

THE MORTON ARBORETUM

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COVER: Rosebay rhododendron or great laurel, *Rhododendron maximum*.
From Charles S. Sargent, *The Silva of North America* (Boston: Houghton Mifflin
Company, 1891-1902), V, Plate CCXXXVIII.
Original drawing by Charles Edward Faxon.

Rhododendron maximum is native to the Appalachian Mountains from New York southward to Georgia and Alabama, and occasionally found from Nova Scotia, Maine, and Quebec westward to Ontario and Ohio. Colonies occur on shaded mountainsides, in deep, moist woods, and along the sides of acid bogs and streams. The pink-colored buds open in late June or early July, producing white to rose flowers, one to two inches in diameter.

This species has been exceptionally hardy here at the Arboretum, with at least one existing specimen having been planted as early as 1923. More recent plantings may be seen on Pine Hill and in the main Rhododendron Collection along Spring Road. When grown in the Chicago area, it must be provided with well-drained, peaty soil, and its broadleaf evergreen foliage protected from the hot summer sun and the drying winds of winter. It cannot be expected to grow as tall here as it does in its native habitat.

The Morton Arboretum Quarterly

VOLUME FOUR, NUMBER ONE

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Trilliums for Midwestern Wild Gardens

By Elizabeth Zimmerman

Every new spring brings sorely needed rejuvenation to the human spirit. As each new leaf and bud unfolds, we sense a reaffirmation of our being a part of a natural and eternal rhythm. To receive full benefit from this tonic, we need more than "open space," "greenbelts," and manicured parks — we also need unspoiled woodlands where, on a spring morning, we can rest on a moss-covered fallen tree and rejoice at the sight of a carpet of white trilliums, shining through the forest as far as we can see. It is not necessary to belabor the fact that woodlands like these are becoming rare, nor to justify our desire to preserve them and their wildflowers by citing once again their necessity for scientific studies, for a healthful environment, and for human well-being. We know these things. But is it not enough to say that we need trilliums for themselves alone, just as we need the song of a cardinal in the spring dawn, or as we need a flaming winter sunset? Many of us feel that it is, and while the task of preserving whole woodlands is more than most of us can undertake, we are trying in a quiet way to help prevent the disappearance of our wildflowers. Some are growing native plants on their own land. Others are moving ahead of the bulldozers with shovels and baskets, rescuing as many of the doomed plants as possible and replanting them on either public or private land. Still others are re-establishing wildflowers in parks, forest preserves, and public gardens. It is for these people and others who would like to join their ranks that this article is written, with the hope that it will make their efforts to preserve our native trilliums a little more successful.

Of course, we must accept the fact that as our wild things become ever scarcer, it is more important than before that *natural areas be left completely undisturbed*. To dig and move to one's garden any native, no matter how abundant or how rare, that is growing where no threat of immediate destruction is posed, has become an act of vandalism. Most of us have been guilty of this at some time; however, more legitimate sources of native material are friends with an abundance of plants, woodland areas about to be "developed," and the few wildflower nurseries that do their own propagating.

CRITERIA FOR SUCCESSFUL WILD GARDENS

The establishment of a successful wild garden involves a much deeper understanding of our native plants than most gardeners possess when they transplant the first white trillium into their gardens. One author, Edwin F. Steffek, has defined a successful wild-gardener as one who can achieve not only the survival of his native plants, but who can also provide an environment wherein natural propagation will occur. He adds that the very survival of our natives, particularly our rare species, may ultimately be due to the efforts of those who have wild gardens, especially those whose land is sufficiently large to provide varying habi-

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tats where plants may be free from disturbance. This need not exclude the small-property owner from having a wild garden, provided he first acquires the knowledge to assess the exact nature of the living conditions he can provide and then selects the species best adapted to that environment.

It is important to understand that most native species are “fussy.” They do not possess the hybrid vigor and adaptability of horticultural species, many of which have been bred and selected specifically for their ability to adapt to varying climatic and soil conditions. Native species, on the other hand, have been sorted out through long eons of time by the processes of natural selection, to those individuals in the species population which could adjust to very specific environmental factors. Many of them, especially our woodland plants, have a very narrow tolerance for conditions of light, moisture, temperature, and soil. To grow them successfully, one must learn to meet these requirements.

