

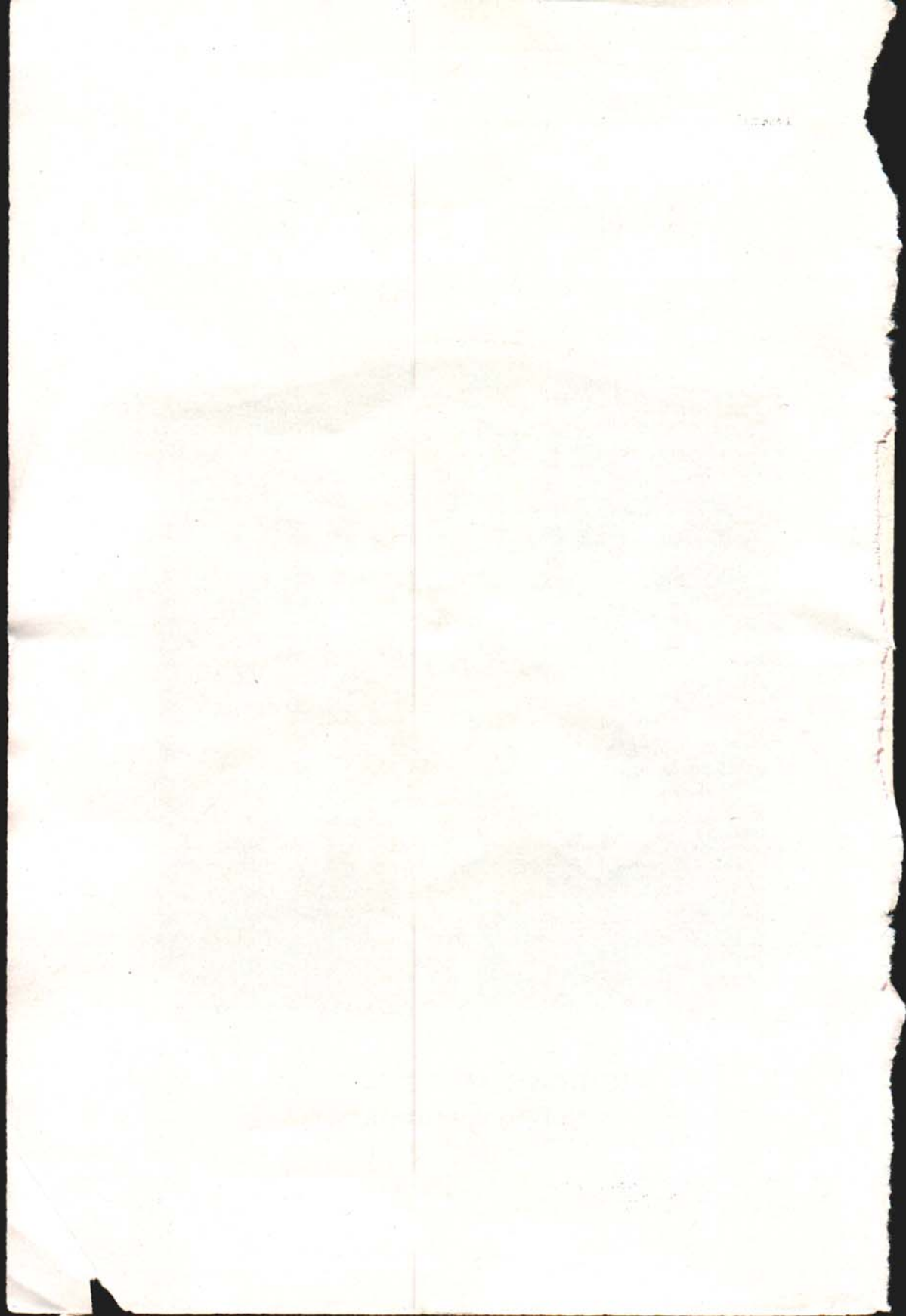
GARDEN FLOWERS

By C. E. WILDON



MICHIGAN STATE COLLEGE
EXTENSION DIVISION
EAST LANSING

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GARDEN FLOWERS

By C. E. WILDON*

Annuals are popular as garden flowers because effects can be obtained so quickly with these plants and because so many of them have exceptional merit as cut flowers. Some annuals may be found for almost every possible use or situation on the home grounds; some are specially adapted to bedding or mass effect; some are best used in the border; others are splendid to use as edging; still others are best in the rock garden;** and many are valuable for cut flowers. Annuals may be classified as hardy, half-hardy, and tender. Hardy annuals are those that will stand freezing without serious injury and so may be sown in the fall successfully; half-hardy annuals are those that will stand some frost and whose seeds may occasionally live over the winter in the soil, germinating in the spring; tender annuals are those that will not stand more than a slight frost.

Culture of the garden annuals is not difficult. Those requiring a long growing season, such as Stocks, Salvia, and Wallflowers, should be started early under glass. Where such annuals are to be grown, hotbeds or cold frames become necessary.† Hardy annuals started early may be planted out in late April or early May if they have been properly hardened off, or the seed may be sown out-of-doors in September or April. Many hardy annuals, such as Asperula, Larkspur, and Calendula, suffer during the hot part of the summer and often are rather unsatisfactory during midseason. Such annuals should be sown as early in spring as practical, that is, in March or April. As a matter of fact, many of these hardy annuals may be sown in the fall (see page 59). Half-hardy annuals may be planted out in late May, while tender annuals are best planted out in June after the weather has become sufficiently warm. Those annuals requiring a comparatively short season to complete their growth may be sown directly out-of-doors, hardy ones at any time from early April to late October excepting generally July and August, half-hardy ones from early May to July, and tender ones from late May to July.

Different annuals require different soils for best results, but good results may generally be obtained with a medium loam to a sandy loam. Some, such as Asters, Zinnias, Viola, Marigolds, and Calendulas, are much bene-

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**For annuals for the rock garden, see *Special Bulletin 228*.

†See "Hotbeds and Cold Frames," *Michigan State College Extension Bulletin 20* (Revised).

fited by the addition of manure or other organic matter and fertilizer to the soil. Others, such as Cosmos, Portulaca, and Poppies, are more satisfactory in a less fertile soil, a gravelly or sandy soil answering very well. Use of large amounts of fertilizer high in nitrogen sometimes results in excessive vegetative growth at the expense of flower production. Sometimes, this may be counteracted by using only superphosphate as a fertilizer.

When annuals are to be raised primarily for cut flowers, they are best grown in rows and cultivated in the same way as vegetable crops. Some kinds, such as Asters, Calendulas, Marigolds, Zinnias, Celosia, Chrysanthemum, and Cynoglossum, require space for the individual plants to develop properly. There are, however, a number of plants, such as Candytuft, Clarkia, Godetia, Coreopsis, Larkspur, Baby's Breath, Linaria Maroccana, Nigella, Salpiglossis, and Trachymene (*Didiscus*), which for purposes of cutting are better if grown rather close together. (See chart 1.) A common practice is to sow these annuals rather thickly in rows and they are not thinned later. They tend to come into flower sooner and, as the flowers are used, the entire plants may be pulled out.

In cases where the soil tends to crust over quickly and so retard or prevent the seedlings from pushing through, it is advisable to cover the seeds with sand. This is also advisable where seeds are started in flats or boxes. The sand covering makes it easier for the seedlings to come up and also discourages the appearance of "damping off".

Throughout the summer, regular and frequent cultivation to destroy weeds and to aerate the soil will be of great help in developing vigorous growth and abundant flowering.

Annuals that bloom over a considerable period (such as Ageratum, Phlox, Violas), will be kept in good flowering condition if the old flowers are kept pinched off to prevent seed formation.

AGERATUM HOUSTONIANUM (*A. mexicanum*)

AGERATUM, is a tender annual, normally with blue fragrant flowers, although there are also white-flowered and pink-flowered varieties. Tall varieties are excellent for cut flowers and for planting in borders, while the low compact forms are used as edgings for beds or borders. Seeds should be sown in April in a hotbed or cold frame. The plants thrive in a rich garden loam and produce their flowers all summer.

Blue Perfection and *Tall Blue*, which grow one to two feet tall, are best for cut flowers. *Blue Cap*, *Blue Ball*, *Little Dorrit*, *Fraseri*, *Little Blue Star*, and *Little Silver Star* are dwarf varieties used for edging and bedding.

Ageratum Lasseauxii (*Eupatorium Lasseauxii*) has mauve-pink flowers that are good for cutting.

ALYSSUM MARITIMUM
(*A. odoratum*)

SWEET ALYSSUM is a low-growing, compact plant covered with fragrant white flowers all summer. It will grow in any garden loam in sun or partial shade. It is a hardy annual and may be sown in the fall or early spring. It is especially valuable as an edging for beds or borders and may be used in masses in the rock gardens. The horticultural forms of var. *Benthami* are more compact and more effective for formal edging. The varieties *Little Gem* and *Little Dorrit* are most popular. *Lilac Queen* has pale lavender flowers. *Violet Queen* is a fine new dark purple-flowered variety.



Fig. 1. *Alyssum maritimum*. A good plant for edging.



Fig. 2. *Anagallis linifolia*. A brilliant flowered plant for low effects.

ANAGALLIS LINIFOLIA

PIMPERNEL, requires a sandy loam in a warm sunny situation. It is a spreading biennial or perennial, commonly treated as an annual. There are a number of varieties with color of flowers varying,—blue, purplish, rose, salmon, scarlet, or red. It is splendid for bedding, for the front of the border, and for the rock garden. Seed may be started in frames in April.

ANCHUSA CAPENSIS

CAPE ALKANET, is a blue-flowered hardy annual growing 2 feet high and thrives in any garden soil. Seeds may be sown in the fall or in the spring out-of-doors, or they may be sown in frames in March or April and the plants planted out in May. The variety *Blue Bird* is an improved form; *alba* has white flowers. They are useful as cut flowers and for planting in the border.

ANTIRRHINUM MAJUS

SNAPDRAGON, is a half-hardy biennial or perennial that is treated as an annual. Seed should be started early in a cold frame or hotbed and



Fig. 3. *Antirrhinum majus*. Fine for bedding or for cutting.

transplanted into the garden in May. Though the plants can often be brought through the winter, if heavily mulched, these old plants are seldom satisfactory. There are many types and named varieties varying in color and height. The winter-flowering or greenhouse varieties are not satisfactory for planting out-of-doors. The tall growing types (2-3 ft.) are forms of the variety *maximum*. Variety *nanum* includes those forms growing from 12 to 20 inches tall. There are also many intermediate varieties. They are all useful for the border and for cut flowers. The very dwarf forms growing from 6 to 9 inches high belong to the variety *pumilum*. These varieties, as well as many of the *nanum* varieties, are excellent for mass color effect in

bedding or as edging for borders. The *pumilum* type is not of much use for cut flowers.

Snapdragon is much troubled by a rust disease. It is difficult of control but spraying with sulfur will check the spread of the disease. Rust-resistant varieties are now obtainable.

Antirrhinum glandulosum is a hardy annual with rose-yellow flowers growing three feet high. *Antirrhinum Coulterianum* is a hardy annual with small white flowers, growing four feet high. *A. glutinosum* is a low perennial. Crosses of the latter with varieties of *A. major* have been made and have recently been introduced under the name *Rock Hybrids*. They are dwarf, profuse flowering, and useful for planting in the rock garden or for edging.

ARCTOTIS GRANDIS

AFRICAN BLUE DAISY, is a hardy annual growing about 2 feet high. The flowers are daisy-like with very pale blue ray flowers and dark blue disk and the foliage is white-woolly. It is of easy culture in any garden loam but grows best when no lime is added to the soil. Seed may be sown out-of-doors in early May.

Arctotis breviscapa is a lower growing species with orange colored flowers. The variety *aurantiaca* has flowers of a deeper orange color.

ASPERULA ORIENTALIS

BLUE WOODRUFF is a fine, blue-flowered, hardy annual, valuable for early spring color in the border or in the rock garden. Seeds may be broadcast where they are to grow in the early spring or in the fall. Fall sowing gives better results. It is usually listed as *A. orientalis azurea-setosa*.

BRACHYCOME IBERIDIFOLIA

SWAN RIVER DAISY, is a half-hardy low growing annual (8 inches to 12 inches high) with dainty blue, rose, or white flowers. It may be sown out-of-doors in May and will thrive in any garden loam. It is valuable for planting in the front of borders, for bedding, or as an edging and is useful for planting in the rock garden.

BROWALLIA DEMISSA (*B. elata*)

Is a half-hardy annual, about 20 inches tall, growing well in sun or partial shade in any garden soil. Seeds may be sown out-of-doors in May, but better results are obtained by sowing the seeds earlier in cold frames and transplanting to the garden about the middle of May. It may be planted



Fig. 4. *Calendula officinalis*. Good in the cool weather.

in the border and it is useful as a cut flower. *B. speciosa* is lower growing (about 12 inches) with white or violet-colored flowers and grows best in partial shade. Var. *major* has larger flowers.

B. viscosa is another species producing more flowers and of stronger habit. *Sapphire* is a recently introduced improved form with dark blue flowers. *B. Roezlii* (18-24 inches), blue or white with yellow throat.

CALENDULA OFFICINALIS

POT MARIGOLD or CALENDULA, is a vigorous growing hardy annual 1 to 2 feet high, with orange or yellow flowers that are excellent for cutting. It is of easy culture in a rich well-drained garden loam, but thrives best in the cool weather of spring and fall. Seeds may be sown in the open in early May or in frames five or six weeks earlier. There are a number of splendid varieties all much improved over the type form. *Orange King* is orange with a dark center; *Lemon Queen* is a yellow with a dark center; *Ball Orange* is an entirely double orange; *Ball Gold* is a yellow form of *Ball Orange*; *Sensation* is a very large entirely double long-stemmed orange, the flower heads being very flat; *Radio* is orange with quilled petals; and *Golden Beam* is a newly introduced variety with golden-yellow flowers.

CALLISTEPHUS CHINENSIS (*C. hortensis*)

The CHINA ASTER, is a half-hardy branching annual with showy terminal flower heads in varying shades and tints of crimson, pink, violet, purple, blue and white. There are many types and varieties, all useful for cut flowers.



Fig. 5. *Callistephus chinensis*. A popular garden plant and cut flower.

The seed may be sown in sterilized soil in a cold frame in early March or out-of-doors in early May, selecting only the early and mid-season varieties for the late sowing as the late varieties flower too late in the fall when sown as late as May. Asters thrive in a rich moist well-drained sandy loam that has had a large amount of rotted manure mixed into it. Additional fertilizer may be worked into the soil in small amounts (2 to 4 pounds per 100 square feet) when the plants begin to grow rapidly, but should not be ap-

plied after the flower buds appear. They should be watered regularly and thoroughly during periods of drouth.

Asters are attacked by several insects and by two serious diseases. Aphids, leaf hoppers, and tarnished plant bugs are the most important of the insect pests. For the aphids and leaf hoppers, regular and frequent spraying with nicotine sulphate and pyrethrum sprays is effective. The tarnished plant bug is more difficult to control but the above-mentioned sprays will help materially especially if soap or penetrol is added to the spray.

The two diseases found infecting asters are aster wilt and aster yellows. The former is caused by a slow-growing, soil-inhabiting fungus. It attacks the roots of seedlings or young plants but is not immediately observable in its effects because of its slow growth. Examination of root systems will show browned and decayed roots. The external evidence of the disease is a rather sudden wilting of the plant as the flower branches become distinct. Often, a yellowed unhealthy appearance develops first and is often mistaken for aster yellows. Control of the disease consists in sterilizing the seed and growing the plants in sterilized soil until they are ready to plant in the garden. If the disease attacks the plants in the field it seldom does any serious damage before the flowers are produced.

Aster yellows is a so-called virus disease that is spread by leaf hoppers, and there is no known remedy other than keeping leaf hoppers off the plants. Spraying is only partially effective. Commercial growers raise asters under a special grade of cloth similar to cheese cloth to keep out leaf hoppers.

There are a number of types and a great many varieties of asters. The types may be classified as (1) singles, one or two rows of florets developed; (2) incurved, all florets having the corollas developed and curving in toward the center of the flowers; (3) reflexed, the corollas all developed and curving outwards; and (4) quilled, the corollas being developed and tubular. There are two types of quilled, one in which both ray and disk florets are alike and the other in which the disk florets are much shortened, as represented by the *German Quilled* or *Sunshine* Asters. All of these classes are represented by tall (2 to 3 feet), intermediate (1 to 2 feet), and dwarf (less than one foot) forms. The branching habit also varies, as branches erect, branches less erect making a pyramidal form, branches spreading, and those with few branches. Some of the varieties listed are: *Giant Branching* or *American Branching*, 2½ to 3 feet, late flowering, loosely incurved; *Beauty*, 2 to 3 feet, late, large, long-stemmed flowers, petals incurved at center, reflex at outside; *Crego*, 2 feet, mid-season, flowers large with long twisted and curled reflex petals. *California Giant*, 2½ to 3 feet, late flowering *Crego* type; *Comet*, 2 feet, mid-season, semi-double, similar to *Crego*; *O'srich Feather*, 2½ feet, similar to *Crego*; *Royal*, 2 feet, an early branching type; *King*, 2 feet, branching, mid-season to late, long quilled incurved petals; *Imperial*, short quilled, intermediate, early; *Sunshine*, single, 2 to 3 feet, mid-season, disk

florets with corollas slightly developed; *Astermum*, 2 feet, *Comet* type; *Early Wonder*, 16 inches, early *Comet* type; *Astermum*, 2 feet, *Comet* type; *Queen of the Markets*, 1½ feet, early, reflex; *Mignon*, very dwarf.

CAMPANULA

BELFLOWER, includes a few annual and biennial species.

