Chemical Injury. Chemical weed control programs in the city of Windsor, Ont. resulted in considerable damage to U. pumila as well as to roses, Hibiscus, Liriodendron, Salix, apples, pears, and grapes (R.W. Walsh).

VIBURNUM

Downy Mildew (Plasmopara viburni). Light infection caused negligible damage to V. opulus in a nursery at Les Saules, Que. (J. Ringuet).

VI. DISEASES OF HERBACEOUS ORNAMENTALS

ALTHAEA - Hollyhock

Rust (Puccinia malvacearum) was commonly encountered in the Okanagan Valley, B.C. (G.E. Woolliams). Heavy infections occurred at Winona and Hamilton (W.G. Kemp), and at Carp and Mountain, Ont. (H.S. Thompson). Specimens were received from Valcourt, Roberval and Levis, Que. (D. Leblond). Infection was sev. at Moncton, N.B. (S.R. Colpitts) and mod.-sev. at Charlottetown, P.E.I. (J.E. Campbell).

ANTIRRHINUM - Snapdragon

Powdery Mildew (Oidium sp.) was particularly heavy on a block of 300 young plants of the variety Christina at Hamilton, Ont. (W.G. Kemp).

Rust (Puccinia antirrhini). The greenhouse variety Indian Chief was heavily infected at St. Catharines, Ont. Snowman and Hercules were infected to a lesser degree (W.G.K.).

Stem Canker (Rhizoctonia solani) affected 77/100 Snowman plants in a Hamilton, Ont. greenhouse. It appeared that the seedlings had been planted too deeply (W.G.K.).

AQUELIGIA - Columbine

Powdery Mildew (Erysiphe cichoracearum) was common in all sections of the Okanagan Valley, B.C. (G.E. Woolliams).

ARABIS

White Rust (Albugo candida) was general on all plants of A. albida in a home garden rockery at Vancouver, B.C. (H.N.W. Toms).

ASTER

Rust (Coleosporium asterum) was sl. on A. novi-belgii at Ste. Thérèse, Que. (J. Rinquet).

Wilt (Fusarium sp.) was sev. in a planting at the University, Edmonton, Alta. (L.E. Tyner).

AZALEA

Gray Mold (Botrytis cinerea). Sev. defoliation and bud infection occurred after a shipment of Azalea plants had been kept in a greenhouse for 2 months in Kings Co., N.S. Some injury was evident when the shipment was received (K.A. Harrison).

BEGONIA

Anthracnose (Gloeosporium begoniae) was sl. at Ste. Foy, Que. (D.L.).

Powdery Mildew (Oidium begoniae). Mod. damage was observed on potted greenhouse plants at Victoria, B.C. (W.R. Orchard). At Penticton, B.C. the disease was evident on several varieties in a home garden. Leaves were dwarfed and fewer in number than normal. Flower production was much reduced (G.E. Woolliams). It occurred in a home greenhouse at Vancouver, B.C. (H.N.W. Toms). Mildew was mod. in a garden at St. Jean, (R. Crête), and occurred at St. Lazare, Que. (D. Leblond).

Tuber Rot (various organisms). Tubers from Belgium, examined at St. Catharines, Ont. showed an advanced stage of rot. Pythium sp., Fusarium sp., Cylindrocarpon sp. and bacteria were isolated (W.G. Kemp).

CALADIUM

Soft Rot (Erwinia carotovora) occurred on tubers at Niagara Falls, Ont. (W.G. Kemp).

CALENDULA

Aster Yellows. (Aster Yellows virus) was sl. in plantings at Winnipeg (W.L. Gordon). Infection was light at Kentville, N.S. Leafhopper populations were not large (K.A. Harrison).

CALLISTEPHUS - China Aster

Aster Yellows (Aster Yellows virus) occurred in several plants at Armstrong, B.C. (G.E. Woolliams). The majority of the plants in a border at Winnipeg were sev. infected (W.L. Gordon). Infection was sev. at Ste. Foy, Que. (D. Leblond). Infection was considerably lighter than usual at Kentville, N.S. (K.A. Harrison).