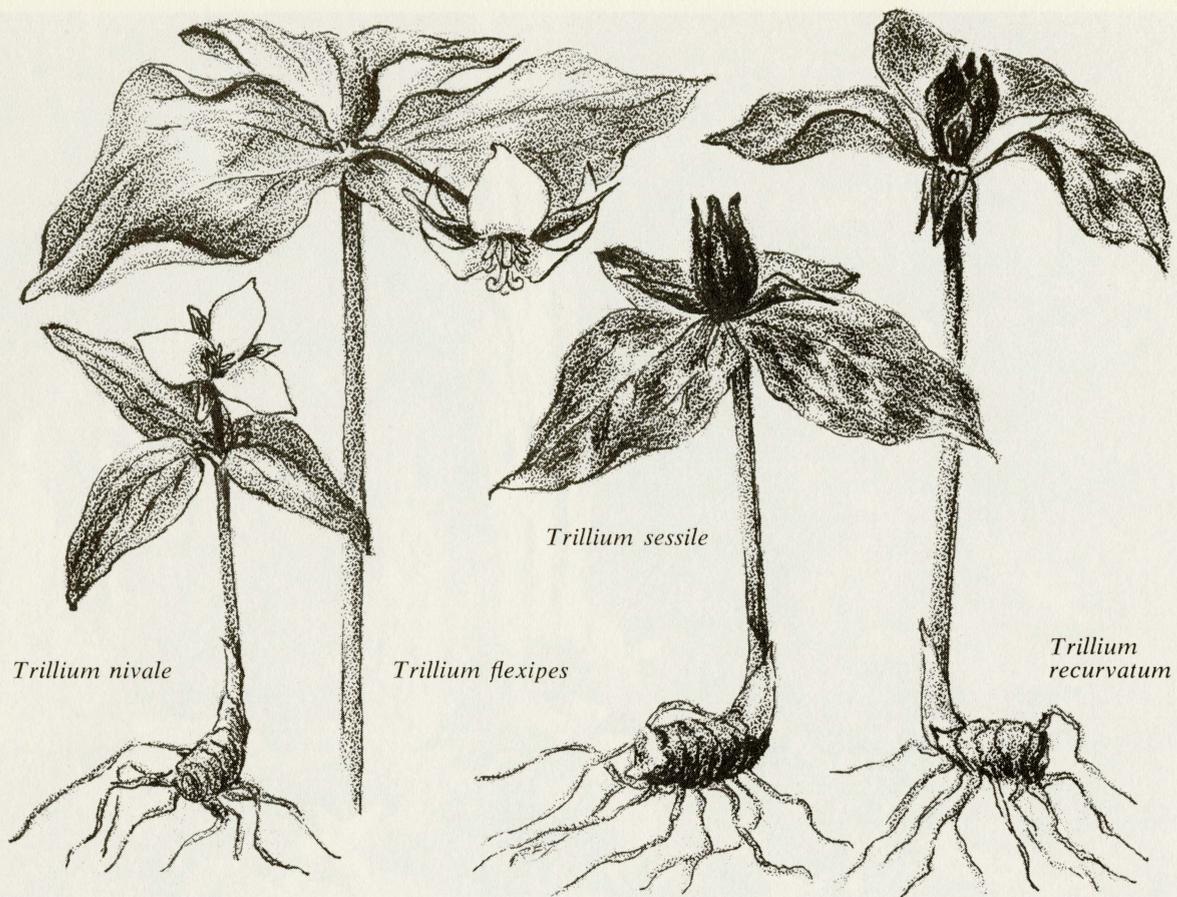
TRILLIUMS FOR THE MIDWEST

Eight species of *Trillium* are listed in the botany manuals as occurring or having once occurred in our midwestern region. Of these, only six can be expected to establish themselves successfully in our wild gardens. They are:

- T. recurvatum* Red trillium, or bloody butcher
- T. sessile* Toadshade
- T. erectum* Stinking Benjamin, or purple wake-robin
- T. grandiflorum* Great white trillium, or large-flowered trillium
- T. flexipes* (syn.
T. gleasoni, Declined trillium
- T. declinatum*
- T. nivale* Snow trillium

We will have to accept the fact that painted trillium, *T. undulatum*, is not one for our midwestern gardens. The most beautiful painted trilliums I have ever seen were in full bloom on June 21 on the top of Mt. Mansfield in Vermont, growing in the very acid duff of a spruce-fir forest. The temperature was a chilling 40° F. Try as we will to duplicate this substrate — an almost impossible feat where such “soils” do not occur naturally — we still cannot change the torrid nature of our summers. The true nodding trillium, *T. cernuum*, is probably not for us either. We may succeed with its var. *macranthum* if we can provide it with a streamside habitat where soils are moist, rich, and mucky.

Other species of *Trillium* are found south and southeast of us, from Oklahoma to Florida and in the southern Appalachians. Still others are found in California and the Pacific Northwest. Tempted though we may be to try growing these exotics here, we must realize that they are adapted to environments quite different from any we can create. It is better to leave them for those who garden where these trilliums are native. For most of us, the cultivation of our own natives is challenge enough.



Occasionally one will find abnormal forms of *Trillium*. These are not caused by disease, as one might suppose, but are simply physiological aberrancies. These variations, interesting and sometimes beautiful, are of particular value for botanical research and occur in all species of *Trillium*, but especially in *T. grandiflorum*.*

NATURAL HABITATS OF TRILLIUM

The first five of the *Trillium* species we can grow, are described as occurring in "rich woods." If we are to grow them, we must understand exactly what this means. Ecologists use the term "mesophytic" forests, which means forests where conditions are neither too wet nor too dry. Perhaps the simplest way to distinguish a mesophytic forest in our region is to note that certain trees will be found almost exclusively in these forests. In the western part of our area (Iowa, Illinois, southern Wisconsin), the dominant trees in undisturbed mesophytic forests

*Hall, Marion T., *Teratology in Trillium grandiflorum*. *American Journal of Botany*, 1961, 48:803-811



Trillium grandiflorum in woodland surroundings.

will be sugar maple and basswood; red oak will occur with them. In our eastern area (southern Michigan, Indiana, western Ohio), beech will be co-dominant with sugar maple. The canopy of leaves at the top of the forest will be almost completely closed in midsummer so that shade is deep on the forest floor. One will soon discover that mesophytic forests in our area are found only on certain sites, usually on north- or northeast-facing slopes, in ravines, and on the well-drained portions of the bottomlands of stream valleys. These sites have certain common environmental factors — the topography provides protection from the extreme effects of the overall climate; drainage is good, but adequate moisture is available throughout most of the year; and soils are deep and full of rich, dark humus.