CAMPANULA MEDIA

CANTERBURY BELLS, is a hardy biennial, with purple, blue, lavender, pink, or white flowers that are excellent for cutting. Seed should be sown in late July and the plants transplanted to the garden as soon as large enough. They should receive a mulch as protection through the winter. They require a rich well-drained soil. Variety *calycanthema* is the CUP-AND-SAUCE form; *flore pleno* has double flowers; variety *gigantea* has very large flowers and strong vigorous growth; variety *imperialis* has strong pyramidal habit. A new strain flowers six months after sowing the seed, which should be sown in frames in February or March.

Other annual Bell flowers are *C. drabifolia* (*C. attica*), 3 to 4 inches high, with blue flowers; *C. ramosissima* (*C. Lorei*), 8 to 12 inches high, violet flowers with white base (variety *alba* is all white); *C. macrostyla*, growing 1 to 2 feet, has purple flowers. The last is especially fine and well worth growing.

CELOSIA

COCKSCOMB is a tender annual with showy flower heads of red, crimson, pink, orange, or yellow. They thrive in a moist, rich, light, well-drained soil in a warm situation. Seed may be sown in cold frames in April or out-of-doors in late May. Naturally disseminated seed survives the winter and will germinate in warm weather in late spring, there are two main types; the plumose and the crested.

CELOSIA ARGENTEA (*C. pyramidalis*)*

The PLUMY CELOSIA, grows 1½ to 4 feet high and is a good cut flower. The flowers may be dried and used with other dried flowers. There are a number of varieties: *Ostrich Plume*, feathery; *Pride of Castle Gould*, *Thompsoni magnifica*; *Heatherdell*; *Childsü*, *Chinese Wool Flower*; and *Liliput*, growing only one foot high. *Fire Feather* is a new introduction with bright crimson flowers growing one foot high; *Golden Feather* is a yellow flowered form. *Flame of Fire* is a fine bedding variety growing to 2 feet.

CELOSIA CRISTATA

COCKSCOMB includes the crested sorts mostly under 10 inches in height, but some growing to 2 feet. The dwarf forms have large dense

*Also catalogued as *C. plumosa*.

flower heads and are used for bedding and edging, but are not valued as cut flowers. Some common varieties are: *Glasgow Prize*; *Empress*; *Pres. Thiers*; *Rosea*; *nana aurea*.

Varieties of both *C. cristata* and *C. argentea* cross readily, many intermediate forms resulting. *C. japonica* seems to be such an intermediate form with the tall branching habit of *C. argentea*, the plumes being replaced by small crested flower heads.

CENTAUREA

Includes a number of important garden annuals. They thrive in ordinary garden loam.

CENTAUREA CYANIS

BACHELOR'S BUTTON or CORN FLOWER, is a hardy annual 2 feet high producing flowers in white, blue and pink. Seed may be sown out-of-doors in the fall or any time in the spring. The seedlings may be thinned if the plants are to be used for bedding, but, for cut flowers, they should be sown in rows, and need not be thinned.

Nana compacta Victoria, is a dwarf variety for edging or low bedding. *Jubilee Gem* is a newly introduced dwarf form. *Boy Blue* and *Pinkie* are fine new varieties.



Fig. 6. *Centaurea Cyanis*. An easily grown hardy annual.

CENTAUREA MOSCHATA

SWEET SULTAN is a hardy or half-hardy annual 1½ to 2 feet high, producing fragrant, thistle-like flowers in purple, lilac or white that are excellent cut flowers. Seed may be sown in early May out-of-doors or may be started earlier in cold frames. The variety *alba* (*C. margaritae*) has very fragrant white flowers; *imperialis* (*C. imperialis*) has larger flowers and is taller. *C. Mariae* is a yellow flowered Sweet Sultan. There are several varieties: *flava*; *suaveolens* (*C. suaveolens*); *Honeymoon*.

CENTAUREA AMERICANA

BASKET FLOWER is a hardy annual that grows 2 to 5 feet high and produces rose, flesh, or purplish flowers of the type of *Sweet Sultan* but larger.

Centaurea depressa is a low-growing annual with showy blue flower heads. *C. Clementei* grows 3 feet high and has silvery foliage and yellow globose flower heads. *C. Cineraria* (*C. candidissima*), DUSTY MILLER, is a popular bedding plant with silvery foliage much used for edging. *C. gymnocarpa* is a perennial silver-foliaged form grown as an annual and used for edging.

CHEIRANTHUS CHEIRI

WALLFLOWER is a half-hardy or almost hardy perennial, but certain early flowering varieties may be treated as annuals. They thrive in a well-drained garden loam in a sunny location. The strong, sweet, cedar-like fragrance, rich brown and yellow colors, and long stems make them specially valuable as cut flowers. Seed should be sown in February or early March in hotbeds and the plants transplanted to the garden in May. The seeds may also be sown in September and the plants carried over winter in frames. *Paris Market*, *Royal Standard* and *Early Wonder* are recommended for trial.

C. kezwensis is a hybrid form that will flower in October if the seeds are sown in March. The flowers are orange-yellow, changing to rich lavender.

C. allioni is a hardy perennial which may be treated as an annual. The seeds may be sown in the open in early spring or in the fall.

CHRYSANTHEMUM

Chrysanthemum carinatum, *Chrysanthemum segetum* and *Chrysanthemum coronarium* are nearly hardy annuals of easy culture in any well-drained garden loam and produce flowers that are excellent for cutting. Seeds should be started in frames in April.

C. carinatum, (*C. tricolor*), growing 2 to 3 feet high, has daisy-like flower heads with rays that are typically white with a yellow ring at the base, and disk florets purple. There are numerous varieties: *Burridgeanum* has a ring of red above the yellow on the rays; *venustum*, (*C. venustum*) has rays that are red with a yellow base; *purpureum*, (W. E. Gladstone) is like *venustum*; *Eclipse* (Chameleon) has all yellow ray florets; *atro-coccineum* is scarlet; *Dunnetti* is double-flowered; *Northern Star* has large white flowers; *Golden Feather*, (*C. annulatum*) is a form of *Burridgeanum* with yellow foliage.

Chrysanthemum coronarium grows 3 or 4 feet high and is of bushy habit, with white, cream, or yellow flowers. There are single, semi-double, and double-flowered as well as dwarf forms. The most popular are the double-flowered forms. *Coronet* is a large single yellow; *Golden Gem* is dwarf and yellow flowered; *Golden Queen* is similar; *White Pearl* is similar but white; *Primrose Gem* is yellow-flowered and dwarf; *Golden Glory* has large, single, deep yellow flowers on long stems.



Fig. 7. *Chrysanthemum coronarium*. Good for border planting and for cutting.

Chrysanthemum segetum, CORN-MARIGOLD, grows 1 to 1½ feet high with yellow daisy-like flowers. *Pumilum* includes the dwarf forms growing 8 inches high. *Grandiflorum* are large flowered tall (2 feet) forms of which there are several varieties: *Morning Star* (Gloria), large light yellow flowers; *Evening Star* (Helios), large golden-yellow flowers; *Eastern Star*, large primrose-yellow flowers; *Gloria*, large yellow flowers.

CHRYSANTHEMUM PARTHENIUM

FEVERFEW is a perennial that may be treated as an annual. It has small white daisy-like flowers that are excellent for cutting and grows 1 to 3 feet high. Variety *tubulosum* (commonly listed as *Matricaria eximia plena* or as *Matricaria grandiflora**) has double white flowers. *Matricaria capensis*,† as listed by seedsmen, seems to be identical. This species has many forms and seems to be much confused botanically. *Matricaria capensis*, as listed by seedsmen, seems to be identical with *tubulosum* but is referred to *Matricaria parthenoides* and to *C. Parthenium flore pleno*. It is double white and 2 feet high. *Chrysanthemum inodorum* or *Matricaria inodora* is listed as an annual but seems to be perennial. Var. *plenissima*,* the double-flowered form, is very good for cutting, *Chrysanthemum Parthenium aurcum* (*Pyrethrum parthenifolium aureum*) is a form with golden foliage used for bedding.

**Matricaria inodora plenissima* is also listed as *M. grandiflora*.

†That is, *Matricaria parthenoides*.

CLARKIA ELEGANS

Is a hardy annual with purplish, rose, or white flowers, growing 2 to 4 feet high. There are single and double forms and pink, salmon, scarlet, crimson, and orange-flowered varieties. They thrive in a well-drained light soil in sun or partial shade. Seeds may be sown any time in the spring. They make good cut flowers and are showy in masses in the border.



Fig. 8. *Clarkia pulchella*. A graceful annual.

Among the best varieties are *Salmon Queen*, *Scarlet Queen*, *Firesheaf La France*, and *Albatross*, a new white-flowered variety. *Glorious* is a new crimson-scarlet variety.

Clarkia pulchella is more dwarf, branching and has rosy lilac to white flowers. There are dwarf compact forms and semi-double flowered varieties. Variety *holopetala* (*C. integrifolia*) is a variety with entire petals.

COREOPSIS

CALLIOPSIS is a hardy annual producing its brown or yellow flowers abundantly all summer. Seed may be sown out-of-doors in early May.

COREOPSIS DRUMMONDII

GOLDEN WAVE has pure yellow flowers, is of compact growth and grows 12 to 18 inches high. It is a splendid bedding or border plant. *C. tinctoria* (*Calliopsis elegans*) is taller, grows 1 to 3 feet, and typically has yellow rays that are maroon-brown at the base. There are a number of varieties: *nana* is a dwarf, compact form; *atropurpurea* (*C. nigra*) has rays entirely dark maroon; *nigra speciosa* is a specially fine variety growing 2 feet high with rays of rich dark maroon; *marmorata* has rays of yellow marbled brown-red; *tigrina* is a dwarf form in which the brown-maroon petals are



Fig. 9. *Coreopsis tinctoria*. Bright, attractive and good for cutting.

reflexed, giving a quilled effect; *bicolor* is dwarf with yellow rays, red-brown at the base. Other varieties are *Beauty*, *Crimson King*, *Dazzler*, *Evening Star*, *Star of Fire*, *The Garnet*, *The Sultan*, *Tiger Star*, and *Morning Star*.

Coreopsis cononata grows 1 to 2 feet high with orange-yellow rays spotted brown. *C. cardaminefolia* has crimson flowers and is compact in habit. *Thelesperma hybrida* (*Cosmidium Burridgeanum*) is a hybrid of *Thelesperma trifidum* and *Coreopsis tinctoria*, with rich brown flowers much resembling *atropurpurea*.

COSMOS BIPINNATUS

COSMOS is a hardy annual, producing daisy-like flowers of white, pink or crimson. Seed may be sown early in frames or may be sown out-of-doors in late April. The plants should be thinned or planted to stand 18 inches or 2 feet apart. They flower most abundantly in a well-drained, gravelly soil that has not been fertilized. The type form flowers in October and grows 5 to 8 feet high. There are numerous varieties with both single and crested forms. The variety *praecox* includes the early flowering kinds which begin flowering the end of July. They are lower growing, not so large, and have numerous color varieties in both single and crested types.



Fig. 10. *Cosmos bipinnatus*. An excellent cut flower.

C. sulphureus, YELLOW COSMOS, is very late flowering and not very satisfactory. Seed should be started in March in frames and should be planted in infertile, well-drained, gravelly soil. It has been offered for sale as variety *Klondyke*. *Orange Flare* is a recently introduced early-flowering variety. *C. diversifolium*, *Black Cosmos*, is a tuberous-rooted species growing about a foot high and having dark, velvety red flowers.

CUPHEA

There are several species in this group valuable for out-of-door planting.

C. miniata grows about 12 inches high, of spreading habit with rose-scarlet flowers. It is a hardy annual and is valued for low bedding effects. Seed may be sown out-of-doors in May in well-drained garden soil.

C. lanceolata (*C. Zimapanii*) is purple-flowered, erect-growing, reaching a height of 2 to 4 feet. It is a hardy annual, and seed may be sown in the early spring or fall.

C. purpurea is perhaps a hybrid form. It much resembles *C. miniata* with flowers of various colors—pink, rose, rose-scarlet and purple. The plant is more erect than *C. miniata*, attaining a height of 20 inches or more. The Avalon Hybrids are listed by seedsmen.

Cuphea ignea (*C. platycentra*) CIGAR PLANT is a well known scarlet-flowered species.

CYNOGLOSSUM AMABILE

CHINESE FORGET-ME-NOT is a hardy annual growing 2 to 3 feet high with blue forget-me-not-like flowers that are splendid for cutting. Seed may be sown in fertile, well-drained soil in September, April, or May. The fall-sown seed will flower earlier in the summer. *Rosea* is a rose colored variety; *alba* has white flowers. *Blue Firmament* and *White Firmament* are desirable new varieties.

Cynoglossum linifolium is *Omphalodes linifolia*, VENUS' NAVEL-WORT. It grows about a foot high with glaucous gray foliage and white flowers. It thrives in a well-drained light soil and is excellent for the rock garden. Variety *caerulescens* has bluish flowers.

DELPHINIUM

LARKSPUR requires a rich well-drained sandy garden loam and a sunny situation. Seed may be sown out-of-doors in April or May or may be sown in the fall in September. *Delphinium Ajacis* grows 18 to 30 inches high and



Fig. 11. *Delphinium Ajacis*. Annual Larkspur.

there are numerous color forms: *caelestinum*, light blue; *caeruleum*, indigo blue; *roseum*, pink; *album*, white; *nanum*, dwarf hyacinth-flowered in various colors. *D. consolida*, BRANCHING LARKSPUR, is a little taller with fewer flowers and more branching. There are many varieties probably more or less hybridized with *D. Ajacis*. There are two types, stock-flowered and Imperial. To the former belong the varieties: *La France*, salmon-pink; *Los Angeles*, salmon-scarlet; *Empress Rose*, pink. To the latter (var. *imperialis*) belong double, flowered varieties: *Pink Delight*, salmon-pink; *The Empress*, salmon-pink, listed as

Emperor type. To the tall forms is given the name Giant Imperial. These branch freely from the base giving more and longer flower stems. Good varieties are: *Miss California*, salmon-pink; *Blue Spire*, dark blue; *Lilac Spire*, lilac; *White Spire*, white; *Exquisite Pink Improved*, salmon-pink; and *Exquisite Rose*, rose. *Delphinium cardiopetalum* is an especially fine blue-flowered species growing about a foot in height. It is a splendid plant for edging or for bedding.

Some varieties of the perennial *Delphinium grandiflorum*, (*D. sinense*) may be treated as annuals for bedding. Seed should be started in hotbeds in February or sown in the fall in cold frames. Varieties suited to this purpose are known as BUTTERFLY LARK-SPURS: *album*, white; *Azure Fairy*, blue; *Blue Butterfly*, deep blue; *Blue Gem*, deep blue; and *Lavender*, lavender. Other annual species are *D. divaricatum*, and *D. Parryi*.

DIANTHUS CHINENSIS HEDDEWIGII

JAPANESE PINKS, although possibly perennial in mild climates, are to be treated as hardy annuals in Michigan. They thrive in a well-drained gravelly or sandy loam. Seed may be sown in cold frames in March or April and the plants set out 6 inches apart in May. They will commence flowering in July and continue all summer, although old flowers should be removed for best results. There are many horticultural varieties: *Crimson Belle*, crimson; *Fireball*, double scarlet; *Pink Beauty*, double pink; *Eastern Queen*, single rose; *Pink Beauty*, double pale pink; *Purity*, double white; *Salmon Queen*, double salmon-pink; *Rosalind*, double rose; *The Bride*, single white, purple eye; *Morning Cloak*, dark purple with white margin; *Black Prince*, silver-edged dark purple petals; *Violet Queen*, double pale violet; *Morning Glory*, single crimson, with white edge; *Cyclops*, single crimson, white eye; *Scarlet Queen*, scarlet. The variety *laciniatus* is a type with deeply cut petals; *Lucifer*, double orange-scarlet; *Snowdrift*, double white; *Vesuvius*, orange-scarlet; *Mirabilis*, single mixed colors. Variety *diadematus* is a garden strain with large flowers; *imperialis* is a strain of tall, double flowered.

Dianthus, "Sweet Wivelsfield," is a biennial that may be treated as a hardy annual. It is said to be a hybrid of *D. barbatus*, SWEET WILLIAM and *D. Allwoodii*. The plant resembles SWEET WILLIAM, though the flowers are much larger and less compact. "Delight" is a new hybrid of "Sweet Wivelsfield" and *D. Roysii*. It is perpetual flowering.

Certain strains of *D. caryophyllus*, CARNATION, are fine for cut flowers. Although perennial, they are to be treated as hardy annuals. Seed should be sown in frames in February or early March and the plants planted out in May. They should begin flowering in July. Among the best kinds are the *Chabaud* strains, the *Marguerite Carnations* and the *Margaret Carnations* (*D. caryophyllus Margaritae*). The *Grenadin Carnations* are also perennial, but flower the first year from early sown seeds.

D. latifolius is another perennial that flowers the first season from early sown seeds and is very fine for bedding effects or for planting in the border. It grows about 10 inches high and produces various colored flowers from early July to frost.

DIMORPHOTHECA AURANTIACA

AFRICAN ORANGE DAISY is a nearly hardy perennial treated as an annual, growing about a foot high and producing an abundance of orange-yellow daisy-like flowers. It thrives in a well-drained garden loam in a sunny location. Self-disseminated seeds survive the winter and germinate in the spring. Hybrid forms, *D. aurantiaca hybrida*, with flowers varying in color from deep orange to white, are the result of crossing the type with *D. Annuua* (*D. pluvialis*). The latter is an annual with rays that are white above and purplish beneath. It has a variety, *ringens*, in which a blue zone appears on the white rays.

