

The NATIONAL
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THE NATIONAL HORTICULTURAL MAGAZINE

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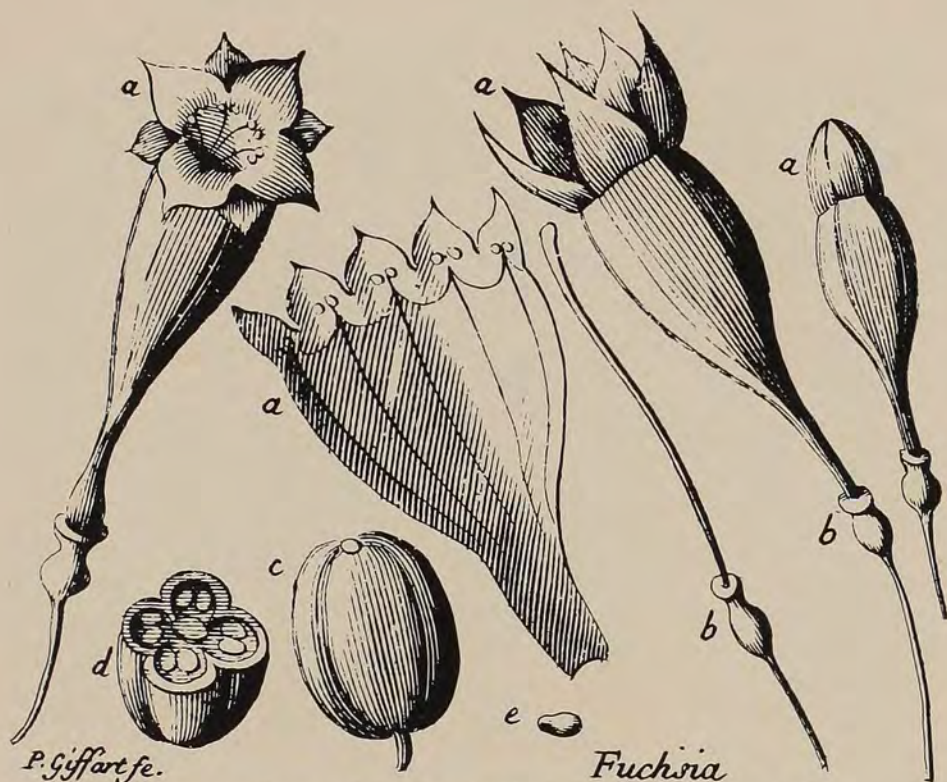
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Plumier's figure of *Fuchsia triphylla flore coccinea*—1703

Fuchsias

By E. O. ESSIG¹

Fuchsias are evergreen perennial ornamentals derived from Mexico, Central and South America, and New Zealand. The species, *Fuchsia triphylla* Plumier was first discovered in 1703, and the first introduction, *F. coccinea* Aiton, was made into England in 1788. Others were discovered and sent to Europe for propagation and hybridization. So popular became these beautiful and showy plants that they received much attention, particularly in England and France where many new hybrids were created in rapid succession and a few crosses were made in Germany. From the native forms, which were largely

red and purple or entirely red or crimson and mostly single, all of the various colors and forms have been obtained. The first fuchsia with white sepals, the diminutive single, Venus Victrix was created by a Mr. Gulliver, gardener to Rev. S. Marriott of Horsemonden, Kent, in 1882 and introduced by T. Cripps of Tunbridge Wells, England, in May, 1842, at one guinea each. H. Cannell remarked that: "This variety must have come by a freak of nature." The first variety with a white corolla was produced by W. H. Storey of Newton-Abbot, Devon, England, about 1853. The first hybrid with a striped corolla, *Striata perfecta*, was introduced by Edward

¹President American Fuchsia Society.

Banks of Deal, England in 1868. These and others which soon followed, opened the way for many new creations. In 1844, Felix Porcher in his "History and Culture of the Fuchsia" (in French) listed 300 commercial varieties. In 1848 there were 500 varieties in commerce. This year marks the peak of the popularity of fuchsias in Europe, but hybridization continued and there were no less than 700 varieties by 1890 and about 1000 varieties have been recorded to date, although there are only about 180 varieties and species available in commerce at this writing. And with the exception of the *triphylla* hybrids produced in Germany in 1900-1906, practically all of these were created over fifty years ago.

In North America and in England fuchsias are still popular with many flower lovers, while in certain parts of California, particularly along the coast from San Diego to San Francisco Bay they are becoming very popular. In this latter region nearly all of the available commercial varieties are grown with marked success out-of-doors the year around. The tender *triphylla* hybrids and such species as *corymbiflora* and *boliviana* may freeze to the ground occasionally, but new shoots appear from the roots and flower abundantly throughout the summer and autumn. In the writer's garden are growing nearly 200 named varieties and species, but many of these are duplicates bearing incorrect names. The interest in fuchsias in California resulted in the organization of the American Fuchsia Society in 1929. Among the aims of this organization is the dissemination of knowledge concerning fuchsias, the introduction and creation of desirable and new varieties, and the establishment of a reliable nomencla-

ture for those now grown in this country.

These random notes presented with the illustrations are in accord with these aims.

The tree fuchsia, *Fuchsia arborescens* (*F. syringaeiflora* Sims), as the name implies, is a large shrub or tree-like plant attaining a height of 16 to 18 feet in a few years. How much larger it may grow in favorable localities in California remains to be seen. The finest specimens I have seen are grown by Hazard and Hazard, fuchsia specialists at Pacific Grove, California, although it is equally as good in the San Francisco Bay region and southward along the coast. They bloom from January to March and are lovely lilac-like plants, fairly covered with large racemes of small rose-colored flowers which are borne at the ends of the branches. When not in flower it has value in the garden because of its clean, bright green foliage and graceful habit of growth. This species is a native of Mexico and was introduced into England in 1823.

