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An Evaluation and Record of
**GENERALLY RECOMMENDED
TREES AND SHRUBS**

*Planted at the Research Station, Sidney, B.C.
1913-1973*



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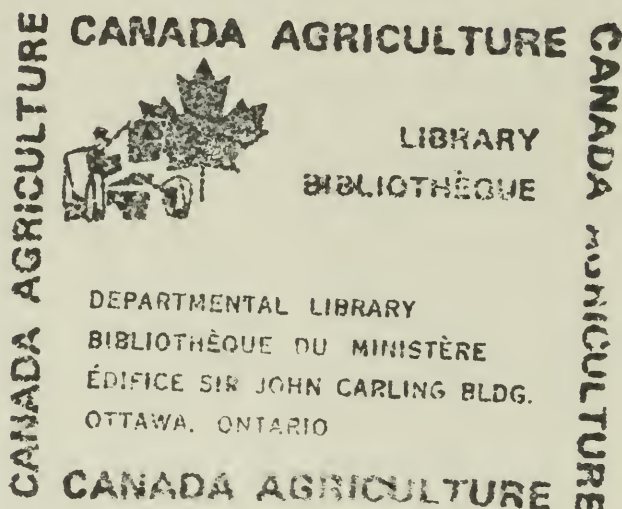


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An Evaluation and Record of

GENERALLY RECOMMENDED TREES AND SHRUBS

Planted at the Research Station, Sidney, B.C.

1913-1973

J. H. CROSSLEY*

Research Station, Sidney, British Columbia

PLANT NOMENCLATURE

The main books that were used to check the nomenclature of the plants listed are Rehder's *Manual of Cultivated Trees and Shrubs Hardy in North America* and his *Bibliography of Cultivated Trees and Shrubs Hardy in the Cooler Temperate Regions of the Northern Hemisphere*. A complete list of references is provided at the end of the publication in the bibliography.

Genera are shown in bold type and capital letters. Families are shown in bold type with a capital initial letter and follow the generic names.

e.g., **ABELIA** **Caprifoliaceae**
(genus) (family)

Species are shown in *italic* type with a small initial letter and follow the genus to which they belong.

e.g., *A. balsamea*
(species)

Subspecies and varieties are shown in *italic* type with a small initial letter and follow the species to which they belong.

e.g., *A. glabrum* var. *douglasii*
(genus) (species) (variety)

Cultivars are shown in roman type with a capital initial letter and are enclosed in single quotation marks.

e.g., *A. pinsapo* 'Glauca'
(genus) (species) (cultivar)

Common names are given in roman type (small capitals) with capital initial letters and follow the scientific names.

e.g., *A. alba* SILVER FIR
(species) (common name)

The following abbreviations have been used: C. central; E. eastern; N. northern; N.E. northeastern; N.W. northwestern; S. southern; S.E. southeastern; S.W. southwestern; W. western; cm centimetre; m metre; circum circumference; diam diameter; decid deciduous; brd-lvd broad-leaved; evergr evergreen; sm semievergreen.

*Director's note: Mr. Crossley retired in 1973, but continued with the preparation of this publication.

PLANT HARDINESS

In the following pages, plant hardiness is indicated by reference to numbered zones (Z) according to the *Map of Plant Hardiness Zones in Canada* prepared in 1967 by C. E. Ouellet and L. C. Sherk, Canada Department of Agriculture, Ottawa. In a few instances where it seemed expedient, information supplementing or qualifying the hardiness of a species as it applies to Zone 9a only has been added. In cases where the Canadian hardiness zone number is not known, but a species' or cultivar's hardiness for local conditions is known from the author's experience or from records of the Research Station, Sidney, the information is indicated by the symbol (H). When information on local hardiness was not obtained from these sources, but was available from *Ornamental Plants Hardy in the Coastal Northwest*, compiled by the Friends of the University of Washington Arboretum, Bellevue, Washington, Editorial Services, 1972, the symbol (H1) is used.

PLANT HABITAT

The natural geographical range is given for each species even though only a cultivar of the species is listed. The main source of this information was Rehder's *Manual of Cultivated Trees and Shrubs Hardy in North America*.

PLANT DIMENSIONS

Measurements in parentheses refer to the ultimate plant height given in Rehder's *Manual of Cultivated Trees and Shrubs Hardy in North America* or in den Ouden's *Manual of Cultivated Conifers Hardy in the Cold- and Warm-Temperate Zone*. Measurements not in parentheses refer to dimensions of specimens growing, or grown, at the Research Station, Sidney, usually for the longest growth period for which records are available. The length of the growth period and plant dimensions provide a more complete assessment of the plant's performance at the Station. The growth data should be interpreted with reservations because irrigation, which was first available in 1943 and used since on park plantings only, has never been used in the arboretum, where dryland conditions have prevailed since 1913.

EVALUATION

ABELIA Caprifoliaceae

A. 'Edward Goucher' 1.5 m, sm, flowers lavender. Z7.

A. × *grandiflora* GLOSSY ABELIA 1.8 m, sm, flowers pink, excellent but not fully hardy. Z7.

ABIES Pinaceae

A. alba SILVER FIR Evergr tree (35 m). C. and E. Europe. (H).

A. balsamea BALSAM FIR Evergr tree (25 m). Labrador to Alberta. Z1.

A. b. 'Nana' DWARF BALSAM FIR Evergr shrub, 0.6 m high, 1.5 m spread at 10 years, excellent. (H).

A. cephalonica GREEK FIR Evergr tree (54 m), 8.5 m high, 1.2 m circum at 46 years. Greece, Yugoslavia. Z5.

A. concolor COLORADO OR WHITE FIR Evergr tree (45 m), 5.6 m high at 16 years. Colorado to Mexico. Z4.

A. firma MOMI OR JAPANESE FIR Evergr tree (50 m), died third year. Japan. (H1).

A. grandis GRAND FIR Evergr tree (99 m). Vancouver Island, N. California east to Montana. Z7.

A. g. compacta Evergr shrub, dwarf, no longer in cultivation.

- A. homolepis* NIKKO FIR Evergr tree (40 m), the two specimens planted failed to establish. Japan. Z5.
- A. lasiocarpa* 'Compacta' Evergr tree, dwarf form of Rocky Mountain Fir. Native Alaska to Oregon.
- A. mariesii* MARIES FIR Evergr tree (24 m). Japan, Formosa. (H1).
- A. nordmanniana* CAUCASIAN FIR Evergr tree (58 m), 17 m high, 2.1 m circum at 46 years. W. Caucasus. Z6.
- A. numidica* ALGERIAN FIR Evergr tree (21 m), the two specimens planted failed to establish. E. Algeria. (H1).
- A. pinsapo* SPANISH FIR Evergr tree (24 m), the lone specimen destroyed accidentally the second year. Spain. Z8.
- A. p.* 'Glauca' BLUE SPANISH FIR Evergr tree, glaucous form of the species; the one specimen planted was just 3 m high at 19 years due to wet location; different, attractive. Z8.
- A. procera* 'Glauca' BLUE NOBLE FIR Evergr tree, 15 m high, 1.8 m circum at 50 years; removed on account of woolly aphids. Z8.
- A. sibirica* SIBERIAN FIR Evergr tree (40 m), the one specimen planted failed to establish. N. Russia. Z2.
- A. veitchii* VEITCH FIR Evergr tree (24 m), the only specimen planted failed to establish. C. Japan. Z5.

ACANTHOPANAX Araliaceae

- A. sieboldianus* FIVE-LEAVED ARALIA Spreading shrub (3 m); flowers greenish white; two specimens succumbed after 8 years because of dry conditions. Japan. Z5.

ACER Aceraceae

- A. buergerianum* TRIDENT OR BUEGER'S MAPLE Decid tree, 11 m high, 8 m spread, 1.7 m circum at 58 years. E. China, Japan. Z8.
- A. campestre* HEDGE MAPLE Decid tree (15 m), 12 m high, 7.3 m spread, 0.9 m circum at 58 years. Europe, W. Asia. Z5b.
- A. carpinifolium* HORNBEAM MAPLE Decid tree (9 m), the only specimen planted failed to establish. Japan. Z7.
- A. circinatum* VINE MAPLE Decid shrubby tree (12 m); colorful in fall. British Columbia to California. Z6.
- A. duretii* Decid tree (12 m), 4.5 m high, 5.4 m spread, 0.5 m circum at 58 years. (H).
- A. ginnala* AMUR MAPLE Decid tree (6 m), 4.8 m high, 4.2 m spread, 0.6 m circum at 58 years; attractive, colorful in fall. China, Japan. Z2b.
- A. glabrum* var. *douglasii* DOUGLAS OR ROCKY MOUNTAIN MAPLE Decid tree (10 m), 14.6 m high, 10 m spread, 2 m circum at 55 years. W. North America. Z5b.
- A. grandidentatum* BIGTOOTH MAPLE Decid tree (12 m), removed at 41 years because of crowding. Wyoming to Utah, New Mexico. (H).
- A. grosseri hersii* The one specimen planted failed to establish. C. China. Z7.
- A. heldreichii* HELDRICH'S MAPLE Decid tree, 17 m high at 58 years, attractive. S.E. Europe. (H).
- A. hyrcanum* Decid tree (10 m), 13.7 m high, 11 m spread, 1.1 m circum at 58 years. S.E. Europe, Caucasus.
- A. japonicum* 'Aconitifolium' Decid shrub or small tree, leaves deeply cleft. Japan.
- A. macrophyllum* BIGLEAF MAPLE Decid tree (30 m); abundant locally. Alaska to California. Z8.
- A. monspessulanum* MONTPELIER MAPLE Decid tree (9 to 15 m), 12 m high, 10 m spread at 59 years. S.E. Europe, W. Asia. Z7.

A. palmatum JAPANESE MAPLE Decid small tree or shrub. Z6. Of the many selections available, here is a list of a few good ones.

'Corallinum' Z6

'Dissectum' (H1)

'Hillieri'

'Ohsakazuki'

'Ornatum' (*A.p. dissectum* 'Ornatum') (*A.p.* 'Dissectum Atropurpureum')

'Suminagashi'

A. platanoides NORWAY MAPLE Decid tree (30 m). Europe. Z5. Two popular selections are 'Crimson King' Z4b, var. *rubrum* (H).

A. pseudoplatanus SYCAMORE MAPLE Decid tree (30 m), 17 m high, 10 m spread, 0.3 m circum at 58 years. Europe, W. Asia. Z5b.

A. p. 'Purpureum' PURPLELEAF SYCAMORE MAPLE Decid tree, underside of leaves purple. Z5b.

A. rubrum RED OR SWAMP MAPLE Decid tree (30 m), 21 m high, 13 m spread, 1.7 m circum at 58 years. Newfoundland to Florida and Texas. Z3.

A. r. var. *drummondii* Decid tree, a single specimen grew poorly throughout its 49 years. S. USA.

A. saccharinum SILVER MAPLE Decid tree (37 m), hardy in coastal northwest, the only specimen planted failed to establish. Quebec to Florida and Oklahoma. Z2b.

A. s. laciniatum WIER'S CUTLEAF SILVER MAPLE Decid tree, 10 m high, 7 m spread, 0.8 m circum at 46 years. Z3.

A. saccharum SUGAR OR ROCK MAPLE Decid tree (36 m). Coastal Northwest, Quebec to Florida and Texas. Z4.

A. spicatum MOUNTAIN MAPLE Decid shrub or tree (9 m), 4 m high at 17 years E. North America. Z2.

A. tataricum TATARIAN MAPLE Decid shrub or tree (9 m), 4.8 m high, 4.2 m spread at 34 years. S.E. Europe, W. Asia. Z2b.



Acer trautvetteri TRAUTVETTER'S MAPLE

A. trautvetteri TRAUTVETTER'S MAPLE Decid tree (15 m), 13 m high, 8 m spread, 0.9 m circum at 58 years, samaras attractively reddish. Caucasus. (H).

A. velutinum Van Volxemii PERSIAN MAPLE Decid tree, 17 m high, 13 m spread, 1.4 m circum at 58 years. Caucasus, N. Persia. (H).

AESCULUS Hippocastanaceae

A. × carnea RED HORSE CHESTNUT Decid tree (24 m), 9 m high, 1.4 m circum at 55 years, flowers reddish.

A. glabra OHIO BUCKEYE Decid tree (10 m), 15 m high, 9 m spread, 1.3 m circum at 58 years; flowers whitish with pink spots, colorful fall foliage. Pennsylvania to Alabama and Nebraska.



Aesculus glabra OHIO BUCKEYE

A. hippocastanum COMMON HORSE CHESTNUT Decid tree (24 m), 11 m high, 1.2 m circum at 57 years, strong grower, heavy shade. Balkan peninsula. Z5b.

A. × hybrida HYBRID BUCKEYE Decid tree, 7 m high, 7.6 m spread, 0.5 m circum at 47 years. (H).

A. mutabilis penduliflora (*A. humilis* × *A. lutea*) Decid tree, 6 m high at 34 years. (H).

A. neglecta Decid tree (18 m), 4 m high at 19 years. N. Carolina. Z5.

A. pavia RED BUCKEYE Decid tree (6 to 12 m), 7.6 m high, 4.5 m spread, 0.8 m circum at 47 years; flowers dark red, colorful fall foliage, excellent. Virginia to Florida and Louisiana. (H).

A. wilsonii Decid tree (24 m), the only specimen planted failed to establish.

AILANTHUS Simaroubaceae

A. altissima TREE OF HEAVEN Decid tree (18 m), 7 m high at 18 years. China. Z6.

ALNUS Betulaceae

A. maritima SEASIDE ALDER Decid shrub or tree (9 m), condition good at 27 years. Delaware, Maryland, and Oklahoma. (H).

AMELANCHIER Rosaceae

A. alnifolia SASKATOON Decid shrub, 4.5 m high at 17 years, flowers white, fruit purple black. Saskatchewan to Colorado and Idaho. (H).

A. asiatica CHINESE SERVICEBERRY Decid shrub (11 m), the two specimens planted failed to establish. Japan, Korea. (H1).

A. bartramiana Decid shrub (2 m). Labrador to Michigan and Minnesota, south to Pennsylvania.

A. canadensis SHADBLOW Decid tree (20 m), 4.5 m at 18 years. Nova Scotia, Maine to Georgia, Iowa and Missouri. Z4.

A. cretica (probably *A. vulgaris* 'Cretica') Decid shrub, 4.8 m at 17 years. (H).

A. ovalis SERVICEBERRY Decid shrub (2 m), 4 m at 16 years. C. and S. Europe.

A. utahensis Failed to establish.

AMORPHA Leguminosae

A. canescens LEAD PLANT Decid shrub, 0.7 m at 14 years, covered with gray down, flowers purple blue, 10- to 15-cm spikes. Michigan, Saskatchewan, Texas, New Mexico. Z2b.

A. fruticosa FALSE INDIGO Decid shrub (4 m), flowers purple blue in clustered spikes. Saskatchewan to Florida and Mexico. Z2b.

A. nana DWARF INDIGO Decid shrub, 1 m at 12 years. Manitoba and Saskatchewan to Iowa and New Mexico. Z2b.

ANDROMEDA Ericaceae

A. polifolia BOG ROSEMARY Brd-lvd evergr shrub, 0.3 m. N. and C. Europe, N. Asia, N. America, including Vancouver Island. Z2.

A. p. 'Compacta' Compact form listed by E. H. Lohbrunner, plant collector, Victoria, B.C.

ARAUCARIA Araucariaceae

A. araucana MONKEY PUZZLE Evergr tree, 14 m high, 1.3 m circum at 55 years, striking appearance, some injury in coldest winters. Chile. Z8.

ARBUTUS Ericaceae

A. menziesii MADRONA Brd-lvd evergr tree, 15 m high, 10.6 m spread at 45 years; attractive, but flaking bark and shedding of leaves on lawns are objectionable; not difficult to raise from seed or to transplant when nursery-grown and less than 0.6 m high. British Columbia to California. Z8.

ARCTOSTAPHYLOS Ericaceae

A. tomentosa WOOLLY MANZANITA Failed to establish. (H1).

A. uva-ursi RED BEARBERRY Low trailing evergr, recent selections from Oregon State University reveal considerable variation in matting and adaptability. Europe, N. Asia, N. America. Z1.

ARTEMISIA Compositae

A. abrotanum SOUTHERNWOOD, OLD MAN Small shrub, 1.6 m at 11 years. S. Europe. Z4.

ARUNDINARIA Gramineae

A. japonica (*Bambusa metake*) ARROW BAMBOO Evergr shrub (6 m). (H).

A. marmorea (*Bambusa m.*) Failed to establish.

A. simonii (*Bambusa s.*) SIMON BAMBOO Evergr shrub (6 m). (H).

ATRIPLEX Chenopodiaceae

A. halimus TREE PURSLANE Sm shrub, 1.8 m high, badly winter-killed 1964–65 after 5 years. S. Europe. Z6b.

AUCUBA Cornaceae

A. japonica JAPANESE AUCUBA Brd-lvd evergr shrub (5 m), slow-growing, highly adapted to shade; variegated forms, most of which do well, are more popular than the green, require some shade to prevent sunburn; plants are bisexual, therefore male specimen is required for showy red berries on female bushes; excellent. Japan. Z8.

AZARA Bixaceae

A. microphylla BOXLEAF AZARA Brd-lvd evergr shrubby tree, attractive, 6 m at 11 years; leaves small, shiny; frondlike arrangement of branches; succumbed to cold 1968–69; tender but worthwhile, needs protection. Chile.

BACCHARIS Compositae

B. halimifolia GROUNDSEL BUSH Decid shrub (4 m), 2.4 m at 16 years, withstands saltwater spray. E. North America. Z5b.

B. patagonica PATAGONIAN GROUNDSEL TREE Evergr shrub (3 m), 2 m at 16 years. Patagonia. (H).

B. salicina Related to *B. halimifolia* (1 m), 1.5 m at 16 years. Kansas, Colorado to W. Texas. (H).

BAMBUSA Gramineae

B. multiplex ORIENTAL HEDGE BAMBOO Evergr shrub, variable species (3- to 11-m canes); 'Alphonse Karr', which was the only cultivar tested, failed to establish; hardy in coastal northwest. China. Z7b.

BERBERIS Berberidaceae

B. aggregata SALMON BARBERRY Decid shrub (3 m), three specimens were planted in 1916 and the last died in 1927 at 1.5 m. W. China. (H).

B. amurensis AMUR BARBERRY Shrub (4 m), active 21 years. N.E. Asia. (H).

B. aristata (2 m) Failed to establish. Himalayas. (H).

B. atrocarpa Evergr shrub (2 m), active 28 years. W. China. (H).

B. bergmanniae Evergr shrub, 2.2 m at 15 years. W. China. (H).

B. brachypoda Decid shrub, 1.8 m at 15 years. N.W. China. (H).

B. buxifolia 'Nana' DWARF MAGELLAN BARBERRY Compact evergr shrub, 0.5 m, excellent. Chile. Z6b.

B. calliantha Evergr shrub, dwarf, compact; 1 m at 11 years, tip kills in coldest winters, otherwise excellent. S.E. Tibet.

B. chinensis CHINESE BARBERRY (3 m), the two specimens planted failed to establish. Causasus.

B. darwinii DARWIN BARBERRY Evergr shrub (4 m), 1.2 m at 8 years; not dependably hardy but very showy, worth planting on limited scale, needs protection. Chile. Z7.

B. hookeri HOOKER'S BARBERRY Vigorous evergr shrub, 1.8 m at 10 years, 2.5-cm thorns. Himalayas. (H).

B. julianae WINTERGREEN BARBERRY Evergr shrub, 2.4 m at 11 years, vigorous dense habit, strong 4-cm spines. C. China. Z6b.

B. linearifolia JASPERBELLS BARBERRY Evergr shrub (3 m). N.W. Chile. (H1).

B. linearifolia 'Orange King' 1.8 m at 11 years, not reliably hardy.

B. lologensis 'Apricot Queen' 1.8 m at 11 years, not reliably hardy.

B. pruinosa Evergr shrub (3 m), 1.2 m at 7 years, active 19 years. S.W. China. (H1).

B. × stenophylla (*B. darwinii* × *B. empetrifolia*) (Sometimes sold as *B. s.* 'Irwinii') ROSEMARY BARBERRY Evergr shrub (3 m), 2.2 m at 11 years, arching branches contribute to its gracefulness, good specimen plant, some injury in coldest winters, otherwise excellent. Z6b.

B. thunbergii JAPANESE BARBERRY Decid shrub, 2.1 m; foliage colorful in fall. Japan. (H).

B. t. atropurpurea Decid shrub, 1.8 m; foliage purple red all summer. (H).

B. t. a. 'Little Favourite' 0.4 m at 14 years, excellent. (H).

B. t. maximowiczii Planted 1914, 1.3 m high when removed in 1930. (H).

B. t. 'Rose Glow' 1.3 m at 11 years, leaves variegated red and purple. (H).

B. triacanthophora THREESPIKE BARBERRY Evergr shrub, 1.8 m at 7 years, one of the hardiest evergr barberries, excellent. C. China. Z6b.

B. vernae Decid shrub, 2.5 m at 13 years. N.W. China. (H).

B. verruculosa WARTY BARBERRY Compact evergr shrub (1.8 m), 1 to 1.5 m high at 11 years, leaves white beneath, glossy green on top, tip kills in severe winters. Z6b.

B. vulgaris EUROPEAN OR COMMON BARBERRY Decid shrub, 1.8 m, destroyed in 1967 because of plant protection regulations. (H).

B. wilsonae MRS. WILSON'S BARBERRY Decid shrub, 1.8 m, sometimes partly evergr. W. China. (H1).

B. wilsonae subcaulialata 1 m at 7 years. (H).

B. xanthoxylon (*B. knightii*) Evergr shrub, active for 17 years. Java.

BETULA Betulaceae

B. pendula youngii (*B. verrucosa youngii*)... YOUNG'S WEEPING BIRCH Decid tree, graceful. (H1).

B. populifolia GRAY BIRCH Decid tree, 10 m at 36 years. Nova Scotia and Ontario to Delaware. Z3.

BROUSSONETIA Moraceae

B. papyrifera PAPER MULBERRY Decid shrub, large, planted 1915, 3.6 m by 1932, gradual decline until 1948 then discarded. China, Japan. (H).

BRUCKENTHALIA Ericaceae

B. spiculifolia SPIKE-HEATH Evergr shrub, low, 0.2 m, closely related to *Erica*, good for rockeries. S.E. Europe, Asia Minor. Z7b.

BUDDLEIA Loganiaceae

B. alternifolia FOUNTAIN BUDDLEIA Decid shrub, vigorous, 2.1 m, branches widespread arching, flowers purple in clusters, hardiest of all the buddleias. N.W. China. Z5.

B. asiatica × *B. alternifolia* Two hybrid plants from Ottawa planted in 1953, killed outright in freeze November 1955.

B. davidii 'Pink Charming' Decid shrub, vigorous, 2.1 m, other forms of *B. davidii* that have been grown successfully include: *magnifica* (Oxeye Butterflybush); *superba* (Juno Butterflybush); and *Veitchiana*. Z7b.

B. globosa SUMMER LILAC Shrub, 2.7 m, flowers orange, fragrant in globular 2-cm heads, semihardy. Peru. (H).

B. intermedia Planted 1915, thrived for 11 years, 2 m high, flowers purple. (H).

B. lindleyana Shrub, planted 1915, succeeded for 15 years, 2.2 m high, flowers deep blue. E. China. (H).

BUXUS Buxaceae

B. microphylla japonica LITTLELEAF BOX Brd-lvd evergr shrub, 1 m. Japan. (Korean variety of this species is hardiest within the genus, new cultivars now available). Z5.

B. sempervirens COMMON BOX Brd-lvd evergr shrub, 5 to 6 m. Mediterranean. Z7. The following cultivars have proved valuable: 'Argentio-Variegata', 'Handsworthii', 'Myrtifolia', and 'Suffruticosa' (Edging Box).

CALLICARPA Verbenaceae

C. bodinieri 'Giraldii' BEAUTY-BERRY Decid shrub, erect habit, 2.1 m high, 1.8 m spread at 12 years; flowers lilac-colored, tiny, in late summer; pale violet fruit in clusters. W. China. (H).

CALLISTEMON Myrtaceae

C. speciosus SHOWY BOTTLEBRUSH Not reliably hardy.

CALLUNA Ericaceae

C. vulgaris HEATHER Evergr shrub (0.6 m). Europe, Asia Minor. Z6. Many cultivars are mentioned in the literature. A few outstanding ones at Sidney are:

'Aurea' Foliage golden

'County Wicklow' Flowers double, pink

'Cuprea' Leaves reddish

'David Eason' Flowers reddish, tinged purple

'Goldsworth Crimson' Flowers crimson

'H.E. Beale' Spikes silver pink

'Mrs. Pat' Flowers light purple, pink bud

'Mullion' Flowers deep pink

'Prestwick' Flowers mauve, vigorous

CALYCANTHUS Calycanthaceae

C. floridus CAROLINA ALLSPICE Decid shrub (2 to 3 m), aromatic leaves and wood are its main attributes. Virginia to Florida. Z5.

CAMELLIA Theaceae

C. japonica COMMON CAMELLIA Brd-lvd evergr shrub (3 to 4.5 m), few specimens in the district 6 m; flowers white, red, in-between shades, variegated, single, semidouble, double, formal double, anemone, and peony and appear from November to April; grows in full sun but some shade preferred; moist, good soil and acid conditions recommended. Z8b. The following are representative cultivars that have been evaluated here with the colors of their flowers:

'Adolphe Audusson' Red semidouble

'Alba Plena' White, regular double

'C.M. Hovey' Carmine, regular double

'Coquetti' Rose, double

'Daitairin' Pink, single

'Donckelarii' Red, variegated, semidouble

'Gloire de Nantes' Rose pink, semidouble

- 'Hawaii' Pink, double
- 'Lady Clare' Pink, semidouble
- 'Magnoliaeflora' Pink, semidouble
- 'Mathotiana' Crimson, double to regular double
- 'Sara C. Hastie' ('Debutante') Light pink, peony form
- 'Snowflake' White, single

C. sasanqua Evergr shrub, brd-lvd, not as reliable as *C. japonica*, 5 varieties planted in 1914 failed to establish with the exception of one plant of 'Onigoromo' that grew to 2.7 m by 1932 and one of "Mine-no-yuki" that lived until 1942. Z8b.

