

# Cultivating Wild Flowers

## How to Make Beautiful Gardens that are Different

By Delia W. Marble

MOST of our early spring wild flowers grow in the woods and prefer shady places, although some kinds will thrive and even grow larger in an open border if the soil is fairly moist and cool.

It should be kept in mind that wood plants require an acid soil or leaf mold or peat, and should be mulched with leaves. They do not like barnyard manure, lime, or fertilizer. Get leaf mold from the woods, mix it with earth shaken out of sods or from old fence corners. Wherever you want to set your plants dig out a hollow a foot or more in depth according to the size of the plant, and fill it with leaf mold; or a larger bed may be dug out to a depth of two or three feet and filled in with a mixture of leaf mold, peat, and some sand. At the same time start a compost heap for future use of sods and leaves—oak leaves are best—and muck from a swamp. In a year or two this will be in a good condition to use.

Instead of attempting to transplant flowers from the woods, it is safer and easier to buy them from a dealer, especially if you intend planting in masses. The nurserymen who specialize in native plants can furnish most of the kinds mentioned in this paper.

Our earliest spring flower is Liver-leaf, a hardy little friend which will thrive in an ordinary garden bed as well as in the shade, and if taken into the house in a flower pot in winter, can be forced for early blooming. It makes fine clumps, and after the delicate violet blossoms are gone the red-brown leaves are handsome all summer. At about the same time comes the blood-root, with a single pure white flower and attractive leaves. This will grow in rich soil in either sun or shade. Dutchman's-breeches, a small relative of the bleeding-heart, is especially charming, with quaint white flowers and feathery foliage that soon disappears. It requires shade like the anemone, the most fragile of wild things.

Adder's-tongue lily has yellow bells and pretty spotted leaves, and spreads readily. This would do well in a lily bed. The bulbs must be planted deep, as every one who has tried to dig them up knows. Spring-beauty is a white flower, veined with pink, that makes a solid mat and is excellent to fill in with. The delicate sprays of mitrewort and the bellworts belong in the same woodland places along with foam-flower and the little smilacina. Wild ginger should be planted in some shady nook for the pleasure of finding its brown blossoms close to the ground in early spring. Rock saxifrage will grow anywhere, even in the crevices of rocks, and is one of the earliest of the spring flowers.

For trailing arbutus or mayflower, Mr. Edward Gillett's directions are: "Select a shady spot where there is perfect drainage, a dry sandy soil is preferable, cover the plants with about an inch of leaves or enough to keep the ground cool and moist, and let them remain for a whole season, as it takes that time to get the arbutus well established." One difficulty with arbutus is that it depends upon mycorrhiza or fungous growth on its roots requiring special soil conditions. This accounts for many failures. However, in the Department of Agriculture in Washington, Mr. Coville has succeeded in raising both arbutus and blueberries, which belong to the same family, in pots by adding phosphoric and other acid ingredients to the soil. They seem to like sour food, so keep barnyard manure away from your arbutus bed, and mulch with leaves.

Partridge-berry is a creeping evergreen vine with white blossoms and red berries that last all winter. Shin-leaf is often called wild lily-of-the-valley on account of its fragrance; princess-pine has evergreen leaves and interesting white flowers, and rattlesnake plantain is a familiar orchid with mottled leaves.

In damp, rich soil under trees or shrubs there is a beautiful group of plants of medium height to use. Jack-in-the-pulpit, beloved of all children, wake robins, both our common kind with red-brown flowers and the white one called wood lily; ginseng, Solomon's seal and false Solomon's seal go in this company. The blue-berried cohosh loves the same kind of a place, though it will grow in the open too; also the baneberry and the snake-root, called sheeptail from its spikes of white flowers. This last is seen at its best against a background of green on the edge of woods or shrubberies.

Those who are fortunate enough to have near their gardens a brook or grassy-edged pool might plant marsh marigold, commonly known as cowslip, though it isn't a cowslip at all. Its glistening yellow flowers make wet places gay in early spring. The pale pink cuckoo-flower will love the edge of the pool, and white hellebore, one of the most decorative of plants with its clasping leaves that look as though they had been ironed in plaits, also likes the wet places. It grows three or four feet tall and has a panicle of greenish flowers. In shallow water the pickerel-weed, with spikes of blue, may be grown, arrowhead with white flowers and arrow-shaped leaves, and golden-club. Near the edge, where the ground is wet, put grass-of-Parnassus, which lifts its white flowers well above the leaves in August. Plant jewel-weed under an overhanging bush, cardinal-flower where it can see its reflection in the stream, and with cat-tails and rushes in the background, honey-balls to bring butterflies, and the stately royal-fern dipping its fronds in the water your pool will be a joy all summer.