Fuchsia boliviana Roezel, The Bolivian Fuchsia, was discovered in Bolivia in 1873. In this region it is a rampant, vigorous grower and sends up long shoots which may attain a height of 8 or 10 feet in a single year. The leaves are very large and downy on both surfaces. The stems stand erect until borne down by the large tresses of flowers and fruits which arise from small shoots appearing in the leaf axils. The flower petioles are short, slightly more than $\frac{1}{2}$ inch long, whereas the tube is from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long. There is a slight enlargement of the tube at the point of attachment and it gradually increases in diameter, being somewhat rigid longitudinally. The color of the tube and the narrow, sharply-pointed, horizontal sepals is pale rose red. The small, somewhat ruffled petals are a



Wm. A. Matthews

F. arborescens



Wm. A. Matthews

Fuchsia boliviana

rich rose red. The stamens and pistils are of the same color, the anthers and the rather large globular stigma are white and rarely extend beyond the corolla. The fruits are smooth and lozenge-shaped. This spe-

cies is generally confused with *F. corymbiflora* but the tubes of the latter are supposed to be enlarged near the middle, and also attain a greater length. A group of seedlings of the supposed *F. corymbiflora* gave



Wm. A. Matthews

Fuchsia coccinea

much variation both in size and color of flowers and of the foliage so that it is not impossible for all these similar varieties to be nothing more than seedlings of a single species.

Although this species frequently survives the winters in this region without injury, it may occasionally freeze to the ground, but new shoots appear in the spring and soon pro-

duce large plants which bear blossoms from May to December.

Fuchsia coccinea Aiton. Single, red and purple bicolor similar to Coralina, but more vigorous and with smaller flowers, and brighter green foliage. The brilliant red, slender buds and equally slender flowers, borne in great profusion, hang like drops from the branches, producing a most attractive and unusual effect. The sepals hang downwardly and are held close to the very small, almost invisible, purple corolla. This species was the first fuchsia introduced into England, having been brought from Chile by Captain Firth in 1788 and placed in Kew Gardens. It was apparently subsequently lost to the trade and was rediscovered in a garden at Oxford in 1867. According to another story it was first put into commerce by a Mr. Lee of Hammersmith, who purchased a plant from the wife of a sailor in Wapping for ten guineas and a promise to propagate and replace it.

It is a comparatively new introduction into North America and is perfectly at home out-of-doors in the San Francisco Bay region. A plant in my garden, less than a year old, is five feet high and has a main stalk one inch in diameter. It is a continuous and profuse bloomer and has proved to be as satisfactory as most of the newer hybrids.

Fuchsia cordifolia Benth. Single, red and yellow bicolor. A distinct species originally collected by Hartweg in Mexico at an altitude of 10,000 feet and was introduced into England in 1840. The plant is quite hardy in this region and develops into a rather loose bush with leaves and flowers as illustrated. The stems, petioles and midribs of the leaves are reddish and the leaf surface is covered with very short fine tomentum. Some

of the leaves are distinctly heart-shaped. The slender pointed buds are dark red at the bases and green at the tips. The ovaries are green, flushed red and the tube, which is the most conspicuous part of the flower is a rather dull scarlet red; the sepals almost entirely green, the petals pale yellow and pinkish, and the stamens pale yellow. This species is likely to be confused with *Fuchsia fulgens* Moc. and Sesse, and *F. splendens* Zucc. It may be separated from the former by the much shorter and more robust tube, the much narrower sepals, and the yellow petals, and from the latter by the more hairy and less brilliant red and green tube and sepals and yellow petals. All except *F. cordifolia* have red or crimson petals.

Fuchsia corymbiflora var. *alba.*, is a beautiful half-albino of the true species. The foliage is paler in that it lacks the red stems and red leaf veins. The flowers are borne in smaller clusters which open in fewer numbers, but which are truly beautiful. The elongated and pointed buds are pale green, whitish and rose pink, while the long slender tubes are white with a pink blush; the sepals are pale pink on the outside and rich pink on the inside; and the small wholly exposed petals are scarlet red and quite showy. When the petals fall the tightly reflexed sepals display their fine pink color. According to Le Texnier, in *Le Fuchsia*, Paris, 1908, p. 20, this variety was discovered by the amateur Courcelles of Montigny in 1847. This species of fuchsia requires protection from frost in this region.

Fuchsia fulgens Moc. and Sesse (Mexico, 1837). Long-tubed single carmine-red, the sepals tipped yellowish-green. This hardy species does well under unusually dry conditions



Wm. A. Matthews

Fuchsia cordifolia

and neglect does not greatly impair its growth. It appears to grow equally well in full sun or almost complete shade and blooms continuously except during the coldest months of

December, January and February. The plant is a strong grower, the foliage is large, pale green, veined pale-reddish and glabrous. The tube is $1\frac{1}{2}$ to 2 inches long, the sepals $\frac{1}{2}$



Wm. A. Matthews

Fuchsia corymbiflora alba

inch long and the petals $\frac{3}{8}$ inch long. The white anthers extend just beyond the corolla and the green stigma $\frac{3}{8}$ inch beyond. In the buds the tips are enlarged and green. The young fruits

are cylindrical, and green marked with many minute light specks.

In published descriptions the roots are said to be bulbous or tuberous, the flowers 4 inches long and the



Wm. A. Matthews

Fuchsia fulgens

leaves 5 inches across all of which characteristics are lacking under our outdoor conditions. The large size of the flowers and foliage may be due to greenhouse culture.

The origin of our stock is probably England, but no definite records of the introductions are available.

Lycioides. Small-flowered single self. The fuchsia bearing this name

in California hardly fits the meager description of this supposed species in European literature, neither does it agree with any that I have so far noted in any published lists. The original stock was brought to the Golden Gate Park, San Francisco, from Santa Monica, California, by Eric Walther some years ago and has been distributed from that center. The plant is an unusually vigorous grower and appears to do well under almost any conditions. It very quickly produces a shrub from 8 to 10 feet high and continually bears a profusion of small red flowers $\frac{3}{4}$ inch long, with the tube and sepals $\frac{3}{8}$ inch long, and the corolla scarcely more than $\frac{1}{4}$ inch long and an equal diameter. The sepals are slightly reflexed. The color of the buds, tubes, and sepals is Tyrian red, the petals being the same color at the base changing to Rhodamine purple towards the outer margin. The foliage is small and very dark green, the leaves varying from $\frac{3}{4}$ to 1 inch long and somewhat cordate in shape. The stems are reddish. The accompanying illustration will give a better idea of the appearance of the flowering branches.

Fuchsia serratifolia, Ruiz et Pav. Single, pink and salmon bicolor. This extra fine species is one that we are sure is correctly named. It was introduced by seeds into England from the high, moist forests of Muna, Peru, in 1844 by William Lobb and flowered the next year. The plants are quite hardy and reach heights of from 4 to 6 feet in this region. During the past five years a plant near a pergola in my garden has shown no injury by frost and has bloomed profusely during the winter and spring months. The flowers are from two to three inches long, the ovaries green, the tubes waxy rose-pink at the bases gradually becoming paler

towards the middle of the rather small incurving sepals, the tips of which are bright green. The small petals which are not as long as the sepals, are brilliant salmon red. Altogether the flower is a marvelous combination of bright colors and causes more favorable comment than any other fuchsia. A variety *multiflora*, a winter blooming form, is also listed in England and *grandiflora* in France. They appear to be only well selected seedlings.

