III. DISEASES OF VEGETABLE AND FIELD CROPS

ASPARAGUS

BLIGHT (Alternaria sp.) caused severe defoliation of seedling asparagus plants in one planting in Lincoln Co., Ont., and apparently reduced their growth considerably. An Alternaria was isolated from the affected leaves (J.K. Richardson)

SOFT ROT (Erwinia carotovora). Some bunches from a garden at Charlottetown, P.E.I., developed soft rot. (R.R. Hurst)

RUST (Puccinia Asparagi). A trace to heavy infection was observed on some plants at Morden, Man. (W.L. Gordon); a general slight infection on many farms in the Niagara Peninsula, Ont., but in no instance was severe damage observed (J.K. Richardson); one small field was severely infected in a low place near the river at Rivière des Prairies, Que. (E. Lavallée). Badly infected specimens were received from Napierville. (R.O. Lachance)

BEAN

POD ROT (Botrytis cinerea) slightly infected the pods in the plots at Sackville, N.B. (S.F. Clarkson and J.L. Howatt). It affected 10% of the pods in a plot of Navy beans at Nappan, N.S. (J.F. Hockey)

ANTHRACNOSE (Colletrotichum Lindemuthianum). Diseased specimens received from Langley Prairie, B.C. (L.T. Richardson); infection slight in a few gardens and severe on selections of Pencil Pod Black Wax and Tendergreen in the University plots, Edmonton, Alta. (M.W. Cormack); damage moderate in a home garden at Saskatoon, Sask. (H.W. Mead); severe infection on most varieties, particularly Stringless Green Pod at Brandon, Man. (W.L. Gordon); present on susceptible varieties at Ont. Agr. College, Guelph, Ont. (J.D. MacLachlan); infection general and rather severe in the Niagara Peninsula (J.K. Richardson); reported from all the counties about Montreal, Que. (O. Caron); absent in fields inspected for certification in Que., and a trace on Pencil Pod Black Wax at Ste. Anne de la Pocatière (R.O. Lachance). Little infection was found in the many fields inspected in the Montreal district (E. Lavallée); slight to severe damage in the plots at Fredericton and Sackville, N.B. (S.F. Clarkson and J.L. Howatt); damage a trace to severe on Pencil Pod Black Wax and other varieties throughout P.E.I. (R.R. Hurst)

HALO BLIGHT (Pseudomonas medicaginis Sackett var. phaseolicola (Burkh.) Stapp & Kotte, Nachrichtenbl. d. Deutsch. Pflanzenschutzd. 9:35. 1929; Phytomonas medicaginis (Sack.) Bergey et al. var. phaseolicola Burkholder, Phytopath. 16:922 1926; cf. Dowson, Zentralbl. f. Bakt. u.s.w. Abt. 2, 100:189. 1939, Starr & Burkholder, Phytopath. 32:601. 1942). Affected material received from Calgary, Alta.; due to the severe attack, no pods were set (W.A.F. Hagborg); rather severe in several localities in the Niagara Peninsula, Ont., both in field and garden varieties; bacterial blight (q.v.) may also have been present, but every diseased plant that was observed showed the typical "halo" symptoms on the leaves (J.K. Richardson); common on the varieties at Sackville and Port Elgin, N.B., but not present at Fredericton; damage slight to severe (S.F. Clarkson and J.L. Howatt).

BACTERIAL BLIGHTS (Pseudomonas medicaginis var. phaseolicola and Xanthomonas phaseoli). Blight was unusually prevalent and destructive, particularly in southern Alta., where a number of fields, including a considerable acreage being grown for seed, were either destroyed or severely infected. These fields had been planted with certified seed. Also, the yields of many fields of beans being grown for canning purposes were severely reduced on account of these diseases. Further, severely blighted kitchen garden plots were common throughout Alta. Halo blight appeared to be the more common of the two diseases (M.W. Cormack). The bacterial blights were observed at several points in Man.; infection was moderate at Brandon and Winnipeg; general and severe on some varieties at Morden; severe (halo blight) at Portage la Prairie. P. phaseoli was isolated from one collection at Winnipeg and tested for pathogenicity. The variety plots at Winnipeg became naturally infected by halo blight. The symptoms were typical of halo blight and the pathogen was isolated. Infection on July 27 was severe on R.P. Kidney Wax, Matchless Green Pod and Masterpiece, moderate on Tendergreen and Pencil Pod Wax, slight to moderate on Stringless Green Pod, slight on Improved Golden Wax and a trace on Altoba. (W.A.F. Hagborg)

DAMPING-OFF (Rhizoctonia Solani) was prevalent in Queens Co., P.E.I., in 1942; infection was 1-15% in many gardens but 100% in 6. (R.R. Hurst)

SCLEROTINIA ROT (S. sclerotiorum) caused slight damage through rotting the pods in two gardens at Edmonton, Alta.

RUST (Uromyces appendiculatus) infection was general in a field of Blue Lake pole beans at Hatzic, B.C., and caused moderate damage. (W. Jones)

BACTERIAL BLIGHT (Xanthomonas phaseoli (E.F. Sm.) Dowson, Zentralbl. f. Bakt. Abt. 2, 100: 190. 1939; Bacillus Phaseoli E.F. Smith, Bot. Gaz. 24: 192. 1897; Proc. Am. Assoc. Adv. Sci. 46: 288. 1898; cf. Starr & Burkholder, Phytopath. 32: 600. 1942). A single plant in a row of foundation seed at the Farm, Agassiz, B.C., was observed (W. Jones); lightly affected plants received from Maymont, Sask.; relatively few reports in 1942 (H.W. Mead); caused slight to moderate damage in Sask.; commoner than usual in unwatered gardens (T.C. Vanterpool); present on some varieties at Ont. Agr. College, Guelph, Ont.; (J.D. MacLachlan); prevalent throughout Ont. in 1942; specimens received from widely scattered counties (J.E. Howitt); reported from all the counties about Montreal, Que. (O. Caron); very little disease found in the Montreal district in 41 fields sown with seed coming from clean fields, when present, it occurred in patches; some fields sown with unselected seed were badly affected (E. Lavallée); out of 13 fields of Brittle Wax inspected in the Montreal district 3 were disease free, 4 contained traces, 3 with 3% infection and 3 with 15%, (R.O. Lachance); 10% infection of Round Pod Kidney Wax at L'Assomption (L.T. Richardson); slight to severe in Westmorland Co., N.B. (S.F. Clarkson and J.L. Howatt); infection a trace to 15% in Pencil Pod Black Wax and other varieties in many gardens throughout P.E.I. (R.R. Hurst)

MOSAIC (virus) was rather common in Alberta; infection ranged from 11 to 20% in 4 large fields planted with certified seed in the Taber district. Infection was slight in all varieties at Lethbridge (M.W. Cormack). Mosaic (Phaseolus virus 1) was present on some varieties at the Ont. Agr. College, Guelph, Ont. (J.D. MacLachlan). Mosaic severely affected 90% of the plants of Stringless Refugee Wax in the test plots at Sackville, N.B.; a trace was present in Matchless Green Pod, Improved Golden Wax, Streamliner, Currie's Rust Proof, and

Refugee 1000-1 in the same plots (D.J. MacLeod). Infection ranged from traces to 4% in the wax pod varieties in gardens in Queens Co., P.E.I., but it was 85% in an unknown variety. (R.R. Hurst)

RUSSETING (cause unknown) was quite general on Black Kidney in a garden in Queens Co., P.E.I. (R.R. Hurst)

SCALD (magnesium deficiency) was severe on a number of varieties in the Laboratory plots, Fredericton, N.B. It was common also on bush beans in York, Sunbury, and Westmorland counties. The condition was less in evidence on limed soils. Scald is characterized by rusty brown scalding of the leaves, early defoliation and dwarfing of the plant. Severely affected plants failed to set pods or the pods and seed were poorly developed. (D.J. MacLeod)

SUN SCALD affected about 60% of the plants in a garden at Westboro, Ont., but all the plants would likely recover. (H.N. Racicot)

BEET

SCAB (Actinomyces scabies) infected 10% of the roots of Detroit Dark Red in one garden in Queens Co., P.E.I., and caused moderate damage. Other cases were reported, but the trouble was no greater than usual. (R.R. Hurst)

LEAF SPOT (Ascochyta Betae Prill. & Del.) slightly affected a few leaves at Ryder Lake, B.C. Sometimes the fungus was associated with Phoma. This organism has not been previously reported to the Survey. (W. Jones)

LEAF SPOT (Cercospora beticola). Slight infection in plot of seed beets at Brooks, Alta. (L.E. Tyner); infection general but not sufficiently severe to cause perceptible damage in Lincoln Co., Ont. (J.K. Richardson); slight infection in Laval and Jacques-Cartier counties, Que. (E. Lavallée); infection general, but not severe in a plot of seed beets at Macdonald College (R.A. Ludwig); slight infection at Kentville, N.S. (G.W. Hope); infection 4% in one garden, 40% in another in Queens Co., P.E.I. (R.R. Hurst)

LEAF SPOT (Phoma Betae) was found on the lower mainland, B.C. The pathogen was most prevalent on the lower leaves in crops grown for seed. Misses due to the decay of the bulb, caused in part by this fungus, result in heavy losses. Poor storage and grading are also considered important factors. (W. Jones) Leaf infection was a trace at Brandon and Morden, Man., and slight at Ponemah in root crops, and was heavy on seed beets at Morden. (W.L. Gordon)

RUST (Uromyces Betae) Margaret Newton and B. Peturson (Phytopath. 33: 10. 1943) have recently reported on the temperature requirements of this rust. It was first observed in 1935 at Saanichton and Agassiz, B.C. (P.D.S. 15:25). The seed used was imported from Europe and was carrying a heavy load of uredinio-spores and teliospores. The rust is most severe at Saanichton in the early spring and late fall. The optimum temperature for spore germination is 10-22°C and for rust development, 15-22°C. Varieties susceptible at 15-22°C develop resistance at higher temperatures and become extremely resistant at 26°C. The sensitivity of the rust to high temperatures probably accounts for its absence in the Prairie Provinces, where summer temperatures exceed these values.

BORON DEFICIENCY. A small field of red table beets was a complete failure at St. Roch des Aulnaies, Que. (C. Perrault). Internal breakdown was found on 2 farms in Sunbury and Northumberland counties, N.B., respectively; the damage was severe. (D.J. MacLeod)

BLACK MUSTARD

WHITE RUST (Cystopus candidus). All plants were severely attacked and most of the leaves died prematurely at the Botanical Garden, Montreal, Que. (J.E. Jacques)

BROAD BEAN

BLIGHT (Alternaria sp.) was found at Ste. Anne de la Pocatière, Que. The plants became infected a few weeks after the seedlings emerged. In severe cases, the entire plant turned black. Pods, when formed, were also affected and the mycelium grew inside the pod onto the seeds. (C. Perrault)

MOSAIC (Trifolium virus 1). Two per cent of the plants in the variety plots at Sackville, N.B., showed a conspicuous veinal mottle and malformation of the leaves. (D.J. MacLeod)

STREAK (virus). One per cent of the plants in the same plots at Sackville, N.B., showed a severe streak, veinal mottle and stunting (D.J. MacLeod).

BRUSSELS SPROUTS

RING SPOT (Mycosphaerella brassicicola) moderately infected the leaves in a garden at the Station, Sidney, B.C. (W. Jones)

CABBAGE

BLACK LEAF SPOT (Alternaria circinans). Slightly affected the lower leaves of Flower of Spring at Sidney, B.C.; the disease is widely distributed but seldom does much damage to the foliage (W. Jones); on lower leaves of Penn. State College grown for seed at Maugerville, N.B. (S.F. Clarkson)

GREY LEAF SPOT (Alternaria Brassicae) slightly affected cabbage in one garden at Saskatoon, Sask. (B.J. Sallans)

SOFT ROT (Erwinia carotovora) affected 3 plants at the Station, Charlottetown, P.E.I. (R.R. Hurst)

RING SPOT (Mycosphaerella brassicicola). Slight infection at Sidney and Agassiz, B.C. (W. Jones)

CLUB ROOT (Plasmodiophora Brassicae). Common in Chinese truck gardens in the New Westminster and Vancouver districts, B.C., and causes considerable damage (W. Jones); quite serious in the western part of Que. (O. Caron); many

fields affected at St. Martin and Ste. Dorothée, rate of infection varying with the degree of contamination (E. Lavallée); traces in 4 and severe in one garden about Charlottetown, P.E.I., but probably destructive in others. (R.R. Hurst)

SCLEROTINIA ROT (S. sclerotiorum) caused a trace of damage in home storage under fairly cool conditions at Saskatoon, Sask. (T.C. Vanterpool).