CAMPANULA

Rust (Coleosporium campanulae). Plants growing under shade by the roadside at Orono, Ont. were heavily rusted (I.L. Conners).

CANNA

Mosaic (virus) affected 26/100 plants of the President variety at St. Catharines, Ont. None of the other canna varieties in the nursery appeared to be infected (W.G. Kemp).

CHRYSANTHEMUM

Flower Blight (Botrytis cinerea). A single large bloom of the variety Fred Shoesmith was heavily attacked in a bed of 500 plants at Hamilton, Ont. (W.G. Kemp).

Powdery Mildew (Erysiphe cichoracearum) developed on several varieties in a garden in Essex Co., Ont. (C.D. McKeen). Sev. infections were found on Fred Shoesmith at Hamilton and a potted plant of Beauregard was heavily infected at St. Catharines, Ont. (W.G.K.).

Rust (Puccinia chrysanthemi). Leaves bearing heavy rust infections were submitted from Jordan, Ont. Rust pustules in concentric rings were present on the undersides of leaves. According to local chrysanthemum growers rust was prevalent in Niagara Peninsula greenhouses in the fall of 1958, but damage was not considered to be sev. (W.G.K.).

Stem Rot (Rhizoctonia solani). Elongate, reddish-brown lesions occurred at soil level on stems of a few Yellow Igloo plants at St. Catharines, Ont. R. solani was isolated from affected tissues (W.G.K.).

Leaf Spot (Septoria sp.) was heavy in the propagating beds of a large commercial greenhouse at Leamington, Ont. The varieties Cotillion and Rubicon were the most seriously affected. It was also prevalent in propagators' ranges at Beamsville, Ont., particularly on the Shasta varieties. A few potted plants of Personality were sev. affected in a Hamilton, Ont. greenhouse (W.G.K.). Leaf spot was heavy on 200 plants at Port Burwell, Ont. (H.S. Thompson). Tr. infections of S. leucanthemi occurred in a Kentville, N.S. greenhouse (K.A. Harrison).

Wilt (Verticillium albo-atrum) was identified from wilted specimens of varieties Indianoplis and White Shasta from Leamington, Ont. (W.G.K.).

Aster Yellows (Aster yellows virus). Specimens of stunted, rosetted plants were received from Burlington, Ont. The grower reported that plants with similar symptoms had developed green-colored flowers when moved from the outdoors to the greenhouse (W.G.K.).

Stunt (virus) affected virtually 100% of the plants of several varieties grown under glass in a large propagating establishment at Leamington, Ont. (C.D. McK.). In another propagating range at Leamington 35% of the variety Indianapolis Yellow and 50% of Beauregard were stunted (W.G.K.).

CLARKIA

Anthracnose (Colletotrichum sp.). A sl. infection was seen on C. elegans at Ste. Foy, Que. (D. Leblond).

Aster Yellows (Aster yellows virus) affected Clarkia at Saskatoon, Sask. (T.C. Vanterpool).

COCHIA

Aster Yellows (Aster yellows virus). Infected plants were seen at Saskatoon, Sask. (T.C. Vanterpool).

COLCHIUM

Smut (Urocystis colchii) caused sev. injury to foliage of affected plants in a commercial planting at Deep Cove, B.C. (W.R. Orchard).

CROCUS

Leaf Spot (Alternaria sp., Heterosporium sp.). Spotting of minor importance occurred on maturing leaves of crocus at Keating, B.C. (W.R. Orchard).

Gray Mold (Botrytis cinerea) caused a slight spotting on crocus at Keating, B.C. (J.E. Bosher).

CYCLAMEN

Gray Mold (Botrytis cinerea) caused sev. petiole and flower bud blast in potted cyclamens in a greenhouse at Esquimalt, B.C. Excessive humidity was a contributing factor (J.E. Bosher).

DAHLIA

Mosaic (virus). A few infected plants were seen at St. Catharines, Ont. (W.G. Kemp).

Blind Tuber (cause undetermined). A single tuber at Vancouver, B.C. exhibited unusual adventitious growth at the root end. No shoot developed. Similar abnormal growth and secondary tuber formation have been reported in potato. (R. McKay. Potato Diseases. Dublin, 1955) (H.N.W. Toms).