Fuchsia speciosa Hort. (*F. hybrida* Hort.). Single creamy-white and pink bicolor. This is truly a most satisfactory vigorous and beautiful species and one of the commonest in the San Francisco Bay region, where it has been cultivated for many years. It is represented by a number of color varieties, which may have originated from chance seedlings. The commonest form has the tube and sepals waxy-blush or almost pink, the tips of the sepals tipped green and the corolla bright rose red. A form having more orange in the corolla is known locally as Monterey.

Fuchsia splendens Zucc., referred to under *F. cordifolia* is likely to be confused with the latter. The habit and foliage is similar, but lacks the heart-shaped leaves. The flowers are much more brilliant, being of a bright cardinal with the tips of the sepals bright green. The buds also are gaudy in color and likely to be somewhat compressed. It was introduced into Europe from Mexico in 1841. My plant came from the Golden Gate Park, San Francisco.

Fuchsia triphylla Linnaeus has the honor of being the first fuchsia discovered by man. Concerning its early history and introduction J. Coultts (*The Gardeners' Chronicle*, Jan. 11, 1930, p. 27) writes as follows: "This is the species on which the genus was founded, and surely it is an anomaly



Wm. A. Mattheus

Fuchsia lycioides

that no authentic figure of the species was published until 1885. Regarding its history, I cannot do better than quote from the *Botanical Magazine* (t. 6,795);—'In the latter part of the

seventeenth century, Father Plumier, a missionary, collected largely in the West Indies, and chiefly in the Island of St. Domingo, and in 1703 he published his *Nova Plantarum Ameri-*



Wm. A. Matthews

Fuchsia serratifolia

canum Genera. Of these genera one was that which he called '*Fuchsia triphylla flore coccinea*.' It is accompanied with a rude and inexact figure, only four stamens being represented,

and the petals being of a wrong form; there is, however, no doubt that the figure is intended for this plant and Linnaeus, in his first edition of the *Species Plantarum* (1753), took it up



Wm. A. Matthews

Fuchsia speciosa

as *Fuchsia triphylla*.' I have carefully examined the original figure, and incorrect as it may be, there seems little doubt that it represents the plant

in question; it is rather unfortunate that no foliage is shown.

"This species, which has brilliant, vermilion-red flowers, and leaves with

reddish-purple undersurface, and is of erect shrubby habit, is quite distinct among a very varied genus. It has always been regarded—and not without reason—as a difficult plant to cultivate successfully, but it is well worth the attention of the skilled cultivator. As already indicated in the garden history of the genus, this species has been successfully used for hybridising.”

To the above account may be added the fact that following its discovery in 1703 it was not again encountered for 170 years when seeds were introduced into New York by Thomas Hogg in 1873 and into England by E. G. Henderson & Son in 1882.

In my garden in Berkeley, California, are four plants of this species, all from different sources and they agree in every respect. The bushes have grown to a height of from three to four feet in one year, having safely withstood one winter with the loss of only a few leaves. However, it is likely that a more severe winter will kill the tops to the ground, as has happened to *Fuchsia boliviana* and *F. corymbiflora*, which soon send up new shoots in the spring and produce an abundance of flowers by midsummer.

Through hybridization *Fuchsia triphylla* has given rise to a number of garden varieties most of which are more vigorous than the parent, although one, Mary, does not seem to be as strong. The hardier ones are: Andenken an Heinrich Henkel, Christmas Gem, Eros, Gartenmeister Bonstedt, Göttingen, Koralle, Taudeschen Bonstedt, and Thalia. Practically all of these hybrids are growing out-of-doors in many parts of California along the Coast from San Francisco to San Diego and are showy and satisfactory garden plants.

Fuchsia microphylla HBK. The

small-leaved and tiny-flowered fuchsias including *microphylla*, *parviflora* and *thymifolia* belonging to the Breviflorae Section are quite distinct from all other garden varieties. The leaves are very small and produced in great abundance and the tiny cylindrical or funnel-shaped flowers, though borne in profusion are not so clearly discernible as in the large-flowered hybrids.

First discovered by Humboldt and Bonpland on Mt. Jorull, Mexico, and introduced into England about 1827 (according to Porcher), and is also known in Guatemala. It is a dwarf species 15 to 18 inches high, with dark green leaves less than $\frac{1}{2}$ inch long and small, bright red flowers, said “to be cylindrical in shape, thus differing from the funnel-shaped flowers of *F. thymifolia*.” (See Gard. Chron., vol. 87, p. 45, 1930). Others have stated that the flowers are funnel-shaped drooping flowers. Only one catalogue describes the flowers as carmine-pink. A variety or species indicated as *F. reflexa* which has been distributed in the San Francisco Bay region, answers quite well to the description of this species and is shown in an accompanying illustration. I have also purchased a vigorous growing pink-flowered variety identical with what is commonly called *F. thymifolia*, also under the name *F. microphylla*.

Fuchsia parviflora does not appear to be a recognized species but is described and listed as having glossy dark green foliage and tiny bright carmine or scarlet flowers with a prominent white stigma.

Isis is listed as a probably hybrid of *F. parviflora*. It has bluish-green foliage and bright scarlet flowers. Not known to the writer.



Wm. A. Matthews

Fuchsia triphylla

Coderinghamii is similar to *F. microphylla* but with bright salmon flowers. Not known to the writer.

Fuchsia thymifolia HBK. This plant was introduced into England

from Mexico in 1827. J. Coutts gives 1836 as about the time that this and *F. microphylla* were introduced into England. It differs from that species "in having somewhat larger foliage



Wm. A. Matthees

Fuchsia microphylla

and open funnel-shaped flowers which are dark red in color." In other articles the leaves are described as nearly round, as being downy above. The plants grow up to six feet and in this

respect conform to the pink-flowered types grown here. Perhaps the pale-flowered form is the result of seedling. Certainly we do not have the true type.