BLACK ROT (Xanthomonas campestris; cf. p. 28) caused 15% damage at St. Laurent, Que. (L.T. Richardson). Reported from 3 storage centres, but not observed in the field in P.E.I. (R.R. Hurst)

VIRUS-LIKE DISEASES. A few plants were affected in Golden Acre grown for seed at the Station, Sidney, B.C. Affected plants were stunted and stems and branches of the inflorescence were distorted. No mottling of the mosaic type was present. (W. Jones)

BROWN HEART (boron deficiency) was reported less frequently than last year because the use of boron is becoming more general (O. Caron); affected 65% of the cabbages in one lot at Macdonald College, Que.; undoubtedly its occurrence was favoured by the dry season. (J.G. Coulson)

CARROT

BLACK ROT (Alternaria radicina). In recent years, black rot was found once at Sidney, B.C., on a field carrot by J.E. Bosher and at New Westminster by W. Jones on a few carrot roots discarded from storage after the winter. In the greenhouse, a seedling blight can be very troublesome at Sidney when the seed sample is carrying a high percentage of A. radicina. It is readily controlled by seed treatment (cf. p. 74). In the field, the disease, either as a seedling blight, leaf spot or root-rot, has not been noted when infected seed was planted. (I. Mounce and J.E. Bosher). The results of these investigations are reported by the authors in Sci. Agr. 23 (7): 421-423. 1943. (I.L. Conners)

Inspection of carrot roots in storage in January, 1943 revealed two lots severely affected by Alternaria radicina. The loss was estimated at 70%. Early in the 1942 season, the fungus was obtained from carrot seedlings affected by a damping-off. During mid-season some foliage spotting was also found with the same fungus in the lesions. More recently a series of seed samples were tested and some samples showed a fairly high infection with A. radicina (J.F. Hockey). The disease was reported in N.B., in 1929. (P.D.S. 9: 27) (I.L. Conners)

SOFT ROT (Erwinia carotovora). Carrot roots showed occasionally soft rot in the early stages when they were lifted from the ground in the Okanagan valley, B.C., in 1942. (G.E. Woolliams) Soft root was affecting all the carrots in one lot in store in March, 1942, in Queens Co., P.E.I., and was causing severe damage. Probably it occurred elsewhere. (R.R. Hurst)

ROOT-KNOT NEMATODE (Heterodera marioni (Cornu, 1879) Goodey, 1932) was found causing injury to carrots in a truck garden at Ottawa, Ont.; and also in carrots received from the Blackwell area near Sarnia. (A.D. Baker)

LEAF BLIGHT (Macrosporium Carotae) was general in 2 fields at Agassiz and Hatzic, B.C., respectively; the damage was slight. (W. Jones)

CROWN ROT (Rhizoctonia Solani) severely affected 10% of the roots in a cellar at Charlottetown, P.E.I.; sclerotia were plentiful. (R.R. Hurst)

SCLEROTINIA ROT (S. sclerotiorum) caused considerable damage in a home storage bin at Indian Head, Sask.; damage by this rot was reported by several growers at Saskatoon. (H.W. Mead) Specimens from two farms at East Florenceville, N.B., were received on Dec. 12. (H.N. Racicot)

BACTERIAL BLIGHT (Xanthomonas carotae (Kendr.) Dowson, Zentralbl. f. Bakt. Abt. 2, 100: 190. 1939, Pseudomonas carotae Kendrick, Journ. Agr. Res. 49: 504. 1934) was general in the Grand Forks district, B.C., in all fields of Chantenay, Imperator and Nantes carrots grown for seed; infection ranged from 10-40% of the plants but in nearly all fields the damage was slight. (G.E. Woolliams) Infection was general and moderate at Brandon, Man., and slight on the odd plant at Morden. (W.L. Gordon)

YELLOWS (? beet curly-top virus) affected 1-3% of the plants in all fields of carrots being grown for seed in the Grand Forks district, B.C. In 1941, tomatoes in this district were severely affected with yellows (curly top virus) (P.D.S. 21: 59). It seems probable that the carrot stecklings became infected in 1941 and the disease showed up in the mother plants this year. Yellows was not observed on tomatoes at Grand Forks this year. (G.E. Woolliams)

YELLOWS (Callistephus virus 1). A trace occurred at Brandon, Man. (W.L. Gordon). A trace was observed at Ste. Anne de la Pocatière, Que. by Dr. H.T. Güssow (R.O. Lachance). Yellows was common in York, Sunbury, Queens, Westmorland, Kings, and Carleton counties, N.B. Infections ranged from 10 to 20% in commercial fields. In a seed plot in York Co., 8% of the plants were affected. Affected seed plants were very chlorotic, severely dwarfed and died early in the season setting no seed. Much of the infection is carried over winter in the stecklings, but the mother plants usually die soon after planting (D.J. MacLeod). Due to the increased acreage of carrots in N.S., the crop and the losses from yellows are of increasing importance. The disease was readily found on weed hosts in the early summer and was noted on carrots about July 20. The insect vector, Macrosteles divisus, was more prevalent this year than in 1941 and was particularly abundant during August and early September. In commercial areas, surveys revealed up to 53% of the plants affected by yellows and an average infection of about 20%. Proximity to pastures or weedy fields and fence and tree rows appears to result in an increase in the incidence of yellows. Carrots showing yellows on 2 to 4 leaves may be harvested for bunching, but if more leaves are affected, the roots will show the "fuzzy root" condition and are unmarketable. Yellows was very prevalent throughout the central and western parts of N.S. on Erigeron canadensis; it was also observed on wild carrot, Daucus Carota, along the roadside in Kings Co. and on a few dandelion plants in a lawn at Kentville (J.F. Hockey). Yellows affected 17% of the Chantenay carrots in the Laboratory plots, Charlottetown, P.E.I., and was apparently troublesome at many other points. (R.R. Hurst)

CAULIFLOWER

ROT (Botrytis cinerea) caused a severe blight and rot of curds in a greenhouse at Kentville, N.S., when the plants were in bloom. (J.F. Hockey)

SOFT ROT (Erwinia carotovora) was fairly general on Vancouver Island

and the lower mainland, B.C., and caused heavy losses in some seed crops. Its spread has been checked somewhat by dusting the plants with copper-lime dust (W. Jones). Soft rot affected about 50% of the cauliflower plants watered by an overhead sprinkler system at Macdonald College, Que., and caused about 5% loss. (J.G. Coulson)

CLUB ROOT (Plasmodiophora Brassicae) affected many fields about St. Martin and Ste. Dorothée, Que. (E. Lavallée). It affected 50% of the plants in a field at St. Martin, and caused considerable damage; no cauliflower or cabbage had been planted in this field for 10 years (L.T. Richardson). Club root was reported in cauliflower by several growers about Charlottetown, P.E.I., but in no case was it very destructive. (R.R. Hurst)

WIRE STEM (Rhizoctonia Solani) is a serious disease commonly found in hot-beds in the Montreal district, Que. Treatment of the soil in the beds with a formaldehyde solution (3/4 qt. of formaldehyde to 5 gal. of water) has given satisfactory control. In fact it has proved much more effective than bichloride of mercury. (E. Lavallée)

WILT (Sclerotinia sclerotiorum) almost completely destroyed ¼ acre of cauliflower being grown for seed at Elk Lake, B.C. The preceding crop of wallflowers had been virtually wiped out. The cauliflower on other areas on the same farm were uninjured. (W. Newton)

BORON DEFICIENCY affected 51% of the cauliflower in a planting at Macdonald College, Que.; the season was abnormally dry (J.G. Coulson). Affected cauliflower were observed on the market at Charlottetown, P.E.I.; 12 other reports were received, but not investigated. (R.R. Hurst)

CELERY

EARLY BLIGHT (Cercospora Apii). As has been the case for the past several years, early blight was a greater problem than late blight on many farms in Lincoln Co., Ont. It is frequently the cause of severe damage before late blight appears (J.K. Richardson). A 2% infection was observed on sprayed celery at St. Martin, Que.; the damage was nil (L.T. Richardson). A 60% infection on the leaves was observed in a planting of Golden Self Blanching in Queens Co., P.E.I. (R.R. Hurst)

DAMPING-OFF (Pythium sp.). A damping-off and root rot was found affecting celery seedlings in Lincoln Co., in March. Spraying with Cuprocide effectively checked the disease. (G.C. Chamberlain)

PINK ROT (Sclerotinia sclerotiorum) severely affected about 20% of the plants in one patch in the Laboratory plots, St. Catharines, Ont. The disease has not been observed in this locality for some years. (J.K. Richardson)

LATE BLIGHT (Septoria Apii-graveolentis) was common on plants for sale by wholesale dealers in Victoria and Vancouver, B.C.; the damage was slight to moderate (W. Jones). Affected specimens were received from Cranbrook, B.C. It was reported that it caused considerable damage there and at Armstrong (G.E. Woolliams). Infection was severe in a truck garden at Lethbridge, Alta. (M.W. Cormack). Moderate infection was observed in a market garden at Saskatoon, Sask.

(H.W. Mead). Late blight was quite severe in the Niagara Peninsula in 1942, and where the plants were not sprayed continuously, it caused considerable damage (J.K. Richardson). Late blight was present, but it was not as severe as usual in Laval Co., Que.; spraying and dusting of beds and fields are practised quite regularly. (E. Lavallée)

MOSAIC (virus). Five plants showing a well-defined veinal mottle and crinkle were found in a garden at Oromocto, N.B.: the virus was identified as Cucumus virus 1 (D.J. MacLeod). Mosaic was found affecting 3 plants in a garden in Queens Co., P.E.I. (R.R. Hurst)

BLACK HEART (cause undetermined) caused a complete loss of a planting of Salt Lake and Golden Self Blanching at the School of Agriculture, Ste. Anne de la Pocatière, Que. (R.O. Lachance)

BORON DEFICIENCY. R.O. Lachance, P. Bertrand and C. Perrault (Sci. Agr. 23 (3): 187-193. 1942) have described a Heart Atrophy of celery due to boron deficiency. The authors consider that it represents an extreme case of boron deficiency. As the soil becomes more deficient in boron, the symptoms on celery are progressively: stem cracking, dwarfing, and heart atrophy (I.L. Conners); some 20% of the plants in a field in Sunbury Co., N.B. showed symptoms of boron deficiency. (D.J. MacLeod)

SOFT or HEART ROT (cause undetermined) caused moderate damage in a market garden at Saskatoon, Sask. The tissues in the heart were in a soft condition. (H.W. Mead)

HEART ROT (cause undetermined) affected all the plants in one storage in Queens Co., P.E.I., and rendered them valueless. (R.R. Hurst)

CUCUMBER

LEAF SPOT (*Alternaria cucumerina*) was general in one field at Hatzic, B.C.; it caused moderate damage to the foliage. (W. Jones)

SCAB (*Cladosporium cucumerinum*). Several severe attacks of scab were reported to the St. Catharines Laboratory this year. In a field near Brantford, Ont., it caused a loss of 25% of the fruit; the cucumbers were severely deformed due to early infection (J.K. Richardson). Affected specimens were received from the Waterford area, where it was reported to be causing a serious loss to growers in the district. (J.E. Howitt)

LEAF SPOT (*Colletotrichum lagenarium*) caused moderate damage to 2 greenhouse crops in the Olinda area, Ont. (L.W. Koch)

BACTERIAL WILT (*Erwinia tracheiphila*). An affected specimen was brought into the Laboratory at Ottawa, Ont. (L.T. Richardson). Some 200 hot-beds were affected on a farm at Ste. Dorothée, Que.; striped beetles were abundant (E. Lavallée). Besides serious outbreaks in the Montreal district, wilt has appeared at Quebec, but was less destructive. (O. Caron)

ROOT KNOT (*Heterodera marioni*). Mild infestations were observed in several greenhouses near Leamington, Ont., towards the end of the harvest period. (L.W. Koch)

STEM and FRUIT ROT (Sclerotinia sclerotiorum). The entire crop in the largest greenhouse in Essex Co., Ont., was destroyed at the peak of production by an outbreak of this disease; other greenhouses were affected to a lesser extent. (L.W. Koch)

MOSAIC (virus) occurred on several varieties in the verification trials at the Station, Summerland, B.C. (G.E. Woolliams). Severe damage from mosaic occurred in several greenhouse and field crops in Essex Co. Losses to individual growers ranged up to $1,000. In several cases, outbreaks in the field followed closely upon aphid infestation (L.W. Koch). Cucumbers appear to be more difficult to grow with each succeeding year, largely on account of severe infections of mosaic. Numerous growers in the Niagara Peninsula have given up the growing of cucumbers because of the disease (J.K. Richardson). Mosaic affected all the plants of Sensation grown at the Botanical Garden, Montreal, Que., but there was little distortion of the fruit (J.E. Jacques). A trace of mosaic (Cucumus virus 1) was found in a commercial field in Sunbury Co., N.B. (D.J. MacLeod). Mosaic affected all the plants of Early Fortune and caused severe damage in a greenhouse in Queens Co., P.E.I.; the affected plants wilted. (R.R. Hurst)

WILT (cause unknown). A severe wilt occurred in several of the verification plots at Summerland, B.C. The plants soon died after the leaves began to wilt. Repeated attempts to isolate a pathogen were negative. (G.E. Woolliams)

EGG PLANT

WILT (Verticillium Dahliae) is particularly severe in Lincoln Co., Ont., and causes the death of 50% of the plants set out. I have never seen a planting even reasonably free from the disease. (J.K. Richardson)

HOPS

DOWNY MILDEW (Pseudoperonospora Humuli) was general in the susceptible varieties, Clusters, Golding, and Brewers Gold on the lower mainland, B.C. It was very severe in Clusters in one large yard in Sardis early in the season. Lack of labour for spraying was partly responsible. Rainy, comparatively mild weather favoured its spread. The disease was then checked by dry weather and conditions were satisfactory during the harvest period. Golding seems to have become more susceptible to the disease, while Fuggles is still quite resistant (W. Jones). A severe infection occurred early in the season and caused moderate damage at St. Polycarpe, Que.; the disease was checked by application of copper dust. (L.J.S. Laporte)

POWDERY MILDEW (Sphaerotheca Humuli) was not severe this year at Cazaville and St. Polycarpe, Que. It was easily controlled with a few dustings with sulphur. In one yard at Ste. Justine, near St. Polycarpe, it did not show up and no dust was applied. (L.J.S. Laporte)

CHLOROSIS (virus). A slight infection was observed on Golding at Sardis, B.C. (W. Jones)

LETTUCE

DOWNY MILDEW (Bremia Lactucae) was general and severe on the foliage in a 5-acre crop grown for seed at Duncan, B.C.; the disease was checked later by dry weather. It also affected seed crops at Metchosin and Agassiz. (W. Jones)

ANTHRACNOSE (Marssonina Panattoniana) was collected by Mr. H. Ruhmann at Grand Forks, B.C. Infection was severe on the outer leaves. Only 3 acres of each of the two varieties, New York 12 and Hanson, were affected out of 13 acres planted for seed. The weather had been very wet and cold and crops were making very slow growth. The affected plants were very backward. This is the first report of the disease in the interior of B.C. (G.E. Woolliams)

DROP (Sclerotinia sclerotiorum) affected a few plants in a 5-acre seed crop at Duncan, B.C. (W. Jones). The damage was slight to moderate in several gardens at Edmonton, Alta., and severe in one planting at Lacombe.

