



SCARLET SAGE



AGERATUM



HOLLYHOCK



NASTURTIUM



ZINNIA

The Spirit of Fall Flowers

By E. LAURENCE PALMER

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SHORTLY before Anna Botsford Comstock's mother died, she said to her daughter, "Heaven may be a finer place than the earth but it cannot be more beautiful". She had stood watching a late summer sunset over a garden before she made the remark. Could complete pleasure in the more wholesome realities be better expressed? To be sure, the world is beset by wars, greed, hate, hypocrisy and unfaithfulness; many of the finer things go unappreciated; disappointments are often discouraging. Yet rarely do these disappointments come with intelligent efforts to make our flower garden reach a climax of beauty in the fall months.

Flowers bloom in my garden on the identical plants that both of my grandfathers planted before I was born. They are about the only things I have that periodically remind me that those bewhiskered gentlemen, of whom I used to stand in awe, must have loved beauty in spite of hands gnarled by years of plowing and of milking. Although I have changed my home four times in the last forty years, and each time have discarded many things, I have never even considered abandoning these flowers pampered in my family for at least three generations. One time, when I made a rather sudden change, I sneaked back to the old home after dark and dug up these plants after all our other effects had gone.



CANNA



GAILLARDIA

Thrice in my life, I refused what seemed to be professional advancement because it meant that I would have to try to live without a garden, and the things that go with a garden. I am rather ashamed of myself for even thinking of living without the chance, now and then, to renew my energy by getting my feet on good rich soil and my finger-nails stubbed and broken. It is true that Joe, who learned his gardening in Italy and does odd jobs around the yard, does most of the routine work. But there are some tasks to which we cannot and would not trust even his acknowledged—and, by him, proclaimed—talents in this direction. While I am sure I would not care to have to make my living running a flower garden, I am equally sure that I could not live to the full without one into which to poke my fingers between sessions with the typewriter and the classroom blackboard.

Now why do you and I have flower gardens? We eat few, if any, of the plants that grow there; they give us no food, clothing, shelter and the like. They cost money to get established and labor to keep in shape. Yet, we have them, and when friends come to see us we are likely to show them the garden before we do the spare bedroom.

After dinner at a friend's recently, he insisted that I go into his garden to see



PETUNIA



HELIOTROPE



MARIGOLD



CHINA ASTER



COSMOS

the mallows he had grown from seeds I sent him one Christmas in lieu of the orthodox star-spangled Christmas card. Other friends in the South, East and West have similar flowers from the same plants in my garden—plants that cement friendships, which our family values above most other things. It is for such real values, I believe, that most of us strive, and it is in a flower garden that at least a part of the finer side of life finds its more nearly complete expression. You can mow the lawn while you occupy your mind with business matters. You can stoke the furnace while planning a little professional strategy. You can shovel the sidewalks and solve a dry-as-dust academic problem. I do not believe, however, that you can really work in a flower garden without cultivating both the garden and the better qualities of good citizenship.

You mow your lawn because you more or less have to. You shovel the sidewalks to keep your feet dry. You stoke the furnace lest you freeze. But you have a flower garden because you *like* a flower garden. You may be a crank on gladiolas, dwarf irises, dahlias, or peonies; you may dote on formal gardens, herb gardens, Indian gardens, or old fashioned gardens, but your real goal is the joy you get from seeing the plants and showing them to your friends. The few who go off on the commercial tangent and who begin to sell the beautiful varieties they have created by careful cross-pollination immediately lose caste with those of us who are proud of our rank-amateur standing. We know that when you put a price on a gladiola it loses value as a token of friendship.

Somehow, the commercial florists have managed to defeat this idealistic philosophy. They have made us believe that when friends are sick or have died, or are getting married, or have a birthday or anniversary, that we

should send flowers, and the flowers must be enclosed in the elaborate, expensive box of the town's best florist. We must not forget the box and the name on it. If we send something from our own garden, we do it with some feeling of shame, that we are a tightwad. But is it really harder to write a check, or to transplant and store through winter some prize gladiola corms? Which calls for the greater sacrifice, to call the florist and say, "Send three dollars worth of the best cut flowers you have to Mrs. Whoosiz in the Memorial Hospital", or to go into the garden and pick your very best flowers—those which you have nurtured through the years—wrap them in the best paper you can find and take them to your friend?

Way back when I was a senior in college I walked into the office of one of my favorite professors—after he had turned in my grades. It was a hot June day. I handed him a flabby, smelly package containing three brook trout that I had caught that morning by getting up before daybreak



STRAWFLOWER

and walking some miles. There was no particular reason why I should have given him the trout except that I liked him and knew that he liked trout. He still mentions those fish, but the memory would not have survived if, instead of going out and getting that gift by my own efforts, I had called up the fish market and said: "Please send Professor George Everett one pound of your best fish. Charge it, and enclose a card saying, 'These fish are sent you as evidence of the glowing esteem of one of your students.'" What's the difference in

a gift, whether we send flowers or whether we send fish? But do you think that if one of my many bosses died I would send flowers from my own flower garden to the funeral? I would not. I would call up the florist and "Say it with flowers" at so much per, or I'd join the committee and contribute so much to the wreath, the amount varying with his rank as a professor, assistant professor, instructor or what. I might, and would, supplement this formal procedure with some choice roots from my garden given to the deceased's wife after the funeral was over, and delivered to her in person without any reference as to why they were given. You can bet your bottom dollar she would remember that longer than anything else I might do. And unless I had a flower garden of which I were proud, I would be denied this solicitude for someone who needed that sort of sympathy.