C. sinensis TEA Brd-lvd evergr shrub, of interest, but tender; 4 specimens planted in 1914 failed to establish; 3-year-old plants in 1915 grew until 1928 when the last were discarded, though many plants were in good condition. All but one of the locally grown seedlings from seed received in 1953 from Tientsin Estate, Bogawantalawa, Ceylon, have succumbed; in 1972 this one was in poor condition.

CAMPSIS Bignoniaceae

C. × tagliabuana 'MADAME GALEN' A hybrid of *C. grandiflora* × *C. radicans* Decid clinging vine (8 m), flowers funnel-shaped, 6 cm in diam, orange and scarlet; should be planted against a sunny wall. (H).

CARAGANA Leguminosae

C. arborescens SIBERIAN PEASHRUB Small decid tree, 6 m, condition still good at 49 years. Siberia. Z2.

C. aurantiaca PYGMY PEASHRUB Decid shrub, 1 m. C. Asia. Z2.

C. decorticans 3.3 m at 48 years, of little decorative value. Afghanistan. (H).

C. frutex SHRUBBY CARAGANA Decid shrub, 1.8 to 2.4 m. S. Russia to C. Asia and Siberia. Z2.

C. microphylla LITTLELEAF PEASHRUB Decid shrub, 3.3 m at 49 years when removed, little ornamental value. Siberia and N. China. (H).

C. pygmaea DWARF CARAGANA Decid shrub, 1 to 1.2 m, resembles *C. aurantiaca*, but latter is deeper-colored and has more taper-pointed leaflets and shorter calyx. N.W. China and Siberia. (H).

C. sinica CHINESE PEASHRUB 1 m after 18 years, flowers reddish yellow in May. N. China. Z4.

C. × sophoraefolia (*C. arborescens* × *C. microphylla*) Decid shrub, height and spread 4.5 m at 48 years, flowers yellow. (H).

C. spinosa Decid shrub, 1.2 m at 18 years, 2.5-cm spines, flowers deep yellow. Siberia. (H).

CARPENTERIA Saxifragaceae

C. californica TREE ANEMONE Evergr shrub; flowers 5 to 8 cm, white in June to July; 0.7 m at 7 years because of tip killing, but root hardy; needs warm site. California. Z9a.

CARPINUS Betulaceae

C. betulus EUROPEAN HORNBEAM Decid tree, one 1914 specimen now 15 m high, 1.8 m circum, rated hardy at Sidney 1936; sturdy, handsome; distinctive fruiting catkins 7.5 cm long with conspicuous three-lobed bracts. Europe to Persia. Z7.

C. caroliniana AMERICAN HORNBEAM Failed to establish. (H1).

C. orientalis ORIENTAL HORNBEAM Failed to establish. (H1).

CARYA Juglandaceae

C. sp. 'Missouria' MAMMOTH HICKORY Failed to establish.

C. tomentosa MOCKERNUT Failed to establish.

CARYOPTERIS Verbenaceae

C. × clandonensis (*C. incana* × *C. mongholica*) Decid shrub (1 to 1.2 m), though referred to as one of the most popular small hybrid shrubs raised this century and ideal for the mass effect of its blue flowers, it has stirred little interest locally. Z6.
C. incana BLUEBEARD OR BLUE SPIREA Decid shrub, 1.5 m, best when cut back annually and treated as a herbaceous perennial. China, Japan. (H).

CASSINIA Compositae

C. fulvida (*Diplopappus chrysophyllus*) GOLDEN HEATHER Evergr shrub, 1.5 m, crowded leaves give a golden effect; flowers white; kills out in cold winters. New Zealand. (H1).

CATALPA Bignoniaceae

C. bignonioides (*C. syringaefolia*) INDIAN BEAN Decid tree, 58 years, shallow soil and dryland conditions have gradually taken their toll of all but one of 22 specimens; survivor in fair state, 10 m high, 1.4 m circum; flowers 5 cm, white, striped yellow, spotted brown and borne on 18-cm panicles; fruiting pods 0.3 m long; good soil and summer irrigation recommended. E. USA. Z6b.

C. ovata (*C. kaempferi*) JAPANESE CATALPA Decid tree, single specimen planted in 1914 barely survived the freeze in 1955 and finally succumbed in 1966. China. Z5.

C. speciosa WESTERN CATALPA Decid tree, 59-year-old specimens in fairly good condition; present height 10 to 12 m, spread 10 m, trunk circum 1.3 m. S.C. USA. Z5b.

CEANOTHUS Rhamnaceae

C. americanus NEW JERSEY TEA Decid shrub, 1 m, hardiest of the genus, superseded by showier hybrids of which it is one of the parents; recommended for poor soil. E. North America. Z4b.

C. × delilianus (*C. americanus* × *C. coeruleus*) DELISLE CEANOTHUS Decid shrub, 1.8 m; flowers blue in summer and autumn; 'Gloire de Versailles' is the most successful of the tested cultivars, which included 'Gloire de Plantieres' and 'Indigo'. It tip kills badly in the coldest winters, but recovery is good. Z7b.

C. × pallidus 'Marie Simon' Shrub, 0.6 to 1.2 m, flowers pink on current season's wood. Z7.

C. prostratus MAHALA MAT OR SQUAW CARPET Low brd-lvd evergr creeper; several selections from Dr. R. Ticknor, Oregon State University and Mr. C. Fleishman, University of Nevada failed to establish. Washington to California. (H1).

C. thyrsiflorus repens CREEPING BLUE BLOSSOM Mound-forming, brd-lvd evergr shrub; 4.5 m; worth growing even though tops winter kill fairly frequently; root semihardy, protection required.

CEDRELA Meliaceae

C. sinensis CHINESE TOON Fast-growing decid tree (15 m), similar to *Ailanthus altissima* but less hardy. N. and W. China. (H).

CEDRUS Pinaceae

C. atlantica ATLAS CEDAR Evergr tree, 55-year-old specimen now measures 15 m high and 2.3 m in girth. 'Pendula', 'Aurea', and 'Glauca' have been tested and proved successful. 'Pendula' is more novel than ornamental, 'Glauca', also known as Blue Atlas Cedar, is distinctive and commonly cultivated. N. Africa. Z7b.

C. deodara DEODAR CEDAR Evergr tree, largest 57-year-old specimen 20 m high, 2.7 m circum; withstands Sidney's coldest winters though it is rated tenderest of the cedars; one of the most graceful evergreens. Himalayas. Z8.

C. libani CEDAR OF LEBANON Evergr tree, largest 55-year-old specimen 13.7 m high, 1.6 m circum. Asia Minor. (H). Cultivar 'Nana', slow-growing, dwarf, semi-

prostrate; old leaves green, young tips light green, 0.7 m high, spread 1.2 to 1.5 m at 10 years; excellent. (H).

CELASTRUS Celastraceae

C. orbiculata ORIENTAL BITTERSWEET Failed to establish. Japan and China. (H).

CELTIS Ulmaceae

C. occidentalis NORTH AMERICAN HACKBERRY Represented by one specimen, which at 34 years reached only 5.3 m high. Quebec to Manitoba, S. to N. Carolina, Alabama, and Kansas. Z2b.

CEPHALOTAXUS Taxaceae

C. fortunei CHINESE PLUM-YEW Evergr shrub, one of two specimens planted in 1913 was killed in freeze in 1955, the second now stands 3 m high, spread of 4.5 m, trunk circum 0.7 m. (H).

C. harringtonia (received in 1914 as *C. pedunculata*) Root hardy, but tops renew, two 57-year-old specimens now 2.1 m high.

C. h. drupacea Evergr tree, two 1915 specimens succumbed in freeze in 1955. (H1).

C. h. 'Fastigiata' Three 1962 specimens in good condition at 1.2 m high.

CERATOSTIGMA Plumbaginaceae

C. willmottianum WILLMOTT BLUE LEADWORT Decid shrub, 1 to 1.2 m, flowers blue, July till autumn. W. China. (H1).

CERCIDIPHYLLUM Cercidiphyllaceae

C. japonicum KATSURA TREE An attractive decid tree (30 m), 11 m at 17 years. Japan. Z5.

CERCIS Leguminosae

C. siliquastrum JUDAS TREE Bushy, decid tree (8 m); response to marginal soil and moisture conditions has been less than satisfactory where 57-year-old specimens remain at 3.6 to 5 m. S. Europe, W. Asia. Z8.

CHAENOMELES Rosaceae

C. japonica DWARF JAPANESE QUINCE Decid shrub, 1 m, flowers orange red. Japan. Z5b.

C. sinensis Tree (6 m), flowers pink; long-lived but of little ornamental value. China. (H1).

C. speciosa (*C. lagenaria*) FLOWERING QUINCE Decid, much branched, spreading shrub, better known as Japonica; dependable, up to 1.8 m, available in white, shades of pink and red in doubles, semidoubles, and singles. China. Z5b.

C. × superba (*C. japonica* × *C. speciosa*) 'Columbia' Decid shrub, 1.2 to 1.5 m; a pink-flowered cultivar acquired in 1915 is the only representative of this hybrid group; flowers pinks to red, singles, doubles, and semidoubles. Z5b.

CHAMAECYPARIS Pinaceae

C. lawsoniana (*Cupressus l.*) LAWSON FALSE CYPRESS Evergr tree (60 m). Oregon and California. Z7b. For a conifer that has produced so much variety in foliage and habit under cultivation, it is ironic that its use has to be restricted because of its susceptibility to phytophthora root rot. Nevertheless, the various forms are well worth planting provided you use disease-free stock and plant them in well-drained soil that has not previously supported phytophthora-infested plants. Of the more than 40 cultivars planted, some as long ago as 1913–20, 14 are in excellent condition. Noteworthy hardy cultivars are:

'Allumii' Steel-blue foliage, 20 m.

'Erecta Viridis' Bright green, 20 m.

- 'Gracilis Pendula' Pendulous branches, 20 m.
- 'Forsteckensis' Globular, dense, dwarf, 0.9 m at 14 years.
- 'Nana' Lively green, 2.8 m high and broad at 58 years.
- 'Pygmaea Argentea' 1.8 m high at 12 years.
- 'Schongariana' Dark green, all trees 58 years old.
- 'Stewartii' Golden yellow, elegant, 5.7 m at 29 years.

C. nootkatensis NOOTKA FALSE CYPRESS, YELLOW CYPRESS Evergr tree (24 to 30 m). Alaska to Oregon. Only 'Pendula' has been tested, 11 m at 30 years. Z6.

C. obtusa HINOKI FALSE CYPRESS Evergr tree (37 m); many dwarf forms, varied foliage. Japan. Z7b. Cultivars doing well are:

- 'Coralliformis' 1.8 m at 11 years.
- 'Gracilis' 1.5 m at 10 years.
- 'Kosteri' 1 m at 10 years.
- 'Mariesii' Variegated, 0.7 m at 14 years.
- 'Nana' 0.3 m at 6 years.
- 'Nana Gracilis' 1.3 m at 14 years.
- 'Sanderi' Sea green in summer, blue plum in winter, referred to under several names including *Juniperus*, *Retinospora*, *C. obtusa* 'Ericoides', and *Thuja orientalis* 'Sanderi Blue'; outstanding.

C. pisifera SAWARA FALSE CYPRESS Evergr tree (45 m), variable species with over 50 cultivars; may need pruning consistently to keep in control. Japan. Z4b. The following have been tested and are representative:

- 'Aurea Nana' Slow-growing, dwarf form, golden yellow.
- 'Boulevard' (*C. p. cyanoviridis*) Beautiful, silvery blue gray foliage; must be pruned heavily to keep in bounds.
- 'Filifera Aurea' THREAD SAWARA CYPRESS Golden threadlike branchlets.



Chamaecyparis pisifera 'Filifera Aurea' THREAD SAWARA CYPRESS

'Plumosa' Tree form, juvenile form, ends of branchlets, frondlike and feathery.

'Squarrosa' Juvenile form, densely branched and loose, feathery, silver gray foliage, mossy or woolly appearance, will grow to tree. Z5.

'Squarrosa Minima' Slow-growing, 1 m, glaucous green, may revert.

'Squarrosa Sulphurea' Growth similar to 'Squarrosa' but leaves sulphur yellow.

CHLORANTHUS Chloranthaceae

C. brachystachys Failed to establish. India to Japan.

CHOISYA Rutaceae

C. ternata MEXICAN ORANGE Brd-lvd evergr shrub, 2 m, subject to considerable injury in coldest winters, but recovery usually rapid; well worth planting in open, protected spot; flowers white, 2.5 cm; leaves pungent when crushed. Mexico. Z9a.

CISTUS Cistaceae

C. × corbariensis (*C. populifolius* × *salvifolius*) CORBIERES ROCKROSE Bushy evergr shrub, 0.5 to 1 m high; flowers white, 4 cm. Z9a.

C. laurifolius LAUREL ROCKROSE The hardiest rockrose species, 2 m. Mediterranean and S.W. Europe. Z8.

C. × purpureus PURPLE ROCKROSE Flowers reddish purple, conspicuous dark blotches; 1.2 m. (H1).

CLERODENDRON Verbenaceae

C. trichotomum HARLEQUIN GLORY-BOWER Decid vigorous shrub, 6 m; flowers white, fragrant, fruit blue, pea-sized; crimson calyx persists; roots sucker freely. E. China and Japan. Z8.

CLETHRA Clethraceae

C. alnifolia SWEET PEPPER BUSH, SUMMERSWEET Decid shrub, height and spread 1.3 m at 11 years; flowers fragrant, small white, tightly set in spiked heads in August; excellent. E. USA. Z5.

COLUTEA Leguminosae

C. cilicica BLADDER SENNA Decid shrub, 3 m at 18 years; pea flowers yellow; inflated pods. Asia Minor. (H).

C. × media Failed to establish.

CORNUS Cornaceae

C. florida EASTERN FLOWERING DOGWOOD Decid shrub or small tree (6 m); cultivars 'Cherokee Chief', 'Cherokee Princess', 'DeKalb Red', 'Hillenmeyer', 'Pluribracteata', 'Pygmy', and 'Rubra' introduced in 1964 have been slow to establish.

C. kousa Failed to establish. Japan, Korea. (H1).

C. mas CORNELIAN CHERRY After 10 years 7 m high, unsatisfactory. Z5b.

C. nuttallii PACIFIC DOGWOOD Decid tree or shrub, 23 m high in wild state; flower bracts about twice size of *C. florida*; 'Colrigo Giant' and 'Eddieii' (leaves splashed golden yellow, blooms at young age), seedlings of *C. nuttallii* establish quickly under cultivation; leaves colorful in fall. British Columbia to California. Z8.

CORONILLA Leguminosae

C. emeroides CROWN VETCH Decid shrub, 1.5 m; flowers yellow, 2 cm long April–May. (H).

C. emerus SCORPION SENNA Shrub, 3 m, seed pod like scorpion's tail. C. and S.E. Europe. (H).

CORYLOPSIS Hamamelidaceae

C. pauciflora WINTER HAZEL Decid shrub, 2 m, flowers yellow, appear in March. Japan. Z7b.

C. spicata SPIKE WINTER HAZEL Decid shrub, 2 m, flowers yellow, 6 to 12 on a drooping spike in spring. Japan. (H1).

CORYLUS Betulaceae

C. avellana 'Contorta' CORKSCREW HAZEL Decid shrub, 1.3 m; branches interestingly twisted and curled. Europe. (H).

COTINUS Anacardiaceae

C. coggygria 'Purpureus' SMOKE TREE Decid tree, 5 m, young leaves and plume-like flower panicles are purple, the latter in profusion give a smoky appearance. S. Europe to C. China. Z5.

C. c. 'Royal Purple' Leaves blackish purple. S. Europe to C. China. (H).

COTONEASTER Rosaceae

C. adpressa CREEPING ROCKSPRAY Decid, wide-spreading shrub, 0.5 m high; fruits red, 0.6 cm long; excellent for rockeries. W. China. Z4b.

C. congesta (*C. microphylla glacialis*) Low, creeping, compact evergr shrub, 0.5 m high; berries red, small. Himalayas. (H1).

C. conspicua decora NECKLACE COTONEASTER Prostrate evergr shrub, 1 m, branches ascending, excellent. Z7.

C. dammeri (*C. humifusa*) BEARBERRY COTONEASTER Low, spreading, brd-lvd evergr shrub, 15 cm high; berries red; branches slender and trailing; excellent for cascading over walls. C. China. Z4.

C. foveolata GLOSSY COTONEASTER Decid shrub (4 m), 2 m at 11 years; fruit first red then black. C. China. (H).

C. franchetii FRANCHET COTONEASTER Evergr shrub, 3 m, leaves gray green, berries red, graceful. W. China. Z7.

C. frigida HIMALAYAN COTONEASTER Decid shrub, 5 m. Z8.

C. horizontalis ROCKSPRAY Decid shrub, 1 m, sometimes referred to as Herringbone Cotoneaster because of its branch pattern. Z6.

C. × 'Lofast' Evergr shrub, 0.6 m, spreading habit; leaves shiny; berries orange red. Z6.

C. microphylla SMALL-LEAVED COTONEASTER Evergr shrub, 1 m, fruit bright red. Himalayas. Z7b.

C. m. thymifolia Three plants 3 years of age were killed winter 1968–69. (H1).

C. nitens Decid shrub, 3.5 m at 17 years, densely branched. W. China. (H1).

C. pannosa SILVERLEAF COTONEASTER Sm shrub, 2.1 m at 7 years; resembles *C. franchetii*. S.W. China. (H1). Three-year-old plants of *C. p.* 'Nana' killed in winter 1968–69.

C. racemiflora Decid shrub (2 m), branches slender and arching, flowers in clusters of 3 to 12, berries red. S. Europe, N. Africa, W. Asia. (H1).

C. r. 'Microcarpa' 3 m at 17 years, active at 58 years. (H).

C. r. 'Soongorica' Lived only 5 years.

C. salicifolia floccosa WILLOWLEAF COTONEASTER Evergr shrub, when winters are mild, 5 m, leaves 8 cm long; berries red; branches pendulous; effective when grafted to standard. W. China. Z7.

C. simonsii SIMONS COTONEASTER Sm shrub, erect, 3.5 m at 14 years. (H).

C. wardii Decid shrub, 1.2 m high and 1.2 m across at 8 years; habit upright; excellent, from U.S. National Arboretum in 1965. (H1).

CRATAEGUS Rosaceae

Decid shrubs or trees; spiny. The following nine hardy (H), decid species and cultivars have established successfully from 1914 or later plantings, but because of limited accommodation, only three have been retained.

C. crus-galli COCKSPUR THORN 11 m, flowers white. Z2b.

C. × dippeliana.

C. intricata (3 m).

C. × lavalleyi (6 m) Flowers white; fruits red, remain throughout the winter.

C. monogyna SINGLESEEDED HAWTHORN (9 m) Flowers white; much used for hedges in England, clips well. Z5.

C. oxyacantha 'Pauls Scarlet' Flowers double, scarlet, very showy, 50-year-old specimens still in excellent condition at 11 to 12 m. Z6.

C. oxyacantha 'Plena' Flowers double, white. Z6.

C. oxyacantha 'Rosea Plena' Flowers double, pink. Z6.

C. phaenopyrum Washington Hawthorn Small tree, good for lawn, street, and highway planting, (9 m); flowers white. Z5.

CRYPTOMERIA Pinaceae

C. japonica CRYPTOMERIA Evergr tree (46 m). Japan.

Best of the seven tested cultivars are:

'Bandai-sugi' Globular when young; specimen planted in 1962 1.5 m high and 1 m across at 11 years. (H).

'Elegans' An attractive and interesting form with permanently juvenile, feathery soft foliage, which is green in summer and brownish red in winter; a 5-m high, 50-year-old lone specimen that was killed in an unusual freeze in November 1955 is not indicative of its almost hardy nature; well worth growing. Z9a.

'Globosa Nana' Very compact shrub of globose habit; a 14-year-old plant measures 1.3 m high by 1.5 m across. (H).

CUNNINGHAMIA Pinaceae

C. lanceolata CHINA FIR Evergr tree (23 m), plantings of 1917 and 1919 failed to establish, a 1964 planting fares precariously, not recommended. S. and W. China.

CUPRESSOCYPARIS Pinaceae

C. leylandii (*Cupressus macrocarpa* × *Chamaecyparis nootkatensis*) LEYLAND CYPRESS Evergr tree, vigorous, fast growing, ultimate height unknown, hardy since received in 1964.

CUPRESSUS Pinaceae

C. arizonica ARIZONA CYPRESS Evergr tree (15 m), a 1960 planting doing well in full exposure, suitable for clipped hedge. Arizona. (H).

C. arizonica bonita Tree (12 to 24 m), 6.7 m at 13 years. (H).

C. macrocarpa MONTEREY CYPRESS Evergr tree (24 m), fast-growing, formerly used extensively for hedges in the Victoria area but now out of favor since a severe killing in November 1955. Z8b. *C. arizonica* considered hardier and may be a desirable substitute.

CYTISUS Leguminosae

Of the 19 species and cultivars tested since 1913, the following are noteworthy:

C. battandieri MOROCCAN BROOM Decid shrub (5 m); leaflets very large, silvery appearance, and feel silky; flowers yellow, pineapple-scented, in spike. Morocco. Z7.

C. × 'Burkwoodi' (2 m), flowers deep red, rated highly.

C. × kewensis Semiprostrate shrub (0.5 m), flowers creamy white in dense masses in May like those of *C. praecox* but larger, excellent. Z7.

C. nigricans SPIKE BROOM (2 m), flowers yellow in 30-cm spikelike inflores-

cences; *C. nigricans elongatus* blooms again in the fall at the top of the elongated fruiting branches. C. and S.E. Europe. Z3b.

C. × praecox WARMINSTER BROOM (2 m), flowers creamy white, showy masses in May.

C. × p. 'Albus' Flowers pure white. A 1914 planting reached 3 m by 1926. Z6.

C. × p. 'Hollandia' (2 m), flowers pale cream and cerise. Z6b.

C. × p. 'Zeelandia' (1.5 m), flowers lilac and pink in May and June. (H).

C. purpureus PURPLE BROOM 0.5 m, flowers purple in May. C. and S.E. Europe.

C. p. 'Albus' Flowers white, more dwarf. S. Austria, N. Italy. Z5b.

C. scoparius SCOTCH BROOM 2 m, naturalized and widespread on Vancouver Island, flowers golden yellow in May. C. and S. Europe. Z7b.

C. s. 'Andreanus' Similar in habit, but flowers are marked brownish crimson, 3 m high at 12 years. C. and S. Europe. (H).

C. s. 'Fulgens' 2 m at 4 years, an excellent June-flowering cultivar of dense, compact habit; flowers opening orange yellow; wings deep crimson. (H).

DABOECIA Ericaceae

D. cantabrica IRISH HEATH Evergr shrub, 0.5 m, flowers small, rosy, purple June to November, excellent in masses and rockeries. W. Europe. Z7b. 'Alba' flowers white. Z7b. 'Praegerae' dwarf spreading, flowers pink. (H).

DAPHNE Thymelaeaceae

All the following, except one that failed to establish, are recommended:

D. × burkwoodii BURKWOOD'S DAPHNE Sm shrub, 1 m, flowers pale pink, fragrant, blooms in May and June. Z5. 'Somerset' is similar.

D. cneorum ROSE DAPHNE Evergr shrub of trailing, spreading habit, 0.3 m, difficult to establish; flowers rosy pink in May. C. and S.E. Europe. Z2b.

D. collina Evergr bush, 0.4 m, one of the best, flowers rose pink, fragrant. Italy, Asia Minor. Z7b

D. genkwa Failed to establish. (H1).

D. laureola SPURGE LAUREL Evergr shrub, 1 to 1.2 m, introduced at Station in 1913, volunteers in semishade of undisturbed part of park, flowers yellowish green in March, not of interest. S. Europe, Asia. (H).

D. mezereum FEBRUARY DAPHNE Decid shrub, 1 m, flowers purplish red in February and March cover the previous season's stems, fruits red and poisonous. Europe to Caucasus. Z3.

D. odora WINTER DAPHNE Evergr shrub (2 m), flowers reddish purple, very fragrant. Japan, China. Z8.

DAPHNIPHYLLUM Euphorbiaceae

D. macropodum Evergr shrub, bushy (15 m), only one of two planted in 1915 became established, reached 1.3 m by 1927; flowers pale green, inconspicuous, pungent. Japan. (H).

DEUTZIA Saxifragaceae

Over 20 specimens and cultivars have been tested since 1913; most are useful and beautiful shrubs when in bloom but uninteresting after flowering. The following are very good and are deciduous:

D. gracilis SLENDER DEUTZIA (2 m), arching branches covered with white flowers in April and May. Japan. Z6.

D. × kalmiaeflora KALMIA DEUTZIA Graceful shrub, 1.3 m at 16 years; flowers white, flushed carmine; excellent. Z5b.

D. × lemoinei (2 m), one of the hardiest. Z5. 'Compacta' is more dwarf and compact. (H). 'Boule de Neige' 0.6 m at 15 years, flowers creamy white, in dense masses. (H).

D. longifolia LONGLEAF DEUTZIA 2.4 m at 15 years, still in fair condition at 47 years when removed; flowers white-tinted pink in large clusters in June and July. W. China. (H).

