot destined for export at Belle River, Ont. (A. E. S.).

PAPAVER - Poppy

ASTER YELLOWS (aster yellows virus) was seen on P. rhoeas at Alexandra, B. C. (N. S. W., H. N. W. T.).

PASSIFLORA - Passionflower

LEAF SPOT (Alternaria ? passiflorae Simmonds). A species of Alternaria was isolated from infected leaves of Passiflora sp. grown as a house plant in North Vancouver, B. C. The organism caused severe defoliation (H. S. P.). According to Neergard, Simmonds described the Alternaria on Passiflora as a species distinct from A. solani which it resembles (Ed.).

PELARGONIUM - Geranium

BACTERIAL LEAF SPOT (Xanthomonas pelargonii) caused a severe spotting of leaves and stems in a garden planting at Kelowna, B. C. (D. L. McI.).

RINGSPOT (? virus). A few plants were affected in a lot of 16,000 plants grown for export at Leamington, Ont. (A. E. S.).

YELLOW NET VEIN (virus) was reported on P. zonale in Ont. (W. G. K.). For an account of this disease and illustrations of symptoms, see Kemp., W. G. Can. Plant Dis. Surv. 46: 81-82. 1966 (Ed.).

OEDEMA (excess moisture). Affected specimens were received from Ste. Foy, Que. (D. L.).

PETUNIA

ASTER YELLOWS (aster yellows virus) caused some damage to petunias at Medicine Hat, Alta. (P. E. B.).

PHLOX

POWDERY MILDEW (Erysiphe cichoracearum) was seen at Edmonton, Alta. and St. Jean d'Irlande, Megantic Co., Que. (D. L.).

TAGETES - Marigold

ROOT ROT (Fusarium sp.) killed 25% of the plants of T. erecta in a planting at Halifax, N. S. Isolations yielded a species of Fusarium in all cases (C. O. G.).

TULIPA - Tulip

FIRE (Botrytis tulipae). Some infections were seen in Edmonton, Alta. (A. W. H., D. S.).

VIOLA - Pansy

POWDERY MILDEW (Sphaerotheca ? macularis). Affected specimens were received from Berwyn, Alta. (A. W. H., D. S.) and Rouleau, nr. Saskatoon, Sask. (R. M.). Both this species and S. fuligenea are known to occur on this host in Canada but the former is the one most frequently encountered (Ed.).

ZINNIA

ASTER YELLOWS (aster yellows virus) was observed at Alexandria and Vancouver, B.C. (N. S. W.).

HOST INDEX

Acer ... 60
Aesculus ... 60
Agropyron ... 42
Alfalfa ... 37
Althaea ... 64
Amelanchier ... 60
Apple ... 53
Apricot ... 55
Aquilegia ... 64
Ash ... 61
Ash, Mountain ... 63
Aster, China ... 64

Barley ... 35
Barley, Wild ... 43
Basswood ... 64
Bean ... 44
Bean, Broad ... 44
Beet, Sugar ... 41
Beet, Table ... 44
Begonia ... 64
Birdsfoot Trefoil ... 38
Blueberry ... 58
Bluegrass ... 43
Bromegrass ... 42
Bromus ... 42
Brussels Sprouts ... 44
Buckthorn ... 62
Buckwheat ... 41

Cabbage ... 45
Cabbage, Chinese ... 46
Callistephus ... 64
Campion ... 65
Caragana ... 60
Carrot ... 45
Catalpa ... 60
Cauliflower ... 45
Cedar ... 63
Celery ... 45
Chamaecyparis ... 60
Cherry ... 55
Cherry, Flowering ... 62
Cherry, Native ... 62
Chrysanthemum ... 64
Clover, Common ... 38
Clover, Sweet ... 38
Columbine ... 64
Corn, Field ... 41
Corn, Sweet ... 51
Cosmos ... 64
Cotoneaster ... 61
Crab, Flowering ... 61
Cranberry ... 58
Crataegus ... 61
Cucumber ... 46
Currant ... 57
Currant, Flowering ... 62
Cypress ... 60

Dactylis ... 43
Dahlia ... 64
Daphne ... 61
Delphinium ... 64
Dieffenbachia ... 64
Dracaena ... 65

Eggplant ... 46
Elder ... 63
Elm ... 64

Ficus ... 65
Flax ... 39
Forget-me-not ... 65
Fraxinus ... 61

Geranium ... 65
Gladiolus ... 65
Gooseberry ... 57
Grape ... 59

Hawthorn ... 61
Hollyhock ... 64
Honeysuckle ... 61
Hordeum ... 43
Horsechestnut ... 60
Hydrangea ... 61