YELLOWS (virus). Two affected plants were found in a private garden at the Station, Fredericton, N.B.; the virus was identified as Callistephus virus 1. (D.J. MacLeod)

BORON DEFICIENCY. The presence of this trouble was suspected at Charlottetown, P.E.I. in 1941. This year in a plot of Grand Rapids, one row was treated and the rest left as checks. All plants in the treated row were healthy, but 8% of the plants in the checks were affected. The symptoms were: poorly shaped leaves, spotting and burning of the leaf tips, injury to the growing tip and younger leaves. (R.R. Hurst)

LIMA BEANS

CHEMICAL INJURY caused moderate to severe damage to lima beans grown on land that had been sprayed in 1941 with Atlacide in Queens Co., P.E.I. (R.R. Hurst)

MELON

LEAF SPOT (Cladosporium cucumerinum) was general and caused moderate damage in the Leamington district, Ont., late in the harvesting period; sheltered, poorly-ventilated plantations suffered more severe damage than others (L.W. Koch). Affected specimens were brought to the Laboratory from the Ottawa area. (L.T. Richardson)

ANTHRACNOSE (Colletotrichum lagenarium) severely infected the leaves and fruits of a single individual of snake melon, Cucumis Melo var. flexuosus, at the Botanical Garden, Montreal, Que.; the leaves died prematurely and the fruits were badly cankered. (J.E. Jacques)

SOFT ROT (Erwinia carotovora) destroyed 15% of the fruit in a garden at Charlottetown, P.E.I. (R.R. Hurst)

BACTERIAL WILT (Erwinia tracheiphila) affected about 5% of the plants in a planting of melons at the Laboratory, St. Catharines, Ont. (J.K. Richardson); infection was up to 2%, and damage mild in Essex Co. (L.W. Koch)

SOFT ROT (Rhizopus sp.). Imported melons developed this rot in September at Charlottetown, P.E.I. (R.R. Hurst)

MOSAIC (virus) affected 10% of the plants in a planting at St. Catharines, Ont.; affected plants produced no edible fruit (J.K. Richardson). All the plants of several cucurbits were affected by mosaic, but with little injury to the fruit at the Botanical Garden, Montreal, Que. These were lemon cucumber, C. Melo var. acidulus; Oka netted melon; Honey Dew pineapple melon; Large Sweet Cheese musk pumpkin; Chinese watermelon, Benincasa hispida; and club gourd, Trichoranthes anguina. The plants were being constantly pruned by the gardener to keep the vines off the paths and this may account for the high degree of infection. (J.E. Jacques)

LOW TEMPERATURE INJURY caused a loss of about 15% of the cantaloupe in a shipment from B.C. to Montreal, Que. (L.T. Richardson)

OKRA

WILT (Verticillium Dahliae). In one planting in Lincoln Co., Ont., about 20% of the plants were affected; in some plants it was sufficiently severe to render production negligible. (J.K. Richardson)

ONION

PURPLE BLOTCH (Macrosporium Porri) was severe on stalks of seed onions and others at Swan River, Man. (W.L. Gordon and I.L. Conners)

NECK ROT (Botrytis Allii) was destructive throughout the onion growing districts of the B.C. interior. The average loss in storage was about 10%. Among onions in cold storage, the loss was around 2%, but in common storage, it was often as high as 50%. At Grand Forks, the pathogen caused extensive loss among fall-planted bulbs for seed production. A few fields were relatively free, but in the majority, losses were high, sometimes being 75% of the bulbs. B. Allii also caused injury to the young shoots of the onion seed crop in the spring of 1942. Later a trace of infection occurred on the flower stalks. Infection in early spring and summer is unusual in this locality and was no doubt due to the cool damp weather that prevailed during the spring months (G.E. Woolliams). While Botrytis Allii is the more common pathogen in the field, B. cinerea may also occur. The latter causes a white spotting of the leaves followed by oval, whitish or grayish lesions about 1-10 mm. long, but the fungus fails to sporulate (C.E. Yarwood, U.S.D.A. Pl. Dis. Reporter 22: 428-429. 1938) (I.L. Conners). Slight rotting before harvest was observed in two gardens at Edmonton, Alta., followed by severe damage in storage (M.W. Cormack). A trace was found on Jan. 15, 1943 on onions in storage at Saskatoon, Sask. (B.J. Sallans). Neck rot affected about 5% of the onions in a shipment from the Leamington district, Ont., while it was held in storage at Blenheim; the shipment had to be regraded (J.K. Richardson); affected specimens were received from St. Laurent, Que. (E. Lavallée); affected 1% of the crop in a garden at Charlottetown, P.E.I. (R.R. Hurst)

SMUDGE (Colletotrichum circinans) slightly affected Silverskin onions at Kentville, N.S. (J.F. Hockey)

SOFT ROT (Erwinia carotovora) destroyed about 2% of the seed stalks in a crop of foundation stock of Prizetaker at Vineland Station, Ont. It also affected about 2% of the bulbs in a shipment from the Leamington area, Ont., in September (J.K. Richardson). The disease was found on Oct. 15 in a shipment of onions made in mid-September from Leamington, Ont. to Quebec City. (H.N. Racicot)

ROOT ROT (Fusarium sp.) severely affected the crop in a commercial garden, Charlottetown, P.E.I. (R.R. Hurst and G.C. Warren)

DOWNY MILDEW (Peronospora Schleideniana) caused severe damage to a small seed crop planting in North Saanich, B.C., in May. It also caused much damage in gardens early in the season but the disease was checked and did little damage in commercial fields late in the season on the lower mainland (W. Jones). Downy mildew was found affecting all the plants at Armstrong and fully 50% of the crop at Vernon. The disease was present at Kelowna, but not quite so prevalent. In general the loss was about half the crop. This is the first time that the disease has been recorded in the Okanagan Valley (H.R. McLarty). Downy mildew was prevalent and caused severe damage in many onion fields throughout Ont. (J.E. Howitt). It caused a great deal of damage about Quebec City, Que., the yields being reduced by half in certain fields (O. Caron). Three fields of onions grown for seed at St. Michel, Lavaltrie and Lacolle, respectively, were severely affected and loss was 50-60% of the crop. The disease also occurred in patches in many fields grown for the bulbs in Laval Co. (E. Lavallée). While the severity of infection was 90% causing 40% damage in a field grown for seed at St. Michel, the infection was 10% in other fields here and at L'Assomption. Diseased specimens were also received from Quebec City and Knowlton. (L.T. Richardson)

SMUT (Urocystis Cepulae) severely affected about 80% of the plants in a 1½ acre field, where the seed was sown directly in the field, at St. Michel, Que.; an adjacent field of transplanted onions was clean. (E. Lavallée)

PARSLEY

LEAF BLIGHT (Septoria Petroselini) was general in one small crop grown for seed at Duncan, B.C., and caused slight damage. (W. Jones)

PARSNIP

SCAB (Actinomyces scabies) infection varied from a trace to heavy in Hollow Crown parsnips in Queens Co., P.E.I., in May; severely affected roots were useless for table use. (R.R. Hurst)

LEAF SPOT (Cylindrosporium crescentum). Traces were present at Brandon, Man. (W.L. Gordon)

LEAF SPOT (Ramularia Pastinacae) was general on the leaves and stems of a seed crop at Milner, B.C.; the damage was moderate. (W. Jones)

SCLEROTINIA ROT (S. sclerotiorum). The roots of a few plants were rotting in a garden at Edmonton, Alta.; S. sclerotiorum was isolated. (L.E. Tyner)

PEAS

MYCOSPHAERELLA BLIGHT (Ascochyta pinodes). A moderate infection was observed at Otterburne, Ponemah, and Winnipeg, Man.; the organism was isolated in each case. (W.L. Gordon)

LEAF and POD SPOT (Ascochyta Pisi). Infection was moderate in several gardens at Edmonton, Alta., and ranged from a trace to severe in garden pea varieties at Lacombe and Olds; infection was a trace to slight in field peas at Brooks, Claresholm and Lethbridge and in the plots at Lacombe (M.W. Cormack). Traces present in all varieties of field peas at Ste. Anne de la Pocatière, Que. (R.O. Lachance); slight infection at L'Assomption (L.T. Richardson). Infection a trace to heavy on pods, leaves and stems in Ottawa test at Charlottetown, P.E.I., and also in many gardens. (R.R. Hurst)

GREY MOULD (Botrytis cinerea). Affected samples of Tall Telephone grown in the Gaspé, Que., were sent from a cold storage plant in Quebec City. (A. Payette)

SCAB (Cladosporium pisicola). Infection was a trace to very heavy in the Ottawa test at Charlottetown, P.E.I. (R.R. Hurst). This disease has not been previously reported in Canada outside of B.C. (I.L. Conners)

POWDERY MILDEW (Erysiphe Polygoni). A slight to moderate infection prevalent at Edmonton, Alta. (M.W. Cormack); infection moderate at Brandon, Man. and heavy on many leaves at Morden (W.L. Gordon); widespread and destructive, being especially severe in many gardens in Queens Co., P.E.I. Trials with dusting sulphur at Crapaud gave satisfactory control, but vigour of the dusted vines was reduced slightly. (R.R. Hurst)

NEAR WILT (Fusarium oxysporum) was found in a planting at Brooks, Alta. (A.W. Henry)

ROOT ROT and WILT (Fusarium spp.) Infection was moderate in most varieties in the plots at Lethbridge, Alta., and ranged from a trace to severe at Lacombe (M.W. Cormack); crop a total loss in a small garden at Phillipsburg, Que. (E. Lavallée). Root rot was slight to severe in 4 fields of Arthur peas inspected at Ste. Anne de la Pocatière, Que. (R.O. Lachance)

FOOT ROT. An examination by culture methods was made of several foot-rotted plants from plots of peas at the Laboratory, Winnipeg, Man. The following fungi were found associated with the disease at different times: Fusarium acuminatum, F. oxysporum, F. Solani f. Pisi, F. Scirpi, F. culmorum, Ascochyta pinodes, Rhizoctonia Solani and Gloeosporium sp. (W.L. Gordon)

DOWNY MILDEW (Peronospora Pisi) was of general occurrence on the lower mainland, B.C., but caused little or no damage; it usually affects the lower leaves only, but it is very occasionally present on pods (W. Jones); infection slight to moderate in plantings at Edmonton and Lethbridge, Alta. (M.W. Cormack); a trace in Ottawa test at Charlottetown, P.E.I. (R.R. Hurst)

BACTERIAL BLIGHT (Pseudomonas Pisi Sackett, Colorado Agr. Exp. Sta. Bull. 218: 3. 1916; cf. Dowson, Chron. Bot. 6: 199. 1941; Starr & Burkh. Phytopath. 32: 601. 1942). A slight general infection was found in several plantings at Brooks and Lethbridge, Alta.

WILT and ROOT ROT (Pythium sp.) Moderate to severe damage was observed in plantings at Brooks and Lethbridge, Alta.

ROOT ROT (Rhizoctonia Solani). A trace was found in a planting at Brooks, Alta.

POD SPOT (Septoria flagellifera). Moderate damage was observed in plots, seed of which was sent from Ottawa for field test at Saskatoon, Sask.; both S. flagellifera and Ascochyta Pisi present (H.W. Mead). Infection was a trace on leaves at Ponemah and slight at Winnipeg, Man. (W.L. Gordon)

LEAF BLOTCH (Septoria Pisi). Slight infection occurred at Claresholm, Alta., and in the plots at Lethbridge (M.W. Cormack); infection moderate at Brandon and Morden, Man., severe on some leaves at Winnipeg (W.L. Gordon). A trace was found on Chancellor, but other varieties were free at Ste. Anne de la Pocatière, Que. (R.O. Lachance)

RUST (Uromyces Fabae). Slight damage at Summerland, B.C. (G.E. Woolliams); traces on all varieties of field peas at Ste. Anne de la Pocatière, Que. (R.O. Lachance); 20% infection on foliage at L'Assomption (L.T. Richardson); infection a trace to heavy in test plots, seed of which was received from Ottawa, at Charlottetown, P.E.I.; reported also from many sections. (R.R. Hurst)

MOSAIC (virus) slightly affected several varieties at the Botanical Garden, Montreal, Que. (J.E. Jacques). Mosaic (Pisum virus 2) affected 2% of the plants in a garden at Fredericton, N.B.; the plants showed a conspicuous veinal mottle and stunting (D.J. MacLeod); occasional plants affected in Ottawa test at Charlottetown, P.E.I. (R.R. Hurst)

PEPPER

FRUIT and LEAF SPOT (Alternaria sp.) was quite general in many districts in South-western Ont.; although fruit infection was common, the greatest damage in many cases was caused by defoliation of the plants. (J.K. Richardson)

WILT (Verticillium sp.) affected 5% of the plants in a planting at Brantford, Ont. (G.C. Chamberlain)

BACTERIAL SPOT (Xanthomonas vesicatoria (Doidge) Dowson, Zentralbl. f. Bakt. Abt. 2, 100: 190. 1939; Bacterium vesicatorium Doidge, Journ. Dept. Agr. So. Africa 1: 718. 1920; cf. Starr & Burkholder, Phytopath. 32: 600. 1942). On Aug. 18, when the observations were made, many green fruits were unmarketable on account of bacterial spot in a 15-acre block of peppers at Brantford, Ont.; the foliage was also moderately affected (J.K. Richardson). Although the pathogen was not definitely determined, this is probably the bacterial spot of peppers described by B.B. Higgins (Phytopath. 12:501-516. 1922) and shown to be the same as bacterial spot of tomatoes by M.W. Gardner and J.B. Kendrick (Phytopath. 13: 307-315. 1923). (I.L. Conners)

INFECTIOUS CHLOROSIS (virus) was quite prevalent in the verification plots at the Station, Summerland, B.C. (G.E. Woolliams)

MOSAIC (virus). Affected specimens from scattered points in Lincoln Co., Ont., were brought to the Laboratory for identification; infection was slight. Mosaic was also found in the Brantford district. (J.K. Richardson). All plants of Red Chili pepper (Capsicum frutescens var. acuminatum) and Tobasco cone pepper (C. f. var. conoides) were dwarfed by mosaic and bore only small fruits at the Botanical Garden, Montreal, Que., while only one plant out of 10 of Long Red Cayenne Chili (C. f. var. longum) was affected. (J.E. Jacques)

MOSAIC and STREAK (virus). Two plants were found affected in a commercial field in Sunbury Co., N.B.; the virus was identified as Solanum virus 1, "L" strain. (D.J. MacLeod)

POTATO

The Plant Protection Division, Science Service, has supplied information on the extent of the seed potato industry, the acreages of the leading varieties passing inspection, the extent of fields which failed to pass inspection and the average percentages of the diseases - black leg, leaf roll, and mosaic - found in the fields. All fields entered for certification are planted with certified seed.

Table 3 - Seed potato certification: Number of Fields and Acres Inspected, 1942.