D. × maliflora 'Avalanche' 0.7 m at 16 years, flowers large, white. (H).

D. × rosea 1.5 m at 49 years and condition good. Z6. 'Campanulata' 2.1 m high at 16 years, flowers white. Z6. 'Eximia' 2 m high at 15 years, flowers pinkish in May, Z6, probably best of *D. × rosea* cultivars, which also include 'Floribunda' and 'Grandiflora', both white tinged pink (H), and 'Venusta' white. (H).

D. scabra FUZZY DEUTZIA 3 m high. China and Japan. Good double-flowered forms are 'Candidissima' white, (H); 'Plena' tinted rosy purple on outside, Z6; 'Pride of Rochester' white, Z6.

D. setchuenensis corymbiflora 1.8 m high at 16 years, flowers small white, starlike in summer. C. China. (H).

DRIMYS Magnoliaceae

D. aromatica Evergr shrub, young stems and leaf petioles attractively red, longest surviving shrub of seven specimens was 10 years old, none reached more than 1 m high; tender, root hardy. Tasmania and S. Australia.

ELAEAGNUS Elaeagnaceae

E. multiflora CHERRY ELAEAGNUS Sm shrub, 3 m, flowers fragrant in April and May; fruits red, showy, edible. Himalaya, China, Japan. Z5b.

E. pungens THORNY ELAEAGNUS Evergr shrub, vigorous (4 m), leaves shiny green above, whitish speckled with brown scales beneath; flowers fragrant in autumn. Japan. Z7b.

E. p. 'Frederici' (*E. p.* 'Aureo-maculata') Less vigorous than the species, large yellow splash in leaf center, showy, excellent. (H).

E. umbellata AUTUMN ELAEAGNUS Decid shrub, 4 m, strong-growing, spreading to 4 m, leaves green above, silvery beneath, fruit silvery at first then red. China, Japan. Z5.

ENKIANTHUS Ericaceae

E. campanulatus REDVEIN ENKIANTHUS Decid shrub (9 m), 1 m at 8 years; flowers yellowish, bell-shaped, in pendulous clusters in May. Japan. Z5.

E. perulatus Decid shrub, (2 m) under ideal conditions; 1 m at 10 years, reddish branches arranged in tiers; flowers white, pitcher-shaped in pendulous clusters. Japan. Z7.

ERICA Ericaceae

E. australis SPANISH HEATH 1.2 to 1.8 m. (H1).

E. carnea SPRING HEATH 0.3 m, one of the best heaths. Z6. Amongst the best cultivars are:

'Cecilia M. Beale' White

'King George' Rosy crimson

'Queen Mary' Rich pink

'Sherwood Creeping'

'Springwood White' Fast growing, low spreading, best white

'Springwood Pink' Clear pink, floriferous

'Vivellii' Carmine red, latest of carneas to bloom

'Winter Beauty' Deep pink

E. cinerea TWISTED OR SCOTCH HEATH 0.3 to 0.4 m, summer and autumn flowering, needs pruning in early spring. W. Europe, British Isles. Z7. Noteworthy amongst many cultivars are:

'Alba' Flowers white, 23 cm

'C.D. Eason' Deep pink, 23 cm

'Fulgida' Scarlet, 25 cm

'Pallida' Pale purple, 15 cm

E. × darleyensis DARLEY HEATH 0.6 m, flowers lavender pink in March to May, vigorous, hardy, excellent. Z8.

E. lusitanica SPANISH HEATH 1.7 m. (H1).

E. terminalis (*E. stricta*) CORSICAN HEATH 1.2 m high at 8 years. (H1).

E. vagans CORNISH HEATH 'Mrs. D. F. Maxwell' Bushy, 0.5 m, flowers red July to October. Z7. 'Lyonesse', flowers white.

ERIOBOTRYA Rosaceae

E. japonica 'Tanakae' LOQUAT Brd-lvd evergr tree; both the specimens planted failed to establish. C. China. (H1).

ESCALLONIA Saxifragaceae

E. bifida (*E. montevidensis*) Failed to establish. (H1).

E. × iveyi Natural hybrid of *E. bifida* × *E. exoniensis* Brd-lvd evergr shrub, 3 m, needs protection, leaves shiny dark green, flowers white in panicles in July and August, excellent. Z8b.

E. rubra Brd-lvd evergr shrub, 3 m, flowers red, glossy green leaves, an excellent shrub but semihardy, killing back extensively in cold winters. Chile.

E. virgata (*E. philippiana*) Parent of many hybrids, failed to establish. Chile. (H1).

EUCALYPTUS Myrtaceae

E. globulus BLUE GUM Evergr tree, leaves aromatic, 0.3 m long, bluish gray exotic appeal, single specimen survived for 12 years in temperatures to -13°C on at least one occasion. Australia.

E. gunnii CIDER GUM Evergr tree, interesting, but not dependably hardy. S. Australia, Tasmania.

EUCOMMIA Eucommiaceae

E. ulmoides HARDY RUBBER TREE Decid tree (20 m), 4.1 m high after 18 years, leaves elmlike, the only hardy tree known for its rubber-producing substance. China. Z7.

EUCRYPHIA Eucryphiaceae

E. × nymansensis Interesting brd-lvd evergr hybrid of two S. American species (*E. cordifolia* × *E. glutinosa*), classed as a small to medium tree, but grew to a 4-m upright shrub here because of periodic renewal from the crown after cold winters; flowers white, 6 cm across, August and September; needs protection but worthwhile ornamental; semihardy.

EUONYMUS Celastraceae

E. alata WINGED SPINDLE TREE Decid shrub (3 m), 2.5 m at 18 years. N.E. Asia to C. China. Z3. Cultivar 'Compacta' is more compact and was 1.5 m high at 13 years; excellent. Z3. Both brilliant scarlet in fall.

E. europaea EUROPEAN SPINDLE TREE Decid shrubby tree (7 m), flowers yellowish green, fruit red, 1.2 to 2 cm diam. Europe to W. Asia. Z4.

E. fortunei WINTERCREEPER Evergr subshrub represented by several trailing, some climbing cultivars, most make good ground covers. China. Z5. The following are doing well:

E. f. 'Colorata' Rambling, 0.3 to 0.4 m, fairly good ground cover, fall color disappointing.

E. f. 'Golden Queen' Selection received from L. Smith Nurseries, Pitt Meadows.

E. f. 'Gracilis' Young leaves with white, yellow or pinkish margins, older leaves with whitish margins.

E. f. radicans Leaf margins creamy white, excellent.

E. f. variegata WINTERCREEPER Showy spreading shrub, leaves with broad marginal band of white, grayish center; 1 m high, 2 m spread at 10 years; excellent.

E. f. vegeta Green-leaved shrub with rounded waxy foliage, 1.6 m in 10 years; flowers small whitish in mid-July. Japan.

E. japonica EVERGREEN EUONYMUS Evergr shrub (5 m), upright, densely branched. S. Japan. Z8b. Since 1914, the following cultivars have been tested but none with lasting success:

'Albo-Marginata'

'Argenteo-Variegata'

'Aureo-Variegata'

'Viridi-Variegata' ('Duc d'Anjou')

'Microphylla'

'Ovatus Aureus'

'Pyramidata'

'President Gauthier'

E. kiautschovica SPREADING EUONYMUS Failed to establish. (H1).

E. maackii Listed as decid large shrub but only 1.3 m high at 18 years. N. China to Korea.

E. nana Failed to establish. Caucasus to W. China. Z2.

E. obovata RUNNING EUONYMUS Decid, fast-growing ground cover, 0.3 m. E. North America.

E. verrucosa Failed to establish. (H1).

E. yedoensis YEDDO EUONYMUS Decid shrub, 2.8 m at 18 years, red foliage in fall. Korea and Japan. (H1).

EURYA Theaceae

E. japonica Failed to establish. Japan, Formosa. (H1).

EXOCHORDA Rosaceae

E. korolkowi Decid shrub, 4 m, vigorous; flowers white, 4 cm; active 46 years. Turkestan.

E. racemosa COMMON PEARLBUSH Decid shrub, 3.3 m at 11 years, spreading habit, flowers white. E. China. (H1).

FAGUS Fagaceae

F. sylvatica EUROPEAN BEECH Decid tree (30 m). C. and S. Europe, Crimea. Z6. The following tested cultivars are recommended:

'Autropunicea' PURPLE BEECH Leaves purple, 9 m at 15 years, 0.8 m circum. Z6.

'Laciniata' CUTLEAF EUROPEAN BEECH Narrow leaves, deeply cleft, very attractive. Z6.

'Pendula' WEEPING BEECH Pendulous branches. Z6.

'Purpureo Pendula' WEEPING PURPLE BEECH Pendulous branches, purple leaves. Z6.

'Rohanii' Leaves dark green above, coppery beneath, deeply cleft, wavy margins. (H).

FATSIA Araliaceae

F. japonica FATSIA Evergr shrub (5 m); leaves large, leathery, polished imparting a tropical effect; plants at least 35 years old and averaging 2 m, still highly ornamental, occasionally renewing from crowns after the coldest winters; some shade and protection needed. Japan. Z8b.

FICUS Moraceae

F. carica COMMON FIG Decid tree, primarily grown as novelty; a 16-year-old 'King' fruited regularly until removed prematurely in 1958 when tree measured 3.6 m, diam 10 cm; benefits from protection. Z7b.

F. pumila Failed to establish. Japan, China.

FIRMIANA Sterculiaceae

F. simplex CHINESE PARASOL TREE Decid tree (15 m), severe winter injury most years, but one of two plants survived 37 years. China, Japan. (H).

FORSYTHIA Oleaceae

F. europaea ALBANIAN FORSYTHIA Decid shrub, 2 m, flowers yellow in March and April. Z5b.

F. × intermedia 'Arnold Dwarf' (*F. intermedia* × *F. japonica*) 0.6 m, shy bloomer, primarily a ground cover. Z5.

F. × intermedia (*F. suspensa* × *F. viridissima*) Decid shrub, 3 m at 17 years. (H).

F. × intermedia 'Nana' Compact, dense foliage, 1 m high, 1.5 m spread at 10 years.

F. × intermedia 'Primulina' 3 m.

F. × intermedia 'Spectabilis' 2 m, preferred cultivar of this hybrid group, and probably showiest of all forsythias. Z6.

F. suspensa 'Fortunei' Decid shrub upright with arching branches, 2 m at 14 years. (H).

F. viridissima Decid shrub, 1.8 m at 16 years, stiff erect branches. China. (H).

F. viridissima 'Bronxensis' Dense, compact, dwarf, masses of twiggy branches, 0.3 m.

F. viridissima 'Koreana' KOREAN FORSYTHIA 2.4 m, only forsythia to color in fall. Z6.

FOTHERGILLA Hamamelidaceae

F. monticola ALABAMA FOTHERGILLA Decid shrub, 2 m; flowers in spikes, white, bottlebrushlike; leaves colorful in fall; highly recommended. N. Carolina to Alabama. Z6.

FRAXINUS Oleaceae

F. americana WHITE ASH Decid tree (40 m), a 58-year-old specimen measures 10 m high and 1.3 m circum. E. North America. Z2b.

F. bungeana Decid tree or shrub (5 m). N. China. (H1).

F. excelsior EUROPEAN ASH Decid tree (40 m), the only active specimen growing on dry hillside measures 12 m high and 1.4 m circum at 58 years. Europe, Asia Minor. Z4.

F. nigra BLACK ASH Decid tree (25 m), 5.4 m at 28 years, little interest or value in gardens. E. North America. Z2b.

F. oregona OREGON ASH Decid tree (25 m), 6.2 m at 28 years, useful shade tree. Washington to California. Z7.

F. pennsylvanica RED ASH Decid tree (20 m), grows quickly when young, common in gardens. Nova Scotia to Manitoba, south to Georgia, Alabama, and Mississippi. (H1).

F. p. aucubaefolia Decid tree, leaves mottled, golden yellow, 5.6 m at 14 years. (H).

F. p. lanceolata GREEN ASH Decid tree (20 m), 5.6 m at 18 years. Maine to Florida, west to Saskatchewan, Montana, and Texas. Z2b.

F. quadrangulata BLUE ASH Decid tree (25 m), active at 56 years, square winged branchlets. Michigan to Arkansas and Texas. (H).

FREMONTIA Sterculiaceae

F. 'California Gold' Sm shrub (5 to 10 m), 2.7 m at 6 years, flowers golden during summer, 6 cm; short-lived locally, semihardy. California.

FUCHSIA Onagraceae

F. magellanica MAGELLAN FUCHSIA Decid shrub, 1.5 m, kills to ground in coldest winters, but renews from winter-hardy crown and produces a pleasing display of scarlet and violet flowers; interesting to humming birds. Z8.

F. m. gracilis Trailing habit, flowers purple and red; of four specimens planted in 1917, two survived 5 years.

F. m. 'Riccantonii' Hardest of the fuchsias, flowers and habit very similar to the species.

GAULTHERIA Ericaceae

Three species introduced to the Station in 1965 (*G. cuneata* [H1], *G. procumbens* [H1], *G. nummularioides* [H1]) were scarcely established when killed during winter of 1968–69.

G. shallon 'Lemon Leaf' SALAL Evergr shrub, 1.5 m, bushy in moist shade and a 0.3- to 0.6-m ground cover in poor soil and full sun. Alaska, British Columbia to S. California. Z7.

GENISTA Leguminosae

G. germanica GERMAN WOADWAXEN Failed to establish. C. and S. Europe. (H1).

G. hispanica SPANISH GORSE Decid shrub (0.7 m), dense prickly mounds covered with golden yellow flowers in May and June. Spain to N. Italy. Z7.

G. lydia Decid shrub, up to 0.6 m, slender pendulous branches covered with yellow flowers in May. Balkans and W. Asia. Z3b.

G. tinctoria DYER'S GREENWEED Decid shrub, sometimes semiprostrate (1 m), flowers golden yellow. Europe and W. Asia. Z3. Cultivar 'Royal Gold' is a small free-flowering form with yellow flowers throughout summer. (H).

GINKGO Ginkgoaceae

G. biloba MAIDENHAIR TREE Decid tree (40 m), the best of two specimens at 57 years stands 6 m high and 0.4 m circum reflecting scant liking for a shallow, dry soil. E. China. Z4.

GLEDITSIA Leguminosae

G. caspica CASPIAN LOCUST Decid tree (12 m), trunks of old specimens are armed with stout spines. Transcaucasia, N. Persia. (H).

G. ferox COCKSPUR HONEY LOCUST Decid tree, very stout spines, 3.8 m at 18 years on a dry hillside. China. (H).

G. macracantha HONEY LOCUST Decid tree, 2.5 m in 18 years in shallow, dry soil. S.W. China. (H).

G. sinensis CHINESE HONEY LOCUST E. China. (H).

G. triacanthos COMMON HONEY LOCUST Decid tree (45 m), stout spines on trunk and branches. North shore Lake Erie, C. and E. USA. Z4.

G. t. 'Inermis' Has no spines. Z4.

G. t. 'Nana' Small compact shrub or tree, 5.1 m high, 2.7 m spread, 0.6 m circum at 58 years. (H).

G. t. 'Sunburst' Medium-sized tree, thornless, young foliage yellow. Z4.

HALIMODENDRON Leguminosae

H. halodendron SALT TREE Decid shrub, 2 m, spiny branches; leaves silver gray; flowers purple pink in June; withstands salt spray. Transcaucasia to Turkey and Altai. Z2b.

HAMAMELIS Hamamelidaceae

H. japonica JAPANESE WITCH HAZEL Decid spreading shrub or tree, 3 m high in 16 years, flowers yellow in January. Japan. (H).

H. mollis CHINESE WITCH HAZEL Decid shrub (10 m), 1.3 m in 11 years, flowers fragrant yellow in December and January, excellent. C. China. Z6b.

H. virginiana Failed to establish. E. North America. Z4b.

HEBE (VERONICA) Scrophulariaceae

H. buxifolia BOX SPEEDWELL Evergr shrub, 1.5 m, small shiny imbricated leaves 1.2 by 0.6 cm arranged in four rows, flowers small white in clusters at the tip of the shoots. New Zealand. Z8b.

H. cupressoides Evergr shrub, 1.5 m; scalelike leaves give branches appearance of those of *Cupressus*; flowers pale blue, 0.4 cm diam. New Zealand. Z8b.

H. c. 'Nana' A dwarf form, 0.7 m high and 1.2 m spread in 7 years, excellent. (H).

H. elliptica Shrub or small tree (6 m), failed to establish. New Zealand. (H1).

H. hectori HECTOR'S SPEEDWELL Evergr shrub (0.6 m), one of the hardiest of the New Zealand hebes. (H1).

H. traversii TRAVER'S HEBE (2 m), two specimens planted in 1916 stood 1.2 m at 15 years and were almost killed out in the severe winter of 1942-43. New Zealand. Z8b.

HEDERA Araliaceae

H. canariensis (*H. algeriensis*) ALGERIAN IVY Evergr shrub, clinging leaves thick leathery, dark green, 5- and 7-lobed; reddish twigs and leaf stems.

H. c. 'Variegata' Yellowish white edged leaves. Canary Islands and N. Africa.

H. colchica 'Dentata Aurea' VARIEGATED PERSIAN IVY Clinging evergr, majority of the leaves are a mixture of green and cream or pale primrose yellow with no two alike.

H. helix ENGLISH IVY Clinging evergr, excellent for walls or ground cover. Europe to Caucasus. Z6b. Of the many forms the following are good and representative:

'Baltica' Small leaves and hardy.

'Arborescens' Upright shrub, 1 m.

'Argenteo-Variegata' Leaves partly or entirely yellow.

'Marginata' Leaf margins irregularly marked yellowish white, striped red or pink in fall.

'Maculata' Leaves spotted and striped yellowish white.

HEDYSARUM Leguminosae

H. multijugum Failed to establish. Mongolia.

HELWINGIA Cornaceae

H. japonica Failed to establish. China, Japan. (H1).

HIBISCUS Malvaceae

H. syriacus SHRUBBY ALTHAEA ROSE OF SHARON Decid shrub, 2 to 5 m, upright, bushy, flowers 5 to 10 cm in various colors ranging from white, red, violet, purple, in singles and doubles, blooming commencing in mid-August. China, India. Z6. Of 40 cultivars planted in 1914, many became established and flourished moderately well until the mid to late 1920's and early 1930's in spite of shallow soil and droughty conditions. A few carried on to 1942 and some later until they were removed because of renovations. Noteworthy amongst the longest survivors were:

'Lady Stanley' Semidouble, white streaked pink, late

'Monstrosus' Single, white, maroon blotch

'Paeoniaeflorus'

- 'Pompom Rouge'
- 'Pulcherrimus' Pink and white, double
- 'Ranunculaeflorus Plenus'
- 'Rubis' Single red
- 'Souvenir de Charles Breton' Purple, semidouble
- 'Speciosus Ruber'
- 'Totus Albus' Pure white, single
- 'Violaceus Semi-Plenus'

Good soil, irrigation, full sun, and protection are recommended.

HIPPOPHAE Elaeagnaceae

H. salicifolia SEA BUCKTHORN The one specimen planted failed to establish. Z2b.

HOLODISCUS Rosaceae

H. discolor ariaefolius (*Spiraea ariaefolia*) OCEAN SPRAY Decid shrub (4 m), flowers conspicuous creamy white in dense plumelike panicles 20 cm long in June and July on arching branches. British Columbia to California, Idaho and Montana. Z5.

HYDRANGEA Saxifragaceae

H. arborescens Decid upright bush, 1 m, straggly grower, flowers creamy white, in clusters up to 15 cm across. E. USA. (H).

H. a. 'Grandiflora' SNOWHILL HYDRANGEA The form usually found in gardens has sterile white flowers in rounded clusters up to 18 cm diam. Z3b.

H. bretschneideri Decid shrub, 3 m, flattened flower heads 15 cm across with numerous large white sterile florets at the edges, June and July. China. Z3b.

H. cinerea 'Sterilis' Decid shrub spreading up to 2 m, globular flower heads in which all the creamy white florets are sterile, the species is native. S.E. USA. (H).

H. involucrata Decid shrub up to 1 m, fertile florets usually pinkish, sterile florets whitish, flower head 13 cm across. Japan. (H).

H. macrophylla Decid shrub, large and varied group, many of hybrid origin, sometimes grouped according to the purpose for which they were bred. Japan. Z6b.

'Hortensia' HOUSE HYDRANGEA For growing in pots for forcing; a florist's plant with large round flower heads 25 cm or more across, large sterile florets white, red, pink, or blue, or a combination of these; flower color can be controlled by choosing appropriate varieties and regulating the soil reaction (pH); after flowering indoors, many florists varieties are transplanted outdoors and bloom successfully as bushes up to 1.2 to 1.5 m.

'Lacecap' This group is characterized by the large flattish flower heads in which the small, fertile florets are surrounded by an outer ring of large, colored, ray florets.

H. paniculata 'Grandiflora' PEEGEE HYDRANGEA Decid shrub, 1.5 m in 11 years, pyramidal clusters 30 cm long of mainly sterile florets, white at first, then purplish pink; excellent. Japan. Z3b.

H. petiolaris (*H. scandens*) CLIMBING HYDRANGEA Decid vine, clinging by tiny rootlike holdfasts, (25 m) under favorable conditions, blooming in June in clusters 30 cm across with conspicuous white sterile florets on the periphery of each spray. China, Japan. (H1).

H. rosthornii (*H. villosa*) Decid shrub, 4 m, flowers in clusters 18 cm across, sterile florets white or purplish. W. China. (H1).

H. serrata 'Acuminata' Small decid shrub, 1.5 m, flowers 10 cm in clusters in summer, florets blue or pink, kills back in coldest winters, but recovery and subsequent performance justify a place. Japan. (H1).

H. xanthoneura Decid shrub, 5 m, active for 12 years, inflorescences flattish, 15 cm across, margined with creamy white florets 5 cm diam. C. China. (H).

HYMENANTHERA **Violaceae**

H. crassifolia Sm shrub, tidy dense (1.5 m), 0.7 m high and spread of 1.2 m in 12 years; its uninteresting small brownish flowers and white berries in fall have been absent more often than present; semihardy. New Zealand.

HYPERICUM **Guttiferae**

H. calycinum ST. JOHN'S-WORT Excellent ground cover, 0.5 m; flowers golden yellow, 8 cm, in July and August; decid in cold winters. S.E. Europe, Asia Minor. Z7.

H. chinense Sm shrub (0.6 m), 20 cm at 5 years, flowers yellow, 5 cm, in September. China, Japan. (H1).

H. inodorum Evergr shrub in mild winters, planted 1965, 0.5 m at 7 years, flowers yellow, 2.5 cm across at end of wirylike shoots in July and August. S.E. Europe, Caucasus. (H).

H. patulum Partly evergr shrub (1 m), 1.8 m high and as wide at 11 years, flowers 5 cm, golden yellow, in June to August. Japan, Himalayas. (H).

H. p. henryi HENRY'S ST. JOHN'S-WORT A more robust and hardier cultivar than the type planted in 1914, it was 1.3 m at 17 years. China. Z7.

IDESIA **Flacourtiaceae**

I. polycarpa Decid tree (15 m), two specimens planted in 1914 succumbed by 1918, variable hardiness depending on the geographical form, may warrant further trials. Japan, C. and W. China. (H1).

ILEX **Aquifoliaceae**

I. aquifolium ENGLISH HOLLY Evergr tree or shrub, brd-lvd, slow-growing (15 m), the most variable of the holly species. S. Europe, N. Africa, W. Asia to China. Z7. Since 1913 over 90 cultivars and selections have been grown at the Station; the following are recommended for ornamental landscaping (0), or commercial cutting for the Christmas trade, or both (C):

CULTIVARS WITH GREEN FOLIAGE

'Beacon' ('Astoria') — O, C. A heavy consistent bearer, an Oregon selection by J. Wieman.

'Bleeg' ('Pilkington') — O, C. Early ripening berries, cropping at an early age.

'Brentwood' — C. Research Station, Sidney, selection 27.

'Brethour' — O, C. Purplish green stems, spiny stiff leaves that retain color and sheen well, selection of Research Station, Sidney.

'Camelliaefolia' — O. One of the best ornamental hollies.

'Ciliata Major' — O. Vigorous female, large flat leaves fringed with hairs.

'Deluxe' ('Teufel's Deluxe' or 'Teufel's Large Berry') — O, C. Vigorous tree, large leaves and berries, early ripening, an Oregon selection.

'Early Cluster' ('Cluster') — C. Early bearing, berries in heavy clusters.

'Escort' Vigorous male tree, useful pollenizer, but has no berries.

'Favorite' — C. Medium large berries, very early ripening, produces short, long, and branched sprays of excellent quality.

'Fructu Luteo' — O. Yellow berries, smooth leaves, almost spineless.

'Green Maid' — C. Vigorous tree, large berries, early ripening.

'Integrifolia' — O. A very attractive compact shrub with large, dark green glossy leaves, slightly wavy margins, moderately spined, large berries, purple bark, 2.1 m high by 2.1 m spread in 17 years.

'J.C. van Tol' — C. Early bearing and early coloring cultivar, smooth leaves almost spineless, used mainly for studding Christmas wreaths with red berries.

'Longspra' — C. Rapid growing, very hardy orchard type selected by J. Wieman of Portland, Oregon.

'Rederly' — C. Erect tree, slender stems, glossy dark green leaves, red berries in early November.

'Special' — C. Vigorous tree, rather coarse, heavy-textured leaf, large berries in abundance, very similar to Research Station selection 26. (Eby 1-11).

'Teufel's Hybrid' — C. An exceptional glossy-leaved commercial type, consistent bearer.

'Wilsonii' — O. Vigorous growing, large flat leaves up to 13 cm long, moderate spines, excellent ornamental.

CULTIVARS WITH VARIEGATED FOLIAGE

'Golden King' ('Aurea Regina') — O. Male and therefore has no berries, leaves margined golden yellow, excellent. 'Golden Queen' of England is synonymous with 'Golden King' of the American trade.