Our native orchids are a beautiful group of plants, some of them difficult to cultivate, but all worth trying. Of the woodland species requiring leaf mold and shade, the handsomest is the pink ladies' slipper, which grows wild under pine trees. Wherever you see it standing up and nodding its pink head, it gives you a thrill of delight. The yellow ladies' slipper or moccasin-flower is not less beautiful. A rhododendron bed would be an ideal situation for any of this group of orchids, as it is for lilies and for plants of the heath family. The lavender and white showy-orchis is found early in wet woods, and there are a number of others, all interesting though less conspicuous. In meadows and in sphagnum bogs we find calopogon with lovely mauve flowers on a slender stalk, and rose pogonia, shell pink, with the fragrance of violets. Other meadow orchids are the purple-fringed orchis, the green-fringed orchis, and the common white ladies-tresses. It is not worth while to transplant the wild ground orchids, since many will die if you do, and all can be had from the dealers.

Quite different from running brook or wet meadow is a sphagnum bog, where the water stands and the Sphagnum is like a wet sponge under your feet. For those who have the right place and time for an experiment, a miniature bog garden is full of interest. Choose a low spot which you can conveniently flood when necessary, dig it out until you come to hard-pan, or if there is no hard-pan put in blue clay and pound it down. Make a cement edge to hold the water, but do not let it show. Put in some muck from a swamp to start with. Then go to a sphagnum bog and dig up the moss, digging deep to get earth below the roots, and bring the chunks home carefully and plant them. You will find all sorts of lovely things among the moss—wild cranberry, pitcher plants and ladies' slippers—and you can add others. The real bog should have sheep-laurel growing around it, and little tamarack trees and tall blue-berries. I do not know why such a bog should not favor mosquitoes, but as a matter of experience I have not found them troublesome in the wild sphagnum bogs that I know.

In midsummer the tall meadow-rue should be in our gardens. Its delicate sprays of white flowers sway in the winds with the meadow grasses, and I know of nothing else with quite its exquisite grace. Another splendid garden plant is the cow-parsnip. It is six feet high, has large flat clusters of white flowers and handsome great leaves, and is one of the most architectural of plants. It grows usually along the margins of streams, but takes kindly to any deep rich soil, as the swamp-mallow does. Along with meadow-rue, we find wild lilies, both the erect meadow-lily and the nodding one. These are easily grown and can be had of all dealers.

The cardinal-flower is deservedly a favorite and will grow in a garden border. Like many perennials it needs occasional transplanting to fresh soil, or starting afresh from seed. In handling this and other meadow flowers, remember that they probably increase by suckering from the roots. There is still a great deal to be learned about the needs of the wild flowers and a certain flavor of adventure in attempting to cultivate them. Each species is likely to develop peculiarities of its own which are nowhere recorded.

For sun or shade, open ground or rocks, the wild columbine is always good. I saw it once where it had grown three or four feet tall, showing what favorable conditions would do for it.

Another attractive red and yellow flower, but difficult to transplant because it is parasitic on the roots of grasses, is the painted-cup. It should be cherished where it occurs. Blue flag also should be encouraged in the meadows for the lovely sheet of color it makes, though in gardens the cultivated kinds are better. Blue lobelia is a valuable garden plant. Mulleins have their uses and the little moth-mullein is charming. The large, fragrant thistle, and the beard-tongue cannot be passed by. Yellow meadow-parsnip, wild geranium or cranesbill, and alum-root are easily grown in the garden, and so is the little innocence or Quaker-lady.

The despised roadside weeds, bouncing-bet and butter-and-eggs are really garden outlaws, banished because they grow too rankly and crowd out better things, but they might well be used to fill in waste corners. A good group of summer plants for the edges of shrubberies includes the celandine poppy, pearly-everlasting, flowering-spurge, and live-forever. For covering banks there are two little creeping vines, money-penny or creeping Jenny with yellow flowers, and gill-over-the-ground, with purplish-blue ones. The latter planted under lilac bushes will grow in a thick mat and blossom at the same time as the lilacs.