D. Ecklonis, growing 2 feet high, is a perennial treated as an annual in Michigan. The flower heads are much larger, whitish, with a dark blue disk. Seed should be sown in March in a cold frame and the plants set out in late May to stand about 16 inches apart.



Fig. 12. *Dracocephalum Moldavica*.
Of splendid habit.

DRACOCEPHALUM MOLDAVICA

ANNUAL DRAGON HEAD thrives in a medium rich sandy loam in a moist, partially shaded position, although it will do well in the open. Its dark blue-violet long-stemmed flowers are excellent for cutting. It grows about 2 feet high. Seed may be sown any time in the spring. The plants should be thinned or transplanted to stand about 18 inches apart. There is a white-flowered variety.

EMILIA FLAMMEA (*Cacalia Coccinea*)

TASSEL FLOWER is a tender annual with small orange or scarlet flower heads. It is a slender erect plant producing its flowers throughout the summer. Seed may be sown out-of-doors in late May. It is most effective in masses and requires little thinning. It may also be used as a cut flower. It thrives in a well-drained sandy loam but will grow well in a heavier soil. It grows best in warm weather and should be given a sunny position in the border.

The variety *lutea* (*Emilia lutea*) is sometimes catalogued as a lighter colored or golden yellow-flowered form. It is a good plant for the rock garden where it should be sown broadcast in patches. For cut flower purposes it should be sown rather thickly in rows.

ERYSIMUM PEROFSKIANUM

Thrives in any well-drained garden loam. It has brilliant orange flowers on stems from 1 to 2 feet high that may be used for cutting. It is a hardy annual and seeds may be sown in the fall or early spring. Variety *nanum* is dwarf; *Orange Gem* is an improved form of the type. *Erysimum linifolium* (*Cheiranthus linifolia*) is biennial or annual, producing many deep, lavender flowers in September and October. Sow seeds in frames in April.

ESCHSCHOLTZIA CALIFORNICA

CALIFORNIA POPPY is a hardy annual that thrives in any well-drained soil. Seed may be sown any time in the spring or may be sown in September for flowering the next year. The flowers are typically orange, although there are yellow, cream, pink, and rose colored forms, and they are excellent as cut flowers if they are cut just as they are opening. They also make splendid mass effects in bedding or borders. It seems to be a variable plant and there are many forms and varieties: *hybrida* includes various color forms; *maritima* is a prostrate form with yellow flowers, orange spotted; *Douglasii*, is slender and early flowering; *caniculata* has flowers with fluted petals. There are also double-flowered forms.

Eschscholtzia tenuifolia is low growing (6 inches high) with small light yellow flowers. The variety *Miniature Primrose* is a form that is splendid as an edging or for the rock garden.

EUPHORBIA MARGINATA (*E. Variegata*)

SNOW-ON-THE-MOUNTAIN is a hardy annual that thrives in a well-drained garden loam in a sunny position. Seed may be sown any time in the spring or in late fall. It is an excellent plant for the border, bedding or for cutting.

E. heterophylla, ANNUAL POINSETTIA, requires much the same treatment, but is not hardy. Seed should be sown in March in a cold frame.



Fig. 13. *Gaillardia pulchella picta* Lorenziana.
The bright flowers are good for cutting.

Gaillardia amblyodon has maroon or brown-red flowers and has probably influenced the development of varieties of *G. pulchella picta*.

GAMOLEPIS TAGETES

Is a splendid half-hardy annual with small, bright orange flowers produced abundantly. It grows 12-15 inches high, of excellent bushy habit. It may be sown out-of-doors after the middle of May. It is excellent for mass effect or for a low hedge. An improved form of more compact habit about 10 inches high is obtainable.

GAURA LINDHEIMERI

GHOST FLOWER is said to be perennial on dry soils but is to be treated as an annual in Michigan although it very often survives the winter. It thrives in a light well-drained soil but will grow well in heavier soils. The seeds should be sown in March in a cold frame and the plants set out in early June, 12 to 18 inches apart. The plant makes a compact clump of foliage about a foot high from which appear the white flowers on 3-foot stems. It is valuable for planting in the border or for the rock garden.

GAILLARDIA PULCHELLA

BLANKET FLOWER requires a light, open, well-drained soil in a sunny position. They are useful for bedding and borders and are splendid for cutting. There are numerous varieties, varying from yellow to rose-crimson and bicolor. Numerous improved garden varieties are classified as var. *picta*. *Indian Chief* is a dwarf rose-crimson; *Josephus* has rays that are red with a broad yellow band; variety *Lorenziana* is a horticultural form in which ray and disk florets are developed as tubular florets; *The Bride* is a white colored form; *Beautiful Star* is maroon and yellow. Seed may be sown in cold frames in April or out-of-doors in May or in the fall.

GAZANIA LONGISCAPA

PEACOCK FLOWER, is a nearly hardy long-season, annual, or biennial that should be sown in early August and the young plants carried over winter in a well protected frame. It thrives in a medium garden loam in a sunny situation. It grows about 8 inches high and produces rich orange-yellow daisy-like flowers in July and August. It is useful for the front of the border and for the rock garden.

GILIA

Includes a large number of hardy annual plants of easy culture in any soil, although they prefer a well-drained sandy or gravelly one. The seeds should be sown in April or May where the plants are to grow. In general they are valuable for low mass effects, dwarf kinds for edgings and for general use in the rock garden. In a poor dry soil, they are likely to flower better and to prove more satisfactory. *C. capitata*, THIMBLE FLOWER, has blue flower heads and grows from 12 to 30 inches high. There is also a white flowered form—variety *alba*. *G. laciniata* is similar but more dwarf and compact with smaller flowers. *G. tricolor*, BIRD'S EYE GILIA, is an annual alpine of splendid habit producing quantities of white, violet, or yellow and



Fig. 14. *Gilia tricolor*. Graceful and easily grown.

brown-purple flowers in early summer. Seed of this may be sown in the fall. There are several varieties: *nivalis*, with all white flowers; *rosea*, with rose flowers; *rubro-violacea*, with reddish violet or brownish flowers; *nana*, a dwarf form. *G. dianthoides* (*Fenzlia dianthiflora*), FRINGED PINK, is a tufted form, from 4 to 6 inches high with lilac or purple flowers. It is excellent as an edging for borders or for planting in masses in the rockery. *G. micrantha*, usually listed as *Leptosiphon*, is another tufted alpine, 3 or 4 inches high, bearing very small flowers in brilliant hues of orange, yellow, white, pink, rose, lilac, or red. It is excellent for a low bedding effect, as an edging to the annual border, as a ground cover under spring flowering bulbs or in bare spots in the rock garden. *G. densiflora*, WHITE PHLOX GILIA, grows 1 to 2 feet high with flower heads of white or lilac. *G. androsace*, with pink, lilac or white flowers, is similar. *G. dichotoma*, EVENING SNOW, 6 inches high, has large fragrant white flowers with brown margin

that open in the late afternoon. *G. coccinea* (*Collomia coccinea*), growing 12 to 18 inches high, has brick-red or rose-colored flowers terminating the branches.

G. grandiflora (*Collomia grandiflora*), 1 to 2 feet high, has dense terminal flower heads of buff or salmon. *G. liniflora*, of tufted habit, 10 to 20 inches high, has large white or bluish flowers. *G. tenuiflora* is of delicate branching habit, 18 inches high, and has pink funnel-form flowers. *G. achilleaeifolia*, growing 2 to 3 feet high, is a branching bushy plant with large violet or purple-blue flowers. There are white and rose colored forms and *major*, a larger flowered variety. *G. multicaulis* is similar but with smaller flowers. *G. abrotanifolia*, 18 inches high, has large, pale blue flowers.

GODETIA

FAREWELL-TO-SPRING thrives in any well-drained garden loam either in sun or partial shade. Seed may be sown in April or in late fall where they are to grow or may be started in frames and transplanted to the garden in May. *Godetia amoena* grows 18 to 36 inches high, with erect satiny flowers that are red-pink, lilac-crimson, or pink with a red center. They are excellent for planting in the border and for cutting. There are numerous forms and varieties: *G. Schavaminii* is a double flowered pink form; the gladiolus-flowered type has large flowers, several being open at the same time much like the gladiolus; *Rosy Morn* is a double coral pink. *G. Bottae*, growing 18 inches high, has large nodding, lilac colored flowers. *G. grandiflora* (*G. Whitneyi*) is low-growing (4 to 12 inches). The flowers vary in color from white to carmine, crimson, and rose and are very large, being from 3 to 5 inches in diameter. It is specially valuable for bedding and masses in the border or rock garden. The Azalea-flowered Godetias are typical of the newer varieties. In these the stems are shorter jointed, thus crowding the flowers to the ends of the shoots. There are so many varieties, it is impossible to list more than a few: *Duchess of Albany*, white; *Duke of York*, scarlet; *Gloriosa*, blood-red; *Lady Albemarle*, deep crimson; *Rosamond*, pink; *Thunderbolt*, dark crimson; *Lady Satin Rose*, rose; *Sunset*, rose-carmine; *Scarlet Queen*, scarlet; *Sweetheart*, double, light pink.

GYPSOPHILA ELEGANS

ANNUAL BABY'S BREATH is a hardy annual that for best results should have a well-drained sandy or gravelly loam and the soil should have some lime in it. Seed may be sown any time from late April to late July, succession sowing being advisable. The small white flowers are fine for cutting and for using with other flowers. It grows about a foot high and may be planted in the rock garden or the border, although it does not last long in flower. There are several varieties: *alba grandiflora* with large white flowers is most popular; *rosea* has rose flowers; *carminea* has carmine-rose flowers.

G. muralis, growing about a foot high and bearing small rosy flowers, makes a dense compact plant and is useful for planting in borders, the rock garden and wall garden.

HELIANTHUS ANNUUS

COMMON SUNFLOWER thrives in a well-drained garden loam in a warm sunny situation. It is a hardy annual. There are many varieties, varying in color from dark red to yellow, in height from 3 to 12 feet, and in flower form: *californicus*, 5 feet high, has large double flowers; *citrinus*, 5 feet, light yellow; *globosus fistulosus*, 6 feet, large double globular flower heads; *nanus fl. pl.*, 3 feet, double flower heads; *annuus purpureus* (Maroon Prince), 3 feet, maroon ray florets; *flore pleno* Sutton's Red, 6 feet, ray florets yellow with broad chestnut brown band at base; *Dr. Wilson's Double Red*, 4 feet.

HELIANTHUS DEBILIS (*H. cucumerifolius*)

The CUCUMBER-LEAVED SUNFLOWER is better for cut flowers and is fine for borders. There are numerous varieties, all under 4 feet high: *purpureus*, ray florets light pink to deep purplish; *Stella*, golden yellow; *Orion*, ray florets with margins rolled back giving a cactuslike appearance; *Dazzler*, florets chestnut, tipped orange; *Excelsior*, florets yellow with broad zones of brown, purple and red; *Perkeo*, 1 foot high; *Liliput*, 6 to 8 inches high, single yellow.

Helianthus argophyllus, *Silvery-leaved Sunflower*, has silvery foliage and grows about 5 feet high.

HELIOPHILA

Is an annual that has been widely advertised of recent years. It is valuable for planting in the border and the rock garden. *H. pilosa* is a variable species with blue flowers growing 6 to 20 inches high. *H. leptophylla* is more compact, 9 inches high, and the bright blue flowers have a white center. *H. linearifolia* grows 12 inches high.

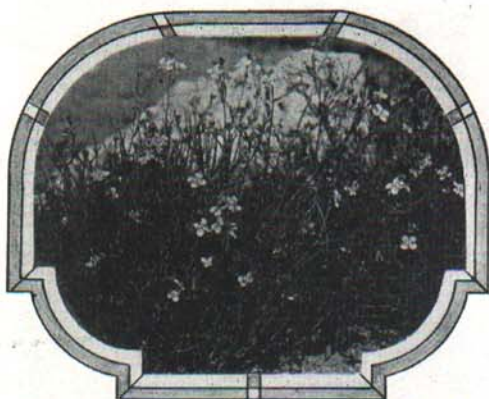


Fig. 15. *Heliophila leptophylla*. A plant for the border.

HIBISCUS TRIONUM (*H. africanus*)

FLOWER-OF-AN-HOUR, or TRAILING HIBISCUS, is a bushy annual, 1 to 2 feet high, that thrives in a deep rich loam, in a warm sunny situation. Self-disseminated seeds often survive the winter and germinate in the spring. Seeds may be sown in early May where the plants are to grow. The flowers are pale yellow with a brown center. It is valuable for

planting in the border or in the rock garden. It is usually listed in seed catalogues as *H. africanus*. The variety *major* has much larger flowers and is listed in catalogues as *H. Trionum*.

H. Manihot, SUNSET HIBISCUS, is a perennial treated as an annual, growing 3 to 9 feet high and producing flowers that are pale yellow or white with a purple center and 4 to 9 inches in diameter. Seed should be started in hotbeds in early March and transplanted to the garden in late May. The roots may be dug in the fall and carried over the winter in the same way as dahlia tubers.

HUNNEMANNIA FUMARIAEFOLIA

The MEXICAN TULIP POPPY, or the GIANT YELLOW TULIP POPPY, thrives in a dry sandy soil in a warm sunny situation. It is a half-hardy perennial, treated as an annual in Michigan and grows 1 to 2 feet high. It is an excellent cut flower. Seed may be sown in May out-of-doors or may be started in April in a hotbed. In the latter case, 4 or 5 seeds should be sown in a small pot as the plants do not stand transplanting. *Sun-lite* is a newly introduced variety with larger double flowers.

IBERIS

CANDYTUFT thrives in a rich well-drained garden loam. *Iberis amara*,

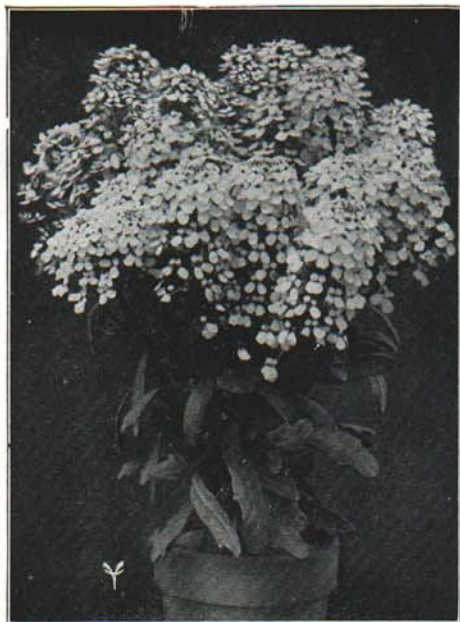


Fig. 16. *Iberis amara*. Good for cutting.

the COMMON ANNUAL CANDYTUFT, growing 6 to 12 inches high, with white flowers, is chiefly of value for bedding, as an edging to borders, or for the rock garden, although the flowers may be used for cutting also. Most of the horticultural forms are of the variety *coronaria*, the ROCKET CANDYTUFT; *Empress*, Spiral White; and *Giant Snowflake* are good cut flower varieties, growing 18 inches high; the *Giant Hyacinth Flowered* (*Hyacinthiflora*) has heavier flower spikes. *Little Prince* and *Tom Thumb* are best for edging, growing but 6 inches high. There are also colored forms, rose, pink, carmine, which possibly are hy-

brids of varieties of *I. amara* and *I. umbellata*. *I. umbellata*, ANNUAL CANDYTUFT, grows 6 to 20 inches high, with purplish or white flowers

and is more branching in habit. There are numerous varieties in crimson, rose, and white. *I. nana*, *I. pumila* and *I. hybrida* are dwarf horticultural forms resembling *I. amara*, and possibly are hybrids of the two species.

IMPATIENS BALSAMINA

GARDEN BALSAM is a hardy annual that thrives in a rich sandy soil. Seed may be started early in frames or may be sown out-of-doors in April or the preceding fall. Several transplantings and pinching out the ends of the growths will make the plants dwarf and compact. They are excellent for the border or for bedding, but the plants should have sufficient space between them to permit proper development. There are many varieties and forms: *camelliaeflora*, the CAMELLIA-FLOWERED BALSAM, has fully double compact flowers; the *Rose-flowered* has double rose-like flowers; *Miniature* is dwarf.

Impatiens Holstii, PATIENCE PLANT, should be started early in frames and planted out in early June. *I. Roylei* (*I. glanduligera*) is a coarse growing half-hardy annual Balsam growing 4 feet high. It is best grown in a shady situation and produces large dark purple flowers in August or September. *White Queen* is a white flowered variety. *I. Delavayi*, *Chinese Balsam*, a half-hardy annual, is a recently listed species, described as having "solitary yellow flowers with purple blotches," growing 4 feet high.

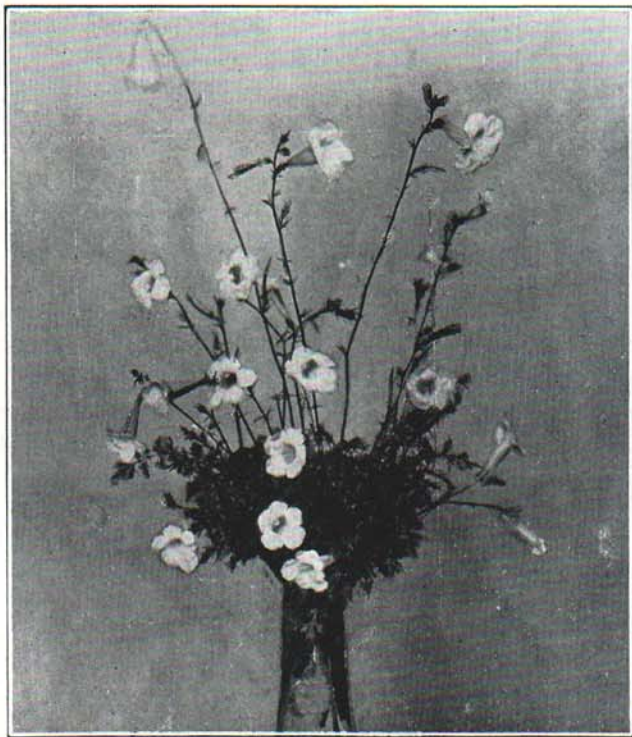


Fig. 17. *Incarvillea variabilis* is useful as a cut flower.