'Golden Queen' — O, C. Leaves edged golden yellow, berries red, very attractive; when leaders are pruned, a very satisfactory, low, spreading, compact bush is obtained.

'Pinto' — O, C. Leaves glossy, splashed with gold, berries round red, eye-catching.

'Silver Variegated Hedgehog' ('Porcupine') 'Ferox Argentea' — O. Male (no berries), leaves small, edged white, margins spined, clusters of white spines dotting leaf surface.

'Silver Weeping' ('Argenteo-marginata Pendula') — O. Leaf margins silvery and spined, berries red, pendulous branches, dense growth.

'Silvary' ('Argenteo-marginata') Leaves silver margined, moderately spined; berries red; very attractive. 'Silver Trim' is identical.

I. aquipernyi 'Brilliant' Evergr shrub, 18 specimens received in 1961 had failed to establish by 1965, semihardy.

I. ciliospinosa Evergr shrub, two specimens received in 1954 were removed in 1963 after failing to establish satisfactorily, unimpressive. C. and W. China. (H).

I. corallina Evergr (7 m), one specimen was planted in 1913 and failed to establish. C. and W. China.

I. cornuta CHINESE OR HORNED HOLLY Evergr shrub, 2 to 3 m, leaves variable shaped but usually rectangular with spines at each corner, 25 specimens of 'Brilliant' and 13 of 'Giant Beauty' failed to establish. 'Rotunda' is an interesting dwarf of marginal performance, which measured 0.3 m by 0.7 m across in 9 years. (H1)

I. crenata JAPANESE HOLLY Evergr shrub (7 m). Z6. The following cultivars established slowly, but eventually became very effective brd-lvd evergrs:

'Convexa' 1.2 m high, 1.5 m spread in 14 years, excellent.

'Golden Gem' 0.3 m high 0.7 m spread at 11 years, gold splashed leaves.

'Latifolia' ('Rotundifolia') 1.0 m high, 2 m spread, excellent.

'Longfellow' 1.2 m high, 1.2 m spread in 14 years, very good.

'Stokes' 0.4 m high, 1.3 m spread in 14 years, good.

Cultivars 'Glass', 'Helleri', and 'Orchardii' were not satisfactory.

I. integra NEPAL HOLLY Evergr shrub or tree (12 m), one of two specimens planted in 1916 lived till 1932, but created no interest. Japan. (H).

I. opaca AMERICAN HOLLY Evergr tree (15 m). Mass. to Florida, west to Missouri and Texas. Z7. The following cultivars were planted in 1954 and became established, but were removed in 1963 as growth performance and leaf color failed to impress:

'Carolina', 'Croonenberg', 'Delia Bradley', 'Hookstra' Old Heavy Berry, 'Maxwell Point'

I. pedunculosa Evergr shrub or tree (10 m), two specimens planted in 1958 failed to establish. China and Japan. Z7.

I. perado (maderensis) AZOREAN HOLLY Evergr tree, 5.4 m in 19 years, leaves dark green, leathery, variable shape, 8 to 13 cm long, 4 to 6 cm wide, short spined; berries red, 1.2 cm; excellent. Canary Islands. (H).

I. pernyi PERNY HOLLY Evergr shrubby tree (10 m), 1.5 m at 14 years, the species and its cultivar 'Veitchii' have given a marginal performance since introduced in 1954. C. and W. China. Z7.

I. platyphylla 'Ballerica' Evergr tree, 5 m high, 2.4 m spread in 19 years, leaves oval, 9 cm long, bright green, heavy-textured, margins uniformly spiny, the spines pointing forward; large red berries; excellent ornamental. (H).

I. serrata (seiboldii) FINETOOTH HOLLY Decid slow-growing shrub (5 m), fruits red, 0.4 cm diam. Japan. Z5.

I. vomitoria YAUPON HOLLY Evergr shrub or tree (8 m), 15 specimens planted in 1962 were winterkilled by -14°C temperature December 17, 1965. S.E. USA. (H1).

ILLICIUM Magnoliaceae

I. anisatum (I. religiosum) JAPANESE ANISE-TREE Compact brd-lvd evergr shrub; leaves fleshy, aromatic, glossy green, 5 cm by 2 cm; flowers double, greenish yellow, 2.5 cm across; with protection a 34-year-old specimen was 1.8 m high with a 2.1 m spread. Japan. (H).

INDIGOFERA Leguminosae

I. gerardiana Decid shrub, kills back some years, a 19-year-old protected specimen measures 1.8 m high and 3 m across; flowers purplish on current season's wood. Himalayas. Z5b.

ITEA Saxifragaceae

I. virginica SWEETSPIRE Upright decid shrub (3 m); flowers fragrant, creamy white in July; needs moist soil and shade. New Jersey and Pennsylvania to Florida and Louisiana. Z6.

JASMINUM Oleaceae

J. humile Sm shrub, 1.7 m in 10 years, flowers yellow in June and July, sometimes grown in pots under glass. China. (H).

J. mesnyi (J. primulinum) PRIMROSE JASMINE Failed to establish. China. (H1).

J. nudiflorum WINTER JASMINE Decid shrub, flowers bright yellow December to February, good on walls where it needs support, or on banks. China. Z6.

JUGLANS Juglandaceae

J. cinerea BUTTERNUT Decid tree (30 m), attractive when small, large compound leaves with 11 to 19 leaflets, large fruit. New Brunswick to Arkansas. Z3.

J. intermedia 'Vilmoreana' A derivative of *J. nigra* \times *J. regia*, a single specimen that was planted in 1914 measures 9 m high, spread 10 m, trunk circum 1 m at 59 years; this is typical of the growth rate of the species and that of the English Walnut in the Station's shallow, dry, hillside soil. (H).

J. nigra BLACK WALNUT Decid tree (50 m), many commercial varieties listed; 'Laciniata' has finely cut leaflets so is more ornamental. Z3b.

J. regia ENGLISH OR PERSIAN WALNUT Decid tree (30 m), grown mainly for its nuts, the quality of local-grown ones is excellent. 'Franquette' is outstanding. 'Laciniata' is recommended but only as an ornamental. Z7.

J. sieboldiana (J. ailanthifolia) JAPANESE WALNUT and *J. s.* 'Cordiformis' Heartnut Decid trees (20 m), chief difference is that the latter has heart-shaped nuts that are flatter and thinner shelled. Japan. Z4b.

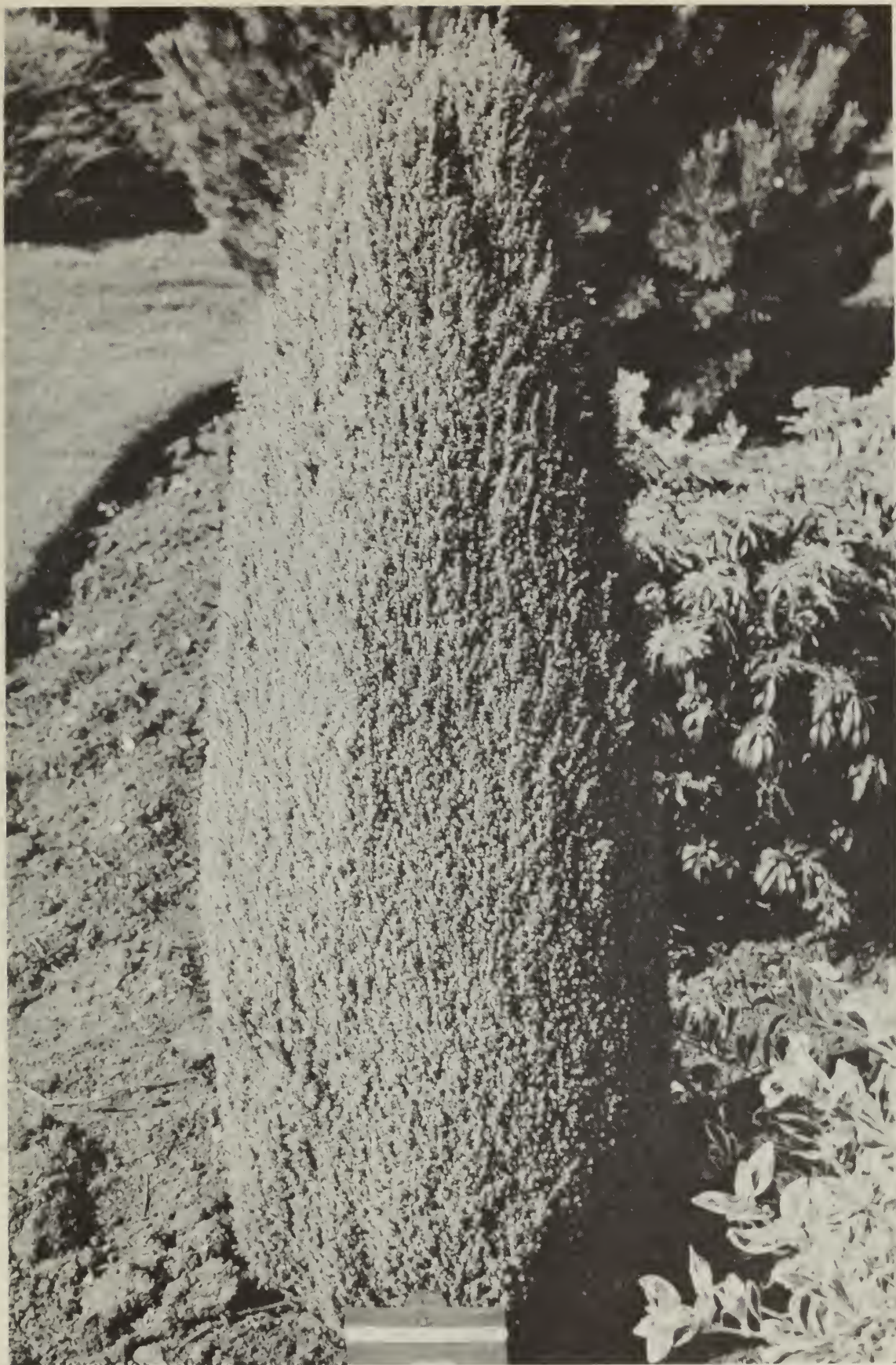
JUNIPERUS Cupressaceae

J. chinensis CHINESE JUNIPER Upright, dioecious tree, 24 m. China. Z5. The species has given rise to many valuable cultivars of widely different forms. Of the 16 tested, the following have proved worthy:

- J. c.* 'Aurea' Conical-shaped shrub (5 m), golden yellow foliage.
- J. c.* 'Blaauw' Vase shaped, spreading upright branches, bluish gray foliage, 3 m high, 1.3 m across at 14 years.
- J. c.* 'Globosa Cinerea' Similar to 'Blaauw' but grayish green and more irregular in habit when older.
- J. c.* 'Obelisk' A narrow columnar fruiting tree, steel blue foliage, keeps its compact form without pruning, 2.1 m high, 1.8 m spread at 10 years. (H).
- J. c.* 'Old Gold' Similar in growth to 'Pfitzeriana' but very compact golden foliage, excellent. (H).
- J. c.* 'Olympia' Pyramidal, greenish blue foliage, more attractive when small; 3.6 m high, 2.4 m spread at 14 years. (H).
- J. c.* 'Pfitzeriana' PFITZER JUNIPER Wide spreading, vigorous, fast grower, gray green foliage, widely planted, one of the best, (up to 1.2 m). (H).
- J. c.* 'Pfitzeriana Aurea' GOLDEN PFITZER JUNIPER Typical Pfitzer growth, but flatter, branchlets and leaves tinted golden yellow. Z2b.
- J. c.* 'Pfitzeriana Compacta' NICKS COMPACT PFITZER JUNIPER A slower growing compact form. (H).
- J. c.* 'Pfitzeriana Variegata' Habit of Pfitzeriana, pale yellow peppered throughout the predominantly gray green foliage. (H).
- J. c.* 'Plumosa Aurea' GOLD DUST OR GOLDEN PLUME JUNIPER Wide-spreading ascending branches crowded with plumose sprays of densely set, yellow, scalelike leaves. (H).
- J. c.* var. *sargenti* Sometimes listed as a distinct species, prostrate shrub, gray green foliage, good ground cover, succeeds in poor light soil, 23 cm high, 1.2 m spread in 6 years, thought to be susceptible to phytophthora disease, otherwise excellent. Japan. Z3.
- J. c.* 'Stricta' (*J. excelsa stricta*) SPINY GREEK JUNIPER Tree densely compact, pyramidal, slow growing, glaucous juvenile foliage, 1.8 m at 10 years. (H).
- J. communis* 'Compressa' COMPRESSED COMMON JUNIPER Dwarf, compact, slow growing; 1 m high, 30 cm diam in 10 years; excellent. (H).
- J. c.* 'Depressa Aurea' 0.6 m, dwarf, broad, prostrate, ascending branches at the tips; young foliage golden yellow in early summer; 0.9 to 1.2 m spread in 5 years. (H).
- J. c.* 'Repanda' Dwarf shrub, carpet-forming, dense growth, growth prostrate in young plants, building up with age, 0.3 m high, 1.2 m in 9 years, excellent. (H).
- J. c.* 'Saxatilis' MOUNTAIN JUNIPER None of 25 one-year-old plants survived more than a year or two. Z2.
- J. c.* 'Suecica' SWEDISH JUNIPER Narrow, columnar, 2.4 m high, 0.6 m spread at 8 years, excellent. Scandinavia, E. Russia. Z6. Very similar to Irish Juniper, *J. c.* 'Hibernica', but the leaves are shorter, less spreading, dark green, and the tips of the branches are upright instead of drooping.

J. horizontalis CREEPING JUNIPER Nova Scotia to British Columbia to Massachusetts, New York, Minnesota, and Montana. Z2. Three forms have been tested and are recommended:

- J. h.* 'Douglasii' WAUKEGAN JUNIPER 0.5 m high, long spreading branches, foliage steel blue in summer, tinged purple in fall and winter, excellent. (H).



Juniperus communis 'Compressa' COMPRESSED COMMON JUNIPER

- J. h.* 'Glauca' BLUE CREEPING JUNIPER Very flat growing, foliage whipcordlike, steel blue, 10 cm high, 1.2-m mat in 4 years. Z2.
- J. h.* 'Plumosa' ANDORRA JUNIPER Dense compact habit, ascending branchlets, 0.3 m high, flat-topped appearance, foliage gray green in summer, purplish green in fall and winter. Z2.
- J. lucayana* WEST INDIES JUNIPER The one specimen planted in 1919 survived 3 years.
- J. procumbens* 'Nana' CREEPING JUNIPER Low shrub, forms a compact mat, good ground cover, 15 cm high, 1.8 m across in 6 years. Japan. Z2.
- J. rigida* NEEDLE JUNIPER Pyramidal shrub or tree, ends of branches pendulous, three specimens measured 7.6 m high at 35 years. Japan. (H).
- J. sabina* SAVIN JUNIPER A variable species, usually low, wide-spreading, upright plumose branchlets, pungent, 0.3 m high, 1.2- by 1.8-m mat in 5 years. S.W. and C. Europe to Caucasia and Siberia. Z2.
- J. s.* 'Blue Danube' Spreading shrub, grayish blue, 0.3 to 0.5 m high, 1.2- by 1.8-m ground cover at 6 years, rampant in good, moist soil; excellent. Z2.
- J. s.* 'Hicksii' Vigorous, semiprostrate, spreading shrub, 0.5 m high, grayish blue plumose branches, leaves unattractive color in winter. Z2.
- J. s.* 'Skandia' Low creeping ground cover, 15 cm high, 3- by 3-m carpet in 14 years, excellent. Z2.
- J. s.* var. *tamariscifolia* TAMARIX JUNIPER Low-growing compact variety, eventually a wide-spreading, flat-topped bush 0.6 m high, excellent. S. Europe. Z2.
- J. scopulorum* ROCKY MOUNTAIN JUNIPER Narrow, pyramidal tree (12 m). British Columbia and Alberta to Arizona and Texas. Z2.
- J. s.* 'Blue Heaven' ('Blue Haven') Open pyramidal form, steel blue foliage at all seasons, 1.2 m high at 10 years. Z2.
- J. s.* 'Erecta Glauca' Upright, loosely columnar, ascending branches, silvery leaves, purple tinged in winter, 2.2 m at 10 years. (H).
- J. s.* 'Pathfinder' Narrow pyramidal tree, bluish gray foliage. (H).
- J. squamata* 'Loderi' Slow-growing shrub, up to 2 m high, narrow columnar form, dense compact foliage. (H).
- J. s.* 'Meyeri' MEYER JUNIPER Semierect shrub, dense blue gray foliage, plant becomes leggy and unsightly with age unless regularly pruned to force strong new branches, 2.7 m high, 2.7 m spread at top in 11 years. Z5.

KALMIA Ericaceae

- K. angustifolia* SHEEP LAUREL Evergr shrub, 1 m, best in acid, moist soil and full sun; flowers purple or crimson in June. E. North America. Z1.
- K. latifolia* MOUNTAIN LAUREL Evergr shrub (3 m); flowers pink and white, saucer shaped, in terminal clusters; seldom seen in local gardens. E. North America. Z5b.

KALOPANAX Araliaceae

- K. pictus* CASTOR ARALIA Small to medium decid tree in cultivation (27 m), 5.7 m at 18 years, young branches and shoots have sharp prickles. China and Japan. Z5. Two specimens of *K. p.* 'Maximowiczii' failed to establish.

KERRIA Rosaceae

- K. japonica* KERRIA Decid shrub to 2.4 m, thin arching stems remain green during winter, 4-cm yellow flowers in April, of easy culture, but needs renewal pruning. C. and W. China. Z5. 'Pleniflora' has double flowers; 'Picta' has leaves edged creamy white; 'Aureo-Variegata' has leaves edged yellow; 'Aureo-Vittata' has branchlets striped green and yellow. Japan.



Kolkwitzia amabilis BEAUTY BUSH

KOLKWITZIA Caprifoliaceae

K. amabilis BEAUTY BUSH Decid, dense twiggy shrub, 2.7 m high, 2.1 m spread at 11 years; flowers pink, bell-shaped in May and June; dependable, excellent. China. Z5b.

LABURNOCYTISUS Leguminosae

L. adami Decid tree of unusual interest; a graft hybrid (chimera) of *Laburnum anagyroides* (stock) and *Cytisus purpureus* (scion); some of the branches bear yellow laburnum flowers, others dense clusters of the purple-flowered broom, and still others produce intermediate flowers of a coppery pink shade; seeds from Laburnum-type flowers and from the intermediate type produce plants like *L. anagyroides*, whereas those from Cytisus-type flowers produce plants identical to *C. purpureus*; hardy, 7.3 m high, 8.2 m spread at 46 years. (H).

LABURNUM Leguminosae

L. alpinum SCOTCH LABURNUM Decid tree, 7.3 m high, 6.4 m spread at 44 years; flowers yellow, pealike, in long drooping clusters in June; similar to *L. anagyroides* but superior garden specimen. C. and S. Europe. Z6b.

L. anagyroides GOLDEN CHAIN, COMMON LABURNUM Decid tree, 7.3 m high, 8.2 m spread at 46 years; flowers yellow, pealike in long hanging clusters that are smaller and later than flowers of *L. alpinum*. C. and S. Europe. Z6b.

L. watereri (*L. vossii*) (*L. anagyroides* × *L. alpinum*) WATERER LABURNUM Decid tree, 7.3 m high, 6 m spread at 19 years; superior in flower to both parents. Z6.

LARIX Pinaceae

L. gmelinii (*L. dahurica*) DAHURIAN LARCH Decid conifer (30 m or more), the only specimen on the Station measured 7 m at 16 years. E. Siberia. Z2b.

L. leptolepis JAPANESE LARCH (27 m). The only specimen planted at the Station measured 3.3 m at 16 years. Japan. Z2b.

LAURUS Lauraceae

L. nobilis BAY LAUREL, SWEET BAY Evergr aromatic shrub (9 m), never more than 3.3 m at the Station where it is semihardy and often renews at or near the ground.

LAVANDULA Labiatae

L. officinalis TRUE LAVENDER Sm with aromatic gray leaves, 1 m, prized mainly for its dried flowers that impart their aromatic fragrance for many years. S. Europe and N. Africa. Z7.

LEPTOSPERMUM Myrtaceae

L. scoparium MANUKA OR TEA TREE OF NEW ZEALAND Both the species and its cultivar 'Nichollsii' are semihardy.

LESPEDEZA Leguminosae

L. bicolor SHRUB BUSH CLOVER Semierect, slender-stemmed shrub (3 m), the rosy purple pealike flowers borne in August and September on current season's growth are its main ornamental assets, 1.5 m at 3 years. N. China, Japan. Z4.

L. cyrtobotrya Decid shrub, 2 m at 10 years, flowers rosy purple in August, attractive. Japan and Korea. (H).

L. thunbergii THUNBERG LESPEDEZA Semiwoody, 1.8 m at 7 years; flowers pealike, rose purple in September. N. China and Japan. Z5.

LEUCOTHOE Ericaceae

L. axillaris COAST LEUCOTHOE Evergr shrub, 0.6 to 1.2 m high, flowers white, heatherlike in April and May. S.E. USA. (H).

L. fontanesiana (*L. catesbaei*) DROOPING LEUCOTHOE Brd-lvd evergr, leaves turn reddish bronze in fall, 1 m, fall colors of 'Rainbow' are somewhat more pronounced being blends of yellow, green, and reddish bronze. S.E. USA. Z6.

LEYCESTERIA Caprifoliaceae

L. formosa FORMOSA HONEYSUCKLE Decid shrub with hollow green shoots, 3 m high; flowers white in terminal drooping clusters of purplish red bracts from June to September, then 1-cm dark purple berries in October; winter-kills occasionally, but renews quickly; blossoms on current season's wood; semihardy. Himalayas and S.W. China.

LIBOCEDRUS Pinaceae

L. decurrens INCENSE CEDAR Evergr columnar tree (45 m), rated highly as a tall evergreen hedge. (Results of Experiments 1932-1936, Experimental Station, Saanichton, B.C.). Oregon and California. (H).

LIGUSTRUM Oleaceae

L. acuminatum Decid upright shrub, 2.1 m at 17 years. Japan. (H).

L. amurense AMUR PRIVET Sm shrub, 3 m at 17 years; flowers white; berries black, small; good clipped hedge plant. N. China. Z5.

L. delavayanum EVERGREEN PRIVET Evergr shrub up to 2.5 m, makes excellent low clipped hedge. W. China. Z8.

L. ibota IBOTA PRIVET Sm shrub, 2.8 m at 16 years. Japan. (H).

L. japonicum JAPANESE PRIVET Evergr shrub, 3 m at 16 years. Z9a. Cultivar 'Rotundifolium' N. China and Japan. (H1).



Euonymus alba 'Compacta' Winged Spindle Tree



Euonymus fortunei variegata Wintercreeper



Genista tinctoria Dyer's Greenweed



Ilex aquifolium 'Golden Queen' English Holly



Ilex aquifolium 'Silvary' English Holly



Pieris japonica 'Variegata'



Rhododendron 'Damozel'



Viburnum davidii David Viburnum

L. ovalifolium CALIFORNIA PRIVET Sm shrub, decid in cold winters, 2.5 m at 17 years. Japan. Z7. 'Variegatum' has variegated pale yellow leaves; 'Aureo-marginata' has yellow-margined or nearly all yellow leaves.

L. quihoui QUIHOU PRIVET Sm shrub, 1.9 m at 16 years, last of the privets to bloom. China. (H).

L. sinense CHINESE PRIVET Sm shrub, 2.5 m at 16 years, considered one of the best privets when in flower; plants propagated from seed of 'Stauntonii' have made a highly effective and attractive flowering 3-m screen. (H).

L. tschonoskii SHARPLEAF PRIVET Decid shrub, 2.4 m at 17 years; upright habit, June flowering. Japan. Z5. *L. t.* var. *macrocarpum* has larger leaves and berries than the species, 1.2 m at 17 years. (H).

L. × vicaryi VICARY GOLDEN PRIVET Hybrid privet with golden foliage (3 m). Z6.

L. vulgare COMMON OR ENGLISH PRIVET (5 m), leaves narrower and not as glossy as the California Privet, much used for hedges. Europe and N. Africa. Z5b.

LINDERA Lauraceae

L. sericeum and *L. triloba* Both failed to establish. Z5b.

LIQUIDAMBAR Hamamelidaceae

L. styraciflua SWEET GUM Decid tree (38 m), 8.3 m high and 15 cm circum in 23 years is indicative of its slow growth; leaves resemble those of the maple, but Sweet Gum has alternate leaves. S.E. USA. Z7.

LIRIODENDRON Magnoliaceae

L. tulipifera TULIP TREE Decid tree (50 m), 18 m high, 16.5 cm diam in 58 years; leaves odd-shaped; flowers yellow, green, and orange, tuliplike; blooms in June and July; durable, no pests; excellent. Massachusetts to Wisconsin, south to Florida and Mississippi. Z5b.



Ligustrum sinense 'Stauntonii' CHINESE PRIVET

LITHOCARPUS Fagaceae

L. densiflorus TANBARK OAK Evergr tree (18 to 24 m); leaves shiny green, leatherylike, alternate, 1.9 by 3.8 cm; a 57-year-old specimen is 5.1 m high and 8.2 m across; in a sheltered position it has shown very little winter injury; currently being tested for an evergreen hedge. (H).

LONICERA Caprifoliaceae

L. × bella 'Candida' (*L. morrowii* × *L. tatarica*) Decid shrub, 2.7 m high, 3.6 m spread at 47 years, flowers white. (H).

L. canadensis AMERICAN FLY HONEYSUCKLE Decid shrub, 1.5 m at 17 years, flowers yellow white in April to May, not very ornamental. Quebec to Saskatchewan to N. USA. (H).