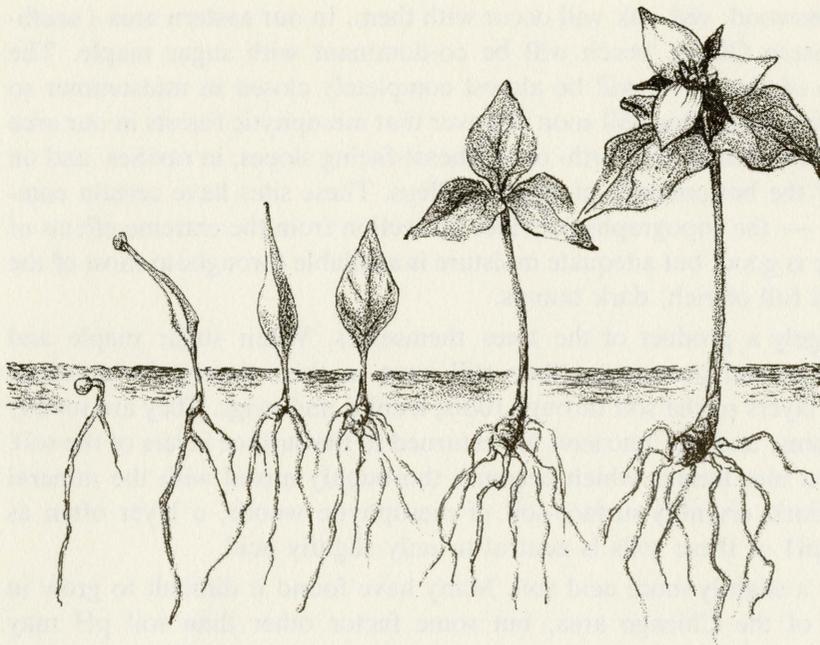
Soils in woods are largely a product of the trees themselves. When sugar maple and basswood leaves fall to the ground in autumn, they still have in their tissues the nutrients brought to them from deep layers of the soil through roots, trunks, and twigs. They are readily decomposed by soil organisms, and the nutrients are returned to the surface layers of the soil. The leaves are broken down into humus which becomes thoroughly mixed with the mineral part of the soil to form the dark, crumbly surface-soil of mesophytic woods, a layer often as much as a foot deep. The pH of these soils is neutral to only slightly acid.

T. erectum may prefer a slightly more acid soil. Many have found it difficult to grow in the limestone-derived soils of the Chicago area, but some factor other than soil pH may account for this. It should do well in eastern gardens within its native range. The other four trilliums of mesophytic woods sort themselves out naturally, according to the particular “microenvironments” in the various parts of these woodlands. On the upper, drier slopes, where the forest contains more oaks and fewer sugar maples and the canopy admits a bit more light, *T. recurvatum* is more abundant. In many of our woods it may be the only trillium, growing with spring beauty, rue anemone, and Solomon’s seal. On the lower, moister slopes in richer soil, *T. grandiflorum* carpets the forest floor, blooming soon after the hepatica and bloodroot flowers have faded. *T. flexipes* and *T. sessile* thrive in the constantly moist soil of the bottomlands where false rue anemone and wild ginger grow. Skunk cabbage may be here, too, but in wetter sites than those occupied by these two trilliums. Ohio buckeye is often found in these low woods; look for *T. sessile* where the buckeye grows.

The other trillium that we can grow here, *T. nivale*, grows on steep, wooded slopes where the limestone or limy-sandstone substrate is close to the surface. These habitat requirements can be met by providing sharp drainage and a rich, limy soil in a woodland environment. Ideal garden sites are in pockets of soil between limestone boulders bordering a steep woodland path or steps.

LIFE CYCLE OF TRILLIUMS

Trilliums and trees have been growing together for millions of years. The living conditions of a mesophytic forest might seem to be quite ideal, but for one factor: where shade is deep, there is very little light available for photosynthesis. So, through the ages, only those individuals of all woodland species that were genetically capable of completing their life cycles in the forest shade have survived. These have survived because they have become able to cram a



The first seven growing seasons of a trillium seedling; the fifth and sixth years will produce only three leaves, but flowers may appear during the seventh. (The illustration of the flowering plant is drawn $\frac{2}{3}$ \times actual size in relation to the earlier stages.)

substantial amount of the physiological activity of a full season's growth into the few short spring weeks when sunlight can pass through the leafless canopy. Characteristics that made this adjustment possible also made these plants unfit to meet other adverse environmental factors. Now the plants whose habitat is "rich woods" require a forest environment — not just "shade," as specified in nursery catalogs, but those conditions that forest shade provides: moderated temperatures, high humidity, ample soil moisture, and protection from evaporation. Their lives will be short where these things are lacking.

When a trillium shoot pushes out of the ground in April, all parts of the plant are ready in the bud for quick and active growth while the sun is still shining in the woods. Leaves and flowers are tiny but complete, pollen is mature, and the ovules that will produce seeds will mature quickly as the shoot grows. Within only two or three weeks, shoot and leaves have fully expanded, flowers have opened, ovules have been fertilized, and fruits with their seeds are being ripened. Not only is all of this above-ground activity intense, but down in the ground, in the bud at the apex of the rhizome, growth is going on, too. The flowering shoot is the result of two years of slow development in the bud. Now, while this year's shoot is blooming, buds that were formed last year are being matured so that they can produce flowering shoots next year, and new buds are being initiated that will produce shoots two years hence. The plant can accomplish so much in so short a time because it can use not only the food being produced in the leaves, but also that stored in the rhizome in excess of last year's needs. Each year there must be produced sufficient food for that year's growth plus reserves to provide for quick and active growth the following spring. Perhaps now it is clear why trilliums

grown under less than optimum conditions may not survive for more than a few years. Food reserves will be insufficient, flowers will not develop, buds for new growth cannot form, and soon there will be no plant at all.

When the leaves overhead close out the sun, the activity of the plant slows down but does not cease completely; trilliums are true shade plants, able to continue a certain amount of activity with very little light. By the middle of August, fruits are mature, and seeds are ready to be shed.