Iris ... 65

Juglans ... 61
Juniper ... 61
Juniperus ... 61

Larch ... 61
Larix ... 61
Larkspur ... 64
Lathyrus ... 65
Lawns ... 43
Lettuce ... 46
Ligustrum ... 61
Lilac ... 63
Lilium ... 65
Lily ... 65
Loganberry ... 57
Lonicera ... 61
Lychnis ... 65

Malus ... 61
Maple ... 60
Marigold ... 66
Muskmelon ... 47
Mustard ... 39
Myosotis ... 65

Oak ... 62
Oats ... 34
Onion ... 47
Orchard Grass ... 43

Paeonia 65
Pansy 66
Papaver 65
Passiflora 65
Passionflower 65
Pea 47
Pea, Sweet 65
Peach 56
Pear 54
Peatree 60
Pelargonium 65
Peony 65
Pepper 48
Petunia 66
Phleum 43
Phlox 66
Picea 61
Pine 62
Pinus 62
Plum 56
Poa 43
Poplar 62
Populus 62
Poppy 65
Potato 48
Privet 61
Prunus 62

Quercus 62
Quince 55

Radish 50
Rape 39
Raspberry 57
Rhamnus 62
Rhubarb 50
Rhus 62
Ribes 62
Rosa 63
Rose 63
Rubber Plant 65
Rutabaga 51
Rye 37

Salix 63
Salsify 51
Sambucus 63
Snowberry 63
Sorbus 63
Soybean 40
Spinach 51
Spruce 61
Squash 51
Strawberry 59
Sumac 62
Sunflower 40
Symphoricarpos 63
Syringa 63

Tagetes 66
Thuja 63
Tilia 64
Timothy 43
Tobacco 41
Tomato 51
Tulip 66
Tulipa 66
Turf 43

Ulmus 64

Viola 66

Walnut 61
Wheat 33
Wheatgrass 42
Willow 63

Zinnia 66

APPENDIX "A"
INDEX OF CONTRIBUTORS

W. R. A. *	Dr. W. R. Allen Vineland Station, Ont.
R. G. A. *	Dr. R. G. Atkinson Saanichton, B. C.
T. G. A. *	Dr. T. G. Atkinson Lethbridge, Alta.
C. A. *	Dr. Claude Aubé La Pocatière, Que.
G. W. A. *	Mr. G. W. Ayers Charlottetown, P. E. I.
B. B. *	Dr. B. B. Berkenkamp Lacombe, Alta.
P. E. B. *	Mr. P. E. Blakeley Lethbridge, Alta.
R. I. B. ****	Prof. R. I. Brawn Macdonald College, Que.
J. E. C. **	Mr. J. E. Campbell Charlottetown, P. E. I.
J. R. C. ***	Mr. J. R. Chard Harrow, Ont.
R. V. C. *	Dr. R. V. Clark Ottawa, Ont.
S. R. C. ***	Mr. S. R. Colpitts Fredericton, N. B.
L. J. C. *	Dr. L. J. Coulombe St. Jean, Que.
D. W. C. *	Mr. D. W. Creelman Ottawa, Ont.
R. C. *	Mr. Rene Crête St. Jean, Que.
B. W. D. *****	Mr. B. W. Dance Maple, Ont.
T. R. D. *	Mr. T. R. Davidson Vineland Station, Ont.
B. N. D. *	Dr. B. N. Dhanvantari Harrow, Ont.
L. D. *	Mr. L. Dubé La Pocatière, Que.
G. E. **	Mr. G. Ethier La Pocatière, Que.
G. F. *	Dr. G. Fleischmann Winnipeg, Man.
L. F. G. *	Dr. L. F. Gates Harrow, Ont.
S. K. G. *	Dr. S. K. Gayed Delhi, Ont.
H. G. *	Mr. H. Généreux La Pocatière, Que.
C. C. G. *	Dr. C. C. Gill Winnipeg, Man.
J. W. G. **	Mr. J. W. Gold Guelph, Ont.
C. O. G. *	Mr. C. O. Gourley Kentville, N. S.
G. J. G. *	Dr. G. J. Green Winnipeg, Man.
J. H. H. *	Dr. J. H. Haas Harrow, Ont.
W. A. F. H. *	Dr. W. A. F. Hagborg Winnipeg, Man.
A. J. H. *	Dr. A. J. Hansen Summerland, B. C.
F. R. H. *	Dr. F. R. Harper Lethbridge, Alta.
E. J. H. *	Dr. E. J. Hawn Lethbridge, Alta.
A. W. H. ***	Dr. A. W. Henry Edmonton, Alta.

The affiliation of each of the contributors listed is indicated by asterisks as follows:

* Research Branch, Canada Department of Agriculture.