L. chrysantha CORALLINE HONEYSUCKLE Decid shrub, 3.6 m high at 18 years, flowers pale yellow in May. N.E. Asia to C. Japan. (H). *L. c.* 'Regeliana' 2.7 m at 15 years; flowers smaller, pure yellow. (H).

L. ciliosa WESTERN TRUMPET OR ORANGE HONEYSUCKLE Decid shrub trailing or twining with stems to 6 m; flowers 3.8 cm long, yellow and scarlet or red. W. North America from British Columbia southwards. (H).

L. deflexicalyx Decid upright shrub, 2.5 m at 18 years; flowers yellowish, abundant in May. W. China, Tibet. (H).

L. fragrantissima WINTER HONEYSUCKLE Sm shrub, 2.5 m high, 2.4 m spread at 6 years; flowers fragrant, creamy white in early spring; very good. China. Z6.

L. gracilipes SPANGLE HONEYSUCKLE Upright decid shrub, 1.8 m high at 14 years, flowers pink to carmine. Japan. (H).

L. henryi HENRY HONEYSUCKLE Twining or trailing evergr shrub; flowers yellowish to purple red; fruit bluish black; strong grower, good for covering banks, old stumps. W. China and Tibet. (H).

L. hispidula PURPLE HONEYSUCKLE Bushy decid shrub with trailing or twining stems (2 m); flowers purplish, 5- to 15-cm terminal clusters. British Columbia to N. California. (H).

L. involucrata BEARBERRY HONEYSUCKLE OR BLACK TWINBERRY Upright, decid, straggly shrub (4 m); flowers yellow; fruit black and loosely enclosed in reddish bracts. Quebec to Alaska, Rockies south to Mexico. Z1.

L. japonica JAPANESE HONEYSUCKLE Vigorous evergr climber (9 m); flowers fragrant, creamy white; fruit black. China and Japan. (H1). 'Aureo-reticulata' Leaves, yellow netted marking.

L. maackii AMUR HONEYSUCKLE Decid bush, 5 m; flowers fragrant, white then yellowish. Manchuria and Korea. Z2b.

L. maximowiczii Erect decid shrub, 2.7 m at 14 years, flowers violet red. Manchuria and Korea. (H).

L. minutiflora (*L. morrowii* × *L. xylosteoides*) BUNCHBERRY HONEYSUCKLE Decid shrub, 2.7 m at 14 years; flowers small, creamy white. (H).

L. morrowii MORROW HONEYSUCKLE Decid shrub, vigorous, widespreading, dense habit, 2.4 m at 15 years; flowers in May, white then yellow. Japan. Z4.

L. muendeniense (*L. bella* × *L. ruprechtiana*) Decid shrub, 3.3 m high at 15 years, similar to *L. bella*. (H).

L. nitida BOX HONEYSUCKLE Evergr twiggy shrub, 2 m, leaves small, good for low-clipped hedges, withstands saltwater spray; flowers fragrant, white; fruit blue. W. China. Z8. 'Baggessen's Gold' is a yellow-leaved form.

L. oblongifolia SWAMP FLY HONEYSUCKLE Decid shrub, 1.5 m; flowers white in May. New Brunswick to Manitoba, south to Pennsylvania, Michigan and Minnesota. (H).

L. orientalis Decid shrub, 3 m; flowers pale violet or pinkish, fruit black. Asia Minor. (H1).

L. periclymenum WOODBINE Climbing or spreading shrub, stems up to 6 m, 1.8 m high at 13 years; flowers yellow, white, and red in varying proportions, fragrant. Europe, N. Africa, and Asia Minor. (H).

L. pileata PRIVET HONEYSUCKLE Evergr shrub, 1.2 m, dense habit; leaves small, shiny green; excellent for underplanting and ground cover especially in shade, does well at seashore; flowers small, white; berries violet purple, usually scarce. C. and W. China. Z7.

L. quinquelocularis MISTLETOE HONEYSUCKLE Decid shrub, upright, spreading, over 3.6 m high at 49 years; flowers yellowish in May; berries whitish, translucent. Himalayas to Afghanistan. (H1).

L. ruprechtiana MANCHURIAN HONEYSUCKLE Decid vigorous bush, 1.8 m at 15 years, flowers white then yellow in May and June. N.E. Asia. (H).

L. salicifolia (*L. ruprechtiana* × *L. xylosteoides*) 1.2 m high at 14 years; leaves narrow, pointed; flowers small. (H).

L. spinosa 'Albertii' ALBERT THORN HONEYSUCKLE Decid shrub, 1.2 m spreading habit, slender arching branches, leaves bluish green, flowers rosy pink, fragrant. The species has thorns, but the cultivar is thornless. Z2.

L. standishii STANDISH HONEYSUCKLE Sm upright bush, 1.8 m at 11 years; flowers creamy white, fragrant, blooms in winter, resembles *L. fragrantissima*. China. (H).

L. tatarica 'Latifolia' TATARIAN HONEYSUCKLE Vigorous upright decid shrub, 2.1 m at 15 years, free-flowering, flowers large, pink. Z2.

L. t. 'Sibirica' Smaller leaves and deep pink flowers, 3 m high, 2.1 m spread at 11 years; other cultivars with pure white or deep red flowers and with yellow berries are available; the species is native to S. Russia.

LYCIUM Solanaceae

L. chinense CHINESE MATRIMONY VINE Decid shrub, prostrate, rambling, 2.1 m at 16 years; arching branches up to 3.6 m, usually not thorny; flowers small, purple in June and September; berries orange or scarlet, 1 to 2.5 cm long; good for banks and poor soil. China. (H). Cultivar 'Ovatum' has broader leaves and end of fruit is blunter. (H).

L. europaeum Spiny shrub with spreading branches, 2.2 m high at 17 years, flowers in September. Mediterranean. (H).

L. halimifolium COMMON MATRIMONY VINE Trailing shrub, often spiny, 1.6 m high at 18 years; flowers small, lilac purple in June; good bank cover; hardier than *L. europaeum*. S.E. Europe to W. Asia.

LYONIA Ericaceae

L. lucida FETTERBUSH and *L. ovalifolia* 'Lanceolata' Failed to establish. (H1).

MAACKIA Leguminosae

M. amurensis (*Cladrastis amurensis*) AMUR MAACKIA Decid tree (15 m); 8.5 m high, 13.4 m spread, circum 1.2 m at 55 years; leaves pinnate; flowers white. N. Carolina to Kentucky and Tennessee.

M. lutea YELLOWWOOD Decid tree, 10.6 m at 56 years; smooth bark and yellow wood, 7 to 11 large leaflets; flowers white, fragrant, in pendulous clusters. S.E. USA. Z4b.

MAGNOLIA Magnoliaceae

M. denudata (*M. conspicua*) YULAN MAGNOLIA Decid tree (18 m). C. China. (H).

M. grandiflora SOUTHERN MAGNOLIA Evergr tree (27 m); leaves waxy, 20 cm long; flowers white, 20 to 25 cm diam. S. USA. Z9a.

M. kobus KOBUS MAGNOLIA Decid shrub (9 m), three specimens planted about 1914 now 10.6 m high, fully hardy, annually display white flowers. Japan. Z5.

- M. liliflora* (*M. obovata discolor*) Failed to establish. China. (H1).
M. liliflora 'Gracilis' Failed to establish.
M. liliflora 'Nigra' PURPLE LILY MAGNOLIA Failed to establish. Z6.
M. obovata WHITELEAF JAPANESE MAGNOLIA Failed to establish. Japan. (H1).
M. salicifolia ANISE MAGNOLIA Failed to establish at the Station, but seedlings in Victoria have established well. Z6.
M. sieboldii (*M. parviflora*) OYAMA MAGNOLIA Failed to establish. Japan. Z7b.
M. × soulangeana (*M. denudata* × *M. liliflora*) SAUCER MAGNOLIA Decid shrub (5 m), Z5b. Two specimens of cultivar 'Lennei' planted in 1953 have flowered annually ever since; present measurements are: height 3 m, spread 2.4 m. Z6. Cultivars 'Alexandrina' and 'Rustica' planted in 1929 failed to establish.
M. stellata STAR MAGNOLIA Decid dense bush, 4.5 m high, 4.5 m spread at 55 years; covered with double, starlike white flowers every March and April; when in flower it is the best and showiest of all the tested magnolias; cultivar 'Rosea' has pink buds, but flowers are white when open; it is sometimes considered a variety of *M. kobus*. Japan. Z5b.
M. virginiana SWEET BAY MAGNOLIA Shrub or small tree (18 m), 4.4 m at 18 years; flowers fragrant, white globular. E. USA, Massachusetts to Florida. Z7b.
M. watsoni (*M. obovata* × *M. sieboldii*) WATSON MAGNOLIA Failed to establish.
M. wilsonii WILSON MAGNOLIA Decid shrub or tree (8 m); flowers white, 7 to 10 cm wide; a single specimen planted 1966 measures 1.3 m and produced its first flower in 1972. China. Z8.

MAHONIA Berberidaceae

- M. aquifolium* OREGON GRAPE Brd-lvd suckering evergr, 1 to 2 m high; leaves shiny, hollylike; flowers yellow in terminal clusters in March to April, later bluish black berries; very good for underplanting in sun or moderate shade; seedlings vary, compact and dwarf forms reported. W. North America. Z5.
M. nervosa CASCADES MAHONIA Low brd-lvd evergr, suckering habit, 0.5 m, similar to *M. aquifolium* but shorter; leaflets are more numerous and duller green on the upper sides. British Columbia to California. Z7.
M. repens CREEPING MAHONIA Brd-lvd evergr, suckering habit, 0.3 m, leaves bluish green above, flowers yellow in April and May, fruit bluish black, fair ground cover. British Columbia to California. Z3.

MALUS Rosaceae

- M. × atrosanguinea* (*M. halliana* × *M. sieboldii*) CARMINE CRAB APPLE (6 m); flowers rose purple, pinkish before falling; fruits dark red, 1 cm diam. Z5.
M. baccata var. *mandshurica* MANCHURIAN CRAB APPLE 6.7 m high, 0.6 m circum, 7.3 m spread at 46 years; flowers white, fragrant, 3.8 cm diam, early flowering; fruits 0.6 cm, red. Japan to Amur Region and C. China. Z2b.
M. 'Cheal's Scarlet Weeping' Interesting form with pendulous branches, globular; fruits red, 2.8 cm diam; 2.4 m high, 3 m spread at 10 years. (H).
M. coronaria WILD SWEET CRAB Flowers 3.8 cm, white tinged rose, fragrant, in clusters of 4 to 6; fruit 2.5 to 3.8 cm diam; 6 m high, 6.4 m spread, 0.8 m circum at 46 years. E. North America. (H).
M. florentina FLORENTINE CRAB Bush or small tree, 2.4 m at 18 years, leaves hawthornlike, flowers white. N. Italy. (H).
M. floribunda JAPANESE FLOWERING CRAB APPLE Shrub or tree, 6.7 m high, 7.6 m spread, 0.9 m circum at 44 years; flowers deep pink buds then pale pink on opening, finally near white, 2.5 to 3 cm across in clusters of 4 to 7; flower stalks 3.8 cm long, very floriferous; fruit round, yellow and red, pea-sized; best of the tested ornamental *Malus* when in flower. Japan. Z5b.
M. fusca OREGON CRAB APPLE Shrub or small tree (tree at Station), 7.3 m high,

7.3 m spread, 1 m circum at 47 years; flowers white or pinkish, 1.2 cm across; fruit red or yellow, 0.9 to 1.2 cm on 3-cm stems; of little ornamental value. Alaska to California. (H).

M. halliana HALL CRAB APPLE Tree (5 m), young foliage purplish; flowers deep rose, 2.5 to 3.8 cm across in clusters of 4 to 7; fruit pea-sized. 'Parkmanii' has double pink flowers. Japan. (H1).

M. ioensis IOWA, PRAIRIE OR WESTERN CRAB APPLE Tree (9 m), 7.3 m high at 47 years; flowers 3.8 to 5 cm, white or pinkish, clusters of 4 to 6; fruit 3 to 3.8 cm diam. 'Plena' or Bechtel Crab Apple has double pink flowers. (H).

M. magdeburgensis (*M. spectabilis* × *M. pumila*) MAGDEBURG CRAB APPLE 5 m at 18 years; flowers semidouble in dense clusters in May, deep rose outside, paler inside, 5 cm across. (H).

M. prunifolia 'Rinki' CHINESE PEARLEAF CRAB APPLE 5 m at 17 years, flowers pinkish, valued chiefly for its numerous bright yellow fruits hanging in rows on lower side of branches. E. Asia. (H).

M. pumila var. *apetala* COMMON APPLE Flowers small, deformed greenish petals, no stamens, and 10 to 15 styles; 5.6 m at 18 years. (H).

M. pumila var. *niedzwetzkyana* REDVEIN CRAB APPLE Young leaves, flowers, fruit, flesh, bark, and wood of the branches are red; susceptible to scab and fire-blight; tested cultivars are: 'Cowichan', 'Erie', 'Geneva', 'Nipissing', 'Okanagan', 'Schgog', and 'Slocan'; these are 1920 crosses representing some of the Ottawa Rosy-bloom Crab Apples of interest because of their colored flowers and fruits. (H).

M. scheideckeri SCHEIDECKER CRAB APPLE A cross of *M. floribunda* and *M. prunifolia* (6 m); flowers pale pink, semidouble, profuse bloomer; fruit yellow to orange; resistant to scab. Z5.

M. sieboldii TORINGO CRAB Shrub or small tree, 4.8 m high, spread 4.8 m, circum 0.4 m at 47 years; flowers pale pinky white; fruit pea-sized, yellow or red. Japan. (H).

M. spectabilis albiplena and *M. s.* 'Riversii' RIVER'S CRAB APPLE Tree (7 m); the former has white petals; the latter has pink petals, numbering 9 to 20. Asia. (H).

MENZIESIA Ericaceae

M. ciliicalyx A single 8-cm transplant introduced here in 1966 failed to establish.

METASEQUOIA Pinaceae

M. glyptostroboides DAWN REDWOOD Decid conifer (35 m), the largest of two specimens measures only 3 m high, 2.1 m spread, 0.3 m circum at 18 years. China. Z6.

MICHELIA Magnoliaceae

M. champaca Tall evergr tree, magnolialike foliage; though one of two specimens was active for 13 years, there is scant evidence of success.

M. fuscata BANANA SHRUB Failed to establish. China.

MORUS Moraceae

M. alba WHITE MULBERRY Decid tree (15 m), 8.5 m high, 6 m spread at 58 years; silkworm feeds on it. China. Z3.

M. nigra BLACK MULBERRY Decid tree (9 m), 5.4 m high, 4.5 m spread, 0.8 m circum at 58 years; fruits blackberrylike, black red, pleasant sweet taste, ripen in late summer. W. Asia. Z6.

MYRICARIA Tamaricaceae

M. germanica FALSE TAMARISK Failed to establish. C. and S. Europe, W. Asia.

MYRTUS Myrtaceae

M. communis COMMON MYRTLE Evergr shrub (3 m); leaves 5 cm long, shiny,

deep green, aromatic; flowers 1 cm, white in summer, then blue black berries. Mediterranean Region. (H1).

NANDINA Berberidaceae

N. domestica SACRED BAMBOO Sm bamboolike shrub, up to 1.6 m at the Station where it occasionally kills to ground in cold winters, but renews sufficiently well from crown to make it worthwhile. C. China, Japan. Z8b.

OLEARIA Compositae

O. haastii NEW ZEALAND DAISYBUSH OR TREE ASTER Evergr rounded bush, 1.2 m high, 1.8 m spread at 7 years when killed by -14°C temperature 1964–65; flowers white, daisylike; excellent when winter permits. New Zealand. Z8b.

OSMANTHUS Oleaceae

O. fragrans SWEET OSMANTHUS The only specimen planted failed to establish. (H1).

O. ilicifolius HOLLY OSMANTHUS Evergr shrub (6 m), 1.8 m high, 2.4 m spread at 59 years on a dry hillside; leaves 5 cm long, leathery, hollylike. Japan. Z7b.

OSMAREA Oleaceae

\times *O. burkwoodii* (*Phillyrea decora* \times *Siphonosmanthus delavayi*) Evergr treelike shrub up to 5 m if not occasionally pruned back to maintain the more pleasing compact bush form; leaves 3.8 by 1.5 cm, shiny green on top; flowers fragrant, white, in terminal clusters in April and May. Z8.

OSMARONIA Rosaceae

O. cerasiformis (*Nuttallia c.*) OSOBBERRY Suckering decid shrub forming a thicket of upright stems, 3 to 4.5 m high; flowers whitish in hanging clusters, appear before



Osmarea burkwoodii

the leaves in March, almond fragrance; fruit blue when ripe, reddish yellow when half ripe on red stems. British Columbia to California. (H).

PACHISTIMA Celastraceae

P. myrsinites OREGON BOX, FALSE BOX Tidy evergr shrub; leaves shiny green, 1 by 0.6 cm; 1.2 m high, 1.8 m spread at 21 years; slender stems much branched with tiny branchlets; flowers numerous, reddish, 0.3 cm, in March; ineffectual; valued mainly for its evergr habit. W. North America. (H).

PAEONIA Ranunculaceae

P. suffruticosa TREE PEONY Decid shrublike plant with woody stems, 1.5 m; flowers single or double, 15 to 25 cm across in May, white, pink, red, or yellow in the case of some of the new hybrids, e.g., 'Souvenir de Maxime Cornu' a double yellow with red markings, one of the best at the Station; suggested varieties include 'Comtesse de Tuder' double salmon; 'Reine Elizabeth' double rose red; 'Souvenir de Ducher' double violet. N.W. China. Z6.

PAULOWNIA Scrophulariaceae

P. tomentosa (*P. imperialis*) ROYAL PAULOWNIA, EMPRESS TREE Decid tree (15 m), 10.6 m high, 1.7 m circum at 40 years; leaves large up to 25 cm long and as wide with velvety gray wool on undersides; flowers violet gloxinia-shaped in terminal panicles, appear before the leaves; striking when in flower. China. Z7.

PERNETTYA Ericaceae

P. mucronata CHILEAN PERNETTYA Showy brd-lvd evergr shrub, spreads by suckers, 0.7 m high; leaves 0.8 to 1 cm, closely spaced on wiry stems; flowers in May to June; fruit round, 1.2 cm diam, persistent, colored white to pink, lilac, red, violet purple; planting several clones together usually assures cross-pollination and fruit setting, though some cultivars are self-fruitful, e.g., 'Bell's Seedling', red berries; and 'Pink Bell', pink berries. Chile. Z8.

PEROVSKIA Labiatae

P. atriplicifolia SILVER SAGE, AFGHANISTAN SAGE Semiwoody decid plant, (1.5 m); leaves 2.5 to 5 cm long, grayish, sage-scented; flowers lavender blue on white downy stems in late summer; has to be treated like a perennial by being pruned back annually to live shoots. Himalayas and Afghanistan. Z5.

PHILADELPHUS Saxifragaceae

P. cordifolius Decid shrub, 4.2 m at 44 years; flowers white in large clusters. California. (H).

P. coronarius SWEET MOCK-ORANGE Decid shrub, 2.1 m at 17 years; flowers yellowish white, single, 2.5 cm diam, heavy fragrance. S.E. Europe and Asia Minor. Z3.

P. c. 'Aureus' GOLDEN MOCK-ORANGE Yellow leaves.

P. c. 'Deutziaeflorus' Double flowers in June, 1.2 m at 13 years. (H).

P. c. 'Primulaeflorus' Double flowers, broad petals, 3.6 m at 17 years. (H).

P. × cymosus 'Conquete' CYMOS MOCK-ORANGE 2.4 m; flowers single, 5.5 cm, fragrant. (H).

P. falconeri (*P. coronarius* × *P. laxus*) STAR MOCK-ORANGE Decid shrub, 3.3 m at 17 years; flowers small, fragrant, white in June. (H).

P. gordonianus GORDON MOCK-ORANGE Decid shrub, 4.8 m high, 4.5 m spread at 47 years; flowers creamy white, 4.4 cm, heavy fragrance, free flowering; very good. British Columbia to Idaho and California. (H).

P. grandiflorus BIG SCENTLESS MOCK-ORANGE Decid shrub, 3.3 m high at 44 years; flowers white, 5 cm diam, scentless. S.E. USA. (H).

P. × insignis (*P. 'Souvenir de Billiard'*) SUMMER MOCK-ORANGE Decid vigorous

bush, 5 m high, 4.2 m spread at 46 years; flowers slightly scented, white, cup-shaped, 2.5 cm diam, in terminal clusters of 15 to 20 blooms in July. (H).

P. × lemoinei (*P. microphyllus* × *P. coronarius*) There are numerous named cultivars of this hybrid. Tested and all hardy are: 'Belle Etoile' compact shrub, 2 to 2.7 m high and 2.1 m spread at 11 years; flowers 5 cm wide, single flushed maroon, fragrant; excellent. 'Erectus' compact erect shrub, 1.5 m high and 1.5 m spread at 46 years; flowers 3 cm, single, scented, floriferous. 'Fimbriatus' 1.6 m high at 17 years; flowers large, fragrant, with twisted and deeply serrated petals, mid-June. 'Manteau d'Hermine' 1.3 m at 44 years, flowers double creamy white. Z4. 'Mont Blanc' 1.2 m at 24 years, flowers single, 3 cm, fragrant. Z4.

P. magdalenae MAGDALENA MOCK-ORANGE Vigorous decid shrub with loose, open habit, 4.8 m high, 2.7 to 3.6 m spread at 46 years; flowers white, 3.8 cm wide in clusters in June. China. (H).

P. nepalensis NEPAL MOCK-ORANGE 4.2 m at 17 years; flowers pure white, almost scentless in June. N.E. Himalayas. (H). 'Variegata' fairly compact shrub, 2.4 m high at 17 years, leaves variegated. (H).

P. × nivalis (*P. pubescens* × *P. coronarius*) SNOWBANK MOCK-ORANGE Vigorous shrub, 4.5 to 5.4 m at 46 years; flowers single, snow white, in June. (H).

P. × purpureo-maculatus PURPLESPOT MOCK-ORANGE 2- to 2.7-m shrub at 17 years; flowers 3 cm diam, white with a purple spot at base of each petal. Z4.

P. satsumanus 3.6-m shrub at 17 years; flowers 3 cm, white in June. Japan. (H).

P. × virginalis VIRGINAL MOCK-ORANGE 'Virginal' One of the most commonly available cultivars, 2 to 2.7 m high at 11 years. Z3b. 'Bouquet Blanc' 1.8 m; flowers single to semidouble, 2.5 m diam. (H).

P. × zeyheri Vigorous shrub of spreading habit, 3.6 m high at 46 years; flowers pure white, fragrant, 5 cm diam. (H).

PHILLYREA Oleaceae

P. latifolia Shrub or small tree (9 m), planted 1925, condition good 19 years later. S. Europe and Asia Minor. (H).

PHOTINIA Rosaceae

P. glabra JAPANESE PHOTINIA Evergr shrub (2.4 m), or tree (3 to 4 m); leaves glossy green, 9 cm long; flowers white in May to June, in terminal flat clusters 10 to 12 cm across; fruit red then black; two specimens planted in 1915 dead by 1924, none planted since. Japan. (H1).

P. glabra 'Rubens' Decid shrub (3 m), leaves bright red when young; of the two specimens planted in 1915 only one grew, 2.1 m high at 16 years. Japan. (H).

P. serrulata CHINESE PHOTINIA Evergr shrub or small tree (11 m); leaves 20 cm long, shiny, reddish bronze when young; flowers white; excellent fall coloration of leaves; one of the hardiest. Japan, Korea. Z5b.

P. villosa (*P. variabilis*) ORIENTAL PHOTINIA Decid shrub or small tree (5 m); flowers white, hawthornlike, in flat clusters in May; fruit red; excellent fall coloration of leaves; one of the hardiest. Japan, Korea. Z5b.

PHYLLOSTACHYS Gramineae

P. aurea GOLDEN BAMBOO Clumps of erect stems 4.5 to 5.5 m high, canes green at first, pale yellow at maturity; a 115-m row planted in 1937 in a moist site provided an almost impenetrable, excellent screen for nearly 30 years until winter-killed 1968–69 (–14°C) when all tops died to ground; recovery has been good but slow. Japan. Z7.

P. bambusoides (*P. reticulata*, *P. quilioi*) GIANT TIMBER BAMBOO 6 m. (H).

P. edulis (*Bambusa mitis*, *Bambusa mosoo*) MOSO BAMBOO (5 m), canes bright green, later dull yellow; strong grower, clump forming, excellent in sheltered site, hardy since 1964. China.

P. flexuosa (2 to 3 m), stems at first green, darker with age, sometimes almost black like those of *P. nigra*; condition good at 7 years according to last record. China.

P. nigra (3 to 6 m), stems long, green at first then black with age; both plantings were short-lived, the 1964 one was winter-killed in 1968–69. (H1).

P. n. 'Punctata' With mottled rather than black stems, in good condition at 7 years according to last record. China and Japan.

PHYSOCARPUS Rosaceae

P. opulifolius NINEBARK Vigorous-growing decid shrub, 4 m at 16 years; leaves 3-lobed; flowers small, white tinged pink in June. Atlantic to Pacific. Z2b. 'Luteus', Golden Ninebark has yellow leaves; 'Nanus' is a dwarf form.

PICEA Pinaceae

The following 11 hardy (H) conifer cultivars are under test:

P. abies 'Compacta' GLOBE NORWAY SPRUCE Dwarf, conical, broad, very compact, specimens measure 2 to 3 m high and 2.1 m wide at 16 years; excellent.

P. a. 'Inversa' DROOPING NORWAY SPRUCE Pendulous form, needs training when young or it becomes a prostrate or trailing plant, interesting, unusual, present height of 1 m and spread of 1.8 m at 10 years has been obtained by pruning.