Province	Number of Fields		Fields Passed %	Number of Acres		Acres Passed %
	Entered	Passed		Entered	Passed	
P.E.I.	3,282	2,238	68.2	13,720	9,200	67.1
N.S.	429	337	78.6	935	746	79.8
N.B.	1,900	1,141	60.1	10,311	6,141	59.6
Que.	1,057	350	33.1	1,869	598	32.0
Ont.	579	439	75.8	1,627	1,213	74.6
Man.	86	63	73.3	254	166	65.4
Sask.	89	60	67.4	138	72	52.2
Alta.	126	108	85.7	263	184	69.9
B.C.	399	287	71.9	864	555	64.2
TOTAL	7,947	5,023	63.2	29,981	18,875	62.9

Acres Entered		Acres Passed	
1941	37,668	1941	24,405
1942	29,981	1942	18,875
Decrease of 7,687 or 20.4%		Decrease of 5,530 or 22.7%	

Table 4 - Seed Potato Certification: Acreages passed by Varieties, 1942.

Variety	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.-Alta.	B.C.	Total
Green Mountain	3,407	74	2,196	570	65	18	39	6,369
Irish Cobbler	4,766	228	244	19	115	136	4	5,512
Katahdin	753	274	2,692	9	681	6	8	4,423
Bliss Triumph	55	107	909			2	2	1,075
Netted Gem					7	193	393	593
Chippewa	10	9	6		268	3	9	305
Sebago	140	5	46		10			201
Warba	14	5			16	11	17	63
Rural New Yorker					49			49
Arran Consul			45					45
Houma	39					1		40
Other Varieties	16	44	3		2	52	83	200
TOTAL	9,200	746	6,141	598	1,213	422	555	18,875

There was a sharp contraction for a second year in the acreage of potatoes grown for certification. The percentage of fields passing inspection was also equally low. In fact, the percentage of fields that have passed in 1941 and 1942 is the lowest ever experienced except for the first 3 years, when seed potato certification was first established on a large scale and the supply of disease-free stock was limited. This year, leaf roll was the chief cause of rejection, mosaic was second and bacterial ring rot third. Although mosaic has yielded first place to leaf roll as a cause of rejection, and still is an important factor, the sharp falling off of the percentage of fields passing inspection is due to leaf roll and to a limited extent, to bacterial ring rot. This failure of many fields to pass inspection may be one cause for the present curtailment of acreage, but it is unfortunate that more high-quality seed is not available when production of food has become so important on this continent.

Table 5 - Seed Potato Certification: Fields rejected on Field Inspection, 1942.

Province	Leaf Roll	Mosaic	Bacterial Ring Rot	Adjacent Diseased Fields	Black Leg	Foreign Varieties	Misc.	Total
P.E.I.	474	327		73	47	41	82	1,044
N.S.	25	23		17		14	13	92
N.B.	350	123	80	91(47)[x]	7	40	66	759
Que.	121	117	186	144(92)	39	5	95	707
Ont.	31	13	12	25(11)	13	13	33	140
Man.	1	3	1	1	7	2	8	23
Sask.		7	2	5(1)	6	4	5	29
Alta.		4		6	7		1	18
B.C.	36	29	1	25	1	3	17	112
TOTAL	1,038	648	282	387(151)	127	122	320	2,924
Rejections as a percentage of fields:								
Entered	13.1	8.2	3.6	4.8	1.6	1.5	4.0	36.8%
Rejected	35.5	22.2	9.7	13.2	4.3	4.2	10.9	100.0%

[x]Figures in curves are the fields rejected because bacterial ring rot occurred in other fields on the same farm.

Table 6 - Seed Potato Certification: Average Percentage of Disease Found in Fields, 1942.

Average percentage of disease found in	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.
	%	%	%	%	%	%	%	%	%
Fields entered (first inspection)									
Black Leg	.16	.07	.13	.18	.17	.78	.47	.19	.06
Leaf Roll	1.35	.75	1.68	.57	.32	.14	.02	.15	.62
Mosaic	.70	.52	.71	.56	.15	.23	.78	.32	1.03
Fields passed (final inspection)									
Black Leg	.06	.04	.05	.13	.06	.12	.01	.01	.02
Leaf Roll	.33	.20	.31	.37	.10	.09	.01	.02	.10
Mosaic	.10	.08	.12	.38	.04	.12	.13	.03	.05

COMMON SCAB (Actinomyces scabies) only slightly affected some crops in B.C. and the affected tubers can easily be graded out (H.S. MacLeod). Scab was prevalent again in 1942 in the smooth-skinned varieties in Alta., and one lot of tubers of those so far inspected was too severely scabbed to be graded for certified seed; in Sask., however, scab was not prevalent (J.W. Marritt). Infection was general but light in Man. and northwestern Ont. (J.W. Scannell). On account of the hot, dry weather, common scab was found in most lots of potatoes grown in the district along the lower St. Lawrence, Que. In a few lots, where heavy applications of lime had been made in the preceding years or barnyard manure applied to the soil the current season, 75-100% of the tubers were affected and the lots were rejected (B. Baribeau). On specimens received from potato-growing centres in L'Islet, Kamouraska and Rimouski counties, scab was very superficial, but covered more of the tuber surface than usual. This behaviour was attributed to the unusually dry conditions prevailing in July and August in eastern Que. (C. Perrault). Scab was severe on a crop grown probably for the farmer's own use at Lac des Iles. (H.N. Racicot)

Nearly all crops were affected to some extent in N.B. and in some sections half the tubers were scabbed (C.H. Godwin). Scab was found in 40% of the crops in N.S. in 1942 as against 20% last year, and the average tuber infection was about 1%; the dry season probably favoured the disease (W.K. McCulloch). Scab was more prevalent than last year in P.E.I.; average tuber infection ranged from a trace to heavy, being severe on all the tubers in one field at Belmont. (S.G. Peppin and R.R. Hurst)

EARLY BLIGHT (Alternaria Solani) was found in several areas in B.C., but no estimate of damage was made, due to the presence of late blight in most fields (H.S. MacLeod). Early blight was more prevalent than usual in Alta.; infection was slight to moderate in several plantings at Edmonton and Lethbridge (M.W. Cormack). A moderate infection occurred on early varieties in the Estevan district, Sask. (J.W. Marritt). Early blight was severe at Dundurn; it was reported and specimens received from several other places (H.W. Mead). The disease was prevalent in Man. and northwestern Ont. (J.W. Scannell). General in Que. on account of the drought (O. Caron). Early blight was general throughout the lower St. Lawrence region, Que. In certain fields it appeared early in July and where no spraying was done, it caused much damage to the foliage. The presence of tip

burn further increased the injury (C. Perrault). It was observed in a few fields in the Chicoutimi, Quebec, and the lower St. Lawrence districts (B. Baribeau). Early blight was present in some areas in N.B., but yields were not reduced (C.H. Godwin). This disease was reported in Colchester Co., N.S., on July 23 and in Kings Co. on July 29. The season was very dry and it was difficult to distinguish between drought injury and blight damage. Crops were rather severely affected, but good yields were obtained. A trace of Alternaria rot was seen (W. K. McCulloch). A slight amount of early blight was present late in the season in P.E.I. (S.G. Peppin). Six tubers showing typical symptoms of early blight rot were brought to the Laboratory in Jan., 1942. (R.R. Hurst)

APHIS INJURY. In Que., in certain fields of Green Mountain, where aphids were very numerous, some necrosis of the younger parts of the stems and of the veins was observed. The leaves curved downward and gave to the tops of the plants a rosette appearance. Streaks were seen on the veins and top parts of the plant similar to streak in tomato. The affected plants could be observed easily in the fields, due to the stunted and rosette appearance of their tops. (C. Perrault)

GREY MOULD (Botrytis cinerea) affected occasional plants in a field in P.E.I. (R.R. Hurst)

ANTHRACNOSE (Colletotrichum atramentarium) was collected in a garden at Indian Head, Sask., where the vines were almost completely dead by early August and the tubers were mostly under 2 in. in length. A few nearby rows, possibly of a different seed lot, were not affected (B.J. Sallans). The characteristic cigar-shaped conidia were present in abundance on the lesions along with the long, dark, sparingly septate, setae (I.L. Conners). The disease was observed in 2 fields at Ste. Anne de la Pocatière, Que. Affected plants died down 2 to 3 weeks before healthy plants. The damage was slight if any. (C. Perrault) The fungus was found fruiting on a few stems at Kentville, N.S., on Sept. 16. (J.F. Hockey)

BACTERIAL RING ROT (Corynebacterium sepedonicum (Spieckermann & Kotthoff) Skaptason & Burkholder, Phytopath. 32: 441. May 1942; C. sepedonicum (Spieck.) Dowson, Trans. Brit. Myc. Soc. 25: 312. June 1942; Phytomonas sepedonica (Spieck.) Magrou; Bacterium sepedonicum Spieckermann 1913, nomen nudum; B. sepedonicum Spieckermann & Kotthoff 1914) was found in a small field of Sequoia entered for certification at Salmon Arm B.C. The original seed was certified stock purchased by the grower from North Carolina in 1940. The disease was also found at Vancouver in shipments of table stock from Sask. and Alta. This is the first time the disease had been found in B.C. and every effort has been made to eradicate it. (H.S. MacLeod and W. Jones) Smears made from material from Salmon Arm and tubers of Irish Cobbler collected at Vancouver from a Sask. shipment were positive for this organism. (H.N. Racicot) Subsequently it was learned that samples of the Sequoia variety had been distributed around the countryside by the grower and the disease has since been located on a farm at Vernon, where one of these samples had been grown. (G.E. Woolliams)

A survey for bacterial ring rot was made in 1942 in 26 townships, mainly in the irrigated sections of Alta. Some 550 farms were visited and 406 inspections made. The presence of the disease was verified by microscopic examinations done by L.E. Tyner, Dominion Laboratory of Plant Pathology, Edmonton. As a result of the survey, the disease was found in 22 townships on 151 farms and

affected 982.5 acres. In addition, 296 acres appeared sound but were on farms, where the disease was detected. The more characteristic symptoms of the disease were visible for such a limited period that the disease was probably more prevalent than the figures indicate.

Until 1942, ring rot was confined in Alta. to the Lethbridge area, including Taber and Raymond, except for 3 small fields at Medicine Hat. Ring rot was not located this year at Medicine Hat, but instead, it was found in 5 fields at Brooks and Rosemary in the Eastern Irrigation District and in one at Drumheller. The disease continues to be a serious problem in the Lethbridge area from Picture Butte to Raymond and from Coalhurst to Taber. Ring rot was found on 145 farms in the area, an increase of 46; approximately half of the commercial acreage in potatoes was affected by the disease. On 68 farms, ring rot was found in previous years and the disease reached new farms by the purchase of affected seed and by the use of borrowed machinery, which had become contaminated. A considerable number of growers were apparently able to get rid of the disease on their farms by the purchase of clean seed and carrying out the recommended clean-up of their premises. (J.L. Eaglesham) Bacterial ring rot was found in one field entered for certification near Lethbridge and a second field in the Brooks district was adjacent to one of affected table stock. (J.W. Marritt)

Bacterial ring rot appeared to be fairly established in the Pike Lake area, Sask. During a one-day survey, suspected plants were collected in 7 fields of table stock and smears from tubers from 4 of the 7 fields were positive. (P.M. Simmonds) Ring rot was in 2 fields entered for certification. One of these was in the Pike Lake area and the other in the Punnicky district. One other field was rejected because ring rot occurred on the farm. A brief survey of fields of table stock in the Pike Lake area indicated that the disease was fairly general and the inspector was informed that the disease occurred elsewhere in the Punnicky district. (J.W. Marritt) Ring rot was found in only one field entered for certification in Man.; it was presented on the same farm in previous years. No cases were found in table stock. (J.W. Scannell) Tubers collected at Vancouver, B.C. from a carload of table stock from Man. by W. Jones were positive for the organism. (H.N. Racicot)

Bacterial ring rot was found in Ont. on 18 farms where certified seed was used compared to 35 in 1941. Infection ranged from 0.1% to 3%. These farms were located: 7 in Cochrane District, 4 in Dufferin Co. and one each in Carleton, Norfolk, Ontario, Peterborough, Renfrew, Simcoe and Sudbury counties. The disease was also encountered on 19 farms in table stock in some of the same counties. Ring rot was destructive in a field of table stock in Gatineau Co., Que. Over 60% of the crop was left in the field upon digging. These Green Mountains had been grown on the farm for 5 years (O.W. Lachaine). Tubers submitted by Mr. J.T. Cassin, Ont. Dept. of Agriculture, from Alliston and Uxbridge were found affected. (H.N. Racicot)

Bacterial ring rot was found in nearly all counties visited in Que. in 1942. Of the 1,057 fields inspected, 278 were rejected for certification on account of the disease. It was present in 186 fields and on the same farm in 92. This year, ring rot was most prevalent in Chicoutimi, Lake St. John and Lower St. Lawrence districts where 237 fields were rejected out of 446 inspected; 69 of these fields showed no ring rot, but were on farms where the disease occurred. This high percentage of infected fields is due mostly to the use of contaminated implements, cutting knife and sacks, often shared with neighbours (B. Baribeau).

