ADDISONIA

COLORED ILLUSTRATIONS

AND

POPULAR DESCRIPTIONS

OF

PLANTS

VOLUME 18

1933—1934

PUBLISHED BY

THE NEW YORK BOTANICAL GARDEN

(ADDISON BROWN FUND)

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MAY 8, 1933

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ANNOUNCEMENT

A bequest made to the New York Botanical Garden by its late President, Judge Addison Brown, established the

ADDISON BROWN FUND

"the income and accumulations from which shall be applied to the founding and publication, as soon as practicable, and to the maintenance (aided by subscriptions therefor), of a high-class magazine bearing my name, devoted exclusively to the illustration by colored plates of the plants of the United States and its territorial possessions, and of other plants flowering in said Garden or its conservatories; with suitable descriptions in popular language, and any desirable notes and synonymy, and a brief statement of the known properties and uses of the plants illustrated."

The preparation and publication of the work has been referred to Mr. Edward Johnston Alexander, Assistant Curator.

ADDISONIA is published as a magazine twice yearly, in March and September. Each part consists of eight colored plates with accompanying letterpress. The subscription price is $10 per volume, four parts constituting a volume. The parts will not be sold separately.

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THE NEW YORK BOTANICAL GARDEN
BRONX PARK
NEW YORK CITY

Subscribers are advised to bind each volume of ADDISONIA as completed; in order to avoid possible loss or misplacement of the parts; nearly the whole remainder of the edition of Volumes 1 to 17 has been made up into complete volumes, and but few separate parts can be supplied.

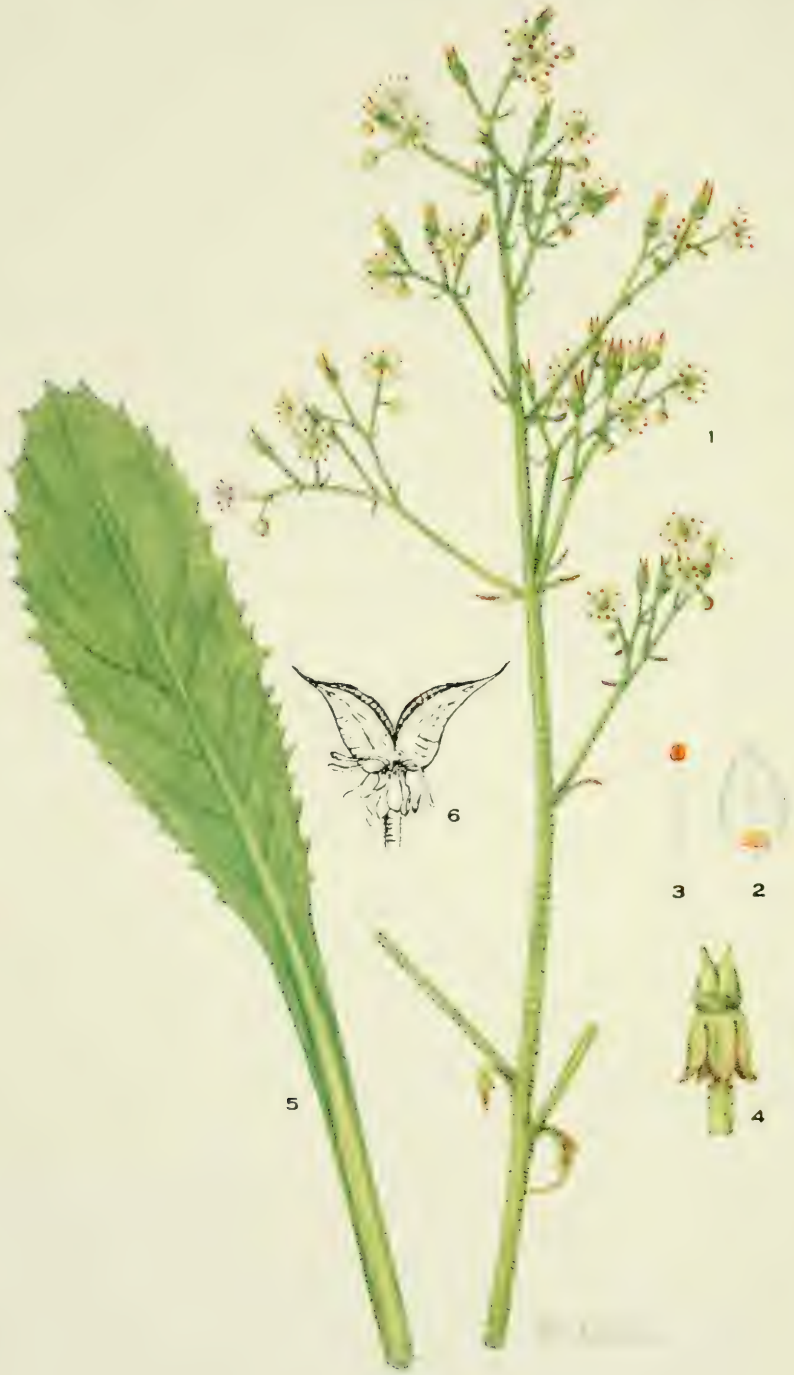
May 8, 1933.

To Addisonia Subscribers:

The attention of subscribers is called to the fact that due to lack of funds, "Addisonia," for the time being, will be published semi-annually in the spring and fall of the year. Four numbers will continue to constitute a volume and the price will remain at $10 per volume but subscribers will be billed yearly at $5.

Subscribers who have paid the full amount for the current year will be credited with payment for the year 1934.

The New York Botanical Garden.



MICRANTHES MICRANTHIDIFOLIA

(Plate 577)

MICRANTHES MICRANTHIDIFOLIA

Mountain-lettuce

Native of the southern Appalachian Mountains

Family SAXIFRAGACEAE SAXIFRAGE Family

Robertsonia micranthidifolia Haw. Syn. Pl. Succ. 322. 1812.
Saxifraga erosa Pursh, Fl. Am. Sept. 311. 1814.
Saxifraga micranthidifolia Steud. Nom. Bot. 736. 1821.
Saxifraga Wolleana T. & G. Fl. N. Am. **1**: 569. 1840.
Micranthes micranthidifolia (Haw.) Small, Fl. SE. U. S. 501. 1903.

Eastern North America does not possess so great a variety of saxifrages as the Old World nor such beautiful ones, but among those she does possess are some interesting and difficult ones to grow in the garden. Most of our native eastern species grow in cool damp woods near stream banks, or on wet or dripping cliffs.

The group represented in the genus *Micranthes* has two northern species extending southward in the mountains, where they are joined by several others and one related genus, *Hydatica.* This related genus and our present subject are indiscriminately called mountain-lettuce by the native mountaineers.

None of the group is very showy-flowered, but one species, *M. virginiensis,* is one of the earliest of spring flowers in northern latitudes, and makes a nice showing, as it grows on rocky hillsides, otherwise barren of color at that season. The others of the group are later-flowering, but have such a fresh green color that their close-growing colonies on wet cliffs and in the spray of water-falls is a most freshening sight, while their loose-branching sprays of small flowers add an airy touch of grace to the scene.

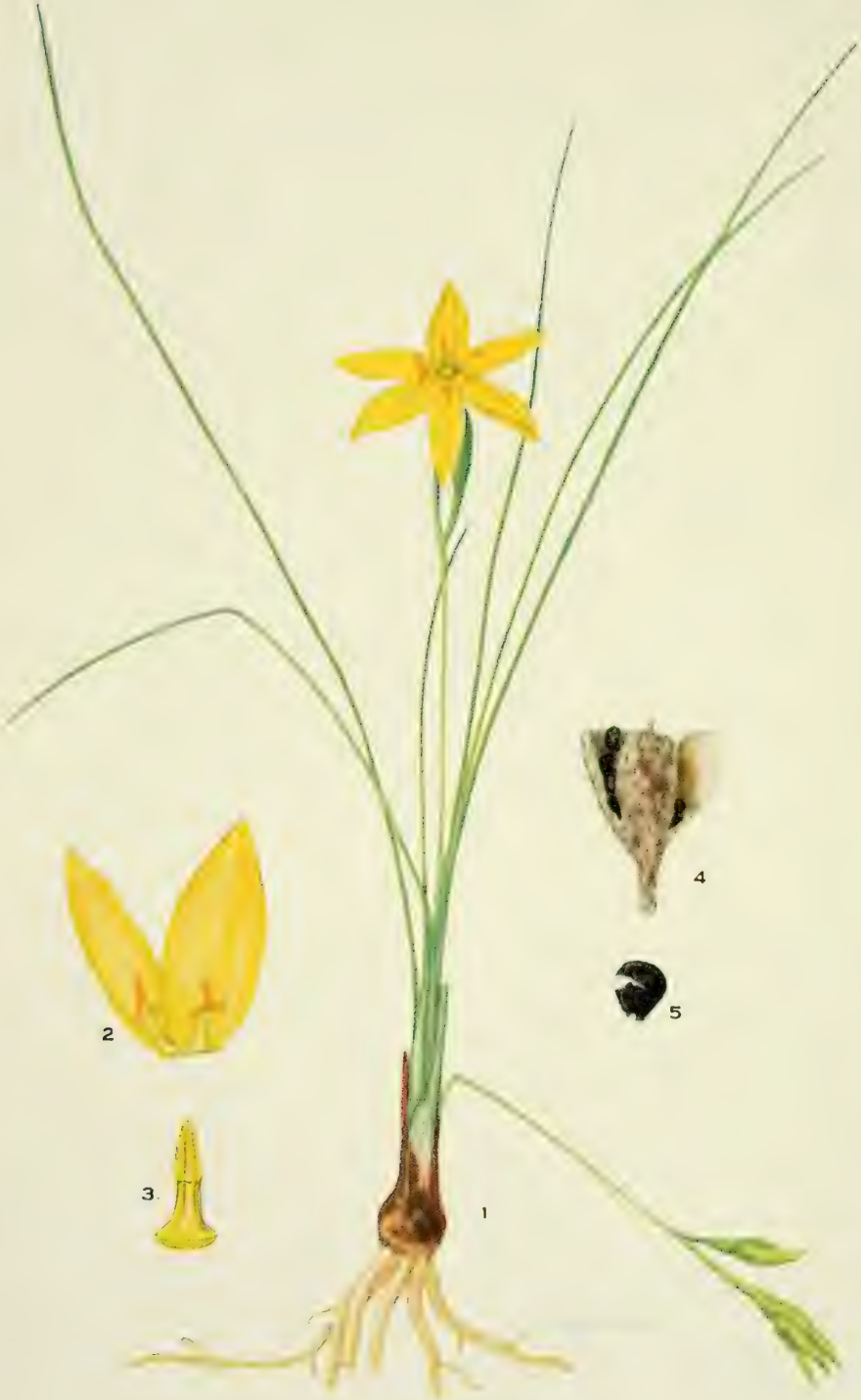
Our present subject was painted from plants collected by the late Dr. P. A. Rydberg on Snowy Mountain, West Virginia, in 1925, and flowering the following year.

The mountain-lettuce is a perennial herb. The leaves, which stand more or less upright in a basal rosette, are bright yellow-green, glandular-ciliolate, three to ten inches long, oblanceolate or spatulate in outline, the margins serrate with flaring deltoid teeth. The inflorescence is borne on a more or less glandular-pubescent scape twelve to thirty inches tall, paniculately branched on the upper portion, each branch and branchlet subtended by a leaf-like bract, those of the lower branches being much more foliaceous than those above. The flowers are about one-fourth inch across, whitish, each petal bearing a yellow blotch near the base. The filaments are white,

clavate, persistent after flowering. The follicles are widely spreading at maturity, about one-fourth inch long.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—The top of an inflorescence. Fig. 2.—A petal × 6. Fig. 3.—A stamen × 6. Fig. 4.—The gynoecium and calyx × 6. Fig. 5.—A leaf. Fig. 6.—The fruit × 1½.



HYPOXIS JUNCEA

(Plate 578)

HYPOXIS JUNCEA

Pine star-grass

Native of South Carolina, Georgia, and Florida

Family AMARYLLIDACEAE AMARYLLIS Family

Hypoxis juncea J. Sm. Spicil. **2:** 15. *pl. 16.* 1792.
Hypoxis filifolia Ell. Bot. S. C. & Ga. **1:** 397. 1817.

The name *Hypoxis* was assigned to the star-grasses of popular parlance by Linnaeus in 1759. The name started with the Greeks, in whose language it means subacid, and was originally applied to a plant with sourish leaves. The popular name comes naturally from the starry form of the perianth. Two American species were known to Linnaeus. The one he described as *Ornithogalum hirsutum* in 1753, referring it to *Hypoxis erecta* in 1759. In 1762 he described the second species, *Hypoxis sessilis.* Three decades later the third American species was launched. Sir James E. Smith described *Hypoxis juncea* from specimens "discovered in boggy ground in Carolina by the indefatigable John Fraser, from whose garden this [the type] specimen was obtained." Nearly three decades passed again before the genus was again augmented by the additional specific name in North America. Actually, however, this latter attempt was botanically abortive. This false alarm, so to speak, was the result of imperfect field knowledge of the plants concerned.

The original studies of this species were made on the very edge of the geographic range and in a region where the plant is rare as compared with the center of its geographic range, peninsular Florida, where it is almost ubiquitous in the pinelands. Stephen Elliott separated his *Hypoxis filifolia* from *H. juncea* mainly on characters that may be found in colonies of what is granted to be good *Hypoxis juncea* in peninsular Florida. In other words, filiform *versus* channelled leaves and two-flowered *versus* one-flowered scapes appear wholly non-diagnostic characters.

Now coming to the personal habits of this plant, we find that it combines the habits of a rain-lily and a fire-weed. The ground cover of the pinelands rapidly collects into a layer of tinder; when this burns, the fire makes a clean sweep of herbaceous vegetation and the foliage of the shrubbery. A black surface covers the soil. Promptly myriad slender green leaves appear after the manner of

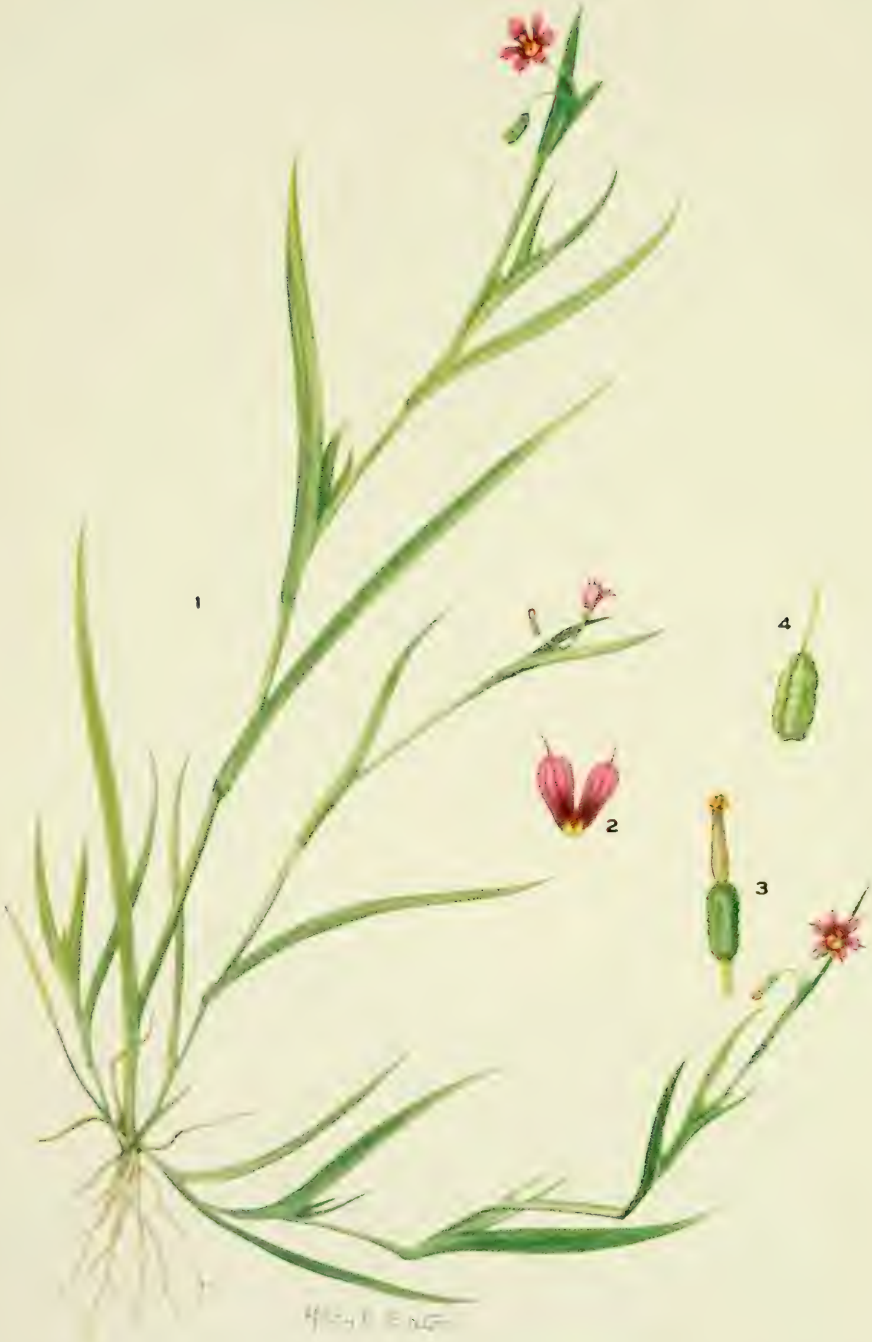
some fire-weeds, and in a short time, after the manner of rain-lilies, myriad bright-yellow stars lie strewn, as it were, over the black floor of the pinewoods. Contrary to the habit, at least of the larger fire-weeds, the star-grass does not grow tall and form almost impenetrable thickets.

The star-grass is not only exceptionally conspicuous on account of the black background beneath the flowers, but also as a result of stimulation from the chemicals in the burned vegetation. It gradually and slightly wanes as the charred material is washed away, returning again to its maximum condition after the next fire.

The pine star-grass has an ovoid or globose-ovoid corm, often with a rather long neck, a quarter to a half inch thick, with brown membranous scales supported on a cluster of thick roots. The leaves are five to ten together, linear-setaceous, from a pale slightly dilated base, mostly three to eight inches long, or sometimes up to fifteen inches, slightly channeled on the upper side or involute, rounded on the back, light-green, with usually scattered, long, very slender hairs, especially when young. The scape is filiform, erect, two to eight inches tall, usually much shorter than the longer leaves, glabrate below and more or less appressed-pubescent above, or glabrous in age, gradually enlarged under the flowers. The flowers are solitary or two on a scape, erect. The bracts are subulate from a broad base. The hypanthium is clavate, softly appressed-pubescent, longer than the bracts. The perianth is yellow, one-half to an inch and a quarter wide, horizontal. The three sepals are lanceolate or elliptic-lanceolate, obtusish or acute, pubescent on the back, sometimes cobwebby, several-veined. The three petals are ovate-lanceolate or elliptic-ovate, acute, thinner than the sepals, glabrous or nearly so. The six stamens are relatively small, a third or a fourth as long as the sepals and petals. The filaments are subulate, those opposite the petals shorter and stouter than those opposite the sepals, whitish. The anthers are yellow, sagittate, the sacs rounded at the base. The ovary is surrounded by the hypanthium and abruptly narrowed into the style-base. The style is columnar, three-ridged, glabrous. The stigma is conic, with the three erect lobes adhering by their faces. The capsule is stout-clavate or clavate-obovoid, nearly or quite a quarter of an inch long, sparingly pubescent to cobwebby, several to many-seeded. The seeds are ellipsoid or obovoid, black, shining and with a fine pebbling.

JOHN K. SMALL.

EXPLANATION OF PLATE. Fig. 1.—Plant natural size. Fig. 2.—A sepal and petal, with stamens attached at base × 2. Fig. 3.—Style and stigmas, × 4. Fig. 4.—Ripe capsule with valves open, × 4. Fig. 5.—Seed, × 8.



SISYRINCHIUM MINUS

(Plate 579)

SISYRINCHIUM MINUS

Rosy-eyed grass

Native of the south-central United States

Family IRIDACEAE — IRIS Family

Sisyrinchium minus Engelm. & Gray, Bost. Jour. Nat. Hist. **5**: 263. (Pl. Lindh. 55.) 1845.

When the seeds were collected from which the plant here illustrated was raised, the writer thought it was a new species, as no "rose"-flowered *Sisyrinchium* was recorded for North America in the genus. Upon careful comparison of the original description of *Sisyrinchium minus,* it became evident that the plant was that species, which had, however, been described as blue-flowered. Since the description is absolutely the same otherwise, the describers of *S. minus* had evidently not seen fresh flowers and as the other species were "blue," assumed it was the case for this species also. The flowers, however, are a dull old-rose in color.

This species was recently shown to the writer growing in the grassy margins of the athletic field at Tulane University, New Orleans, by Professor W. T. Penfound, of that University, this making its first record east of the Mississippi River.

In central Louisiana the plants from which our seeds were gathered were growing in dense patches closely intermingled with *Trifolium resupinatum,* an introduced species of clover from Europe. Their flowers being of the same color, the two were indistinguishable from a distance, and the *Sisyrinchium* flowers were so small it was necessary to get down on hands and knees to locate the plants and collect the seed.

The plant was originally collected near San Felipe, Texas, in 1844, by F. Lindheimer, and was named the following year.

In its more western habitat, the plants grow in damp or boggy meadows and on swampy stream margins.

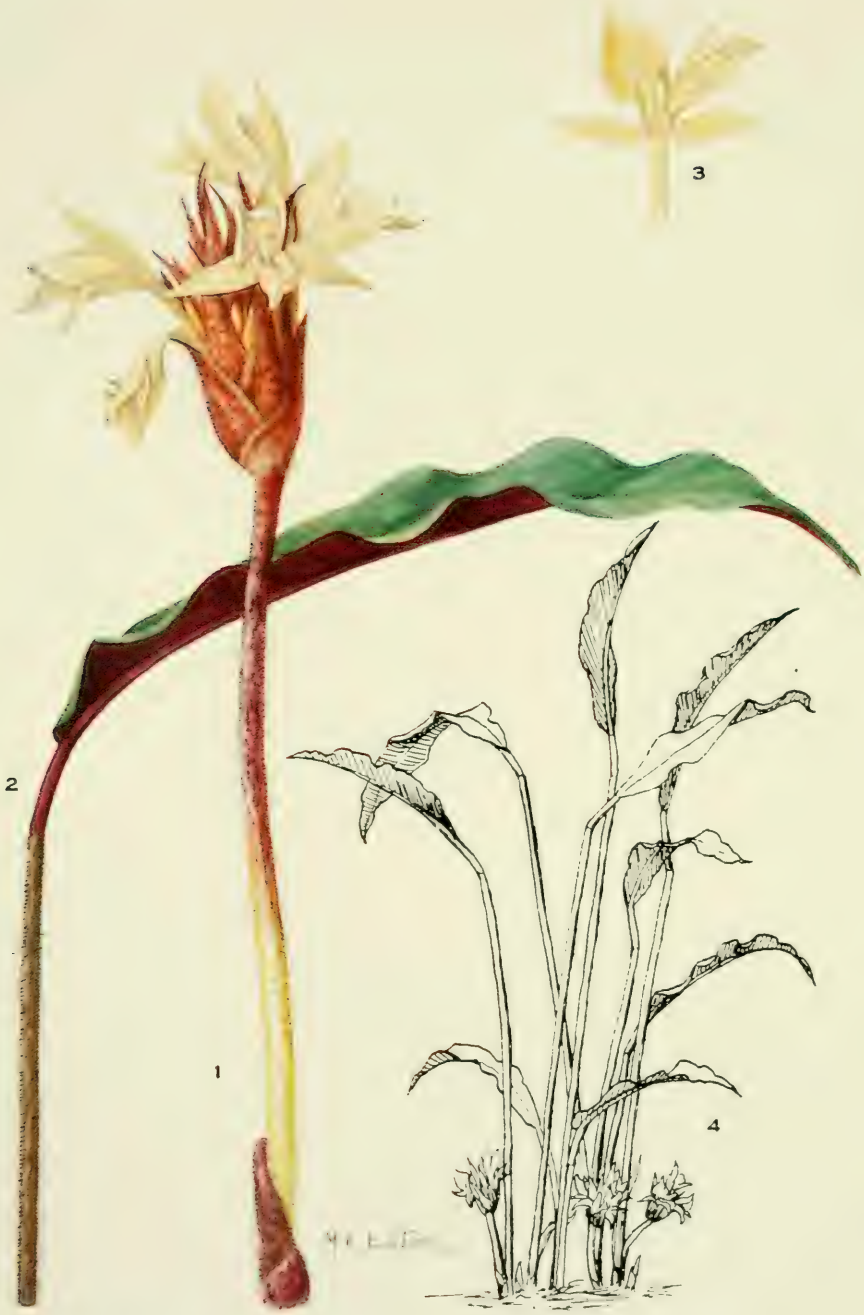
In the Index Kewensis this species has been reduced to *S. angustifolium,* to which it could not possibly be related, as the shape of its perianth-lobes, its capsule and its habit of growth are totally at variance with that species.

The rosy-eyed grass is a biennial or short-lived perennial, arising from a cluster of fibrous roots. The stems are rosulate, in loose tufts, zigzag, as are the numerous branches. The leaves, three-

fourths of an inch to three inches long, are deep green. The scape is much branched and leafy from near the base, margined or narrowly winged. The flowers are one-fourth to three-eighths of an inch across. The perianth lobes are dull old-rose, veined darker, tapering abruptly into a thread-like tip nearly half as long as the lobe; the lobes darken below and have a yellow eye-spot at the base. The three stamens are united by their filaments to the top, forming a brownish yellow, purplish-marked tube around the slender style-branches, which are not exserted until after anthesis. The ovary is slightly hairy, sharply three-angled. The capsule is narrowly obovoid, its three lobes very distinct and torulose, readily dehiscent. The numerous seeds are very small and black, irregularly pitted. Unique among American Sisyrinchiums by its rosy flowers, long-aristate, not emarginate, perianth-lobes, and its torulose, obovoid capsules. The smallest-flowered of the American species.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—A flowering plant. Fig. 2.—Two perianth divisions × 2. Fig. 3.—The gynoecium and androecium × 4. Fig. 4.—A mature capsule × 4.



CALATHEA VARIANS

(Plate 580)

CALATHEA VARIANS

Calathea

Native of tropical America

Family MARANTACEAE ARROWROOT Family

Phrynium varians C. Koch & Math. App. Cat. Sem. Hort. Berol. 12. 1855.
Calathea varians Koernicke, Gartenfl. 7: 87. 1858.

The *Maranta* or Arrowroot family has given many greenhouse plants to horticulture, most of them being grown for their ornamental foliage, which in many species of its various genera is colored, barred, or metallic. Since many of them do not bloom at all or but rarely in cultivation, the genera are frequently confused, most of those known as Marantas being really Calatheas. These two genera differ markedly in the inflorescence, which in *Maranta* is paniculate or branched, and in the ovary, which is one-celled; while in *Calathea* the inflorescence is capitate or cone-like, with spirally arranged bracts, and the ovary is three-celled. The three genera *Phrynium, Ctenanthe,* and *Monotagma* also have members which are likely to be known in cultivation as *Calathea,* all of these differing either in type of inflorescence or shape of the flower as well as in other technical characters. *Calathea* is by far the largest genus of the Marantaceae, there being over a hundred species, all native in tropical America.

Calatheas may be cultivated in pots or pans, but they are seen at their best when planted out in a border in a greenhouse wherein a tropical temperature is maintained. In either case, very good drainage must be provided, for, although they require liberal supplies of water at the root, they abhor stagnant soil conditions. The rooting medium should be of loose open character and may with advantage contain a proportion of peat in addition to a generous amount of rotted leaf-mold, sharp sand, and some turfy loam.