P. a. 'Maxwellii' MAXWELL SPRUCE Dwarf, dense mound, 0.4 m high, 1.2 m across at 14 years.

P. a. 'Mucronata' SHARPLEAF NORWAY SPRUCE Shrubby, pyramidal form, young plants slow-growing, 2.4 m high and 2.2 m spread at 14 years, very dense and compact, more so than 'Compacta'.

P. a. 'Nidiformis' NEST NORWAY SPRUCE Dwarf, compact, flat-topped, nestlike, largest specimen is 1 m high and 1.8 m across at 10 years; excellent.

P. a. 'Ohlendorffii' OHLENDORFF NORWAY SPRUCE Dwarf, conical, compact form, three specimens vary from 1.2 to 2.1 m high and 2 to 2.1 m spread at 14 years.

P. a. 'Pachyphylla' Slow-growing dwarf form, upright habit, few branches and branchlets, 1.2 m high and 1 m spread at 14 years, distinctive, excellent.

P. a. 'Pumila' Dwarf, globular, flat-topped, compact, 0.4 m high and 1.2 m spread at 8 years.

P. a. 'Pygmaea' PYGMY NORWAY SPRUCE Globular or broadly dome-shaped dwarf, one of the slowest growing cultivars of *P. a.*, 0.6 to 0.8 m high and 0.7 to 1.2 m spread at 8 years.

P. a. 'Remontii' REMONT NORWAY SPRUCE Dwarf, conical form, 0.7 m high, 1 m spread at 8 years.

P. a. 'Repens' CREEPING NORWAY SPRUCE Dwarf, low spreading mound, oldest specimen is 1 m high, 3.3 m across at 14 years.

P. glauca 'Conica' (*P. albertiana conica*) DWARF ALBERTA SPRUCE Slow growing, cone-shaped bush, dense, compact, 1.6 m high, 1.2 m spread at base at 14 years; excellent.

P. omorika 'Nana' DWARF SERBIAN SPRUCE Small, densely conical bush, leaves with conspicuous bluish-white bands; specimens at 10 years range from 1.8 to 2.7 m high, 1.6 to 2 m wide at base; excellent. Yugoslavia.

P. orientalis 'Gracilis' COLUMNAR ORIENTAL SPRUCE Slow-growing rounded bush, dense, eventually a small conical tree; oldest specimen (pruned) measures 3.8 m high and 2.5 m wide at 14 years; excellent. Caucasia and N. Asia Minor.

P. pungens COLORADO SPRUCE Tree (30 m), 11.5 m at 46 years, leaves stiff, apex sharp-pointed, 4-angled. S.W. USA. Z2.

P. p. 'Globosa' Dwarf, flat-topped, globular bush; 1.2 m high and 1.5 m wide at base at 10 years; dense habit; needles steely blue.

P. p. 'Hoopsii' Medium-sized tree, densely conical habit, steely blue needles.

P. p. 'Koster' KOSTER BLUE SPRUCE Pyramidal tree; leaves bluish white; 15 m high, 7.3 m spread at 46 years; excellent.

P. p. 'Moerheimi' Pyramidal tree, 4 m high, 2.5 m wide at 10 years, leaves steely blue; best of *P. p.* cultivars.

P. sitchensis SITKA SPRUCE Fast-growing tree (40 m), very ornamental. Alaska to California. (H).

PIERIS Ericaceae

P. floribunda MOUNTAIN PIERIS Evergr shrub (2 m), the only plant failed to establish. Virginia to Georgia. Z5.

P. japonica (*Andromeda japonica*) JAPANESE PIERIS Brd-lvd evergr, 1.5 m high, 1.5 m spread in 10 years; leaves glossy, bronze when young; flowers waxy in drooping clusters in April; excellent. Japan. Z5b.

P. j. 'Variegata' Leaves with white margins, otherwise similar to *P. japonica*; both excellent.

PINUS Pinaceae

P. ayacahuite MEXICAN WHITE PINE Tree (30 m), leaves in fives, 10 to 18 cm long; when removed at 30 years due to blister rust, the two specimens measured 8 m and 11 m high, and 0.7 m and 1.3 m in circum. Mexico. (H).

P. cembroides var. *parryana* FOUR-LEAVED NUT PINE, PARRY PINE Tree (15 m), 2.8 m at 17 years, leaves 3.8 cm long. S. California. (H).

P. contorta BEACH, SHORE OR SCRUB PINE Tree (9 m), 10 m at 32 years, occasionally a large bush; short branches; leaves in pairs, 5 cm long. Alaska to California. Z6.

P. coulteri COULTER PINE, BIG-CONE PINE 3-leaved species, of local interest to both children and adults chiefly because of its very large woody cones 25 cm or more long by 10 cm broad; at 43 years tree measured 18 m high, 10 m spread, circum 3 m. S. California, N. Mexico. (H).

P. densiflora 'Umbraculifera' JAPANESE UMBRELLA PINE An attractive distinctive shrubby dwarf pine with umbrellalike head; at 47 years 3.6 m high, 5.4 m spread, 1 m circum. Japan. (H).

P. jeffreyi JEFFREY PINE Two specimens measured 12.5 m and 15.5 m high, 2.1 m in circum at 30 years; leaves in threes, 27 cm long. S.W. USA.

P. koraiensis KOREAN PINE 8 m high, 0.7 m circum at 46 years; leaves in fives, 5 to 12 cm long. E. Asia. Z5.

P. massoniana MASSON PINE 11 m high at 17 years, leaves in twos up to 20 cm long. S.E. China. (H).

P. monticola CALIFORNIA MOUNTAIN PINE, WESTERN WHITE PINE, MOUNTAIN WHITE PINE Tree (53 m), 3 m at 15 years; leaves in fives, 10 cm long; cones up to 40 cm long, 3 cm wide before opening. W. North America. Z2b.

P. mugo (*P. montana*) SWISS MOUNTAIN PINE Hardy large shrub or small tree of dense bushy habit, a very variable species. Mountains of Europe from Spain to Balkans. Z1.

P. m. 'Compacta' HILL MUGO PINE Compact globose form with ascending branches and more or less erect at the ends; 14-year old specimen measures 1.3 m high, 2.5 m spread.

P. m. var. *pumilio* Prostrate shrub with several stems curving from bottom rather than one leader; 1.2 to 1.5 m high, 1.8 to 3 m spread at 14 years. Mountains C. Europe.

P. nigra AUSTRIAN PINE, BLACK PINE Large, densely pyramidal tree (27 m), flat-topped head when old, 5 m at 13 years; needles in twos, 12 to 15 cm long. C. and S. Europe. Z4.

P. ponderosa WESTERN YELLOW PINE, PONDEROSA PINE Large tree (45 m or more), stout, spreading, usually pendulous branches ascending at the ends; leaves in threes, up to 28 cm long. British Columbia to Mexico. Z2b.

P. pumila 'Glauca' Broad, bushy, slow-growing shrub, 1.2 m high, 0.9 m wide at 9 years; bluish band on one side of leaf and green on other side give a varied color effect to entire plant.

P. pungens TABLE MOUNTAIN PINE, PRICKLY PINE Small to medium tree, often bushy (9 to 18 m); leaves in twos, stout, twisted, sharply pointed; little ornamental value. E. USA. (H1).

P. radiata MONTEREY PINE Tree valued for seaside planting; four specimens planted in 1915 averaged 17 m high and 0.5 m circum at 33 years; although many plants in Victoria area killed in November 1955 freeze, it is well worth planting. S. California. (H1).

P. resinosa RED OR NORWAY PINE Failed to establish. (H1).

P. sabiniana DIGGER PINE Tree (24 m), closely related to *P. coulteri*; two specimens planted in 1915 grew well until 1955 when decline set in; 16 m high, 0.6 m circum at 33 years. California. (H).

P. sylvestris SCOTS OR SCOTCH PINE Tree (21 m or more); reddish young bark; leaves in twos, 12 cm long. Numerous forms are catalogued, only two tested here. Europe, N.E. Siberia, and W. Asia. Z2.

P. s. 'Fastigiata' Columnar habit with ascending branches; at 9 years 4 m high and 1 m wide throughout; wet snow may force branches downwards, necessitating tying to restore normal shape. (H).

P. torreyana TORREY OR SOLEDAD PINE Small tree (12 m or more), 5.7 m high at 17 years, sometimes a gnarled bush; leaves in fives, 20 to 30 cm long; limited ornamental value. S. California. (H).

PISTACIA Anacardiaceae

P. chinensis Performance of a single 19-year-old specimen indicates it is worth planting as an ornamental. China. (H1).

PITTOSPORUM Pittosporaceae

P. crassifolium KARO Three specimens planted in 1961 winter-killed by 1965. New Zealand.

P. tenuifolium TAWHIWHI Three specimens planted in 1958 winter-killed 1964-65. New Zealand.

P. tobira JAPANESE PITTOSPORUM Two specimens planted in 1914 failed to establish, three planted in 1966 winter-killed 1968-69. China, Japan.

PLATANUS Platanaceae

P. orientalis ORIENTAL PLANE TREE Decid tree (30 m), very large widespreading branches; largest of several measures 20 m high, 22 m spread, 3.8 m circum at 57 years; leaves deeply 5-lobed; seed clusters bristly and 2 to 6 dangling on a long stalk; good shade tree but needs much room. S.E. Europe. Z7b.

PODOCARPUS Taxaceae

P. macrophyllus (*Taxus m.*) Japan } Two specimens of each planted in 1915
P. nageia (*P. nagi*) Japan, China } failed to establish; hardiness here to be deter-
P. nageia variegata } mined.

POLYGALA Polygalaceae

P. chamaebuxus BOX-LEAFED MILKWORT Dwarf evergr; flowers pealike, creamy

white; in two separate plantings totaling five specimens, three failed to establish and two lived for only 4 years. Mountains of C. Europe.

POPULUS Salicaceae

P. nigra 'Italica' LOMBARDY POPLAR Decid male tree (30 m), with erect branches forming a dense column; useful for tall screen; 14 m high at 23 years. Europe. Z3.

POTENTILLA Rosaceae

P. fruticosa SHRUBBY CINQUEFOIL Decid shrub of dense habit, many forms and widely distributed. N. Hemisphere. Z1. Tested ones:

'Katherine Dykes' 1.3 m high, 1.5 m spread at 9 years, flowers single, yellow; excellent. Z2.

'Nana' Received as such in 1956; 0.6 m high, 0.6 m spread at 7 years. (H).

'Purdomii' Flowers pale yellow, Arnold Arboretum seedling. 'Katherine Dykes' is superior.

'Veitchii' 1.3 m high at 14 years, flowers white. China. Z2.

PRUNUS Rosaceae

P. americana AMERICAN PLUM 3.2 m at 15 years; flowers white, profuse, 2.5 cm diam, appear before leaves; fruit red or yellow, 2.5 cm diam. E. North America. (H).

P. amygdalus FLOWERING ALMOND Grown here as a flowering ornamental tree, 5.1 m at 8 years, flowers pink or white, single or double. W. Asia. Z7.

P. × amygdalo-persica (*P. pollardii*) Small ornamental tree, 3.6 m high, 2.4 m spread at 8 years; flowers pink. Hardy.

P. angustifolia 'Watsonii' SAND PLUM Twiggy shrub, 2.8 m at 18 years; flowers 3.8 cm diam; fruit about 1 cm, red or yellow, thick-skinned. Kansas to Texas, New Mexico. (H).

P. × blireiana Beautiful ornamental tree (6 m) when in bloom; 4.5 m high, 6 m spread at 8 years; flowers pink, semidouble, 2.5 cm across in April; excellent. Z6.

P. cerasifera (*P. myrobalana*) MYROBALAN PLUM, CHERRY PLUM Tree (7 m), flowers white in April, better known by its cultivars. (H).

P. c. 'Atropurpurea' PISSARD PLUM Tree (9 m); leaves reddish purple; 9 m high, 9 m spread at 50 years; flowers soft pink in March and April are showy but do not last long; fruits purple, 2.5 cm diam. Balkans, Caucasus, W. Asia. Z5b.

P. c. 'Nigra' BLACK MYROBALAN PLUM Foliage dark purple, slightly darker than 'Atropurpurea'. Z5.

P. cerasus 'Marasca' Vigorous tree, 6.4 m at 18 years. (H). The species is one of the parents of the Morello cherries and is widely cultivated and naturalized in Europe.

P. c. semperflorens ALL SAINTS CHERRY Tree or small shrub, 6.4 m high at 18 years; flowers white to pinky white in April. (H).

P. conradinae CONRADINA CHERRY Tree 6.8 m at 18 years; flowers 1.2 cm, whitish or pinkish, before the leaves. C. China. (H).

P. dasycarpa 'Persicifolia' PURPLE APRICOT Tree 4.5 m at 18 years; cultivated as an early free-flowering tree here; flowers white; fruit purple, round, about 2.5 cm diam. (H).

P. emarginata WILD CHERRY Shrub or small tree, 10 m high, 5.4 m spread, 1.1 m circum at 41 years; flowers whitish, less than 1.2 cm; fruit 0.6 to 1.2 cm, first red then black. British Columbia to California to Rockies. (H).

P. gymnodonta Tree, 7.6 m high, trunk 1.2 m circum at 49 years; flowers white; fruit yellow, round, 2.5 cm, ripe in late July. (H).

P. incana WILLOW CHERRY Failed to establish. Manchuria.

- P. insititia* DAMSON PLUM Shrub or small tree, 3.2 m at 18 years; flowers white, 2.5 cm; fruit 2 cm diam, black or yellow. W. Asia, Europe. (H).
- P. laurocerasus* CHERRY OR ENGLISH LAUREL Brd-lvd evergr shrub or small tree (6 m); leaves thick leathery, shiny green; flowers white, in compact clusters up to 13 cm long; fruits black, cherrylike, 1.2 cm long; much used for pruned hedges and screens because of its easy culture and general reliability. S.E. Europe and Asia Minor. Z7. Thirteen cultivars have been tested; those with an asterisk are noteworthy:
- '*Angustifolia*' Leaves 7.5 cm long, narrow; 1.5 m high at 20 years.
 - *'*Latifolia*' (*Bertini*) (*Macrophylla*) Vigorous, leaves large broad, 4.8 m at 20 years.
 - '*Bruanti*' Columnar, erect, compact, 3.9 m at 20 years.
 - '*Camelliaefolia*' Fairly large, erect, open shrub, unusual because of curled, twisted, dark green leaves; 3.2 m high at 20 years.
 - *'*Caucasica*' Erect, compact, 3.9 m at 20 years; leaves 17 cm long, almost 7.6 cm wide; outstanding.
 - '*Colchica*' 4.2 m at 20 years, leaves 17 cm long.
 - '*Compacta*' Reported as dwarf but 3.4 m at 20 years here.
 - '*Nana*' Received as such, 2.1 m high, 2.1 m spread at 8 years.
 - *'*Otto Luyken*' Low, compact, erect stems, narrow leaves, 1 m high at 11 years.
 - '*Otini*' Leaves very dark green; compact, strong grower, 5 m at 20 years.
 - '*Pyramidalis*' Erect, pyramidal, compact, 4.5 m at 20 years.
 - '*Rotundifolia*' Leaves half as broad as long, 4.7 m at 20 years.
 - *'*Schipkaensis*' Very hardy, leaves 5 to 10 cm long by 3.8 cm wide, spreading habit, 1.6 m at 20 years.
 - *'*Zabeliana*' Hardy, low shrub; branches horizontal or pointing obliquely upwards; leaves narrow; 1.6 m at 20 years; excellent ground cover.
- P. lusitanica* PORTUGAL LAUREL Slow-growing, evergr, bushy shrub; leaves shiny dark green, up to 12.5 cm long by 5 cm wide; flowers white in June on last year's twigs; fruit blackish, 1.2 cm diam; largest specimen 4.8 m high, equally broad at 57 years; useful and excellent shrub of outstanding performance. Spain, Portugal. Z7b.
- P. mira* Failed to establish. W. China.
- P. mume* JAPANESE APRICOT Small tree, 5.4 m at 18 years depending on cultivar; flowers fragrant, profuse, pink or white, single or double, in early spring; fruit 2.5 cm, yellow or greenish, poor quality; good floral ornamental. China, Japan. Z7.
- P. nigra* CANADA PLUM Small tree or shrub, 4.7 m at 15 years; flowers white, 3 cm; fruit red or yellow, 2.5 cm long. New Brunswick to Saskatchewan and E. USA. (H).
- P. × orthosepala* (*P. americana* × *P. angustifolia* var. *Watsonii*) TEXAS PLUM Spreading shrub, 1.6 m at 17 years; flowers white, 1.2 cm; fruit red with blue bloom, 2.5 cm, palatable. (H).
- P. padus* EUROPEAN BIRD CHERRY Decid tree to 10 m or more; flowers small, white in 15-cm-long clusters; fruit black, 0.6 cm diam. Europe, N. Asia to Japan. (H).
- P. pedunculata* Failed to establish.
- P. persica* FLOWERING PEACH Bushy tree to 7.5 m; many ornamental cultivars are catalogued; flowers single, double, white, pink, or red; also purple-leaved, variegated, and dwarf forms. China. Z6b.
- P. serotina* WILD BLACK CHERRY Tree (27 m), shiny peachlike leaves, flowers white in long loose clusters, profuse; fruit peasized, black, bitter. Nova Scotia to Dakotas, Texas to Florida. Z2b.

P. serrulata ORIENTAL CHERRY, JAPANESE FLOWERING CHERRY Tree (8 m); over 100 named cultivars, 15 have been tested, outstanding are:

'Amanogawa' Fastigate habit, flowers pink, dense clusters, usually single, sometimes semidouble. Z6.

'Ariake' Flowers pinkish white, 5 cm diam, almost single. (H).

'Fugenzo' Flowers double pink, 5 cm; one of the latest to bloom; very old variety. Z6.

'Kiku-shidare-zakura' Small tree, weeping habit, flowers deep pink, double. Z6.

'Mikuruma-gaeshi' Flowers blush pink, 5 cm, usually single. (H).

'Ojochin' Strong grower; flowers pinkish white, single or nearly so. (H).

'Kwanzan' ('Kanzan'), ('Sekiyama') Strong-growing, stiff ascending branches; flowers large, double, purplish pink; very popular. Z6.

'Shirofugen' Tree vigorous (7 m); pink bud, flowers large, double, white; last to bloom. Z6.

'Shirotae' ('Albida'), ('Kojima'), ('Mount Fuji') Flowers white, fragrant, in pendant clusters, often single on immature plants, mostly semidouble on mature ones. Z6.

'Takasago' ('Sieboldii') Small tree, slow grower; flowers semidouble, pale pink. (H).

'Ukon' Flowers yellowish, semidouble, 4.5 cm. Z6.

P. subcordata PACIFIC PLUM Shrub or small tree, 4.2 m at 18 years; flowers white, 1.6 cm diam; fruit oblong, red or yellow, up to 3 cm long. Oregon and California. (H).

P. subhirtella HIGAN CHERRY Tree (9 m); flowers pale pink, single, in April; fruit black, 0.6 cm diam, attractive. Japan. (H).

P. tangutica Failed to establish. W. China.

P. triloba multiplex FLOWERING ALMOND Shrub or small tree, flowers double, pink, showy in bloom.

P. t. 'Petzoldii' Flowers double, rose; 3.6 m high at 18 years. China. (H).

P. virginiana CHOKE CHERRY Shrub or tree, 7.7 m at 18 years; flowers white, in dense clusters up to 15 cm long and 2.5 cm wide; fruit purplish black, 0.6 cm diam, astringent. British Columbia to Newfoundland, south to N. Carolina, Missouri and Kansas. (H).

P. × yedoensis YOSHINO OR TOKYO CHERRY Tree (15 m), flowers blush white, about 3.8 cm diam, almond-scented; early flowering, floriferous. Z7b.

PSEUDOTSUGA Pinaceae

P. menziesii 'Fletcheri' Evergr shrub, dwarf, flattened mound with spreading branches and branchlets; largest of three specimens 1 m high, 1.8 m by 2.1 m spread at 14 years; interesting, excellent rock garden subject. (H).

PTELEA Rutaceae

P. baldwinii (*P. angustifolia*) WESTERN HOP TREE Decid shrub, 3.6 m at 18 years; leaves trifoliate, leaflets up to 6 cm long, downy underneath; flowers inconspicuous, 1.2 cm in March; seed with narrow wings. N. California.

P. trifoliata HOP TREE 3 m high at 18 years; flowers greenish yellow in June, fragrant; later dense green clusters of winged elmlike seed. Cultivar 'Aurea' has yellow foliage. E. North America and Mexico. (H).

PYRACANTHA Rosaceae

P. coccinea FIRETHORN Thorny evergr shrub or small tree; flowers hawthornlike, white; berries in dense showy masses; cultivars are available with bright red, orange, or shiny yellow fruits. 'Lalandei', the only one tested, has orange red berries; 5.4 m at 44 years; excellent on walls, stands pruning well. Italy to Western Asia. Z6.

P. × watereri (*P. atalantioides* × *P. rogersiana*) Fast-growing hybrid, flowers white, berries red. (H1).

PYRUS Rosaceae

The following hardy varieties have been tested:

P. amygdaliformis ALMOND PEAR Shrub or small tree, some thorns, 9 m at 49 years; flowers white, 2.5 cm diam in April; fruit almost round, 2.5 cm long. S. Europe, W. Asia.

P. a. 'Cuneifolia' Smaller and narrower leaves, 7 m at 47 years.

P. a. 'Persica' Resembles type, differing slightly in leaf shape, gray, highly pubescent foliage; 8.5 m high, 4 m spread at 47 years.

P. balansae Species related to *P. communis* COMMON PEAR Long-stalked, 2.5-cm fruit; 10 m high, 1 m circum at 49 years. W. Asia.

P. betulaefolia BIRCHLEAF PEAR Graceful tree, slightly pendulous branches, 6.4 m at 18 years, leaves coarsely toothed, 7.5 cm long. N. China.

P. communis COMMON OR GARDEN PEAR Broad pyramidal tree, 10 m high and as wide, 1.3 m circum at 47 years; flowers white in spring before the leaves; fruit 5 cm long, sweet; hundreds of cultivars. Europe, W. Asia.

P. cossonii (*P. longipes*) Tree, 11 m high, 8.2 m spread, 1.2 m circum at 47 years; fruit typical pear-shaped, 3.8 cm long, brown; colorful foliage in fall. Algeria.

P. elaeagrifolia Tree, 7.6 m with 0.6 m circum at 49 years; leaves grayish or whitish on both sides; flowers white, 2.5 cm diam; fruits 2.5 cm. Asia Minor.

P. heterophylla Tree, 12 m, 1 m circum at 49 years.

P. × michauxii (*P. amygdaliformis* × *P. nivalis*) Tree, 7.3 m, 5.4 m spread, 0.5 m circum at 47 years; leaves grayish at first, then shiny green; fruit greenish yellow, spotted brown.

P. nivalis SNOW PEAR Tree to 6 m at 18 years; flowers white, prolific, appear at same time as white woolly leaves; attractive because of its white foliage. S. Europe.

P. orthocarpa 3.3 m at 15 years, pink in bud, flowers pinky white.

P. pashia (*P. variolosa*) 5.4 m high, 4.5 m spread, 0.6 m circum at 47 years; fruit 2.5 by 5.7 cm, brown with pale specks. Himalayas, W. China.

P. pubescens So received in 1914 from Spaeth; 7 m high, 9 m spread, 1.1 m circum at 47 years.

P. syriaca 8.2 m high, 5.4 m spread, 1.2 m circum at 47 years, fruit pyriform about 3.8 cm diam, yellow green. W. Asia, Cyprus.

P. ussuriensis USSURIAN PEAR Tree (12 m), hardiest of all pears; flower buds pink; fruit yellow green, 3.8 cm diam, inedible. N.E. Asia.

QUERCUS Fagaceae

Q. alba WHITE OAK Failed to establish, only one planted. Z4.

Q. bicolor SWAMP WHITE OAK 16 m high, 10 m spread, 1.6 m circum at 58 years. Quebec to Georgia, west to Michigan and Arkansas. Z4b.

Q. cerris TURKEY OAK Received as *Q. cerriscana minot* from Spaeth, 1914; 18 m high, 11 m spread, 1.5 m circum at 58 years; leaves narrow, 10 to 12 cm long, 3.8 cm wide, coarsely toothed; acorns 2.5 by 2 cm, in 1.2-cm-deep mossylike cups; rated excellent street tree. S. Europe, W. Asia. (H).

Q. coccinea SCARLET OAK 8.2 m high, 1 m circum at 23 years; leaves 7.5 to 15 cm long, deeply lobed; valued for its fall coloring. E. North America. Z4.

Q. dentata DAIMYO OAK 13 m high and wide, 1.5 m circum at 47 years; leaves large, tapering, 27 cm long by 14 cm wide, 5 to 9 rounded lobes each side, russet brown in fall, persisting into winter; amongst largest of hardy oaks. Japan, Korea, N. and W. China. (H).

Q. falcata (*Q. rubra*) SPANISH OAK Tree (24 m), the one specimen representing

this species was removed after 13 years when 4.8 m high for unstated reason. E. and S. Central USA. (H).

Q. garryana OREGON OAK Tree (18 to 24 m) with ascending branches; planted specimen 14 m high, 11 m spread, 1.6 m circum at 56 years; does well on dry or gravelly soils. Vancouver Island and W. North America. Z8.

Q. glandulifera GLANDBEARING OAK Failed to establish, location unfavorable. (H1).

Q. glauca BLUE JAPANESE OAK Failed to establish, location unfavorable. (H1).

Q. imbricaria SHINGLE OAK 18 m high, 13.7 m spread, 1.6 m circum at 58 years; leaves oval, tapered both ends, 20 cm long, 6 cm wide, russet brown in fall, persisting into winter; good for hedges and screens when clipped. S.E. and C. USA. Z4b.