DELPHINIUM

Stem and Crown Rot (Erwinia ? atroseptica) occurred in a planting of seed stocks. The disease was most prevalent in low areas which had been abnormally wet because of poor drainage. Bacteria were isolated in 10/11 cases (G.E. Woolliams).

Powdery Mildew (Erysiphe cichoracearum) caused sev. injury to a mixed variety planting at Saanichton, B.C. (W.R. Orchard).

DIANTHUS - Carnation

Branch Rot (Alternaria sp.). Diseased tissues of specimens received from Burlington, Ont. consistently yielded Alternaria sp. (W.G. Kemp).

Fusarium Wilt (F. oxysporum f. dianthi). Infection was 10% in a greenhouse at Sarnia, Ont. As the soil in the bench had been thoroughly sterilized it is assumed that the disease was introduced in the cuttings (R.W. Walsh).

Stem Rot (Fusarium sp.) was so sev. at Port Dover, Ont. in a bed of 1500 plants that the grower was forced to pull up the entire planting (W.G.K.).

Leaf Spot (Heterosporium echinulatum). Extensive plantings of Pink Apollo and White Apollo were sev. affected at Burlington, Ont. Siren and Athena were affected to a lesser degree. Electra showed no infection even where grown adjacent to badly infected varieties (W.G.K.).

DICENTRA - Bleeding Heart

Crowding Out. Bleeding heart growing in a bed at Lethbridge, Alta. was crowded out by Thelephora terrestris. The organism was identified by R.J. Bourchier (J.B. Lebeau).

DIGITALIS - Foxglove

Wilt (Verticillium sp.) kills 2-4% of the plants annually in plantings on Vancouver Island, B.C. (W.R. Orchard).

EPIPHYLLUM - Orchid Cactus

Leaf Spot (undetermined organism). Necrotic, sunken, circular lesions, often with a shot-hole effect were seen on a plant at Vancouver, B.C. (H.N.W. Toms).

EUPHORBIA - Poinsettia

Basal Stem Rot (Pythium sp.). Affected specimens from Grimsby, Ont. yielded Pythium sp. from diseased tissues (W.G. Kemp).

FUCHSIA

Wilt (Verticillium albo-atrum) was isolated from several wilted plants from Victoria, B.C. (W.R. Orchard).

GARDENIA

Leaf Drop (cause unknown). A sl. but disfiguring leaf drop occurred in a small greenhouse at Burnaby, B.C. Irregularities in temperature and ventilation were the probable causes (H.N.W. Toms).

Flower Bud Drop (high temperatures) occurred on plants in a private home at Vancouver, B.C. (H.N.W.T.).

GLADIOLUS

Fusarium Yellows (F. oxysporum f. gladioli) occurred at Stouffville, Ont. (W.C. Kemp).

Scab (Pseudomonas marginata) affected 400/600 corms in one lot at Saskatoon, Sask. (T.C. Vanterpool). About 10% of the corms in one area in a garden at Kentville, N.S. were infected (K.A. Harrison).

Dry Rot (Stromatinia gladioli). Specimens of infected corms were received for diagnosis at Fredericton, N.B. (S.R. Colpitts). The disease has been increasing steadily in gardens at Kentville, N.S. Snow Princess and Dieppe show some resistance, Elizabeth the Queen and Purple Supreme less resistance, and Spotlight, Yangtze, Miss Wisconsin and Susquehanna are very susceptible (K.A. Harrison). Infection was 8% at South Berwick, N.S. (J.F. Hockey).

Flower Break (virus complex). Different varieties of gladiolus from several plantings of 1/4 acre or more in size in Windsor and other parts of Essex Co., Ont. showed a sev. flower break and foliage mottle. Isolations from 3 plantings revealed the presence of cucumber mosaic virus and tomato ringspot virus. Flower break symptoms were particularly sev. in progeny of Picardy (C.D. McKeen).