In June and July our gardens are full of bloom, but with August comes a slack season in the perennial border, and it is just here that the wild flowers would be a help, for August is one of their most gorgeous months. In untouched swamps Joe-Pye weed makes wonderful masses of deep old rose, boneset supplies the white, iron-weed a dull purple, and the slender spikes of blue vervain the blue color, while the graceful wild sunflower furnishes the yellow. This sumptuous contrast of color lasts for a month and might well be transferred to deep moist soil in or near the garden. Along with the Joe-Pye weed and of the same color is the swamp milkweed with its flat-topped cluster of flowers. It is easily grown and is a lovely bit of color. The butterfly-weed is also easily grown and is fine wherever its flaming orange does not clash with the milder things.

Purple asters are among the most valuable of our native plants for naturalizing. Coming as they do late in the season, in every shade from the dark purple of the New England aster to pale lilacs and whites, nothing could be better than masses of them wherever a space can be found. They grow with astonishing luxuriance in a good garden. I have seen them six feet tall and covered with blossoms. There are many varieties and all are beautiful.

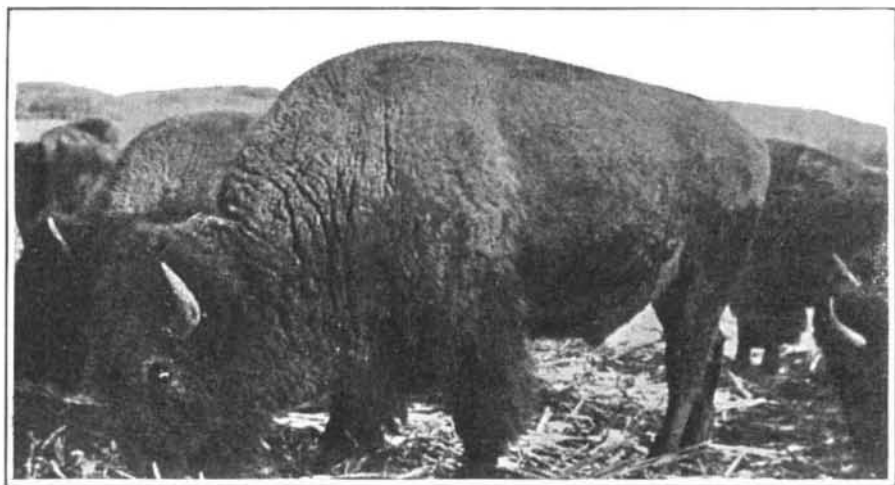
Fringed gentian, the latest of the wild flowers, is an annual and can be raised from seed. The field and roadside plants, unlike the woodland flowers, thrive in an ordinary well-manured garden soil and improve with cultivation.

Of our wild vines, the best are, the wild grape, which has beautiful leaves and deliciously fragrant flowers. Clematis, or virgins'-bower, is like *C. paniculata*, but comes earlier. Woodbine is always delightful for color in the autumn. Bittersweet has good foliage and orange and scarlet berries. Cat-brier is valuable for its green stems in winter, but do not plant it where you expect to walk, its claws are long and sharp. The ground-nut has chocolate colored blossoms with the fragrance of violets. Nightshade is a pretty slender vine with purple blossoms and red berries.

A different and delightful way of using wild flowers is to keep and improve the wild gardens that nature has made, and here I want to make a plea for preserving flowers in their native places. They have two foes, the children and their elders who ruthlessly pick and pull up all the flowers in sight, and the farmer who calls them all weeds without discrimination.

When I was a child our roadsides were blue with fringed gentian. Now you may travel miles without seeing one. People say "I left the roots!" But gentians are annuals and the roots are no more use than the roots of China asters after the flowers are gone. Even perennials like columbine need to be renewed by seed. Our hillsides used to be pink with azaleas. Now there are hardly any in sight from the main roads.

\*Republished from the *Journal of the N. Y. Botanical Garden*.



His Majesty, "John Kerr."—Since his desperate encounter with "Black Dog" last September in which he badly worsted his antagonist, this powerful five-year-old buffalo has been absolute monarch over a realm of eight thousand acres and a herd of eighty-two buffaloes



The eight-thousand-acre buffalo pasture in Wichita National Forest and Game Preserve—with part of the herd coming to be fed (photograph made in January). The woven-wire fence, six feet high and sixteen miles long, is heightened by two wires above and supported by oak or steel posts

People break off the whole top each year until the poor plant is discouraged. There is still plenty of laurel, though you have to go to out-of-the-way or protected places to find full-sized bushes; but with the cutting of it summer and winter for decoration I fear the end is in sight. This is not an idle fear; already laurel is reft from the Pocono and Delaware Water Gap where once it covered mountain sides, trailing arbutus has almost disappeared from Lakewood and everywhere is the same reckless destruction of natural beauty. This has been a wonderful year for dogwood; consequently one meets motors so filled with the lovely white branches that the occupants are hardly visible. Not reasonable quantities which might be picked without harming the trees, but branches of five years' growth broken off, only to wilt in a few days.