INCARVILLEA VARIABILIS

Is a tender perennial plant that may be treated as a tender annual. The tubular flowers are white, cream, and delicate tints of pink, rose, buff, etc., and are borne profusely all summer. The finely prinnate foliage is attractive. The plant grows to a height of 12 to 18 inches and is valuable for planting in the border and for cut flowers. Seed should be started in a hotbed in March and the young plants planted in the garden in late May.

KOCHIA TRICHOPHYLLA

SUMMER CYPRESS or MOCK CYPRESS, is a hardy annual thriving best in a rich garden soil. It grows 3 to 5 feet high, is of compact formal habit, and the light green foliage turns bright red-bronze in the fall. Variety *Childsii* is an improved form. It is valuable as an edging for walks and for accent points in the border.

LATHYRUS ODORATUS

SWEET PEA is a hardy annual that thrives in a deep rich well-drained soil. For successful culture, the soil should be prepared in the fall by dig-

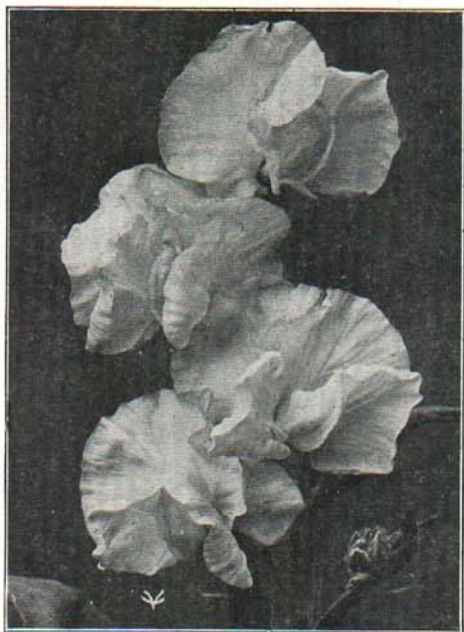


Fig. 18. *Lathyrus odoratus*. Sweet Peas.

ging a trench 2 feet or more deep and 2 feet wide. After 6 inches of manure has been placed in the bottom, the trench should be filled with alternate layers of rich soil and well rotted manure, firmed down. Seed may be sown in March or early April about one-half inch deep. Soaking the seed over night preliminary to planting softens the seed coats and hastens germination. As the season advances, the soil in the trenches is likely to settle down, in which case soil may be drawn around the plants from between the rows. Supports in the form of wire poultry fencing, brush, bamboo stakes, or strings supported by posts should be supplied early. A mulch of well rotted manure 2 to 4 inches deep

in early July will keep the plants producing fine flowers for a longer time. Occasional thorough watering in dry weather and frequent picking of flowers

will help prolong the life of the plants. There are many varieties, the best for outdoor culture being those of the summer or late-flowering *Spencer* type.

LAVATERA TRIMESTRIS

Is an annual that thrives in a well-drained garden loam. It is valuable for planting in the border. Variety *splendens* is an improved form with satiny pink flowers growing 2 or 3 feet high. *Sunset* is a new deep rose-colored variety; *alba* has white flowers. Self-disseminated seeds often survive the winter and germinate in the spring. Seed may be started early under glass or may be sown in the open in early May.

LAYIA ELEGANS (*Oxyura chrysanthenoides*)

TIDY TIPS thrives in almost any garden loam, but best in a well-drained sandy soil. It grows about 12 inches high, producing many light yellow daisy-like flowers in the early summer, but dies about the middle of August when the seeds are sown early. It is excellent for early summer bedding and for planting in masses in the border or in the rock garden. *L. platyglossa* (*Callichroa platyglossa*) grows somewhat taller. *L. glandulosa*, WHITE DAISY, has flowers that are white and sometimes tinged with rose.

LEPACHYS COLUMNARIS

OBELISK FLOWER is a hardy annual growing 15 to 18 inches high. The yellow-brown cone flowers are valuable for cutting, and the plant is useful for border effects. Seed may be sown in the fall or early spring in the open. Variety *pulcherrima* has brown-purple ray florets.

LEPTOSYNE MARITIMA

Is an easily grown annual, 2 feet high, with large yellow flower heads, thriving in a moist sandy loam. *L. Stillmanii* is dwarf, with smaller flowers produced earlier in the season and does not last the entire summer. Both are fine for cut flowers and may be planted in the border or in the rock garden. Seeds may be sown in late May. *L. calliopsidea* is similar to *L. maritima*, but with somewhat smaller flowers.



Fig. 19. *Linaria maroccana*. Good as a cut flower and as a border plant.

LINARIA MAROCCANA

Is a hardy annual. It will grow in any ordinary soil, but thrives best in a well-drained sandy loam. Seed may be sown in frames in early April or out-of-doors in May. It grows 12 to 18 inches high with violet, red-purple, or rose colored flowers. The flowers resemble very small snapdragons and are good for cutting. Variety *rosea* has carmine-rose flowers; variety *Excelsior* is a horticultural strain of mixed colors, including possibly forms of *L. bipartita* and others.

Linaria bipartita resembles *L. maroccana*, but the violet-purple flowers have a bright orange palate; variety *alba* is cream colored; *L. reticulata* has purple flowers with yellow palate; variety *aurco-purpurea* has purple and orange flowers. *L. heterophylla* (*L. aparinoides*) grows 15 to 30 inches high, with pale yellow flowers; variety *splendens* with violet-bronze flowers. *L. Broussonettii* (*L. multipunctata*) grows 4 to 8 inches high and has black-spotted yellow flowers with orange palate. *L. tristis*, 12 inches high, has yellow flowers with dark brown palate.

LUPINUS

LUPINE thrives in a warm, sandy loam and does not grow well in soil with any free lime. Seeds may be sown in early May where they are to grow. There are a large number of fine annual species. *L. Hartwegii*, grows 2 to 3 feet high with spikes of blue, white or pink flowers in July; variety *nana* grows 18 inches high; variety *Tom Thumb* grows 8 inches high. It is useful for cut flowers and for planting in the border. *L. hirsutissimus*, 18 to 30 inches high, has deep reddish purple flowers. *L. pilosus*, 2 to 4 feet high, has rose-purple or pink flowers, the middle of the standard brown-purple, or dark carmine in the pink flowers. *L. subcarosus*, grows 8 to 12 inches high, is of spreading habit and has deep blue and white flowers. It is useful for the border and rock garden. *L. nanus* is a dwarf spreading species with blue and white flowers that is splendid for bedding or for masses in the border or rock garden. *L. luteus*, 2 feet high, has fragrant yellow flowers that are fine for cutting. *L. mutabilis* is a half-hardy kind with flowers having white standards which later become blue, white keel and yellow center; the

variety *Cruikshanksii* has a blue keel. It grows 4 or 5 feet high and has large fragrant flowers varying from white to blue. *L. densiflorus* (*L. menziesii*) growing 15 to 18 inches high has lavender flowers; variety *crinitus* has purple flowers; variety *lacteus* has white flowers. *L. succulentus* grows 2 feet high and has blue flowers, but requires a moist soil for best results. *L. sulphureus* growing 2 feet high has yellow flowers; variety *superbus* is an improved form with dark yellow flowers. The form catalogued as *L. nanus albo-coccineus* seems to be the same as *L. Hartwegii* Tom Thumb.

LYCHNIS COELI-ROSA

ROSE OF HEAVEN is a hardy annual that thrives in a sandy loam. It is a slender plant growing 12 to 18 inches high, with rose, pink or white (variety *alba*) flowers. It is used for planting in borders, rock gardens, and as edging. The variety *oculata* (*Viscaria oculata*) has flowers with purple centers, *coerulea* has blue flowers, *Fire King* has scarlet flowers, *Blue Bouquet* is a more compact form with blue flowers, *Tom Thumb Rosy Gem* grows but 6 inches high and has rose-carmine flowers, *fimbriata* has irregularly cleft corolla lobes.



Fig. 20. *Lychnis Coeli-rosa oculata*. Useful for edging.

MALCOMIA MARITIMA

VIRGINIAN STOCK is a hardy annual growing 10 inches high and producing numerous rose-lilac flowers. Seed may be sown any time from April to July or may be sown in the fall. There are several varieties: *alba* is white-flowered; *Crimson King* has red flowers. It may be planted as an edging in the border or in patches in the rock garden.

MALVA SYLVESTRIS ZEBRINA

MALVA SYLVESTRIS ZEBRINA is a tall-growing hardy annual of easy culture. It grows 3 to 5 feet high, bearing an abundance of mallow-like flowers either white or pink, heavily veined purple in the center. Seeds may be sown out-of-doors in early spring.

MATTHIOLA INCANA

STOCK, or GILLIFLOWER, is a hardy biennial, treated as annual. It thrives best in cool weather in ordinary garden soil. For best results,

seed should be sown in hotbeds in early March and the plants set out in late April. There are two main types: The *Ten Weeks* and *Intermediate*

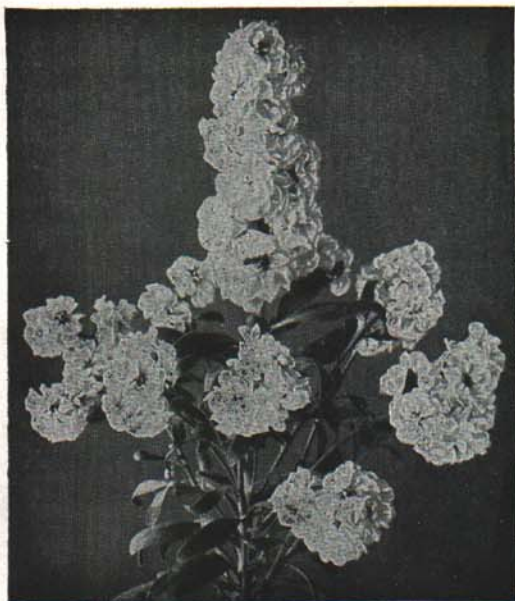


Fig. 21. *Matthiola incana annua*. The fragrant stocks.

Stocks, variety *annua*; and the *Brompton* stocks, variety *autumnalis*. There are several strains in each type, some of which are not satisfactory for outside planting in lower Michigan. The earliest stocks are the *Beauty of Nice* of the *Ten Weeks* type. These do very well, if they can be had in flower before the arrival of hot weather. *Giant Perfection*, *Giant Bismarck*, *Excelsior*, and *Dwarf German* are representative of the intermediates. Under trial the *Dwarf German* and *Victoria Bouquet* proved satisfactory out-of-doors in Michigan.* The *Dwarf German* and *Victoria Bouquet* flower continuously all season, while other forms flower satisfactorily only in the fall. All types can be obtained in various hues of crimson, purple, lavender, rose, pink, and white, and all are good for cutting.

Matthiola bicornis is a quick growing, straggling annual, about 10 inches high with light rose-lilac fragrant flowers that open at night. It may be planted in the border or in the rock garden.

*Other varieties do well in the northern sections of the state.

MIRABILIS JALAPA

FOUR-O'CLOCK or MARVEL OF PERU, is a tender perennial, treated as annual. Seed should be started in early March in hotbeds, transplanting the young plants to the garden in early June. They thrive best in a rich sandy loam in a sunny situation, and grow 2 or 3 feet high with



Fig. 22. Four-O'Clock is an old favorite for garden decoration.

white, pink, rose, red, or yellow flowers that open in the late afternoon. They are used for planting in borders and for bedding. Plants that have grown well may be carried over winter by digging the roots up in the fall and storing in the same way as Dahlias. "Tom Thumb" is a dwarf compact, form. *M. longiflora* has very fragrant white, rose, or violet flowers.

MYOSOTIS ARVENSIS

FORGET-ME-NOT is an erect-growing hardy annual growing 7 to 20 inches high and producing blue or white flowers from June to August.

Seed should be started in early spring in frames. The perennial forms, *M. scorpioides*, *M. sylvatica*, etc., may be treated in the same way or seed may be sown in August for flowering the next year.

NEMESIA VERSICOLOR

Six to 18 inches high, thrives in a rich well-drained sandy loam. The flowers are variable, usually two colored. The plants make a dense compact growth and are covered with flowers throughout the season, making them specially valuable for bedding and for the rock garden. The variety *compacta* grows 8 to 12 inches high with white, rose, violet and blue flowers: *Blue Gem* is especially fine with rich blue flowers; *White Gem* has white flowers. *N. strumosa* is better known than the above, but is not so satisfactory in Michigan. The plant is taller and less compact and the flowers are much larger and more brilliant. There are white, yellow, purple, orange, rose, and crimson-flowered forms. They are splendid as cut flowers and for late spring or early summer bedding. Variety *Suttoni* is an improved strain with larger flowers; variety *compacta tricolor* has white, rose, and violet flowers; *compacta grandiflora* is a dwarf, large flowered strain of which there are several horticultural forms; *Fire King*, scarlet flowers; *Orange Prince*, orange flowers; *Aurora*, crimson and white; *Twilight*, blue and white. *N. barbata* has purple and white flowers.

NICOTIANA

FLOWERING TOBACCO is a group of hardy annuals that thrive in a deep rich garden loam in a sunny situation. Lime should be applied to the soil unless the soil already tests alkaline. The flowers are very fragrant at night. It is specially adapted to growing in the border. *Nicotiana alata* (*N. decurrens*) grows 2 to 4 feet high and has pale violet flowers. The variety *grandiflora* (*N. affinis*) has large sweet-scented flowers. *N. Sanderae* is a hybrid of the above and *N. Forgetiana*, with rose or carmine flowers varying to red, violet, and white. The variety *Crimson Bedder* is especially fine. *N. sylvestris* has drooping white flowers. *N. suaveolens* grows 1 to 2 feet high and produces fragrant small white flowers, that remain open throughout the day. It will grow well in sun or partial shade.

NIEREMBERGIA

NIEREMBERGIA HIPPOMANNICA is one of the outstanding introductions of the last decade. It is a low-growing plant 6 to 8 inches in height, and 8 to 12 inches across, compact regular growth with fine foliage and large lavender to blue-lavender campanulate flowers. The flowers appear continuously all season. It is excellent to use for bedding or edging. Purple Robe is a new variety of a somewhat darker color.

NIGELLA DAMASCENA

LOVE-IN-A-MIST is a hardy annual with blue or white flowers, thriving in a good garden loam. Seed may be sown where they are to grow any time from April to July, or may be sown in the fall. They do not do well if transplanted. There is a dwarf variety, *nana*, growing about 9 inches high with large flowers. *Miss Jekyl* is an improved dwarf blue variety. *N. hispanica* has blue flowers; variety *alba* with white flowers; *atropurpurea*, with purple flowers; Dragon Fly is a recently developed blue-flowered variety that is perhaps the finest of all the varieties.

PAPAVER

POPPY is a large group of plants containing a number of popular annuals. All thrive in well-drained sandy loam in a sunny situation and are valued for mass effects in bedding. *Papaver Rhoeas*, CORN POPPY, is a variable species with numerous forms and with the color of flowers varying through red, purple, scarlet, pink, or white. The most important types are: *Shirley*, a very fine popular strain with flowers of mixed colors and growing 18 inches high; *ranunculiflorum*, with double flowers; *pumilum*, *Lilliput Shirleys*, dwarf form of Shirley poppies, 12 to 15 inches high; *Japonicum*, *Japanese Pompon Poppies*, small double flowers on plants 12 to 20 inches high; *Flander's Poppy*, a scarlet flowered form, 18 inches high; variety *umbrosum* has darker red flowers than the type, with black spots on the petals and is dwarf, compact and much branched in habit. *P. somniferum*, OPIUM POPPY, grows 2 to 4 feet high with very large pink, red, purple or white flowers and bluish foliage. There are two main types: (1) the Carnation-flowered with double flowers having fringed petals and growing 30 inches high; a variety *nanum fl. pl.*, with double flowers only 18 inches high; and (2) the Peony-flowered (*P. paeoniaeflorum*) with large double flowers.

Papaver pavonium, PEACOCK POPPY, grows about a foot high and has scarlet flowers. *P. glaucum*, TULIP POPPY, grows 12 to 18 inches high and has bluish foliage and scarlet flowers, spotted at the base of the petals. *Papaver dubium laevigatum* is a large-flowered poppy of the *Shirley* type. Each petal has a black spot at the base.

PENTSTEMON GLOXINIOIDES

This plant is a tender perennial that may be treated as an annual. It is a hybrid race of *Pentstemon*, derived from *P. Hartwegii*, *P. gentianoides*, *P. Cobaea*, and others. The plants grow 18 to 24 inches high and produce their flowers in attractive scarlet, rose, purple, pink and white hues late in summer. Seeds should be started in hotbeds as early as possible (February or March) and the young plants set out in May in a rich well-drained sandy loam. The old plants may be dug up in the fall and wintered in a well-protected cold frame. They are splendid for border planting and the flowers are among the best of cut flowers.