In all, the crop from 97 fields entered for certification were rejected for ring rot in N.B. in 1942 compared with 254 in 1941; the disease was discovered in 80 cases during field inspection, and was found later in 17 others, as against 205 in the field and 49 later in 1941. Ring rot was also observed in 11 fields of table stock. (C.H. Godwin)

Bacterial ring rot was not reported in N.S. this year (W.K. McCulloch). Ring rot was not found in the field in P.E.I., but it was observed on Oct. 29 in one lot of Irish Cobbler grown at Armadale. (R.R. Hurst and S.G. Peppin)

BLACK LEG (Erwinia phytophthora) was not prevalent nor severe in B.C.; it was in 39 fields or 9.7% entered for certification and resulted in the rejection of one (H.S. MacLeod). Most of the fields affected by black leg in Alta. were in the Peers and Duchess districts; 13% of the fields were affected and 7 fields were rejected. Black leg developed in 17% of the fields inspected in Sask. and caused the rejection of 6; the affected fields were mostly in the northeastern part of the province (J.W. Marritt). Black leg was epidemic in some fields in Man. At the time of the first inspection in July, the usual amount of black leg was present, which the growers then rogued out. In August, infection was 4.3-13.3% in these rogued fields and by Sept. 1 these amounts were doubled. Black leg was responsible for 7 out of 14 rejections made for disease in Man. and for 3 out of 4 in northwestern Ont. (J.W. Scannell)

Ten fields were rejected for black leg in Ont. as against 8 in 1941 (O.W. Lachaine). Small amounts of black leg were reported from many places throughout Que. (O. Caron). The disease was particularly noticeable in Témiscouata, Chicoutimi and Labelle counties and caused the rejection of 39 fields (B. Baribeau). There was some increase over recent years in N.B. in the amount of black leg in affected fields, but it caused the rejection of only 7 fields, the same as last year. Most of the disease was located in the same areas as in previous seasons and was due mostly to late infection (C.H. Godwin). Black leg was present in 78 fields, mostly of Irish Cobbler, in N.S., but no fields were rejected. The number of infected fields was double that of last year, although 22 showed only a trace (W.K. McCulloch). Black leg was less prevalent than in 1941, only 47 fields being rejected; very little was present in the early season, but more developed later (S.G. Peppin). Affected plants were found here and there in 48 fields of table stock examined; infection never exceeded 2% in any field. (R.R. Hurst)

STEM-END ROT (Fusarium Solani var. eumartii). Tubers sent in by J.T. Cassin from a field of Irish Cobbler at Harrow, Ont., were severely affected by stem-end rot and rhizoctonia; 8% of the plants were wilting in the field (H.N. Racicot). The disease was not a problem in Ont. in 1942. (O.W. Lachaine)

TUBER ROTS (Fusarium spp.). F. avenaceum was considered the cause of dry rot in affected tubers scattered through 80 carloads in storage at Duchess, Alta.; other fungi commonly isolated were F. caeruleum and F. sambucinum f. 6 (M.W. Cormack). Some 6% of the tubers were affected in one cellar at St. Roch des Aulnaies, Que. (A. Payette). Tubers received from B. Baribeau were found affected by dry rot and black heart. The tubers were from a field in Que., which had passed inspection, but they were left for some time after harvest in rather airtight barrels. It was reported that 8-10% of the tubers were so affected (L.T. Richardson). Tubers affected by dry rot from the 1941 crop were received from Ogema and Richard, Sask. (T.C. Vanterpool)

WILT (Fusarium sp.) was reported in only 4 fields in B.C. in 1942 and did not cause any rejections (H.S. MacLeod). Light infections of wilt were present in Man. and northwestern Ont., and one field entered for certification was rejected in Man. (J.W. Scannell). Only 8 fields were rejected for wilt in Ont. (O.W. Lachaine). The disease was observed in a few fields in the lower St. Lawrence district, Que. At digging time, the tubers from these plants were affected by dry rot. Bruised and cut tubers were more severely affected (B. Baribeau). A large proportion of the potatoes in Kamouraska and Témiscouata counties which reached the Laboratory for examination for the bacterial ring rot were infected with Fusarium oxysporum. (A. Payette)

RHIZOCTONIA (Pellicularia filamentosa (Pat.) Rogers; Hypochnus filamentosus Pat.; Corticium Solani (Prill. & Del.) Bourd. & Galz.). Students of the Thelephoraceae have recognized for some time that certain genera were badly in need of revision. Due to the plethora of described species, it became clearly impossible for one student to present a complete revision in a single paper. Attention has, therefore, been directed to the segregation of groups of naturally related species. "Pellicularia is distinguishable by very short-celled stout hyphae .... , by right-angled branching of the mycelium, by very stout basidia and by mucedinoid texture," according to D.P. Rogers (Farlowia 1(1): 95-118. 1943). Donk (Nederl. Myc. Ver. Med. 18-20: 1931) proposed the genus Botryobasidium for this "distinct and well characterized systematic and phyletic unit, for which the need had long existed." Rogers, however, found it necessary to adopt the name Pellicularia proposed by Cooke for P. Koleraga. (I.L. Conners)

Although rhizoctonia was prevalent in fields in most areas in B.C., it was not as severe as usual. Sclerotia were less common than in the average year on the tubers in the bins inspected so far; a few lots will have to be graded fairly heavily (H.S. MacLeod). Injury by rhizoctonia was not prevalent in Alta.; only 6% of the fields, mostly of Early Ohio, showed more than slight injury. In Sask., rhizoctonia caused severe injury in 4 fields and moderate in 19; sclerotium formation was slight on the tubers (J.W. Marritt). Rhizoctonia was not severe on the tubers in Man. in 1942 as had been expected; the crop was slow in maturing and the tubers were harvested soon after the vines were killed by frost (J.W. Scannell). Rhizoctonia was present throughout Que. Average infection was slight on the tubers; only 2 lots, with 80-90% of the tubers infected, were rejected at bin inspection (B. Baribeau). The disease was present to some extent in every field in N.B. and sclerotia occurred on the tubers in most lots; no lot was rejected at bin inspection (C.H. Godwin). Rhizoctonia was apparently more widespread than usual in N.S. It was reported in 70% of the fields of Irish Cobbler, 60% of Katahdin, 50% of Bliss Triumph and 20% of Green Mountain. Some 50% of the tubers were affected in some crops with an average infection of 5% of the tubers (W.K. McCulloch). Rhizoctonia caused slight to moderate damage in the field in P.E.I. It also slightly affected 5% of the tubers (S.G. Peppin). The perfect stage was a common sight in the field during wet weather in August. At harvest time, sclerotium infection was a trace on Irish Cobbler and Green Mountain. (R.R. Hurst)

LATE BLIGHT (Phytophthora infestans) was first found in B.C. on June 4, the earliest date on record in B.C. Weather conditions were very favourable for the development and spread of the disease in the early part of July. Defoliation suffered by the plants in early stages of growth greatly reduced the yields, especially in late-planted fields. Late blight was most prevalent in the Fraser Valley, but it was found in several other localities. After July 17, the weather

was unusually fine and dry and the spread of the disease was checked. Most of the crop was clean and dry when harvested. There was little loss from rot of the tubers, especially in crops that were well sprayed. Nevertheless, due to the attack early in the season, late blight was estimated to have caused a greater reduction in yield in B.C. in 1942 than in any previous year. Spraying is not yet general in the areas where the disease is found frequently (H.S. McLeod). Late blight caused severe damage for the second successive year in Man., especially in the Red River Valley. It was impossible to determine the exact amount of damage, as many potatoes were frozen in the ground in September and the secondary rot that developed in the frosted tubers was not easily distinguished from rot following late blight. Late blight was extremely severe in the Rainy River district, Ont., but it caused little or no damage in the Thunder Bay district, where the summer was very dry; it also occurred in the Dryden district. (J.W. Scannell)

Late blight was epidemic in a few counties in eastern Ont., where over 50% of the crop was lost; the disease was also present in all sections where late varieties are grown (O.W. Lachaine). Late blight was prevalent in most of the important potato-growing districts of Ont.; at digging time, crops were seen where over 30% of the tubers were showing rot (J.E. Howitt). Late blight was not a serious problem in Que. in 1942. It was reported causing the death of vines on Aug. 15 in the Montreal and Three Rivers districts. The disease appeared in the Chicoutimi district and along the lower St. Lawrence, especially in the Gaspé at the end of August, but caused no tuber rot (B. Baribeau). According to information received, late blight was rare in eastern Que., but it became prevalent in the western part of the province (O. Caron). A severe outbreak of late blight developed early in July in Carleton Co., N.B., and it spread later throughout the other counties. Such an early outbreak seriously set back plant growth and resulted in a reduction in yield. Dry weather during Aug. checked the disease and prevented tuber infection. Loss from rot was very small. (C.H. Godwin)

Late blight was general in N.S., but except in a few cases, infection was slight. It was reported in Kings Co. on Aug. 1 and in Colchester Co. on Aug. 13. All varieties including Sebago were affected. In general, spraying was effective and large crops of sound tubers were harvested. However, 40% of the tubers were infected in a lot of 200 barrels of Bliss Triumph and 30% in a lot of Early Rose. Tuber rot averaged 1.5%. Infection was very severe in two fields, which had produced a severely blighted crop the previous year (W.C. McCulloch). Late blight was reported in P.E.I. on July 25, following a rainy period of 6 days. In the next week it was recorded from many points throughout the province. Its great prevalence at this early date has been observed previously in years following a severe outbreak, such as occurred in 1941 (P.D.S. 21: 47). By late August it had caused severe damage in many potato fields on account of the premature death of the tops. Many farmers, unfortunately interrupted their spray schedules because they thought the lack of heavy rains in the first half of September had definitely arrested the further spread of blight. New growth was unprotected, and a late-season outbreak caused a loss varying from 10 to almost 100% of the crop in individual fields. Rot destroyed 21% of the seed pieces in 7 fields of Green Mountain in June; the seed was cut from tubers affected by late blight. In fact throughout the winter of 1941-42, severe losses from rot occurred because such a high percentage of blight-infected tubers was placed in storage in the fall of 1941 (R.R. Hurst). Late blight was moderate to severe in P.E.I., depending on the variety and locality. Late blight rot was prevalent over most of P.E.I., but was most severe in the central area; the average loss was 10%. (S.G. Peppin)

SOFT ROT or LEAK (Pythium ultimum) caused numerous misses in tuber-index tests in the greenhouse at Sidney, B.C., Feb., 1942. The tubers were not well callosed, greenhouse temperature was high and the soil had not been sterilized (W. Jones). Severe rotting occurred in 2 carloads shipped from Edmonton, Alta. to Vancouver in September. The tubers were harvested during wet weather and were apparently not properly dried before shipping. (G.B. Sanford)

SOFT ROT (Rhizopus sp.) was affecting a few Green Mountain tubers brought to the Laboratory at Charlottetown, P.E.I. in November; the tubers showed mechanical injury. (R.R. Hurst)

SILVER SCURF (Spondylocladium atrovirens) was observed a few times in Que.; infection was slight (B. Baribeau). It was present to some extent on Irish Cobbler in several parts of N.B. (C.H. Godwin). Observations indicate that infection will be moderate to severe in P.E.I. (S.G. Peppin). A considerable amount of silver scurf was present on Irish Cobbler in April, 1942, and a trace occurred on Green Mountain. (R.R. Hurst)

POWDERY SCAB (Spongospora subterranea). A single tuber was found infected in a greenhouse at Edmonton, Alta. (J.G. Grimble). The disease was observed only in Témiscouata and Kamouraska counties, Que.; infection was slight (B. Baribeau). A few cases were reported in N.B., but infection was not severe (C.H. Godwin). Powdery scab was reported in 6 fields in N.S.; infection ranged from 0.25 to 2% of the tubers. In one field of Bliss Triumph, where 5% of the tubers were very severely infected in 1938, infection this year was 1.25% (W.K. McCulloch). Only one or two cases of powdery scab were found in P.E.I. (S.G. Peppin)

WART (Synchytrium endobioticum) was not observed again, since it was discovered in 1941. Further search was made during the summer and although many lots of "English" potatoes were found and examined, no trace of wart was seen. The small garden in Halifax, where the disease was found, has been kept under observation by the Plant Inspection Service. (W.K. McCulloch)

WILT (Verticillium albo-atrum) ruined a field of potatoes grown for home consumption at Summerland, B.C. (G.E. Woolliams). The disease was frequent and often caused evident damage in Alta. (M.W. Cormack). Wilt affected only a few plants in the fields where it was observed in N.B.; most of the affected fields were in the central part of the province (C.H. Godwin). Wilt caused the rejection of one field and slightly affected 6 others in N.S. The source of infection was usually the seed, in which the disease had been detected previously (W.K. McCulloch). Several specimens were brought to the Laboratory from North Mountain, N.S., for identification; the organism was isolated (J.F. Hockey). Very little wilt was reported in P.E.I. in 1942; however, it should be noted that wilt symptoms were probably masked by the severe late blight infection. (S.G. Peppin)

WILT (Verticillium and Fusarium). A trace to 0.33% of affected plants was found in 10% of the fields inspected in Alta. and Sask.; moisture was plentiful in Sask., throughout the season. (J.W. Marritt)

LEAF ROLL (virus) was more prevalent and severe in B.C. in 1942 than in the previous year. It was found in 191 fields or 47.8% of those inspected and was the cause of rejection of 36 or 9.0% (H.S. MacLeod). Leaf roll was found in

Alta. in only 10% of the fields inspected, a definite reduction from last year, and no fields were rejected. However, there was evidence of late-season spread of leaf roll in the University plots, Edmonton, similar to that observed in 1940; but necrosis in the tubers and primary symptoms in the vines were less pronounced. Nevertheless an increase of leaf roll is anticipated in 1943, although current season symptoms were not observed in fields entered for certification in the district. Leaf roll has never been prevalent in Sask.; in 1942, a few plants were found in only 6% of the fields entered for certification (J.W. Marritt). Leaf roll was more prevalent than usual in Man. and northwestern Ont.; one field was rejected in Man. (J.W. Scannell)

Leaf roll was the cause of rejection of 31 fields in Ont.; 10% of the plants were affected in one field of Irish Cobbler, but in most fields rejected infection ranged from 2 to 5% (O.W. Lachaine). Leaf roll appeared to be increasing to an alarming degree in some districts of Que. In Nicolet Co., 61 fields were rejected out of 111 entered for certification (B. Baribeau). Leaf roll was the cause of rejection of 350 fields in N.B. as against 469 in 1941. However, the disease continues to be severe. Many fields of table stock were planted with seed from fields where leaf roll had been prevalent; this year's crop also showed a high percentage of leaf roll (C.H. Godwin). Leaf roll caused the rejection of 25 fields in N.S. Control measures are less rigorously carried out, due to the shortage of labour, etc. Among the new varieties, Chippewa appears to be very susceptible. (W.K. McCulloch) Leaf roll was more prevalent in P.E.I. than in 1941; 474 fields were rejected against 263 in the previous year (S.G. Peppin). Leaf roll was observed in Irish Cobbler, Green Mountain, Katahdin and Sebago; besides leaf roll being present in more fields, very high percentage of affected plants were recorded in some. (R.R. Hurst)