Few gardens are more lovely than certain meadows; one in June is pink with calopogon and pogonia; others are full of lilies asking only to be let alone and mowed late—while we are toiling over lily beds somewhere else! The swamps, brilliant with late summer flowers, would be a triumph for any gardener.

I would suggest that where money is being spent on beautifying one part of an estate, a little might be diverted to preserve the beauty which already exists. Why not fence in any special attractive spot, and have a gate and seats? then it would be a part of the garden plan, no longer careless farming but well considered landscape gardening. Such little reservations would be a source of quite unexpected pleasure to your friends.

There are still wonderful thickets near the roads and many beautiful banks of ferns. I wish that more property owners would consider and protect such places. They add more than we perhaps quite realize to the charm of the country.

### Contributions to Water Analysis

**Standard Caustic Soda Solutions.** To prevent standard solutions of caustic soda from undergoing change, the solution should be made up with one-third of its volume of glycerol. **Hardness.** The modern method of ascertaining the hardness of a water is to determine the alkalinity, and to subtract the "carbonate" hardness calculated from this, from the total hardness. For these results, the terms "carbonate" hardness and "remaining" hardness should be used, and the terms "temporary" and "permanent" hardness reserved for the results of the soap test. The reason for this is that the two methods give different results for the same water. **Determination of bromine.** The residue from a liter of the water is distilled after oxidation with permanganate in presence of manganous sulphate, and the bromine in the distillate titrated with arsenious acid. **Determination of Iodine.** The residue from a liter of the water evaporated with caustic soda is ignited and dissolved, the solution acidulated and shaken with carbon tetrachloride. The depth of the color produced is proportional to the amount of iodine present. **Determination of arsenic.** 100 cc. of the water, or one liter concentrated to 100 cc., is introduced into a flask with zinc and sulphuric acid, the neck plugged with cotton-wool soaked in lead solution, and the mouth of the flask tied over with white linen moistened with gold chloride solution. The reddish-blue color produced is proportional to the amount of arsenic present. **Mineral analysis.** The results of a complete mineral analysis should be checked by dividing the weights of each anion and cation found by its equivalent; the resulting quotients for the anions are added, together, also for the cations; the two sums should equal one another.—Note in *J. Soc. Chem. Ind.* on an article by L. W. WINKLER in *Z. angew. Chem.*

### A Buffalo Bullfight\*

By Ed. D. Crabb, Formerly of the United States Forest Service

This fight occurred in the Wichita National Forest and Game Preserve, near Cache, Oklahoma, in September, 1916. There are 61,630 acres in this forest and game preserve. Of this number of acres there is an enclosure of eight thousand acres constituting the so-called "buffalo pasture." The fence, of heavy woven wire, around this pasture is about six feet high with two heavy wires above it, and is supported by large oak or round steel posts. This fence is sixteen miles long, and encloses mountains and flats, timber and prairie, as well as some beautiful stretches of creeks that afford an ample supply of sparkling cold water. The native grasses form the richest and most luxuriant pasturage that Oklahoma affords.

During the breeding season most of the buffalo bulls are segregated from the herd in a two-hundred-acre bull pasture, and here are staged some great free-for-all fights. On one occasion during a fight nearly a quarter of a mile of woven wire fence was torn down, not even one of the steel posts remaining upright after the bulls were finally separated. It was in this pasture that the younger bulls of the herd killed "Quannah Parker," a twelve-year-old bison shipped here from the New York Zoological Park and named in honor of the late chieftain.—ED. D. CRABB.

The large, surly, nine-year-old buffalo bull, "Black Dog," was turned into the field with the herd one morning late in September, and when he was a short distance from the herd another bull, named "Comanche," challenged him to a fight. After but a few short, sharp rounds, however, "Comanche" agreed to let "Black Dog" share the herd's company with him. Such was not the decision of "John Kerr," a powerful bull of five summers, who immediately attacked the visitor savagely. As a result of his last encounter, "Black Dog's" spirits were high, but his wind was short, so "John Kerr" had little difficulty in thrashing him soundly in less time than it had taken the former to whip "Comanche." After this unwelcome reception, the panting "Black Dog" repaired to the farthest side of the pasture. Early in the afternoon when he had rested and regained his wind, the mighty wrath which had been kindled in his heart that morning goaded him on to another encounter with his victorious rival, "John Kerr."