PETUNIA HYBRIDA

COMMON PETUNIA is a well known popular plant used for bedding, being especially valuable for the abundance of flowers produced. It is a hardy annual thriving in a rich, well-drained soil. Flowering seems to be more profuse where there is some lime in the soil. Seed should be started early in a hotbed. There are single and double forms and numerous types: *Balcony*, single flowers, very profuse, spreading habit, especially valuable for bedding, porch boxes, etc.; *Portland*, similar to *Balcony*, flowers larger, plant less spreading; *Giant Flowered Singles*, very large, more or less wavy-margined flowers, vigorous; *Theodosia*, *California Giants*, etc., are selected strains of the *Giant Flowered Singles*; there are also large-flowered singles, large-flowered double and other types.

PHACELIA

This genus includes a number of species of good garden plants. They



Fig. 23. *Phacelia tanacetifolia*. Excellent for mass effect.

thrive in a well-drained garden loam in a sunny or partially shaded situation. *Phacelia tanacetifolia*, growing 2 to 3 feet high, with lavender flowers, is exceptionally fine for the border and there is a white flowered variety, *alba*. *Phacelia congesta* is similar but not so tall. *P. campanularia*, growing 10 inches high, with deep blue flowers, is valuable for planting in the border or in the rock garden. *P. Whitlavia* (*Whitlavia grandiflora*) CALIFORNIA BLUE-BELL, grows 12 to 15 inches high and has lighter blue or lavender flowers; the variety *gloxinioides* (*P. gloxinioides*) has white flowers with blue centers; variety *alba* has white flowers. *P. Parryi* grows 10 to 15 inches high and has deep violet flowers. *P. viscida* (*Eu-*

toca viscida), growing 2 feet high with deep blue flowers, is rather branching and sprawling of growth. *P. divaricata Wrangeliana* is an interesting low-growing plant with light blue flowers.

PHLOX DRUMMONDII

ANNUAL PHLOX thrives in a rich sandy loam in a sunny location. It has red, pink, rose, purple, lilac, or white flowers, grows 6 to 18 inches high, and is valuable for bedding or as a cut flower and the dwarf forms for bedding or as an edging. Seed may be started in frames in April and the plants set out in late May or early June. Variety *rotundata* has flowers with large broad petals; *grandiflora* is large flowered and *nana compacta*, growing 6 inches high, is dwarf and the best for edging. Variety *stellaris*, STAR PHLOX, has narrow petals variously fringed or cut; *cuspidata*, or STAR OF QUEDLINBURG, has very narrow, long pointed petals; *fimbriata*, and *laciniata* are similar forms.

PORTULACA GRANDIFLORA

ROSE MOSS, is a hardy annual that thrives in a sandy soil in a sunny situation. The plant spreads over the ground, completely carpeting it and producing large numbers of flowers throughout the summer. The flowers are white, rose, pink, scarlet, yellow, orange, crimson, or carmine, in both single and double forms. Seed may be sown where they are to grow in April or May and may also be sown in late fall.

RESEDA ODORATA

MIGNONETTE never grows as well out-of-doors as it does in the greenhouse in winter. It requires a cool temperature for best results and hot summers do not permit of the best development. It thrives in ordinary garden loam and produces fragrant flowers valued for cutting. Seed may be sown out-of-doors any time from early May to July. There are numerous varieties. *Bismarck* is red-flowered; as is *Goliath* and *Giant Pyramidal*, the tallest growing. *Golden Queen* is yellow-flowered. *Machet* is a selected strain, compact growing and is obtainable in red, white or yellow. *Red Monarch* is a new red-flowered variety of compact habit.



Fig. 24. *Reseda odorata*. Valued as a cut flower because of its fragrance.

RICINUS COMMUNIS

CASTOR OIL PLANT thrives in a rich, well-drained garden loam. It is chiefly used in tropical bedding or as a screen. Seed should be sown in pots in a cold frame in April and the plants set out in early June. There are a number of varieties: *africanus*, bluish foliage, 15 feet high; *cambodgiensis*, dark green foliage, 5 feet high; *Red Spire* (Crimson Spire), dark green foliage, red flowers, 6 feet high; *Gibsonii*, foliage dark red, of metallic luster, 4 feet high; *Scarlet Queen*, maroon foliage, orange-scarlet flowers, 4 feet high; *sanguineus*, red-purple foliage, 5 to 7 feet high; *Zanzibarensis*, large foliage, 5 feet high; *Zanzibarensis enormis*, 7 feet high.

RUDBECKIA BICOLOR

This plant thrives in a sandy loam in a sunny position and grows 1 to 2 feet high, producing handsome flower heads with ray florets that are deep



Fig. 25. *Rudbeckia bicolor* is rich in color and excellent for cutting.

yellow with a brown-purple base. Self-disseminated seeds survive the winter and germinate in the spring. Seed may be sown any time from April to late June, or they may be started in frames in April. The variety *superba* is better than the type; *semi-plena* has semi-double flower heads. There are several improved varieties available. *My Joy* is a fine yellow-flowered variety; *Orion* is a semi-double yellow and brown flowered form; *Kelvedon Star* has very large brown and yellow flowers.

SALPIGLOSSIS SINUATA (*S. grandiflora*)

Thrives in a rich sandy loam. Seed may be sown out-of-doors in May or June, or in frames in April. They grow 2 to 3 feet high and the flowers are of most striking and attractive combinations of red, scarlet, maroon, yellow, blue, purple, white, and pink. They are valued highly as cut flowers and for display in the border. The variety *superbissima* is a more columnar type that does not branch freely and is usually listed as *Emperor*.



Fig. 26. *Salpiglossis sinuata*. Desirable for cutting and for border effects.

SALVIA SPLENDENS

SCARLET SAGE is a tender shrub, treated as an annual. It grows from 1 to 4 feet high and produces quantities of brilliant scarlet flowers throughout late summer and fall. It is valued for bedding of all kinds, for hedges along garden walks, and as a cut flower. Seed should be sown in hotbeds in early March and the young plants transplanted to the garden in early June. There are numerous varieties, the most important being listed here: *America* (Globe of Fire), 18 inches to 3 feet, scarlet; *Bonfire* (Clara Bedman), 18 inches to 3 feet, scarlet; *Harbinger*, 15 inches, scarlet; *Zurich*, 12 inches, scarlet, early; *Fireball*, 15 inches, scarlet; *alba*, 2 feet, white; *atropurpurea*, 2 feet, dark violet-purple; *atrosanguinea*, 2 feet, deep crimson; *bicolor*, 2 feet, scarlet and white; *Maroon Prince*, 2 feet, plum color; *Parma Violet*, 18 inches, violet-blue; *Rosy Gem*, 15 inches, rose; *Salmon Beauty*, 15 inches, salmon. *Coral* and *Welwyn* are new pink-flowered varieties.

S. farinacea is a half-hardy or almost hardy perennial, growing 2 to 3 feet high, with light blue flowers. It is usually treated as an annual and given the same culture as *S. splendens*. It is planted in the border and is a good cut flower. Variety *alba* has white flowers and *Blue Bedder* has deep blue flowers.

S. patens is a half-hardy perennial requiring the same cultural treatment. It grows 15 to 30 inches high and has blue flowers, or white in variety *alba*. *Cambridge Blue* is a new variety which is an improvement on the type and is recommended for mass effect or for bedding. *S. columbaria*, 12 to 20 inches high, has blue flowers. It succeeds well in a dry soil. Seed may be sown out-of-doors in May or June. *S. carduea* is a half-hardy perennial treated as an annual. It has thistle-like foliage, lilac-blue flowers, and grows about a foot high. *S. Hornimum*, CLARY, is an annual growing about 18 inches high and requiring the same general culture as *S. columbaria*. It has interesting reddish-purple floral whorls. The variety *Blue Beard* has blue floral bracts. *S. coccinea* is a red-flowered species with dark green, hairy leaves.

SANVITALIA PROCUMBENS

Is a low-growing annual of trailing habit bearing numerous small, yellow flowers throughout the summer. It is useful as a ground cover or as a low border plant. Seeds may be sown out-of-doors in early May. They thrive in ordinary garden soil in full sunlight. A double-flowered form is known as *flore-pleno*.

SCABIOSA ATROPURPUREA

SWEET SCABIOUS, or MOURNING BRIDE, is a hardy annual that thrives in ordinary garden loam.



Fig. 27. *Scabiosa atropurpurea*.
Good for cutting.

It grows 1 to 2 feet high and produces maroon, purple, rose, or white flowers. Seed may be sown in frames in March or April or out-of-doors in May or early June. The flowers appear about three months from sowing of the seeds. They are valuable for bedding, for the border and for cutting. There are many varieties, some dwarf. Variety *grandiflora* includes the large-flowered sorts growing 2 or 3 feet high; *nana* includes dwarf sorts about 18 inches high; *pumila* are very compact forms, a foot or less high. The variety *candidissima* is a fine, white-flowered variety. *Blue Cockade* is a good lavender-blue variety. *Giant Loveliness* is a new salmon-rose variety. *Die Fee* is a fine lavender-blue.

SCHIZANTHUS

BUTTERFLY FLOWER thrives best in a rich garden loam in a cool situation. Seed should be sown out-of-doors in May. The dainty graceful flowers in pleasing hues of purple, rose, orange-brown, or white are very fine for cutting. There are several species and a number of fine varieties.

S. retusus grows 2 feet high with rose-colored flowers; *alba*, white flowers; *Pink Beauty*, rose-pink; *roseus*, pink; *nanus*, dwarf. *S. pinnatus* has violet, lilac, or purple flowers; *nanus*, dwarf; *maximus*, large flowered; *grandiflorus* (*S. grandiflorus*) large flowered. *S. Grahami* has lilac or rose and orange flowers and there are lilac, rose, white and pink forms. *S. Wisetoniensis* is a hybrid of the two preceding species with various colored flowers. There are numerous strains and varieties. *Dr. Badger's Hybrids* constitute another mixed strain. *Chiselhurst Hybrids* is a recently introduced strain.

SENECIO CINERARIA (*Cineraria maritima*)

DUSTY MILLER is a hardy perennial with white woolly foliage, usually treated as annual, and used for edging and bedding. Seeds should be sown early in frames. The variety *candidissimus* is the most popular.

Senecio elegans (*Jacobaea elegans*), PURPLE RAGWORT, is an annual growing about 18 inches high. It thrives in a sandy loam. Seed should be sown in March in a frame and the plants planted out in early June. This is a common garden plant used for borders and the flowers are useful for cutting.

SILENE ARMERIA

LOBEL'S CATCHFLY is a hardy annual, 12 to 18 inches high, with rose, pink or white flowers. It thrives best in a well-drained sandy loam, although it grows well in clay or muck soil. Seed may be sown out-of-doors any time from April to July, although earliest flowering is obtained by sowing the seeds in September or early October. They should be sown broadcast to give a mass effect when in flower and need not be thinned. They are splendid in the border or in the rock garden, although short lived.

S. pendula is a low growing annual useful as an edging or for the rock garden. Seed should be started in a cold frame in April. There are several varieties with flowers of white, pink or rose.



Fig. 28. *Silene Armeria*. Used for mass effects.

SPECULARIA SPECULUM

VENUS' LOOKING-GLASS, is a low-growing, hardy annual producing blue flowers in the summer. It is useful as an edging and for the rock garden. Seed may be sown out-of-doors in early spring. It thrives in a well-drained sandy soil and a sunny situation. It is of easy culture, tolerating a variety of soils and situations. Variety *alba* is a white-flowered form.



Fig. 29. *Silene pendula*. Splendid for edging.

STATICE SINUATA

Is a half-hardy annual or biennial, that thrives in a well-drained sandy or gravelly soil. Seed should be sown in frames in April or earlier. The



Fig. 30. *Statice*. Annual and perennial forms are popular for drying.

flowers are blue and white, borne on stems 1 to 2 feet high and are splendid for cutting. The flowers may also be dried for use in winter bouquets. There are several color forms: *rosea*, rose flowers; *candidissima*, white; *True Blue*, deep blue. (See page 45.)

S. Bonduelli is similar but has yellow flowers. *Statice suworowii*, RUSSIAN or RAT-TAIL STATICE, grows 9 to 18 inches high and has fine rose-colored flowers that make splendid cut flowers. There is also a white-flowered form, variety *album*. *S. superbum* is a hybrid form growing 2 feet high, similar to *S. suworowii*, with rose, red, pink or white flowers. *S. sinensis* is a perennial best treated as annual.

TAGETES

MARIGOLD thrives in a well-drained sandy loam in a sunny situation. Seed should be started in frames in April or out-of-doors in late May. There are several species commonly planted, all valuable for bedding or border planting.

Tagetes erecta. AFRICAN MARIGOLD, is tall-growing (2 feet) and is best for cutting. There are numerous varieties: *Orange Beauty*, single orange flower heads; *Lemon Queen*, yellow, quilled flower heads; *Guinea Gold*, semi-double orange with long loose petals; *Orange Prince*, very large orange yellow flower heads. *Yellow Supreme* is a yellow-flowered variety with a rather pleasing fragrance. *Tom Thumb Golden Crown* is a fine dwarf variety. *Honeycomb* is another dwarf form with odorless foliage. *T. patula*, FRENCH MARIGOLD, grows a foot or less in height and has smaller flowers. It is especially valuable for bedding. There are numerous varieties. *Legion of Honour*, single yellow; *Fire Cross*, improved form of *Legion of Honour*; *Robt. Beist*, reddish brown. *Golden Ball*, yellow; *Pygmy*, double yellow. *Spry* is an exceptionally fine bicolor.

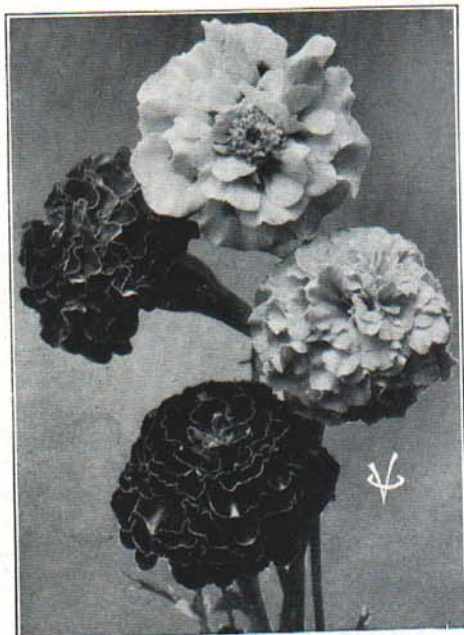


Fig. 31. *Tagetes patula*. Used for bedding and for cut flowers.

Recent years have seen the introduction of many new varieties. Most important of these are (1) the Harmony group which includes Butterball,

Melody, Spotlight and Harmony, dwarf bedding varieties, (2) Collarette Crown of Gold (odorless foliage), (3) Carnation flowered odorless foliage varieties including Burpee Gold, Golden Glow, etc., (4) Wildfire, a cut flower type resulting from crossing African and French varieties. *T. signata* is an orange-yellow flowered plant with fine fern-like foliage that grows 1 to 2 feet high. It is a splendid bedding plant. The variety *pumila* grows less than a foot high. *T. lucida*, SWEET-SCENTED MARIGOLD, is a tender perennial cultivated as an annual. (See page 53.)

THUNBERGIA ALATA

BLACK-EYED SUSAN is a half hardy perennial climber or ground cover. It thrives in a well-drained sandy loam in a sunny situation. It may be planted in the rock garden or border and is useful for planting in hanging baskets, window and porch boxes and cemetery vases. Seed should be started in frames in early March and the plants set out in June. There are numerous varieties, with color of flowers varying from white to orange, all with dark centers.

TITHONIA SPECIOSA

INCAS FLOWER is a tall-growing, tender annual producing large zinnia-like orange-scarlet flower heads in late summer or fall. Seeds should be started in a hotbed in March and the plants set out in June. The plant is rather coarse and should be used in the back of the border. The flowers are lasting, and effective as cut flowers. Avalon Earliest is a recently introduced variety that flowers somewhat earlier.

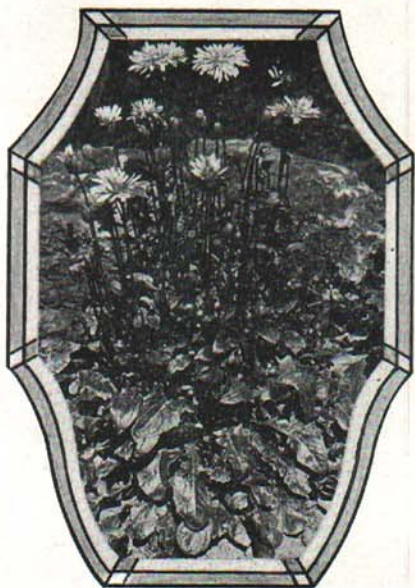


Fig. 32. *Tolpis barbata*. An interesting attractive annual.

TOLPIS BARBATA (*Crepis barbata*)

Has double yellow, pink or white flower heads which much resemble large dandelions. The plant forms a compact tuft from which appear the flowers on stiff 15-inch stems. They thrive best in a sandy loam soil. Seeds should be sown in frames in early April and the plants set out in early June. They are troubled with aphids and should be sprayed with a contact insecticide.

Crepis rubra grows 6 inches high and has small rosy-pink flowers.

TORRENIA FOURNIERI

Is a compact, low-growing, tender annual that thrives in a rich sandy loam in a sunny position. It produces quantities of rich purple flowers all summer and is a splendid bedding plant. Seed should be sown in frames in March, and the plants set out in early June. There are several good varieties: *alba* has white flowers, *White Wings* being an improved form; *grandiflora* has larger flowers. *T. flava* (*T. Baillonii*) grows 9 inches high and has flowers that are golden yellow with a purple center.

TRACHYMENE COERULEA (*Didiscus caerulea*)

BLUE LACE FLOWER, is a half-hardy annual that thrives in a rich sandy loam. It grows 2 feet high, producing umbels of beautiful lavender-blue flowers from July to frost. The flowers are splendid for cutting. Seed may be sown out-of-doors in May.