I know of no one who has written better about the pleasure one gets from giving something for which he has made considerable exertion than Henry Van Dyke. Read his "A Sprig of Spearmint" and see what I mean. He wrote about fish, but he also wrote about sharing with others the things you like best.

Possibly this article should not be written in this style. Possibly, it should give you detailed directions for planting a dahlia, or for spraying green flies, or should include definite formulae for baiting cutworms. Much of this sort

of detail is found in the chart section, and more is in the many books and pamphlets widely available.

There are a few things some of us amateurs like to pass on, however, to beginners at raising flowers. Just before I wrote this, one of my friends who had just bought his first bit of land, and who had just spent his second Sunday with his new garden tools, looked at the blisters on his hands and asked me if it was necessary to work every Sunday the rest of your life if you wanted to have a garden as nice as mine. I assured him that if that were the case I would not have such a garden. He wanted to know how long perennials would last and how long I had had my peonies. When I told him that they had been my grandfather's and that I had done nothing to them for at least five years some of the discouragement left him and the old fighting spirit came back. When I had expanded a little on the merits of hardy perennials, he said he was going to buy a bushel of hardy perennial seeds and sow them broadcast in his garden and then forget them. Of course, I had to warn him of what would happen under such circumstances.

If one has plenty of time and energy, and plenty of money and land, there is no reason why he should not grow the more stylish garden flowers such as the dahlias, cannas and gladiolas. But, no matter what the radio programs tell you, I should not advise the beginner to start off with such species. If you have a new home and new grounds, plant a few quick annuals such as the moss pinks and sweet alysums along the borders, sow some of the standard sweet peas and nasturtiums for the middle of the beds, and start some hollyhocks back against the walls and buildings. But do not stake all your hopes on these. Get from neighbors, or friends, or good nurseries some healthy roots of the hardy perennials like peonies, fall chrysanthemums and some of the ornamental daisies. Get them established, and the next year add a few more, letting them take the place of the annuals you might otherwise plant. As your perennials get bigger, you may dig them up every few years, divide them and use them to occupy new territory. This territory will take care of itself if it is given a good weeding once or twice in the summer. Eventually, it may not even need that weeding.

Before selecting your stock of perennials, get acquainted with some neighbor who has a flower garden. Ask him what kinds of plants he has had trouble with. If iris borers have consistently cleaned out his irises for years, then do not spend money on expensive iris roots. His experiences with other plants may be a helpful guide. Of course, if you take your gardening seriously, you may know some things that your neighbor does not know, but he will know some things about your particular neighborhood that you cannot find in any book.

It is always good to get some idea of the nature of the soil in your garden. A heavy, hard clay, a loose, sterile sand

and a deep, rich, black loam will produce different response from each kind of plant. You cannot expect plants that love sour soil, as do azaleas, to do well on land rich in lime. Choose your plants with soil facts in mind. Suggestions appear in the accompanying chart section.

Remember that the garden will be with you through the year. Do not plan it so that you have a beautiful display of tulips in the spring and a terrible display of weeds in the late summer. Plan to have your different seasons emphasize different colors. If you have chosen red tulips for early spring, then try some iris for blue for the following weeks. Let white daisies follow that. Then have some maroon monardas that will take over from the daisies, to be followed by some pink mallows and some scarlet sage, which may give way to or be supported by some cannas, themselves giving way to some golden strawflowers or fall chrysanthemums. If you follow this suggestion, your garden will never be without interest, and each ten days or two weeks it will differ from the preceding fortnight.

I like to think of my fall flower garden as being typically American. Really, it is an international, or intercontinental, melting pot. I have some brilliant Japanese barberries that grow along one border. Just inside of them are some bachelor buttons, which some people call the Kaiserblume because it is so abundant in the late Kaiser's native land. Growing comfortably with these are some Chinese asters from eastern Asia, some cannas, cosmos, French marigolds, nasturtiums, flowering maples, verbenas, portulacas and petunias from Mexico and Central and South America. I have never yet witnessed a fight in my garden between one of my China asters, which came from Japan, and a strawflower, which came (Continued on page 424)