Division of the old plants in the spring affords a ready means of increase and after separation from the parent stock the young divisions should be grown on for a while in a propagating case. Established plants growing in borders should be top-dressed each spring, and those cultivated in pots or pans may be moved into such larger-sized receptacles as growth demands any time until the early part of July. After this date further repotting should not be necessary but feeding plants which are well rooted with dilute liquid manure

will do much to encourage healthy growth. Feeding should cease at the end of September.

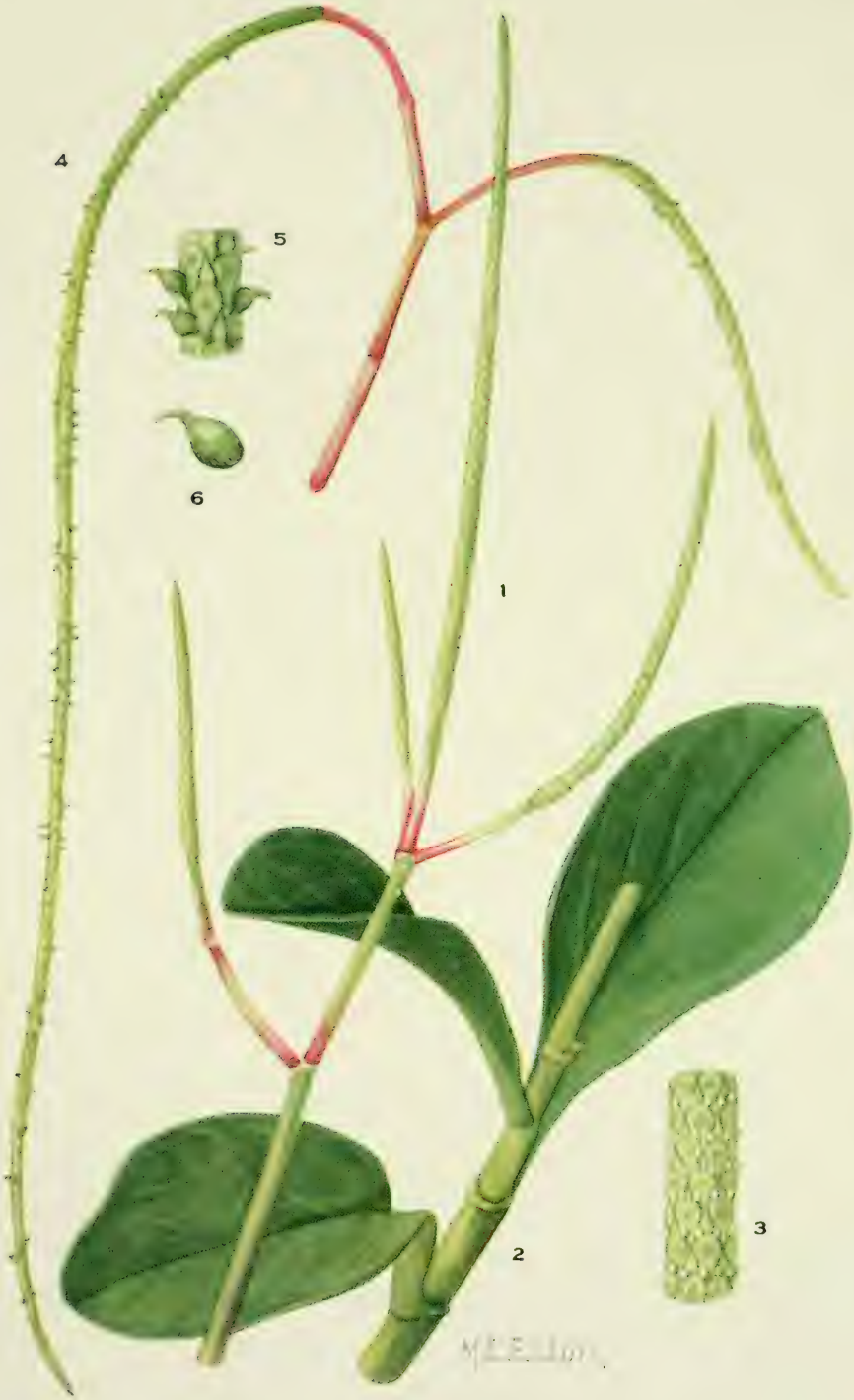
High temperature, heavy shade and a high degree of relative humidity in the atmosphere are the remaining requisite conditions to assure the luxuriant and thrifty growth of Calatheas.

Mealy bug and red-spider are the two chief enemies but both may be controlled by vigorously spraying the foliage with clear water on every bright day.

Calathea varians is an herb, arising from a slender rootstock. The rather few leaves are on hairy, purplish-spotted petioles up to twenty inches long. The petiolule is glabrous, dull purple, one-half to one and one-half inches long. The leaf-blades are smooth and leathery, five to fifteen inches long, deep green above, dull purple beneath. The flowers are borne in an ellipsoid cone, which arises from the rootstock on a hairy, purplish-spotted peduncle two and a half to five inches long. The bracts of the cone are hairy, spirally arranged, yellow-brown with reddish spots, all floriferous. The flowers are yellowish, showy for the genus, about an inch and a half long and an inch across, hairy on the outer side.

T. H. EVERETT,
EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—Inflorescence. Fig. 2.—A leaf. Fig. 3.—A flower, laid open. Fig. 4.—An entire plant, much reduced.



RHYNCHOPHORUM SPATHULIFOLIUM

(Plate 581)

RHYNCHOPHORUM SPATHULIFOLIUM

Fragrant wild-pepper

Southern Florida, Bahamas, Hispaniola

Family PIPERACEAE PEPPER Family

Peperomia spathulifolia Small; Britt. & Millsp. Bahama Fl. 1920.
Rhynchophorum spathulifolium Small, comb. nov.

As usually interpreted, *Peperomia* is an awkward genus of well over six hundred species, mainly tropical, succulent, often epiphytic or humus plants. It is most abundantly represented in the New World, where its geographic range is extensive, including continental and insular America from Argentina to Mexico and Florida, and with an extreme northern station in the Western Hemisphere in Bermuda, where *Peperomia Stewardsonii* is endemic. These plants are often popularly known as wild-pepper plants, a name attached to them as a result of their relationship to the black pepper of commerce. The generic name *Peperomia* comes from the Greek and means pepper.

Five kinds of wild-pepper plants are now known to grow naturally in Florida. They are all humus plants. The humus in which they grow has several kinds of substrata. In the case of one species it is sand or marl, in the case of another, shells, and curiously enough not natural shell accumulations, but only on the refuse heaps—kitchenmiddens—of the aborigines. In the case of two species, it is the trunks or limbs of trees or decaying logs themselves, and in the case of the plant here figured the substratum is rock.

With a thin coating of humus on the otherwise exposed limestone, this plant makes a prodigious growth, often piling up its leafy stems knee-deep. The monotony of this abundant bright-green ground cover is often broken by the numerous inflorescences which consist of white or ivory, forking, very slender, often string-like spikes, which droop at the tips. These characters alone distinguish this wild-pepper from our other species in which the inflorescences are green. Two additional diagnostic characters appeal to the sense of smell. The drying plant gives off a very pungent aromatic fragrance which is not possessed by any other native member of the genus and more remarkable is the fragrance given off by the inflorescence. We have not been able to decide if this fragrance comes from the whole inflorescence or from the flowers only. The latter

are so small, consisting only of two minute stamens and a minute pistil, that it seems incredible that so much fragrance could come from the flower alone.

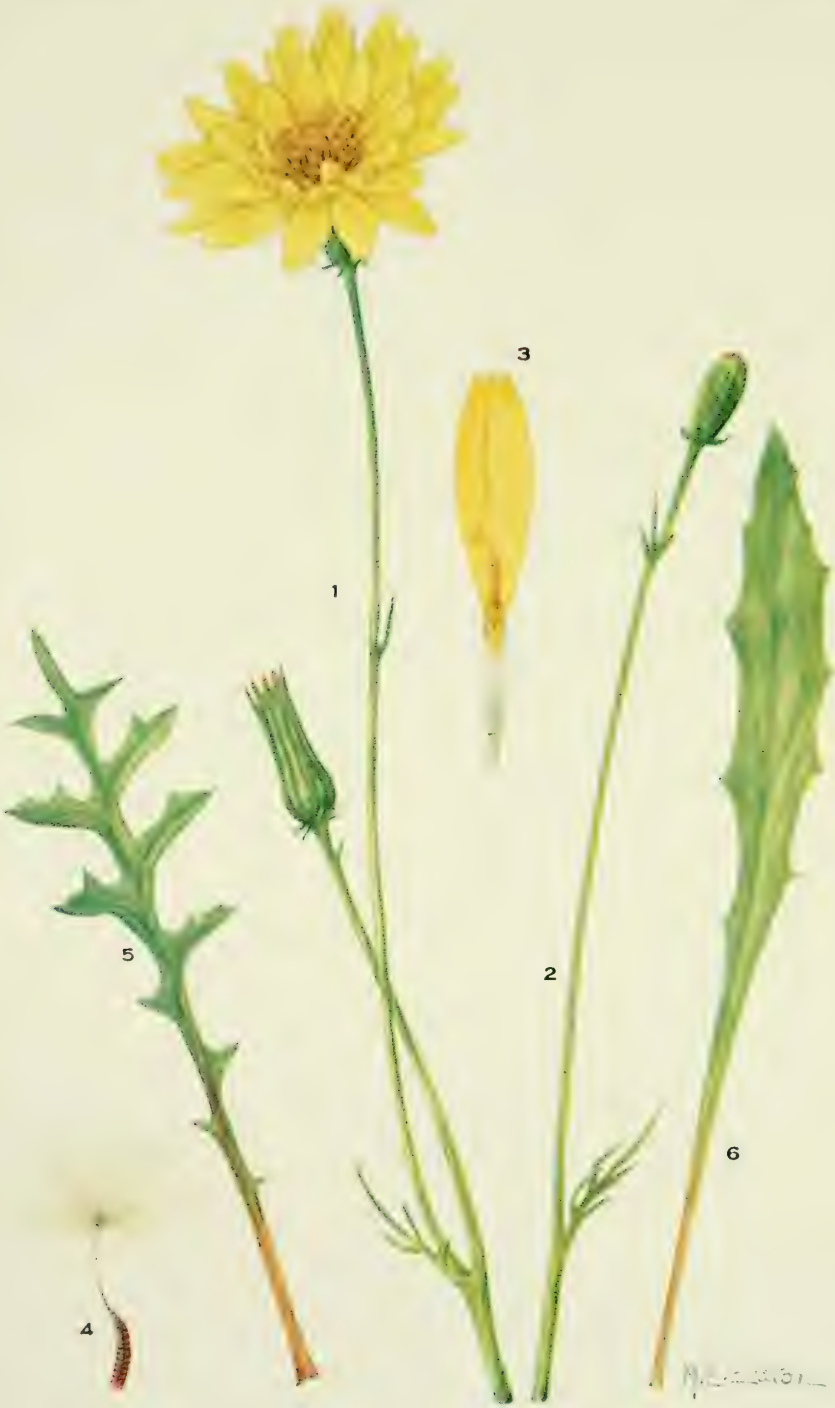
This plant is known in Florida only in the Hattie Bauer hammock of the Homestead or Redland region, south of Miami. So far as the evidence goes, it is not abundant, either in the Bahamas or in Hispaniola. In its native haunts it has few or no herbaceous associates, but overhead on the trunks and limbs of the live-oak trees there are ferns, orchids, and wild-pines galore, forming massive hanging gardens. These masses of epiphytes sometimes fall from the trees, either through excessive growth or especially as a result of storms, and thrive for a period in the humus along with the wild-pepper, and later contribute to the supply of humus in which this wild pepper-plant grows and thrives. Besides carpeting the hammock floor, as indicated above, this wild-pepper decorates the ruins and walls of the erosion-holes, large and small, in the hammock floor, often completely lining the rim and hanging down in vine-like streamers on the perpendicular walls, intermixed with many kinds of ferns.[1]

The fragrant wild-pepper is a succulent hammock plant. The stem and branches are rather stout, decumbent, especially near the tips. The leaves are numerous, alternate, but approximate near the ends of the branches, spicy-aromatic in drying. The blades are coriaceous, cuneate to spatulate, two to four inches long, usually rounded or notched at the apex, entire, glabrous, obscurely veined, deep-green above, slightly paler beneath, tapering into a petiole-like base, which is sometimes quite slender and up to an inch in length. The inflorescence is terminal or lateral near the ends of the branches, long-stalked, erect, rarely simple, usually once to thrice forked, each spadix slender-stalked, articulated at the base of the stalk, mostly three to eight inches long. The rachis is very slender, nodding or drooping, white or ivory, floriferous up to the slender tip. The bracts are minute, somewhat whorled, peltate, often dark in the center and pale-margined, sessile. The flowers are very minute, with the yellowish anthers a half or a third the size of the bracts. The pistil is mostly hidden under the bract, with a turgid ovary and a short-subulate style. The berries are approximate, not densely crowded, brown, ellipsoid or ovoid, sticky, rounded at the base, narrowed into a strongly curved or hooked beak, which is shorter than the body.

JOHN K. SMALL.

EXPLANATION OF PLATE. Fig. 1.—Unopened inflorescence. Fig. 2.—Leafy branch below the inflorescence. Fig. 3.—A portion of the flower spike × 3. Fig. 4.—Fruiting inflorescence. Fig. 5.—A portion of the fruiting spike × 3. Fig. 6.—A single fruit × 6.

[1] Notes with illustrations of this plant and other native species were published in Jour. N. Y. Bot. Gard. 32: 210–223, *f. 1–5*. 1931.



SITILIAS MULTICAULIS

(Plate 582)

SITILIAS MULTICAULIS

False-dandelion

Native of the southwestern United States

Family CICHORIACEAE CHICORY Family

Pyrrhopappus multicaulis DC. Prodr. **7:** 144. 1838.
Sitilias multicaulis Greene, Pittonia **2:** 179. 1891.

Certain similarities in plants and careless observations on these plants may lead to confusion in geographic distribution.

The present plant has been responsible for reports of the common dandelion (*Leontodon Taraxacum*) occurring in parts of peninsular Florida and Texas. When viewed from a distance the fruiting heads of the false-dandelion do somewhat resemble the fruiting heads of the dandelion. In proposing the genus *Sitilias* and referring to *S. caroliniana,* the type, Rafinesque records that "It was shuffled in 4 Genera! *Leontodon, Borkhausia, Scorzonera, Chondrilla!* and now must form a 5th, the name [*Sitilias*] was an ancient name of Hieracium of which it has the habit." Then as a climax DeCandolle proposed an additional genus—*Pyrrhopappus*—for this plant in 1838.

In the southeastern Coastal Plain and Piedmont provinces, after the changeable weather of winter passes into the more even temperature of spring, various plants, annuals, biennials, and perennials, that have made starts in short warm spells and been checked by intervening cold spells, come into their own with a rush. Great patches or sheets of different colors appear in both high and low places. Yellow is a very common color. Its presence, viewed from a distance, may represent a growth of buttercups, or yellow-cress, ragworts, etc. Lemon-drops, as these plants are popularly called on account of the lemon-yellow heads, may be seen growing in patches or scattered. Lemon-drops are scarcely ubiquitous in the southeast, but they may be considered universal within their range. They thrive alike in wild and cultivated places. The plants even grow well in lawns, as weeds, and survive the lawn-mower. It is principally in such localities that the plant is thought to be and is referred to casually as dandelion.

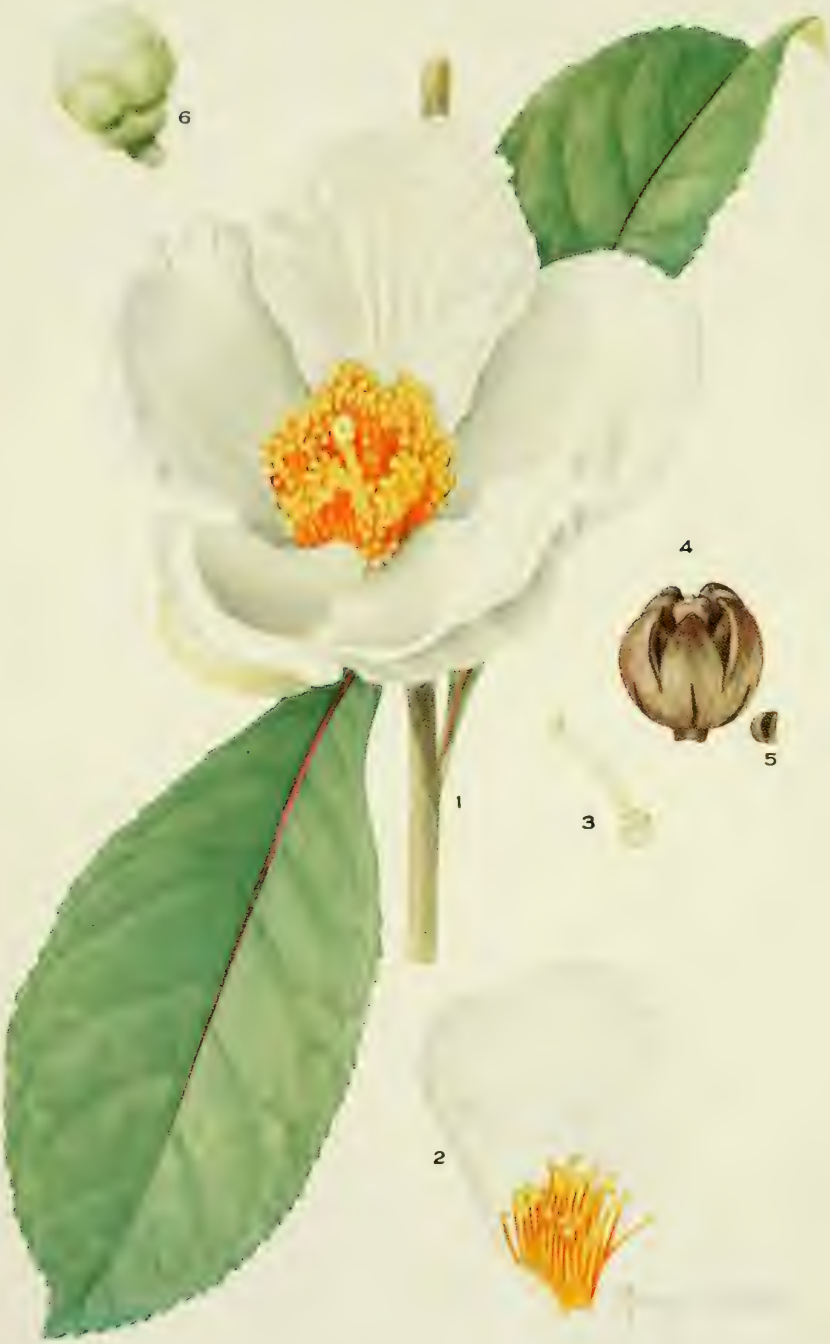
Yellow, however, is not the only color shown in the flowers of this genus, in spite of technical descriptions. In the watersheds of the Suwannee River and Ocklocknee River in northern Florida,

there is a white-flowered variety of *S. caroliniana*. The corollas are white within, except the rose-tinted tips of the ligules, and rosy without. A form apparently similar to this has been reported from Alabama.

The false-dandelion is an erect biennial, or sometimes apparently perennial caulescent herb up to two feet high. The stems are solitary or clustered, erect, more or less branched, glabrous, at least below, or finely pubescent throughout. The leaves are various, mostly at or near the base of the stems, spreading, mostly three to six inches long, tapering to the base and also often to the apex, irregularly sinuate or pinnatifid, with the lobes entire or toothed. The cauline leaves are few, shorter than the basal, with blades similarly toothed or lobed or sometimes entire. The flower-heads are yellow, erect, solitary or few together, on long minutely pubescent peduncles. The involucres are subcylindric, ultimately with the base slightly swollen, one-half to three-quarters of an inch long. The bracts of the involucre are in two series and glabrous; those of the outer series are less than half as long as those of the inner, lanceolate or subulate-lanceolate, very unequal; those of the inner series are nearly equal, linear and narrowed below the often dilated tip, bright green and often with a slightly paler midrib and paler margins. The flowers are numerous, with spreading ligules. The ligules are linear to narrowly elliptic, one-half to three-fourths of an inch long, minutely toothed at the apex. The stamen-tube is brown or greenish-brown. The achenes are tightly clustered in the base of the involucre, with the filiform beak much longer than the body. The body of the achene is inequilateral, strongly ridged and grooved longitudinally and cross-ribbed, in the case of the outer ones much more strongly curved than the inner.

JOHN K. SMALL.

EXPLANATION OF PLATE. Fig. 1.—Top of a stem in flower. Fig. 2.—A branch with an unopened head. Fig. 3.—A flower, × 2. Fig. 4.—A fruit. Fig. 5.—A pinnatifid leaf. Fig. 6.—A sinuate leaf.



FRANKLINIA ALATAMAHA

(Plate 583)

FRANKLINIA ALATAMAHA

Franklinia

Native of Georgia

Family THEACEAE — CAMELLIA Family

Franklinia Alatamaha Bartram; Marsh. Arbust. 49. 1785.
Gordonia pubescens L'Hér. Stirp. Nov. 156. 1791.
Gordonia Franklini L'Hér. Stirp. Nov. 156. 1791.
Michauxia sessilis Salisb. Prodr. 386. 1796.
Lacathea florida Salisb. Parad. Lond. *pl. 56.* 1806.
Gordonia sessilis M. Marsh.; Darl. Mem. Bartr. & Marsh. 563. 1849.
Gordonia Alatamaha Sarg. Garden & Forest **2:** 616. 1889.

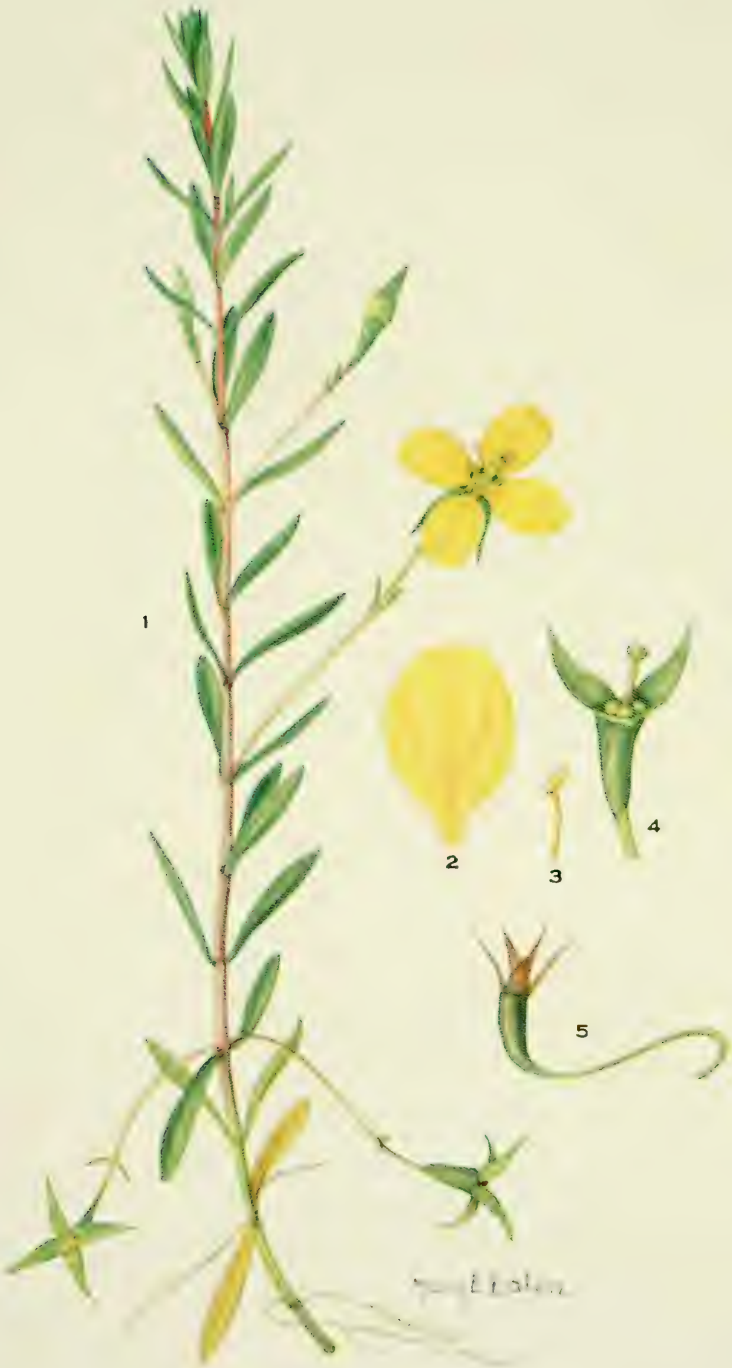
This beautiful tree, with its showy fragrant white flowers and curious fruit, has a very remarkable history. It was discovered in Georgia, near Fort Barrington on the Altamaha river, late in the fall of 1765, by John Bartram and his son William. The latter revisited the locality in May, 1773, and again saw the tree. In the spring of 1777, never having seen the tree elsewhere, William Bartram again went to Fort Barrington, where he found it plentiful over an area of two or three acres, and collected both living plants and seeds; in this way he introduced it into the Bartram garden at Philadelphia, whence it found its way soon afterward into other gardens in the northern United States, in England, and in France. In 1790, Dr. Moses Marshall, of Philadelphia, visited the original locality, and again saw the tree in the wild state; but this is the last record of its existence outside of cultivation. Many times it has been sought in vain, and it would now be extinct, if it were not still to be found occasionally in gardens. It has always been reputed to be difficult to grow, but some specimens have flourished amazingly, and the recent discovery that it prefers acid soils may lead to its more general cultivation.

When Bartram discovered this tree, he believed it to constitute a new genus, which he named for his friend Benjamin Franklin, but the facilities for scientific publication in America were very inadequate in those days, and it was twenty years after the discovery that the name *Franklinia* was eventually published. Another closely related tree was already known from the same region, and had been named *Gordonia;* the two genera were long united by most authors under the older name, but in recent years *Franklinia* has come into its own. The flowers of *Gordonia* and *Franklinia* are very similar, but the fruits differ decidedly.

Franklinia is a shrub or tree up to thirty feet in height. The alternate, short-petioled leaves are oblong or oblanceolate, up to six inches long, tomentose beneath, and serrate at least toward the apex. The axillary flowers are nearly sessile. The five unequal sepals are suborbicular, concave, silky, and about half an inch in diameter. The five delicate white petals are obovate, with crenulate margins, concave, and an inch to an inch and a half long. The numerous stamens are borne in clusters on the bases of the petals, the anthers on slender filaments half an inch or more long. The pubescent ovary is five-ridged and five-celled. The style is about the length of the filaments, and is deciduous. The woody capsule is depressed-globose, half an inch in diameter, and five-celled; it opens by ten slits, five of them from above downward to beyond the middle, and five, alternating with the others, from below upward to beyond the middle. The persistent capsule thus retains its attachment to the branch solely by the base of its woody axis. The seeds, up to eight in each cell, are angled, and nearly half an inch long.

JOHN HENDLEY BARNHART.

EXPLANATION OF PLATE. Fig. 1.—Portion of a branch, with a flower. Fig. 2.—Petal, with cluster of stamens attached to base. Fig. 3.—Pistil. Fig. 4.—Capsule. Fig. 5.—Seed. Fig. 6.—Flower-bud.