Trillium seeds are subject to "double dormancy." This means that the seeds must be exposed to two seasons of winter cold before the first green shoots will appear above the ground. The first winter's cold breaks the dormancy of the root so that in spring the seeds will germinate, but only the roots will grow. A second winter's cold is needed to break the dormancy of the shoot, so that in the second spring, the first single, narrow, green leaf appears. For two more years, perhaps only a single leaf can be produced. Finally, sufficient surplus food will have been stored in the tiny developing rhizome to make it possible for the seedling to produce a whorl of three leaves. In about the seventh spring, the young plant will have become robust enough to produce a flower. Each year both the shoot and the rhizome become larger, and eventually a large rhizome may produce two, three, or four shoots, all of which will flower in a single season.

PROPAGATION OF TRILLIUMS

After this résumé of seedling growth, it requires some courage to suggest that the true conservationist will increase his stock of trilliums by growing them from seeds. Yet it is not difficult with proper care, and what a sense of achievement it gives! Seeds should be gathered in August, and are mature when you can loosen the berry easily from its receptacle. They should be sown while still fresh, since germination from seeds allowed to dry out will be poor.

If one has a greenhouse and cold-storage facilities, the seven-year period can be considerably shortened. Fresh seeds are planted in pots of damp, sifted peat moss or light humous soil and kept in cold storage at about 45° F. for three months. They are then grown in the greenhouse for five months, after which they are put back into cold, damp storage at about 45° F. for another three months. When they are brought back into the greenhouse for the second time, the first green shoots will appear within a few weeks. The seedlings can now be transplanted into pots or deep flats filled with rich soil full of humus and grown in the greenhouse or outside in shaded nursery beds that simulate natural conditions. Obviously, they will need normal alternating seasons of active growth followed by cold winter dormancy.

Without cold storage and greenhouse facilities, one will have to substitute patience. In August, plant fresh seeds in deep flats filled with rich soil lightened with sand and sifted, well-composted leaf mold. Cover the flats with heavy clear plastic punched with holes through which water and air can reach the soil. Place them outside in a protected, well-drained, shady spot or in an open coldframe. Keep the flats moist. In late fall, cover with about six inches of oak leaves and forget them until spring when the leaves should be removed and the plastic covers taken off, cleaned, and replaced. The cover will prevent drying, thereby lightening your watering chore and, at least in my experience, securing a higher percentage of germina-

tion than in those flats not covered during their first summer. The moss that grows on the surface will do no harm; if liverworts grow, they should be carefully removed with a sharp knife. Cover again with leaves late in the second fall. The first leaves will appear soon after the plastic covers are removed in late April of the second spring. The seedlings can now be transplanted to nursery beds until they bloom and are ready for the garden.

An easier but less sure way of increasing one's stock of trilliums is to take advantage of the natural vegetative reproduction which occurs in some species, particularly *T. recurvatum* and *T. sessile*. In these and sometimes others, a mature rhizome will produce offset rhizomes from which shoots, probably flowerless at first, will grow. Clumps of five to a dozen or more flowering shoots result; these clumps may be lifted in early fall, the offset rhizome pulled away from the main rhizome, and each of these planted by itself.

Transplanting of mature trilliums should be done in early fall. Moving a plant in the midst of its intense spring activity often so upsets the metabolic balance that it will fail to flower for a number of years. If a plant must be moved in the spring, do it with as big a ball of earth as possible, and keep it watered and covered with a bushel basket until there is no further danger of wilting.

GARDEN HABITATS FOR TRILLIUM

Of course, natural woodlands are the best sites for woodland wild gardens, but only a very few of us possess undisturbed mesophytic woods where trilliums can be planted and forgotten. Most of us who have woods have much drier oak-hickory woods, and these have been considerably degraded by cutting, grazing, and fire. Such disturbance opens up the forest so that the soil moisture is lowered, and the increased light encourages a rank growth of shrubs and weedy, aggressive plants. Trilliums do not tolerate this kind of competition, nor do they do well in dry soils. To improve such forests as a habitat for trilliums, one may plant trees (sugar maple is a good choice) to fill the openings in the canopy; but until the canopy closes over again, one will have to weed and water if he wants his trilliums to thrive. Mowing in August will help control shrub growth and will not hurt trilliums.

And what about those of us who live in "suburbia"? May we have trilliums too? Obviously, the shade of a single tree in an otherwise open yard among other open yards does not provide the environment of a mesophytic forest. But many of our suburban homes occupy former forests, and many of the trees are still there. No doubt trilliums once grew there, too. Not only are wild gardens possible here, but often they are the most satisfactory answer of any to the problem of what to grow in these shaded yards. Compacted soils will have to be lightened with leaf mold; additional protection may have to be given by planting trees in the right places; drying winds may have to be screened out by dense hedges or solid fences. It is best to keep these small gardens mulched with an inch or two of leaf mold throughout the year and to cover them with leaves in the fall. Naturally, some watering and weeding will be necessary, but with imaginative planning, they will not only meet the criteria for successful wildflower gardens, but will demand a minimum of care and be a delight to all who pass by. What better way to keep our heritage of wildflowers as a part of our daily lives than in these suburban bits of native woodland?



Arboretum News and Notes

ARBOR DAY AT THE ARBORETUM. Native trees of Illinois are featured in the new self-guiding trail being developed on the east side of the Arboretum as part of our participation in the Illinois Sesquicentennial celebration. The trail will be formally dedicated and opened on Arbor Day, April 26. Among the other events of the day will be the planting of an oak tree, to be designated as the Sesquicentennial Oak, and an outdoor Arbor Day program in the afternoon.