TROPAEOLUM MAJUS

CLIMBING NASTURTIUM thrives in ordinary garden loam in a sunny position. Seed may be sown where they are to grow in late May. They are useful as cut flowers, for covering banks, and as annual vines. There are numerous varieties and color forms: *flore pleno* has double flowers; *nanum*, *dwarf* or *Tom Thumb Nasturtium*, is low growing, (10 to 15 inches). The "Gleam" hybrids are recently-introduced double-flowered varieties. (See page 53.)



Fig. 33. *Tropaeolum majus* "Golden Gleam".
Double Nasturtium.

T. peregrinum (*T. canariense*) CANARY-BIRD FLOWER, is a quick-growing annual vine with yellow flowers. *T. peltophorum* (*T. Lobbianum*) is an annual climber with orange-red flowers that is used in window boxes, among shrubbery, or to cover banks or walls.

URSINIA

STAR OF THE VELDT, is a dainty nearly hardy annual with small orange or yellow daisy-like flowers. It thrives in a sandy loam. Seed should be sown where the plants are to grow in late May. It grows 10 or 12 inches high and is valuable for the front of the border, as an edging or for the rock garden. There are a number of forms more or less alike as *U. anethoides*, *U. anthemoides*, *U. pulchra*, *U. speciosa*, *U. versicolor*.

VENIDIUM DECURRENS

Is a somewhat coarse half-hardy annual producing bright orange daisy-like flowers in August and September. It grows about 12 inches high and thrives in a sandy loam and a sunny situation. It may be used in the front part of the border and is useful as a cut flower. Variety *calendulaceum* is usually catalogued. Seed should be sown in frames in March or April.

V. fastuosum is a recently introduced species growing 2 to 3 feet high with large brilliant orange flower heads. It has not proved altogether satisfactory for central Michigan.

VERBENA HYBRIDA

Is a low-growing spreading annual or half-hardy perennial that thrives in a rich well-drained garden loam. It quickly covers the ground and produces many flowers in shades of red, rose, pink, blue, purple and white. Seed should be sown in frames in March and the plants set out in late May or June. It is splendid for bedding and the flowers are useful for cutting. There are many varieties.

Verbena venosa, is a perennial of questionable hardiness in Michigan. It may be treated as an annual, sowing the seed as early as possible under glass and setting the plants out in May. It has tuberous roots which may be lifted in the fall and stored over winter in the same way as are Dahlias. It forms a spreading plant about a foot high with rich purplish flowers. *V. erinoides*, MOSS VERBENA, has similar flowers and may be given the same culture. It is much taller and more spreading.



Fig. 34. *Viola tricolor*. Pansies are always desirable.

VIOLA TRICOLOR

PANSY is a hardy perennial, thriving in a rich loam soil in a cool situation. They do not survive the heat of summer and are therefore valuable only for spring bedding and for cut flowers during the cooler months of the year. They may be grown in cold frames out-of-doors. Seed may be sown in early August in frames. The soil must be kept moist and shaded until the plants are about one-half inch high, when they may be transplanted to the garden or to other frames and planted out in the early spring. Seeds may also be sown in frames in late fall or in February. When frame culture is adopted, the plants should be watered occasionally through the

winter and the sash removed on sunny days. There are many fine varieties of pansies, and some are not so hardy as others. Seed should be obtained from growers in the colder states. There are various perennial VIOLAS that may be grown in the same way as PANSIES. *V. cornuta*, the TUFTED VIOLA, HORNED PANSY, or BEDDING PANSY, *V. gracilis*, and *V. hybrida* are all splendid for bedding purposes and there are many varieties, most of which are easily grown from seed. A few of the finest varieties are *lutea splendens*, *Apricot*, *Blue Perfection*, *Admiration*, *Maggie Mott*, *Purple King*, *Lord Nelson*, *Picardie*, and *Avalanche*.

ZINNIA ELEGANS

YOUTH AND OLD AGE is a tender annual thriving best in a rich garden loam in a sunny position. Seeds may be sown in April in frames or out-of-doors in late May. They are valuable for bedding and for cut flowers. There are many varieties, varying from the *Dahlia-flowered*, *Giant-flowered* or *Collosal*, and *California Giants* all with very large flower heads and growing 2 to 2½ feet high, to the *Pumila* varieties growing 12 to 18 inches high, and the *Lilliput* growing less than a foot high. Both single and double flowered forms occur. The scabious-flowered are crested forms. The colors of the flowers vary from orange or brown and yellow to white, crimson, pink, or scarlet. There are double-flowered forms, *stellata*, with twisted florets and hybrids with the above. *Fantasy* is a new, improved form. *Z Haageana* has smaller orange flower heads, in which the margins of the florets are slightly curled in. *Z Haageana Perfection* has flowers of various colors, variously marked with maroon or other dark colors.



Fig. 35. *Zinnia elegans*.
Popular garden plant.

EVERLASTINGS

EVERLASTINGS are valuable as cut flowers, to be dried for use in winter bouquets. There are a number of these everlastings that can be grown in the garden without any difficulty. To prepare the flowers for winter use, all except *Gomphrena*, *Helipterum Humboldtianum*, and *Statice* should be cut before the flower heads have expanded. The exceptions should not be cut until fully open. The foliage should be removed and the flowers should be then hung up, flower heads down, in a warm shaded place, such as an attic, to dry. Success in retaining the natural colors depends on rapid drying.



Fig. 36. *Helichrysum bracteatum*. Straw flowers are used for winter bouquets.

Helichrysum bracteatum and varieties *nanum* and *Monstrosum*, STRAWFLOWER, thrive best in a rich well-drained loam and grow 1½ to 4 feet high. Seed should be sown in frames in March and the plants set out in late May or early June.

Helipterum Manglesii (*Rhodanthe Manglesii*) and its larger flowered variety *maculata*, growing 12 to 18 inches high, with pink or white flowers; and *Helipterum roseum*. (*Acroclinium roseum*) growing 1 to 2 feet high with pink or white flowers may be sown in the open in early spring. *Helipterum Humboldtianum* (*H. Sanfordi*) has dense terminal corymbs or yellow flowers and is very fine. It is a hardy annual.

Ammobium alatum and its larger flowered variety *grandiflorum*, grows 18 to 30 inches high and has pearly white flower heads. They require the same culture as *Helipterum*. It is a hardy annual. Seed may be sown in the fall or in early spring.

Gomphrena globosa, GLOBE AMARANTH, about 18 inches high with white, yellow, orange, pink, purple, or violet flowers, requires the same culture as *Helipterum*. The orange variety is most pleasing. Seed may be sown out-of-doors in the early spring.



Fig. 37. *Gomphrena globosa*. A border plant with flowers that may be dried.

Xeranthemum annuum grows about 2 feet high, with white, rose, purple, or violet colored flower heads; seeds may be sown outdoors where they are to grow in early spring or in the fall.

Actinolepis coronaria (*Shortia californica*, *Baeria californica*) is a yellow-flowered annual everlasting useful as an edging.

Lunaria annua (*L. biennis*), SATIN FLOWER, HONESTY, or MOONWORT is a hardy annual or biennial that thrives best in a moist sandy loam in a shaded or partially shaded location, although it grows well under ordinary garden conditions. The flowers are bright pink-purple in color, but their chief value is in the interesting, flat seed pods which are dried and used for winter bouquets. Seeds may be sown in late summer or fall and the plants wintered in cold frames or the plants may be started under glass in February or early March. Seed may also be sown out-of-doors in May or June and protected the following winter with a mulch. Such sowing gives finest results, if the plants survive the winter.

Several other garden plants are also useful as dried flowers: *Echinops*, *Eryngium*, *Gypsophila paniculata*, *Limonium sp.*, *Artemesia Silver King*, *Achillea millefolium*, *Physalis Franchetti*, hardy perennials, and *Delphinium Ajacis* (see page 16), *Celosia Childsii* (see page 10), etc., annuals.

ANNUAL HERBS

Herbs have been important in the culinary art of many peoples, but particularly so of Europeans. The excellence of French cookery is in no small degree due to the judicious use of herbs. The average American knows very little about herbs and the uses of herbs.

Those herbs used in the dry state or whose seeds are used should be harvested, dried, and stored with the greatest care. The leaves of herbs that are to be dried for winter use should be gathered just previous to the appearance of the flowers. The leaves should be picked at mid-day and dried in a cool, shaded place in order to retain as much as possible of the essential oils or flavor. When thoroughly dried, the leaves may be crushed and stored in tightly stoppered bottles or jars. When the crop consists of the seeds, the flower heads or seed pods should be gathered just before the seeds start to fall and placed on papers to complete the drying. They may then be separated out and placed in jars.

Many herbs such as basil, marigold, calendula, poppy, sweet marjoram, false saffron, and parsley are valued ornamental plants and are useful for growing in the flower garden. Below are listed the important annual herbs with notes on their culture and uses.

Anethum graveolens, DILL, grows 2 to 3 feet high with small, yellowish flowers. The seeds are used for seasoning in pickles and in soups, meats, sauces, and vinegar and sometimes substituted for Caraway. The leaves and nearly mature clusters of seeds are occasionally used for flavoring fish, soups and sauces, and commonly with cucumber pickles. Seed may be sown in the spring, in a warm situation in drills 12-15 inches apart. Later thin to stand 6 inches apart in the row. This plant may also be cultivated as a biennial, in which case the seed may be sown in the fall, in the open ground.

The crop is ready to harvest in late summer when the umbels become brown. Cut umbels before seed drops, then dry and thresh.

It is a possible cash crop and may be grown like spring oats. The seeding rate is 10 pounds per acre. Production averages about 700 pounds per acre.

Anthriscus Cerefolium, SALAD CHERVIL, grows 1 to 2 feet high. The leaves, either fresh or dried, are used for flavoring, as a condiment in soups, and for salads. Seed should be sown in May or at any time to mid-July, in a cool, moist situation.

Basella rubra, SWEET MALABAR, is an annual vine with red, white, or violet flowers. The leaves may be used like spinach as a pot-herb. Seed should be started early in a hotbed and the plants set out in late May.

Borago officinalis, BORAGE, is valued as a pot-herb, as a salad-plant, and as a bee-plant. The crushed leaves or flowers placed in water, fruit juices, or in wines, give an agreeable flavor. It has blue or purplish flowers, useful for cutting, and reaches a height of 2 feet. The seed may be sown in the garden in the spring in rows 2½ feet apart. Later, thin the plants to stand about a foot apart. It thrives in rather light soil. *Albiflora* is a variety with white flowers.

Brassica nigra, BLACK MUSTARD, furnishes the mustard of commerce, although *B. alba*, WILD MUSTARD, or WHITE MUSTARD, and *B. juncea*, CHINESE MUSTARD, are also used. The seed ripens in late summer. When dry, it is cut and threshed. Mustard flour is made by grinding the seeds. Mustard oil is distilled from the seeds of black mustard. The species mentioned are annuals, easily grown from seed sown in the spring. All of them, together with *B. japonica*, POT-HERB MUSTARD, and *B. arvensis*, CHARLOCK, are used as pot-herbs and for salads.

Calendula officinalis, POT MARIGOLD (see page 8), is of some value as an herb as well as a cut flower. The flower heads are used as seasoning in soups, etc., as an adulterant for saffron, and to color butter, custards. It may be grown in rows 2 feet apart, and the plants are grown 10-12 inches apart in the rows.

Capsicum annuum, PEPPER, is a tropical plant grown for the fruit. There are many forms and varieties, some of which are grown as staple vegetable crops, others as condiments, and still others for their ornamental value. Some forms such as CHRISTMAS PEPPERS, are commonly used as pot plants. Seed should be started early under glass and the plants planted out-of-doors in June. Ornamental forms may be lifted and potted up in the late summer and brought into the window-garden.

Cayenne and chili powder is made by grinding the dried fruits of the small-fruited, "hot" varieties.

Carthamus tinctorius, SAFFLOWER OR FALSE SAFFRON, grows 2 feet or more high and bears thistle-like heads of orange florets, which may be used for dyeing, making rouge, or for coloring or flavoring.

Carum Carvi, CARAWAY, is a hardy biennial (or annual) with white or pinkish flowers, growing 1 to 2 feet high. The seeds are valued for flavoring bread-stuffs, cakes, cookies, preserves, soups, candy, cheese, etc. Young shoots and tender leaves may be used in salads. Oil distilled from the seed is used in liquors, perfumes, soaps, etc. Ground seeds may be used in sachets. The seed should be sown in the spring in well-drained soil. It produces flowers and seed the second year from planting.

The plant would appear to have good commercial possibilities in Michigan. It is often sown with coriander in the rows. The coriander matures and is harvested long before the caraway matures, thus obtaining two crops from the same land. It is said to produce 400-800 pounds per acre,* when grown in this way.

It seems to produce higher yields on moderately light soils. When grown commercially sow in April or May in drills 15 inches to 3 feet apart at the rate of 8 to 16 pounds per acre which should be enough to get a stand of plants 3 to 6 inches apart. Give thorough shallow cultivation through the first year and spring of the second year. Every care must be taken to prevent contamination by weed seeds at harvest. The crop matures in late June or July. The seed shatters easily and should be harvested just before stalks die. The yield should average 1,000 pounds per acre. If used for oil, the seed should yield 3 to 6 per cent of oil.

Coriandrum sativum, CORIANDER, is a slender plant, 1 to 3 feet high, bearing mauve to white flowers. The seeds are valued for flavoring bread, sausage, meats, confections, pastries, drinks, in curry powder, and to disguise the taste of medicines. Oil obtained from the seed is used in colognes, cordials, bread, cake, and to flavor certain brands of cocoa. Seed may be sown out-of-doors in the early spring (April), or in the fall in drills 16 inches apart. The seed should be gathered before maturity in July or August.

The plant could probably be grown commercially in Michigan. It is

*See "Culinary Herbs" by M. G. Kains, Orange Judd Co. (1912)

said to produce as much as 1,500 pounds per acre on a light fertile soil. It is sometimes sowed with Caraway, 15 pounds of Coriander and 8-15 pounds of Caraway being mixed together for an acre. It may also be grown in alternate rows with Caraway.

Cuminum odorum, CUMIN, is valued for the seeds which are used for flavoring liquors, cheese, breads, soups, pickles, pastries, etc., and in making curry. Oil distilled from the seed is used in certain perfumes. It grows best in a warm light loam soil. Seed should be sown in rows 14 inches apart. Later thin to 3 inches apart in the rows. On clean land it may be broadcast out-of-doors in May. The seeding rate is 2-5 pounds of seed per acre. The crop matures in about two months.

Foeniculum vulgare (*F. officinale*), FENNEL, *Bitter Fennel* is a perennial European herb or vegetable with fragrant umbels of yellow flowers and grows to a height of 4 feet or more. *F. officinale* (*F. capillaceum*) is the form known as SWEET FENNEL. It is easily grown from seed sown in the spring in drills 18 inches apart, requiring about 5 pounds of seed per acre. Later, thin young plants to stand a foot apart in the rows. The young leaves are used for flavoring fish, soups, sauces, or for salad, while the seeds are used in confectionery and for flavoring liquors, soups, etc. The seeds are harvested in September when they turn brownish. The seed umbels are cut off, dried and then threshed out. The variety *dulce* (*F. azoricum*) is the FLORENCE FENNEL or FINOCCHIO, also known as SWEET ANISE. This is a dwarf annual form. The thickened base of the stem is blanched by mounding earth around it and is palatable after boiling, or may be used raw in salads. Oil expressed from the seeds is sometimes used in soaps. The variety *piperitum*, CAROSELLA, is commonly grown in southern Italy, where the young stems are used raw as salad in the spring. Oil of fennel is used in perfumes and soaps.

Marrubium vulgare, HOREHOUND, is a perennial, but can be grown as an annual. Sow seed in early spring in rows 2 feet apart. Later thin to 6 inches apart in the rows. The crop is harvested throughout the summer. The branches are cut off at flowering or just previous to flowering. The leaves are then stripped off and dried. It is largely imported from southern France.

Matricaria chamomilla, WILD CHAMOMILE, or GERMAN CHAMOMILE, is an annual valuable for its oil which is used in perfumes. ROMAN CHAMOMILE (*Anthemis nobilis*) is used medicinally.

Melilotus caerulea, BLUE MELILOT, is an annual reaching a height of 3 to 5 feet. It is used in certain cheeses to give an aroma and to store with clothes in the same way as lavender, and for distilling to obtain perfumed water. The dried flowers retain their strong perfume for many years. The seed should be sown out-of-doors in May.

Nigella sativa, BLACK CUMIN or FENNEL FLOWER, is valuable for its seeds which may be used for seasoning. They are also used for mixing in bread or scattered on bread and cakes, to flavor wine, and sauces, and as a substitute for pepper. Oil from the seed is used in perfumes. Seed may be sown in late April or early May in drills 12 inches apart. Thin later to 5 inches apart. The crop is ready to harvest in August or September. Two to four pounds of seed per acre are required.

Ocimum basilicum, BASIL, grows about a foot high with small, white flowers in mid-summer. The leaves and flowers are used for flavoring soups, vinegar, meats, sausage, dressing and salads. It is also recommended for flavoring cheeses, fruit drinks and all tomato dishes. Oil extracted from the leaves may be used in the manufacture of perfumes. The young branches may be cut and dried for use in the winter. The plants may be potted up in the fall and grown in the window garden to supply fresh leaves during the winter. Seed may be started in frames in the early spring and later transplanted to the garden or may be sown directly out-of-doors in early May in rows 14 inches or more apart. The plants may be thinned to stand 6-12 inches apart. The seeds are hardy and usually the young plants appear in the spring from self-sown seeds. The plant makes a compact, formal growth and is valuable as a low hedge for annual beds. *O. minimum* is a more compact, dwarfer form.