MOSAIC (virus) was found in 225 fields in B.C. and caused the rejection of 29 or 7.3%; the average number of rejections from 1936 to 1942 inclusive was 22.7 fields or 5.9% (H.S. MacLeod). Climatic conditions were favourable for development of symptoms of mosaic in the central and northern parts of Alta. and in Sask. Mosaic was found in 23% of the fields and caused the rejection of 4 in Alta.; in many fields only a slight mottling was observed. Mosaic was observed in 59% of the fields and caused the rejection of 7 in Sask.; symptoms ranged from slight to moderate mottling in most fields (J.W. Marritt). Mosaic was readily detected and may account for the apparent increase in Man.; one field in Man. and one in Northern Ont. were rejected (J.W. Scannell). In Ont., 12 fields were rejected on account of mosaic (O.W. Lachaine). The disease was slightly less prevalent in fields entered for certification in Que. than in 1941; 117 fields were rejected for mosaic (B. Baribeau). Mosaic was reported from many localities in Que. (O. Caron). The disease was less severe in fields entered for certification in N.B. than previously. The disease is more prevalent in table stock fields, especially where the same stock is used year after year; in one field the seed had been used for 17 years, and every plant was affected with mosaic (C.H. Godwin). Mosaic was not quite as widespread in N.S. as in 1941. It was found in 37% of the fields and caused the rejection of 5%. Green Mountain and Bliss Triumph continue to be the worst affected (W.K. McCulloch). Mosaic was less prevalent in P.E.I. than last year; 327 fields were rejected (S.G. Peppin). In 48 fields of table stock, chiefly of Irish Cobbler and Green Mountain, mosaic was present in every field; not less than 25% of plants were affected in most fields and 82% were affected in one field of 2 acres. (R.R. Hurst)

PURPLE DWARF was observed in several fields in Alta., but apparently

this malady was much scarcer than in 1940 (G.B. Sanford). This trouble was present in 5% of the fields examined in 1941; the number of affected plants has been greatly reduced in the past two years (J.W. Marritt). Affected plants, according to Dr. H.T. Güssow, greatly resemble those affected by "haywire", which he saw at Cornell University several years ago. "Haywire" is apparently a disease, described by Goss from Nebraska. (I.L. Conners)

PURPLY TOP was observed in all fields of Katahdin inspected in N.B. The trouble apparently increases as the season advances. The same condition existed in fields of other varieties (C.H. Godwin). From 1 to 2% of the plants were found affected with purple top in N.S. this year. The trouble was quite conspicuous in 1940, almost disappeared in 1941, and was easy to find in 1942. Many large fields of Katahdin where the seed was planted in tuber-units were inspected in person and only rarely was found more than one infected plant to a unit. The disease seemed to be worse in low-lying or damp parts of the field. One of the worst cases was a 22-acre field in Upper Musquodoboit Valley, Halifax Co. The seed for this field was developed from a ½ bu. of tubers from the plots at Kentville, where the disease has never been seen, and no other potatoes were grown on the farm at Musquodoboit (W.K. McCulloch). Purple top was severe on Sebago, moderate to severe on Katahdin and Irish Cobbler, and slight on Green Mountain in P.E.I. The crop was reduced considerably and tubers from affected plants were often flabby (R.R. Hurst). The same trouble was observed in 1939. (S.G. Peppin)

S.G. Younkin (Phytopath. 33: 16. 1943) reports that "further evidence has been obtained indicating that the eastern strain of the aster-yellows virus may cause purple-top wilt of potatoes". In greenhouse tests, Green Mountain was less susceptible than Katahdin and Smooth Rural. It was transmitted by grafting 4 times out of 200 grafts, using scions from naturally infected purple-top plants of Katahdin, Sebago, Rural and Cobbler collected from 18 localities in New York and Pennsylvania. No claim is made that the disease in the Maritimes is identical with that reported by Younkin, but it will be noted that varietal reactions are similar. Possibly purple top was only noted in potatoes in recent years because the older varieties were not particularly affected. However, if it is due to aster-yellows virus, its appearance in potatoes may in some way be connected with the outbreak of yellows in carrots, which has become very destructive to the latter, particularly in N.B. and N.S.

SPINDLE TUBER (virus) was recorded as follows: In 72 fields in B.C., but none were rejected on that account; one field rejected in Man.; growers know the disease better than formerly; no more serious in Ont. than in 1941; reported in a few lots in Que.; only one field rejected on account of spindle tuber in N.B.; improvement attributed to the use of better seed, particularly of Katahdin; seen in 2 fields of Sebago in N.S.; pear-shaped tubers of Katahdin and cylindrical ones of Irish Cobbler found frequently; very little found in P.E.I., symptoms probably masked by late-blight infection; a trace to 12% seen in table stock of Irish Cobbler and Green Mountain.

WITCHES' BROOM (virus). Found in 72 fields in B.C., but the number of affected plants was small.

YELLOW DWARF (virus) was found in 9 fields in Ont.; the highest infection observed was 5% in a field of Dooley at Durham. Clover was present in the adjacent field. (O.W. Lachaine)

VIRUS DISEASES IN KATAHDIN. A virus disease, believed to be new to potatoes, was found in Katahdin. The disease is characterized by an intense mottling of the leaves accompanied by a blistering of the leaf surface. The virus is readily sap transmissible and gives reactions on standard defferentials resembling those of Hyoscyamus virus 3. The disease was found in a field of certified stock in York Co., N.B. (cf. Marion A. Hamilton, Ann. Appl. Biol. 19: 550-567. 1932 and F.M.L. Sheffield, ibid 25: 781-789. 1938)

A severe streak disease was found causing considerable damage in a field of Katahdin in Addington Co., Ont. The virus has been identified as a strong strain of Solanum virus 2 (rugose mosaic).

The Katahdin variety has a great deal of field resistance to Solanum virus 3 (mild mosaic), but it is susceptible to certain strains of Solanum virus 1, Solanum virus 2, and at least two other viruses not previously described as affecting potatoes.

Greenhouse tests over a period of 3 years have shown that Katahdin does not readily show leaf roll the first and second years, the symptoms being confined mainly to a rolling of the lower leaves. Up-to-date and certain other varieties believed to be carriers of leaf roll also behave in this manner. (D.J. MacLeod)

BLACK HEART (non-parasitic). An affected tuber of Chippewa was received from Clute, Ont. The potatoes were grown in heavy clay soil and harvested in wet weather. The bin became flooded at one end (H.N. Racicot). Several reports of black heart were received from P.E.I. growers late in the storage period. (R.R. Hurst)

BRUISE SPOT (mechanical injury to immature tubers). A shipment of potatoes from the Pike Lake District to the R.C.A.F. Depot at Saskatoon, Sask., was turned down because of the presence of numerous brown areas on the surface of the tubers. The trouble was apparently caused by rough handling which resulted in a bruising of the thin skin of the immature though moderately large tubers. This condition is not uncommon in Sask. in late-maturing varieties, or in seasons when the ripening period is prolonged. The bruised areas enlarge if the tubers are kept at moderately high temperatures and become irregular in outline. This is evidently the same trouble reported last year as Crusty Spot. (T.C. Vanterpool)

BORON DEFICIENCY. It has been observed that the leaves of Katahdin become severely rolled when the variety is grown on certain soils in N.B., while the leaves are normal when it is planted on other soils. The Chippewa variety also shows this tendency. Possibly these varieties are more sensitive to boron deficiency than the older varieties, for when Katahdin was grown on a boron deficient soil at the Laboratory, Fredericton, the leaves were extremely rolled, while Green Mountain in adjacent plots showed almost no rolling of the leaves. (D.J. MacLeod)

GIANT HILL was reported in 20.8% of the fields inspected in B.C., but no fields were rejected on account of its presence (H.S. MacLeod). About 1% of the plants were suspected of being affected by giant hill in a few fields of Green Mountain in Kings Co., N.S. (W.K. McCulloch)

HOLLOW HEART (non-parasitic) was severe in Man. in one field of Irish Cobbler, which had passed field inspection; tubers weighing as little as 8 oz. were affected (J.W. Scannell). Hollow heart was observed in N.B. in one field, where soil fertility was high and the plants had made unusually vigorous growth (C.H. Godwin). Hollow heart was present occasionally in the 1942 crop in P.E.I.; in one field of Sebago 0.5% of the tubers were affected. (R.R. Hurst)

FAILURE OF TOP FORMATION (non-parasitic). The Chippewa variety, in common with Katahdin, apparently possesses a tendency to produce small tubers rather than tops when the sets are planted. Seed from a lot grown near Saanichton, B.C., were planted in a garden near the Station on April 10, April 22, and May 1. The respective stands were 100%, 83%, and 76%, and all seed pieces that failed to grow were found on examination to consist of a mass of small tubers and no stalks. A survey conducted by Mr. E.R. Bewell disclosed that all the Chippewa seed grown on Vancouver Island, which matured very early in 1941 under abnormally hot, dry conditions, gave imperfect stands due to this condition, and in every case the late plantings gave the poorest stands. Potatoes of the same variety grown at Grand Forks and Chilliwack in the Fraser Valley gave good stands, apparently because the tubers matured later than the Vancouver crops (W. Newton). A slight amount of this trouble was found in a field of Katahdin at Halls Harbour, N.S. (G.W. Hope)

NET NECROSIS was not as prevalent as in many previous years in B.C. (H.S. MacLeod). Certified seed stocks in Alta., which have, so far, been inspected in the bin, have been very free from net necrosis (J.W. Marritt). Net necrosis was reported in a few lots of seed from Nicolet Co., Que. Over 50% of these lots were rejected for leaf roll when inspected in the field. Affected tubers were sent to this office and were planted in the greenhouse and field; more than 25% of the affected tubers produced plants affected by leaf roll (B. Baribeau). Net necrosis was still serious in seed and table stock grown in the Saint John River Valley, N.B.; in other areas, where the disease has not been considered severe, more cases were reported this year than in 1941 (C.H. Godwin). A sample of 25 tubers of Green Mountain showing necrosis was critically studied at Kentville, N.S. Seven weeks after planting, all tubers produced plants showing leaf roll in one or both units from each tuber. In addition to leaf roll, 22 tubers yielded plants showing more or less severe symptoms of mosaic. Microscopic examination of preparations made from the tissue adjacent to eyes revealed a necrosis of phloem and the adjacent parenchyma tissue. No xylem necrosis was observed except in tissue of some tubers, immediately adjacent to the stolon. Tissue plantings were nearly all negative. The owner of the seed recently examined the plants and remarked on their similarity to the plants in a field adjacent to the one from which the sample was taken in 1941 (J.F. Hockey). Net necrosis was severe in one field in P.E.I. where 75% of the tubers were affected; otherwise very little occurred. (S.G. Peppin)

SPRAIN was severe in one field in P.E.I., where 75% of the tubers were affected; a slight amount occurred in other fields and was found only in the extreme western end of the province. (S.G. Peppin)

STEM-END BROWNING is still a serious trouble in Green Mountain and to a lesser extent in other varieties in N.B.; occasionally the crop was a total loss (C.H. Godwin). Stem-end browning was found in almost every lot of Irish Cobbler grown in P.E.I. in 1941. All seed was so seriously affected that no seed lots could be found quite free from it and plantings of this variety contained, of necessity, affected tubers. Stem-end browning had not developed in the 1942 seed crop by December, when tubers were last examined. (S.G. Peppin & R.R. Hurst)

PUMPKIN

MOSAIC (virus). All plants of Royal Acorn were affected but suffered little injury in a plot at the Botanical Garden, Montreal, Que. (J.E. Jacques)

RADISH

YELLOWS (Callistephus virus 1). Two severely infected plants were found in a garden at the Station, Fredericton, N.B.; the plants were dwarfed and the inflorescence was distorted and sterile. (D.J. MacLeod)

RHUBARB

LEAF SPOT (Phyllosticta straminella). A moderate infection was present on the leaves of some varieties at Brandon, Man. (W.L. Gordon)

CROWN ROT (cause unknown) moderately affected rhubarb in the gardens at Lacombe, Alta.

SALSIFY

WHITE RUST (Cystopus cubicus). All the plants of Mammoth Sandwich Island salsify were more or less affected in the Botanical Garden, Montreal, Que.; removal of the diseased leaves apparently checked further spread (J.E. Jacques). Traces of white rust were present in a planting of salsify in Rouville Co. (E. Lavallée)

SPINACH

YELLOWS (Fusarium sp.) affected 20% of the plants in a garden in Lincoln Co., Ont.; diseased plants were so chlorotic and stunted as to be unfit for sale. (J.K. Richardson)

DOWNY MILDEW (Peronospora Spinaciae) was moderate and caused slight damage in a field in Lincoln Co., Ont. (G.C. Chamberlain). One field was slightly affected at St. Martin, Que. (E. Lavallée)

SQUASH

BACTERIAL WILT (Erwinia tracheiphila) infection was a trace to slight in the plots at Ste. Anne de la Pocatière, Que. (R.O. Lachance)

MOSAIC (virus). All plants of Golden Summer Crookneck squash were affected, but suffered little injury in the Botanical Garden, Montreal, Que. (J.E. Jacques)

SWEET CORN

?BACTERIAL STALK ROT (Phytomonas dissolvens). There appeared recently at the Horticultural Station, Vineland Station, Ont., a new disease, which was quite prevalent in some hybrid lines of corn. The symptoms differ somewhat from those described for bacterial stalk rot. The disease affects primarily the leaf

sheaths and occasionally the ears. External symptoms appear as light to dark brown discolorations and water-soaked areas on the leaf sheaths. Later, some necrosis develops accompanied by blanching and drying of the centre of the lesion. Bacteria have been found upon a microscopic examination of the diseased tissue and have been readily isolated. (C.D. McKeen)

RUST (Puccinia Sorghi) was apparently uncommon in Man. this year; a mere trace was present at Morden (W.L. Gordon). Several fields near the Laboratory, St. Catharines, Ont., were slightly infected (J.K. Richardson). Rust infection was a trace to heavy on Golden Bantam and other varieties in Queens Co., P.E.I. (R.R. Hurst)

SMUT (Ustilago Zeae). Infection was slight at Brandon, Man., being less than in some years; general and moderate at Morden (W.L. Gordon); infection quite general in Ont., although less severe than usual in Lincoln Co. (J.K. Richardson). A single plant of variegated maize, Zea Mays var. japonica f. quadricolor, was attacked in the Botanical Garden, Montreal, Que. (J.E. Jacques). A few cases of smut were reported in Que. this year. (O. Caron)

SWEET POTATO

JAVA BLACK ROT (Diplodia tubericola). Sweet potatoes affected by a severe storage rot were received from a wholesale firm in Calgary, Alta. Isolations from the potatoes yielded cultures of Diplodia tubericola, which proved to be pathogenic when inoculated into sound specimens. (J.G. Grimble)

SWISS CHARD

LEAF SPOT (Phoma Betae) was found on a few leaves in a crop grown for seed at the University, Vancouver, B.C.; the spots were associated with those caused by Ramularia beticola. This pathogen has not been previously reported on swiss chard in Canada. (W. Jones)

LEAF SPOT (Ramularia beticola) was general on the leaves and occasionally on the stems of 2 seed crops grown at the University, Vancouver, B.C. and in North Saanich Co. respectively. The fungus has not been reported previously in Canada on swiss chard. (W. Jones)

RUST (Uromyces Betae) slightly infected a crop grown for seed in North Saanich Co., B.C. (W. Jones)

TOBACCO

These records, prepared by Dr. L.W. Koch, include information obtained by Mr. F.A. Stinson in the New Tobacco Belt of Ontario and from Mr. R. Bordeleau for the Quebec tobacco-growing areas.