HYACINTHUS - Hyacinth

Leaf Spot (Alternaria sp.) was seen on hyacinth at Saanichton, B.C. (W.R. Orchard).

Wilt (Sclerotium sp.). Affected plants at Saanichton, B.C. were wilted and yellowed and ultimately died. Sclerotium sp. was isolated from several specimens (W.R.O.).

Yellows (Xanthomonas hyacinthi). Approximately 0.1% of the bulbs in a 1-acre planting of mixed varieties at Metchosin, B.C. were infected in mid-April (W.R.O.). Yellows was tr.-mod. in 11/18 fields examined on Vancouver Island, B.C. (N. Mayers).

HYDRANGEA

Leaf Spot (Phyllosticta hydrangeae) was mod. at Ste. Foy, Que. (D. Leblond).

Frost Injury. Late spring frosts caused mod. damage in the suburbs of Quebec City, Que. (D.L.).

IRIS

Gray Mold (Botrytis cinerea) occurred on a few overwintering flower stalks at Kentville, N.S. (J.F. Hockey).

Leaf Spot (Didymellina macrospora) was found in 5/16 plantings on Vancouver Island, B.C. Infections ranged from tr.-mod. (N. Mayers). Heavy infections occurred on the foliage of a number of varieties in an experimental planting at Guelph, Ont. (W.G. Kemp).

Soft Rot (Erwinia carotovora). A few corms exhibiting extensive soft rot were received from a garden at Vineland, Ont. The incidence of rot seemed associated with the Iris borer (Macronoctria onusta) (W.G.K.).

Bulb Rot (Penicillium spp.) occurred on poorly cured and damaged bulbs at White Rock, B.C. (H.N.W. Toms). At Guelph, Ont. 18-20% of 6000 plants were affected. Poor growth and stunted plants were produced from affected bulbs (H.S. Thompson).

Mosaic (virus). Infections were tr.-1.6% in 3/16 Vancouver Island, B.C. plantings (N.M.).

LILIUM - Lily

Blight (Botrytis elliptica). At Saanichton, B.C. sev. infections were observed on Lilium hollandicum, L. bulbiferum var. crocum, L. testaceum and L. martagon. Infection was less sev. on L. speciosum and L. leucanthemum var. chloraster (J.E. Bosher). Regal lillies in a small bed at Kentville, N.S. were 100% infected and badly defoliated during the summer (K.A. Harrison).

Leaf Spot (Phyllosticta ? lilii) was sl. on L. regale at Ste. Foy, Que. (D. Leblond).

NARCISSUS

Smoulder (Botrytis narcissicola). Trace infections were found in 7 plantings on Vancouver Island and in 4 on the mainland of B.C. (N. Mayers). At Markham, Ont. 20% of 6,000 bulbs were affected (H.S. Thompson).

Basal Rot (Fusarium oxysporum f. narcissi) occurred on about 8% of a shipment of 5 tons of bulbs of the variety Magnificence imported into Victoria, B.C. from Washington, U.S.A. (J.E. Bosher). It was seen in some B.C. plantings (N.M.).

Leaf Scorch (Stagonospora curtisii). Trace infections were seen in 27/30 plantings on the B.C. mainland and in 1 Vancouver Island planting (N.M.).

Mosaic (virus) was tr. in 2/30 plantings on the B.C. mainland and sl. in 8/30 Vancouver Island plantings. This disease, easily detected, can be readily controlled by spring rogueing (N.M.).

Decline (virus complex). A 1% infection was found in 1/10 plantings on the B.C. mainland. On Vancouver Island infection ranged from 1-12% in 8/30 plantings (N.M.).

PAEONIA - Peony

Blight (Botrytis paeoniae) caused bud blast and stem rot in a garden at Saanichton, B.C. (J.E. Bosher). A few plants at Dorval, Que. were sev. affected. The fungus was fruiting profusely on stems (D. Creelman). Blight was mod. at Charlesbourg and Ste. Foy, Que. (D. Leblond). It was very common in Kings Co., N.S. As much as 50% of the bloom was affected (J.F. Hockey).