ROSE
MOSS



GLADIOLA



VERBENA



FL. MAPLE



CORN FLOWER

COMMON NAME SCIENTIFIC NAME ORDER FAMILY	GLADIOLA <i>Gladiolus</i> Liliales Iridaceae	CANNA <i>Canna indica</i> Scitaminales Cannaceae	ROSE MOSS <i>Portulaca grandiflora</i> Caryophyllales Portulacaceae	NASTURTIUM <i>Tropaeolum majus</i> Geraniales Tropaeolaceae
DESCRIPTION	Leaves, erect, sword-shaped, with entire margins, stiff. Underground corms, thick and flat, with both thick and fibrous roots. Flowers, in gorgeous spikes at tip of erect stem. Florets in a spike, from 6 to 30, varying greatly in size, color and shape; usually funnel-shape.	Stems, to nearly 5 feet tall; some related species such as <i>C. edulis</i> growing to 10 feet. Leaves green, about twice as long as broad, smooth throughout, with entire margins, clasping stem at the base. Roots, heavy, tuberous, branching, with finer roots spreading.	Sprawling plant, reaching to height of 10 inches. Stem, round, fleshy, creeping. Leaves, rounded, to 1 inch long and often hidden by flowers when they are open; fleshy and usually smooth. Roots, usually fibrous and rather deeply penetrating but survive transplanting well.	Stems, climbing or sprawling, weak and rather succulent. Leaves, with long petioles, more or less round, with wavy margins, succulent and uniquely flavored. Roots, fibrous. Stems and leaves, smooth, usually light green. Intertwine forming tangled mass.
RANGE AND HABITAT	Some 200 species and many more varieties coming originally from South Africa and from Mediterranean region and Asia Minor. Now developed by culture and crossing to many forms adapted to varying conditions in many parts of the world. American plant breeders have been foremost in this work.	Native of tropical America although thought by Linnaeus to be native of Asia and Africa. There are about 50 species native to the Western Hemisphere, some of which have become naturalized outside their normal range. Favors deep, rich, loose, well-watered soil.	Native of the mountains of southern Brazil. Introduced into United States and established in some places where it occurs as an escape, particularly in south. Survives in hot, dry, sandy soil. Good for path borders, in poor soil.	Native of Peru, with relatives including some 50 species ranging from Mexico to Chile. Best in medium rich, well-drained soils. <i>T. tuberosum</i> , grown under cultivation in South America for edible underground tubers, which are 2 to 3 inches long.
REPRODUCTION	Tender perennial. Blooms 60 to 130 days after corms are planted. Many florets open promptly at one time. Pollination by insects and possibly by humming birds. Fruit, a capsule with many seeds. Also reproduce by cormlets, which are produced from corms and run true to the parent plant. Succeeds best in rich, moist, sandy loam in full sunshine, but sensitive to poor conditions. Should be watered thoroughly each week.	Flowers, normally red or orange, with petals about 1 1/4 inches long and most flowers borne in twos, erect and relatively narrow, with lips orange, spotted with red. When originally brought from West Indies for cultivation in 1830, was grown only for leaves but flowers have been developed and are larger. Tender plant, subject to injury by drought, frost, too much moisture. Seeds will not germinate normally unless filed to let in water.	Flowers, single or double, crimson, red, yellow, white, 1 to 2 inches across, close in evenings and on dark days. Petals, 5, heart-shaped. Stamens, many. Ovary, 1-celled, many seeded. Seeds germinate in about 5 days and may live to 4 years. Blooms through summer to killing frost. Pollinated by insects. Since seeds germinate fastest in warm, dry weather, cool, wet weather may interfere with rapid development.	Flower, solitary, showy, 1 to 2 1/2 inches across, with 1 to 1 1/2 inch spur. Yellow, maroon, red, white, vari-colored or blotched, with rounded petals, 5 sepals, 8 stamens, and 3-celled, 3-seeded ovary. Seeds germinate in 8 days. Blooming begins in 2 months and continues to frost; may live to 4 years. Insect pollination. If soil is too rich, will produce many leaves and few flowers; if too wet, roots will rot.
CULTURE	Attacked by thrips, aphids, "red spiders", borers, a fungal "scab", and many other enemies whose effectiveness varies greatly with moisture, temperature and light conditions. Nicotine sulphate spray controls thrips and aphids. Water spray for "red spiders". Bordeaux mixture for blight. Corms infected with borers or fungal rot should be burned. Corms may well be fumigated before planting after outer scales have been removed.	Roots, dug in autumn, stored in cool cellar, like potatoes, started in March in sand indoors after being divided so each piece has one bud or eye. Potted plants rarely set out before May; should then be set 16 to 18 inches apart. From the hardness of the seeds comes the common name, Indian shot. Seeds may be soaked a day in warm water on back of stove before being sown.	Not reported as subject to many diseases or injuries of fungi and insects. Should be watered lightly until well established. Light cultivation and destruction of competitive weeds and good judgment in planting where there is needed sun is about all care needed. After being established, may be transplanted successfully. Will maintain themselves by self seeding.	Seeds may be soaked before planting. Plant in rows about 1 foot apart after frost danger has passed. Thin to 9 to 12 inches apart. Keep weed competition down and keep soil loosened about the plants until blooming begins. Pick flowers daily if continued yield is desired and protect if frost threatens. Plant lice important enemies, controlled with nicotine sulphate spray. Cabbage worm controlled by arsenate of lead spray. Leaves affected by serpentine miners should be picked and destroyed.
RELATION TO MAN	Highly valuable garden and cut-flower species, with many loyal "fans" increasing its popularity. Corms, planted 4 inches deep, 2 to 3 inches apart, in rows 2 1/2 to 3 feet apart, and at 2 week intervals to spread flowering season. Cormlets planted 1/2 as deep and 1/2 as far apart as corms.	Most attractive foliage plant where mass effects are desired. Purplish-leaved species, <i>C. edulis</i> and <i>C. warcewiczii</i> , the former bearing edible tubers as well as most attractive foliage. <i>C. indica</i> is the old-fashioned green canna, so common in old gardens and in lawn centers.	Ideal as ground cover. Because of variety of color and ability to grow in poor soil popular particularly in warmer, drier regions. Flowers do not survive picking well but serve best on growing plants. Good for children's gardens, and for path borders.	Useful plant for borders and for cut flowers. Leaves may be mixed in salads effectively, and young seeds are commonly pickled or eaten raw. Some forms perpetuated by cuttings being kept through winter in greenhouses. Always widely popular and easily grown.