Origanum Majorana, SWEET MARJORAM, is a perennial treated as an annual. It is not likely to survive the winter in Michigan. It grows 1 to 2 feet high with white or purplish flowers. The green parts of the plants are used for seasoning soups, meats, fish, sausages, dressings, salads, and as a garnish. The branches may be cut before flowering and dried for winter use. The plant has also had medicinal uses. Oil distilled from the plant is used in perfumes, soap, pomades, etc. Seed should be sown out-of-doors in drills 15 inches apart, in May or may be sown earlier in a cold frame where the seedlings may be shaded until well established. They may then be transplanted to the garden. It may also be propagated from cuttings. It grows best in a sandy loam. The plants may also be grown in pots in the window garden. The leaves are cut as the flowers begin to appear and then dried. More commonly the plants are harvested late in the summer by cutting close to the ground.

Papaver somniferum, OPIUM POPPY, "Maw" seed is the source of poppy seeds used in breads and scattered on the surface of rolls, breads, cakes, and other pastries, and for flavoring other foods. Oil may also be obtained from the seeds. The oil is used in soap making and as salad oil. The plant grows 3 to 4 feet high and does best in a well-drained light soil. Seeds should be sown in the early spring (April). They may also be sown in the fall, as the plant is a hardy annual.

This crop may be drilled in rows 1 to 2 feet apart, requiring about 1 pound of seed to the acre. It is probable that on clean land the seed could be broadcast, but this method is not recommended. Barely cover the seeds. The use of a light roller would be sufficient to cover the seeds. When the plants are 3 or 4 inches high "chop out" plants with the hoe so that they stand in clumps about 6 inches apart. Later they may be thinned to stand 6 inches apart. In Europe the pods are harvested by hand and dried on a drying floor. Probably a light combine could be used. The blue-seeded form is the one commonly used for culinary purposes, baking, etc. The seeds are harvested after the seedpods are thoroughly dry.

CAUTION. The growing of poppy seed in Michigan requires a state license and a federal permit.

Petroselinum hortense, PARSLEY, may be treated as a hardy annual. Seed should be sown in the early spring. The leaves are used for flavoring soups and for garnishing roast meats, fish, salads, etc. This plant is also valuable as an edging in the flower garden. Plants may be lifted in the fall and grown in pots in the window garden. The leaves may be dried for use in flavoring.

Pimpinella Anisum, ANISE, is an easily grown annual with umbels of cream-colored flowers growing to a height of 1½ to 2 feet. The seeds are valuable for use in medicines, for flavoring breadstuffs, pastries, drinks, confectionery, curry powders, cheese, etc. Anise oil is distilled from seeds and plant. About 50 pounds of seed will produce a pound of oil. The oil is used for flavoring beverages, drugs, and in perfuming soap, etc., and as a component of some perfumes. The ground seeds may be used with other materials in making sachets. The leaves may be used for flavoring bread and pastries, as a garnish, for salads, and as a pot-herb. Seed may be sown in spring (May) in a well-drained, sandy loam. Old seed will not germinate. The seeds which are to be used for flavoring should be gathered before they are thoroughly ripe, as they shatter quickly as soon as mature. After drying and cleaning, they should be stored in a light, airy place.

For commercial production the soil should receive a light application of manure. The seed should be sown in drills 15 inches apart. Later thin to stand 6 inches apart. The crop is ready for harvest in about four months. It should therefore, be a profitable crop in some parts of Michigan.

Satureia Hortensis, SUMMER SAVORY, grows 6-12 inches high, bearing white, pink, or purple flowers. The foliage and green parts may be harvested in mid-summer for use in flavoring meats, fish, sausage, dressings, salads, boiled vegetables, etc. The pulverized dried leaves are also used in making conserves and syrups, and as a condiment. Seed should be sown in early spring (May) in a well-drained gravelly or sandy loam in rows a foot apart, and the plants later thinned to 4 or 5 inches apart. A perennial form, *S. montana*, WINTER SAVORY, is used in the same way.

Sesamum indicum, SESAME or BENE is a tropical herb valuable for its seeds which may be used in cookies, cakes, etc. Oil of sesame is expressed from the seeds and is an important product in some parts of the world. The seed may be sown out-of-doors in May in a well-drained soil. Harvest in September. Requires a warm climate for successful culture.

Tagetes lucida, TARRAGON MARIGOLD, (See page 41), is occasionally used as a substitute for Tarragon, *Artemisia Dracunculus*. The leaves may be used for flavoring vinegar, pickles, relishes, and mustard and for seasoning salads.

Trigonella Foeniculum-Graccum, FENNGREEK, is an annual with white flowers growing 2 feet high. It requires a well-drained garden loam. The seeds are used as food in some countries. Formerly it was used medicinally and is still valued by veterinarians for its medicinal properties and by stockmen as an aid in fattening stock.

Tropaeolum majus, NASTURTIUM, is frequently used as a savory herb. Leaves and flowers may be used in salads, and sandwiches, while the immature seeds are often used for flavoring mixed and mustard pickles, relishes, etc.

For those requiring more detailed information on herbs, the following books are suggested:

- Culinary Herbs. M. G. Kains, Orange Judd Company, New York, 1912.
- Gardening with Herbs. H. M. Fox, The MacMillan Company, New York, 1933.
- Magic Gardens. R. E. Clarkson, The MacMillan Company, 1939.
- What to Do with Herbs. M. C. Dennis, E. P. Dutton & Co., N. Y., 1939.
- Les Plantes Medicinales. Georges Pellerin, Librairie Hachette, Paris, 1929.
- The Book of Herbs. R. Northcote, J. Lane Co., New York and London, 1903.
- Herbs. H. N. Webster, Hale, Cushman and Flint, Boston, 1939.
- Profitable Herb Growing and Collecting. Ada B. Teetgen, Chas. Scribners, New York, 1919.

OTHER PUBLICATIONS

- Herbs—Their Culture and Use. C. P. Brooks and A. Graham, Vermont Agricultural Extension Circular 83, 1935.
- Savory or Aromatic Herbs in the Kitchen Garden. W. R. Beattie, B. P. I., U. S. Department of Agriculture, Washington, D. C.
- The Herb Garden. G. P. Van Eseltine, N. Y. Agricultural Extension Circular No. 157, 1935 (Geneva), Revised, 1936.
- American Medicinal Plants of Commercial Importance. Misc. Pub. 77, U. S. Dept. of Agriculture, Office of Information, Washington, D. C.
- Culinary Herbs. A. E. Hutchins and L. Sando, University of Minn. Agr. Ext. Circ. 54.
- Herbs—Their Culture and Uses. A. E. Hutchins and L. Sando, Pamphlet 38, University Farm, St. Paul, Minn.
- Methods of Extracting Volatile Oils from Plant Materials and the Production of Such Oils in the United States. U. S. Dept. of Agriculture Tech. Bul. No. 16 (Jan. 1928).
- Mimeograph Material from U. S. Dept. of Agriculture, Washington, D. C.
- Mimeograph Material from Horticultural Department, Michigan State College, East Lansing.

ANNUAL VINES

There are a number of annual vines. The most common are listed here with brief notes.

Boussingaultia baselloides, MADEIRA VINE or MIGNONETTE VINE, is a tender perennial vine growing 10 to 20 feet high. It has tuberous roots which may be dug up in the fall and stored the same as Dahlias.* It is used as a screen for porches, verandas, etc.

Cobaea scandens is a rapid growing tender perennial, treated as annual. Seed should be sown early in March in pots in frames. The seed should be placed on edge.

Calonyction aculeatum (*Ipomaea Bona-Nox*) MOONFLOWER, grows 10 to 20 feet high but does not flower until late and so is not satisfactory here.

Cardiospermum Halicacabum, BALLOON VINE, grows 3 to 8 feet high and has interesting inflated seed pods. Seed may be started early in pots and planted out in late May or June.

Dolichos Lablab, grows 10 to 20 feet, with purple or white flowers. Seed may be planted in May.

Eccremocarpus scaber, growing 10 feet high is a perennial, treated as annual.

Echinocystis Lobata, WILD CUCUMBER, is a hardy annual of rapid growth, useful for covering unsightly objects. Seed may be sown out-doors in April or May.

Humulus japonicus, JAPANESE HOP, grows 10 to 20 feet high. Seed may be sown in early May.

Ipomaea purpurea, TALL MORNING GLORY, grows 4 to 10 feet high. There are numerous varieties. Seed may be sown in May. If seed is soaked a few hours in warm water it will germinate more quickly. *Ipomaea tricolor* grows 10 to 20 feet high, has purple flowers, and requires the same culture as *I. purpurea*. *Ipomaea setosa*, BRAZILIAN MORNING GLORY, makes a thick screen for covering arbors. Sow seed in May. The rose-purple flowers appear from August to frost.

Ipomaea hederacea grows 2 to 8 feet high. There are many strains and varieties including the JAPANESE MORNING GLORIES. Sow seed in May. The rose, white, blue, or crimson flowers appear from July to frost.

*See Special Bulletin No. 266, Mich. Agr. Exp. Sta., page 17.

Maurandia Barclaiana is a slender perennial climber treated as an annual. Seed may be sown in frames in March. It is used for window boxes, baskets, or vases. *Maurandia Lophospermum* (*Lophospermum scandens*), CLIMBING FOXGLOVE, requires the same treatment as *M. Barclaiana*.

Melothria scabra, MUSK VINE, is a half-hardy annual used for covering unsightly objects. Seed may be sown in May. *Melothria punctata* (*Bryonia punctata*) is a tender perennial. Seed should be sown early in frames. The roots may be dug and stored in sand over winter.

Momordica Charantia, BALSAM PEAR, is a tender annual growing 10 feet high. *Momordica Balsimina*, BALSAM APPLE, grows 6 feet high.

Phaseolus multiflorus, SCARLET RUNNER BEAN, is a rapid-growing vine 10 to 15 feet high having scarlet flowers.

Quamoclit pinnata (*Ipomaea Quamoclit*) CYPRESS VINE, or CARDINAL CLIMBER, grows 10 to 20 feet high and has small scarlet trumpet-shaped flowers. There is also a white-flowered variety, *alba*. Seed should be sown in pots in frames in early April. If the seed coats are filled, the seeds will germinate better. *Quamoclit coccinea* (*Ipomaea coccinea*), STAR IPOMAEA, grows 10 feet high and has small scarlet flowers. There is a yellow-flowered form, *luteola*. It should receive the same culture as *Q. pinnata*. *Quamoclit lobata* (*Mina lobata*), growing 15 to 20 feet high, has flowers that are at first crimson, fading to yellow. It requires the same culture as *Q. pinnata*.

Rhodochiton volubile, PURPLE BELLS, should be treated as a tender annual vine.

Tropaeolum (see pages 43 and 53).

GOURDS

Gourds have been grown in gardens for many years. All are vine-like plants. The culture of these plants is, for the most part, the same as for squash, pumpkins, cucumbers, or melons. Some forms, such as *Trichosanthes Anguina* and *Cucumis dipsaceus*, should be started early under glass. All kinds should be sprayed or dusted with insecticides or otherwise protected against insects such as cucumber beetle, squash bug, and squash-vine borer which attack the better known cucurbits.

Gourds are grown largely for their curious ornamental fruits, although some kinds are edible.

The storage and treatment of gourds is a difficult problem probably

because treatment varies with varieties. Some varieties such as the warty hard head gourds and the broad-striped gourds keep very well at room temperature. The Lagenarias do not retain the color; they should be dried quickly in a warm dry room and when thoroughly dry may be painted.

Some specimens will start rotting, very soon after harvesting. There doesn't seem to be very much that can be done to prevent this. For ornamental purposes the gourds may be coated with shellac, varnish or paint. Gourds so treated may be further polished with wax. However, such coating will not prevent rotting of some specimens.

Benincasa hispida, WAX GOURD, is a vine-like plant resembling the squash and requires the same cultural treatment (see Lagenaria). The fruits may also be used for pickling and for making preserves.

Cucumis Anguria, the GOOSEBERRY GOURD, is a near relative of the muskmelon and requires the same culture. It is grown for its curious fruit which may also be used for making pickles.

Cucumis dipsaceus, the HEDGEHOG GOURD, is a close relative to the muskmelon and requires the same cultural treatment.

Cucurbita Pepo ovifera includes the gourd-like pumpkins. These are small, hard-shelled varieties of little value as food and of varying shapes and color markings. The EGG GOURD, the MOCK ORANGE GOURD and the PEAR GOURD belong in this group. The culture is the same as for squash. (See Lagenaria.)

Lagenaria leucantha is an exceedingly variable species which includes the CALABASH, BOTTLE, DIPPER and similar gourds. The plant is a tender vine of rampant growth and should be given the same culture treatment as squash. Best results are to be obtained by sowing the seed in a warm, sunny location in late May or early June. They may also be started in pots in a hotbed in April or May and planted out in June.

Luffa cylindrica, DISH-CLOTH GOURD, is another of the group of gourds that should be given the same culture as Lagenaria.

Trichosanthes Anguina, the SERPENT or SNAKE GOURD, is grown for the long, slender fruit which occasionally attains a length of 6 feet. The seeds should be started in pots in a hotbed in March and transplanted into the garden in early June.

Further information on gourds can be obtained by consulting "The Garden of Gourds," L. H. Bailey, MacMillan Company, New York, 1937.

ORNAMENTAL GRASSES

Several annual grasses are useful for cutting for bouquets or for drying and dyeing. Many may be sown in the open ground in May, while the remainder (marked e) should be sown early in frames and transplanted later. Some are perennial but are treated as annuals. They are dried for winter bouquets in the same way as are the Everlastings. Some kinds are commonly dyed various colors. Some may be cut and dried at different stages of development. While these dried grasses last a long time, they often become dirty from dust. Some may be freshened by washing carefully with white soap and water. After washing they should be dried by suspending with the heads down where the drying will be rapid. The most popular kinds are marked with a star (*).

* *Agrostis nebulosa*, CLOUD GRASS. 8"-12", for cutting and drying; should be cut young.



Fig. 38. *Brisa*. Several species are used for drying.

- * *Agrostis hyemalis*, SILK-GRASS, HAIR-GRASS, TICKLE-GRASS. 8"-18", should be cut young for drying.
Agrostis laxiflora.
- * *Aira capillaris* (*Agrostis elegans*), HAIR GRASS. 4"-12", for dry bouquets.
Aira caryophylla. 4"-12".
Anthoxanthum gracile, VERNAL or SPRING-GRASS. 9", for edgings.
Avena sterilis, ANIMATED OATS. 18"-36", curiosity.
Avena nuda elegantissima.
Brachypodium gracile. For bouquets.
- * *Briza maxima*, TALL QUAKING GRASS. 1'-2', excellent for drying and dyeing.
- * *Briza minor* (*B. gracilis*, *B. minima*), QUAKING GRASS. 4"-15".
- * *Briza media*, COMMON QUAKING GRASS. 9"-20", perennial.
- e *Bromus brizaeformis*. 1'-2', for cutting and drying.
- e *Bromus macrostachys*. 1'-2'.
- e *Bromus madritensis*. 1'-2'. Fine for drying and dyeing.
- *e *Chloris polydactyla* (*C. barbata*) FINGER GRASS. 1'-3'. Fine for drying and dyeing. Tender perennial.
- * *Chloris elegans*. 1'-3'. Fine for drying and dyeing.
- * *Coix Lacryma-Jobi*, JOB'S TEARS. 2'-4'. Seeds may be used as beads; var. *aurea zebrina* (variegata), blades yellow striped.
- Cyperus* sp. Various native species, as *C. esculentus*, may be dried and dyed.

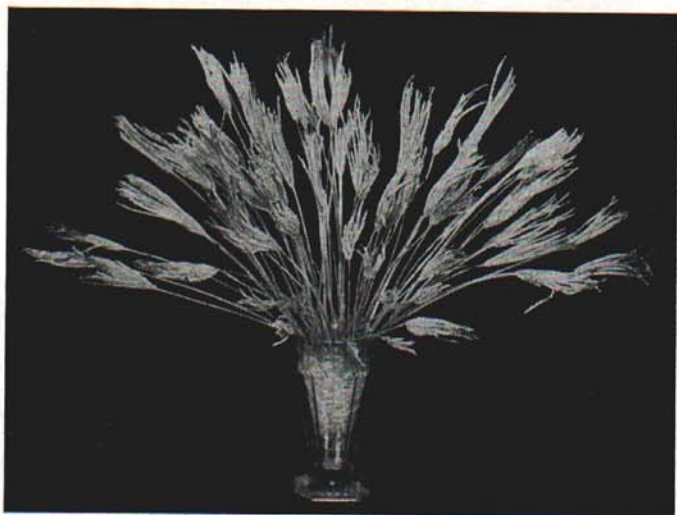


Fig. 39. *Chloris elegans* is a tender annual grass commonly grown for drying and dyeing for winter bouquets.