Q. macrocarpa BURR OAK Failed to establish. Nova Scotia to Pennsylvania west to Manitoba and Texas. Z2.

Q. michauxii Failed to establish. E. USA. (H1).

Q. palustris PIN OAK 16 m high, 8.2 m spread, 0.9 m circum at 56 years; leaves deeply and sharply lobed; full coloration lacking here. S.E. Canada and E. USA. (H).

Q. petraea DURMAST OAK The designation *Q. sessiliflora alnoides* used when received from Spaeth in 1914 is apparently *Q. petraea*; 17 m high, 11.8 m spread, and 1.5 m circum at 58 years. Europe, Asia Minor. (H).

Q. prinus BASKET OAK 18 m high, 15 m spread, 2.4 m circum at 58 years. Delaware to Florida west to Indiana, Missouri and Texas. (H).

Q. pubescens (*Q. lanuginosa*) Failed to establish. S. Europe, Caucasus, W. Asia.

Q. robur ENGLISH OAK Sturdy tree, 20 m high, 27 m spread, 4.1 m circum; lower limbs horizontal, largest 1.1 m circum at 58 years; excellent. Europe, N. Africa, W. Asia. Z5.

RHAMNUS Rhamnaceae

Many species harbor the crown rust of oats and are prohibited plants in many parts of Canada.

R. caroliniana INDIAN CHERRY Shrub or small tree, 6.4 m at 17 years; fruit round, about 0.8 cm diam, first red then black, sweet. New York to Florida, west to Nebraska and Texas. (H).

R. cathartica COMMON BUCKTHORN Decid shrub or small tree; spiny branches, 4.1 m at 18 years; sometimes used in clipped hedges. Europe, W. and N. Asia. (H).

R. japonica Spreading, decid shrub with thorny branches, 2.2 m at 17 years; fruit black, about 0.8 cm diam. Japan. (H).

R. purshiana CASCARA Tall shrub or tree (12 m), decid. British Columbia to Montana, Idaho and N. California. (H).

RHODODENDRON Including Azalea Ericaceae

Since 1914, 72 rhododendron species, 94 hybrids, and 12 azalea cultivars have been tested under outdoor conditions. These are listed alphabetically below in their respective groups.

SPECIES

In the following list of rhododendron species reference is made to hardiness alone (H1) (see page 2) and also to the longevity in years each species was or is still under test. The latter is given for a more complete story of the success attained than that depicted by hardiness alone. The test periods vary because plantings have been over a period of years and some have been made only recently.

		Test period (years)			Test period (years)
<i>R. ambiguum</i>	(H)	16	<i>R. luteum</i>	(H1)	16
<i>R. amesiae</i>	(H1)	Fte*	<i>R. macabeaenum</i>	(H1)	Fte
<i>R. arboreum</i>	(H1)	14	<i>R. macrophyllum</i>	(H1)	16
<i>R. argyrophyllum</i>	(H)	16	<i>R. maximum</i>	(H)	16
<i>R. arizelum</i>	(H1)	3	<i>R. micranthum</i>	(H)	16
<i>R. atlanticum</i>	(H1)	8	<i>R. molle</i>	(H1)	14
<i>R. augustinii</i>	(H)	16	<i>R. moupinense</i>	(H1)	9
<i>R. austrinum</i>	(H1)	6	<i>R. nudiflorum</i>	(H1)	14
<i>R. blandyanum</i>	(H)	16	<i>R. obtusum amoenum</i>	(H)	55
<i>R. calendulaceum</i>	(H1)	14	<i>R. obtusum kaempferi</i>	(H)	16
<i>R. calophytum</i>	(H1)	16	<i>R. occidentale</i>	(H1)	14
<i>R. carolinianum</i>	(H1)	15	<i>R. onsloviaenum</i>	(H)	16
<i>R. catawbiense</i>	(H)	16	<i>R. oreodoxa</i>	(H1)	15
<i>R. caucasicum</i>	(H1)	16	<i>R. pachytrichum</i>	(H)	16
<i>R. ciliatum</i>	(H1)	Fte	<i>R. polylepis</i>	(H1)	16
<i>R. concinnum</i>			<i>R. ponticum</i>	(H)	55
(<i>yanthinum</i>)	(H1)	16	<i>R. przewalskii</i>	(H)	Fte
<i>R. davidsonianum</i>	(H1)	16	<i>R. roseum magnum</i>	(H)	16
<i>R. decorum</i>	(H)	16	<i>R. saluenense</i>	(H1)	Fte
<i>R. discolor</i>	(H)	16	<i>R. searsiae</i>	(H1)	5
<i>R. faberi</i>	(H)	Fte	<i>R. simsii</i>	(H1)	5
<i>R. falconeri</i>	(H1)	Fte	<i>R. strigillosum</i>	(H1)	10
<i>R. fastigiatum</i>	(H1)	2	<i>R. suberosum</i>		Fte
<i>R. fictolacteum</i>	(H1)	8	<i>R. sutchuenense</i>	(H)	5
<i>R. fimbriatum</i>	(H1)	2	<i>R. thayerianum</i>	(H)	16
<i>R. fortunei</i>	(H1)	2	<i>R. thomsonii</i>	(H1)	5
<i>R. hanceanum</i>	(H1)	4	<i>R. trichostomum</i>		
<i>R. hormophorum</i>	(H1)	Fte	<i>radinum</i>	(H1)	Fte
<i>R. hunnewellianum</i>	(H)	16	<i>R. ungeronii</i>	(H1)	Fte
<i>R. impeditum</i>	(H1)	13	<i>R. vaseyi</i>	(H1)	6
<i>R. indicum</i>	(H1)	5	<i>R. vernicosum</i>	(H1)	8
<i>R. insigne</i>	(H1)	16	<i>R. viscosum</i>	(H1)	5
<i>R. lacteum</i>	(H)	16	<i>R. watsonii</i>	(H)	16
<i>R. leucaspis</i>	(H1)	8	<i>R. websterianum</i>	(H)	16
<i>R. longesquamatum</i>	(H1)	2	<i>R. weldianum</i>		Fte
<i>R. longistylum</i>	(H1)	8	<i>R. williamsianum</i>	(H1)	Fte
<i>R. lutescens</i>	(H1)	16	<i>R. wiltonii</i>	(H)	16

*Fte indicates the plant failed to establish.

RHODODENDRON HYBRIDS

Cultivars of outstanding merit are marked with an asterisk*. All are adapted locally, except for those marked "failed to establish" (Fte) and new plantings that have not been proven. Descriptive terms are mainly confined to flower color only. Additional descriptive information on color, blooming time, plant characteristics, dimensions, parentage, hardiness, etc. can be obtained from publications on rhododendrons listed in the bibliography.

- * 'Aladdin' vermilion
- 'Alexander Adie' pink
- * 'Alice' pink, then pale rose
- 'Anah Kruschke' lavender blue
- * 'Anna Rose Whitney' rose pink
- * 'Antoon van Welie' deep pink
- 'Baden Baden' dark red
- * 'Beauty of Littleworth' white
- 'Betty Wormald' pink
- 'Blue and Gold' deep lavender
- 'Blue Lavender' lavender
- * 'Boule de Neige' white
- * 'Bow Bells' pink
- * 'Britannia' scarlet
- * 'Brocade' peach pink, frilled
- * 'Butterfly' pale yellow
- 'Carita' pale primrose
- * 'Carmen' deep red
- 'Cavalier' scarlet
- * 'Cilpinense' pale shell pink
- 'Commandeur' pink
- 'Cosmopolitan' purple red
- 'Cunningham's White' white
- * 'Cynthia' rosy crimson
- * 'Damozel' deep rose pink
- * 'Doncaster' crimson scarlet
- * 'Dr. V. H. Rutgers' red
- 'Duchess of Edinburgh' light crimson
- * 'Earl of Donoughmore' bright red
- * 'El Alamein' dark red
- * 'Elizabeth' bright red
- 'Elizabeth Hobbie' scarlet red
- 'English Roseum' rose
- * 'Evening Glow' deep yellow
- 'Everestianum'
- 'Fabia Mayday'
- * 'Fastuosum Flore Pleno' mauve, semidouble
- * 'Fire Bird' salmon red
- 'Floriade' red
- 'Golden Belle' apricot flushed shell pink
- 'Graf Zeppelin' pink
- 'Hollandia' carmine
- * 'Humming Bird' pink, shaded vermilion
- * 'Jacksonii' rosy pink
- * 'Jan Dekens' pink, fringed
- * 'Jean Mary Montague' scarlet
- * 'John Walter' crimson
- 'Kluis Sensation' red
- * 'Lady Armstrong' carmine
- 'Leonidas' bright pink
- * 'Loderi King George' blush white, fragrant
- * 'Loder's White' pinkish mauve then white
- * 'Lord Roberts' dark red
- 'Madame Cochet' lilac
- * 'Madame de Bruin' bright red
- 'Madame Rosenthal' pink
- 'Madame Wagner' white, rose margin
- 'Margaret Dunn' Fte
- * 'Marinus Koster' deep pink
- 'Martha Isaacson' white
- 'Matador' orange
- * 'May Day' orange scarlet
- 'Minnie'
- * 'Mrs. A. T. de la Mare' white, fragrant
- * 'Mrs. G. W. Leak' light pink
- 'Mrs. John Clutton' white
- 'Olympic Lady' Fte
- 'Parsons' Gloriosum' light pink
- 'Pink Bountiful' pink
- * 'Pink Pearl' soft pink
- 'Prince Camille de Rohan' rosy pink
- 'Purple Lace' purple
- * 'Purple Splendour' deep purple
- * 'Queen Mary' pink
- * 'Roman Pottery' Fte
- * 'Rosamundi' pale rose
- * 'Rubina' dark maroon red
- * 'Sapphire' light blue
- * 'Sappho' white, spotted maroon
- * 'Scarlet Wonder' scarlet red
- 'Sherwoodeanum'
- 'Sonata' orange, flushed purple
- * 'Susan' amethyst violet, spotted purple
- * 'Temple Belle' Fte
- * 'Thomwilliams' deep rose pink
- * 'Unique' red bud, opening pale yellow

* 'Van Nes Sensation' pale lilac,
fragrant
'Van Weerden Poelman'
crimson
'Voodoo' scarlet

* 'Vulcan' bright red
'William Ewart Gladstone'
deep rose
* 'Zuiderzee' creamy yellow

AZALEAS

The list includes only 21 cultivars, but many more specimens have been planted over the years. Generally speaking, evergreen azaleas that are effective for a time are shorter lived than the deciduous cultivars and need replacing periodically.

'Blaauw's Pink', pink, sm
'Exquisite' white, flushed rose, frilled, scented, decid
'Floradia' pink, red blotch, sm
'Gaiety' pink, evergr
'Hardizer Beauty' red, sm
'Hinodegiri' red, evergr
'Hino-crimson' crimson, evergr
'Hino-white' white, evergr
'Irene Koster' white, flushed red, scented, decid
'Little Beauty' dark red, evergr
'Vuyk's Rosyred' red, sm
'Vuyk's Scarlet' scarlet, evergr

RHODOTYPOS Rosaceae

R. scandens (*R. kerrioides*) JETBEAD Decid shrub, 2.1 m at 11 years; flowers white, 5 cm diam; fruit pea-sized, black, conspicuous in winter; closely allied to *Kerria japonica*. China, Japan. Z6.

RHUS Anacardiaceae

R. chinensis (*R. semialata*), (*R. javanica*) CHINESE SUMAC Failed to establish. (H1).

R. succedanea WAX TREE Decid tree (9 m), the only two specimens planted survived for 7 years. China, Japan, Himalayas. (H1).

R. typhina STAGHORN SUMAC Decid tree, scraggly, flat-topped, shrubby (6 m); young twigs fuzzy-looking, covered with dense reddish hairs; leaves 0.3 to 0.6 m containing up to 26 leaflets; female flowers on separate plants from males, greenish and in dense spikes 10 to 20 cm long; fall foliage very colorful. E. North America. Z3.

R. verniciflua VARNISH TREE Decid tree (18 m), a lone specimen succumbed to winter injury after 4 years. C. and W. China.

RIBES Saxifragaceae

R. aureum GOLDEN CURRANT OR BUFFALO CURRANT Decid shrub, 2 m; flowers fragrant, bright golden yellow in April; fruit blackish purple, 0.8 cm diam. Washington to Saskatchewan, Montana, New Mexico and California. Z2.

R. bracteosum CALIFORNIAN BLACK CURRANT Decid shrub, 2 m, upright stems; leaves large maplelike, up to 20 cm wide; fruit black with whitish bloom, edible; subject to occasional killing of tips in winter. Alaska to California.

R. divaricatum COMMON WILD GOOSEBERRY Decid shrub, 2.4 m at 11 years, bristly branches, spines stout, 2 cm long. British Columbia to California. (H).

R. lobbii RED FLOWERED GOOSEBERRY Decid spiny shrub, 1.2 m at 10 years; flowers purplish red, 1.6 cm long; fruit red brown S. British Columbia to N. California. (H).

R. menziesii Decid spiny shrub, 1.2 m at 9 years; bristly stems; flowers purple and white. Oregon to C. California. (H1).

R. sanguineum WINTER CURRANT, RED FLOWERED CURRANT Decid shrub, 1.8 m high, 1.8 m spread at 5 years; characteristic pungent smell; flowers red; fruit bluish black. W. North America. Z7. 'Atrorubens', flowers dark blood red; 'King Edward VII', flowers intense crimson; 'Brocklebankii', leaves golden yellow; 'Plenum', flowers pink.

ROBINIA Leguminosae

R. hispida (*R. rosea*) ROSE ACACIA Decid shrub (2 m), flowers pealike, pink, in hanging clusters in May to June; suckers freely on its own roots; sometimes grafted on *R. pseudoacacia* making a very good small tree. S.E. USA. Z5.

R. luxurians Decid shrub or small tree (10 m), 6.5 m at 17 years, leaves 15 to 30 cm composed of 15 to 25 leaflets; flowers pale rose in clusters in July; spines up to 2.5 cm. Colorado to New Mexico, Arizona and Utah. (H).

R. pseudoacacia BLACK LOCUST Decid tree, 12 m high, 10.9 m spread, 1.6 m circum at 58 years; leaves 15 to 30 cm, pinnate, 7 to 19 leaflets; flowers white, fragrant, in long clusters in June. E. USA. Z4. Several cultivars are catalogued, including a golden yellow leafed form.

R. viscosa CLAMMY LOCUST Decid tree, 10 m high, 8.2 m spread, 1 m circum at 47 years; young branches and leafstalks sticky; flowers pink, in hanging clusters in June. S.E. USA. (H).

ROSA Rosaceae

Several hundred cultivars of hybrid tea, perpetual, floribunda, grandiflora, climber, and rambler roses have been tested since 1914. All classes are well suited to the area. Outstanding on the Station has been the annual performance of many hybrid tea bushes 10 to 20 years of age, thus lending strong support for the retention of bushes beyond the 4-year period endorsed by some rose enthusiasts. Prerequisites for long-term successful culture are timely protection from the common diseases and insects with appropriate chemicals, annual pruning, spring and summer feeding, plus irrigation in droughty weather particularly if the soils are light textured. No attempt is made here to name the best cultivars, because new ones appear too fast. Experience has made it obvious that older ones also have a great deal and much more than mere sentiment to recommend them. The problem may be to find a source if one wishes to plant them.

ROSMARINUS Labiatae

R. officinalis ROSEMARY Evergr aromatic shrub (2 m), only 1 m at 8 years at Station, stems thickly clothed with grayish green leaves; flowers blue in May. S. Europe and Asia Minor. Z8.

RUBUS Rosaceae

All except the first-mentioned species have very limited ornamental value.

R. illecebrosus STRAWBERRY-RASPBERRY Nearly herbaceous upright plant, 1 m high, prickly, suckering habit; flowers white, 4.5 m diam, July to fall; fruits red, sweet, insipid. Short-lived because of dry location. Japan.

R. incisus 'Subcrataegifolius' (*R. koehnaenus*) Japan.

R. leucodermis BLACK RASPBERRY British Columbia to Montana, Utah and C. California. (H1).

R. parviflorus THIMBLEBERRY C. and W. North America. (H1).

R. rosaefolius 'Coronarius' ROSELEAF RASPBERRY Not hardy. S. Asia, Himalayas.

R. spectabilis SALMONBERRY Flowers magenta rose, fruit dark red or yellow. W. North America. (H).

RUSCUS Liliaceae

R. aculeatus BUTCHERS BROOM Durable evergr shrub (0.6 m), spreads by suckers; numerous stiff branches and small leaves tipped with short sharp spine; both male and female plants needed for red berries; tolerant of shade and dryness. S. Europe. Z8.

SALIX Salicaceae

Except for the one noted, willows are seldom used locally for ornamentals.

S. alba tristis (*S. alba vitellina pendula*) GOLDEN WEEPING WILLOW Tree (10 m or more), equal spread, arching branches terminating in golden yellow weeping branchlets; beautiful but subject to scab and needs spraying. Europe, N. Africa to C. Asia. (H).

SAMBUCUS Caprifoliaceae

S. nigra COMMON OR EUROPEAN ELDER Decid shrub (6 m); flowers whitish in flattened heads, 18 cm across; berries small, black covered with blue bloom, sometimes used for wine making. Europe, N. Africa, W. Asia. Z4. *S. coerulea* (*S. glauca*) is similar with its flat-topped inflorescence and black berries. British Columbia native.

S. racemosa EUROPEAN RED ELDER Decid shrub (4 m), 5 to 7 leaflets; flowers yellowish white, in dense terminal conical heads up to 8 cm high and nearly as wide; berries tightly packed, attractive in fruit. Common at west coast, eastward to Atlantic; native also to Europe, W. Asia. Z3.

SANTOLINA Compositae

S. chamaecyparissus LAVENDER COTTON Mound-forming evergr, subshrub with woolly gray aromatic foliage, 0.4 m high by 2.1 m spread in 5 years; flowers yellow, in clusters in May to June; needs good drainage and pruning to keep tidy. S. Europe. (H).

SARCOCOCCA Buxaceae

S. hookeriana Evergr shrub, 0.7 m high, 1 m spread at 3 years; leaves smooth, shiny green, alternate, 3.8 cm long, 2 cm wide; flowers small, white, axillary in late fall; fruit round, 0.6 cm diam, red first then black. W. Himalayas, Afghanistan.

SASA Gramineae

S. disticha (*Bambusa nana*) Thicket-forming bamboo with slender hollow stems 0.2 to 0.7 m high, creeping rootstocks. Japan. (H1).

S. palmata (*S. senanensis*), (*Bambusa senanensis*) Bamboo with stems up to 2 m, leaves up to 33 cm long, spread by rhizomes rather aggressively. Japan. Z8.

S. pygmaea (*Bambusa pygmaea*) Solid thicket of 2-m hollow canes, largest 0.3 cm diam; solidly established at 8 years in a moist, sheltered site. Japan. (H).

S. veitchii (*S. albo-marginata*), (*Bambusa veitchii*) Low, dense-growing species with dull purple canes about 1.2 m high; leaves 20 cm long, margins of which become whitish and withered imparting a variegated effect during winter. Japan. (H).

SCHIZOPHRAGMA Saxifragaceae

S. hydrangeoides Decid climbing shrub (12 m), young stems with aerial roots; plant resembles *Hydrangea petiolaris* in habit, but leaves and flowers are distinct; flowers flattish heads, 25 cm across, in July the main feature is the heart-shaped pale yellow bracts. Japan. (H).

SCIADOPITYS Pinaceae

S. verticillata UMBRELLA PINE Evergr tree (30 m or more), a strikingly beautiful specimen tree; pyramidal form; cladodes (leaflike branchlets) arranged like ribs of an umbrella. Japan. Z7.

SENECIO Compositae

S. greyi Gray spreading shrub, a dense mound 1.2 m high, 2.2 m wide at 8 years; young shoots and underside of leaves covered with soft white felt; flowers yellow, June till August. New Zealand. Z9a.

SEQUOIA Pinaceae

S. sempervirens CALIFORNIA REDWOOD Stately evergr (over 90 m), 20 m high at 33 years. California. Z8.

SEQUOIADENDRON Pinaceae

S. giganteum (*Sequoia gigantea*) CALIFORNIA BIG TREE Evergr tree (90 m), 24 m high, 4.2 m circum at 34 years. California. Z7b.

SIPHONOSMANTHUS Oleaceae

S. delavayi (*Osmanthus delavayi*) Evergr shrub, 1.2 m high and 1.5 m spread at 11 years, semihardy, killing up to 50% in coldest winters, but recovery and performance usually very good. W. China.

SKIMMIA Rutaceae

S. japonica JAPANESE SKIMMIA Evergr shrub, dense-growing, shade-loving, 1.2 m; flowers white in terminal clusters, male and female on different plants; fruit red, 0.8 cm diam. Japan. Z7b. One male to six female plants recommended for berry production.

S. japonica 'Fructu-albo' Has white berries. (H).

SOPHORA Leguminosae

S. japonica JAPANESE PAGODA TREE Decid tree (22 m), leaves in 9 to 15 leaflets, flowers creamy white in late summer. China, Korea. Z6b.

SORBARIA Rosaceae

S. aitchisonii KASHMIR FALSE SPIREA Decid shrub, 2.7 m high and 1.8 m spread at 5 years; leaves compound 15 to 21 leaflets; flowers white in conical clusters, 25 cm long, July to August. Afghan, Kashmir. Z4.

SORBARONIA (*Sorbus* × *Aronia*) Rosaceae

× *S. alpina* The only specimen planted failed to establish.

SORBOPYRUS (*Sorbus* × *Pyrus*) Rosaceae

S. auricularis BOLLWYLLER PEAR Bigeneric hybrid tree, 6.4 m high, 8.2 m spread, 0.9 m circum at 46 years; leaves 7.5 to 10 cm long, oval, coarsely toothed, gray down on undersides; flowers white in May; fruit pear-shaped, 3 cm long, green then reddish, sweet; originated about 1619 in Alsace. (H).

SORBUS Rosaceae

S. americana AMERICAN MOUNTAIN ASH Decid tree, 4.2 m high, 4.5 m spread, 0.5 m circum at 47 years; leaves with 13 to 17 leaflets; fruits red in dense clusters. Newfoundland to Manitoba, south to N. Carolina and Michigan. Z3.

S. aucuparia EUROPEAN MOUNTAIN ASH OR ROWAN TREE Decid tree, 12.8 m high, 8.2 m spread, 1.1 m circum at 58 years; berries 0.5 cm, red, in large clusters; useful attractive tree. Europe to W. Asia and Siberia. Z3.

SPARTIUM Leguminosae

S. junceum SPANISH BROOM Erect, strong-growing shrub with green rushlike stems up to 3 m; flowers fragrant, pealike, bright yellow, May through September and October; excellent. Mediterranean and Canary Islands. Z8.

SPIRAEA Rosaceae

S. alba Decid upright shrub, 1.3 m at 14 years; flowers white in pyramidal clusters. New York to Missouri, south to Georgia and Mississippi. (H).

- S. × arguta* (*S. thunbergii* × *S. multiflora*) GARLAND SPIREA Decid shrub with slender twiggy stems, 1.5 m high at 49 years; flowers white, 0.8 cm wide all along the branches in April to May. Z3.
- S. × billiardii* (*S. douglasii* × *S. salicifolia*) BILLIARD SPIREA Decid shrub with stems 1.8 m high in dense masses; flowers rose pink, in pyramidal spikes, in June; spread by underground stems. (H).
- S. × blanda* (*S. chinensis* × *S. cantoniensis*) Flowers pure white in May. (H).
- S. × brachybotrys* (*S. pruinosa*) (*S. canescens* × *S. douglasii*) Decid shrub 1.5 m high; flowers pink, 7.5-cm-long clusters in June. Z4.
- S. bullata* Upright decid shrub, 1 m high, 1.8 m spread at 15 years; leaves puckered, 3 cm long; flowers deep rosy pink in small, dense, flattish clusters. Japan. (H).
- S. × bumalda* (*S. japonica* × *S. albiflora*) 'Froebelii' Decid shrub, 1.5 m high; flowers bright crimson, in flattish heads, in June. Z2b. 'Anthony Waterer' is similar but 0.6 m and compact. Z2b.
- S. cantoniensis* (*S. neumanni*) Failed to establish. (H1).
- S. × cinerea* (*S. cana* × *S. hypericifolia*) Decid shrub, 1.3 m high; flowers white in dense clusters all along the stem in May; condition still good at 41 years with considerable bloom; general resemblance to *S. × arguta*. Z5.
- S. douglasii* var. *menziesii* Decid shrub of suckering habit in dense clumps, 2 m high at 18 years; flowers purplish rose in erect pyramidal clusters, June to July; the species is common on Pacific coast. (H). var. *menziesii* is less common; 'Alba' has white flowers. (H).
- S. × fontenaysii* (*S. canescens* × *S. salicifolia*) 'Alba' Upright shrub, 1.3 m at 4 years, flowers white in June. (H). 'Rosea', 2.1 m at 5 years, flowers rose colored. (H).
- S. × inflexa* (*S. conferta*) (*S. crenata* × *S. cana*) Flowers white in May. (H).
- S. japonica* Decid shrub, 1.5 m at 12 years; flowers pink or white in flat heads; attractive. (H).
- S. latifolia* 'Rubra' (*S. bethlehemensis* 'Rubra') Flowers deep pink in June. (H).
- S. × margaritae* Decid shrub, 1.5 m at 17 years; flowers bright rosy pink, in flattened heads in July; outstanding. Z5.
- S. × pachystachys* (*S. corymbosa* × *S. douglasii*) Flowers light rose in dense pyramidal clusters in June. (H).
- S. × prunifolia* BRIDALWREATH SPIREA Decid shrub, dense growth, arching branches, 2.1 m high, 1.8 m spread at 9 years; flowers white in April to May. Z6. 'Plena' has double flowers 0.8 cm across and is more showy; outstanding. Japan. (H).
- S. × sanssouciana* (*S. douglasii* × *S. japonica*) Erect shrub 4.5 m at 5 years; flowers bright rose, in flattened heads in July.
- S. tomentosa* HARDHACK SPIREA Small vigorous shrub forming dense thickets 1 m high; flowers purplish rose in dense terminal clusters. E. USA.
- S. trichocarpa* KOREAN SPIREA Decid, vigorous shrub, 1 to 2 m high; flowers white, 0.8 cm wide in June. Korea. Z3.
- S. × vanhouttei* (*S. cantoniensis* × *S. trilobata*) VANHOUTTE SPIREA Decid shrub, 1.5 to 2 m high at 50 years, graceful arching branches; flowers white, in dense clusters all along the branches in May to June; dependable, showy in bloom, outstanding. Z4.