Diseases in the Seedbed

BLACK LEG (Erwinia ?aroideae). A few cases were observed in the Woodslee area of Essex Co., Ont., during the transplanting season. It is nearly always confused by growers with damping-off.

NEMATODES (Heterodera marioni) were observed in one Essex Co. seedbed. Cucumbers had been grown in some of the soil during the previous year. Seedlings were chlorotic and stunted.

DAMPING-OFF (Rhizoctonia and Pythium sp.). Damage in Ont. was observed chiefly in cloth-covered burley seedbeds in Essex and Kent counties. Some damage also occurred in Norfolk Co. during the transplanting season. On the whole, this disease was less serious than in 1941 in Ont. In the southern tobacco-growing area of Que., however, this disease took a high toll of seedlings.

BLACK ROOT ROT (Thielaviopsis basicola). Damage from this disease was generally moderate throughout the old and new tobacco belts of Ont. However, in localized areas of Norfolk Co., black root rot was observed to be present in some greenhouses. It was found that mild, general infections in seedbeds were almost invariably overlooked by growers. In the northern tobacco-growing section of Que., black root rot was the most destructive disease of seedlings and infection was widespread. This is due largely to the fact that most of the varieties grown there are completely susceptible, and besides, disinfection of seedbed soil and frames is not generally practised.

CHLOROSIS (chilling). During the past year, as usual, some complaints were received of this seedling trouble which appears as a distinct yellowing of the inside "bud" leaves at the four to six leaf stage. Careful observations during the past four years have strongly indicated this trouble to be due to chilling of seedlings at night. Recovery nearly always follows within a few days to a week with no permanent ill effects.

YELLOW PATCH (unbalanced fertilization) was the most damaging disease of seedlings during 1942 in both the old and new tobacco belts of Ont. The disease is characterized by dwarfing and yellowing of the tops, rotting of the roots, and patchy appearance of the affected seedbeds. Damage varied from a milk stunting and yellowing in the affected parts of seedbeds to the death of all seedlings in entire beds. In all severe cases of yellow patch, excessive or improper fertilization of seedlings was practised. In one case, a "high-nitrogen" vegetable fertilizer had been used and in several other cases, sheep manure.

MUSHROOMS. In Kent county, Ont., fruiting bodies of fleshy fungi caused damage in some seedbeds. Occasionally responsibility could be assigned to manure, even though in small quantities, placed underneath the seedbed soil. Affected seedlings were chlorotic and, in some cases, mildly stunted.

Diseases in the Field

NEMATODES (Heterodera marioni) were observed in plants in two fields in Norfolk Co., Ont. One of these was at the Delhi Sub-station in the same general area where nematodes had been observed in previous years. In no case was damage severe, and in some cases infection was unaccompanied by noticeable stunting.

ANGULAR LEAF SPOT (Pseudomonas angulata (Fromme & Murr.) Stev. Pl. Dis. Fungi 21. 1925, Bacterium angulatum Fromme & Murray, Journ. Agr. Res. 16: 226. 1919; Starr & Burkh. Phytopath. 32: 601. 1942). Mild damage from this disease was observed towards the end of the harvesting season in Essex and Kent counties, Ont. Severe damage to some crops was also observed near L'Assomption, Que.

WISCONSIN LEAF SPOT (Pseudomonas mellea Johnson, Journ. Agr. Res. 23: 489. 1923; Bacterium melleum Johnson l.c.; Starr et al. Phytopath. 33: 316. 1943) was recognized for the first time in Canada during the past year where it occurred in epidemic form in the southern tobacco-growing area of Que. It is believed, however, that it has been present in this province prior to 1942. Many crops of cigar tobacco were affected late in the season and damage varied widely. The necrotic leaf areas resulting from infection by this organism were often three-eighths to one-half inch in diameter and in later stages became dry and dropped out.

SORE SHIN (Rhizoctonia Solani) again caused damage soon after transplanting in Essex Co., Ont. This was the second year this disease has caused damage in fields of flue-cured tobacco on very light soil. There appears to be a correlation between incidence of this disease and the ploughing-under of heavy crops of rye.

LEAF ROT (Rhizopus Oryzae Went & Prinson Geerlings). In the Delhi distruct, Norfolk Co., Ont., some loss was experienced from a rotting of flue-cured tobacco in the early stages of curing. Isolations yielded Rhizopus Oryzae in all cases. The species was identified by Victor M. Cutter, Jr., Cornell University.

BLACK ROOT ROT (Thielaviopsis basicola) caused moderate damage in Essex Co., Ont., parts of Norfolk Co., and in both tobacco-growing areas of Que. Green Briar appeared to suffer more than any other variety in Essex Co. In a field test for varietal susceptibility of flue varieties in Norfolk Co., Silver Dollar was the only one of seven varieties tested, which showed moderate resistance in naturally-infested soil.

MOSAIC (virus). In both the old and new tobacco belts of Ont., mosaic continued to cause some damage in flue varieties, particularly where two successive crops of tobacco were grown on the same field. Elsewhere, infection was usually limited to scattered plants or localized groups of plants. In one case, 80% of the plants in a three-acre plot of flue tobacco in Essex Co. showed symptoms of mosaic less than 3 weeks after planting. Infection in this instance proved to have arisen from a preceding crop of tobacco on the field which showed a high percentage of infection towards the end of the season.

RING SPOT (virus). Groups of infected plants were observed in two fields of burley tobacco in Essex Co., Ont. Elsewhere, infection was limited to scattered plants in different fields.

STREAK (virus) was less prevalent than during 1941; scattered infected plants were observed in some fields in Essex and Kent counties, Ont., particularly in the latter.

BROWN ROOT ROT (cause undetermined) caused some damage on burley tobacco in Essex Co., Ont., where corn had been the preceding crop. The varieties Harrow Velvet and Halley's Special were chiefly affected. In laboratory plots at Harrow, the variety Green Briar revealed a high degree of resistance.

Additional Observations

MOSAIC (virus). J.H.H. Phillips (Can. Journ. Res. Sec. C, 20: 329-335. 1942) has made a special study of the occurrence of cucumber mosaic in tobacco.

He describes 3 strains of cucumber mosaic which occur in Ont. and Que., as follows: "Though cucumber mosaic occurs in both the old and new tobacco belts in Ont., it does not appear to be widespread or cause much damage to the crop. In Que., however, where tobacco is grown in comparatively small plots, often adjacent to vegetable crops, such as potatoes, cucumbers, tomatoes, etc., cucumber mosaic on tobacco is more prevalent." "Certain strains of cucumber mosaic virus were found capable of causing severe injury to tobacco while other strains cause little or no injury beyond mild stunting. Because of its superficial resemblance to tobacco mosaic, many growers in Ont. and Que. are not aware of the occurrence of this disease on tobacco." Phillips compares the symptoms of cucumber mosaic on tobacco with those of tobacco mosaic. As he points out, "Unlike tobacco mosaic which persists over winter in the soil and is spread mainly by contact, cucumber mosaic is spread by insects from overwintering perennial hosts. It is therefore apparent that control measures as applied to tobacco mosaic would not be effective in controlling outbreaks of cucumber mosaic." This appears to be the first time that cucumber mosaic has been recognized on tobacco in Canada. (I.L. Conners)

Some plants of the following varieties were found affected at the Botanical Garden, Montreal, Que.; Quesnel, Canelle, Grand Rouge, Petit Rouge, Canadien and Connecticut; the leaves were sometimes badly distorted. One plant of Nicotiana sylvestris also showed a mottling on the young leaves (J.E. Jacques). Mosaic was reported on tobacco in Rouville and in the Lake St. John district. (O. Caron)

TOMATO

EARLY BLIGHT (Alternaria Solani) was general on Vancouver Island and the lower mainland, B.C., and caused considerable damage to the foliage of outdoor crops; it is difficult to control, although spraying with Bordeaux checks its spread (W. Jones). Early blight was found wherever tomatoes were inspected in Ont., and it appeared to cause more defoliation in the Niagara Peninsula than Septoria leaf spot. By mid-season, many plantings were almost devoid of foliage with the result that the fruit was a very poor quality (J.K. Richardson). A 5% infection was observed at L'Assomption, Que.; damage was negligible (L.T. Richardson). Early blight was observed in several gardens and was reported from others in P.E.I., but infection was heavy only in the Laboratory greenhouse. (R.R. Hurst)

LEAF MOULD (Cladosporium fulvum) was found in a greenhouse at Ponoka, Alta. (M.W. Cormack). Leaf mould became severe in October in numerous greenhouses of the Leamington area, Ont., where Vetomold was being grown. In a few greenhouses where the New Improved Vetomold, V121, was used, the new variety was showing a high degree of resistance to the disease (L.W. Koch). A small amount of leaf mould developed in the Laboratory greenhouse, Charlottetown, P.E.I.; infection was frequently heavy late in the season out of doors (R.R. Hurst). Mr. A.T. Pugsley, Waite Agr. Research Institute, Adelaide, South Australia (letter, Nov. 3, 1942), reports: "For two years now we have grown the Vetomold tomato variety in our glasshouses and in each season it has remained free." Dr. Bailey has also written that he has received reports from England that Vetomold has remained resistant to leaf mould in that country. (I.L. Conners)

ANTHRACNOSE (Colletotrichum phomoides) infected up to 30% of the fruit on late varieties in Essex and Kent counties, Ont.; the damage was moderate (L.W. Koch). Again this year there was some infection of fruit by anthracnose

in Lincoln Co., but the loss was small because the disease appeared to be confined to over-ripe fruit. (J.K. Richardson)

WILT (Fusarium oxysporum) caused appreciable loss of plants which had been raised in the Laboratory greenhouse, and then transplanted to a field at Wolfville, N.S.; the land had received a thin application of green manure. (J.F. Hockey)

WILT (Fusarium sp.) affected 1-2% of the plants which wilted and died, in a field at Burlington, Ont. (G.C. Chamberlain). Wilt severely affected 15 plants in the Laboratory greenhouse, Charlottetown, P.E.I.; Fusarium was easily isolated; soil was light and contained too much leaf mould and the temperature was high. (R.R. Hurst).

NAIL HEAD SPOT (Macrosporium tomato) infection was up to 5% and damage moderate in a field in Essex Co., Ont. (L.W. Koch)

BACTERIAL SPECK (Pseudomonas tomato (Okabe) Starr et al. Phytopath. 33: 316. 1943; Bacterium tomato Okabe, Journ. Soc. Trop. Agr. Formosa 5: 32. 1933). A trace to slight infection was observed on scattered fruits at Morden, Man. (W.L. Gordon)

LATE BLIGHT (Phytophthora infestans), as a fruit rot, caused considerable damage in the experimental plots at Ridgetown, Ont.; infection apparently came from an adjacent potato field (J.K. Richardson). Diseased fruit were received from North Bay (L.T. Richardson). Market gardeners who failed to protect their tomatoes or were careless in treating, suffered heavy losses about Quebec City, Que. Repeated and thorough applications of Bordeaux mixture were quite effective (O. Caron). Late blight was very severe all around the Montreal district; in many fields infection was high and damage severe (E. Lavallée). Specimens were received from the Three Rivers and Montreal districts; the disease also caused slight damage around Joliette (C. Perrault). Diseased specimens were received from Sillery and Dunham. (L.T. Richardson)

PHYTOPHTHORA STEM and FRUIT ROT (P. parasitica) was found affecting plants received from the Rideau Gardens, Ottawa, Ont. The firm reported a loss of 20,000-25,000 tomato plants of a late variety ready to transplant into the field out of 75,000. The disease was encountered first in 1940 and has increased in severity each year since (J.W. Groves and L.T. Richardson). According to L.T. Richardson (Can. Journ. Res. Sec. C, 10: 446-483. 1941) the disease first came to his notice in the Experiment Station greenhouses, Vineland, Ont., in the summer of 1937. Since then it has appeared in several greenhouses in that district and in one outdoor crop; losses in some instances were very heavy. It was also known from cultures from the Okanagan Valley, B.C., where it was reported by Dr. R.E. Fitzpatrick in 1940. A detailed account of the disease is given. (I.L. Conners)

FRUIT ROT (Phytophthora sp.) was found on fruit sent to the Laboratory from Canoe, B.C. (G.E. Woolliams)

LEAF SPOT (Septoria Lycopersici). A slight infection was general at Brandon, Man., with a heavy infection on the leaves of some varieties (W.L. Gordon). This disease became epidemic on the early field crop in Essex Co., Ont., towards the end of the harvesting period (L.W. Koch). Leaf spot was general throughout the Niagara Peninsula and the plants became defoliated somewhat earlier

than usual. In many plants, severe stem lesions were observed and infection of the fruit was also noted several times (J.K. Richardson). Affected leaves were received from a greenhouse at L'Assomption, Que. (L.T. Richardson). Leaf spot was prevalent at Waterville, N.S., in several fields set out with plants from the same greenhouse. The seed was supposedly treated, but the plants were raised in soil that had grown tomatoes the previous year. Later some fields were defoliated and the crop was reduced 25% (J.F. Hockey). The disease was seen once in P.E.I. (R.R. Hurst)

WILT (Verticillium albo-atrum) caused slight damage in greenhouses at Redcliff, Alta. (J.G. Grimble)