HOLLYHOCK <i>Athaea rosea</i> Malvales Malvaceae	FLOWERING MAPLE <i>Abutilon hybridum</i> Malvales Malvaceae	GARDEN PETUNIA <i>Petunia hybrida</i> Polemoniales Solanaceae	SCARLET SAGE <i>Salvia splendens</i> Polemoniales Labiatae	COMMON HELIOTROPE <i>Heliotropium peruvianum</i> Polemoniales Boraginaceae
<p>Height, to 9 feet, with erect, unbranched, spire-like, hairy stems. Leaves, deep green, rough, large, lobed, long-stalked, with wavy margins, and relatively conspicuous veins. Roots, heavy, with short, side-crown buds, and with deep-penetrating root commonly branched.</p>	<p>Stem, erect, stiff, rather coarse, and bearing large, bell-shaped flowers dropping from tip. Leaves, somewhat 5-lobed, like some maples and giving plant its common name. Leaves, rather coarse, with prominent veins and long stalks alternate. Root, fibrous.</p>	<p>Stems, sprawling or ascending, over a square yard of space, climbing if support is available; break easily at joints. Leaves pointed, egg-shaped, with rather conspicuous veins. Leaves and stems, clammy to touch because of fine hairs. Both, a rich green. Roots, fibrous and rather large.</p>	<p>Stems, to over 3 feet high, often brittle, 4-angled, smooth and shrubby. Leaves, opposite, about 3 inches long, long stalked, pointed at end, with toothed margins and conspicuous veins. Roots system, fibrous, many branched.</p>	<p>Small trees or vines or shrubs in their native land, but in America, is found in gardens and greenhouses as low shrubby plants. Leaves, oval or oblong, with conspicuous veins. In <i>H. peruvianum</i>, leaves are not narrowed at base as in <i>H. corymbosum</i>. Leaves usually dark green and roughened. Roots, strong and fibrous.</p>
<p>Native of China. Carried to Europe by Crusaders; to America by Pilgrims; now commonly established throughout United States and through much of temperate world. Sun-loving, but tolerates partial shade. Lower leaves demand light. Grows best in well-drained, fertile soils; often as escape.</p>	<p>A hybrid of many species including such garden varieties as Snowball, Fireball, Caprice, Savitzi and Golden Fleece. Some 100 species of herbs and shrubs in the genus, many South American in origin. Indian mallow is closely related, more hardy and often a weed.</p>	<p>Most species are native of South America. This garden species is a hybrid of many others. Over a dozen distinct species now distributed by cultivation over most of the civilized world. Favors sunny exposures where soil is rich and well-watered, but will survive rather severe hardship and much abuse.</p>	<p>Native of Brazil; many varieties. Over 500 species of <i>Salvia</i>, including small-flowered sage used in flavoring meats and other foods. Sagebrush is not a true sage. Common cultivated sages include: Clary, <i>S. sclarea</i>, and Cardinal or Mexican Sage, <i>S. fulgens</i>.</p>	<p>Native of Peru, with upwards of 250 related species in the genus, all of which are native in warmer regions. Now widely distributed, and many are popular as border plants or in greenhouse. When grown outdoors, this species favors strong sunlight and normally rich soil.</p>
<p>Flowers, nearly stemless, but arranged in wand-like formation along main stem; large, single or double; 3 inches or more across; many colored. Many stamens fastened into a tube at bases. Fruit, a capsule with many seeds. Pollination by insects. Blooms in July to September, each flower lasting 3 or 4 days. Perennial, best treated as biennial. Propagate by seeds or by division. Seeds germinate in 5 days and live to 4 or 5 years.</p>	<p>Flowers, red, purple, pinkish, yellow, white or with mixed colors; open bell-shaped, dropping from slender stalks, and relatively light, sensitive. Stamens, many, fastened together at their bases, at first, enclosing the pistils but these later make their way through at their tips. May be propagated by seeds which are sown indoors in early spring to produce large blooms same autumn, or by slips which are taken in spring or autumn.</p>	<p>Flowers, funnel-shaped and from 2 to 3½ inches long. Colors, blue, red, white, purple and striped. Some strains have flowers with a spread of 5 inches. Stamens, fastened to corolla and nectar glands deep in tube. Flowers respond to light well.</p>	<p>Flowers, to 2 inches long. In edible sage, <i>S. officinalis</i>, and most others, flowers are under 1 inch long. Stamens are inserts in tube of scarlet corolla, attached at middle to short stalks. Tip of pistil sticks beyond these in some cases.</p>	<p>Flowers, about 1/8 inch long, violet or purple, with a pleasant vanilla scent. Some forms are white-flowered. Flowers, arranged in a compact, rather long, curved formation (cyme). Stamens, short and included in corolla. In <i>H. peruvianum</i>, the corolla is little longer than the calyx; in <i>H. corymbosum</i>, twice as long.</p>
<p>Self-sowing maintains production but plants freely hybridize. Sow seeds in fall after ripening, cover lightly, in deeply dug soil, transplant in spring; mulch lightly in fall. Insect pests include rose chafer, yellow woolly caterpillar, stalk borer, Abutilon moth, and a leaf roller. Control insects by picking or using arsenate of lead spray. Rusts destructive but controlled with spray of Bordeaux mixture or sulphur dusting. Red spiders wash off with a water spray. Some varieties resistant.</p>	<p>Plants taken to greenhouse in September may be cut back and grown at temperature of 55° F. but bottom heat is necessary for satisfactory development. Mealy bugs, red spider, thrips and aphids are bad pests and are controlled by appropriate sprays, fumigation and hand care. High nitrogen content of soil produces leafiness and few flowers so porous, low fertility soil is to be desired. Unless plant is pruned, it will be too open.</p>	<p>Propagation by cutting or by seeds. Cuttings made in September produce flowers in February. Double varieties must be perpetuated by September cuttings. Seeds may be planted in fall or early winter and grown at a temperature of 45° to 50° F. May be transplanted, April or May when frost danger is over. Relatively hardy plant that remains healthy when neighboring plants of other species are destroyed by insect and fungus pests. Cannot withstand frost but, with some protection, may winter safely.</p>	<p>Seeds sown in January, or softwood cuttings are made in fall before frost. Medium heavy soil in greenhouse and temperature of around 60° F. necessary if proper development is to take place. Early flowering, induced by shortening day by covering with black cloth. Worst enemies are the "white flies" normally controlled by cyanide fumigation. Black Arrow dust, Hitox, Multicide or Libersol. Fumigation must be done with great caution. Does not thrive unless soil is rich in nitrogen.</p>	<p>May be raised from seed to blooming in one year but should be started indoors if this is to be effected. Usually trained to grow on trellises. While they need sunshine, when grown indoors, they do not do well if the temperature is allowed to rise much above 45° F. in winter months. Enemies are those common to many greenhouse plants but greatest handicap to successful raising is wrong temperature. <i>Heliotropium</i> means "turning to the sun" and indicates sensitivity to sunlight.</p>
<p>Excellent perennial for groupings in back borders with shrubs or against a wall or building. Gives color for long period and requires little care. Occupies little space horizontally for amount of beauty vertically. Popular with amateur plant breeders.</p>	<p>This shrubby plant has a fair sale value for use as house plants, as gifts to the sick, and for growing in window boxes indoors or out. Will bloom all winter indoors if given reasonable care but cannot survive severe weather outside in northern part of country.</p>	<p>Popular for window boxes and for pots indoors. Also grows well and profusely in gardens and on trellises over walls. Proves popular for sale in spring and particularly for mass bedding in summer and fall. Provides interesting studies in genetics for those interested.</p>	<p>A popular bedding plant for late summer and fall; and as a potted plant, particularly in spring. Interesting to botanists because of unique arrangement for guaranteeing cross pollination. Related species used as flavoring.</p>	<p>Popular "old-fashioned" garden flower formerly common as a houseplant. Fragrance probably not excelled; this compensates for its usually scraggly appearance. Flowers used as long-lasting buttonhole bouquets.</p>