LUDWIGIANTHA ARCUATA

(Plate 584)

LUDWIGIANTHA ARCUATA

Long-stalked Ludwigiantha

Native of the southern Atlantic States

Family ONAGRACEAE EVENING-PRIMROSE Family

Ludwigia arcuata Walt. Fl. Car. 89. 1788.
Ludwigia pedunculosa Michx. Fl. Bor.-Am. **1:** 88. 1803.
Isnardia pedunculoso DC. Prodr. **3:** 60.
Ludwigiantha arcuata Small, Bull. Torr. Club **24:** 178. 1897.

In the outlying parts of the southern Coastal Plain where the land is very flat and wet, herbaceous plants appear in two very distinct habits. Some have stiff erect stems, others have weak prostrate stems. Some of the latter are not only prostrate but form dense vegetable carpets. These show different shades of green, when in foliage only. It is noteworthy that so large a number of plants have assumed a prostrate and carpet-forming habit. High altitudes and low altitudes seem to be conducive to prostrate growth. Of course, the stimulating causes are different. In fact, the prostrate habit is really caused by opposite actions. The mountain tops are dry as far as standing water is concerned and the plant must struggle and protect itself against the violence of the elements. In the low flat country with an abundance of surface water aquatic plants abound. The water-table naturally fluctuates and some aquatics have become accustomed to thrive both in the water and on the mud when the water temporarily recedes in season. Thus the uliginous plants have developed and we now find many plants in the southeastern Coastal Plain that are especially endowed as to habitat. In other words, there are aquatics that can thrive for a period, at least, in a uliginous state, and uliginous plants that can also be aquatics, even for indefinite periods.

The subject of this note belong to the latter class. It has many associates resembling it in habit. Relatives, such as several species of *Ludwigia,* and *Isnardia,* have the same habit. Several dozen creepers in other families are of very common occurrence. For example, *Bramia, Hemianthus, Micranthemum,* are a few in just one family.

The long-stalked *Ludwigiantha* grows in mud or wet sand, usually forming a bright-green carpet. The stems are prostrate and creeping, branching and intricately matted, up to a foot long. They are glabrous or pubescent with short more or less crisped pale hairs. The leaves are numerous, opposite, with the pairs separated

on main stems, often approximate on branches. The blades are oblanceolate to narrowly elliptic or almost linear, usually acute or acutish, entire, narrowed to the base, glabrous or pubescent like the stem, bright-green above, slightly paler beneath. The flowers are borne on slender usually minutely pubescent peduncles which are axillary to leaves which they much exceed. Each peduncle is terminated by a short-pedicelled flower, with the pedicel subtended by a pair of lanceolate-subulate bracts. The hypanthium is obconic, becoming obpyramidal, usually minutely pubescent, at first erect on the pedicel, later borne nearly or quite at right angles to it and more or less four-grooved. The four sepals are linear-lanceolate, acuminate, lightly three-veined, entire or obscurely few-toothed, glabrous, spreading or more or less recurved in age. The four petals are spreading, obovate, a quarter to a half inch long, exceeding the sepals, bright-yellow, promptly deciduous. The four stamens are erect, about half as long as the sepals. The filaments are slender-subulate, green. The anthers are greenish-yellow, much shorter than the filaments. The ovary is surmounted by a prominently four-lobed stylopodium from which the slender columnar style, which is dilated at the base and the apex, arises. The capsule is clavate, including the pedicel-like base, a quarter to a half inch long, more or less curved upward at maturity, glabrous or minutely pubescent, surmounted by the persistent calyx.

JOHN K. SMALL.

EXPLANATION OF PLATE. Fig. 1.—Branch of flowering and fruiting plant. Fig. 2.—Petal, × 2. Fig. 3.—Stamen, × 2. Fig. 4.—Gynoecium, with 2 sepals, × 2. Fig. 5.—Capsule.

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AND
POPULAR DESCRIPTIONS
OF
PLANTS

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ADDISON BROWN FUND

"the income and accumulations from which shall be applied to the founding and publication, as soon as practicable, and to the maintenance (aided by subscriptions therefor), of a high-class magazine bearing my name, devoted exclusively to the illustration by colored plates of the plants of the United States and its territorial possessions, and of other plants flowering in said Garden or its conservatories; with suitable descriptions in popular language, and any desirable notes and synonymy, and a brief statement of the known properties and uses of the plants illustrated."

The preparation and publication of the work has been referred to Mr. Edward Johnston Alexander, Assistant Curator.

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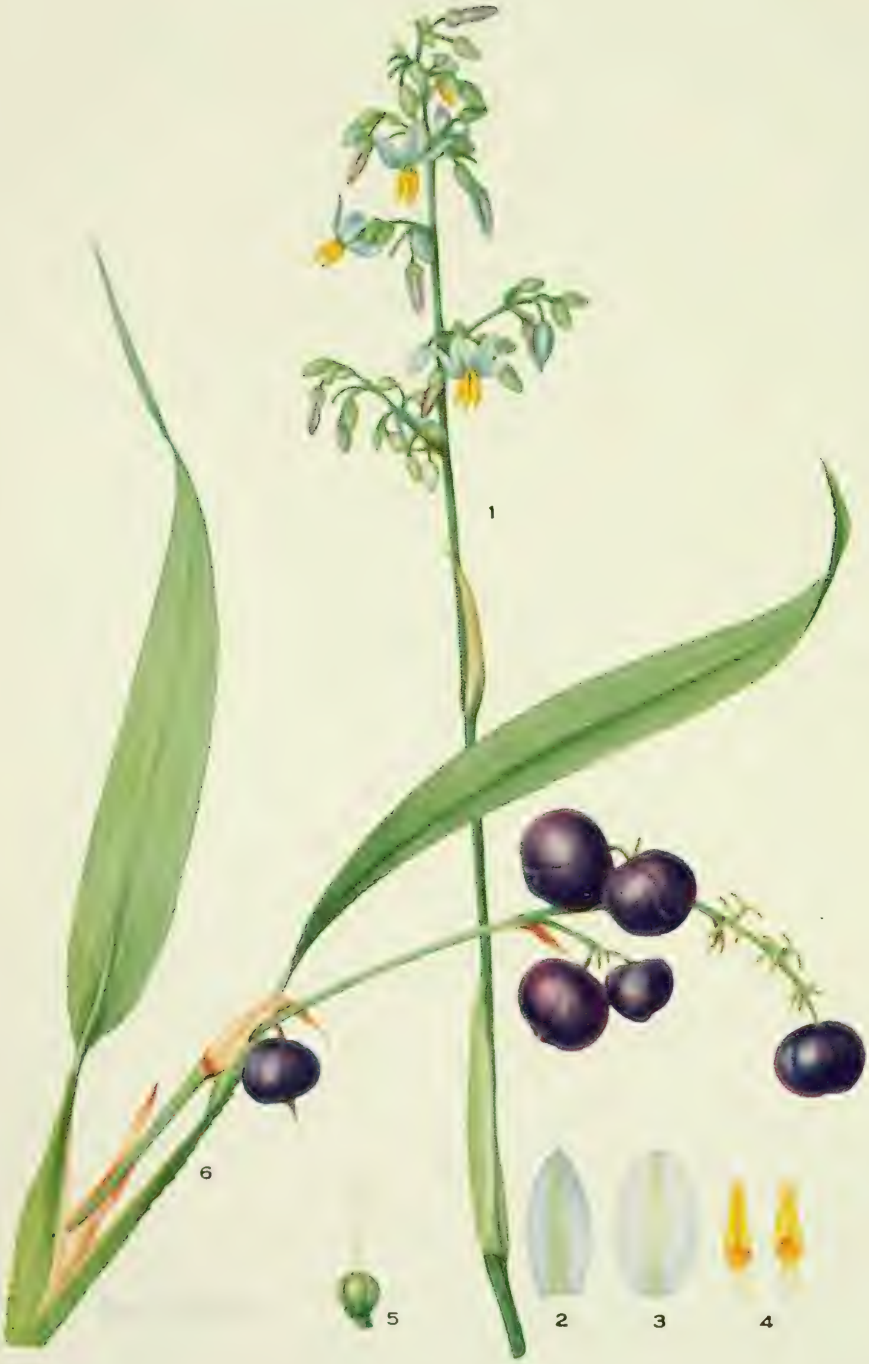


DIANELLA CAERULEA

(Plate 585)

DIANELLA CAERULEA

Dianella

Native of southeastern Australia

Family LILIACEAE — LILY Family

Dianella caerulea Sims, Bot. Mag. *pl. 506.* 1801.

The Australasian genus *Dianella* contains a small number of species, which have whitish or blue flowers followed by black, blue or purple berries. The species which have blue flowers are rather unusual though not beautiful greenhouse plants, their small lily-like flowers appearing in spring or summer. The berries are the chief attraction of the genus, and among them, none are more attractive than the bright violet berries of our present subject.

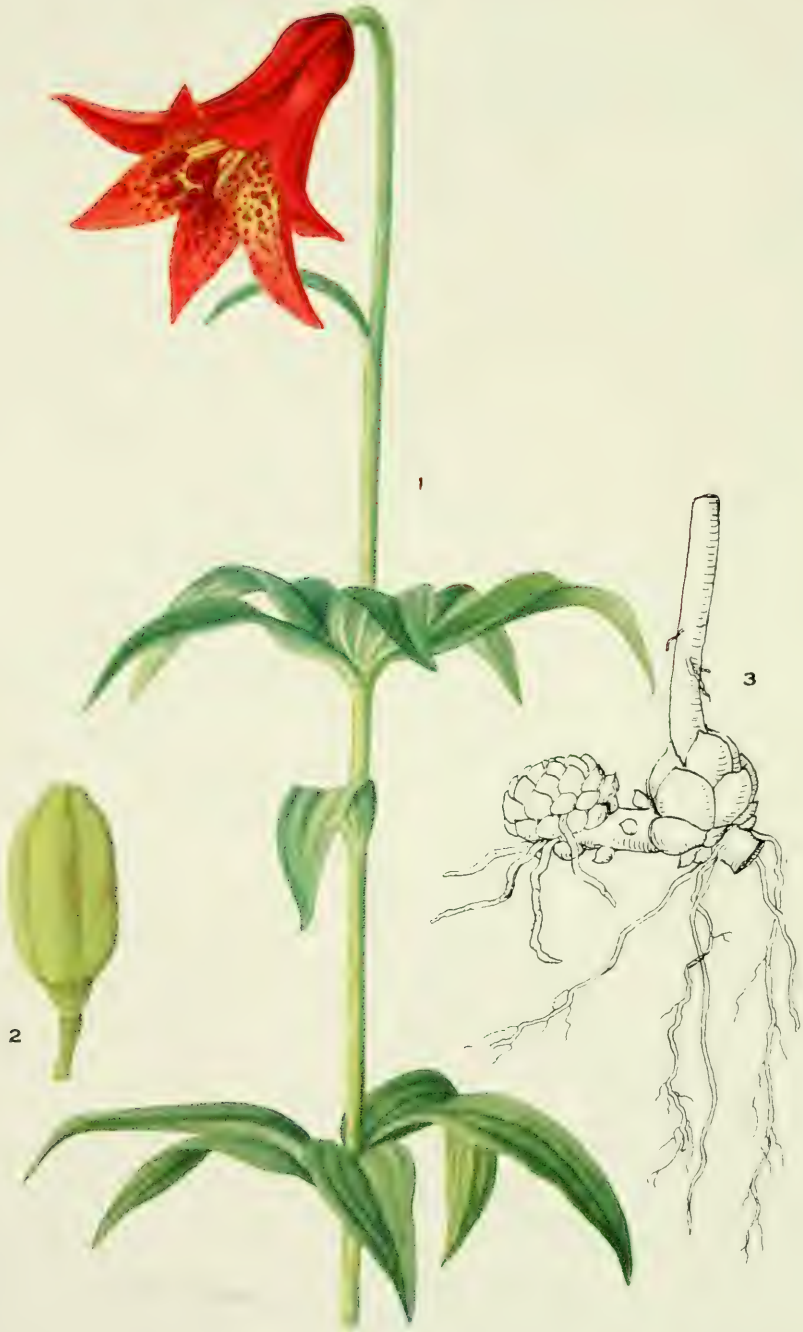
Our plate represents a form of *D. caerulea* with partly congested inflorescence and shorter leaf-blades than the typical form, but it is not different enough to consider a separate species. It was raised from seed sent by the Edinburgh Botanical Garden, and as this form has not been seen wild, it may be only a horticultural variant.

Dianellas are easily raised from seed or propagated by root division. They suceed best when planted in the open border of a cool greenhouse.

Dianella caerulea is a subshrubby perennial rhizomatous plant, forming a stem, at the top of which six to twelve leaves are clustered. The leaves are six to twelve inches long, dark green, the flattened, conduplicate sheath quite distinct from the linear, flat blade. The margins of the blade, the midrib of the blade beneath, and the keel of the sheath are sharply spine-toothed. The inflorescence is borne in a terminal panicle. The flowers are diurnal, blue (very pale in this form), the six perianth segments spreading, one-fourth inch long, the outer with five distant veins, the inner with three closer ones. The six stamens are erect; the filaments white, the anthers bright yellow. The fruit is a bright violet berry, several-seeded.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—Inflorescence. Fig. 2.—An outer perianth segment. Fig. 3.—An inner perianth segment. Fig. 4.—Stamens. Fig. 5.—The gynoecium. Fig. 6.—Fruiting spray and leaves.



LILIUM GRAYI

(Plate 586)

LILIUM GRAYI

Asa Gray's Lily

Native of Eastern United States

Family LILIACEAE LILY Family

Lilium Grayi S. Wats. Proc. Am. Acad. **14:** 256. 1879.

Among the many rare and showy flowers that contribute to the beauty and perfection of Nature's Garden that adorns the summits and slopes of the Southern Appalachian Mountains is the Asa Gray's, Gray's, or "Bell Lily" as it is locally called. Of our native tiger lilies, this one has probably the most limited distribution, occurring only in the high mountains of southwestern Virginia and northwestern North Carolina. While locally fairly abundant, because of its inaccessible locations to most human beings and being rapidly removed by commercial nurseries, it is a rare treat to see Asa Gray's Lily in its native home. Consequently very few people seem to know it and often mistake the Turk's Cap (*Lilium superbum*) or the Carolina Lily (*Lilium carolinianum*) for this one. After once having seen it, however, there is no possibility of making this mistake, as this Lily is quite different from these two, especially in its nodding bell-shaped flowers. This is its most distinctive characteristic and it is, therefore, very properly called by the mountain people, "Bell Lily."

The closest relative of Asa Gray's Lily is the Canadian Lily, from which it can be distinguished only with difficulty when not in flower. It was this close resemblance that prevented its discoverer, Asa Gray, from giving it another specific name, showing his possession of caution and conservatism which are two of the most essential qualities of a scientific systematic botanist. Sereno Watson in 1879, after giving this plant some further study, decided it deserved to be given a separate specific name and he named it after its discoverer, our first great and most noted botanist.

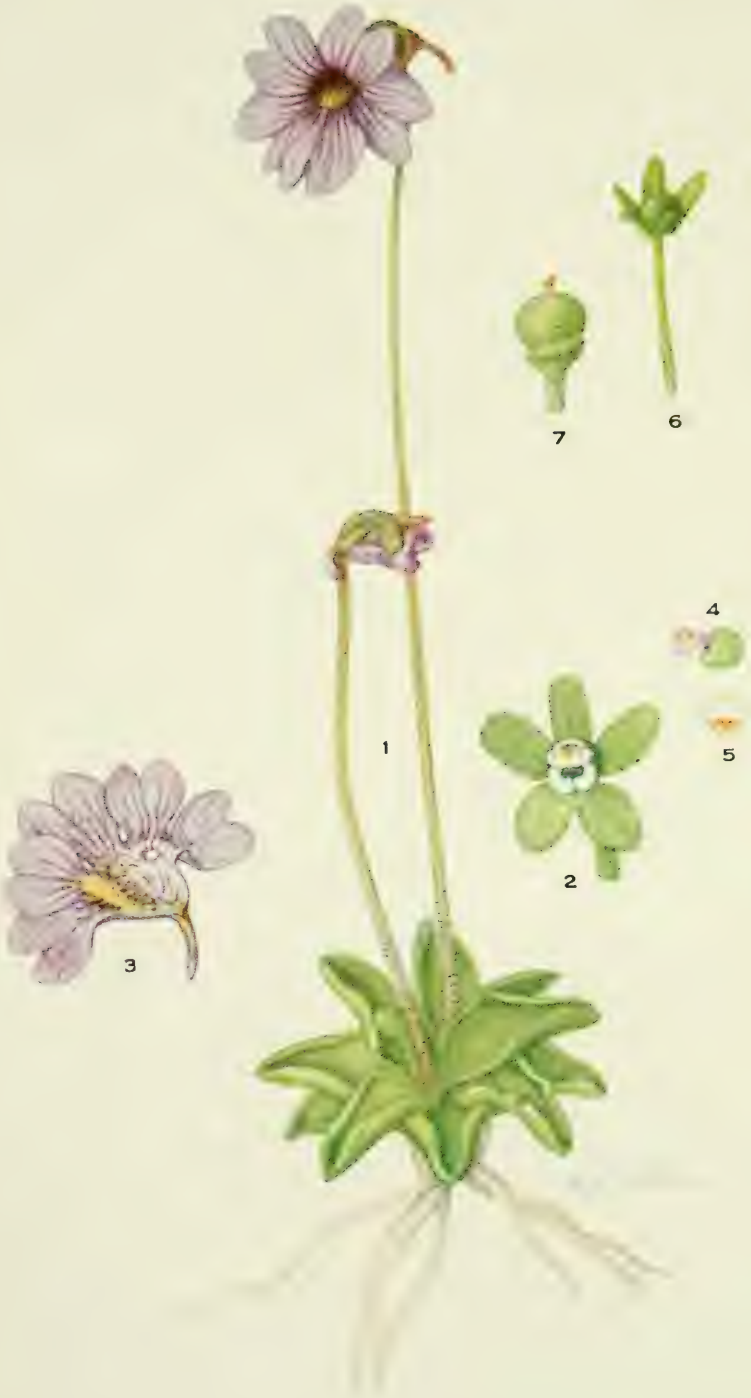
There are several tiger lilies in cultivation, the most common of which seems to be *Lilium tigrinum,* which came originally from China and Japan. This has bulblets in the axils of its leaves which serve as propagules besides the bulbs under ground. They are all midsummer bloomers and, therefore, flower with the Gladioli, Dahlias, and Zinnias. In recent years, florists have taken up the

collection, propagation and sale of most of our native tiger lilies including the present subject. Under cultivation in favorable soil, this lily grows to twice the size of the wild ones and produces larger and more numerous flowers. While it is desirable to cultivate our own native plants and flowers which under cultivation are as beautiful and interesting as introduced ones, the commercial distribution should be more dependent upon artificial propagation than upon collections from the wild state, which practise unfortunately will eventually exterminate the species from our native flora. The Asa Gray's Lily is in danger of being exterminated in this fashion.

Asa Gray's Lily is, like all other tiger lilies, an herbaceous perennial which perennates by a rhizome on which appear thick scaly bulbs for vegetative propagation. The stem, two to four feet in height, is smooth and typically unbranched except for the inflorescence which branches more or less. The leaves occur in whorls of four or eight, three to five inches apart, but may be fewer in a whorl or even singly disposed, especially at the base of the stem or just below the inflorescence. The leaf-blades are mostly oblong-lanceolate, narrowed at both ends, sessile, acute at the tips, one and one-half to three inches long, and smooth except for the slightly rough margins and under sides of the primary nerves. The number of flowers, ranging from one to eight, seems to depend upon the age of the plant and upon the favorableness of its habitat. When more than one, they are produced on stalks two to eight inches long and usually as many at each node as there are subtending leaves which in the upper part of the stem do not usually exceed four. The flowers are nodding, commonly at an angle with the stem, and they may even be horizontal, but in robust specimens, such as those in cultivation, the flower stalks are long and the flowers are all directed straight downward like a bell. The sepals and petals are deep red on the outside but somewhat darker at the base than at the tips; the inside is lighter red at the tips, shading gradually into a yellow throat with many conspicuous dark purple dots. They are oblong spatulate, one and three-quarter inches to four inches in length, acutely pointed, and sessile, forming a broad base. This broad base and the slightly recurved tips give the flower its bell-shaped appearance. The fruit is a capsule three to five cm. long.

HUGO L. BLOMQUIST.

EXPLANATION OF PLATE. Fig. 1.—Upper portion of a flowering plant natural size but about one-half the size of the most vigorous plants. Fig. 2.—Mature capsule. Fig. 3.—Underground parts showing base of stem and rhizome bearing a new scaly bulb, × 1/2.



PINGUICULA CAERULEA

(Plate 587)

PINGUICULA CAERULEA

Large Violet Butterwort

Native of the southeastern United States

Family LENTIBULARIACEAE BLADDERWORT Family

Pinguicula caerulea Walt. Fl. Carol. 63. 1788.
Pinguicula elatior Michx. Fl. Bor. Am. **1**: 11. 1803.
Isoloba elatior Raf. Fl. Tell. **4**: 59. 1838.

The names "butterwort," "grassette," "Fettkraut," and their equivalents in various other languages, have been applied for several centuries at least to the common European species of *Pinguicula,* because of the buttery or greasy feel of the upper leaf-surfaces; the use of these common names has gradually extended to the other species of the genus now known to occur in various parts of the world, although the leaves of some of these are less or not at all oleaginous.

The first report of the existence of butterworts in the southeastern United States seems to have been by Thomas Walter, who in 1788 named two species, with extraordinarily brief descriptions. The specific names implied the color of the corollas, but otherwise he merely said (in Latin) of *Pinguicula caerulea,* "tube of the corolla ventricose" and of *P. lutea* "corolla campanulate." And, really, as may be seen by a comparison of this plate and the following one, and of the descriptions here given, these are about the only differences he could have been expected to observe. Yet, curiously enough, Walter's name *P. lutea* has been generally accepted ever since, while most botanists have preferred for the plant here illustrated the later name *P. elatior.* This was done merely because Walter's color-name *P. caerulea* was equally applicable—or rather equally inapplicable, for the flowers are not blue in either case—to a smaller species, of distinctly more southern distribution, that he had probably never seen.

This species grows only in moist, open places in the Coastal Plain from southeastern North Carolina to Florida, and westward through Alabama to Mississippi. All attempts have failed to maintain it in cultivation for more than a year or two. Our portrait of it was painted at the New York Botanical Garden, from a plant collected near Wilmington, North Carolina, in April, 1927, by E. J. Alexander. This locality is at or near the extreme northern limit

of its range, but the specimen is fairly representative of this species wherever it grows.

The large violet butterwort is a perennial, with fibrous fleshy roots, and with a rosette of leaves just above the surface of the ground. The obovate leaves, narrowed toward the base, are from half an inch to two and a half inches long, the margins inrolled especially toward the apex; the upper surface is minutely granulate, but both surfaces are glabrous or nearly so and neither viscid nor oleaginous. The scapes are often solitary, but usually 2, 3, or 4; they are from four inches to more than a foot high, slender, minutely glandular-hairy above, and pubescent near the base with loose spreading hairs. The calyx is minutely glandular-hairy on the outside, and is obtusely five-lobed, the three upper lobes about one-fourth of an inch long and united for about one-third of their length, the two lower lobes distinctly shorter and united for about half their length. The corolla, violet varying to white, is from three-fourths of an inch to an inch and a half long and broad, with a large, clavate, hairy, slightly exserted palate; the five lobes are almost equally spreading and are similar in outline, emarginate or more deeply notched, the teeth all obtuse; the tube is ventricose and about as long as the lobes; the slender spur is about one-third as long as the rest of the corolla, straight or slightly curved, and obtuse. The globose capsule is about one-fifth of an inch in diameter, and is exceeded by the persistent calyx.

JOHN HENDLEY BARNHART.

EXPLANATION OF PLATE. Fig. 1.—Entire plant, in flower. Fig. 2.—Flower, with the corolla removed, × 2. Fig. 3.—Corolla, split open. Fig. 4.—Gynoecium. Fig. 5.—Androecium. Fig. 6.—Fruit. Fig. 7.—The same, with the calyx removed, × 2.

PINGUICULA LUTEA

(Plate 588)

PINGUICULA LUTEA

Large Yellow Butterwort

Native of the southeastern United States

Family LENTIBULARIACEAE BLADDERWORT Family

Pinguicula lutea Walt. Fl. Carol. 63. 1788.
Pinguicula campanulata Lam. Jour. Hist. Nat. **1:** 336. *pl. 18, f. 1.* 1792.
Pinguicula edentula Hook, Exot. Fl. *pl. 16.* 1822.
Isoloba lutea Raf. Fl. Tell. **4:** 59. 1838.
Isoloba recurva Raf. Fl. Tell. **4:** 59. 1838.
Pinguicula lutea var. *minor* A. DC. in DC. Prodr. **8:** 32. 1844.
Pinguicula lutea var. *edentula* A. DC. in DC. Prodr. **8:** 32. 1844.

The large yellow butterwort, like the large violet one, was first named and characterized in 1788 by Thomas Walter, and the name he gave it has been maintained in botanical literature ever since. Its variability in size and in division of the corolla-lobes has led several writers to distinguish aberrant forms as species or varieties, and this accounts for the synonymy here given.

Reichenbach, apparently merely because the corolla is yellow, suggested (Consp. 127. 1828) that this species should be separated from *Pinguicula* under the name *Brandonia,* but he never published a description of this supposed new genus. Sixteen years later Alphonse de Candolle used the same name, again for this species alone, as a sectional one in the genus *Pinguicula.*

The fact is that, aside from the color of the corolla, the large yellow butterwort is very difficult to distinguish from the large violet one illustrated on the preceding plate. In range of sizes of all parts of the plants, in leaf-structure, in the lobing of the calyx, and in the capsule, they are virtually indistinguishable. *Pinguicula caerulea* has the base of the scape pubescent, the corolla-tube somewhat ventricose, and the clavate palate a trifle shorter and more closely appressed to the surface of the corolla-tube; that is about all. Rafinesque was more logical than Reichenbach and de Candolle, and more so than was his wont, in separating these two species and all others with spreading and subequal corolla-lobes from *Pinguicula* under the generic name *Isoloba.* Increased knowledge of these plants has shown that Rafinesque's *Isoloba* is a very natural species-group, although hardly of generic rank.