- Cyperus parmata* (*C. congesta*). Listed as an annual.
- Desmazeria sicula* (*Brizopyrum siculum*) SPIKE GRASS. 8'-12', for edging and for cutting.
- Eleusine coracana*, AFRICAN MILLET. 2'-4'.
- Eleusine indica*, GOOSE-GRASS. 2'-4'. Coarse, weedy.
- **Eragrostis interrupta* (*E. elegans*) LOVE GRASS. 1'-2'. For bouquets and for drying.
- Eragrostis amabilis* (*Poa amabilis*). 1'-2'. For bouquets.
- Eragrostis maxima*, GIANT LOVE GRASS. 2'-3'. For bouquets.
- Eragrostis abyssinica*. 1'-3'. For bouquets.
- Eragrostis suaveolens*. 1'-2'. For bouquets.
- Eragrostis pilosa* (*Poa pilosa*). For edgings, bouquets; a native grass.
- Euchlaena mexicana* (*E. luxurians*), TEOSINTE, 5'-10'. Resembles corn.
- Festuca rigida*. 1'. For bouquets.
- Festuca stipoides* (*F. incrassata*). For bouquets.
- Hordeum jubatum*, SQUIRREL-TAIL GRASS, WILD BARLEY. 2' For bouquets.
- **Lagurus ovatus*, HARE'S-FOOT GRASS, HARE'S-TAIL GRASS. 1'.
- Lamarckea aurea* (*Chrysurus cynosuroides*, *C. aurens*). GOLDEN TOP. ½'-1'.
- Leptochloa arabica*. For bouquets.
- Leptochloa fascicularis*. For bouquets.
- Panicum capillare*, OLD WITCH-GRASS. 2'. For bouquets.
- Paspalum membranaceum* (*P. elegans*), MILLET GRASS.
- Pennisetum villosum* (*P. longistylum*), PLUMY GRASS. 2'. For bedding, bouquets.
- e**Pennisetum Ruppelii* (*P. Ruppelianum*), CRIMSON FOUNTAIN GRASS. 2'-3'. For bedding, bouquets.
- Polypogon monspeliensis*, BEARD GRASS. 8"-20".
- Setaria italica rubrofructa violacea*, SIBERIAN MILLETT. For bouquets.
- Setaria macrostachya* (*S. alopecurus*). For bouquets.
- Sporobolus minutiflorus*.
- **Tricholaena rosea*, RUBY-GRASS, NATAL-GRASS. 1½'-3'. For drying.
- Zea Mays japonica variegata*. Corn with variegated blades.
- Zea Mays gracillima variegata*. Very dwarf.

ANNUALS THAT MAY BE SOWN IN THE FALL

The following is a list of annuals which reseed in Michigan.¹ These annuals are, therefore, recommended for planting in the fall.

Alyssum maritimum, *Amberboa muricata rosea*, *Ammobium alatum*, *Anagallis grandiflora*, *Anchusa capensis*, *Arctotis grandis*, *Argemone grandi-*

¹Reprinted from *Michigan Agricultural Experiment Station Quarterly Bulletin*, Vol. 18, No. 1, August, 1935.

*flora, Artemesia sacrorum viride, Atriplex hortensis atro-sanguinea, Asperula orientale, Calendula officinalis, Celosia argentea, Celosia japonica, Centranthus macrosiphon, Centaurea americana, Centaurea Cyanus, Centaurea depressa, Centaurea moschata, Cerinthe major, Chrysanthemum carinatum, Chrysanthemum coronarium, Chrysanthemum segetum, Cleome spinosa, Coix Lacryma-Jobi, Collinsia bicolor, Convolvulus tricolor, *Coreopsis coronata, Coreopsis Drummondii, Coreopsis radiata, Coreopsis tinctoria atropurpurea, Cuphea lanceolata, Cuphea miniata, Cynoglossum amabile, Delphinium Ajacis, Delphinium Consolida, Delphinium cardiopetalum, Dimorphotheca aurantiaca, Echium plantaginium, Erodium gruinum, Erysimum Perofskianum, Eschscholtzia californica, Euphorbia marginata, Gaillardia pulchella, Gilia achilleaefolia, Gilia capitata, Gilia coccinea, Gilia congesta, Gilia densiflora, Gilia tanacetifolia, Gilia tricolor, Gomphrena globosa, Hebenstreitia comosa, Helianthus annuus, Helianthus debilis, Helipterum Humboldtianum, Helipterum roseum, Herniaria hirsuta, Hibiscus Trionum, Humulus japonicus, Iberis amara, Impatiens Balsamina, Kochia trichophylla, Lavatera trimestris, Layia elegans, Lepachys columnaris pulcherrima, Linaria maroccana, Linaria reticulata aurea purpurea, Lonas inodora, Lupinus sulphureus, Lychnis coeli-rosa, Malcomia maritima, Martynia fragrans, Matricaria capensis, Matthiola bicornis, Mentzelia Lindleyi, Moluccella, laevis, Nicandra Physalodes, Nicotiana Sanderæ, Nigella damascena, Ocimum basilicum, Oenothera rubricalyx, Oxyura chrysanthemoides, Papaver Rhoeas, Papaver somniferum, Petunia hybrida "Rose of Heaven," Phacelia congesta, Phacelia tanacetifolia, Phacelia viscida, Phacelia Whitlavia, Phacelia divaricata Wrangeliana, Phlox Drummondii, Portulaca grandiflora, Rudbeckia amplexicaulis, Rudbeckia bicolor, Salvia Columbariae, *Salvia farinacea, Salvia Horminum, Silene Armeria, Specularia Speculum, *†Statice sinensis, Tagetes patula nana, †*Verbena erinoides, †*Verbena hybrida, Xeranthemum annuum.*

ANNUALS FOR EDGING

Actinolepis coronaria, Ageratum Houstonianum (dwarf varieties), Alonso Warscewiczii miniata compacta, Alyssum maritimum, Antirrhinum pumilum, Antirrhinum "Rock Hybrids," Brachycome ideridifolia, celosia cristata, Centaurea Cineraria, Centaurea gymnocarpa, Chrysanthemum segetum pumilum, Chrysanthemum Parthenium aureum, Chrysanthemum Parthenium tubulosum, Coreopsis Drummondii, Dianthus chinensis, Dianthus "Sweet Wivelsfield," Dimorphotheca annua, Dimorphotheca aurantiaca, Dimorphotheca aurantiaca hybrida, Downingia elegans, Erysimum Perofskianum nanum, Eschscholtzia californica, Eschscholtzia tenuifolia, Gamolepis tagetes, Gilia dianthoides, Gilia micrantha, Godetia grandiflora, Helianthus debilis variety

*Perennials that should be treated as annuals.

†Mature plants do not survive the winter.

Perkeo, *Helianthus debilis* variety *Liliput*, *Helipterum Humboldtianum*. *Iberis amara* (dwarf varieties), *Iberis hybrida*, *Lobelia Erinus*, *Lychnis Coeli-rosa* (Blue Bouquet, Tom Thumb), *Matricaria inodora*, *Matricaria capensis*, *Matthiola bicornis*, *Myosotis arvensis*, *Nemesia versicolor compacta*, *Ocimum minimum*, *Omphalodes linifolia*, *Phlox Drummondii*, *Scabiosa atropurpurea nana*, *Senecio Cineraria candidissimus*, *Silene Pendula*, *Specularia Speculum*, *Limonium (Statice) Bonduellii*, *Limonium (Statice) sinuata*, *Tagetes patula nana*, *Tagetes signata pumila*, *Tolpis barbata*, *Torrenia Fournieri*, *Torrenia flava*, *Tropaeolum majus nanum*, *Viola cornuta*, *Viola gracilis*, *Viola hybrida*, *Zinnia elegans* (dwarf varieties).

ANNUALS FOR MASS EFFECT IN BEDDING OR BORDERS

Note: g, ground cover; d, dwarf; m, medium high (1-2 ft.); t, tall (2-3½ ft.); v, very tall, for borders only.

Abronia sp., dg; *Alonsoa Warscewiczii*, m; *Alonsoa acutifolia*, m; *Alonsoa linearis*, m; *Alyssum maritimum*, d; *Amarantus sp.*, t; *Ammobium alatum*, mt; *Anagallis linifolia*, d; *Antirrhinum majus*, m; *Antirrhinum majus nanum*, m; *Antirrhinum majus pumilum*, d; *Antirrhinum rock hybrids*, d; *Arctotis breviscapa*, d; *Asperula orientalis*, dm; *Brachycome iberidifolia*, d; *Browallia speciosa*, d; *Browallia grandiflora*, m; *Celosia cristata*, d; *Celosia argentea*, t; *Centaurea gymnocarpa*, dm; *Centranthus macrosiphon*, m; *Cheiranthus linifolius (Erysimum linifolium)*, m; *Cheiranthus Kewensis*, mt; *Chrysanthemum carinatum*, mt; *Chrysanthemum coronarium*, t; *Chrysanthemum Parthenium aureum*, m; *Chrysanthemum Parthenium tubulosum*, m; *cleome spinosa*, t; *Collinsia bicolor*, m; *Collinsia grandiflora*, d; *Convolvulus tricolor*, d; *Coreopsis Drummondii*, d; *Coreopsis cardaminefolia*, dm; *Cosmos bipinnatus*, v; *Cuphea miniata*, d; *Delphinium Ajacis*, t; *Delphinium consolida*, t; *Delphinium grandiflorum* (Butterfly type), m; *Dianthus chinensis*, d; *Dianthus "Sweet Wivelsfield,"* d; *Dimorphotheca aurantiaca*, dm; *Dimorphotheca annua*, d; *Dimorphotheca Ecklonis*, m; *Dolichos Lablab nanus*, m; *Dracocephalum Moldavica*, m; *Echium creticum*, m; *Echium plantagineum*, m; *Elsholtzia cristata*, m; *Erysimum Perofskianum*, m; *Eschscholtzia californica*, dm; *Euphorbia heterophylla*, mt; *Euphorbia marginata*, mt; *Gaillardia amblyodon*, m; *Gaillardia pulchella*, m; *Gomolopsis Tagetes*, d; *Godetia grandiflora*, d; *Gomphrena globosa*, m; *Helianthus debilis*, dt; *Helichrysum bracteatum nanum*, m; *Herniaria hirsuta*, g; *Hibiscus Trionum*, m; *Hunnemannia fumariaefolia*, m; *Iberis amara*, dm; *Iberis umbellata*, dm; *Iberis hybrida*, d; *Impatiens Balsamina*, m; *Lavatera trimestris*, tv; *Layia elegans*, d; *Layia glandulosa*, m; *Layia platyglossa*, m; *Linaria bipartita*, d; *Linaria Broussonnetii*, d; *Linaria heterophylla*, m; *Linaria maroccana*, dm; *Linaria reticulata*, d; *Linaria tristis*, d; *Linum grandiflorum*, m; *Lobelia Erinus*, d; *Lobelia tenuior*, d; *Lupinus sp.* (see

page 28; *Lynchnis Coeli-rosa*, dm; *Malva sylvestris*, t; *Martynia fragrans*, m; *Matricaria Chamomilla*, dm; *Matricaria eximia plena*, d; *Matricaria inodora*, m; *Matricaria parthenoides*, m; *Matthiola bicornis*, d; *Matthiola incana annua*, mt; *Mentzelia involucrata*, dm; *Mentzelia Lindleyi*, mt; *Mirabilis Jalapa*, t; *Mirabilis longiflora*, t; *Myosotis arvensis*, dm; *Nemesia barbata*, d; *Nemesia strumosa*, d; *Nemesia versicolor*, d; *Nicotiana alata grandiflora*, t; *Nicotiana Sanderae*, t; *Nicotiana suaveolens*, m; *Nicotiana sylvestris*, t; *Nierembergia frutescens*, m; *Nierembergia gracilis*, m; *Nigella damascena*, m; *Nolana paradoxa*, dg; *Ocinum Basilicum*, m; *Oenothera acaulis*, d; *Oenothera Drummondii*, m; *Oenothera gigas*, v; *Oenothera rubricalyx*, "Afterglow," m; *Oenothera telaptera Childsii*, d; *Papaver glaucum*, m; *Papaver pavonium*, m; *Papaver Rhoeas*, m; *Papaver somniferum*, mt; *Papaver umbrosum*, dm; *Pentstemon gloxinoides*, m; *Perilla Frutescens*, tv; *Petunia hybrida*, dm; *Phacelia campanularia*, d; *Phacelia linearis*, d; *Phacelia tanacetifolia*, t; *Phacelia viscida*, mt; *Phacelia Whittlavia*, m; *Phlox Drummondii*, d; *Polygonum orientale*, mt; *Portulaca grandiflora*, dg; *Rudbeckia bicolor*, m; *Salpiglossis sinuata*, mt; *Salvia carduacea*, dm; *Salvia coccinea*, t; *Salvia columbaria*, m; *Salvia farinacea*, mt; *Salvia Horminum*, m; *Salvia patens*, m; *Salvia splendens*, mt; *Sanvitalia procumbens*, dg; *Saponaria calabrica*, d; *Scabiosa atropurpurea grandiflora*, m; *Scabiosa atropurpurea nana*, d; *Schizopetalon Walkeri*, d; *Sedum caeruleum*, dg; *Senecio Cineraria candidissimus*, m; *Senecio elegans*, m; *Silene Armeria*, m; *Silene pendula*, d; *Statice Bonduelli*, m; *Statice sinense*, m; *Statice sinuata*, m; *Statice spicata*, d; *Statice superba*, mt; *Statice Suworowii*, dm; *Tagetes erecta*, mt; *Tagetes patula*, d; *Tagetes signata*, m; *Tagetes signata pumila*, d; *Thunbergia alata*, dg; *Tithonia speciosa*, v; *Tolpis barbata*, m; *Torenia flava*, d; *Torenia Fournieri*, d; *Ursinia anethoides*, d; *Ursinia pulchra*, m; *Ursinia versicolor*, dm; *Venidium decurrens calendulaceum*, m; *Verbena erinoides*, mg; *Verbena hybrida*, dg; *Verbena venosa*, dm; *Viola sp.* (see page 44), d; *Zaluzianskya capensis*, d; *Zaluzianskya selaginoides*, d; *Zinnia elegans* (see page 45); *Zinnia Haageana* (see page 45).

Chart 1. Period of flowering of kinds used for cut flowers.

	May 15-31	June 1-15	June 15-30	July 1-15	July 15-31	August 1-15	August 15-31	September 1-15	September 15-30	October
<i>Ageratum Houstonianum</i>										
<i>Anchusa capensis</i>										
<i>Andirrhinum majus</i>										
<i>Arctotis grandis</i>										
<i>Calendula officinalis</i>										
<i>Callistephus chinensis</i>										
<i>Campanula Medium</i>										
<i>Celosia argentea</i>										
<i>Centaurea americana</i>										
* <i>Centaurea Cyanus</i>										
* <i>Centaurea moschata</i>										
* <i>Centaurea suaveolens</i>										
<i>Cheiranthus Cheiri</i>										
<i>Cheiranthus Kewensis</i>										
<i>Cheiranthus linfofolius</i>										
<i>Chrysanthemum carinatum</i>										
* <i>Chrysanthemum coronarium</i>										
<i>Chrysanthemum Parthenium tubulosum</i>										
<i>Chrysanthemum segetum</i>										
* <i>Clarkia elegans</i>										
* <i>Coreopsis tinctoria</i>										
<i>Cosmos bipinnatus</i>										
<i>Cosmos bipinnatus praecox</i>										
<i>Cynoglossum amabile</i>										
* <i>Delphinium Ajacis</i>										
* <i>Delphinium consolida</i>										
<i>Dianthus caryophyllus Chabaud</i>										
<i>Dianthus Sweet Wivelsfield</i>										
<i>Dracocephalum Moldavica</i>										
* <i>Emilia flammea</i>										
<i>Erysimum Perofskianum</i>										
<i>Eschscholzia californica</i>										
<i>Eupatorium Lasseauntii</i>										
<i>Euphorbia marginata</i>										
<i>Gaillardia pulchella</i>										
* <i>Godetia amoena</i>										
* <i>Gypsophila elegans</i>										
<i>Helianthus debilis</i>										
<i>Hummannannia Jumaricefolia</i>										
* <i>Iberis amara coronaria</i>										
* <i>Iberis umbellata</i>										
<i>Incarvillea variabilis</i>										
<i>Lathyrus odoratus</i>										
* <i>Layia platyglossa</i>										
* <i>Lepachys columnaris</i>										

*May be grown close together without thinning (See page 4).

Chart 1. Continued.

	May 15-31	June 1-15	June 15-30	July 1-15	July 15-31	August 1-15	August 15-31	September 1-15	September 15-30	October
* <i>Leptosyne maritima</i>										
* <i>Leposyne Stillmanii</i>										
* <i>Linaria heterophylla</i>										
* <i>Linaria maroccana</i>										
* <i>Linaria reticulata</i>										
<i>Lupinus</i> (see page 28)										
<i>Matricaria</i> (see page 12)										
<i>Matthiola incana annua</i>										
* <i>Myosotis arvensis</i>										
<i>Nemesia strumosa</i>										
* <i>Nigella damascena</i>										
<i>Penstemon glazimiovides</i>										
* <i>Phlox Drummondii</i>										
<i>Polygonum orientale</i>										
<i>Rudbeckia bicolor</i>										
* <i>Salpiglossis sinuata</i>										
<i>Salvia farinacea</i>										
<i>Salvia splendens</i>										
* <i>Saponaria Vaccaria</i>										
* <i>Scabiosa atropurpurea</i>										
<i>Schizanthus</i> sp. (see page 38)										
<i>Senecio elegans</i>										
<i>Statice Bonduelli</i>										
<i>Statice sinuata</i>										
<i>Statice Suarorovi</i>										
<i>Tagetes erecta</i>										
* <i>Theliperna hybridum</i>										
<i>Tithonia speciosa</i>										
* <i>Trachymene caerulea</i>										
<i>Tropaeolum majus</i>										
<i>Veridium fastuosum</i>										
<i>Verbena hybrida</i>										
<i>Viola cornuta</i>										
<i>Viola gracilis</i>										
<i>Viola hybrida</i>										
<i>Viola tricolor</i>										
<i>Zinnia elegans</i>										
<i>Zinnia Haageana</i>										

*May be grown close together without thinning (See page 4).