Wm. A. Matthews

Fuchsia thymifolia
Twice natural size



Wm. A. Matthews

Fuchsia reflexa

Annie Earle (Lye, 1887). Single white and carmine blend. An unusually good grower in this region producing a bush 4 to 6 feet high, densely covered with rich green foliage and bearing beautiful green, white, and pinkish buds and delicately colored wax-like flowers. The tube is $\frac{1}{2}$ inch long flushed waxy white; the rather narrow sepals are 1 inch long and pale rose-pink on the outside, the inside being white at the bases, then pink with bright green tips. The petals are $\frac{5}{8}$ inch long, often imperfectly formed and of a clear brilliant salmon red—the same general tone which appears in many other hybrids. It appears to be inferior to *Duchess of Albany* and *Covent Garden White*.

Arabella (Banks, 1866), single bicolor. The tube and calyx are waxy-white; the corolla is rich rosy-pink. The plant is hardy, but the branches are inclined to be weak and drooping. It is nevertheless a very beautiful garden variety. The exact identity of this fuchsia has been difficult both in great Britain and in America. In England it is claimed that the hybrids *Attraction* and *Mrs. Marshall* are identical with it, whilst in this region what is generally thought to be *Arabella* is also known as *Earl of Beconsfield*. *Arabella Improved* (Lye, 1871) is reported to be somewhat coarse and less desirable and has probably not yet appeared in California.

Aurora Superba. Single, almost a self. This beautiful variety is vigorous enough, but the branches are far too weak to support the huge flowers on the growing tips. The tube and long narrow almost horizontal sepals are waxy pale salmon, flushed with pink, the tips of the sepals being a soft pale green. The rather long petals are the most beautiful and deli-

cate orange-salmon. The individual flowers are unexcelled by any other fuchsia in cultivation and should be in every collection. Awarded H. C., R. H. S., July 25, 1929. In the Pacific Coast region of California this variety does very well outside and has a wide distribution. It is commonly confused with another similarly-colored variety, *Swanley Yellow*, the descriptions of which are almost identical in fuchsia literature. We are separating *Aurora Superba* from *Swanley Yellow* by the narrow longer petals of the former and the more *Speciosa*-like flowers of the latter. The latter is a much stiffer plant and has more strongly colored flowers.

Caledonia. Single, almost a pink self. One of the small-foliaged and small-flowered types in the *gracilis* group, but much less vigorous and altogether a more pleasing garden variety. The flowers are almost exactly like those of *gracilis* in size and shape, however, the color is quite different. Instead of the ordinary brilliant red tube and sepals they are of a uniform deep pink or pinkish red, the corolla being somewhat more lavender in tone. Our plants came directly from England.

Carmen. Single, red and mauve dwarf variety bearing a great profusion of small flowers. The very short, rather robust tube and short recurved sepals are red and the overlapping petals are various shades of light and dark purplish-mauve or reddish-violet. The compactness of the corolla may suggest a double flower and it is so listed, but as there are only four petals it is hardly to be considered as such. Because of its dwarf habit, small foliage and floriferousness it is a very desirable plant in the small garden.



Wm. A. Matthews

Annie Earle



Wm. A. Matthews

Arabella



Wm. A. Matthews

Aurora Superba



Wm. A. Matthews

Caledonia

Corallina. Single red and purple bicolor. The plant is tall-growing with purple stems and rather slender dark-green leaves which have red petioles and midribs. The growth is willowy and can be trained to a post or wall or allowed to weep over a wall or through a trellis. The slender brilliant red buds, which may be 1 and $\frac{1}{2}$ inches long and the flowers are pendulous. The latter are much like those of *F. gracilis* but about twice as large and are borne in much less profusion. It was introduced into England prior to 1860 and was early used as a covering for the inside of roofs of greenhouses and as a pillar plant. One single plant was known to be thirty years old and was still very vigorous and floriferous at the time. It is claimed to be a synonym of the old *Fuchsia exoniensis* Paxt., a hybrid of *F. cordifolia* and *F. globosa*.

Countess of Aberdeen (Dobbie, Forbes about 1888), one of the choicest singles. Although the plant is somewhat slow of growth, it is nevertheless quite vigorous in the San Francisco Bay region and at Pacific Grove. The foliage is small, somewhat curled and of an unusually dark green color. The pretty little self-colored flowers vary from almost white to very pale blush-pink in the spring when grown in almost full shade, to a very rich bright pink as the flowers age and more particularly in summer and fall when grown in the sun or in only part shade. The flowers are supported on stiff stems and do not droop.

It is fairly common in this region and is known in the trade as Little Gem and as Schneewichtchen. The former is certainly a misnomer and so far I have been unable to trace the origin of the latter. Named specimens received from England have definitely settled the identity of the variety.

Display. Single, almost a self. Open showy flowers, the tube and sepals reddish-cerise; the corolla bright carmine. The plants are erect, with bright clean foliage and a propensity for bearing a profusion of blossoms almost the entire year. It is one of the handsomest varieties in cultivation and appears to have been long grown in the San Francisco Bay region, where it is more frequently known as Prince Charming. The writer also purchased it under the names Mme. Eva Boeg and Red Cup.

Dutchess of Albany. Single, white and pink bicolor. One of the finest pale single sorts, vigorous and floriferous with bright green stems and leaves. The brilliant shiny green ovaries contrast markedly with the almost pure white waxy tubes and sepals which are just faintly blushed pink, especially on the undersides of the latter which are only slightly reflexed. The petals are brilliant salmon rose. (There are no colors in Ridgway's Color Standards that match this and many other fuchsia colors). They are quite even and neat when the flowers open but later become quite wrinkled which mars their early beauty. However the variety is a most worthy and desirable one for any garden. Our plants are recently from England.

Elsa, a splendid double variety. The tube and the sepals are waxy pale rose-pink or flesh colored, the sepals tipped green and 1 and $\frac{1}{8}$ inches long; the corolla is rosy-purple or rosy-magenta. The flowers are carried on drooping stems.

This variety has been cultivated in the West for some years and is one of the most desirable.

Emile Laurant. Double red and white bicolor. The flowers are very large, measuring $2\frac{1}{2}$ inches across; the stems $1\frac{1}{4}$ inches long; and the



Wm. A. Matthews

Carmen



Wm. A. Matthews

Corallina



Wm. A. Matthews

Countess of Aberdeen



Wm. A. Matthews

Display



Wm. A. Matthews

Duchess of Albany

ovary and tube of equal length, three-eighths of an inch long. The tube is very large, and the somewhat wrinkled and roughened sepals are bright pinkish-crimson, the sepals being $1\frac{1}{4}$ inches long and five-eighths of an inch wide and strongly reflexed against the stem. The very full and crowded corolla is white, faintly tinted pink and the petals are veined bright pink. The stamens are twice as long as the petals, but the pistil is scarcely longer. The foliage is a clean bright green, the young stems, petioles and mid-ribs of the leaves are reddish. The plant is only medium in size, but bears a great profusion of large nearly globular brightened buds and flowers. I am unable to determine the origin of either the name or the stock. It may be a well known European variety masking under a pseudonym in this country.