Sterile Buds (cause unknown) was frequently encountered in the Kindersley and Regina districts of Sask. No lesions were noted nor were there any indications of insect damage (T.C. Vanterpool).

PAPAVER - Poppy

Aster Yellows (Aster yellows virus). Trace infections were observed in 2 gardens at Lethbridge, Alta. (J.E. Moffatt).

PELARGONIUM - Geranium

Pelargonium Leaf Curl

W.G. Benedict

Krauselkrankheit (leaf curl disease) incited by the Pelargonium leaf curl virus has caused heavy losses to propagators of the florists' geranium Pelargonium domesticum in recent years in northern Essex County, Ontario. The chief source of the many varieties of geranium grown in the Windsor area has been a Chicago wholesaler. The cuttings, certified free of disease, are imported in the spring and are usually shipped directly from California where the plants are grown out of doors.

Chlorotic leaf spots generally appear in the potted imported cuttings about the first week in November. At that time the cuttings are being used as stock plants for propagation. Spotted leaves are ruffled and crinkled. The infected plants do not die and normally bloom the following spring. Symptoms of the disease do not appear in the new foliage produced during the summer. The only known method of transmitting this virus is by grafting. This fact was confirmed by experiments with one of the infected plants.

Pelargonium

The geranium variety Pink Sensation has been generally infected and the greatest losses to propagators in the Windsor area have been with this variety. One grower lost all of 1,000 stock plants and numerous cuttings of the variety in 1957-58 as well as about 200 stock plants of other varieties. Three years previously the same grower lost 2,000 plants of the variety Carlsbad White from the same disease. Two other Essex County growers have suffered recurring losses of equal magnitude in recent years, especially with the variety Pink Sensation. No locally grown varieties selected from propagation have ever shown symptoms of leaf curl.

The actual losses to the propagator are very real. The loss of a single stock plant represents a loss of approximately $4.00 to the grower. It also occurs at a time of year when no plants can be secured from which to obtain cuttings for his next year's stock. As a result of these experiences, growers in the Windsor area have placed a self-imposed ban on all geraniums grown in California.

Other Observations

Gray Mold (Botrytis cinerea) caused a basal stem rot on cuttings in the Okanagan Valley, B.C. (G.E. Woolliams), and a leaf, petiole and pedicel blight on the varieties Ricard and Apple Blossom Pink at St. James, Man. The varieties Radio Red and Potavain in the same planting were reportedly not attacked (W.E. Sackston).

Black Shank (Pythium ultimum) was mod. in a greenhouse at Neuville, Que. (D. Leblond).

Wilt (Verticillium sp.) caused the loss of several potted plants at Harrow, Ont. (R.W. Walsh).

Stem Rot (Xanthomonas pelargoni) affected 500/1000 plants at Brampton, and single infected plants were observed at Hamilton and London, Ont. (W.G. Kemp).

Oedema (physiological) was sl. in a greenhouse at Regina, Sask. (R.J. Ledingham). A plant received from Toronto, Ont. showed small, watery swellings on the leaves and corky ridges on the petioles and stems. The grower reported that the condition was prevalent in his stock plants (W.G.K.).

PETUNIA

Leaf Spot (Ascochyta petuniae). Sl. infections were seen at St. Foy, Que. (D. Leblond).

Gray Mold (Botrytis cinerea) caused considerable damage to plants in a bed at the Arboretum, Ottawa, Ont. Leaves were attacked and flowering was almost completely checked. Frequent rainfalls in

September appeared to favor disease development (H.S. Thompson, D.B.O. Savile). Sev. corolla infections occurred at Kentville, N.S. in a bed which had been sprinkler irrigated. Nearby unsprinkled beds were unaffected (J.F. Hockey).

Root Knot Nematodes (Meloidogyne sp.). Eggs and larvae of the nematode were found in galls on the roots of a single stunted plant at St. Catharines, Ont. (W.G. Kemp).

Late Blight (Phytophthora infestans). S. infections were seen on petunias at Ste. Foy, Que. Sporulation occurred on the upper surface of leaves (D.L.).

Aster Yellows (Aster yellows virus) affected scattered plants in a bed at Winnipeg, Man. (W.L. Gordon).