When "Black Dog" topped the hill and started down the slope toward the herd, he gave a mighty snort and bawl which were answered by "John Kerr" in a way which seemed to bristle with defiance. This reply, however, did not frighten "Black Dog," who answered by viciously tossing his great shaggy head, then wallowing and violently thumping his hump on the ground and kicking his feet in the air. This formal announcement being over, he ambled leisurely toward the herd, emitting powerful "brawps," that sounded as if they were coming from the throat of a locomotive, while pawing the dust over his back as if he were master not only of the herd, but of the whole world. When "Black Dog" was about two hundred yards from the herd, he began threatening battle in dead earnest. Wallowing in the dust, the powerful brute would strike the turf mighty whacks with his hump, kick up his feet, roll his eyes, and toss his great, shaggy head. It was not long before "Black Dog" advanced to within about one hundred yards of the herd, then halted, and again pawed up the earth, while facing his adversary. After he had thumped his hump harder and tossed his heels higher than he ever had before, he arose and shook his head more fiercely than he had at any other

time, and advanced in a trot toward his opponent. During all this time "John Kerr" had likewise been threatening battle, and now he trotted out of the herd to meet his adversary.

Then began as fierce a battle as ever took place on the plains between two members of the cow family. The two maddened brutes clashed with the force of a long line of freight cars bumping together, and each received the other on his horns. It was then very apparent that each tried to receive the other's blows on his horns and the top, or poll, of his head; also, that those curved, short, stout horns, instead of being placed too high up, as had seemed, and too far back on the bison's head to be of any use, are placed just right. When the horns are brought into play, the sensitive nose is far back out of harm's way. Vicious thrust was followed by skillful parry, and the blows fell fast and heavily. "Black Dog" beat down "John Kerr's" guard and gored him in the neck and shoulder. "John Kerr" stepped sideways, and right lively too, but "Black Dog" kept up with him, and for several seconds "John Kerr" was unable to get away from those merciless, twisting horns of ebony. The veteran fighter seemed to feel victory ahead, but his adversary, who was younger, longer winded, and more nimble, evaded the weapons of his opponent, and charging, beat past his guard and gave him a vicious side thrust in the neck that brought a handful of hair. This made the old monarch still more angry, and he charged savagely while "John Kerr" nimbly warded off the blows with his horns. "Black Dog" charged again and again, but each time his opponent received the blows on his horns. Finally "Black Dog" tried to push his adversary backward by means of sheer brute strength and weight, and made some progress—but at what fearful cost! Tearing up the turf as they went, the mighty brutes traveled southward about a quarter of a mile.

"Black Dog's" tongue was lolling; his feet were leaden weights. He had entirely given up the offensive and tried only to defend himself. "John Kerr's" horns tore off bunch after bunch of the kinky, chocolate-colored hair. Finally his horns found "Black Dog's" shoulder and he gored him mercilessly, but so thick is the old bull's hide that "John Kerr's" horns failed to bring the blood. Poor old "Black Dog," with lolling tongue and heaving sides, offered no further resistance. He was hopelessly whipped and "John Kerr" was master of the herd.

Even to this day "Black Dog" leads the life of a hermit, and "John Kerr" is absolute monarch over a realm of eight thousand acres and a herd of eighty-two buffaloes. But the monarch of the herd today will be the hermit of tomorrow. A younger and more powerful bull will succeed "John Kerr," just as he succeeded "Black Dog." The herd may have a new leader with the advent of this coming season, and "John Kerr" will have passed into oblivion.

### Strength of Paper

FROM an examination of various papers, prepared with different proportions of rags, sizing and loading it appears, according to *Zt. angew. Chem.*, that the mechanical properties are improved by increasing the proportion of rags. Rosin sizing diminishes the strength, while animal sizing increases it. An increase in the proportion of rags, also sizing of any kind enables a larger proportion of loading material to be retained by the paper. Loading decreases the strength of all papers the percentage of loss approximating 2.2 times the percentage of loading material.

\*Reproduced from the *American Museum Journal*, issued by the Am. Museum of Natural History, New York.

The fifteen bison that formed the nucleus of the herd in the "buffalo pasture" of the Wichita, were presented by the New York Zoological Society from its Zoological Park herd.—EDITOR.