Frau Emma Topfer (Storm King). Double, red and white bicolor. A medium-sized plant of only fair vigor which bears rather sparingly large very double flowers as illustrated. The tube and sepals are coral red, the latter nearly horizontal or only slightly reflexed and roughened on the inner surface. The bases of the pure white petals are stained and veined the same red color as the sepals. This variety appears to be of continental European origin and when introduced into the United States was given the name Storm King (The Garden, vol. 45, p. 105, 1894). This popular name has been applied to nearly every red and white double bicolor in this region.

G. Portesi. Large double red and purple bicolor. This is the largest and commonest double purple grown in California and commonly goes by the name, Phenomenal, just as all of

the double whites are known as Storm King. The origin of both the name and the stock is unknown to the writer, but because of its popularity should not be omitted from these descriptions. The flowers are immense, often measuring 2 and $\frac{1}{2}$ inches across when fully expanded. The tube is $\frac{3}{4}$ inch long and of the same smooth brilliant red as are the reflexed sepals, which are very large and roughened on the inside surface. Nearly all of our vigorous double purples have this latter characteristic. The petals are rich royal purple with red bases and veins, uneven in length and variable in size. When first opened the corolla is very compact but expands finally into a globe-like flower much redder in color than the original.

Graphic. Large double red and purple bicolor. The plant is a fairly strong grower and has pleasing green foliage and bright red stems and leaf petioles. The short tube and wide sepals are brilliant red, the latter half as wide as long, smooth and noticeably creased in the middle. The closely crowded petals are of a very rich hyacinth-violet, shading into red at the base, and nearly one inch long. The bright red buds are globular and nearly one inch in diameter when ready to burst. It is rarely mentioned in English literature, but is quite commonly grown in California.

Hap Hazard (Hazard, 1931). Double red and purple bicolor. The variety is vigorous and hardy and forms a strong and upright bush. The tube is about half the length of the sepals and both are brilliant red, the latter being roughened inside. The closely crowded petals vary from dark rich blue-purple to a uniform rhodamine purple. The



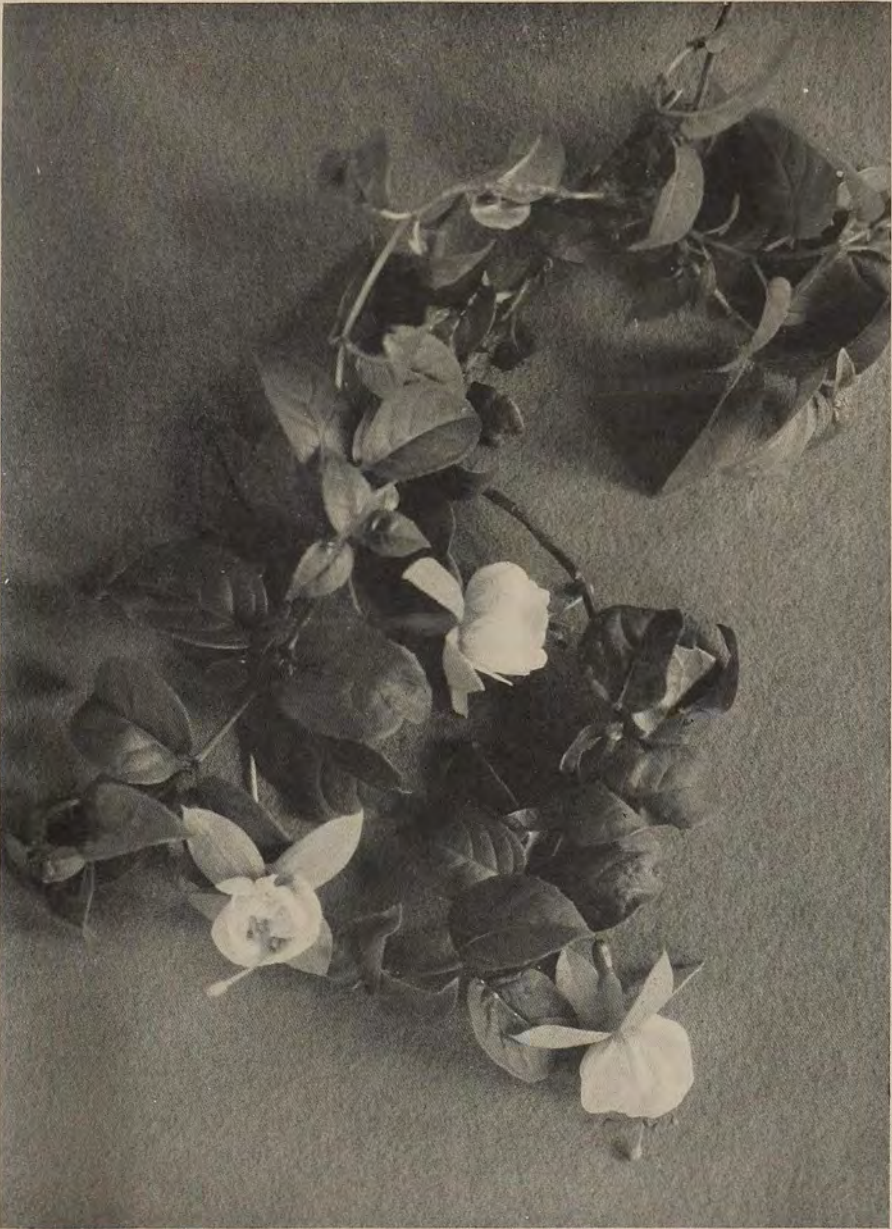
Wm. A. Matthews

Elsa



Wm. A. Matthews

Emile Laurent



Wm. A. Matthews

Frau Emma Topfer (Storm King)



Wm. A. Matthews

Graphic



Wm. A. Matthews

Hap Hazard

unique feature of the flowers is the white edges of the petals which are specially noticeable in freshly opened ones. The stamens are very feeble and the pistil is more than twice the length of the petals. All plants noted have originated with Hazard and Hazard, fuchsia specialists at Pacific Grove, California, where more than 100 of the writer's varieties were obtained.