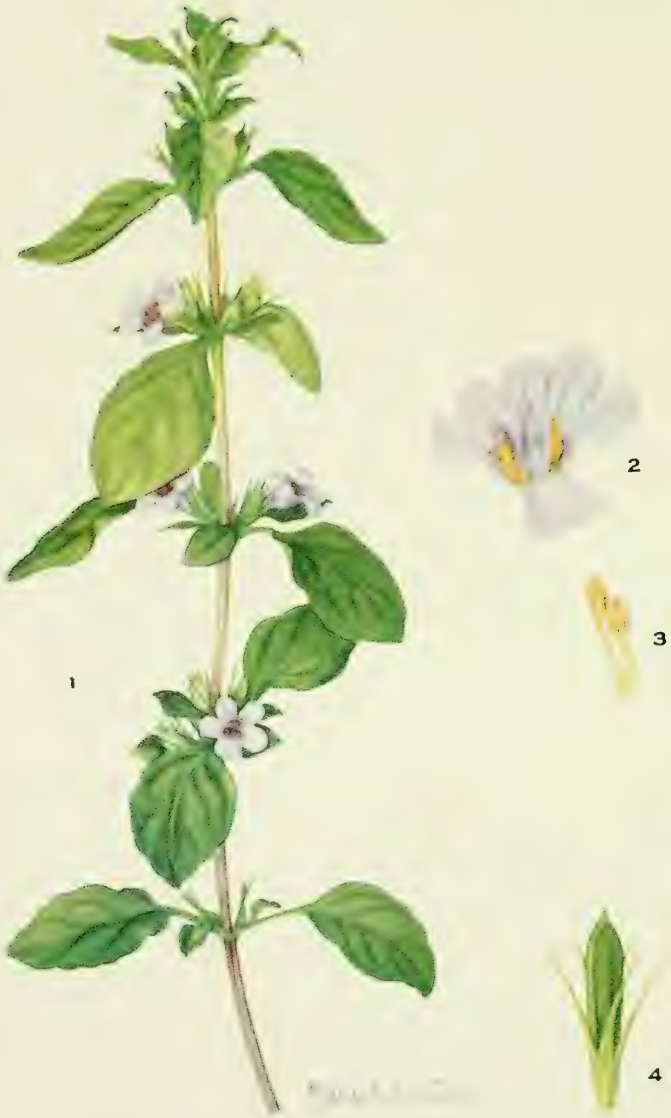
The yellow and the violet species are essentially identical in geographic range, in the Coastal Plain from southeastern North Carolina to Florida, and westward in Alabama and Mississippi,

although the yellow one has been found in southeastern Louisiana, while the violet one has not yet been reported from that state. And our illustration of this was also painted, like the other, at the New York Botanical Garden, from a plant collected near Wilmington, North Carolina, at or near the extreme northern limit of its range, in April, 1927, by E. J. Alexander. The close parallelism between these two species is somewhat overemphasized in these two plates, since the specimen of *P. lutea* that served as a model chanced to have corolla-lobes almost identical with those of *P. caerulea*. Commonly, in this yellow species, each corolla-lobe is more deeply cleft, and is again emarginate or cleft, so that each lobe has four teeth instead of two.

The large yellow butterwort is a perennial, with fibrous fleshy roots, and with a rosette of leaves just above the surface of the ground. The obovate leaves, narrowed toward the base, are from half an inch to four inches long, the margins inrolled especially toward the apex; the upper surface is minutely granulate, but both surfaces are glabrous or nearly so and neither viscid nor oleaginous. The scapes are often solitary, but usually 2, 3, or 4; they are from four inches to more than a foot high, slender, and minutely glandular-hairy throughout, with no loose spreading hairs. The calyx is minutely glandular-hairy on the outside, and is obtusely or subacutely five-lobed, the three upper lobes about one-fourth of an inch long and united for about one-third of their length, the two lower lobes distinctly shorter and united for half their length or more. The golden-yellow corolla is from three-fourths of an inch to an inch and a half long and broad, with a large, orange, clavate, hairy, distinctly exserted palate; the five lobes are almost equally spreading and are similar in outline, emarginate or notched, commonly doubly so, the teeth all obtuse; the tube is campanulate and about as long as the lobes; the slender spur is about one-third as long as the rest of the corolla, straight or somewhat curved, and obtuse. The globose capsule is about one-fifth of an inch in diameter, and is exceeded by the persistent calyx.

JOHN HENDLEY BARNHART.

EXPLANATION OF PLATE. Fig. 1.—Entire plant, in flower. Fig. 2.—Flower. Fig. 3.—Flower, with the corolla removed, × 2. Fig. 4.—Corolla, split open. Fig. 5.—Fruit. Fig. 6.—The same, with the calyx removed, × 2.



DYSCHORISTE HUMISTRATA

(Plate 589)

DYSCHORISTE HUMISTRATA

Dyschoriste

Native of Florida and southern Georgia

Family ACANTHACEAE — ACANTHUS Family

Ruellia humistrata Michx. Fl. Bor. Am. **2**: 23. 1803.
Calophanes humistrata Shuttlew. ex. Nees. DC. Prod. **11**: 108. 1847.
Dyschoriste humistrata Kuntz, Rev. Gen. Plant. **2**: 486. 1891.

Most of the members of the Acanthus family are so confined to the tropics that the layman does not expect to find the several genera that reach into temperate regions in such a family. The genus *Ruellia* is the largest genus of the family in the southeastern U. S., and upon finding our present subject for the first time, one is apt to mistake it for that genus. Closer examination easily discloses its belonging to the sister genus *Dyschoriste* instead, whose members differ from *Ruellia* by their more narrow calyx-lobes, the shorter corolla-tube, the more pointed anther-sacs, and the two- to four-seeded capsule.

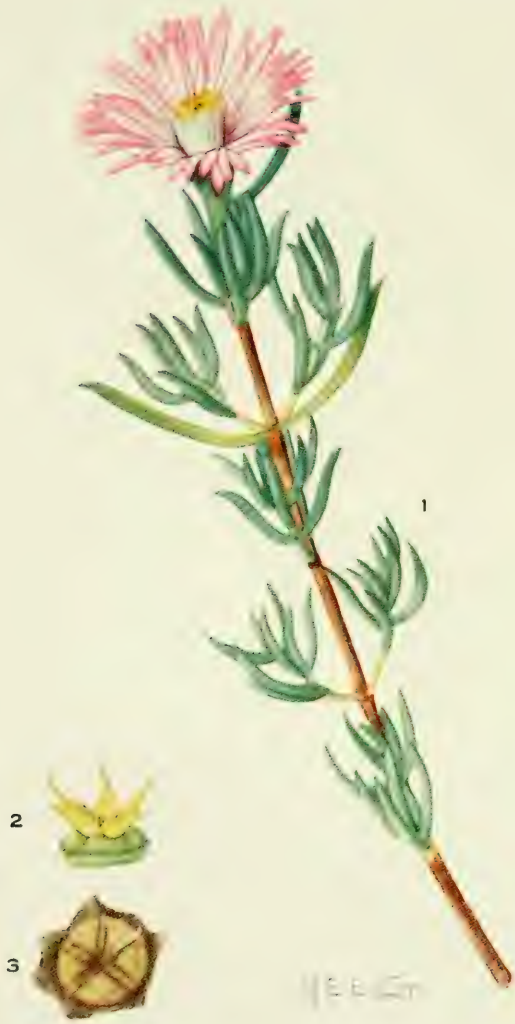
Our plant grows in sandy woods in Florida and adjacent Georgia, blooming from May well into the fall, its small lavender flowers rather inconspicuous and frequently unnoticed by reason of the many other more showy associates.

The name *Dyschoriste* is from the Greek, meaning hard to separate, referring to the difficulty of parting the valves of the capsule.

Dyschoriste humistrata is a perennial herb, arising from a mass of fibrous roots. The stem is from three to thirteen inches tall, erect or reclining, finely appressed-pubescent. The opposite leaves are deep green, finely pubescent beneath when young, glabrous at maturity, elliptic to obovate in outline, entire, from one-half to two inches long. The flowers are borne in leafy-bracted clusters in the leaf-axils. The calyx is deeply five-parted, the lobes subulate, often finely pubescent, about three-eighths of an inch long. The corolla is lavender, darker-spotted in the throat, about one-half inch long, the five lobes spreading, nearly regular. The four stamens are didynamous, the anther-sacs pointed at the base. The ovary is two-celled, with two ovules in each cell. The four round, flat seeds are attached on hook-like processes, discharging by the elastic splitting apart of the carpels.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—A flowering stem. Fig. 2.—Corolla, laid open. Fig. 3.—Two stamens. Fig. 4.—Capsule seated in the calyx.



MESEMBRYANTHEMUM EMARGINATUM

(Plate 590)

MESEMBRYANTHEMUM EMARGINATUM

Mesembryanthemum

Native of South Africa

Family TETRAGONIACEAE CARPET-WEED Family

Mesembryantheum emarginatum L. Sp. Pl. ed. 2: 692. 1754.

Mesembryanthemums have long been popular as greenhouse plants, both for their attractive foliage and their usually showy flowers. In South Africa, the native home of most of the species and their center of distribution, many of them are curious and bizarre in form, some imitating in their growth the stones of the hot desert or arid regions in which they grow. They are nearly all indiscriminately called fig-marigolds or mesembryanthemums in cultivation, but doubtless other names exist in their native country.

Their flowers, mostly large and showy, are at their best in hot sunshine, usually closing at night or in shadow. Many species have definite hours for opening their flowers.

The fleshy capsular fruits of these plants are peculiarly interesting for their hygroscopic character, opening when wet, and closing when dry; this habit due to the climate of the desert regions in which they grow, where the seeds have a better chance to start life in rainy weather, hence it is then that they are scattered.

Mesembryanthemums propagate easily from cuttings or seed. The plants grow best under airy conditions, and while they may be bedded out in summer, must be taken in before killing frost. They resent overwatering, but should never be allowed to become completely dry.

Our present subject was raised from seed from the Botanical Garden at Zurich, sent under the name of *M. flexuosum.* While it differs from *M. emarginatum* in having most of the petals acute or acutish, and light pink in color, it seems best included under that species for the present, although it may represent either an undescribed species or a hybrid.

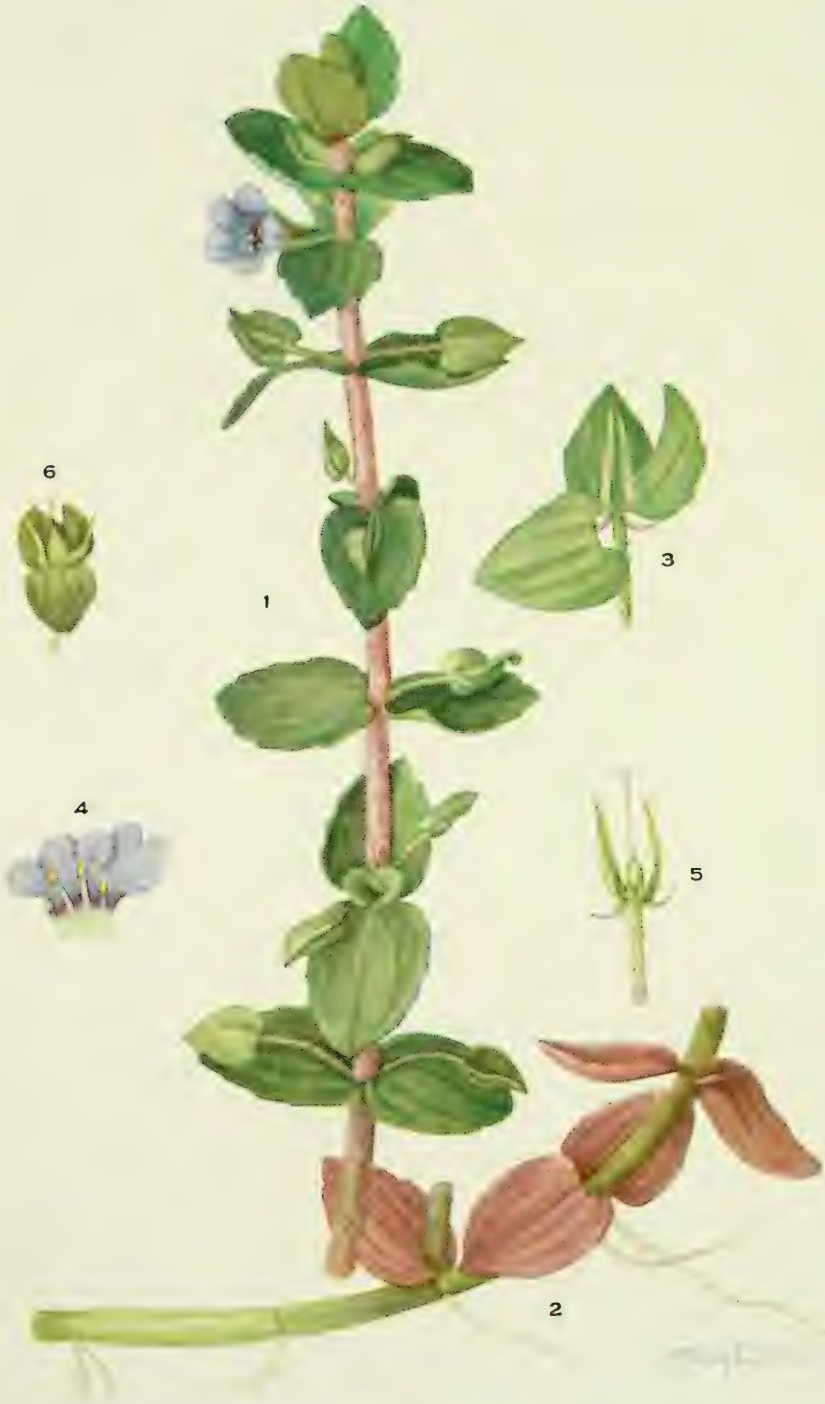
The name Mesembryanthemum is from the Greek for mid-day flower, referring to their opening well only in full sunshine.

Mesembryanthemum flexuosum has erect-spreading flexuous stems and branches. The leaves are crowded, curving-spreading, nearly terete, mucronulate, somewhat papillate, green with a bluish

tinge, those of the flowering branches longer than those of the sterile branches. The calyx-lobes are subulate and nearly equal. The petals are pink to purple. The numerous yellow stamens have white filaments. The styles are four or five, spreading after anthesis, ramentaceous. The five-celled capsule, which opens only when wet, is very many seeded, the seeds small.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Fig. 2.—The gynoecium. Fig. 3.—A capsule.



HYDROTRIDA CAROLINIANA

(Plate 591)

HYDROTRIDA CAROLINIANA

Water-hyssop

Native of Coastal Plain, Florida to Louisiana and North Carolina

Family SCROPHULARIACEAE FIGWORT Family

Obolaria caroliniana Walt. Fl. Car. 166. 1788.
Herpestis amplexicaulis Pursh. Fl. Am. Sept. 418. 1812.
Septilia caroliniana Small, Fl. SE. U. S. 1046. 1903.
Hydrotrida caroliniana Small, Fl. Miami 165. 1913.

In the outer districts of the lower Atlantic and Gulf Coastal Plains topography or physical features are not prominent as far as sudden or great changes in altitude are concerned. However, there are ridges, plains, marshes, and swamps, or any kind of habitats ranging from very dry to permanently damp and aquatic. Shallow water, sandy edges of ponds and small streams are the favorite haunts of this pimpernel. In natural habitats it grows very well, but, like many of our other semiaquatic plants, the unnatural or artificial habitat is most to its liking for luxuriant growth. In old established habitats this pimpernel often grows indifferently up to a half foot high. In the bottom of shallow, newly made ditches where humus has begun to collect, and on the edges of the Everglades where the humus has been disturbed, luxuriant patches often knee-deep may be found. In healthy condition this aquatic makes a beautiful cover plant. The glossy green foliage forms a background for the violet flowers. Although the contrast between the foliage and flower is moderate, it is pleasing. A fresh installment of corollas appears while the preceding installments fall and wither daily. This routine continues during a long flowering season.

The water-hyssop or fragrant hedge-hyssop has very aromatic foliage and usually grows in perennial colonies spreading by the decumbent creeping or floating stems and branches. The stems and branches are terete, glandular pubescent with short clammy hairs, sometimes rather densely so. The leaves are opposite, spreading, up to an inch long, somewhat fleshy, blades ovate, elliptic-ovate, orbicular-ovate, or suborbicular, obtuse or rarely acute, entire or shallowy crenate, more or less broadly cordate-clasping, several–5- or 7-veined, punctate, with oil-glands, with scattered hairs mainly or only near the base on both sides. The flowers are borne on peduncles axillary to leaf-like bracts, each flower being seated in a pair of ovate bractlets somewhat resembling the leaves but smaller. The calyx subtending the pair of bractlets is very irregular. The five sepals are of three forms; the posterior

or upper one is equilateral, ovate-cordate, the two lateral ones are inequilateral, half-cordate, the two lower or inner ones are equilateral, but very narrow, subulate-lanceolate. The corolla is violet-blue, campanulate, irregular, slightly two-lipped. The lower lip, with the lobes slightly spreading, is about as long as the tube. The upper lip is notched, with the lobes rounded. All the lobes are pubescent within. The four stamens are exserted from the throat of the corolla-tube to which they are adnate. The anthers are about as long as the free parts of the filaments. The gynoecium is seated in a nectary composed of a whorl of yellow bristles. The ovary is conic-ovoid, tapering into the filiform or subulate-filiform style. The stigmas are minute. The capsule is narrowly ovoid, included in the persistent calyx, glabrous. The seeds are numerous, minute, wingless, ellipsoid or oval, reticulate.

JOHN K. SMALL.

EXPLANATION OF PLATE. Fig. 1.—A flowering stem. Fig. 2.—The rooting portion of stem. Fig. 3.—Calyx laid open to show the two kinds of sepals, × 2. Fig. 4.—The corolla laid open. Fig. 5.—The gynoecium, calyx, and bracelets, × 2. Fig. 6.—A mature capsule seated in the calyx and bracts.

ILYSANTHES GRANDIFLORA

(Plate 592)

ILYSANTHES GRANDIFLORA

Carpet pimpernel

Native of southeastern Georgia and Florida

Family SCROPHULARIACEAE FIGWORT Family

Lindernia grandiflora Nutt. Gen. **2:** 43. 1818.
Ilysanthes grandiflora Benth. in DC. Prodr. **10:** 418. 1846.

The genus *Ilysanthes* was proposed by Rafinesque in 1820. Several species now included in it were previously described in other genera. However, it is a curious fact that none of the species now included in *Ilysanthes* were orginally described in that genus. It has inherited from *Capraria, Lindernia, Gratiola,* and *Herpestis.* The genus as now constituted contains plants that fall into groups by habit. The wide-spread group contains two species of small ordinarily erect soft-herbaceous plants and mud-lovers in habitat. A more geographically restricted group of two species, consists of more wiry-stemmed erect plants and sand- or rock-lovers.

The species directly under consideration is a law unto itself, so to speak. It constitutes a group by itself. The plants are fleshy-herbaceous, with prostrate and creeping stems and branches. This plant rejoices in miry places and thrives best in a soil composed of white sand and black humus, thus true to the meaning of its generic name which is from the Greek meaning mud-flower.

The mineral surface of peninsular Florida is mostly sand, and for the most part a white sand. In some places there is so little humus intermixed that the sand looks snow-white, in other places it appears to be coal-black, especially if wet, but in this case whiteness may be restored by washing out the decayed vegetable matter, tannic-acid, etc.

This pimpernel has several outstanding characteristics. It is not a friendly plant. It prefers to grow by itself. Its favorite haunts are margins of ponds and cypress heads and edges of hammocks where the water-table fluctuates, often standing so high that most kinds of plants cannot survive the long submergences. On such relatively otherwise bare area this pimpernel takes hold and soon forms a green carpet with but few plant associates. The habitats mentioned above are usually at the bottom or near the bottom of slopes from which decaying vegetable matter has been washed down and incorporated with the sand. As just indicated

this plant grows well in the natural habitats just mentioned, but like a number of native plants in Florida it grows even better in a kind of artificial habitat. It is on the raw surface of sides of roads where the natural surface has been scraped off and on banks of ditches where the sand has been thrown out that we find this plant at its best. Here it gets a quick start, grows fast and covers the areas with a carpet smothering out plants that might otherwise grow in its company. The solid green carpet of leaves, in season is covered with a generous sprinkling of the violet, more or less spotted flowers which lie on layers of leaves or are raised an inch or two above it on slender inconspicuous stalks. An outstanding character of this plant is the uniform size of the leaves. Only in occasional instances, when a plant gets an unusual amount of very favorable nourishment, do the leaves double or treble in size.

The carpet-pimpernel covers moist sandy banks of streams and ditches, and edges of swamps and low hammocks. The stems and branches are prostrate and creeping, often numerous and matted, very leafy and forming a complete ground-cover. The leaves are opposite, glabrous, more or less spreading. The blades are suborbicular, varying to ovate, oval, or somewhat reniform, mostly a quarter to a half inch long, obtuse, entire or shallowly few-toothed; mostly three-veined, abruptly narrowed or subcordate at the base, sessile and often slightly clasping. The flowers are axillary. The pedicels are slender, much exceeding the subtending leaves, glabrous. The calyx is green, glabrous, erect on the pedicel. The sepals are lanceolate to linear-lanceolate or linear, acute, erect. The corolla is twice or thrice as long as the calyx, two-lipped. The tube is funnelform, light bluish-violet within and without, except near the whitish base. The upper-lip is slightly two-lobed, white or whitish. The lower lip is much longer than the upper lip, prominently three-lobed with the lobes suborbicular to somewhat reniform, white except for two violet spots at the base. The four stamens are included, the two posterior are anther-bearing. The filaments are greenish-white, the anthers whitish. The sterile filaments are longer than those of the other pair, with a large dark glandular lobe and a smaller pale lobe. The ovary is conic, sessile. The style is filiform, curved, light-green. The stigma is two-lobed, white or whitish. The capsule is ellipsoid or nearly so, exceeding the calyx.

JOHN K. SMALL.

EXPLANATION OF PLATE. Fig. 1.—Three pieces of plants, natural size. Fig. 2.—Calyx and gynoecium, the right-hand figure with the calyx removed, × 4. Fig. 3.—Corrolla, × 3. Fig. 4.—Young capsule, × 2. Fig. 5.—Mature capsule, × 2. Fig. 6.—Dehiscing capsule, × 2.

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COLORED ILLUSTRATIONS
AND
POPULAR DESCRIPTIONS
OF
PLANTS

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ANNOUNCEMENT

A bequest made to the New York Botanical Garden by its late President, Judge Addison Brown, established the

ADDISON BROWN FUND

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The preparation and publication of the work has been referred to Mr. Edward Johnston Alexander, Assistant Curator.

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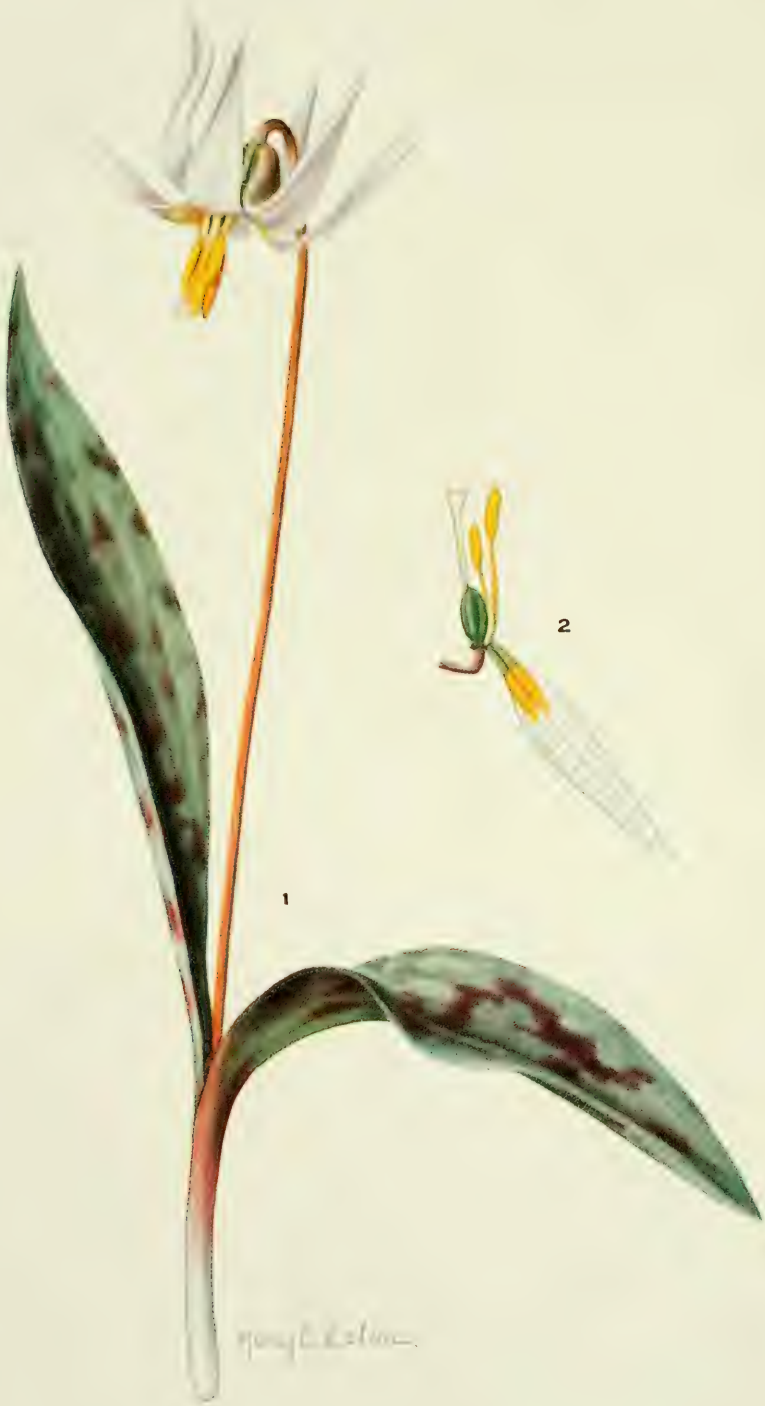


ERYTHRONIUM ALBIDUM

(Plate 593)

ERYTHRONIUM ALBIDUM

White trout-lily

Native of eastern North America

Family LILIACEAE — LILY Family

Erythronium albidum Nutt. Gen. **1**: 223. 1818.

When the icy hand of winter is lifted from the land, those nature-lovers who have been townbound during cold weather gird themselves with high enthusiasm and fare forth to the woods, fields and hills. Each has his own choice spot to seek out, in order to see with his own eyes the first steps of spring in the form of some loved and cherished early-blooming wild flower. While most of us find only the common wildings, fortunate indeed is he whose steps lead to the haunt of the white trout-lily, for it is indeed a rarity in the northeastern states, although quite plentiful in the northern Ohio and Mississippi drainage system. Its pinkish-white flower, set off by the foil of red and green mottled leaves, is a not easily forgotten sight when one has once found its hiding place, and it is to be hoped the finder will admire it in its natural haunts and not try to take it home, for the flowers soon wilt and do not easily revive.

The name dog-tooth violet, which is applied to the eastern species of the genus, is apparently a translation of the specific name of the European *E. Dens-Canis,* supposedly so-named in allusion to the fancied resemblance of its corms to a dog's tooth.

There are about twenty known species of the genus *Erythronium,* only one occurring outside of North America, the largest number of species occurring west of the Rocky mountains.

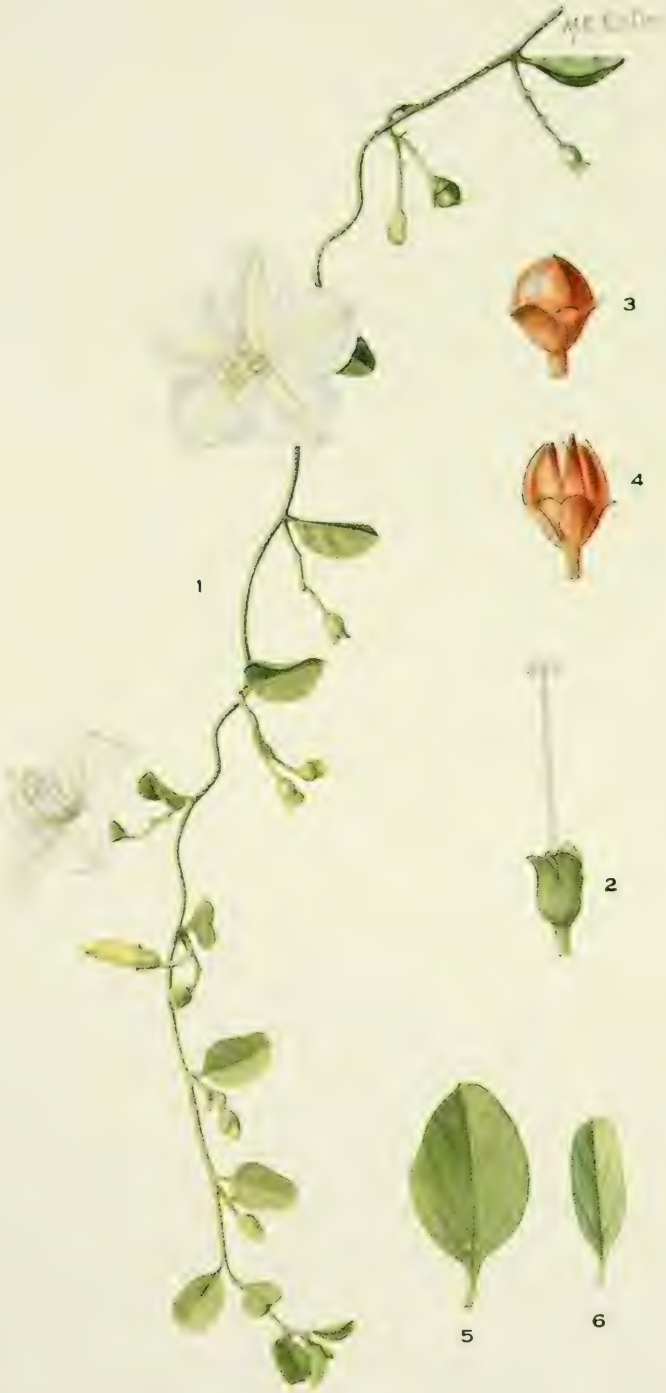
Our present subject grows in moist rich soil in shade from Ontario to Minnesota, and south to Texas and Georgia, usually seeking slightly drier locations than *E. americanum,* the other widespread species. *E. albidum* is rare east of the Allegheny mountains.