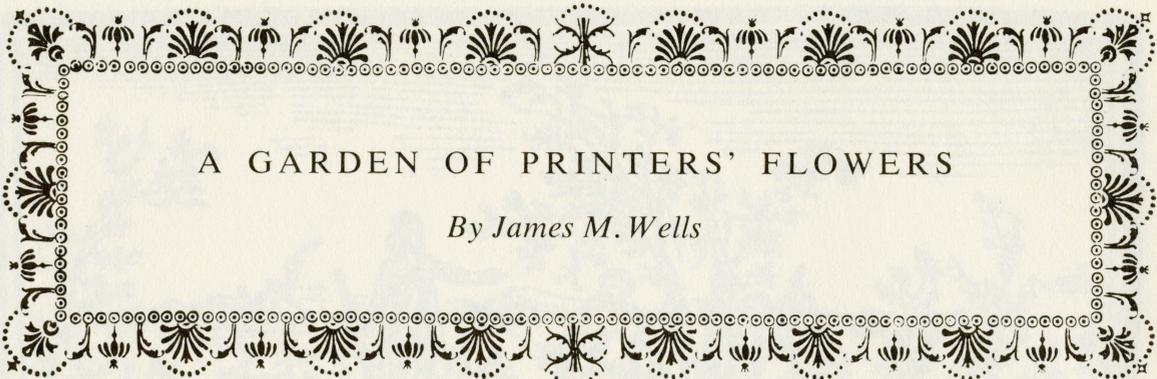
The trail itself begins at the northeast corner of the large parking lot near the Arboretum Center (Parking Lot 20) and consists of three loops of varying lengths. The shortest route circles Meadow Lake and is a half mile long. Both of the longer loops (one is a mile and a quarter, and the other two and one-half miles long) traverse varied geological terrain — along marshes and through meadows and upland woods. The labels on native trees will give information of interest to hikers of all ages.

STAFF APPOINTMENT. The Arboretum is pleased to welcome George B. Van Schaack as Bibliographic Consultant to the Sterling Morton Library. Dr. Van Schaack joined our staff in mid-

December, after retiring from the Missouri Botanical Garden, where he had served as Librarian since 1958. His abilities are not limited to bibliography, however, as a summary of his activities in St. Louis will confirm. He was a full-time professor of Mathematics at Washington University between 1947 and 1960, and on his own time he continued to pursue the botanical interests that had begun when he was stationed in the Aleutian Islands with the U.S. Naval Reserve during World War II. He became Honorary Curator of Grasses at the Missouri Botanical Garden in 1948. After serving in this capacity for a number of years, he became Acting Curator of the Herbarium, a post which he held until 1958, when he was appointed full-time Librarian and Curator of Grasses. We appreciate the opportunity of having Dr. Van Schaack on our staff, and will draw frequently upon his broad knowledge and experience.

GARDENS OF FOUR CENTURIES, an exhibit of early garden and landscape architecture books, will be shown in the Sterling Morton Library during the spring and summer months.

(Continued on page 16)



A GARDEN OF PRINTERS' FLOWERS

By James M. Wells

Man has always shown a love of ornament — in his dress, in his buildings, in all his belongings, including his books. The dictum that “less is better,” associated with modern, machine-made objects, is a new one which already shows signs of having lost its powerful appeal except among the most rigidly doctrinaire. Throughout history, and even in pre-history (as in primitive cave paintings), flowers and other natural motifs have been among the most popular kinds of decoration. It is not surprising that soon after the invention of printing the early designers and type casters were producing single pieces of ornamental type, based upon leaf designs or flowers, which soon became part of the basic typographic materiel and were known as fleurons.

The early typographers drew their inspiration from two principal sources: the painted decoration used in medieval manuscripts, especially from their borders, and the tools used by leatherworkers in decorating leather boxes, wall hangings, and above all, bookbindings. They often used patterns of interlocking foliage, known as arabesques, since they were based upon Moorish ornament brought into Europe through Spain and Venice. The arabesque occurs in many forms in Oriental decorative design, especially Persian: on tiles, in textiles, on pottery, and on illuminated manuscripts of the Koran, for instance. The Muslims, like the Jews, observed scriptural prohibitions against depiction of the human and the divine form, and therefore emphasized natural forms in their decoration. Moorish leatherworkers were skillful in painting leather and in gilding it as well; indeed, they were probably the inventors of the process by which gold ornament was applied to leather by the application of heated tools. In this process single small tools are combined into larger units to produce remarkably complex, yet delicate, decorative patterns. Among the tools which they and their European imitators used to great effect were a number representing stylized flowers and leaves. The early printers, seeking an easy mechanical method of applying decoration, adapted these tools, which had the same virtues as letters of type: they could be cast in large quantity, once punches had been cut and molds made; they could be assembled in an almost limitless number of combinations, depending upon the imagination and skill of the compositor; they could be locked up and printed simultaneously with text matter, being the same height and depth as type letters. The first printed books relied, like their manuscript ancestors, upon hand-painted decoration and illustration — a luxurious but costly method. Soon wood-cut borders and initials appeared,

This article is based on a talk given at the Sterling Morton Library during the winter of 1966 by Mr. Wells, Associate Director of the Newberry Library and Custodian of the John M. Wing Foundation on the History of Printing.

but these had serious drawbacks: they limited the printer to particular sizes and uses; they were hard to print with metal type; they could not be produced mechanically but had to be cut by hand, which was expensive. The typographic flower was cheap, handy, and attractive; easily used and easily replaceable, it quickly became popular.

The earliest printers' flowers are found in Italian books and were obviously derived from binders' tools. In 1478, the brothers Giovanni and Alberto Aluise, of Verona, printed an edition of Capricana's *Arte de ben morire* which contains both flowers and foliage, printed from type, combined into lines of decoration which surround the title of the book. They strongly resemble binders' tools of the period and, indeed, the punches for them may have been cut by a craftsman who had learned to do so by making binders' tools. (See figure a, page 13.)