Improved Rose of Castile (Banks, 1860). Single, white and purple bicolor. A very strong and vigorous variety in California attaining a height of from 12 to 15 feet in a single season. The flowers are large and borne in profusion throughout the year. The very short tube is white and the calyx, somewhat inflexed, is rose-pink, the color being much more pronounced on the inside of the sepals which are tipped green. The corolla is rather tight and rich royal-purple when the flowers first open, but gradually becomes more expanded until cup-shaped and very much redder in color. The vari-colored flowers are one of the charming features of this hybrid. The buds are green, white, and pinkish. H. C., R. H. S. The foliage is clean bright green, the young stems being reddish. Apparently this fuchsia has been in California for a long time, if we are to judge from its wide distribution and the many huge plants which are to be found. It frequently goes under the names *Rose of Castile*, *Nonpareil*, and *Schiller*. A form which appears to be the same is called *Gerolstein*, probably from the name *Duchesse de Gerolstein*, a single white and purple hybrid originated by Lemoine in France in 1868. It may be seen growing in nearly every garden in Monterey, Pacific Grove, and Carmel and is no doubt

identical with the *Improved Rose of Castile* of the San Francisco Bay region where it is most often known as *Schiller*.

Irwin's Pink Giant. Large double bicolor. The flowers are rather loosely formed; the very short tube and rather short wide roughened sepals are crimson; the petals are Amaranth pink, veined crimson. The stamens are nearly twice as long as the petals and the style is still longer. The buds are almost globular and do not become as brilliant as in most fuchsias. The foliage is rather small and deep green. The plants are of just ordinary vigor. The true identity of this variety is a puzzle. It goes by such names as *Lavender Beauty*, *Giant Pink*, *General Drude*, *Dancing Girl* and *Mrs. Marshall*. The last it is certainly not and none of the other names appear in authentic lists. Nevertheless the hybrid is a good one and worthy of a place in any garden.

Koralle (Henkel) (*Coral*). Long-tubed single coral red. One of the hybrids of *Fuchsia triphylla* Linn., and a fairly strong growing plant with dark velvety green foliage which is faintly tinged red on the undersides of the growing tips. The buds and flowers which are borne in leafless clusters at the tips of the branches are brilliant coral red. (*Begonia rose* according to Ridgway.) The fully formed buds are 1 and $\frac{1}{2}$ inches long and the opened flowers slightly less. This hybrid makes a striking display in the garden and brightens up any dark shady corner, although it does well in full sun in this region.

L'Enfant Prodigue (Lemoine). Semi-double red and purple bicolor. Often listed as a baby fuchsia, which name refers to the rather small



Wm. A. Matthews

Improved Rose of Castile



Wm. A. Matthews

Irwin's Giant Pink



Wm. A. Matthews

Koralle



Wm. A. Matthews

L'Enfant Prodigue



Wm. A. Matthees

Little Beauty

flowers and not to the vigorous plants which often attain a height of 15 to 20 feet. As this is a climbing variety it requires support and under favorable conditions produces a splendid display of bright green leaves and vivid flowers. The buds are green and dull red; the tube and sepals brilliant red, the former $\frac{3}{8}$ inch long, the latter $\frac{7}{8}$ inch long and slightly recurved. The corolla is $\frac{3}{4}$ inch across and is composed of four encircling and overlapping petals, which if spread out would form a typically single flower. They are $\frac{3}{4}$ inch long, red at the base and reddish-violet around the margins. The stamens are twice the length of the petals and the style is almost double the length of the stamens. This is perhaps the best of the many small-flowered French hybrids. The stock was introduced directly from France some years ago.

Little Beauty. Single bicolor. A rather small or dwarfish sort, free blooming and hardy in this state. The flowers are rather small and very attractive, the tube and sepals being rose red and the corolla, a light mallow purple, each petal with a light blotch, veined with pink at the base. So far I have been unable to find this name in any of the European lists and it may prove to be another American invention for some old well-known hybrid. It has also gone under the name of Abbe Fargas in the San Francisco Bay region.

Marinka. Single red self. Although the plant is not large it is strikingly beautiful because of the red stems, the deep green leaves with red petioles and midribs, and the graceful drooping habit. Most pleasing of all are the beautifully formed brilliant red flowers which

appear to be a combination of tyrian rose (tube and sepals) and rhodamine purple (petals). The tube is also nearly as long as the sepals. In form it is like Display and is certainly a choice variety. Hazard and Hazard has distributed it under the name Durango, but recent introductions prove it to be the above.

Masterpiece. Single red and purple bicolor. A truly magnificent and vigorous variety, bearing a profusion of beautiful perfectly-formed flowers. The foliage is dark green, the tips of the young branches and the petioles and midribs of the leaves are red. The somewhat corrugated tube and creased sepals are rose red, the latter at first horizontal and becoming more reflexed as the flowers open. The corolla is the color of the sepals at the base and the remainder is rhodamine purple (Ridgway's color standards), being somewhat darker when the flowers first open and fading out in the usual fuchsia manner. Awarded A. M., R. H. S., July 25, 1929. This is recent introduction from England and is one of the best.

Molesworth. Double red and white bicolor. A somewhat straggly but fairly vigorous, free-blooming variety and a popular early market sort in England in 1893. The rather short, faintly creased tube and the wide sepals are rose red, which color also stains the bases of the thickly crowded petals. The latter are most perfectly formed and largest near the center of the flower and are very much smaller around the outside. The stamens are weak, but the pistil is prominent and double the length of the petals. The fruits are large, nearly globular, four-lobed and borne in abundance.

Monsieur Thibaut. Single, red and reddish mauve bicolor. What is called



Wm. A. Matthews

Masterpiece



Wm. A. Matthews

Meteor



Wm. A. Matthews

Molesworth



Wm. A. Matthews

Monsieur Thibaut



Wm. A. Matthews

Mr. Gladstone

by the above name in this area is a very vigorous growing hybrid with reddish stems, large dark green foliage and a profusion of huge brilliant flowers. The tube and sepals are bright red, the latter often reflexed so as to touch the base of the former. The petals are bright Rhodamine purple and perfectly flared when fully expanded. Cannell in 1888 described the corolla as semi-double and rosy vermilion. The buds are large, elongated and sharply-pointed, red and borne in large numbers and with the masses of flowers weight down the strong stems. This variety is widely used in California as a tall bush against the house or as a garden specimen plant and is one of the most satisfactory ornamentals. Seed is produced freely on this variety and a number of unnamed seedlings occur in this area. It is also frequently called Carl Blanc, a name more commonly given to Display.