PHLOX

Powdery Mildew (Erysiphe cichoracearum) was sev. on several perennial plantings in the vicinity of Ste. Anne de Bellevue, Que. (R.H. Estey). It was mod. at Dorval, Que. (D.W. Creelman). Specimens were received from Valcourt, Quebec City, Drummondville and St. Narcisse, Que. (D. Leblond). It was more common and more sev. than usual in Que. nurseries (J. Rinquet). Heavy infections occured in a nursery at Bunbury, P.E.I. (J.E. Campbell).

Aster Yellows (Aster yellows virus) occurred in city parks in Winnipeg, Man. (W.L. Gordon).

SAINTPAULIA - African Violet

Root-knot nomatodes (Meloidogyne sp.). A single plant from Greenwood, N.S. showed sev. distortion of crowns, leaves and petioles. Numerous root-knot nematodes, both male and female, at all stages of development were found in the plant (C.O. Gourley).

Chemical Injury. Fumes from paint burning off the surface of a new furnace caused bud-drop and leaf scorching in a substantial crop of African Violets in a small commercial greenhouse near Vancouver, B.C. (H.N.W. Toms).

TAGETES - Marigold

Aster Yellows (Aster yellows virus) affected a few plants in a border at Winnipeg, Man. Infection was much less sev. than in 1957 (W.L. Gordon). Affected plants at St. Catharines, Ont. displayed delayed and abnormal flower formation. Portions of the blooms were green. Plants were slightly stunted and many of the upper leaves were chlorotic (W.G. Kemp).

TULIPA - Tulip

Fire (Botrytis tulipae). Secondary infections were 61-tr., 5-mod./73 plantings examined on the B.C. mainland. On Vancouver Island primary infections were seen in 70/104 fields and secondary infections in 88/104 fields ranging from tr.-sev. Where good spraying practices were used fire was controlled (N. Mayers). Fire was sev. in a commercial greenhouse at Edmonton, Alta. (L.E. Tyner). Infections were heavy and killed many plants in a second-year bed at Kentville, N.S. A nearby first-year bed bore only light infections (K.A. Harrison). It was general in western N.S. with older beds being the most sev. affected (J.F. Hockey).

Basal Rot (Fusarium oxysporum). At Sidney, B.C. 6% of 5000 Nivea bulbs were infected. There was also sev. injury to Basra bulbs at Port Kells. Both the above mentioned stocks were imported from Holland in 1957. It was also seen on Golden Harvest bulbs from Summer, Wash. (W.R. Orchard).

Bulb Rot (Sclerotinia sativa) affected 15% of the plants of the variety Red Giant in a Quebec City, Que. greenhouse. The organism was isolated by J.W. Groves (H.S. Thompson).

Mosaic (virus). A 1% infection was seen in 1/73 plantings on the B.C. mainland. A tr. infection occurred in 1/104 Vancouver Island plantings (N.M.).

VIOLA - Pansy

Crown Rot and Leaf Spot (Centrospora acerina). This disease was first noticed in a nursery at Centerville, N.S. in the fall of 1957, but pure cultures were not obtained until Nov., 1958. Sporulation is sparse in culture and growth is best at temperatures below room temperature. Spores, however, are common in the debris where the leaves touch the soil. About 75% of the plants in a large block were affected and about 5% of the infected plants were killed (K.A. Harrison).

Powdery Mildew (Sphaerotheca humuli) was tr. on many of the 2000 plants in a bed at St. Catharines, Ont. early in July (W.G. Kemp). It was mod.-sev. on a few dozen plants in 2 Ottawa, Ont. gardens. Control was obtained by spraying with Karathane. Mod. infection was also seen in a large planting at Carleton Place, Ont. (H.S. Thompson).

ZANTEDESCHIA - Calla Lily

Soft Rot (Erwinia carotovora). Infected rhizomes, originating in California, were received from Niagara Falls, Ont. (W.G. Kemp).

ZINNIA

Stem Rot (Sclerotinia sclerotiorum) was sev. in 1 planting in Regina, Sask. (T.C. Vanterpool).