The link between the binders and the typefounders continued well into the next century. The great Aldus Manutius, of Venice, who pioneered in the publishing of small, handy editions of the classics — the first "pocket books" — issued trade editions, bound for him, whose leather covers were decorated with various small gilded tools, usually leaves, varying in shape, length, and curvature. These were so successful that they were soon copied throughout Europe.

The earliest dated appearance of such leaves on the title page of a printed book occurs in a 1512 volume issued by Erhardt Ratdolt. By the 1520's, such leaves were being widely copied in Paris and Lyons; by the end of the century, printers everywhere were stocked with them. The most successful were those devised in Lyons, a great commercial and printing center, whose book fairs were a major factor in the international book trade. The most successful of the Lyons innovations, which began to appear about 1555 or thereabouts, was a set of fleurons, combining solid and shaded elements, which made up into strikingly handsome, if somewhat florid, borders, vignettes, and the like. They were probably designed by Bernard Salomon and cut by the great French punch cutter, Robert Granjon. Never completely out of fashion, they were revised and revived in the present century for machine composition and are still extensively used.

In the late sixteenth century, typefounding began to be an independent, highly specialized trade. Before then, punch cutters and founders had worked directly for the printer, as a rule, designing and providing type to special, individualized order. The first firm to have sufficient trade to print a specimen sheet of their stock and to solicit orders from throughout Europe was the Egenolff Typefoundry in Frankfurt, which showed and sold types designed by a number of the most skilled craftsmen of the sixteenth century, among them Claude Garamond and Robert Granjon. Their 1592 broadside specimen displayed, together with roman, italic, and gothic types, a number of *röslein*, as printers' flowers were called in Germany.

The seventeenth century saw little change or development in the use of printers' flowers, but this was more than made up by their tremendous proliferation during the eighteenth. Not only were a far greater variety of flowers cut than ever before, but they were used with extraordinary skill and imagination. One can really say that the printers' flower attained full bloom about the middle of the eighteenth century, particularly in France, where floral decoration was highly appreciated. Flowers bloomed on French porcelain, on *toile de jouy*, on silver and ivory, and on the charming books whose pages were ornamented with the fleurons of Louis Luce, Claude Lamesle, the Fourniers, and the other great French type designers of the era. But the art was cultivated not only in France, but across the continent. The 1760 specimen of J. J. Trattner, of Vienna, has one of the most comprehensive and exuberant displays of the century. The great William Caslon, a gun-engraver turned typefounder, cut many flowers still in the printers' repertoire, as did Thomas Cott-

rell, Alexander Wilson, and other British founders of the day. Isaiah Thomas, the foremost American printer of the eighteenth century, had a considerable number of Caslon's flowers, which he proudly showed in his 1785 specimen book.

There is a great temptation, especially in college survey courses and articles like the present one, to hack the time continuum into neat little segments, labelled "sixteenth century," "nineteenth century," and the like. Unfortunately, neither history nor the people who make it cooperate in this endeavor, and so it becomes a bit difficult to fit men who span the turn of a century, or whose styles develop during the course of a long career, into the proper pigeonhole. A case in point is G. B. Bodoni, the great Italian printer and type designer, whose early work, at the end of the eighteenth century was very French and very rococo in style, but whose later work, executed during the Napoleonic era, is classically severe. Bodoni used fleurons with great effect, not only in his books but on a wide variety of ephemera, done with as much charm and skill as his books.

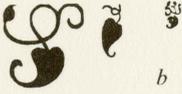
The nineteenth century, especially that part of it characterized as Victorian, is known for its love of decoration — the more profuse and exuberant, the better. It was a century in which plant explorers and hybridizers sought to produce larger, showier specimens, and gardeners set out carpet beds astounding for their ingenuity, if not their beauty. The typefounders and printers, not to be outdone, devised types and flowers which were large, bold, and sometimes tortured in their application of decoration, and used them with great gusto whenever they had a chance. It is interesting that today's decoration-starved designers have turned back the clock, so that the adjective "Victorian" need no longer be a pejorative one. The specimens of Vincent Figgins, of Stephenson and Blake, of McKellar Jordans, and the Didots, among others, well illustrate this branch of "typographic horticulture," as do the magazines, programs, posters, and books which used them.

The present age, with its emphasis on photographic illustration and drawn decoration — comparatively cheap and easily available since the invention of offset printing — is less devoted to typographic decoration than were earlier days, yet printers' flowers still crop up in our books, our ads, our Christmas cards. When a printer or designer wishes a spot of instant decoration, he can readily find it in the ample resources of the typefoundries; he can also find fleurons in the specimen books of the Monotype and Linotype, since the manufacturers of composing machines were quick to realize the need and the demand for typographic ornament, and to provide it. One of the greatest typographers of the twentieth century, Bruce Rogers, was a master in the use of printers' flowers, and many of his most delightful books employ them. There are a host of recent book designers — W. A. Dwiggins, Will Bradley, Oliver Simon, and others — who have enlivened their work with the fleuron. Leonard Baskin, proprietor of the Gehenna Press and an artist who works in many media, among them wood-engraving, sculpture, and typography, last year issued an anthology, *Flosculi sententiarum . . . , or Printers' Flowers Moralized*, which demonstrates that, in the hands of an artist, humble printers' flowers can be combined into whimsical nosegays and handsome bouquets. As long as there are people who love flowers, and printers to serve them, we can be certain that this will continue to hold true.

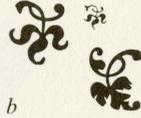
Opposite: b. 16th-century fleurons, used throughout Europe; c. Tailpiece from J. J. Trattner's 1760 Viennese type specimen book; d. Fleuron decorations from William Caslon's A Specimen of Printing Types . . . , London, 1785; e. 19th-century French typographic ornaments; f. Decorated initial from Fournier's Manuel typographique, Paris, 1766; g. Border piece from Fantasies Parisiennes, French 19th-century specimen book; h. A printer's mark by Bruce Rogers, using a typographic thistle, from Eugene Field's The Symbol and the Saint, New York, 1924; Page 10: Typographic border by G. B. Bodoni, Parma, early 19th-century.