The white trout-lily is a low glabrous herb arising from a deep-seated, membranous-coated, small corm, bearing above the ground two oblanceolate leaves four to six inches long. The leaves are deep-green, mottled with purplish, although occasional forms lack this mottling. The nodding, white or pinkish lily-like flower is solitary on an erect scape sheathed at the base by the two leaves. The perianth divisions are lanceolate, sharply recurved, an inch to an inch and a half long; the three sepals white or pinkish (occasionally flushed with deeper color) with a pale yellow blotch at their base,

the outside purplish-red tinged, especially near the margin; the three petals white or pinkish on both sides, with the yellow blotch at the base within. The six stamens are borne on the receptacle between the perianth and the ovary. The filaments are white, shorter than the perianth-lobes, the anthers bright yellow. The bright green ovary is three-celled, the ovules on parietal placentae. The style is club-shaped and white, arising at an angle from the ovary. The three stigmatic lobes are recurved. The capsule is obovate, about five-eighths of an inch long, loculicidally dehiscent. The seeds are brown and shining, slightly tubercled at one end. Besides its normal method of propagation by seed, it also multiplies by paired underground runners which form corms at their ends. These corms produce sterile, one-leaved plants which far outnumber the flowering ones.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—Flowering plant. Fig. 2.—Gynoecium, two stamens and a perianth division.



JACQUEMONTIA RECLINATA

(Plate 594)

JACQUEMONTIA RECLINATA

Dune-jacquemontia

Native of southern Florida and West Indies

Family CONVOLVULACEAE MORNING-GLORY Family

Jacquemontia reclinata House, Bull. N. Y. Bot. Gard. **3**: 435. 1905.

Up to three decades ago the site of the city of Miami Beach was a veritable flower garden the year round. The floristics were then evidently essentially the same as they had been for ages. Strange to say, the plant covering there, both copious and of great variety, comprised herbs, shrubs, and trees, in spite of the fact that the habitat was swept and torn by the sea driven over it by the fury of myriad hurricanes. The loose sand was more or less readjusted by each storm, each time causing the vegetation of re-establish and reassert itself to a greater or less extent. This unusual irritation over a long period of time had a fundamental effect on the vegetation. Just before the "development" about two decades ago, there were erect herbs, prostrate herbs, aerial herbs and almost subterranean herbs, climbing vines and prostrate vines, erect shrubs and prostrate shrubs, erect trees and prostrate trees. In spite of the frequent storms and periodic hurricanes, the plant covering on the dunes was in most places penetrated with difficulty, and formed an ideal home for the diamond-back rattlesnake which existed there in great numbers. They were in a way guardians of the vegetation.

In this plant assemblage either as advents or as remnants, a number of species not known elsewhere on the continent were found during our earlier explorations there. The plant here illustrated was among these endemic. It is a vine where herbs, shrubs, or low trees are present. The stems sprawl and recline on their branches. Where these are absent it sprawls on the loose sand.

Like many of the morning-glory family in southern Florida, each leaf-axil of the elongate stems and branches supports a flower or a flower cluster. Thus, in this case, myriad white star-shaped flowers are often in view, particularly in the early hours of the day.

Three other jacquemontias occur in southern Florida, two of them—*J. Curtissii* and *J. jamaicensis*—with white flowers, and *J. pentantha* with blue flowers. The latter plant is a universal favorite for cultivation in southern Florida. The several species show differential characters in growth and inflorescence. *Jacquemontia Curtissii* of the pinelands has shrubby or twining stems and a copious inflorescence. *J. jamaicensis* of dunes of Bahia Honda Key shows a

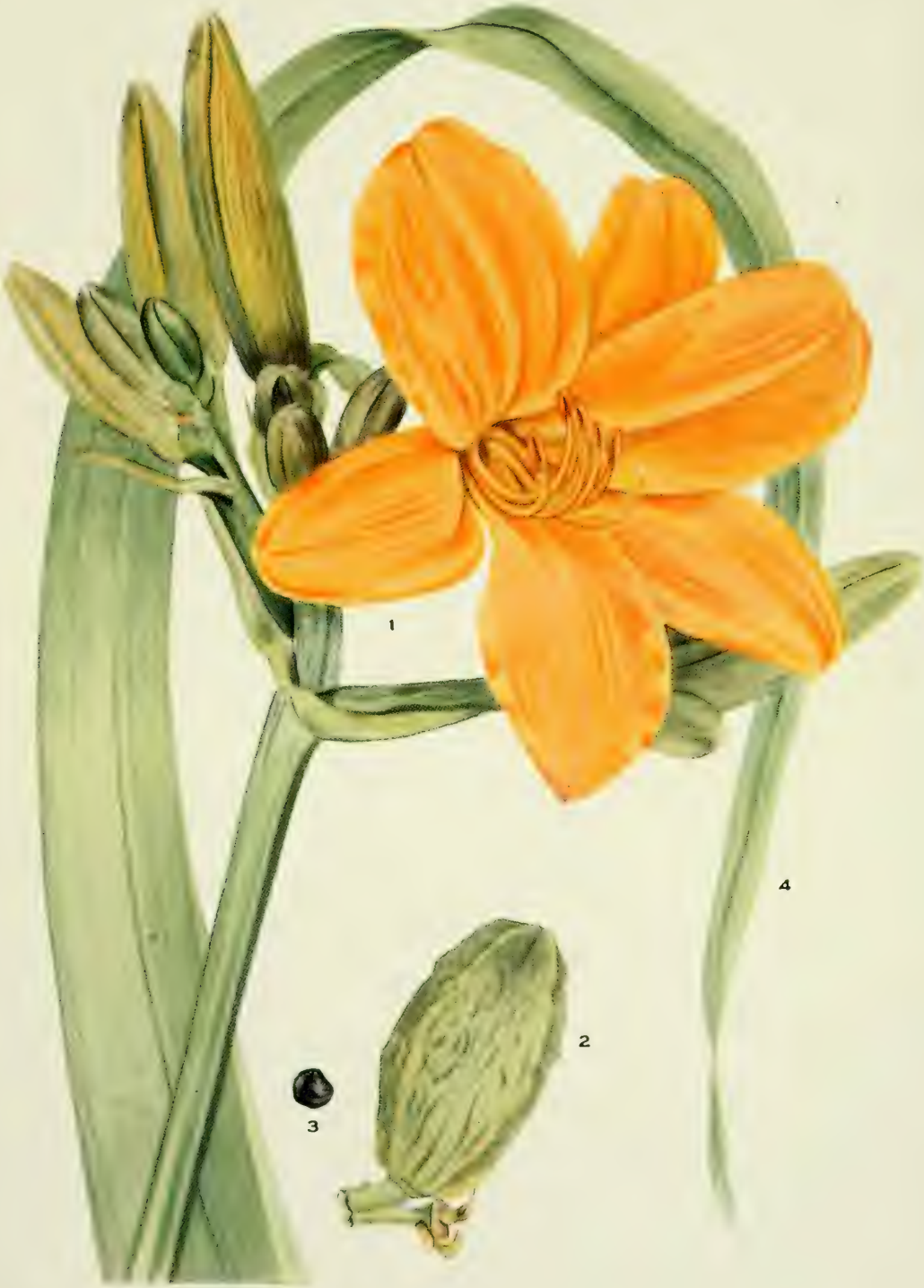
similar growth and a congested inflorescence. *J. pentantha* was for many years considered endemic on the Florida Keys. It was not until rather recent access was gained to a pine ridge near where the Everglades and the Big Cypress Swamp meet that this plant was found to be abundant on the mainland. Its large panicles of blue flowers give it a long flowering season.

The specimens from which the accompanying figure was made were collected by the writer on Miami Beach in 1918.

Jacquemontia reclinata is a perennial vine with a stout tap-root. The stem is branched at the base. The branches are elongate, relatively slender, and partly woody, widely radiating, prostrate reclining, or partly twining, or more stocky, quite woody, and with a dark-gray bark, finely pubescent or glabrate. The branchlets are irregular. The leaves are alternate, more or less succulent, distant on the branches and often crowded on the branchlets. The blades are very variable, ranging from subreniform to orbicular, obovate, ovate, elliptic or linear-elliptic, rounded and notched and usually mucronulate at the apex, entire, finely pubescent, at least when young, or often only pubescent beneath, cuneate to rounded at the base, short-petioled. The flowers are borne in irregular, axillary, short-peduncled cymes. The pedicels are longer than the peduncle and less densely pubescent, often angled at least in age. The bracts are inconspicuous, scale-like, densely pubescent. The calyx is sparingly pubescent at least when young, persistent. The lobes are unequal, the two outer ones are broadly obovate to suborbicular, ciliolate all around; the three inner lobes are reniform or orbicular-reniform, smaller than the outer ones, often pale-margined and ciliolate only or mainly at the apex. The corolla is rotate, mainly white, or tinged with pink, fully one inch wide, broadly five-lobed, the limb is pentagonal in outline. The lobes are rounded and often slightly notched at the apex in which a median band of yellowish-green or cream-color terminates. The five stamens are erect and exserted. The filaments are white, with a dilated basal portion partly adherent to the short corolla-tube, the free part of the dilated portion glandular-ciliolate; the upper portion which is longer than the dilated base is subulate. The anthers are yellow, ellipsoid, about one twelfth of an inch long. The gynoecium is glabrous. The ovary is ovoid, surrounded at the base by a lobed disk. The style is filiform or nearly so, often slightly thicker near the top than at the base. The stigma consists of two thick spreading-recurved lobes terminating the constricted apex of the style. The capsules, which stand erect by the curving of the peduncle and pedicels, are subglobose or ovoid-globose, fully a sixth of an inch long, glabrous, each one seated in the persistent calyx; the valves, when separate, lanceolate. The seeds are about one-sixteenth of an inch long, with two flat sides and a turgid back.

JOHN K. SMALL.

EXPLANATION OF PLATE. Fig. 1.—A flowering stem. Fig. 2.—Calyx and gynoecium × 2. Fig. 3.—Capsule. Fig. 4.—Opened capsule, showing method of dehiscence. Fig. 5.—A large leaf. Fig. 6.—A small leaf.



HEMEROCALLIS EXALTATA

(Plate 595)

HEMEROCALLIS EXALTATA

Type locality, Tobi Shima Islands, Japan

Family LILIACEAE LILY Family

Hemerocallis exaltata Stout*, sp. nov.

The description of this new species is based on ten different living plants that have flowered at The New York Botanical Garden each year since the summer of 1930. These plants were sent to the Garden by Mr. T. Susa, Director of the Aomori Agricultural Experiment Station, Kuroishi, Japan, who states that they were collected in the wild by a "village master" on the Tobi Shima Islands which lie off the west coast of Japan.

These plants show some minor variations which indicate that each is a seedling and it is evident that they belong with a new species that is distinct from others of this genus. In the tall, stiff, stout scapes, and robust foliage there is resemblance to the more vigorous plants of *H. fulva.* The foliage is not evergreen, the crown is compact and without spreading rhizomes, and the roots are only slightly enlarged, which are characters seen especially in *H. Thunbergii.* In the color of the flowers, the shape of the petals, and the size and shape of the capsules there is a resemblance to *H. Middendorffii.* The scapes are definitely branched but the branches are short, stout, and clustered at the apex, and the individual flowers are often almost sessile. This condition may be regarded as intermediate between the much-branched scapes of most species of *Hemerocallis* and the unbranched type of scape seen in the two species, *H. Dumortierii* and *H. Middendorffii.*

The species *Hemerocallis exaltata* is of itself not especially valuable or useful as a garden plant; the flowers are somewhat too small and too few in proportion to the tall scapes and the robust size of the plant. Certain garden clones of hybrid origin such as the Ophir Daylily, that have much-branched scapes and large flowers, are more colorful. Hybrids between *H. exaltata* and certain other species are being grown.

An herbaceous perennial. Main roots long, slender-cylindrical only occasionally somewhat fleshy and spindle-shaped; the older

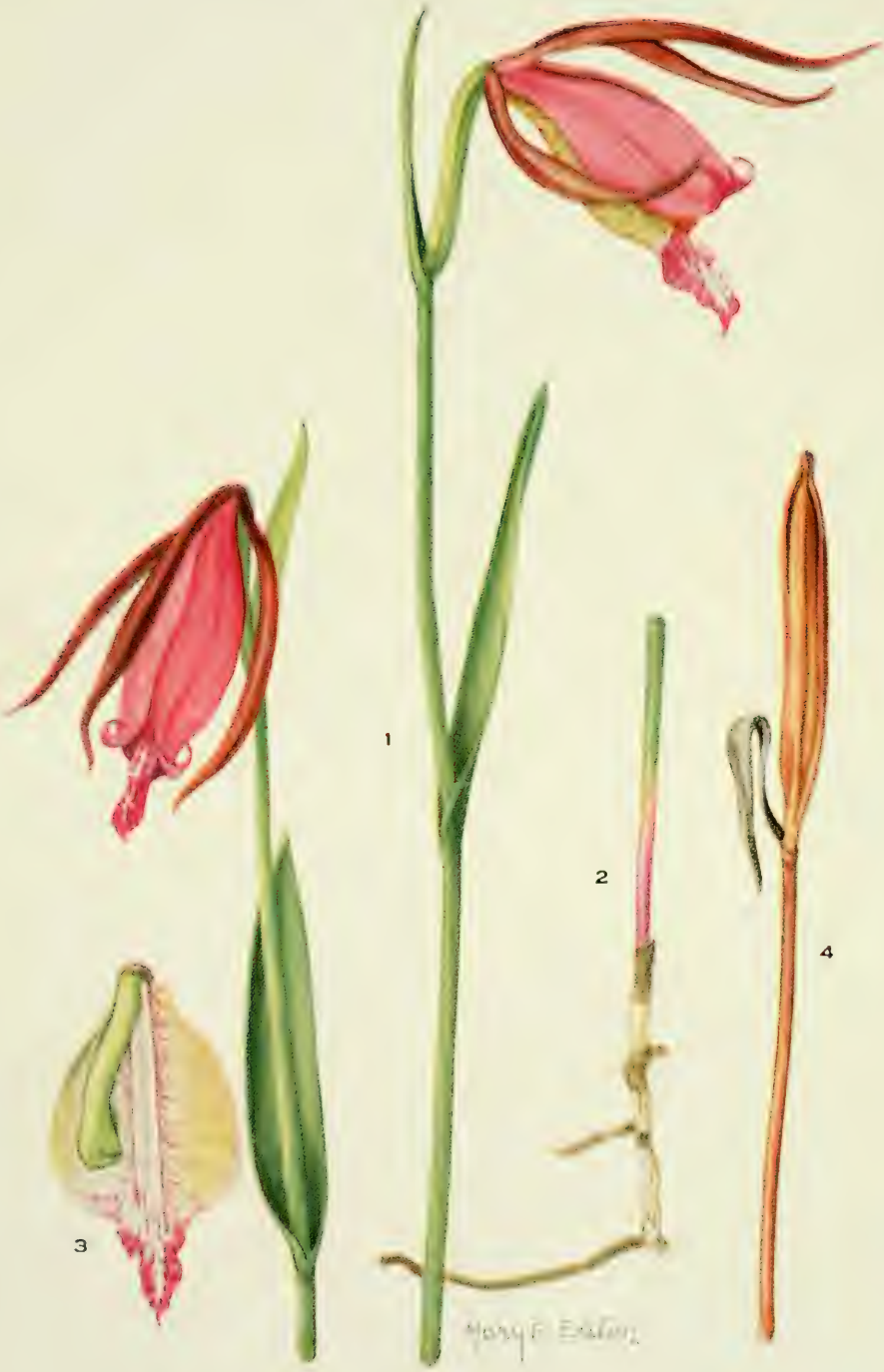
*Herba perennis; radicibus primariis gracilibus teretibus, interdum subcarnosis; caulibus brevibus compressis erhizomatis; foliis crassis usque ad 1 m. longis et 6 cm. latis; scapis rectis, 1.25–1.75 m. altis, ad apicem ramos breves crassos gerentibus; floribus diurnis, pallide aurantiacis; tubo corollae brevi, crasso; petalis subspathulatis, ca. 8 cm. longis et 3 cm. latis; capsulis ellipticis, ca. 4 cm. longis et 2 cm. latis, corrugatis; seminibus nigris, glabris, rotundatis, angulatis, ca. 0.5 cm. in diametro maximo.

ones dull brown, the younger tinged with yellow, and the terminal fibrous roots nearly white. The stems are short and much compacted into a crown without creeping rhizomes. The leaves are coarse, as much as 6 cm. in width and 1 m. in length, but recurving so the mound of foliage stands at a level of about 75 cm. The scapes are erect and 1.25 to 1.75 m. tall with a cluster of short coarse branches at the apex. The flowers have a spread of about 10 cm.; the petals are slightly spatulate, about 8 cm. long and 3 cm. broad; the tube is short and thick. The flowers are light orange in color, diurnal, not fragrant, and the season of bloom is in late June and early July. The largest bracts at the base of the branches are clasping, acute at the apex, and 4 to 5.5 cm. long; those subtending the flowers are much smaller. The capsule is elliptic in longitudinal outline, about 4 cm. long and 2 cm. wide, and corrugated with numerous short ridges. The seeds are black, smooth, rounded and angled, and about 0.5 cm. in greatest diameter.

One of the plants now growing at The New York Botanical Garden is considered as the type of the species. This plant is being propagated asexually by division, and specimens of it are deposited in the herbarium with photographs of the plant, the roots, the flowers, and the capsules.

A. B. STOUT.

EXPLANATION OF PLATE. Fig. 1.—Flower and portion of scape. Fig. 2.—A capsule. Fig. 3.—A seed. Fig. 4.—Portion of a leaf.



CLEISTES DIVARICATA

(Plate 596)

CLEISTES DIVARICATA

Lady's ettercap

Native of southeastern United States

Family ORCHIDACEAE ORCHID Family

Arethusa divaricata L. Sp. Pl. 951. 1753.
Pogonia divaricata R. Br. in Ait. Hort. Kew. Ed. 2. 5: 203. 1813.
Cleistes divaricata Ames, Orchidaceae fasc. 7. 21, 1922.

Habits and habitats are almost legion among the orchids of the world. Many habits and habitats are shown by the orchids of North America north of Mexico, where, however, only about three per cent of the known orchids are represented.

Toward the northern geographic limit of the family the orchid plants are terrestrial. Southward many orchid plants have taken themselves to trees and shrubs, and epiphytic plants appear in great numbers and in the tropics epiphytes often dominate. There also, where for one reason or another there are extremes in nearly everything, we find aquatic orchids. Cases of these may be found in extra-tropical Florida.

The general ranges of the terrestrial and the epiphytic orchid often overlap. Some of the more northern terrestrial orchids range down into peninsular Florida where there are many epiphytic species, while only one epiphyte, *Amphiglottis conopsea,* reaches northward to the Coastal Plain of North Carolina.

Orchids are moisture-loving plants. Extra-tropically the plants are typical of swamps and marshes. Their water apparatuses are adjusted to using large quantities of water recklessly. In the tropics orchids are typical of humid forests. There the plants obtain their water-supply largely from the sponge-like attachment to the tree trunks on which they grow. Here the water-supply, being dependent on rains and the general humidity in the atmosphere, is more or less precarious.

Adjustments of the water-apparatus through the ages have enabled the orchid plant to use its water supply according to circumstances. For example, if a succulent orchid is pulled from a swamp or a marsh and laid on a shelf, its water is promptly given off from the tissues and the plant promptly withers, dries up and dies. Tear off an orchid plant from a tropical forest tree and lay it on a shelf. The plant will remain fresh and alive for weeks, the tissues holding firmly to the contained water.

The plant here illustrated is a warm-temperature type, but with a rather wide distribution in latitude and in altitude. Cleistes is perhaps a very ancient type. Its altitudinal range indicates a mi-

gration from the ancient highlands where it still maintains a foothold. For example, Cleistes grows on the very top of Table Rock, in the Blue Ridge of North Carolina, whence it may be traced down through the Piedmont Plateau and through the Coastal Plain almost to the sea-shore.

Sea coast and mountain summit at first thought seem incompatible habitats for such a plant, but the moisture conditions are practically identical, for in the lowlands along the coast the capillary water supply is always present, while on the mountain top it is there also, for the peaks on which this orchid grows are frequently and often for long periods enveloped in heavy rain clouds. In the open, Cleistes often grows in large colonies with rather pale flowers, the plants often averaging about a foot in height. Among shrubbery in swamps the plants frequently become two feet tall and have deeper-colored flowers. There too the plants are usually scattered.

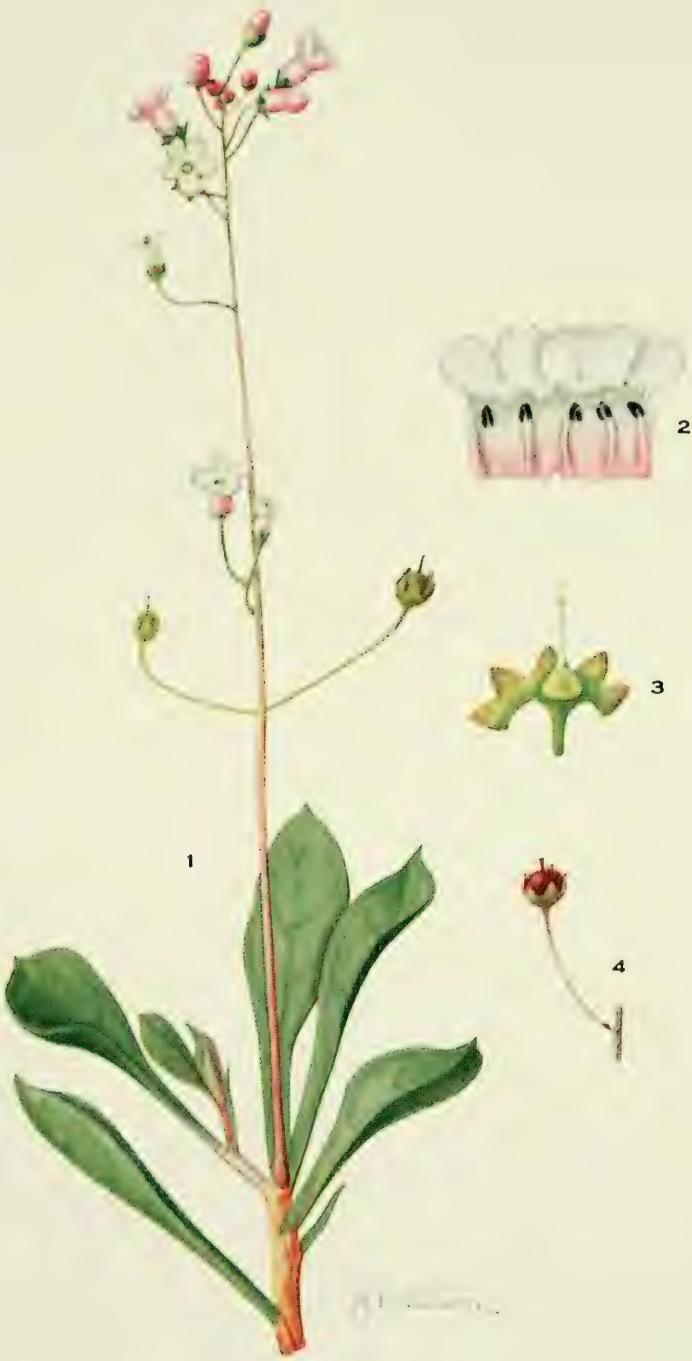
Cleistes began its career in the genus *Arethusa.* Sixty years later it was transferred to the genus *Pogonia* where it remained for over a century, taxonomically closely associated with the more widely distributed rose-crested orchid, *Pogonia ophioglossoides.*

The specimens from which the accompanying figure was made were collected near Jacksonville, Florida, and sent to the Garden by Mrs. M. M. Lander in 1930.

Cleistes divaricata is a perennial herb, with a short scaly caudex supported on horizontally spreading fleshy cord-like roots. The flower-stem is bright green, glabrous, 8–24 inches tall, nearly terete, bearing one leaf or rarely two leaves. The leaf is erect or nearly so, 1½–4 inches long, more or less glaucous. The blade is narrowly elliptic-lanceolate or linear-lanceolate, acute, glabrous, faintly parallel-veined, pale-margined, slightly concave, clasping at the base. The bract is similar to the leaf, but smaller, erect or nearly so. The flower is sessile, with the hypanthium paler than the stem, curved at the top. The perianth is nodding, with the lip even drooping. The sepals are erect, only slightly curved, purplish-brown, narrowly linear, attenuate, equalling or exceeding the corolla. The corolla, of a magenta ground-color, is mostly 1½–2 inches long. The lateral petals are oblanceolate, concave, recurved at the tip. The lip (median petal) is longer than the lateral petals, the body enrolled about the column, with a broad midrib which is flat without, and with an elevated trough within, and green-tinged wings which are magenta-veined and magenta-tinged and eroded near the apex, from which extends the magenta deltoid or ovate-deltoid middle lobe which is furnished with sharp ridges and papillae. The column is clavate, curved, ¾–1 inch long, light-green, with lateral slightly fringed lobes at the apex. The anther is lid-like, slightly 2-lobed. The stigma is horse-shoe like. The capsule is cylindrical, 1½–2 inches long.

JOHN K. SMALL.

EXPLANATION OF PLATE. Fig. 1.—Two flowering stalks. Fig. 2.—Base of stem showing roots. Fig. 3.—Column and lip. Fig. 4.—A capsule.



SAMODIA EBRACTEATA

(Plate 597)

SAMODIA EBRACTEATA

Marsh pimpernel

Native of the West Indies, Mexico, and the Gulf Coast region of U. S.

Family PRIMULACEAE PRIMOSE Family

Samolus ebracteatus H.B.K. Nov. Gen. et Sp. **2:** 223. 1818.
Samodia ebracteata Baudo. Ann. Sci. Nat. (II) **20:** 350. 1843.
Samolus longipes Hook., Shuttlew. Bot. Zeit. **3:** 222. 1845.

Whatever the starting point of this plant was, insular or continental, it has gradually spread to distant points. This migration was brought about by two factors—the perennial character of the plant and the numerous light seeds. When established at a point the plant normally has a long seed-producing period. The numerous seeds thus produced over a long period are not only numerous but small enough to be transported to distant points and unattractive to animals for food.