COMMON NAME SCIENTIFIC NAME ORDER FAMILY	COMMON VERBENA <i>Verbena hybrida</i> Polemoniales Verbenaceae	FLOSS FLOWER <i>Ageratum houstonianum</i> Campanulales Compositae	GAILLARDIA <i>Gaillardia aristata</i> Campanulales Compositae	ZINNIA <i>Zinnia elegans</i> Campanulales Compositae
DESCRIPTION	Height of stems, to about 2 feet, with sprawling or creeping bases. Entire plant, grayish, with long, stiff, spreading hairs. Leaves, opposite, margins with rounded teeth or slightly lobed, stalked, dark, with rather conspicuous veins. Roots usually tough and fibrous.	Stems, relatively weak, to about 1 foot high, or sometimes higher and forming an open, loose mass. Leaves, blunt or rounded at base. In <i>A. houstonianum</i> , leaves are heart-shaped at base. Leaves, mostly opposite, and with distinct petioles. Roots, fibrous and much branched.	Erect stems, to a height of 3 feet, more or less short-hairy, relatively slender and stiff. Leaves, alternate, gray-green, longer than wide, entire or cleft, lower ones paddle-shaped; in some species, leaves almost entirely basal. Roots, stout and fibrous.	Stems, stiff, erect, hairy, and to 3 feet high. Leaves, opposite, compound, lobed, more or less clasping at bases, with roughened surfaces which are somewhat sticky and which show prominent veins. Roots, fibrous, relatively strong.
RANGE AND HABITAT	Native to Brazil. Introduced into United States in 1840. About 100 species in genus, chiefly native of tropical America, but some common weeds in fields and waste, dry or wet grounds, north into Canada. <i>V. hybrida</i> favors rich, well-drained loam and does best when exposed to full sunlight.	Native of Mexico. "Hardy ageratum" belongs to a related genus. Of about 30 species, native herbs of tropical America, only two appear commonly in greenhouses or gardens. Favor loose, relatively rich, well-drained soils, and withstand heat well.	Native to United States, from Minnesota and Manitoba west and southwest, but now spreading east. Twelve related American species, mostly from far west. Grows well in sandy soil, with good drainage. Favors strong sunlight. Can endure partial shade and resists cold.	Single form, native of Mexico; double form, of French origin, where it first appeared in a garden in 1856. Introduced through United States and other temperate parts of world. Best in rich, well-drained, loose loam and favors sunny areas.
REPRODUCTION	Flowers, in flat heads, on long floral stems; pink, red, white, blue, purple and mixed, tubular with right-angled border, slightly fragrant. Stamens, 4; ovary, 4-celled. Fruit, dry, ribbed nutlets. Closely related <i>V. chamaedryfolia</i> has scarlet flowers and appears greenish rather than gray.	Flowers are tubular, blue, rarely pink or white, and in heads over 1/4 inch across or less. In <i>A. conzoides</i> , the heads are commonly under 1/4 inch across. Flowers, fragrant, last long, always attractive. Flowers all summer, or until frost comes. If protected, it is perennial.	Flowers, in terminal heads, 2 to 4 inches across; daisy-like, yellow or yellow-orange. Related annuals <i>G. amblyodon</i> and <i>G. pulchella</i> have flowers normally red, lobes of disc flowers of former being obtuse while those of latter are acute. Pollination, by insects.	Flowers, in solitary, terminal heads, from 2 to 4 1/2 inches across. Ranges from crimson to scarlet, salmon, rose, purple, orange, yellow and white. <i>Z. haageana</i> has orange flowers. <i>Z. multiflora</i> has slender, linear rays which are red or purple. Pollination, mostly by moths and butterflies.
CULTURE	Annual. Seeds germinate in about 8 days and live to 3 years. Seedlings raised indoors, planting in hotbeds in March or sown outdoors after frost danger. Transplant or thin, to 1 foot apart. Cultivate lightly, pinch back plants, to improve form. Pick flowers to prolong blooming. Common enemies include thrips and aphids, controlled with spray of nicotine sulphate; leaf tier, with arsenate of lead; red spider, with water spray; verbena bud moth, with arsenate of lead spray and by picking off affected buds.	Propagated by cutting to get early blooms or by seeds planted indoors in late March, or outdoors after danger of frost has passed. In greenhouse, blooms profusely through winter. Flowers must be kept picked if blooming is to be prolonged. Worst pests are aphids, red spider and thrips, which are controlled as on other species of plants. It is difficult to keep varieties to run true, so it is a gamble what may be expected from much seed that is purchased as representing unique strains. Tall and short strains seem to be more permanent.	Propagated by seeds, division or by stem or root cuttings. May bloom first year from seed, but is better the second. Seeds germinate in about 20 days and live about 2 years. Seeds should be sown early. Named varieties should be grown from cuttings to assure desired characters. There are annual forms. Not often seriously injured either by insects or by fungi. Hardy in severe weather. If flowers are kept picked, blooming will continue from June to November, long after many other common species have ceased. Typical plant of western plains.	Annual. Propagated from seeds, which germinate in about 5 days and live to 4 years. Seeds sown indoors in March, transplanted after frosts cease, thinned in rows to 12 inches apart. Cultivate lightly; water thoroughly in dry weather. Prune smaller heads to produce larger remaining heads. Enemies include leaf rollers controlled by lead arsenate spray, tarnished plant bug, controlled with nicotine sulphate spray, cut worms controlled with poison baits, and European corn borers in which case the infected plants should be burned. Humming birds visit flowers.
RELATION TO MAN	Good for beds, window boxes, or use as cut flowers. Bright colors, fragrance and durability make it popular, both indoors and out, and since it blooms into late fall if the flowers are kept cut it remains attractive longer than others.	Seeds sown in February produce marketable plants in 4-inch pots by May at 50° F. Pinching off ends develops bushiness. One of most popular of plants for growing in hanging baskets, window boxes, where they are grown with geraniums, wandering-jew and coleus. Finds ready sale at a low price.	Vivid, sprawling, hardy plants that deserve the popularity they enjoy. Flowers cut before they are open last longer than those cut when mature. In gardens, the perennials are favored because they do not need to be purchased or planted new each year.	Good in beds and borders; dwarf <i>Z. haageana</i> being better for edgings. Flower heads should be removed before seeds are formed if blooming is to be continued. Flowers, attractive; keep well after being cut, some lasting many days. Some are almost shrubby.