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DE BEN MORIRE

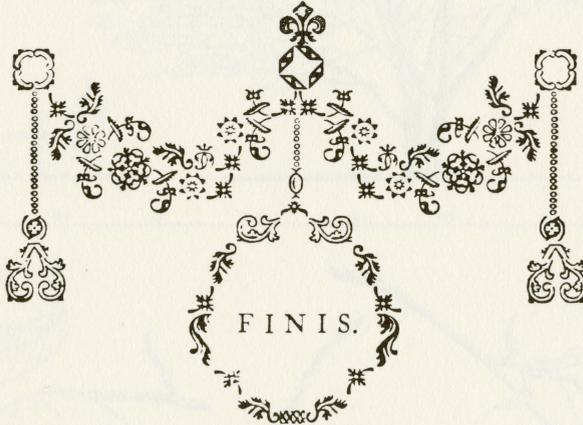
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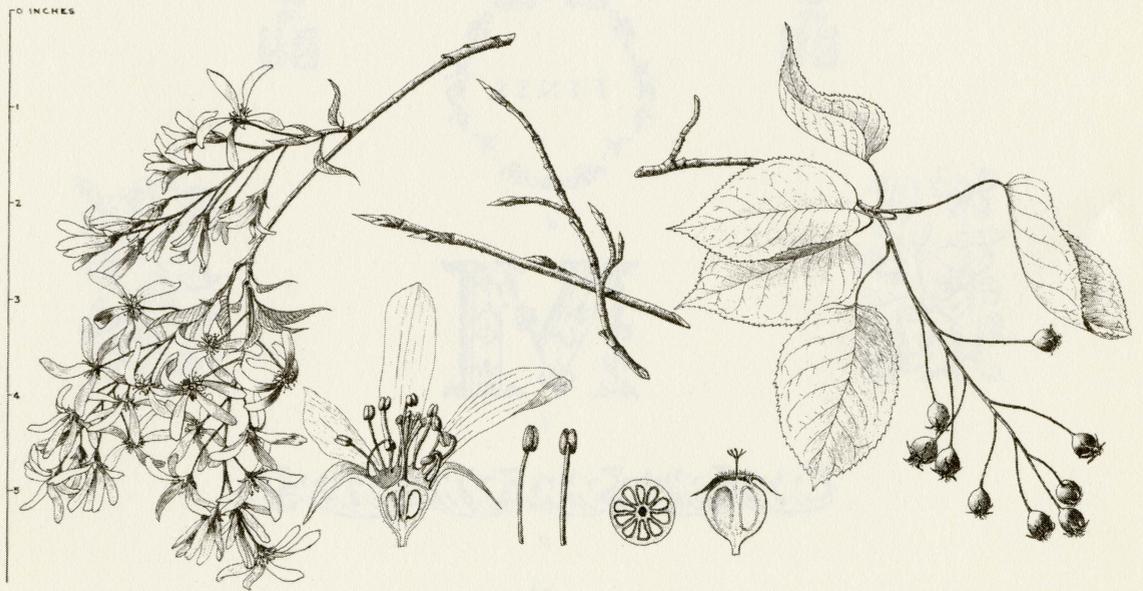
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h



Shadbush, Allegheny Shadblow, Serviceberry, Juneberry, *Amelanchier laevis*

Rose Family (*Rosaceae*)

Natural distribution: Newfoundland to Ontario and Minnesota, south to Iowa and Ohio; in the mountains south to Alabama.

Natural habitat: woods, thickets, and swamp margins.

Height: may ultimately reach 40 feet.

Shape: upright with spreading branches, often irregular in growth; slender, graceful, sometimes multiple-trunked; picturesque specimens can be obtained by personal selection in the nursery.

Texture: fine, with a light and airy aspect, especially when in bloom.

Bark: smooth, gray, attractive.

Buds: green tinged with red; ½ inch long, but can be up to 1 inch.

Foliage: quite smooth; leaves elliptic or ovate, usually somewhat heart-shaped at base, with finely toothed margins; usually about 2 inches long and 1 inch wide; purplish-bronze when unfolding in spring, then light green until autumn when coppery fall color appears.

Density of its shade: light to medium.

Flowers: showy white flowers, more than ½ inch long, in pendulous racemes, appearing when the leaves are about half developed; narrow white petals, sometimes rose-tinged.

Fruit: about ⅓ inch in diameter, somewhat resembling a tiny apple in appearance; pink to red, bloomy, ripening to dark purple or blackish in June or July; sweet and edible, but usually eaten quickly by birds.

Root system: shallow, coarse, spreading.

Exposure: sunny or partly sunny location needed for best flowering, but grows satisfactorily in shade.

Moisture requirements: adaptable.

Soil: tolerant; requires good drainage.

Wind resistance: good.

Planting suggestions: move in very early spring; transplanted, root-pruned specimens are best; must be balled and burlapped.

Maintenance: minimum.

Growth rate: slow to moderate.

Hardiness: hardy to and including Zone 5.*

Problems: none.

Availability: not widely available in nurseries; plantsmen who grow material true to name are invited to inform the Arboretum so that we can keep our source file up to date.

Area of adaptability: suburban or rural.

Uses: effective in naturalistic plantings and masses; specimen plantings; all-season interest, with attractive spring blooming, fall foliage color, and winter bark; attractive to birds.

Location in Arboretum: Amelanchier Collection east of Lake Marmo; area south of the junction of Spring and Forest Roads.