Within its present geographic distribution the more southern latitudes seem to have been the primitive region of dissemination. The plant seems to have migrated north into Florida from the West Indies and into Texas from Mexico. Its experience during the past ages has enabled it to accommodate itself to a variety of habitats.

The plants grow about equally well in sand, sandy-loam, humus and on almost bare, eroded limestone. Naturally in the richer soils the foliage is a deeper or brighter green. On the limestone the foliage is often pale or glaucous, and sometimes has a coating of lime. On the much-weathered oölitic limestone near its landing place from the West Indies the plants grow not only in the erosion holes, but also perched on the high points. They are able to do this because the lime-rock is saturated with capillary water. A very elastic stem-system has been developed in the past. Plants may be almost stemless with the leaves clustered near the root. Again there may be an elongate rootstock-underground stem, but scarcely any stem above ground. Then there may be a short rootstock supporting an elongate aerial stem with the leaves scattered along it up to the inflorescence.

Not all members of the Primrose family are showy-flowered. In some the flowers are inconspicuous, even destitute of corollas.

The present plant is intermediate in prominence. The inflorescence is sharply marked off from the foliage portion of the plant.

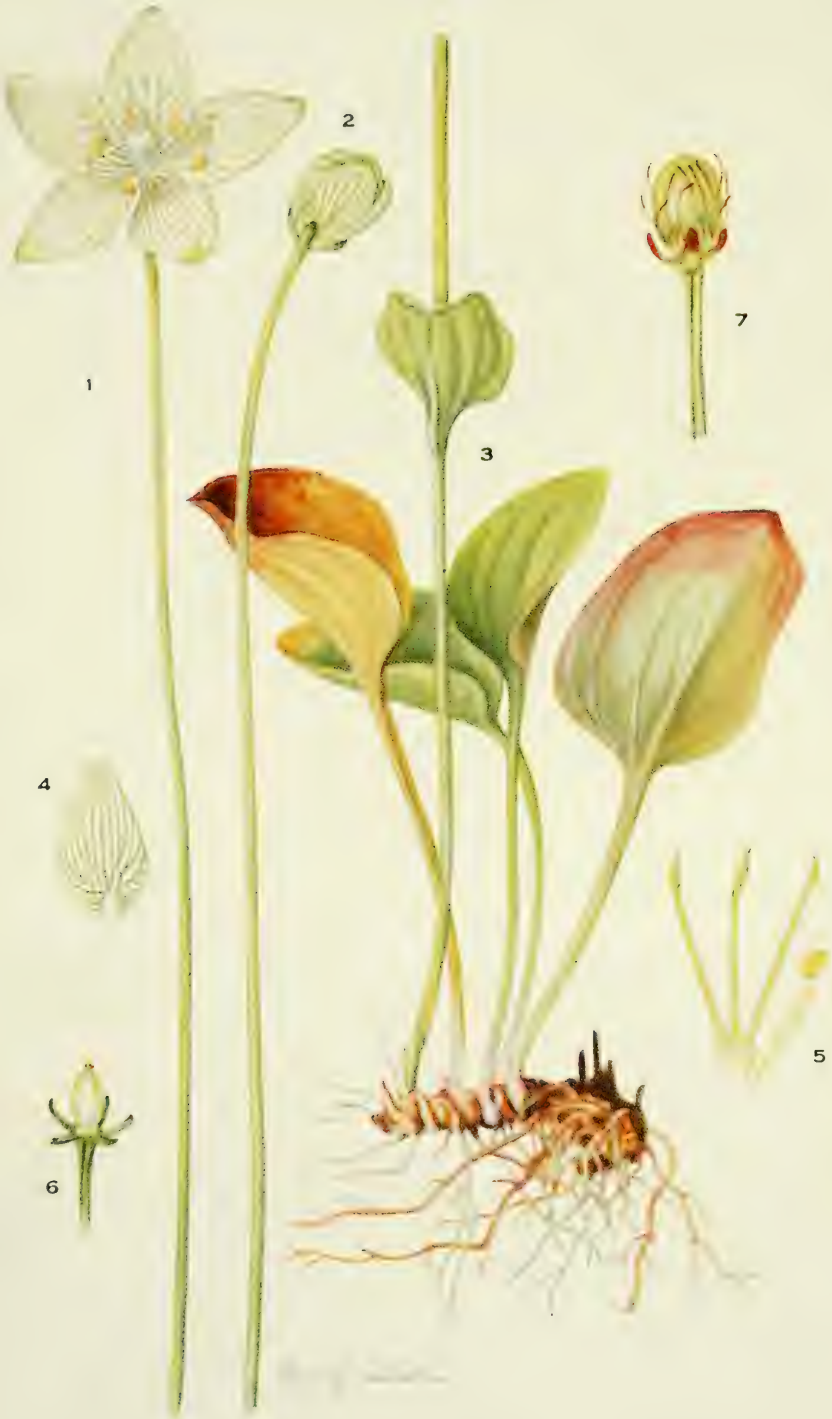
A wiry peduncle terminates the shorter or fleshy stem. This in turn supports the raceme proper which consists of wiry, spreading, individual flower-stalks. The flowers are rather small. The usually pink corolla makes the inflorescence easy to be located either isolated or mixed with other vegetation. However, when the growth is copious and massed, as it were, the inflorescence may be said to be conspicuous, especially where it is the dominant growth and forms sheets of pink.

The plant is seldom cultivated, but grows well when planted even under glass in the North, as is shown by the accompanying figure which was made at the Garden from plants raised from seed collected along the Rio Grande in Texas by Robert Runyon in 1925.

The marsh-pimpernel is a glabrous or nearly glabrous, partly succulent, perennial herb, ranging from six to eighteen inches tall. The stem is simple or branched, with the branches more or less tufted, short and erect, or elongate and prostrate or ascending. The leaves are alternate, sometimes widely spaced. The blades are spatulate to obovate, an inch and a half to four inches long, obtuse or apiculate, sessile and somewhat decurrent or with short wing-like petioles. The inflorescence is erect, the peduncle usually longer that the stem, wiry, often dark-colored. The pedicels are very slender, usually glabrous. The calyx is campanulate, with triangular-ovate, acute or acutish lobes about twice as long as the tube. The corolla is pink, the limb nearly or quite a quarter of an inch wide, with suborbicular lobes retuse at the apex and densely glandular at the base, shorter than the tube. The stamens are included. The stigma is notched. The capsule is subglobose, surrounded by the calyx at the base, partly exserted at the apex.

JOHN K. SMALL.

EXPLANATION OF PLATE. Fig. 1.—Inflorescence and top of a leafy stem. Fig. 2.—Corolla, laid open × 3. Fig. 3.—Calyx and gynoecium × 3. Fig. 4.—Capsule, seated in the calyx.



PARNASSIA CAROLINIANA

(Plate 598)

PARNASSIA CAROLINIANA

Carolina grass-of-Parnassus

Native of southeastern United States

Family PARNASSIACEAE GRASS-OF-PARNASSUS Family

Parnassia caroliniana Michx. Fl. Bor. Amer. **1:** 184. 1803.
Parnassia floridana Rydb. N. Amer. Fl. **22:** 80. 1905.

Late in October, 1928, there was sent to this Institution by H. A. Rankin, of Fayetteville, N. C., some live specimens of a *Parnassia* which grew on wet savannas near Hallsboro, N. C. He wished to know if they were *P. caroliniana,* which was not known to grow that far south.

In the course of identification, which was undertaken by the writer, Michaux's original description was checked up, and it was found that Mr. Rankin's plant must surely be the real *P. caroliniana* of Michaux, as he cited "*in undis Carolinae*" as the locality, and no other species grows within several hundred miles of the Carolina coast, which was obviously the place referred to.

Aiton in 1811 (Hort. Kew. ed. 2) listed as *P. caroliniana* a plant sent by Masson to Kew in 1802, undoubtedly collected in New York or New England, since Masson went no further south. This plant was illustrated in the Botanical Magazine (pl. 1459), and is obviously *P. americana* Muhl., the name which must be taken up for the northern plant. This error was continued by Pursh in 1814, and has been perpetuated by all authors since, as no *Parnassia* from the Carolina coast was seen by botanists again. A Florida specimen, collected by A. W. Chapman near Apalachicola, and upon which *P. floridana* Rydb. was based, proves now to be identical with the North Carolina plant, thus extending its range.

Thus was rediscovered a plant lost to science for 125 years, and it seems only fair to quote Mr. Rankin's comments upon it:

"That the Grass-of-Parnassus should turn out to be the true Carolina Grass-of-Parnassus is indeed good news and is received almost as a personal vindication, for I have always thought of it as that.

Some years ago I found in Blanchan's 'Wildflowers' under Carolina Grass-of-Parnassus, the following—'What's in a name, certainly our common Grass-of-Parnassus, which is no grass at all, never starred the meadows around about the home of the Muses, nor sought the steaming savannas of the Carolinas.'

I have always resented that passage as almost a personal affront.

Owen Wister said in 'The Virginian,' 'When you call me that always smile,' and in this passage no smile is indicated.

What if our savannas are sometimes steaming, it is the condition necessary for the development for many wonderful plants which find here their most congenial surroundings.

But Grass-of-Parnassus does not star the meadows during the steaming season, instead, by local tradition, the 'Eyebright,' its local name, times its first flowers to come just two weeks before frost when most of the fall flowers have passed. As a matter of fact, I saw the first flowers this year on October 12th and our first frost came the morning of the 25th.

Its chosen habitat is the wet savannas and hundreds of acres may be seen liberally dotted with its white stars, but it finds its best development in the lower places, and here it often almost covers the ground. Today, November 1st, it is in its prime and is the most conspicuous flower on many acres and in one little depression less than two feet in diameter I counted seventy-two flowers and buds.

Its associates now blooming are *Gentiana saponaria, Lobelia glandulosa, Spiranthes cernua, Prenanthes virgata* and many species of asters. Among other plant associates not now in bloom will be found *Chaptalia tomentosa,* our first spring flower; Venus' fly-trap; the sundews, *D. filiformis* and *D. rotundifolia*; *Sabatia paniculata, Habenaria ciliaris, Balduinia uniflora* and the pitcher-plants, *S. flava* and *S. purpurea.*

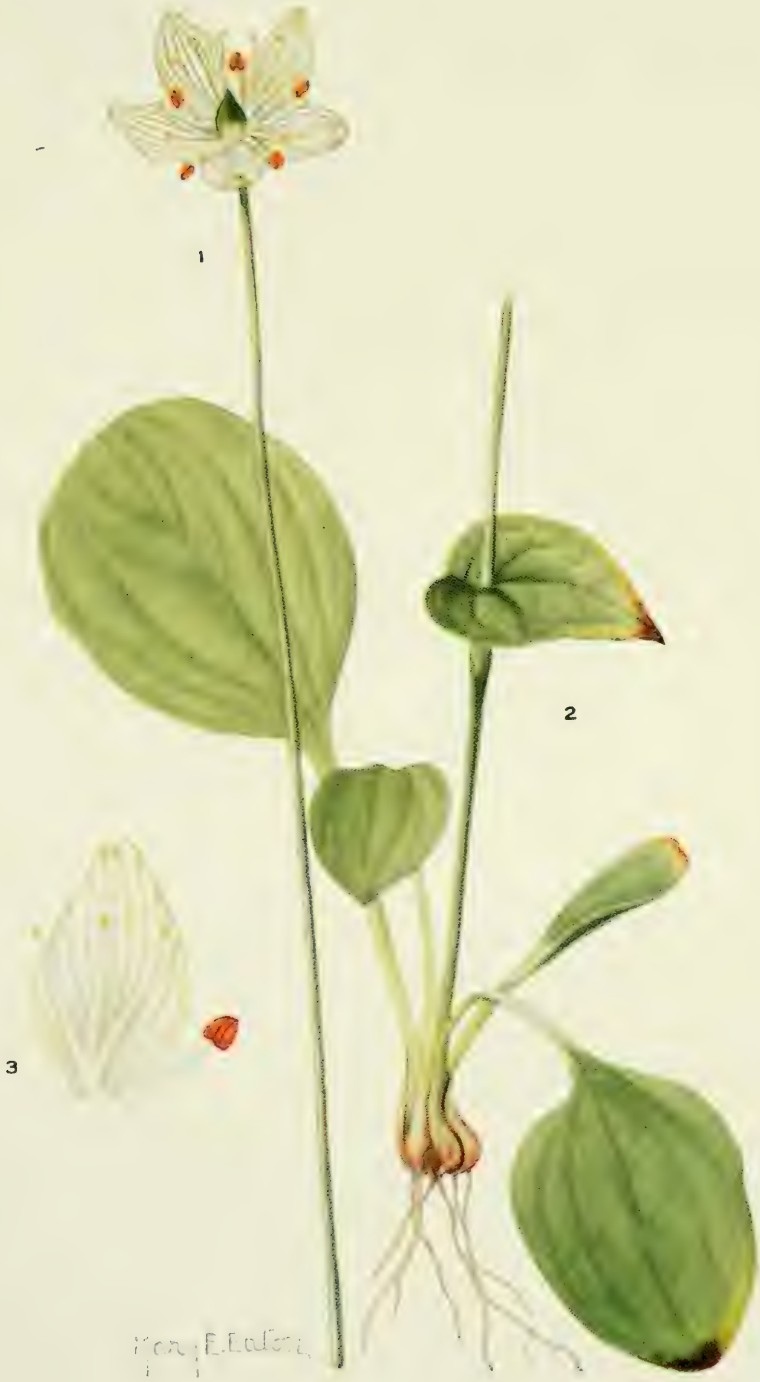
The years 1926 and 1927 were very dry and Grass of Parnassus flowered very sparingly, in many places not at all, but otherwise it seems to have held its own and this year being wet it is blooming so abundantly that it is hard to conceive of the species having been lost."

An examination of our plate will reveal that true *P. caroliniana* has the stamens shorter than the staminodia, the staminodia with lanceolate, concave tips, the ovary truncate-columnar and white, and flowers 1½–2 inches across. *P. americana* has the stamens as long as, or longer than the staminodia, the staminodia with round tips, the ovary pointed at the apex and green, and flowers 1–1½ inches across.

The Carolina grass-of-Parnassus is a perennial herb, with an underground creeping rootstock, which bears at its growing tip a number of light green, orbicular-ovate leaves 1–2 inches broad and the same length on 2–4-inch petioles. The 12–15-inch flower-scape bears below its middle a single, broadly ovate, clasping bract, and a solitary flower at its apex. The five green, dark-tipped calyx-lobes are linear, blunt-tipped, ⅕ inch long. The corolla is 1.5–2 inches across. The petals are ovate, white, with thirteen to fifteen prominent yellow-green veins. The staminodia, borne in groups of three, are nearly as long as the petals, pale yellow-green, with concave, lanceolate tips. The anthers, ellipsoid, borne on white filaments only half as long as the staminodia, are pale, dull yellow, the tip rounded. The ovary is white or faintly greenish, at anthesis stout-columnar, truncate, but later the four sessile stigma-tips become separated and spread out. The fruit is an ovoid capsule, loculicidally dehiscent. The seeds are small, light brown.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—A flowering scape. Fig. 2.—A bud. Fig. 3.—A plant, showing leaves and basal portion of flower-scape. Fig. 4.—A petal. Fig. 5.—A staminodium and a stamen × 2. Fig. 6.—Calyx and gynoecium. Fig. 7.—A capsule.



PARNASSIA GRANDIFOLIA

(Plate 599)

PARNASSIA GRANDIFOLIA

Large-leaved grass-of-Parnassus

Native of the southern Appalachians

Family PARNASSIACEAE GRASS-OF-PARNASSUS Family

Parnassia grandifolia DC. Prodr. 1: 320. 1824.

One is often at a loss to understand why certain common names are applied to plants which in no wise fit them, our present subject being a member of one genus to which this statement particularly applies.

The name grass-of-Parnassus, while euphonious, is very misleading, as the plants bear not the remotest resemblance to any kind of grass and it was many years before the European species, *P. palustris* was found on Mt. Parnassus, and then found not at all common there.

Loudon suggests that the name probably applies to the beauty and elegance of the plant, which was considered as having sprung from the homes of the Muses, and well might we believe such upon seeing for the first time some rocky stream or wet cliff studded with its delicately veined and fragile-looking flowers. Other species than our present one, especially *P. palustris,* frequent wet meadows and swamps, making a fine display when, late in summer, they star the meadows with their handsome flowers.

It seems to have been rather a long time before European botanists were willing to accept more than one species from North America, and at present, the Index Kewensis relegates *P. grandifolia* to synonymy under *P. caroliniana,* and the long misnamed *P. caroliniana* at that, which has flowers only two-thirds the size, petals with 7–9 veins, staminodia the same length as the stamens and with differently shaped tips.

By comparison of plates 598 and 599, the differences between *P. grandifolia* and true *P. caroliniana* are also apparent in the different shape of the staminodia tips, the color and shape of the anthers, the color and shape of the ovary, and the number of veins in the petals.

Another species, *P. asarifolia,* has the same range as our present subject, but differs in having cordate-reniform leaf-blades, clawed petals and the stamens as long as, or longer than, the staminodia.

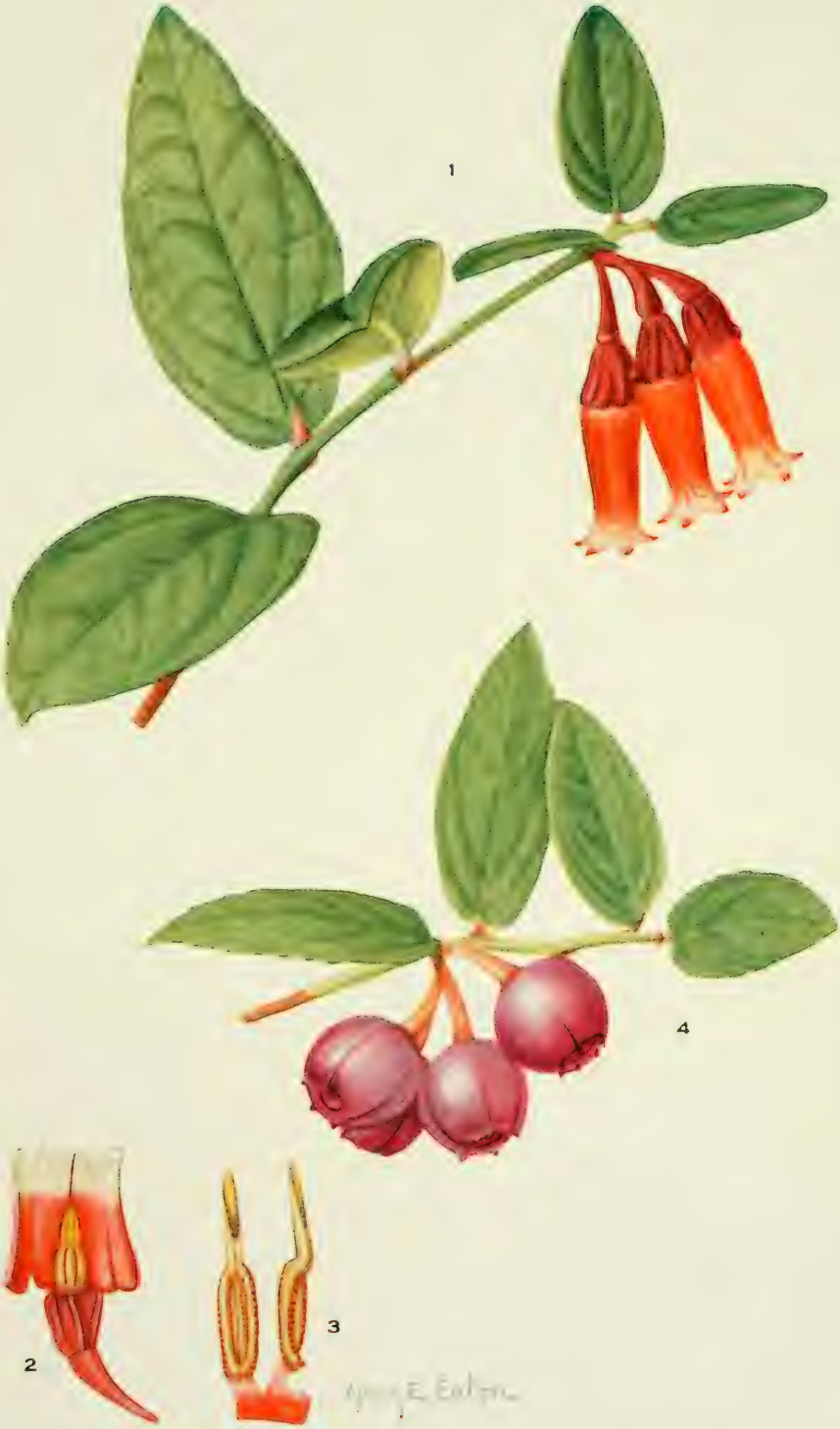
Both grow on wet, dripping cliffs, or in rocky stream beds, in the mountains from Virginia southwards.

These large-flowered species should be of great value for rock gardens, where their season of bloom, September to October, would be appreciated, but they would probably have to be grown under conditions of constant moisture, such as is provided by a stream or moraine.

The large-leaved grass-of-Parnassus is a perennial, glabrous herb with an underground creeping rootstock, from which at the growing tip arise a number of bright green ovate or subcordate leaves 1–3 inches broad and 2–4 inches long, on 2–5-inch petioles. The 12–15-inch flower-scape bears a single ovate-cordate clasping bract below the middle, and a solitary, erect flower at the apex. The five green calyx-lobes are ovate to elliptic, blunt-tipped, $\frac{1}{6}$ inch long. The corolla is $1\frac{1}{2}$–2 inches across. The petals are ovate, white, with 7–9 prominent yellow-green veins. The staminodia, borne in groups of three, are about half the length of the petals, pale yellow-green with round, yellow tips. The ovoid anthers, borne on white filaments about half the length of the staminodia, are orange-brown, the tips bluntly pointed. The ovary is white at the base only, green above, at anthesis ovoid, the four sessile stigmas later becoming separated and spreading. The fruit is an ovoid capsule loculicidally dehiscent. The seeds are light brown and small.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—A flowering scape. Fig. 2.—A plant, showing leaves and basal portion of flower scape. Fig. 3.—A petal, a staminodium and a stamen × 2.



MACLEANIA CORDIFOLIA

(Plate 600)

MACLEANIA CORDIFOLIA

Cordate-leaved Macleania

Native of northern Ecuador and southern Colombia

Family VACCINIACEAE BLUEBERRY Family

Macleania cordifolia Benth. Pl. Hartw. 223. 1846.
Macleania speciosissima Hook. f. Bot. Mag. *pl. 5453.* 1864.

The northern Andes are the home of more than two hundred species of the tribe Thibaudieae, an entirely tropical group within the family Vacciniaceae. Members of the tribe bear conspicuous crimson or orange-red flowers, and are among the most beautiful shrubs of tropical mountains. The genus *Macleania* contains thirty-two species, of which several are to be found in greenhouse cultivation in Europe and North America.

The plant here illustrated is an attractive shrub for greenhouses, its slender branches becoming elongated and pendant, bearing their brilliant flowers near the tips. It was first collected by Hartweg in the Province of Pichincha, Ecuador, and has since been found in the neighboring regions. *Macleania* was so named by W. J. Hooker to commemorate the name of John Maclean, who in the first part of the nineteenth century introduced many living South American plants to English collections.

The cordate-leaved *Macleania* is a small slender shrub with elongate branches, which become pale brown in the older parts of the plant. The ovate or ovate-oblong leaves are leathery and glabrous, short-petioled, sparsely punctate above, subcordate at the base, four to ten centimeters long, two to five centimeters broad, five- or seven-pli-nerved. The inflorescence is axillary, short racemose, four- to ten-flowered; the pedicels are slightly swollen distally and articulate with the calyx. The calyx is about five millimeters long, obprismatic, broadly winged to the sinuses, with five short apiculate lobes. The crimson fleshy cylindric corolla is about twenty millimeters long, slightly flaring distally to the white apex; it bears five small triangular lobes which are densely white-pubescent within. The ten yellowish stamens are about half as long as the corolla; the filaments are coherent into a membranous tube; the erect anthers are granular-surfaced, each bearing a single cylindric-conical tubule which opens by a wide introrse cleft. The slender style is about as long as the corolla, bearing a truncate stigma. The fruit is globose, sur-

mounted by the persistent calyx lobes, and is composed of five carpels, each containing several small seeds.

A. C. SMITH.

EXPLANATION OF PLATE. Fig. 1.—Portion of a flowering branch. Fig. 2.—Corolla, laid open, showing androecium and hypanthium. Fig. 3.—Stamens × 3. Fig. 4.—Fruiting spray.

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AND
POPULAR DESCRIPTIONS
OF
PLANTS

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A bequest made to the New York Botanical Garden by its late President, Judge Addison Brown, established the

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The preparation and publication of the work has been referred to Mr. Edward Johnston Alexander, Assistant Curator.

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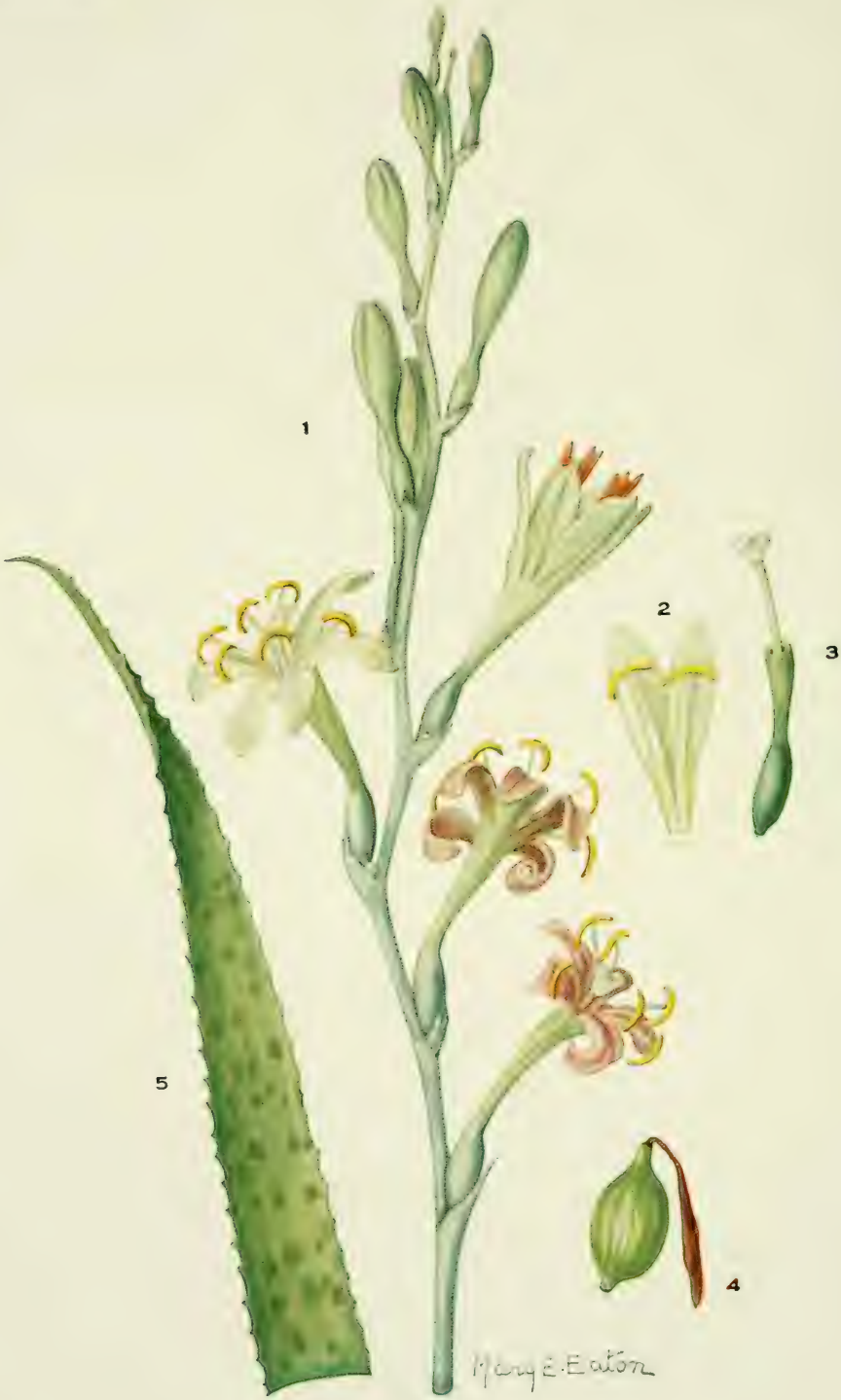


MANFREDA MACULOSA

(Plate 601)

MANFREDA MACULOSA

Huaco

Native of Southern Texas

Family AMARYLLIDACEAE AMARYLLIS Family

Agave maculosa Hook. Bot. Mag. 85: pl. 5122. 1859.
Agave maculata Engelm. Bot. Mex. Bound. Surv. 214. 1859. Not Regel 1856.
Manfreda maculosa Rose, Cont. Nat. Herb. 8: 17. 1903.