STAPHYLEA Staphyleaceae

- S. bolanderi* Decid shrub, 1.8 m at 18 years, 3 roundish leaflets; fruit pods interesting, inflated, 3-celled, 5.7 cm long. California. (H).
- S. colchica* Strong-growing decid shrub, 3.5 m high at 17 years; flowers yellowish white in erect clusters; 10-cm inflated capsules. Caucasus. Z6.
- S. pinnata* EUROPEAN BLADDER NUT Upright, decid shrub (4 m), 1.8 m at 18

years, 5 to 7 leaflets; flowers greenish white, in drooping clusters in May; inflated fruit capsule about 2.5 cm long. C. and S. Europe. (H).

S. trifolia AMERICAN BLADDER NUT Decid. upright shrub (5 m), 3.2 m at 18 years; leaves of 3 very downy leaflets; flowers greenish white; little ornamental value. E. USA. Z5.

STEPHANANDRA Rosaceae

S. incisa (*S. flexuosa*) CUT-LEAF STEPHANANDRA Decid shrub of dense bushy habit with zigzag stems, 1.8 m high, 2.1 m spread at 46 years; suckers freely; leaves triangular or heart-shaped at base, margins deeply cut; flowers greenish white, in clusters 7.5 cm long; the fernlike foliage is its main ornamental value. Japan, Korea. Z5.

S. tanakae Decid shrub, twiggy habit, 2.1 m high at 13 years; resembles *S. incisa*, but leaves are larger and not so deeply cleft. Japan. (H).

STEWARTIA Theaceae

S. pseudo-camellia JAPANESE STEWARTIA The two plants tried failed to establish; drought suspected. Z7.

STRANVAESIA Rosaceae

S. davidiana CHINESE STRANVAESIA Sm vigorous shrub (7.5 m); leaves oblong leathery, 11.5 cm long, colorful in fall; fruit round, 0.6 cm, red. W. China. Z7b.

S. d. undulata Less vigorous than the species and with wide-spreading branches; berries red. W. China. (H1).

STYRAX Styracaceae

S. japonica JAPANESE SNOWBELL Small decid tree or shrub (7 m), 2.8 m high, 2 m spread at 6 years; branches slender, sometimes drooping toward the tips; flowers white, bell-shaped, pendulous, 2 cm across covering undersides of the branches; excellent. China, Japan. Z6b.

S. obassia FRAGRANT SNOWBELL Decid shrub or tree, 3.3 m high, 0.5 m circum at 48 years in a dry shallow soil, up to 6 m or more in suitable locations; leaves up to 20 cm long and clothed beneath with velvety down; flowers white, fragrant, bell-shaped, pendulous, in June; excellent ornamental. Japan. (H).

S. veitchiorum The one specimen planted failed to establish.

SYMPHORICARPOS Caprifoliaceae

S. albus laevigatus SNOWBERRY Suckering shrub to 2 m; flowers small, pinkish, in terminal clusters; berries white, 1.2 cm. Alaska to California. Z2. 'Ovatus', 1.5-m shrub at 16 years, dense clump resembling *S. a. laevigatus*, leaves broad ovate, bluish green. (H).

S. mollis (*S. ciliatus*) Low, prostrate shrub, young shoots covered with soft down; leaves velvety; fruit white, 0.5 cm diam. S. British Columbia to S. California. (H).

S. occidentalis 'Heyeri' WOLFBERRY Small decid shrub to 1.5 m, dense erect habit; clusters of round white berries. Colorado. (H).

S. orbiculatus INDIAN CURRANT, CORALBERRY Dense bushy shrub, decid (1.5 m); flowers yellowish white; fruit 0.5 cm, purplish red, along the branches. New Jersey to Georgia, Kansas and Texas west to S. Dakota. Z2b.

S. o. 'Variegatus' Leaves variegated with yellow, 1.5 m at 16 years. (H).

SYRINGA Oleaceae

S. amurensis AMUR LILAC Shrubby decid tree (5 m), flowers white in June. Manchuria, N. China. (H).

S. a. japonica JAPANESE TREE LILAC Large shrub, easily trained to tree form with single trunk; flowers fragrant, creamy white in June. Japan. Z2.

- S. × chinensis* (*S. rothomagensis*) CHINESE LILAC Decid bush, 4.5 m at 45 years. (H).
- S. × hyacinthiflora* (*S. oblata* × *S. vulgaris*) The one specimen planted was removed soon after. Several cultivars by Lemoine and by Clarke should be tried.
- S. josikaea* HUNGARIAN LILAC Large decid shrub, 5.1 m high, 5.4 m spread at 46 years; flowers fragrant, deep mauve, in 20-cm-long clusters in June; leaves glossy green. Hungary, Galicia. Z2.
- S. × 'Kim'* A hybrid of *S. josikaea* received from Central Experimental Farm, Ottawa, in 1937; medium-sized shrub; flowers purple, in freely branching clusters in May to June. (H).
- S. × persica* (*S. laciniata* × *S. vulgaris*) PERSIAN LILAC Decid shrub, 2.7 m high, 2.1 m across at 11 years; leaves small; flowers fragrant, in clusters 5 to 7.5 cm long, produced freely. Z4.
- S. × prestoniae* (*S. reflexa* × *S. villosa*) PRESTON LILAC A group of lilacs raised by I. Preston, Central Experimental Farm, Ottawa, and characterized by their vigor, large erect or drooping pyramidal clusters of red purple flowers about 2 weeks after the common lilacs have flowered; all about 2.7 m and hardy. Z2. Amongst the best are: 'Isabella' pink; 'Audrey' purple; 'Donald Wyman' dark red purple; 'Jessica' fragrant purple.
- S. villosa* LATE LILAC Decid shrub of dense bushy habit (3 m); flowers rosy mauve, in stiff compact clusters in late May to June. N. China. Z2.
- S. vulgaris* COMMON LILAC Long-lived, popular flowering shrub (5.5 m). S.E. Europe. Z2b. Forty-nine cultivars planted since 1914, all of which thrived and flowered well. A few good ones are: 'Charles Joly' dark red double; 'Charles X' magenta, single; 'Decaisne' bluish, single; 'Georges Bellaire' magenta, single; 'Ludwig Spaeth' deep purple, single; 'Mme. Lemoine' white, double; 'President Grevy' bluish, double.

TAMARIX Tamaricaceae

- T. africana* AFRICAN TAMARISK Decid shrub or small tree (5 m); densely branched, very thin branchlets; flowers bright pink in late May. Mediterranean. (H).
- T. chinensis* CHINESE TAMARISK Decid shrub or small tree (5 m); branchlets slender, spreading; leaves bluish green; flowers pink, form large loose pendulous clusters. China. (H).
- T. gallica* FRENCH TAMARISK Decid shrub or small tree (9 m), branches slender, flowers pink, in dense cylindrical clusters on shoots of current year. Mediterranean. (H).
- T. juniperina* Decid shrub or small tree (5 m), branchlets slender, flowers bright pink in June on previous year's wood. N. and C. China. (H1).
- T. odessana* ODESSA TAMARISK Decid shrub (2 m); flowers pink, in slender inflorescences on current wood. Caspian. Z3. (H).
- T. parviflora* SMALL-FLOWERED TAMARISK Rapid-growing decid shrub (4.5 m); flowers deep pink in June on previous year's growth. C and S. Europe. Z4. (H).
- T. pentandra* AMUR TAMARISK Decid shrub or small tree (5 m); flowers bright carmine pink in June on shoots of current year; needs heavy pruning; highly recommended. S.E. Europe and C. China. Z3. (H).

TAXODIUM Pinaceae

- T. distichum* BALD CYPRESS Hardy decid tree; leaves feathery; resembles redwood (*Sequoia*) (45 m); of 17 specimens planted in 1915 only 3 were alive in 1932 and averaged 3.6 m high; by 1948 the last struggling specimen succumbed in its droughty site; species warrants replanting preferably in moist or wet location. Swamps and wet places, S.E. USA. Z5b.

TAXUS Taxaceae

T. baccata ENGLISH YEW Evergr tree (12 to 18 m); used successfully for hedge 1918 to 1942; specimens measure 2.7 m high, 2.7 m across at 9 years. Only 6 of 40 known cultivars have been tested. Europe, W. Asia, N. Africa. Z7.

T. b. 'Adpressa' Wide-spreading form, dense habit, large shrub or small tree, 1.3 m at 18 years. (H).

T. b. 'Dovastoniana' WESTFELTON YEW Distinct upright form with pendulous branchlets, plants becoming leaderless when young, forming a wide-spreading, vase-shaped bush. (H).

T. b. 'Fastigiata' (*T. b.* 'Stricta') IRISH YEW A female form of dense erect columnar habit, 3 m high, 1 m spread at 14 years. (H).

T. b. 'Fastigiata Aureomarginata' GOLDEN IRISH YEW Male form, 5.4 m high, 1.5 m spread at 57 years. (H).

T. b. 'Repandens' SPREADING ENGLISH YEW Dwarf, wide-spreading, low-growing female bush, 0.7 m high, 2.1 m spread at 14 years. Z5.

T. b. 'Semperaurea' EVERGOLD ENGLISH YEW Low, slow-growing male form with ascending branches and short crowded branchlets; 1.6 to 2.1 m high, 1.2 to 2.1 m across; leaves attractive golden. (H).

T. canadensis CANADIAN YEW Spreading straggly shrub, 1.2 to 1.8 m high; hardiest of the yews. E. North America. Z3.

T. cuspidata JAPANESE YEW Tree (15 m); 57-year-old specimen has long remained stationary at 1.8 m high with a spread of 2.7 m; sometimes used for hedges. Japan. Z4.

T. c. 'Nana' DWARF JAPANESE YEW Irregular-shaped shrub of dwarf spreading habit; 1.6 m high, 0.6 m spread at 8 years. (H).

T. × media 'Brownii' BROWN'S YEW Described as "compact, broad columnar, developing into globose or semiglobose form," vase-shaped most nearly fitted the Station's specimens that at 8 years stand 1 to 2 m high and 0.5 m across. (H).

T. × media 'Grandifolia' BIG LEAF YEW As received in 1964 from Mitsch Nursery, Aurora, Oregon, but with no official listing; upright habit. (H).

T. × media 'Hatfieldii' HATFIELD YEW Dense, compact, male form with ascending branches, resembles Irish Yew, 2.1 m high and 0.7 m spread at 8 years. (H).

T. × media 'Hicksii' HICK'S YEW Columnar form, almost vertically ascending branches; female. (H).

T. × media 'Robusta' OBELISK YEW Received as such in 1964 from Mitsch Nursery, Aurora, Oregon, but with no official listing; believed to be *T. cuspidata* 'Robusta'; 1 to 2.1 m high, 0.3 to 0.5 m spread at 8 years. (H).

T. × media 'Viridis' Received as such in 1964 from Mitsch Nursery, Aurora, Oregon, but with no official listing; 1.8 to 2.1 m high, 0.5 m spread at 8 years. (H).

TERNSTROEMIA Ternstroemiaceae

T. japonica Name under which plants were received in 1914 from Yokohama Nursery; listed as *Cleyera ochracea* (*C. japonica*) by L. H. Bailey and as *Ternstroemia gymnanthera* by Mathias and McClintock. The two specimens planted succumbed to droughty conditions after 5 years; only suited for mild areas, requires sheltered position and shade. Japan, China, India.

TEUCRIUM Labiatae

T. fruticans SHRUBBY GERMANDER Evergr shrub 1.5 m high, 2.1 m spread at 6 years; kills back extensively in coldest winters; renews from near crown and again becomes very effective with its white felt covering of the square stems and undersides of the leaves; flowers pale blue throughout summer; likes sun; semihardy. S. Europe and N. Africa.

THUJA Cupressaceae

T. occidentalis 'Hetz' Midget' Dwarf, globular when young, 0.5 m high, 1 m spread at 14 years. (H).

T. o. 'Little Champion' Dwarf, globular, 1 to 1.5 m high, 1.5 to 2.1 m across at 14 years. (H).

T. o. 'Pyramidalis' PYRAMIDAL ARBORVITAE Columnar, narrow, compact, 3.2 m high, 1 m spread at 13 years. (H).

T. o. 'Pyramidalis Compacta' Denser, more compact than 'Pyramidalis', 3.5 m high, 1 m spread at 9 years. (H).

T. o. 'Rheingold' (*T. o. ellwangeriana* 'Rheingold') Dwarf evergr shrub, globular when young, becoming broad; branchlets pronounced golden color especially on sun-exposed side of bush; 1.8 m high and 2.1 m across at 14 years; excellent. (H).

T. o. 'Smaragd' Compact pyramidal form, rated as having greener or richer colored foliage in winter than most others; 1.5 m high, 0.5 m across at 4 years. (H).

T. orientalis 'Aurea Nana' Dwarf, round bush, topped with light yellow foliage; 1.2 m high, 1.2 m across at 14 years; excellent. (H).

T. o. 'Bakeri' Compact evergr shrub, bright green foliage; 1 m high, 0.7 m across at 14 years; not done well in variety of exposures, tip kills in coldest winters.

T. o. 'Blue Cone' Compact, upright shrub with very dense foliage, tip kills in coldest winters and subject to weighing down of branches with snow and fine rain; 1.2 to 2 m, 1.2 m across at 14 years.

T. o. 'Brewer's Hybrid' Similar to 'Blue Cone' in general appearance but preferred; more vigorous, larger; tip kills in coldest winters; 2.4 m high, 1.5 m across. (H).

T. plicata GIANT ARBORVITAE, WESTERN RED CEDAR Tree, long-lived, timber species (58 m), beautiful at any height; makes excellent hedge or screen when



Thuja occidentalis 'Rheingold'

clipped; prefers moist situations. Alaska to N. California and Montana. (H).

T. p. 'Aurea' Foliage golden yellow; 3.6 m high, 2 m spread at 8 years. (H).

T. p. 'Cuprea' Dense, slow-growing conical bush; tips of branchlets bronze or yellow varying with season; 0.5 m high, 1 m across at 10 years. Z7.

T. p. 'Zebrina' (*T. lobbii aurea*) Strong-growing conical tree, 5.4 m high, 7.3 m spread at 22 years; splashes of creamy yellow on foliage and stems of current growth intermingled with green and touch of bronze to tips of branchlets give zebra effect; excellent. (H).

THUJOPSIS Cupressaceae

T. dolabrata HIBA ARBORVITAE Evergr tree of pyramidal habit (15 m); branchlets flattened with large scalelike leaves; bright green above and conspicuously marked underneath with white bands; attractive; 11 m high, 4.8 m spread at 50 years. C. Japan. Z7b.

TILIA Tiliaceae

T. americana AMERICAN LIME OR LINDEN (BASSWOOD) Decid tree, softest and lightest in weight of the Canadian hardwoods; 13 m high, 0.2 m circum at 34 years. E. and C. North America. Z2b.

T. × europaea (*T. cordata* × *T. platyphyllos*) COMMON LIME Decid tree, 11.5 m high, 0.2 m circum at 34 years; suckers freely from base of trunk. (H).

T. heterophylla Decid tree, 11.7 m high, 0.2 m circum at 34 years. Virginia to N. Florida, Alabama and Indiana. (H).

T. × moltkei (*T. americana* × *T. petiolaris*) Tree, 12 m high, 0.3 m circum at 34 years. (H).

T. platyphyllos 'Laciniata' Cut-leaved form of the large-leaved Linden; 9 m high, 0.2 m circum at 34 years. (H).

T. p. 'Vitifolia' Tree, 7 m at 18 years. C. and S. Europe to N. France and S.W. Sweden. (H).

TORREYA Taxaceae

T. nucifera JAPANESE TORREYA Evergr tree or shrub (24 m), closely allied to *Taxus* and *Cephalotaxus*; 58-year-old specimens have remained more or less stationary at 4.8 to 6 m high, 5.4 m spread for the last 40 years due to difficult site. (H).

TROCHODENDRON Trochodendraceae

T. aralioides Brd-lvd evergr shrub (20 m), two specimens only, failed to establish due to dryness. Japan. (H1).

TSUGA Pinaceae

T. canadensis EASTERN HEMLOCK Evergr tree (18 m), graceful when young, excellent for clipped hedges. Z4.

T. c. 'Hussii' Dense bush, ascending branches but no definite leader; 1 m high, 0.9 m spread at 10 years. (H).

T. c. 'Nana' Slow-growing, dense, moundlike form with numerous upright short shoots; 0.3 m high, 0.3 to 0.4 m spread at 8 years. (H).

T. c. 'Pendula' WEEPING HEMLOCK Attractive shrub, mass of pendulous branches hiding the interior; young plants are slow-growing; 0.2 m high, 0.9 to 1.3 m spread at 8 years; excellent. Z5.

T. c. 'Prostrata' Very attractive form, finer-textured foliage than 'Pendula', which it resembles when small; 0.2 m high, 0.9 m spread at 10 years; excellent. (H).

T. c. 'Stranger' Upright, open tree; terminal growth, slightly pendulous, 1.8 m high, 1.5 m spread at 10 years. (H).

T. c. 'W.H.T.' Upright open habit, branches and branchlets slightly zigzag; named by and received from Cherry Hill Nurseries, West Newbury, Mass.; 1.8 m high, 2.1 m spread at 10 years. (H).

T. sieboldii SIEBOLD'S HEMLOCK Evergr tree (30 m), 11.5 m high, 1.2 m circum at 57 years; very good for hedges. Japan. (H).

ULEX Leguminosae

U. europaeus GORSE OR FURZE Spiny bush, 1.8 m high at 15 years, showy in full bloom but a naturalized pest on Vancouver Island. W. and C. Europe. Z7.

ULMUS Ulmaceae

U. americana WHITE OR AMERICAN ELM Decid tree; specimen planted July 1, 1927, measures 18 m high, 14 m spread, 1.9 m circum. Nova Scotia to Saskatchewan, south to Florida. Z5.

U. × *arbuscula* (*U. glabra* × *U. pumila*) Shrubby tree grown for only 18 years, then 8 m high. (H).

U. carpinifolia 'Umbraculifera' GLOBE SMOOTH-LEAVED ELM Failed to establish. Z5.

U. c. 'Suberosa' This form of the Smooth-leaved Elm measured 11.2 m at 39 years. (H1).

U. glabra WYCH OR SCOTCH ELM 7.1 m at 16 years. (H).

U. × *hollandica* 'Klemmer' A narrowly pyramidal tall dense form of the Dutch Elm; 12.4 m high at 18 years. (H).

U. × *h.* 'Vegeta' HUNTINGDON ELM 10.3 m high at 16 years. (H).

U. parvifolia CHINESE ELM Decid tree (24 m), the two specimens planted failed to establish. N. and C. China, Korea, Japan. Z5.

U. pumila SIBERIAN ELM 16.7 m high, 7.6 m spread, 1.4 m circum at 59 years. E. Siberia, N. China, Turkestan. Z2.

UMBELLULARIA Lauraceae

U. californica CALIFORNIAN LAUREL Evergr aromatic shrub or tree (24 m); in moist places, California and Oregon; performance of two specimens planted in an exposed dry site in 1925 was submarginal and the lone survivor was in fair condition 19 years later. (H).

VACCINIUM Ericaceae

V. ovatum BOX BLUEBERRY Evergr shrub of dense compact habit, 1.5 m high, 1.5 m spread at 17 years; leaves shiny green, red stems; flowers small, white or pink; much used by florists; excellent ornamental. British Columbia to C. California. Z7.

VIBURNUM Caprifoliaceae

V. carlesii KOREAN SPICE VIBURNUM Decid free-branching shrub up to 2.5 m; leaves grayish beneath, dull green above; flowers fragrant in terminal clusters 7.6 cm across; fruit black, 0.6 cm. Korea. Z5b.

V. cinnamomifolium Evergr shrub, 1.3 m high, 1.2 m spread at 7 years; leaves glossy, leathery; flowers white in clusters 15 cm across; fruits small, shiny, blue black. China.

V. davidii DAVID VIBURNUM Evergr shrub, low, compact, moundlike, 0.7 m high, 1.5 m spread at 14 years; leaves large, leathery, glossy green, 15 cm long; flowers small, dull white in terminal clusters in June; fruit light blue; good ground cover; excellent ornamental. W. China. Z7b.

V. fragrans FRAGRANT VIBURNUM Decid shrub, 2.7 m high, 2 m spread at 9 years; flowers white in lateral and terminal clusters, sweetly scented, winter blooming; excellent. N. China. Z6b.

V. hupehense HUPEH VIBURNUM Decid shrub, erect habit, 1.5 m high at 11 years. C. China. (H).

V. japonicum JAPANESE VIBURNUM Evergr shrub, 1.8 m high; leaves leathery up to 15 cm long; flowers white, fragrant; fruit 0.8 cm long, red. Japan. (H1).



Viburnum × *juddii* JUDD'S VIBURNUM

V. × *juddii* (*V. carlesii* × *V. bitchiuense*) JUDD'S VIBURNUM Decid shrub, vigorous, 1.6 m high, 2.1 m spread at 19 years; flowers sweetly scented, pink-tinted April to May; excellent. Z5.

V. lentago 'Pink Beauty' 1 m high and 1.2 m across at 11 years. E. North America. (H).

V. odoratissimum SWEET VIBURNUM Evergr shrub, 3 m high at 4 years; leaves leathery, 20 cm long; flowers white, scented in clusters, 15 cm deep and 12 cm across; fruit red, finally black. Japan, China, India. (H1).

V. opulus EUROPEAN Highbush CRANBERRY Decid shrub, makes thicket of upright stems, 4.2 m at 15 years; 3 to 5 maplelike leaves; flowers fragrant in flat clusters in June to July; fruit red. Europe, N. Africa, N. Asia. Z2b.

V. o. 'Nanum' Dwarf form, tufted habit; 1 m high, scarcely any flowers, no fruits; useful for low dense hedge. (H).

V. o. 'Roseum' ('Sterile') EUROPEAN SNOWBALL 3.3 m high, 2.5 m spread at 10 years; flowers large, sterile, form a closely packed round head 6.3 cm across; excellent. (H).

V. plicatum (*V. tomentosum*) JAPANESE SNOWBALL The form growing on the Station is 'Grandiflora'; decid shrub with horizontal branching habit; 1.5 m high, 1.8 to 2.7 m spread at 19 years; flowers sterile, white in globular heads May to June; excellent. Japan. (H1).

V. tinus LAURESTINUS Evergr shrub, dense bushy habit, 4.5 m high, 4.2 m spread at 54 years; leaves dark glossy green; flowers white, flat, in clusters in late fall to early spring; fruits blue black; occasionally winter-kills and attacked by mildew, otherwise an excellent ornamental. S.E. Europe, Mediterranean. Z8.

VITEX Verbenaceae

V. agnus-castus CHASTE TREE, HEMP TREE Decid shrub (3 m), 2.7 m high, 2.1 m spread at 6 years; two specimens in fair condition after 29 years; leaves gray, aromatic, compound, 5 to 7 paired leaflets; flowers pale violet, fragrant, on current season's wood in September to October. Mediterranean. Z8.

WEIGELA Caprifoliaceae

Thirty-seven species, hybrids, and cultivars planted 1913–17, all decid shrubs ranging from 1.8 to 3 m or more high, spreading habit, branches tend to arch, free flowering in spring and early summer. Some of the best are:

'Abel Carriere' Flowers deep pink

'Bristol Ruby' Flowers ruby red

'Eva Rathke' Flowers reddish crimson, long season

'Gratissima' Flowers rose red

'Mont-Blanc' Flowers white, large, fragrant; vigorous

W. florida 'Foliis Purpuriis' Flowers pink, leaves tinged purple

WISTERIA Leguminosae

W. floribunda (*W. multijuga*) JAPANESE WISTERIA Decid woody vine, twining right to left; cultivars of this species best for fragrance, also longest flower clusters; white, bluish violet and light pink flowering forms now available as named cultivars and so replace the old ones planted here in 1914. Japan. (H).

W. sinensis CHINESE WISTERIA Decid woody vine, twining left to right, flowers blue violet in clusters, 18 to 30 cm long. China. (H).

W. venusta (*W. brachybotrys*) SILKY WISTERIA Woody vine twining right to left; flower clusters are thin, open, and only 7.5 cm long, hence a low-rated ornamental. Japan. (H).

YUCCA Liliaceae

Y. aloifolia Failed to establish. (H1).

Y. filamentosa ADAM'S NEEDLE Evergr with stiff upright leaves; 1 m high, long flower stalks with numerous showy creamy white florets, 5 to 7.5 cm diam; single specimen in the rockery has thrived and bloomed for well over 35 years; excellent. S.E. USA.

Y. angustissima Failed to establish. Utah, Nevada to Arizona.

Y. gloriosa Failed to establish. S. Carolina to Florida. (H1).

Y. macrocarpa Failed to establish.

ZANTHOXYLUM Rutaceae

Z. piperitum (*Xanthoxylum piperitum*) JAPAN PEPPER Shrub or small tree; of two specimens one succumbed a year after planting, the second was in fair condition at 29 years. N. China, Korea, Japan. (H).

Z. stenophyllum The two specimens planted failed to establish.

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