Mr. Gladstone. Double red and purple bicolor. A very satisfactory, vigorous plant producing a profusion of huge flowers. The large buds are elongated and brilliant red as are also the tube and sepals. The latter are distinctly roughened on the inner surface and strongly reflexed, at times forming circles. The corolla is compact, but composed of well formed petals of nearly uniform length which are reddish-purple at the bases, the remainder hyacinth purple. The older flowers fade to a bright true purple. The red stamens are double the length of the petals and stigma longer still.

Mrs. E. G. Hill (Lemoine). Double red and white bicolor. A rather small plant producing a profusion of small, neatly formed flowers and pointed red buds. The tube and sepals

are brilliant red. The former is $\frac{1}{4}$ inch long and the latter about $\frac{1}{2}$ inch. The petals are small, white suffused with bright red at the base, closely crowded and only slightly longer than the tube. The red stamens are more than twice and the pistil four times the length of the petals. The leaves are very dark green, narrow, and rather far apart on the stems. This is a dainty and desirable garden plant.

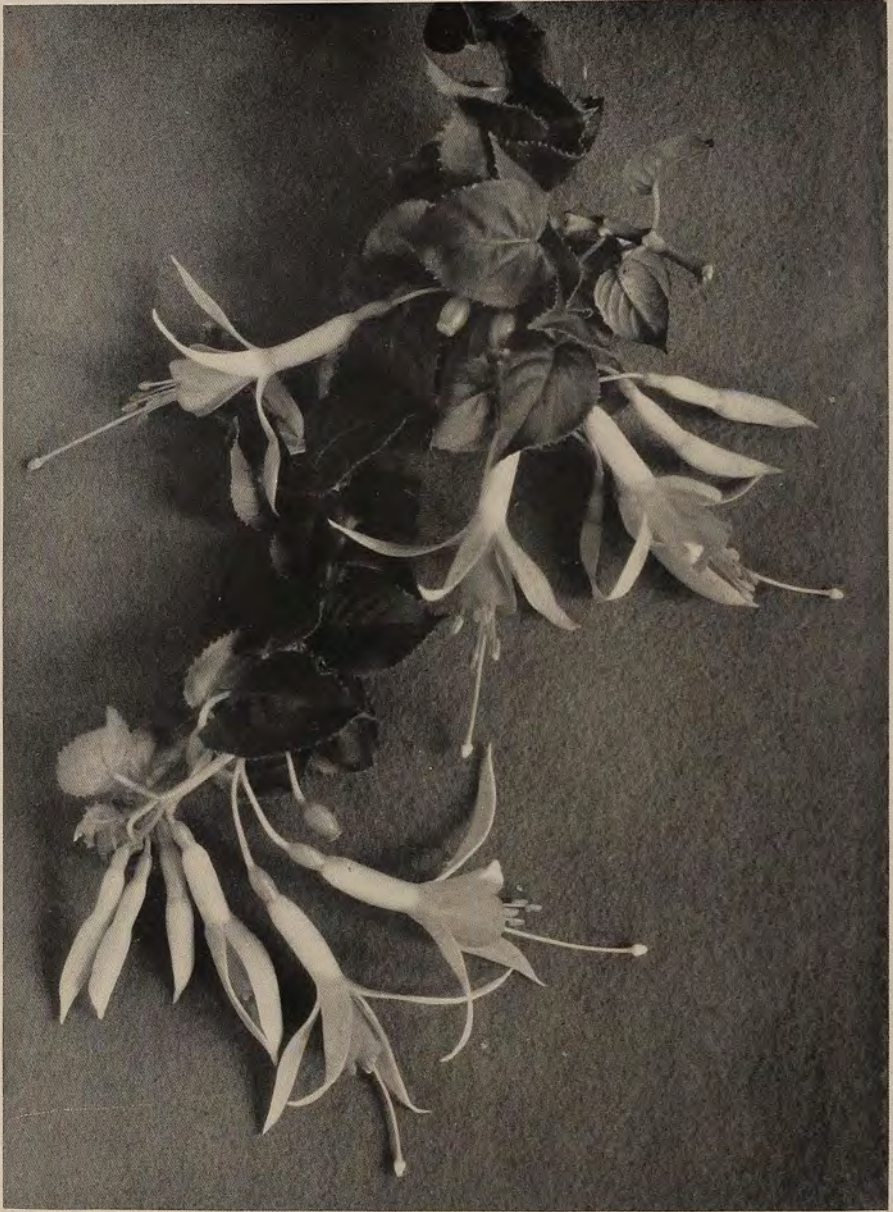
Mrs. Rundle. Single, white and orange bicolor. The long tube and the equally long rather slender somewhat reflexed sepals are creamy-white flushed with rose; the rather small closely overlapping sepals are vivid orange. The long slender buds are creamy-white flushed with rose. The foliage is deep green and the leaves small. This is an old variety illustrated as early as 1882 and probably antedating that year considerably. It is a seedling of the Earl of Beaconsfield, being accounted more graceful, and with longer tubes. It was awarded a First Class Certificate, R. H. S., 1883. In California, where it is only a recent introduction, it appears to be as hardy as Aurora Superba, Swanley Yellow, and others in the so-called yellow class.

Pride of Oxford. Semi-double, red and white bicolor. A rather dwarfish bush which produces splendid long bright red buds and fine large flowers. The short tube and large wide sepals are red, the latter are smooth on the upper surface which has three or more longitudinal line-like depressions, and roughened on the inner surface. The sepals are pure white, noticeably elongated, the outside row considerably foreshortened, the bases stained red and with branching red veins extending beyond the middle. The foliage is very dark green, the stems, petioles and midribs being reddish.



Wm. A. Matthews

Mrs. Cornelisson



Wm. A. Matthews

Mrs. Rundle



Wm. A. Matthews

Pride of Oxford



Wm. A. Matthews

Sunray



Wm. A. Matthews

Swanley Gem

The correct identification and origin of this beautiful variety appears to be in doubt. It is known locally as Long White and Pride of Orion.

Sunray (Thomas Milner, 1871). Single ornamental foliage. A rather small, slow-growing variety often cultivated for its coleus-like foliage. The older leaves are variegated green and whitish, whereas the new growth is vari-colored pink, salmon, red, yellow and green. In 1872, H. Cannell listed it as the "New tricolor-leaved fuchsia" and described it as "one of the most beautiful plants ever offered; colors as rich and clear as in any tricolor pelargonium; the leaves, which are very large, are of a rich bright crimson, white, and bronzy-green, in about equal parts. The habit and growth are all that can be desired, each plant forming a beautiful pyramid. It will make a magnificent exhibition plant, is a good bedder and invaluable as a decorative or market plant. Flowers of fine form, scarlet tube and sepals with light purple corolla." First Class Certificate, R. H. S., and Leeds Hort. Soc., 1871; Extra prize York Hort. Soc., 1871; A. M., R.H. S., 1929.