(Continued on page 16)

*Hardiness Zone based on Plant Hardiness Zone Map prepared jointly by the U.S. National Arboretum in cooperation with the American Horticultural Society. U.S.D.A. Misc. Pub. #814, May, 1960.

Other Amelanchiers: Several related kinds are available in the nursery trade. The one most similar to *A. laevis* is *Amelanchier arborea*, a tree sold frequently under the name *Amelanchier canadensis*. The true *A. canadensis* is a tall shrub with more rounded leaves and does not usually appear in mid-western nurseries. Neither *A. canadensis* nor *A. arborea* has the smooth bronze foliage in spring that is typical of *A. laevis*. Reference to *Gray's Manual of Botany*, 8th edition, will help clarify the identification of these plants, often confused in the literature and in the trade. Two other useful members of this genus are the low-growing shrub, *Amelanchier stolonifera*, and the large-flowered showy hybrid, *Amelanchier* × *grandiflora*, a cross between *A. arborea* and *A. laevis*.

Arboretum News and Notes

OIKOS III. The third Oikos conference was held at the Thornhill Building on March 2. Sponsored by the Open Lands Project, the American Association of Landscape Architects (North Central States Chapter), and the Morton Arboretum, this annual conference focuses on environmental problems and particularly upon their ecological implications. "Land, Ethics, and the Law" was this year's theme and also the title of the main address, given by Patrick Horsbrugh, of the Department of Architecture at Notre Dame. On the program, also, was Richard F. Babcock, an attorney who has specialized in the problems and intricacies of zoning law. Mr. Babcock's book, *The Zoning Game; Municipal Practices and Policies*, was published by the University of Wisconsin Press in 1966.

GUATEMALAN FIELD WORK. Marion T. Hall, Arboretum Director, and Mrs. Hall traveled in Guatemala for three weeks in December. The

purpose of their trip was to study the habitats and forms of four species of *Juniperus* which represent the southernmost distribution of that genus in the western hemisphere.

RHODODENDRONS FOR THE CHICAGO AREA was the title of the Arboretum's exhibit at the Chicago World Flower and Garden Show, March 23-31. This display was the culmination of many years of collecting and testing various kinds of azaleas and rhododendrons for this region. Mature specimens were grown in containers for the past two years, enabling them to be forced into bloom and transported to the show. The exhibit was designed and its preparation directed by Webster R. Crowley. A leaflet listing the plants may be obtained from the Arboretum.

THE GINKGO SHOP AND TEAROOM will re-open on April 13 and will be open every day. Group reservations may be made by calling Mrs. Naser at WO 8-0074.

Climatological Summary

<i>Data</i>	<i>November</i>	<i>December</i>	<i>January</i>
<i>Average mean temperature</i>	34.1° F	28.5° F	22.4° F
<i>Highest temperature</i>	58° F	60° F	50° F
<i>Lowest temperature</i>	13° F	-6° F	-19° F
<i>Days maximum below 32° F</i>	0	9	15
<i>Days minimum below 0° F</i>	0	4	5
<i>Precipitation</i>	2.32"	2.61"	1.21"

The Morton Arboretum

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Clayton J. Adams
Edward H. Baker, Jr.
Laurence A. Carton
Charles C. Haffner III
Garfield King
Daniel Peterkin, Jr.
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Anthony Tyznik, *Superintendent*
Walter E. Eickhorst, *Curator of Cultivated Plants*
Ray Schulenberg, *Curator of Native Plants*
Mrs. Raymond Watts, *Naturalist Emeritus*
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Ronald M. Coulter, *Assistant in Education*
Roy M. Nordine, *Propagator*
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Floyd A. Swink, *Taxonomist*
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Miss Carol L. Doty, *Assistant Librarian*
George B. Van Schaack, *Bibliographic Consultant*
Mrs. Roger J. Naser, *Tea Room Manager*
Miss Marjorie Westhafer, *Shop Manager*

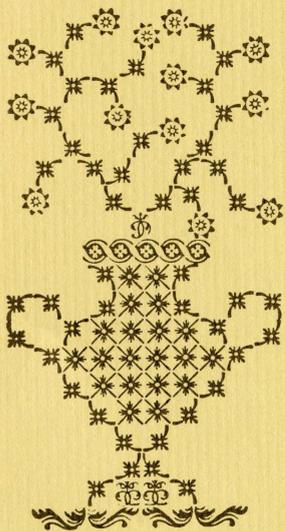


ILLUSTRATION SOURCES

Page 3, 6: Drawings by Elizabeth Zimmerman.

Page 4: Photograph by Marion T. Hall.

Page 9: Woodcut from M. Schabol, La Pratique du Jardinage, Paris, 1774.

Page 14: Pen and ink drawing by Anthony Tyznik.

*Inside back cover: Printers' flowers from William Caslon,
A Specimen of Printing Types, London, 1785.*



PLANT TREES

THE MORTON ARBORETUM

LISLE, ILLINOIS

Founded by Joy Morton, 1922

A PRIVATELY ENDOWED EDUCATIONAL FOUNDATION FOR PRACTICAL, SCIENTIFIC RESEARCH WORK IN HORTICULTURE AND AGRICULTURE, PARTICULARLY IN THE GROWTH AND CULTURE OF TREES, SHRUBS, AND VINES BY MEANS OF A GREAT OUTDOOR MUSEUM ARRANGED FOR CONVENIENT STUDY OF EVERY SPECIES, VARIETY, AND HYBRID OF THE WOODY PLANTS OF THE WORLD ABLE TO SUPPORT THE CLIMATE OF ILLINOIS . . . TO INCREASE THE GENERAL KNOWLEDGE AND LOVE OF TREES AND SHRUBS, AND TO BRING ABOUT AN INCREASE AND IMPROVEMENT IN THEIR GROWTH AND CULTURE.