FRENCH MARIGOLD <i>Tagetes patula</i> Campanulales Compositae	CHINA ASTER <i>Callistephus chinensis</i> Campanulales Compositae	STRAWFLOWER <i>Helichrysum bracteatum</i> Campanulales Compositae	COSMOS <i>Cosmos bipinnatus</i> Campanulales Compositae	CORN FLOWER <i>Centaurea cyanus</i> Campanulales Compositae
<p>Bushy annual, with stems to 1½ feet high, compact, relatively stout. Leaves, dark green, compound and divided into about 12, long-toothed segments. Glands on leaves give off a distinctive odor. Leaves of <i>T. lucida</i> not compound. Roots, fibrous and relatively profuse.</p>	<p>Stems, erect, to 2½ feet high, branching, with slightly sticky, short, stiff hairs. Leaves, broadly triangular, to egg-shaped, deeply and irregularly toothed, the upper being narrower than lower and being without stalks common on lower. Roots, fibrous.</p>	<p>Stout stems, to 3 feet tall, sometimes somewhat branched, minutely roughened with scales that may rub off. Leaves, numerous, up to 5 inches long, narrower near base, and smooth or nearly so, dry and retaining form well when deprived of water. Roots, relatively tough and fibrous.</p>	<p>Stems, to 6 feet high, smooth or nearly so and relatively slender. Leaves, opposite, compound, or lobed and cut into slender parts so that they look lace-like, but this is not the case with all species. Roots, fibrous and relatively strong. Plant as a whole most attractive.</p>	<p>Stem, slender, 1 to 2 feet tall, branching and, when young, downy white, this disappearing with age. Leaves, narrow, entire or with lower ones slightly toothed or sometimes coarsely featherlike. Surface, harsh and rough frequently. Color, dark green in mature plants. Roots, fibrous.</p>
<p>Native of Mexico, but greatly modified by cultivation. Grown widely in United States and Canada. About 20 species ranging from New Mexico and Arizona to Argentina. This species prefers sunny area where there is light loam and moderate amount of moisture.</p>	<p>Native of China and Japan. Cultivated in Europe more than 200 years; in America more than 100 years. Grows best in rich, sandy loam either in full sunshine or in part shade. Well-decayed manure makes best fertilizer. Favors temperate climate.</p>	<p>Native of Australia, but has established itself in gardens and in hearts of many Americans. Around 300 related species native of Europe, Asia, Africa and Australia. Is grown mostly as an "everlasting." It prefers rich, loamy soil but does well where there is plenty of sunshine.</p>	<p>Native of Mexico. Only earlier flowering forms hardy enough to bloom well in northern United States. Best in well drained, sandy loam which is not too rich, and which is exposed to full sunlight for relatively long periods. If soil is too rich, plants fail to bloom.</p>	<p>Native to Europe. Commonest in central Europe. Common name Kaiserblume meaning the Kaiser's flower. Has escaped and established itself widely in United States. Grows well in sun or shade but does best in moderately rich, moist, garden soil. Some 500 related species.</p>
<p>Flowers, in heads, single or double, yellow or orange and marked with brown or maroon. Heads, about 1½ inches across. In <i>T. lucida</i>, heads are clustered; in others, solitary. In <i>T. signata</i>, heads are about 1 inch across, not red marked, and ray flowers few. In <i>T. erecta</i>, heads are 2 to 4 inches across.</p>	<p>Flowers, in terminal heads, showy, single or double, large or small, in tints of pink, blue and white. Early flowering varieties sown in July, benched in late August, mature in January if 5 hours of additional light is added each day by 50-watt lamps spaced at 4 feet, and up 18 inches.</p>	<p>Flowers, in terminal solitary disc-like heads, which are 1 to 2½ inches across. Red, white, yellow, brown, pink or red, the colored portion being not the corollas of the flowers but the bracts which subtend the flowers. In related <i>H. petiolatum</i>, heads are clustered rather than solitary.</p>	<p>Flower heads, solitary, or in loose clusters on long stems; single or double; about 3 inches wide, with ray flowers pink, red or white, and central disc yellow. In <i>C. sulphureus</i>, rays are yellow; in <i>C. diversifolius</i>, disc is red. Floral bracts are oval and unequal.</p>	<p>Flowers, in solitary heads, on slender stalks, either single or double. Usually, blue but also pink, white or purple. Flower head composed only of tubular flowers, outer rows being larger and sterile and inner, much smaller. Fruit, an achene. Pollination, by insects.</p>