BACTERIAL SPOT (Xanthomonas vesicatoria cf. p. 50). According to M.W. Gardner & J.B. Kendrick (Journ. Agr. Res. 21(2): 123-156. 1921), the disease was first noted in Canada in 1918 by W.A. McCubbin (Dom. Dept. Agr. ser. 2, Bull. 35: 15. 1919). (I.L. Conners)

BLOTCHY RIPENING (virus). A sample of imported tomatoes from the Fruit Inspection Office, Toronto, Ont., showed numerous yellow blotchy markings and ring spot. This condition is suspected to have been brought about by severe aucuba mosaic. (G.C. Chamberlain)

MOSAIC (virus). All plants affected in a commercial field of Clark's Early at Rutland, B.C.; plants poorly developed and crop light and of inferior quality (G.E. Woolliams). A few plants of Grand Rapids were found in a greenhouse in Welland Co., Ont., in March showing the indistinct green vein-banding symptoms of potato X virus. This is the first time this virus alone has been found on tomato in Ont. (G.C. Chamberlain). Mosaic affected 70% of the Harkness plants in a field in Lincoln Co.; the affected plants were from one source of seed, while a second planting from a different source was free (G.C. Chamberlain). A slight infection was present in a small planting of seed tomatoes of Early Rutgers in Lincoln Co. (J.K. Richardson). Mosaic affected up to 90% of the tomatoes and caused moderate damage in early tomatoes in Essex Co. (L.W. Koch). All plants were affected by mosaic in a planting at Verdun, Que.; fruit were fewer and smaller on the diseased plants (E. Lavallée). The terminal leaves of one or two plants of Yellow and Red pear-tomato showed a mottling in the Botanical Gardens, Montreal (J.E. Jacques). Three plants in a garden at the Station Fredericton, N.B. and 6 plants in a ½-acre field in Sunbury Co. were affected by mosaic; the virus was identified as Solanum virus 1, strain L. Mosaic affected 3% of the plants in a 2-acre field in Sunbury Co. and caused slight damage; the virus was identified as Nicotiana virus 1 (D.J. MacLeod). Traces of mosaic were present on all varieties observed in Queens Co., P.E.I. (R.R. Hurst)

SHOE STRING (cucumber mosaic virus) severely affected several plants in a ½-acre field of John Baer in Lincoln Co., Ont. (J.K. Richardson)

SPOTTED WILT (virus). A trace was found on most varieties in the plots at Lethbridge, Alta. (M.W. Cormack)

STREAK (virus) affected 2-3% of the plants in a greenhouse in Welland Co., Ont., in March and caused moderate stunting of the plants; the disease was due to a combination of tobacco mosaic and potato X virus. A few plants were also affected by potato X virus alone (cf. mosaic) (G.C. Chamberlain). Streak affected some plants in the Laboratory greenhouse, Charlottetown, P.E.I. (R.R. Hurst)

YELLOWS (beet curly top virus) was prevalent and destructive throughout the southern interior of B.C. in 1941, but most fields were free from the disease in 1942. (G.E. Woolliams)

PURPLE TOP (?Beta virus 1) affected 1% of the plants in a 2-acre field in Sunbury Co., N.B. Two affected plants were also found in a garden at the Station, Fredericton. The principal symptoms were an inward rolling of the leaflets along the mid rib; petiole and midrib frequently curved downward giving the leaf an appearance of drooping, but not wilting. The affected leaves were somewhat thickened and crisp. They assumed later a yellow colour with purple veins. The stems became hollow through the drying of the pith. After the first appearance of these foliage symptoms, the plant ceased growing and assumed a staring upright appearance. Affected plants usually died, the leaves and stems turning brown. A similar condition was found in Polygonum sp. (smartweed) growing in quantity near the tomato field in which the disease was discovered (D.J. MacLeod). An average of 1% of the plants in 4 gardens in Queens Co., P.E.I., were affected. (R.R. Hurst)

BLOSSOM-END ROT (non-parasitic) was general and severe in a few rows in Clark's Early A at Duncan, B.C. (W. Jones). The trouble severely affected 160 plants in a private garden at Britannia, Ont.; weather had been dry. The garden is on heavy clay and received a liberal dressing of cow manure during the fall and winter, which was worked in this spring (I.L. Conners). Affected specimens were received from Ottawa and Limoges, Ont. (L.T. Richardson). Many specimens were brought to the office from the Montreal District, Que., at the beginning of the harvesting period (E. Lavallée). Affected specimens were received from Beauprairie, Montreal and Sillery (L.T. Richardson). According to reports and specimens received, some loss was suffered from the trouble in various localities in Que.; it was generally followed by soft rot as the vines are usually not staked (C. Perrault). Blossom-end rot was very prevalent on light soils in N.S. and 40% loss occurred in some plantings (J.F. Hockey). Little blossom-end rot was found in unstaked tomatoes in P.E.I., but it was frequently very destructive where the vines were staked. (R.R. Hurst)

MANGANESE DEFICIENCY. A trace of suspected manganese deficiency was encountered in a greenhouse on Vetomold 121 in Lincoln Co., Ont. The plants showed a yellowing of the central part of the plant, the tip leaves being slightly mottled and the lower leaves normal green. The plants seemed to outgrow the condition to a large extent. (G.C. Chamberlain).

OEDEMA (non-parasitic). Some 75% of the plants of Vetomold 121 in one large greenhouse in Lincoln Co., Ont. were affected when the plants were 6-8" high. With increased ventilation and reduced watering, the affected plants made a complete recovery. (G.C. Chamberlain)

TURNIP

SCAB (Actinomyces scabies). A moderate infection was observed in Swede turnips in Kamouraska and L'Islet counties, Que. (R.O. Lachance). Scab was more prevalent than I have ever known it to be in P.E.I.; in one field the turnips were unfit for table use. (R.R. Hurst)

BLACK LEAF SPOT (Alternaria circinans) was present on the outer leaves of ruebstiel (Brassica rapa var. perviridis) and rather severely attacked wild turnip (B. campestris) in the Botanical Garden, Montreal, Que. (J.E. Jacques)

GREY LEAF SPOT (Alternaria Brassicae) heavily spotted the outer leaves of Purple Top Milan turnip at the Botanical Garden, Montreal, Que. (J.E. Jacques). A trace of infection occurred on pods and aborted blossoms of semi-sterile plants of Wilhelmsburger Swede at Nappan, N.S. (J.F. Hockey)

WHITE LEAF SPOT (Cercosporella Brassicae (Fautr. & Roum.) v. Höhn Ann. Myc. 22: 193. 1924; Cylindrosporium Brassicae Fautr. & Roum. Rev. Mycol. 22: 81. 1891; Cercosporella albomaculans (Ell. & Ev.) Sacc. Syl. 11:606. 1895; Cercospora albomaculans Ell. & Ev. Proc. Acad. Nat. Sci. Phil. 1894) was very prevalent in a field near Plattsville, Ont.; conidia were being produced in abundance about Oct. 1 (J.D. MacLachlan). A moderate infection was present in a field of Purple King in the same district in August, while other fields in the vicinity were slightly infected. (J.K. Richardson)

SOFT ROT (Erwinia carotovora) occurred usually in fields where black rot (q.v.) was prevalent; the disease apparently was secondary to black rot (J.D. MacLachlan). About 10% of the roots were affected by soft rot in a planting of Laurentian at the Laboratory, St. Catharines, Ont.; in most cases it followed black rot. (J.K. Richardson)

POWDERY MILDEW (Erysiphe Polygoni) slightly infected a planting of Laurentian at the Laboratory, St. Catharines, Ont. (J.K. Richardson)

DOWNY MILDEW (Peronospora Brassicae) slightly infected turnips on one farm in Ont. on Aug. 20; the fungus was sporulating freely at the time (J.D. MacLachlan). A trace of downy mildew occurred on the foliage of Ditmars seed plants at Deep Brook, N.S. on June 22. It was also found on a few plants of wild radish, Raphanus Raphanistrum, at Centreville on Aug. 3. (J.F. Hockey)

BLACK LEG (Phoma lingam) affected 25% of roots in a ½-acre field at Ste. Agathe, Que.; the disease developed in patches (E. Lavallée). Black leg caused a loss of 0-30% of seed roots of Ditmars in storage at Deep Brook, N.S.; secondary rots were also present in many cases. (J.F. Hockey)

CLUB ROOT (Plasmodiophora Brassicae). An affected specimen was received from Knowlton, Que. (H.N. Racicot). Club root completely destroyed an acre field of swede turnips in P.E.I.; in others infection varied from a trace to 50% of roots. (R.R. Hurst)

BLACK ROT (Xanthomonas campestris; cf. p. 28). In many fields of Laurentian and Purple King near Hickson, Ont., symptoms of black rot were apparent both on the foliage and in the roots in September and October; it is feared that the disease will increase and cause even more damage in storage, particularly in waxed stock (J.K. Richardson). Black rot occurred sporadically in the Guelph district, Ont., but in some fields almost all the leaves and 30% of the roots were diseased. (J.D. MacLachlan)

MOSAIC (virus) affected 3-7% of the seed plants in a field of Ditmars planted with roots, which showed mosaic in 1941, at Deep Brook, N.S. Affected plants appear slightly smaller and the yield of seed was lighter than that of normal plants. Several wild radish, Raphanus Raphanistrum, were also affected in the same field (J.F. Hockey). Affected specimens were received from Mr. Hockey for examination. The principal symptoms are a clearing of the veins, followed by a chlorotic mottling and distortion of the leaves. The virus was transmitted to

turnips by Myzus persicae. All attempts to transmit the virus by sap inoculation to Datura Stramonium, Capsicum annuum, Nicotiana Tabacum, N. glutinosa and Solanum nodiflorum were unsuccessful. The virus resembles Brassica virus 3. The virus was sap-transmitted with difficulty to turnip by the use of carborundum powder. (D.J. MacLeod)

BROWN HEART or WATER CORE (boron deficiency) occurred sporadically in southwestern Ont., but in some fields more than 90% of the roots were affected (J.D. MacLachlan). In southwestern Ont., applications of borax to the soil have not given consistent control of brown heart in rutabaga (J.D. MacLachlan, Phytopath. 33: 8-9. 1943) probably because of the high lime content of the soil. Practically complete control was obtained by 2 foliar spray applications of a 2% aqueous solution of borax and ¼% Orvus as a spreader applied: (1) when roots are 1-2" in diam. and (2) one month later.

As the result of a test conducted at Ottawa in 1941, the varieties, Canadian Gem, Perfect Model and Cannell's Purple King were all significantly more affected by brown heart than other varieties of swedes such as Laurentian, Wilhelmsburger, Ditmars, and Acadian. (T.M. Stevenson)

Brown heart was present in swede turnips on 50% of the farms surveyed in L'Islet Co., Que.; growers failed to secure fertilizers containing the proper percentage of borax; in general the infection was slight (R.O. Lachance). Brown heart affected up to 50% of the roots of several varieties and selections of swede turnips in Jacques Cartier Co.; the season was very dry (J.G. Coulson). Brown heart was found affecting 10-20% of the roots in two fields in N.S., one at Baxters Harbour and the other at Lindsay (W.K. McCulloch). Brown heart affected up to 100% of the roots of swede turnips in some fields in P.E.I. The disorder has become very troublesome again in some areas. Apparently this increase is due to the farmers not keeping up their applications of boron. (R.R. Hurst)

FALSE BLOSSOM and STERILITY (cause undetermined) was common in swede turnips being grown for seed in N.B.; 2 to 65% of the plants were affected. It also affected 25% of the plants of bird rape, Brassica campestris, in a potato field at Grand Falls (D.J. MacLeod). The trouble was reported to have been quite serious in some fields in P.E.I.

VEGETABLE MARROW

ROT (Sclerotinia sclerotiorum) causes slight damage to the fruit in one garden in Edmonton.

WILT caused severe damage in a ½-acre planting at Brooks, Alta. Isolations were made and proved pathogenic to seedlings of several cucurbits in greenhouse pot culture. The pathogen was identified as Fusarium sambucinum f. 6 by W.L. Gordon (L.E. Tyner)

MOSAIC (virus) affected all plants of Long White Bush and Italian Cocozelle grown at the Botanical Garden, Montreal, Que., but caused little injury. (J.E. Jacques)

FASCIATION. Fasciated plants were found in several varieties being grown for verification at the Station, Summerland, B.C. (G.E. Woolliams)

SEED-BORNE PATHOGENS OF VEGETABLES: Samples of vegetable seed were tested by sowing the seed in steam-sterilized soil in the Laboratory greenhouse, Saanichton, B.C., and examining the seedlings for disease. A large porportion of the samples were "of high quality from the standpoint of freedom from disease and considered entirely suitable for use". However, a portion of the samples, notably of cauliflower, radish, and carrot were carrying seed-borne pathogens. The unfavorable weather conditions at harvest time in 1941 were reflected in an increased amount of seedling blight in radish and carrot. Of 10 samples of radish seed of the 1940 crop, 7 were clean and the other 3 yielded 1% Alternaria-blighted seedlings. Of 24 samples of the 1941 crop, 5 were clean and percentage of blighted seedlings obtained from the remainder were: 7 with 1-2%, 5 with 3-10%, 6 with 11-20%, and 1 with 27%. Of the 14 samples of carrot (q.v.) seed from the 1940 crop, 7 were clean and the remainder yielded 1-4% of seedlings blighted by Alternaria radicina. Of the 14 samples of the 1941 crop, 2 were clean, 1 with 1%, 1 with 7%, and 10 with 14-27%. Cauliflower seed, on the other hand, was more heavily infected in 1940 than in 1941, but it is believed that conditions for drying this seed was more favourable in 1941 than in the previous year. In 1940, in 4 samples examined, seedling blight due to Alternaria was 2%, 12%, 23% and 31% respectively. In 1941 of the 11 samples, 2 were clean, 8 showed 2-3% blight, and one 6%. This disease can be troublesome to the seed grower because of the loss of young seedlings being grown in the greenhouse or cold frame during the winter to be planted out next spring for seed production. Hot water treatment (15 min. at 122°F.) followed by Semesan dust, gives excellent control and in good seed reduces the germination but slightly. The same treatment has been effective with radish seed, but it causes definite injury where the seed coats are loose or where the seed is in poor condition. For carrot, seed treatment with 1% Ceresan, Semesan Jr., and Spergon, gave effective control. (I. Mounce & J.E. Bosher)