The eastern Gulf and Atlantic Coastal Plain supports two species of Manfreda—*M. virginica* and *M. tigrina*. The Texas Gulf Coastal Plain likewise supports two species—*M. variegata* and the one under consideration on these pages.

The farther southward one goes into the Coastal Plain of eastern Texas the more extensive becomes the succulent flora. The two southern projections of the continental United States—Florida and Texas—are rich in succulent plants. In the former area the succulents are those of a humid climate, in the latter, of an arid climate. So far as general groups are concerned, the amaryllids for the monocots and the cacti for the dicots hold the palm, respectively. It is in the desert-like areas of Texas that these plants predominate. In these shadeless or lightly shaded areas the succulents seem destined to make a complete ground-cover. The foliage parts are short-stemmed and leafy or with plenty of greenery. However, the greenery represents many shades, light-, deep-, and dark-green, and mottled-green, as in the case of the plant under consideration.

This plant was named and described in 1859. The original plants are said to have come from Texas to the Horticultural Society of London and these to the Royal Gardens at Kew.

The distribution of *Manfreda maculosa* is apparently confined to Southern Texas. It is found from the Colorado River westward to the Devil River in open arid or semi-arid lands, and occurs either singly or in colonies. The flowering season is from May to June; the fruit matures in August. Its flowering stalk is usually shorter than the stalk of *Manfreda variegata;* and when not in flower, it is distinguished from *M. variegata* by its narrow strictly channeled leaves.

Runyonia longiflora, another succulent found in southern Texas, is confined to a small area of strictly arid lands near the Mexican border, from Hidalgo County westward to Laredo, while *Manfreda variegata* is abundant from Cameron County in the southernmost corner of the state westward along the Mexican

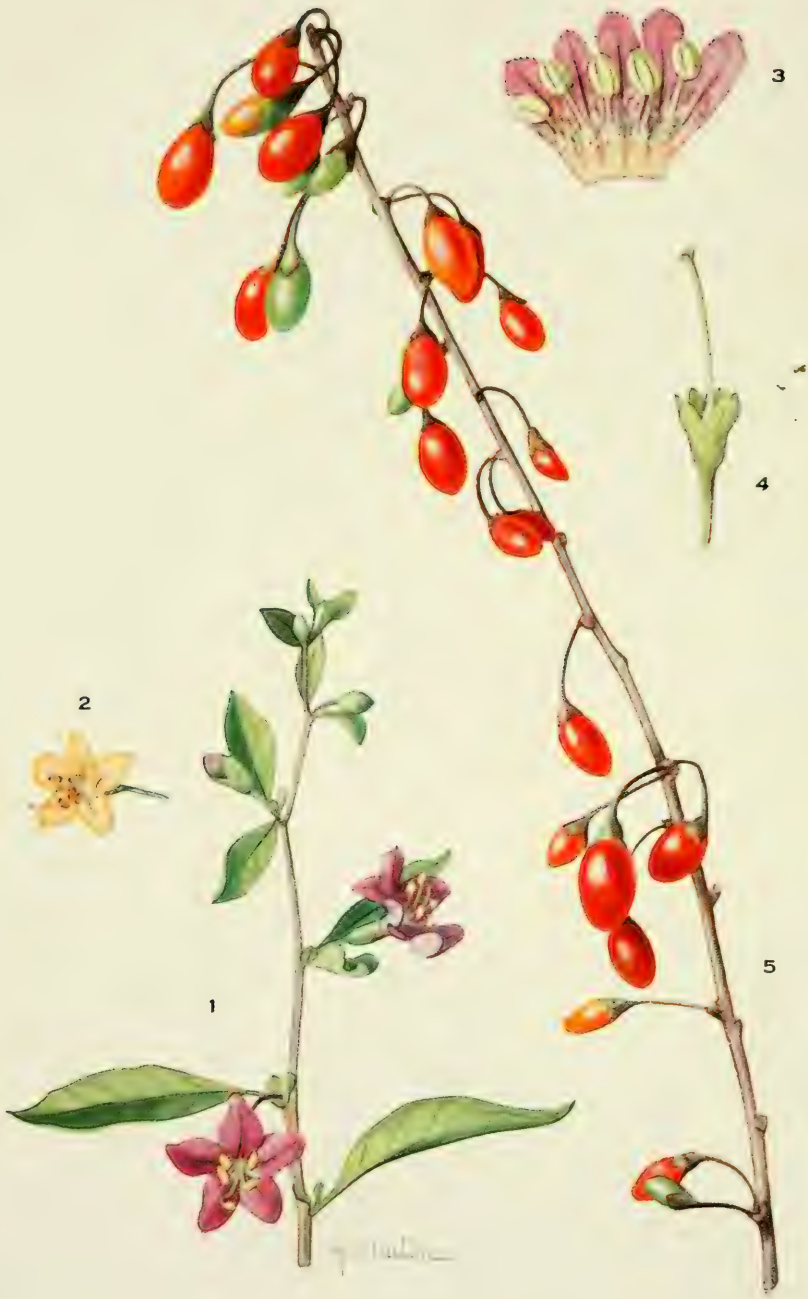
border, though both extend far south into Tamaulipas, Mexico. Both of these plants, as well as the one treated here, are known as Huaco. *M. variegata* is distinguished from *M. maculosa* and *R. longiflora* by its broader, longer, and brighter green leaves, and the tall flowering stalk which reaches to a height of six feet or more.

These plants have deep-seated, thick, fleshy roots and a rosette of fleshy leaves that store up water and resist drought for many months; thus when the flowering season arrives, the plant produces the tall slender flower stalk in an amazingly short period, with or without the aid of rain. The roots of these interesting plants are used by the natives as a substitute for soap, in a product called Amole. The leaves have long been used as a remedy for snake bites. The Mexicans and Indians speak of the remedy as Huaco. This succulent prefers a shady loam and may be grown successfully under glass in northern latitudes.

The huaco has a stout short-branching caudex, closely covered with sheathing leaves. The leaves, several to many, are mainly in a basal rosette, curved and spreading, two to eight inches long. The blades are linear-lanceolate, attenuate, sessile and clasping, channeled, rounded beneath, concave above, irregularly callous-denticulate, irregularly spotted, bright-green with darker spots, shining. The flowering stem is scape-like, erect, two to three feet tall, glaucous, terete, very stiff, bearing several remote, lanceolate or linear-lanceolate scales (leaves) with partly clasping bases, diminutives of the basal leaves, but erect, inconspicuously toothed or entire, glaucous like the stem. The raceme is terminal, spike-like, (really a reduced panicle, for there are often bractlets at the base of the flower). The rachis is zigzag, glaucous, nearly naked. The bracts are broadly lanceolate or ovate-lanceolate, acuminate, scarious-margined. The hypanthium is about an inch and a quarter long, the free part much longer and paler-green than that covering the ovary, somewhat trumpet-shaped, finely ridged, more or less glaucous. The three sepals are elliptic to linear-elliptic, one-half to three-quarters of an inch long, recurved, obtuse, with a green midrib which is prominent on the back, and also with several lateral parallel ridges, green and also purplish tinged within and without. The six stamens are exserted, erect or slightly spreading within. The anthers are narrowly linear, brown or greenish-brown without, curved. The ovary is ellipsoid, three-celled. The style is slenderly clavate, exserted at the tip, white or somewhat greenish near the base. The stigma is three-lobed, the lobes ovate, spreading or recurved, sometimes notched. The capsule is oval or globose-oval, three-quarters of an inch to an inch long, slightly lobed. The seeds are nearly flat.

JOHN K. SMALL.
ROBERT RUNYON.

EXPLANATION OF PLATE. Fig. 1.—The flowering portion of the inflorescence. Fig. 2.—Two of the perianth divisions and their adnate stamens. Fig. 3.—The gynoecium. Fig. 4.—A mature capsule. Fig. 5.—A leaf.



LYCIUM HALIMIFOLIUM

(Plate 602)

LYCIUM HALIMIFOLIUM

Matrimony Vine

Southern and Central Europe, Northern Africa, Western Asia.

Family SOLANACEAE POTATO Family

Lycium halimifolium Miller, Gard. Dict. ed. 8, no. 6. 1768.
Lycium barbarum var. *vulgare* Ait. Hortus Kewensis, 1: 257. 1789.
Lycium turbinatum Veillard, in Duhamel, traité des arbres etc., ed. 2. 1: 119, pl. 31. 1802.
Lycium vulgare Dunal, in DC. Prodromus, 13[1]: 509. 1852.
Lycium flaccidum K. Koch, Dendrologie, 2: 347. 1872.
Lycium barbarum Hort. et Aut. plur. nec. L.

The matrimony vine, as this shrub is most commonly called in America, has its original home most likely in the Mediterranean region, though for a long time it was supposed to be of Asiatic origin. It has now spread far and wide over most of temperate Europe and occurs also in western Asia and northern Africa. When and by whom it was introduced to America is not known, but it now may frequently be found naturalized, especially in the east.

The name "matrimony vine" seems to be applied to it only in America, and the only explanation for this name which could be found in literature is offered by William Prince in his "Treatise on fruit and ornamental trees and plants, cultivated at the Linnean Botanic Garden, Flushing, Long Island, N. Y.," dated 1820. There Prince says on page 37: "Matrimony Vine, so called on account of its delicate flowers being produced in pairs." Unfortunately, the flowers of *L. halimifolium* are not produced in pairs but in groups of one to four. However, since matrimony is likely to result eventually in a group of one to four, we may still abide by this explanation.

In England this shrub is most commonly known under the name of "Boxthorn" or also as "Bastard Jasmine." The French call it "Jasminoide" or "Lyciet"; and the Germans "Bocksdorn" or "Teufelszwirn." The latter name, which translated means "devil's twine," is supposed to refer to the long, slender twigs which are so tough that even the devil may be tied with them securely.

In Europe *L. halimifolium* may quite frequently be found planted as an untrimmed hedge, especially along the seacoast, since it thrives particularly well on light, sandy soil, but, since the matrimony vine spreads from underground runners, no other plant except, perhaps, grass will succeed in the immediate vicinity of such a hedge. Also as a porch climber or trained up on the walls of houses the matri-

mony vine is frequently planted. But for this purpose its Chinese cousin, *L. chinense,* is much superior, since it climbs up higher and faster, has larger foliage and larger, much showier berries. Since both Lyciums support their twigs in climbing only by means of their thorns, a trellis has to be provided for them and the branches have to be tied up occasionally, if they are to cover a wall. Their berries are not edible.

The lilac-colored flowers contain at their base a sweet drop of nectar which children like to suck. The dark violet lines on the mouth of the corolla are explained in folk-lore as marks which show the bees the way to the nectar. The anthers and the style are usually at the same height, and self-fertilization seems to be frequent with the Lyciums. Some observers report that in the flowers with long styles the filaments gradually lengthen until the anthers touch the style, so that also in this case self-fertilization results, if cross-fertilization has not taken place before.

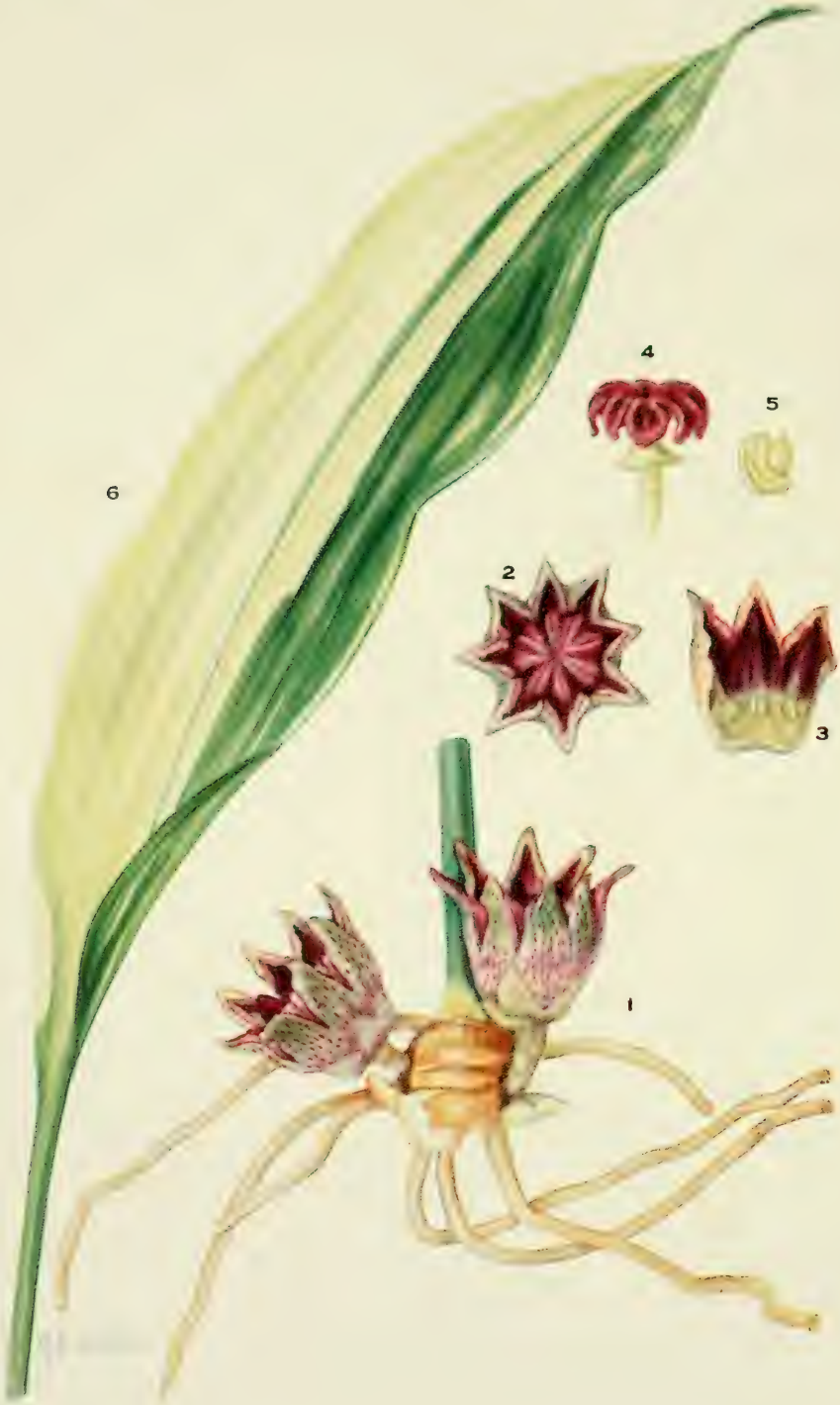
Propagation is from suckers or cuttings or seeds; but seeds usually lie dormant for one year before they germinate.

The Bittersweet, *Solanum Dulcamara,* which superficially bears a rather strong resemblance to the matrimony vine and is frequently confused with it, may be easily distinguished by its flowers, in which the anthers are not distinct, as with the Lyciums, but converge cylindically around the stigma.

Lycium halimifolium is an upright shrub with long, thin, slightly angular, grayish-brown, arching or recurving branches. It will reach a height of six to nine feet if standing free. Trained up on a wall it will climb much higher. Its leaves are alternate, short-petioled or almost sessile, entire, oblong-lanceolate, acuminate or obtusish, three-quarters to two and one-half inches long, grayish-green, and somewhat thickish. They are largest at the base of the branches and smaller and narrower towards the tip of the branches. The thorns are few and small in the axils of the leaves, usually only on the lower part of the branches. Farther up, the thorns are usually replaced by fascicles of small leaves which towards the tips of the branches are replaced by flowers. The flowers are borne on the current year's growth in clusters of one to four, and are axillary on the tips of the branches. They are puplish-lilac, but change to tan-colored after the first day. The corolla is funnel-shaped, with five obtuse, spreading lobes, which are about as long as the tube. The five stamens are exserted. The calyx is campanulate, irregularly one- to three- or five-lobed, glabrous. The berry is two-celled, many-seeded, ovoid, one to two cm. long, orange-red or scarlet, ripening from August to October.

HENRY TEUSCHER.

EXPLANATION OF PLATE. Fig. 1.—A flowering branch. Fig. 2.—A two-day-old flower, showing the change of color. Fig. 3.—The corolla laid open × 2. Fig. 4.—Calyx and gynoecium × 2. Fig. 5.—Fruiting spray.



ASPIDISTRA ELATIOR VARIEGATA

(Plate 603)

ASPIDISTRA ELATIOR VARIEGATA

Aspidistra

Native of Southern China and Japan

Family CONVALLARIACEAE LILY-OF-THE-VALLEY Family

Aspidistra elatior Blume, Hoev. et De Vriese, Tijdsch 1: 76. pl. 4. 1834.
Plectogyne variegata Link, Otto et Dietr. Allg. Gartenz. 265. 1834.
Aspidistra variegata Regel, Flora 33: 354. 1850.
Aspidistra punctata var. *albo-maculata* Hook. Bot. Mag. pl. 5386. 1863.
?*Aspidistra punctata* Carrière, Rev. Hort. 36 fig. 4–8. 1875.
Aspidistra lurida Hort., not Ker.
Aspidistra elatior var. *variegata* Hort.

For the housewife or apartment-dweller who desires to have greenery in the home and needs a plant that will stand the vicissitudes of rough usage, heat, cold, drought, dust, gas-laden air, and poor light, the Aspidistra is the answer to all prayers, for it is a plant that thrives upon neglect, even in a dark corner or on a stairway, asks only an occasional watering, and that of none too pure or clean water, and yet continues to send up its normal quota of leaves and grow serenely on. One can ask no more of a house plant. Cases are known of this plant growing in the alcohol-laden air of the old saloon or in more modern speakeasies and beer gardens, receiving its only moisture in the form of discarded beer or dishwater, and yet keeping up a perfectly normal growth. Of course, when well taken care of it makes a beautiful, dense plant with large, glossy dark-green leaves, which are often used by florists in bouquet arrangements with Amaryllis and similar large flowers. The variety *variegata,* which has alternating stripes of green and white, is the most desirable, but it must be grown in poor soil or the variegation disappears.

Attempting to sort out and assign the correct name to any one species of *Aspidistra* is apt to start in confusion, because of the diagrammatic character of some of the early plates, and because in some cases the descriptions are at variance with their accompanying plates. Considering both plate and description, our present subject seems best relegated to *A. elatior* Blume, as both the original illustration and description of that species fits it, while that of *A. lurida,* the name under which it is most frequently cultivated, seems to apply to a somewhat different plant. The plate and description of *A. punctata* var. *albo-maculata,* not considering a slight difference in the color of the flowers, is also very obviously our plant;

however, both the plate and description of *A. punctata* Lindl., though at variance with each other, seem to apply to a different plant.

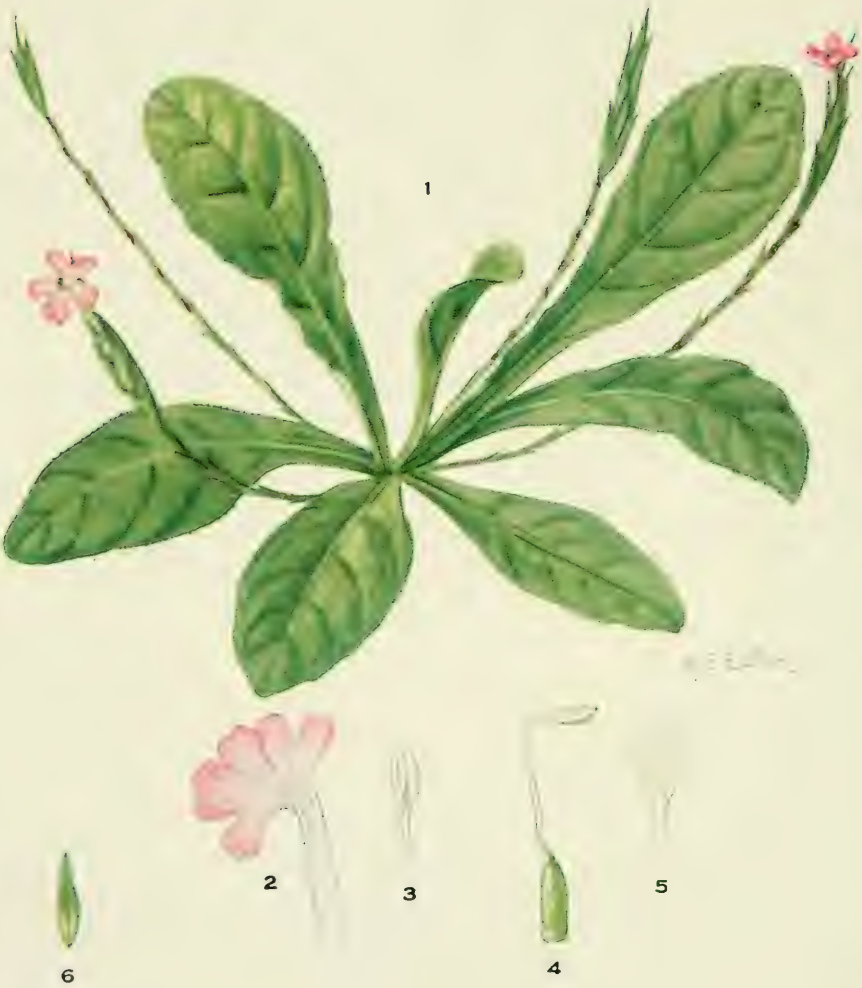
Aspidistra is considered an abnormal genus, since its flowers usually have the parts in multiples of four, whereas normal monocotyledonous plants have their parts in multiples of three.

The name *Aspidistra* is derived from the Greek for a small round shield, supposedly referring to the form of the stigma.

The Aspidistra is a glabrous, acaulescent plant with stout, creeping, branched rhizomes, from which the evergreen leaves arise. The leaves, which are dark-green, or green with white stripes, are shining, and somewhat leathery, twelve to thirty inches long, the very broadly ovate-elliptic blades tapering gradually to the channelled petiole. The flowers, about one inch in diameter, are borne singly at the surface of the ground on short peduncles which arise from the rhizome. The peduncles have a few scarious bracts, some subtending the flower, some lower down. The perianth is cupulate or short-campanulate, thick and fleshy; without, brownish-pink on the tube portion, becoming suffused with green on the lobes, all spotted with brown-purple; within, the tube below the stigma is greenish-yellow, the part above the stigma lurid brown-purple. The perianth-lobes are erect-spreading, triangular-ovate, as long as the tube; the margin induplicate, with inflexed sinuses alternating with the lobes of the stigma. The stamens are eight in number, dorsi-fixed on short fleshy filaments, opposite the perianth-lobes and below the stigmatic disk. The stigma is peltate, large and fleshy, obscurely four-lobed, each lobe appearing again two-lobed by an inflexion of the margin, the margins of the then apparent eight lobes again folded, so that the disk appears sixteen-radial, with the radii in pairs. The style is short and thick. The ovary is four-celled, each cell two-ovuled. The fruit is an indehiscent, one-seeded berry.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—Base of a flowering plant, showing attachment of flowers. Fig. 2.—A flower from above. Fig. 3.—A portion of the perianth showing position of stamens. Fig. 4.—The gynoecium. Fig. 5.—A stamen × 3. Fig. 6.—A leaf.



TUBIFLORA ACUMINATA

(Plate 604)

TUBIFLORA ACUMINATA

Armored-stem

Native of the Rio Grande Delta and lower Texas Coast

Family ACANTHACEAE ACANTHUS Family

Tubiflora acuminata Small, Fl. SE. U.S. 1082, 1903.

Different morphologic characters in a plant suggest different generic names. The long and slender corolla-tube in the case of the present plant and its congeners suggested the Latin generic name *Tubiflora* to Johann Friederich Gmelin, while the imbricate long-acuminate bracts encasing the flower-stem and inflorescence branches appealed to André Michaux, not aware of Gmelin's name, to select the generic name *Elytraria* from the Greek word meaning "case" or "cover."

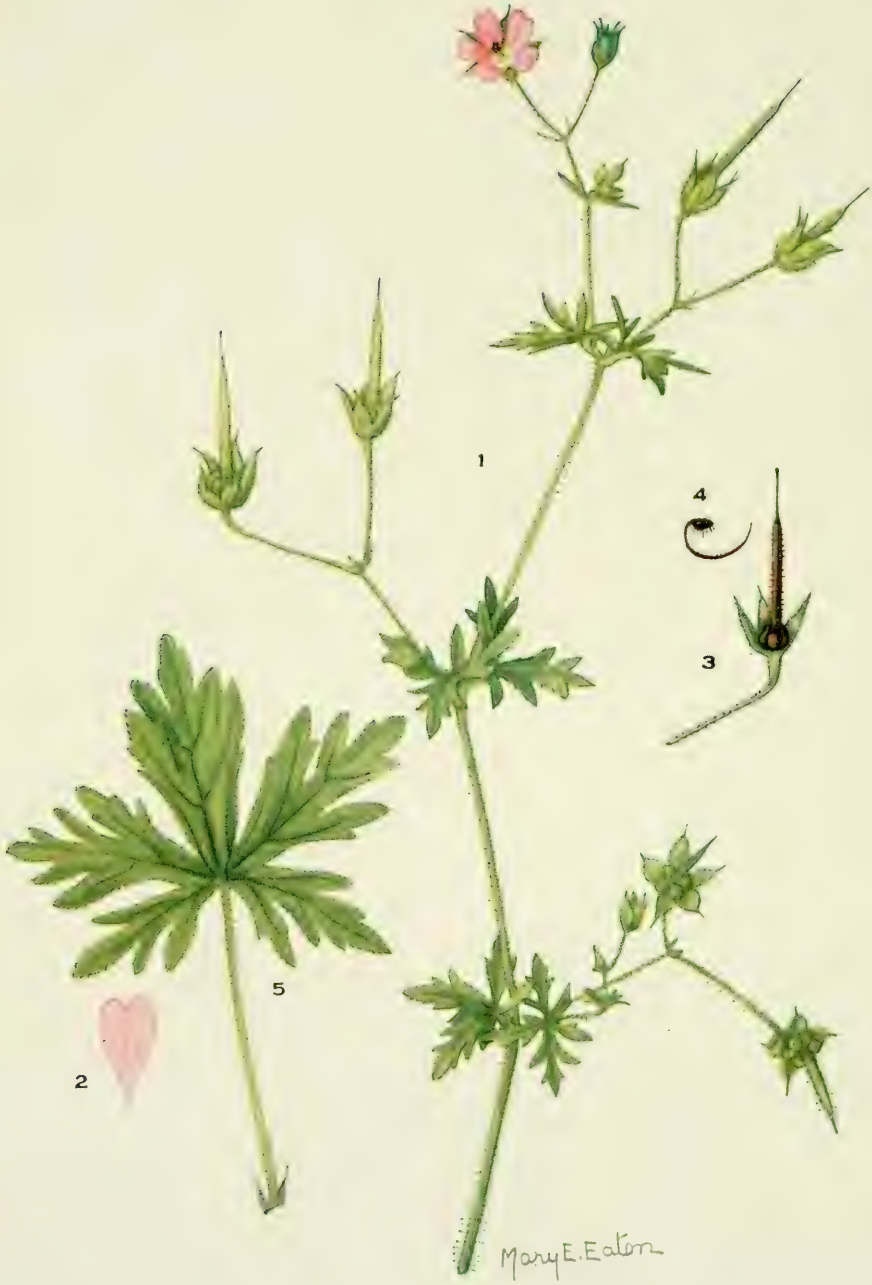
This is a plant of the open spaces—near the edges of thickets, margins of trails, roadsides, banks of old resacas. It is able, even in these exposed places, to weather long dry spells, for it has a large root-system, its leaves lie flat on the ground thus helping to protect the roots, and its stems are slender and wiry. The plants flower in the summer. Although the plants do not grow in the close association of other plants, they frequently are in close enough proximity to shrubbery to derive some protection from the damaging elements. In the thickets near-by the habitat of this *Tubiflora* are to be found the baby-pepper (*Rivina humilis*), virgin's-bower (*Clematis Drummondii*), skunkbush (*Petiveria alliacea*), and devil's-claws (*Pisonia aculeata*). Plants have grown very well under glass at The New York Botanical Garden, raised from seed sent from Texas by Robert Runyon. There is an associated species in southern Texas and Mexico. There are two species of *Tubiflora* in Florida (*T. carolinensis* and *T. angustifolia*), the latter species often having the same associates in southern Florida, except for the *Clematis* cited above.