<p>Propagate from seeds which germinate in 5 days and live to 4 years. Seedlings transplant well and thrive better if transplanted frequently. Should be thinned to 15 or 18 inches apart and cultivation should be light but frequent. Will blossom from June to frost under proper treatment and may self-seed. Enemies include yellow woolly caterpillars controlled by hand picking; leaf tiers, controlled by lead arsenate spray; tarnished plant bugs, controlled by nicotine sulphate spray. In greenhouse cultivation, requirements are light soil, good ventilation and temperature of 55° F. Needs room.</p>	<p>Sow seeds in March and transplant to get early bloom; outdoors in May for September bloom. Cover seeds ½ inch deep. Thin plants to 18 inches apart, cultivate lightly and frequently, add a little slaked lime if soil is sour and keep fertilizer from direct contact with roots. Seeds germinate in 8 days; live 3 years. Spray with kerosene emulsion for tarnished plant bug. Mix nicotine dust in soil to control root lice. Knock off blister beetles into can of kerosene. Dig and burn plants attacked by yellows, wilt or rust. Yellows not common under glass but leaf hoppers may be serious pest here.</p>	<p>Seeds may be sown indoors or out and transplanted when frost danger has passed. Seeds germinate in 5 days; live to 3 years. Plants should be thinned to 12 inches apart and cultivated frequently. Blooming should continue from July until frosts come. Many seeds are produced in each head. Common pests include aphids, and tarnished plant bugs, controlled by a nicotine sulphate spray. Chief limitations to its more general growth are climatic. Favors moderate amount of moisture and does better in the warmer climates.</p>	<p>Annual. Propagated from seeds which germinate in about 5 days and live about 3 years. Early varieties sown in April are transplanted when weather permits, thinned to 18 inches apart, cultivated until blooming begins in September. Blooming continues until frost, in south, plant self-sows. Spotted cucumber beetles are bad cosmos pests, controlled by spraying with arsenate of lead. European corn borer, and a stem blight, also attack the plant. Injured plants should be burned to prevent spread of trouble. Since plant may break, it may be staked.</p>	<p>Seeds sown in fall or spring. For best results, thin plants to at least 6 inches apart. Pick blossoms before they set seed, to prolong blooming, and because flowers picked before completely mature seem to enlarge when placed in water and last longer than those picked after maturity has been attained. Not affected seriously by insects or fungi. This resistance and general hardiness makes it popular with beginner gardeners since it will succeed where others fail. Fall sown plants produce seedlings that may winterkill, but some may survive to bloom next season.</p>
<p>Desirable plant for border edges, or in mass plantings. Also popular with commercial florists as commercial early flower for spring sales. The flowers arrange themselves and keep well when cut. For commercial sales, seeds are sown in January; and seedlings are sold in lots of 3 or 4, in shallow containers.</p>	<p>Valuable and popular cut-flower plant grown best in greenhouses where cost of suggested extra lighting should be about 1 cent per flower at 3 cents per kilowatt hour. Keeps best after cut, if cut ends are in 2 percent sugar solution instead of in water. Marketed usually in bunches of twenty-five.</p>	<p>Probably largest and best of everlastings. Flowers should be cut when half open, in evening, for winter bouquets. Should be fastened in bunches and allowed to dry hanging downward in a warm room. May be arranged after they have dried. Bunches find ready sale at roadside stands.</p>	<p>Excellent plant to use in masses and supply attractive cut flowers which do not wilt readily and may last several days. Form may be controlled by pinching off parts not wanted to fill desired space.</p>	<p>Excellent species for border and for edging plant. One of the best for lasting qualities after being cut and so is popular in many floral arrangements. May self sow and establish itself in gardens and waste land.</p>