** Plant Protection Division, Canada Department of Agriculture.

*** Provincial Government Service.

**** University Department.

***** Canada Department of Forestry.

J. A. H. *	Dr. J. A. Hoes Morden, Man.	G. A. N. *	Dr. G. A. Nelson St. John's West, Nfld.
J. S. H. *	Dr. J. S. Horricks Lethbridge, Alta.	J. N. *	Dr. J. Northover Vineland Station, Ont.
W. G. K. *	Mr. W. G. Kemp Vineland Station, Ont.	O. A. O. *	Dr. O. A. Olsen St. John's West, Nfld.
J. G. L. *****	Mr. J. G. Laut Winnipeg, Man.	G. B. O. *****	Dr. G. B. Ouelette Sillery, Que.
R. E. C. L. *	Dr. R. E. C. Layne Harrow, Ont.	G. A. P. *	Mr. G. A. Petrie Saskatoon, Sask.
R. C. L. **	Mr. R. C. Layton Kentville, N. S.	H. S. P. *	Dr. H. S. Pepin Vancouver, B. C.
J. B. L. *	Dr. J. B. Lebeau Lethbridge, Alta.	L. J. P. *	Dr. L. J. Piening Lacombe, Alta.
D. L. ***	Mr. D. Leblond Quèbec City, Que.	M. J. P. *	Dr. M. J. Pratt Vancouver, B. C.
R. J. L. *	Mr. R. J. Ledingham Saskatoon, Sask.	J. R. ***	Mr. J. Ringuet Quèbec City, Que.
C. L. L. *	Mr. C. L. Lockhart Kentville, N. S.	R. G. R. *	Dr. R. G. Ross Kentville, N. S.
L. E. L. *	Dr. L. E. Lopatecki Summerland, B. C.	B. J. S. *	Dr. B. J. Sallans Saskatoon, Sask.
A. A. MacN. ***	Mr. A. A. MacNabb Kentville, N. S.	D. J. S. *	Dr. D. J. Samborski Winnipeg, Man.
J. W. M. *	Dr. J. W. Martens Winnipeg, Man.	W. L. S. *	Dr. W. L. Seaman Ottawa, Ont.
R. J. N. M. **	Mr. R. J. N. Mayers Vancouver, B. C.	G. C. V. S. *****	Mr. G. C. Van Sickle Fredericton, N. B.
A. C. M. *****	Mr. A. C. Molnar Victoria, B. C.	T. S. ***	Dr. T. Simard Montreal, Que.
R. M. ****	Prof. R. Morrall Saskatoon, Sask.	J. T. S. *	Dr. J. T. Slykhuis Ottawa, Ont.
G. C. M. *	Mr. G. C. Mortimore Harrow, Ont.	J. D. S. *	Mr. J. D. Smith Saskatoon, Sask.
W. C. McD. *	Dr. W. C. McDonald Winnipeg, Man.	R. S. S. *	Dr. R. Stace-Smith Vancouver, B. C.
D. L. McI. *	Dr. D. L. McIntosh Summerland, B. C.	D. S. ***	Mr. D. Stelfox Edmonton, Alta.
C. D. McK. *	Dr. C. D. McKeen Harrow, Ont.	C. St. P. *	Mr. C. St. Pierre La Pocatière, Que.
J. J. N. *	Dr. J. J. Nielson Winnipeg, Man.	A. E. S. **	Mr. A. E. Straby Ottawa, Ont.

H. T. S. *	Mr. H. T. Stultz Kentville, N. S.	V. R. W. *	Dr. V. R. Wallen Ottawa, Ont.
M. D. S. *	Dr. M. D. Sutton Ottawa, Ont.	G. L. W. *****	Mr. G. L. Warren Cornerbrook, Nfld.
L. M. T. ***	Mr. L. M. Tartier Montreal, Que.	B. H. W. **	Mr. B. H. Weibe Estevan, Sask.
H. S. T. *	Dr. H. S. Thompson Ottawa, Ont.	M. F. W. *	Dr. M. F. Welsh Summerland, B. C.
L. S. T. *	Dr. L. S. Thompson Charlottetown, P. E. I.	P. H. W. *	Mr. P. H. Westdal Winnipeg, Man.
R. D. T. *	Dr. R. D. Tinline Saskatoon, Sask.	J. M. W. *	Dr. J. M. Wilks Summerland, B. C.
H. N. W. T. *	Mr. H. N. W. Toms Vancouver, B. C.	C. B. W. *	Dr. C. B. Willis Charlottetown, P. E. I.
F. T. ****	Mr. F. Turel Saskatoon, Sask.	G. E. W. *	Mr. G. E. Woolliams Summerland, B. C.
T. C. V. ****	Prof. T. C. Vanterpool Saskatoon, Sask.	N. S. W. *	Dr. N. S. Wright Vancouver, B. C.
C. W. W. *	Dr. C. W. Walkof Morden, Man.	R. C. Z. *	Dr. R. C. Zimmer Morden, Man.