This armored-stem is an acaulescent perennial, with numerous long slender roots. The leaves are in a rosette, two to four inches long, and prostrate (or the young plants erect or ascending). The blades are spatulate, obtuse, undulate, ciliate, sparingly pubescent on the veins, especially beneath, deep-green above, pale beneath, with the veins somewhat impressed above and prominent beneath, with the midrib very prominent. The flower-stalks are axillary,

assurgent, about as long as the leaves, slender and wiry, closely invested with imbricate, acuminate, pale-margined, ciliate scales. The spikes are a half inch to an inch long. The bracts are similar to the scales of the flower stalk but larger and more ciliate. The calyx is about six mm. long, with variously shaped lobes, three of them narrowly lanceolate with a green midrib, scarious margins, and a ciliate tip; one narrowly linear, ciliate above the middle, with two very slender tips. The corolla is pinkish-lavender, salverform; tube cylindric or nearly so, about a quarter of an inch long; limb about a quarter of an inch wide, upper lip with two broadly cuneate, slightly notched lobes; lower lip three-loped, the two lateral lobes somewhat resembling the lobes of the upper lip, but more deeply notched, the middle lobe much broader than the lateral ones, deeply notched, thus two-lobed. The stamens are two, included. The filaments are adnate to the corolla-tube, except for a somewhat flattened tip which is mostly shorter than the anther. The anthers are minute, the sacs slightly unequally borne on the connective. The ovary is conic, green. The style is filiform, several times longer than the ovary, white. The stigma is expanded, the upper lip spoon-like, fringed, the lower lip minute, at the base of the upper lip. The capsule is stout-subulate, scarcely a quarter of an inch long, with a conic tip.

JOHN K. SMALL.

EXPLANATION OF PLATE. Fig. 1.—A flowering plant. Fig. 2.—The corolla laid open × 2. Fig. 3.—A stamen × 6. Fig. 4.—The gynoecium × 6. Fig. 5.—The stigma × 9. Fig. 6.—A capsule × 2.



GERANIUM BICKNELLII

(Plate 605)

GERANIUM BICKNELLII

Bicknell's Geranium

Native of temperate North America

Family GERANIACEAE GERANIUM Family

Geranium Bicknellii Britton, Bull. Torr. Club 24: 92. 1897.

Most of us are accustomed to thinking of geraniums as the showy-flowered pot-plants so commonly grown for house or bedding decoration. These showy-flowered plants, however, belong to the genus *Pelargonium,* of tropical regions, while members of the true genus *Geranium* have much less showy, often insignificant flowers, and inhabit woodland areas or are waste-place and roadside weeds and grow in temperate regions. In the eastern United States, the only large-flowered species is the wild-geranium or cranesbill so common in our woodland areas in spring.

Our present subject is one of the small-flowered weedy species. It is interesting as being the northern equivalent of *G. carolinianum,* a species of more southerly distribution, although their ranges overlap. Until *G. Bicknellii* was described as a distinct species in 1897 it was classed as a variety of, and often confused with *G. carolinianum,* from which it differs in the angulate outline of its more sharply dissected leaves, its more sparse inflorescence with only two flowers to the peduncle, its deeper-colored flowers with longer petals, and the longer-beaked fruit, as well as its usually taller and more slender growth. It inhabits open woodlands, especially those recently burned, roadsides, fields and waste-places from Newfoundland to southern New York and west to Utah and British Columbia.

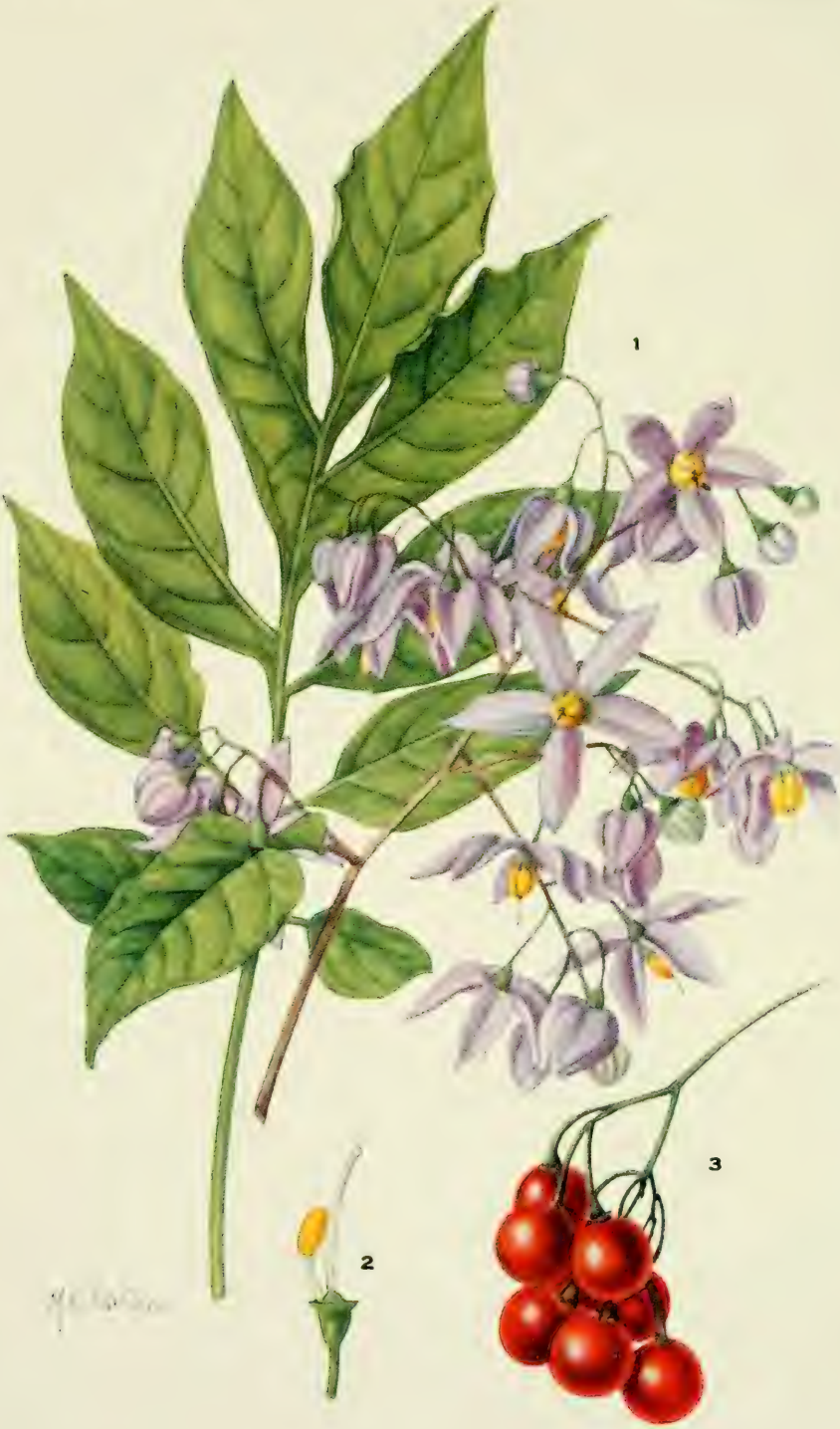
The name *Geranium* is derived from the greek word for a crane, in allusion to the long beak of the fruit, hence the common name of cranesbill.

Bicknell's geranium is an annual or biennial, pubescent, diffusely-branched herb,from a few inches to two feet in height. The slender-petioled leaves are one to two inches in diameter, somewhat angulate in outline, the primary segments five to seven, or three in the uppermost ones. The inflorescence is loose, the slender peduncles usually two-flowered. The sepals are lanceolate, awn-pointed, one-fourth to three-eighths inch long. The petals are obcordate, light rose with a few darker veins; slightly longer than the sepals. The filaments are persistent, longer than the pubescent carpels of the ovary. The main body of the style-column of the

mature fruit is about three-fourths of an inch long, tipped by a beak about one-fourth inch long. The seeds are black-brown, finely reticulated.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—A flowering branch. Fig. 2.—A petal × 2. Fig. 3.—The mature fruit. Fig. 4.—A single carpel. Fig. 5.—A lower leaf.



SOLANUM SEAFORTHIANUM

(Plate 606)

SOLANUM SEAFORTHIANUM

Seaforth's Nightshade

Native of Brazil

Family SOLANACEAE POTATO Family

Solanum Seaforthianum Andr. Bot. Rep. pl. 504. 1807.
Solanum venustum Kunth, Ind. Sem. Hort. Berol. 10. 1845.

Various genera that have inconspicuous herbaceous representatives in temperate regions often have large, elegant and showy species in the tropics. The complex genus *Solanum* well illustrates such a group. It also appears in many important rôles, for example, as a food (tuber, herbage, fruit), a poison, (solanine), a drug, (Dulcamara), a barrier (Bahama-nightshade), and an ornamental (various species, especially climbers).

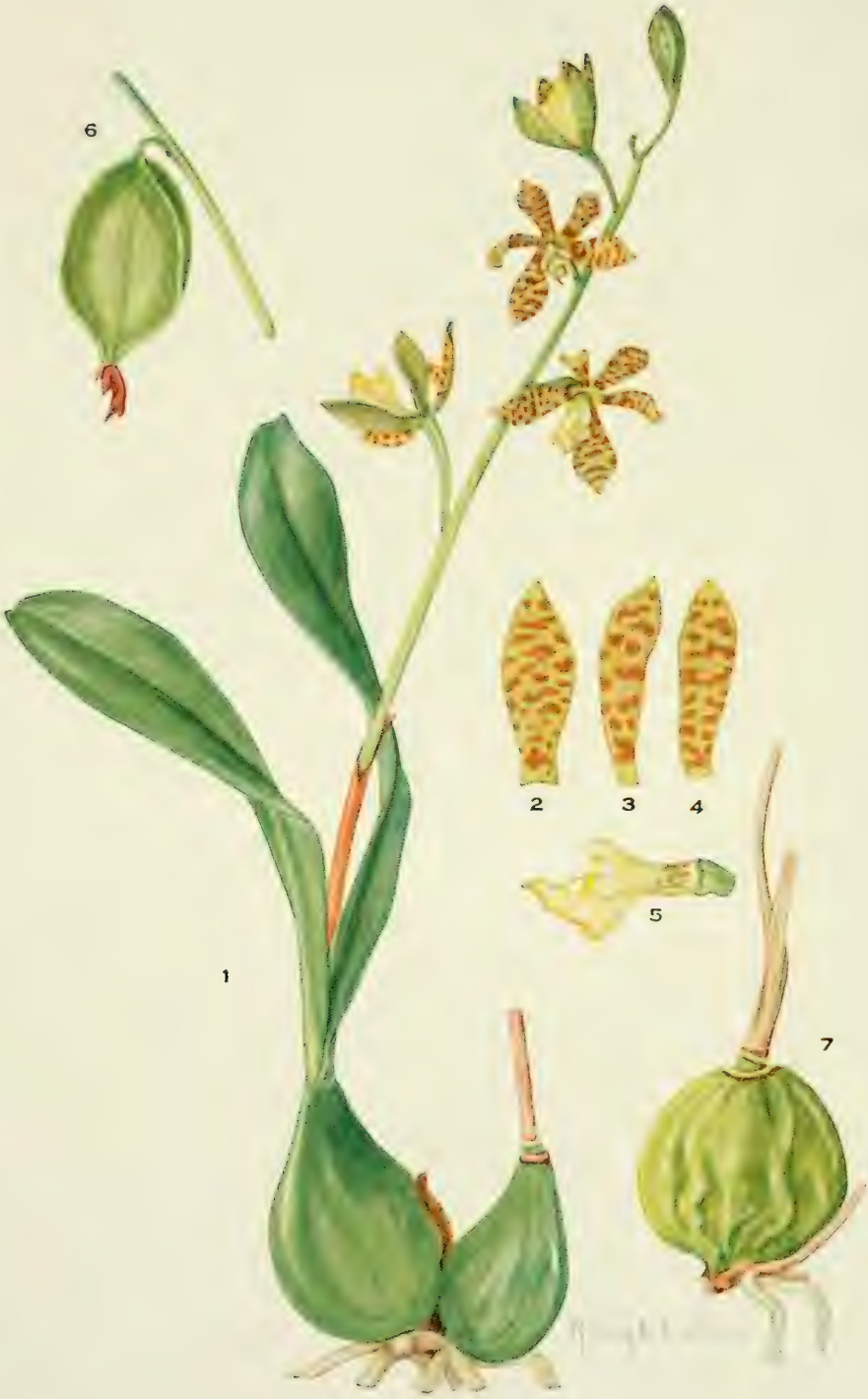
To one accustomed to seeing only the weedy common nightshade (*Solanum nigrum*) at the North, the splendor of some of the tropical species can scarcely be imagined. To be appreciated the plants must be seen in flower or flower and fruit within the zone where the temperature is congenial to their best growth. The showy-flowered species are also showy in fruit, for of these the berries are usually red or yellow, and often in great quantities. The present species first came into prominence in England when it was published and illustrated, in color, in 1807. The author of the species remarked that, "Throughout this extended genus, there are but few which possess attractions equal to this new and undescribed species of *Solanum.*" Similar statements were published at intervals as the plant was illustrated from time to time. A tropical American plant—the nativity of the present one was uncertain and was recorded as either West Indian or South American, but Brazil seems to be its native country—naturally grew at a disadvantage in England, but the horticulturists were very enthusiastic about it. Had the British writers seen the plant in its native haunts or in contiguous regions they would have been even more enthusiastic. It is exceedingly showy and accommodating in its manner of growth. It makes a ground-cover, besides covering fences and arbors, may be trained about porches, and it climbs trees. In Florida, where it is widely grown, it has begun to escape from cultivation and betakes itself to edges of hammocks. It flowers throughout the year, hence the flower-clusters are often augmented

by the clusters of scarlet or red fruits. The foliage too is abundant and of a good green. This vine has made itself at home in Central America, as well as in Florida, as a naturalized plant, a fact which testifies to its wide-spread popularity as a cultivated exotic.

The Seaforth nightshade is a climbing or sprawling, unarmed vine with the stem woody below, herbaceous above, becoming twenty feet long or more, branching, glabrous. The leaves are numerous and various, 3–9-lobed, 3–9-pinnate, or entire on the branches, two and a half to eight inches long, usually acuminate, sometimes acute, glabrous or minutely pubescent especially on the rachis and veins, slender-petioled. The flowers are borne in drooping axillary peduncled clusters, each terminating a slender-clavate pedicel. The calyx is broadly turbinate and pentagonally five-angled or shallowly five-lobed, glabrous, somewhat succulent. The corolla is "light-purple, lilac, or white," somewhat less than an inch broad, often campanulate, or rotate-campanulate, deeply five-lobed. The lobes are longer than the tube, obtuse, ciliolate, each with a midrib and submarginal veins and veinlets between. The five unequal stamens are erect, with clavate or subulate filaments and oblong anthers, each of which opens by a subapical introrse chink. The ovary is ovoid, adnate to the calyx at the base, glabrous. The style is slender, filiform or subulate-filiform, exceeding the stamens. The stigma is slightly depressed. The berries are globose, ellipsoid or ovoid, a quarter to a half inch long, red, glabrous, usually shining.

JOHN K. SMALL.

EXPLANATION OF PLATE. Fig. 1.—The inflorescence and a leaf. Fig. 2.—The gynoecium and a stamen × 2. Fig. 3.—A spray of ripe fruit.



EPICLADIUM BOOTHIANUM

(Plate 607)

EPICLADIUM BOOTHIANUM

Dollar-orchid

Native of the West Indies and Florida

Family ORCHIDACEAE ORCHID Family

Epidendrum Boothianum Lindl. Bot. Reg. 24: Misc. 5. 1838.
Epidendrum erythronoides Small, Fl. SE. U. S. 328. 1903.
Epicladium Boothianum Small, Fl. Miami 56. 1913.

The orchids are almost universal in their distribution; likewise their habitats are almost universal. They appear as terrestials, epiphytes, epipetrics, and aquatics. About twenty-five percent of our native orchids in the United States are epiphytic. Three decades ago the known percentage was much less, for it was in the more inaccessible parts of southern Florida that comparatively recent exploration brought many additional epiphytes—orchids, bromeliads, and ferns—to light. The percentage of epiphytes is really higher than given above, for there are about a dozen humus orchids which should be classed as epiphytes.

The subject of this note was among these more recent additions to our flora. The history of this orchid began early in American botanical activities. Catesby in 1731, in figuring and describing (without naming) this plant, records that "These plants grow on rocks and to the trunks of trees in many of the Bahama Islands." In 1838 Lindley records: "I have had an account of this pretty species of Epidendrum in my possession for nearly two years, without being able to satisfy myself about it being certainly new, so many are the species of this extensive genus;" and further: "This curious plant is a native of Havannah from whence it was brought . . . in the spring of 1835."

The next episode in the history of this orchid occurred on this side of the Gulf Stream, in Florida, late in the nineteenth century, when the plant was found on small trees on Key Largo. In 1903 it was discovered on the mainland on the large live-oaks in the hammocks midway between Miami and Cape Sable. The fourth episode was its collection in Haiti in 1929.

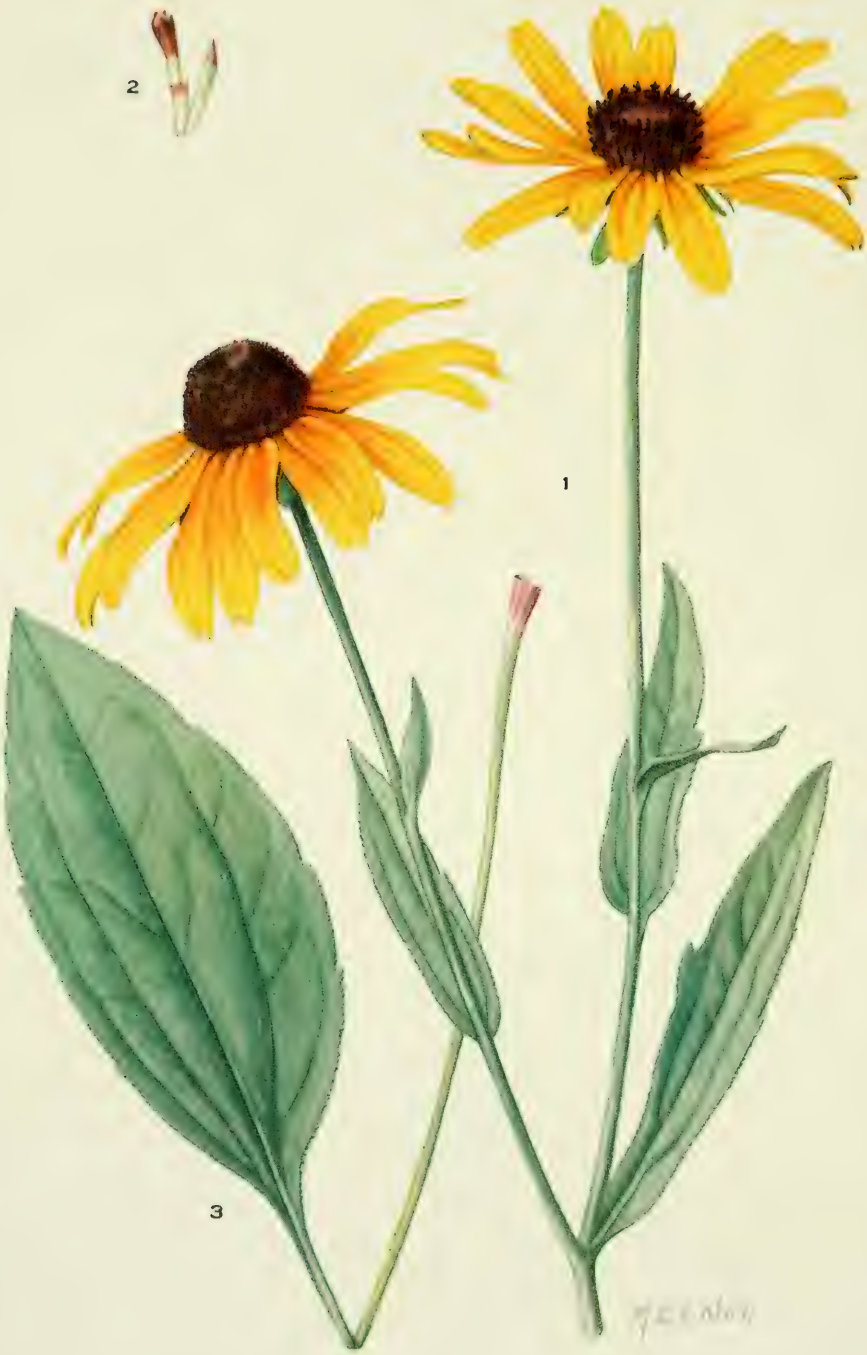
In the continental United States the center of abundance of this orchid seems to be the Cape Sable region. In Florida, within the limits of its temperature and moisture preferences, it is a prolific grower. In the high-pineland hammocks it prefers the large live-

oaks (*Quercus virginiana*) where the colonies sit on the large outstretched branches or in the crotches, often growing intermixed with other epiphytes, both ferns and flowering plants. On occasions palm-trunks may be added to the list of hosts. In the Cape Sable region when large trees are absent, and where continuous trade winds and periodic hurricanes sweep the plains, this orchid grows on slender tree trunks and branches and on shrubs. It is a rapid grower, and forms enduring vegetative tissues. The series of spent pseudobulbs accumulate in large patches or long strings which persist for many years as the new growths continue to spread the colony. Although the plant flowers mainly in the spring, flower-stalks are always in evidence; if not bearing the mottled flowers on stiff erect stalks, dangling fruits are there in their stead. This orchid grows well under glass in northern latitudes.

The dollar-orchid is a rather small epiphyte, propagating by seeds or by successive series of pseudobulbs. These plants are anchored to the bark of trees by strong roots. The pseudobulbs are flat, typically suborbicular, or sometimes of an ovate type, three-quarters of an inch to an inch and a quarter in diameter, bright-green, often shining, subtended by broad partly clasping subscarious scales. The leaves are spatulate to oblong-oblanceolate, two to six inches long, flat or nearly so, obtuse or with a twisted acute tip. The flower-stalk is erect, simple, subtended by a pair of scale-like bracts, the outer one elongate, obliquely opened at the top, the inner much narrower and shorter than the outer. The flowers are few, mostly two to nine in the raceme, the pedicels subtended by broad minute bracts. The flowers are spreading on the slender pedicels. The lateral sepals are oblong or elliptic-oblanceolate, a half inch long or nearly so, yellow, more or less mottled with brown within, sometimes with the brown dominant. The petals are spatulate, about as long as the sepals, and mottled like them. The lip is yellowish, often pale yellow, rhombic, a half inch long or nearly so, partly clasping the shorter column at the base, the lateral lobes spreading, the terminal lobe obtuse. The capsule is ellipsoid to oval, an inch to an inch and a quarter long, drooping, three-winged, shining, usually bearing the persistent perianth at the tip.

JOHN K. SMALL.

EXPLANATION OF PLATE. Fig. 1.—A flowering plant. Fig. 2.—An upper sepal × 2. Fig. 3.—A lateral petal × 2. Fig. 4.—A lateral sepal × 2. Fig. 5.—The column and lip × 2. Fig. 6.—The mature fruit. Fig. 7.—An old pseudobulb.



RUDBECKIA SPECIOSA

(Plate 608)

RUDBECKIA SPECIOSA

Showy Cone-flower

Native of the Mississippi Valley Region

Family CARDUACEAE THISTLE Family

Rudbeckia speciosa Wenderoth, Flora 12. 1 Erg. 30. 1829.

In the great family of composites are a number of genera of plants confined to North America as their native habitat. Since such a great majority of these plants have their flowers in various shades of yellow and purple, and the plants grow in such large quantities, our American autumn, before leaf coloration sets in, has its predominating color scheme in yellows and purples, as this it the principal flowering season of these composites.

One of these is the genus *Rudbeckia,* whose dark-brown-centered heads of bloom make such handsome fields of color and are individually so attractive as to be one of the most popular of wild flowers.

Most of the forty species are rather similar in appearance, the dark-centered ones being called black-eyed Susan, or all of them called cone-flower, the latter name referring to the conical form which the center of the head assumes during the flowering period.

Our present subject is one of the more attractive of the large-headed species, rivaling the much more common *R. hirta* in popularity. It grows in damp woods and low grounds from Pennsylvania west to Missouri and south to Georgia and Alabama.

The showy cone-flower is a rough-hairy perennial herb up to three and one-half feet tall. The upright branches of the stem are naked above, terminated by large single heads of flowers. The basal leaf-blades are elliptic-ovate, irregularly coarse-toothed, long-petioled, acute; the cauline leaf-blades are lanceolate or elliptic-lanceolate, acute at the apex, tapering below to broadly winged petioles. Both basal and cauline leaves are from two and one-half to five inches long, the cauline becoming reduced to one inch on the upper parts of the stem. The spreading bracts of the involucre are linear to linear-lanceolate, one-fourth to one-half inch long. The ray-flowers are one inch to an inch and a quarter long, bright-yellow, orange-yellow, or more frequently yellow towards the tip, becoming orange on the basal half. The disk is dark-brownish-purple, about one-half inch in diameter. The chaff of the receptacle is dark-brown-purple, acutish and smooth. The disk-florets are brown-purple. The achene is four-angled, smooth, flat at the top, the pappus a short, crown-like border.

EDWARD J. ALEXANDER.

EXPLANATION OF PLATE. Fig. 1.—Portion of a flowering plant. Fig. 2.—A disk-floret and its chaff × 2. Fig. 3.—A basal leaf.

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Bold-face type is used for the Latin names of plants illustrated; SMALL CAPITALS for Latin names of families illustrated and for the names of the authors of the text; *italics* for other Latin names, including synonyms.