(Continued from page 419) from Australia. I have some gaillardia, which hails from our midwest plains, some gladiolas from South Africa and some hollyhocks from China, and one patch in my lawn is white with an English daisy. They all seem to get along well together. I rarely see the hollyhock but to remember that we have it in our gardens because it was carried to Europe by the returning Crusaders, and brought across the Atlantic by the Pilgrim fathers. Of course, I have to step in now and then to save a struggling minority from extermination by a more dominating and numerous species, but I always remember that some of these guests in my garden are not living under conditions normal to their requirements. I realize that were some of our native plants taken to the homeland of these struggling aliens the tables would be turned. Anyway, the international aspect of a fall flower garden should interest all who are thinking of Argentine and Madagascar and Malaya only in terms of the war news. How many of the garden flowers in your neighborhood are natives of the lands where the boys of your home, street or town are now engaged in military activities? Possibly the boys, like the Crusaders of old, may send—or, better, bring—you some seeds from these foreign lands to make your flower garden more significant than it would ever be otherwise.

While I find geography in my flower garden, there are those who read other meanings into flowers. I once lived in a home where there were many young women, some of whom rather regularly received flowers from masculine admirers. One damsel was forever trying to find hidden meaning in this or that flower from this or that man. I am quite certain that the flower selection meant nothing to the sender except an expression of admiration, or a concession to established custom—probably too often the latter. That girl's persistence in reading something into white roses, and something else into red, always made me send something other than roses to my girl friends, because I never could remember what was supposed to mean what. To this day, I do not know what it is all about and care less. Do not count too heavily on the significance of any particular flowers implying any particular sentiment when it is sent by the average man. The city man who called his best girl his "little wake robin" because he thought it sounded nice did not know that his lady from the country was familiar with the odor of wake robins, and resented the implication.

While I do not know now whether I should wear a white or a red carnation on Mother's Day in memory of my mother, I do remember the flowers she liked best, and some of these flowers are in my garden. Also, there are some flowers that did not mean the same to her as they do to me. A few paragraphs earlier in this article I made a reference to weeds of which I am a bit ashamed. I advised you not to so plan a garden that in the fall it was just a mess of weeds. I did not mean to imply that I would want a garden entirely devoid of weeds. In fact, as I indicated

in an earlier insert in this series to the expressed delight of some of my readers, there is one spot on our garden tract where I protect some weeds. Dandelions, chicory, goldenrods and teasels have their place in a garden. For years I lived in the middle West where purple cone flower and prairie blazing star and pasque flower and spiderwort grew wild in the fields. We have nothing in our garden that exceeds any of these in sheer beauty. Neither do we have anything that came from nursery or friends that can match a little patch of native goldenrod I have kept.

If you are attempting to build a fall garden, have limited funds and want a quick effect, do not rely wholly on the stuff you must buy or get by trade. Take a hike into the open hinterland at least once a month. Notice the plants that are putting on the best display on the least valuable land. Take a few—not all or too many, and certainly not the last—of these plants back with you and use them at least as temporary fillers for areas that eventually may be occupied by more orthodox species. You may come to like the natives so well that you may decide to keep them, or at least to devote one part of the garden to their preservation. I know one place in Iowa where blazing star grew in great profusion. It has now been taken over by suburban developments and the residents strive to make their places attractive with the usual species. What a mistake they made in destroying the native species that may be almost completely eliminated in the neighborhood by the time their children reach maturity.

You do not have to be rich to maintain a beautiful flower garden. But nothing will make you richer inside, where it counts, than a little patch of ground on which you have spent thought and effort in the culture of plants that have no value for your stomach, much value to your eye and more value to your soul.

Exchange the things you like best with the friends you like best. See if you do not develop a happier outlook on the world in general. If any of your friends are thinking of getting a divorce ask the judge to get them to work together on a flower garden. There is one place where you and your friends can find peace, and where efforts directed towards the better things of life yield visible results within your lifetime. There is one place where you can be as good and as rich as the next fellow without too much effort. If you do not have a garden, you are poor indeed. If you do have one, it may be your most valuable asset.

Remember, I still have a lot of those mallow seeds from my garden that are yours if you wish to send me something for my garden, which is in my back yard at 206 Oak Hill Road, Ithaca, New York. As gardens go it is nothing wonderful, but I like it and I would not trade it for plenty of gardens that I know cost much more. The latch string is always out. There is no better note on which to end appropriately an article on the spirit of the flower garden.