Our strain is true to form, having been compared with plants recently received from England. The variety is specially suited to lathhouse and conservatory culture but does well in residences and out-of-doors in partial or half shade if well watered. It does not do well in full sun and cannot stand drought.

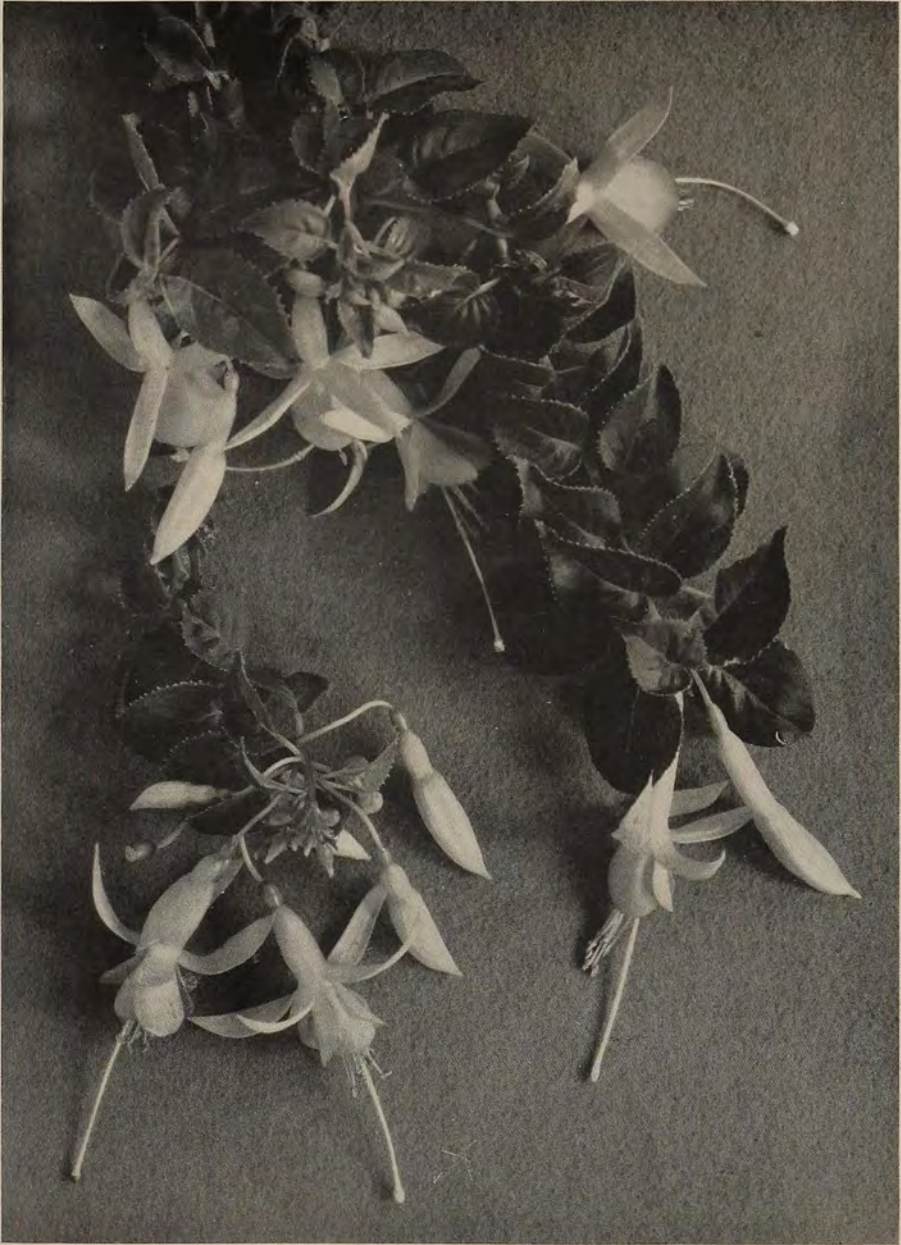
Swanley Gem (Banks). Single, bicolor. Very large, rather long flowers borne in profusion. The tube and very long somewhat reflexed sepals are rose red; the corolla is rose red at the base and the remainder light aster purple. Frederick Buss (London, 1883) states that the flowers

are of a strange shape, the corolla beautiful rose, frilled. Pretty and distinct. In California, what is reported as this variety has a very smooth even corolla. It is very similar to Masterpiece, but has slightly shorter and wider sepals and longer ovaries.

Swanley Yellow. Single, almost an orange self, the corolla being slightly stronger in color than the calyx. This beautiful variety is much like Aurora Superba and I am not so sure that the two may not be confused in this region. What goes by the name of Swanley Yellow is quite well shown as to size and shape in the accompanying illustration, which reveals none of the brilliance of the salmon-pink tube and sepals and the rich orange-salmon corolla. The long pistil is also characteristic. The plant is quite hardy and seems more amenable to growing in an upright form than its close relative. The leaves are green and the young stems slightly stained reddish. The buds are green, slightly reddish above when exposed to full sun. This fuchsia was introduced about 1902. While it is far from yellow it is in the so called yellow class and a real beauty.

Taudeschen Bonstedt (triphylla x). Single, long-tubed, self-colored, salmon-pink flowers, borne in great profusion and almost completely hiding the foliage. The buds are pointed and the open flowers add little to the brightness of the clusters of pendulous buds. The foliage is medium-green and the plants in the San Francisco Bay region are rather dwarfish and even smaller than the parent species, but this may be due to the fact that none of them are much more than a year old. The variety was imported directly from England last season.

White Beauty. Single red and white



Wm. A. Matthews

Swanley Yellow



Wm. A. Matthews

Taudeschen Bonstedt



Wm. A. Matthews

White Beauty



Wm. A. Matthews

White Phenomenal

bicolor. The best single white so far introduced and one deserving of the name. The plants are small in size but continuously produce an abundance of striking flowers. The very short tubes are much larger than the ovaries and are brilliant red as are also the reflexed sepals, the pistil, stamens, and the veins of the corolla. The sepals are 3-lobed and overlap to form a perfect wide open shallow cup of very neat appearance. At the base of each there is a regularly branched red vein which does not extend to the margins.

The origin of the stock grown in the West is not known to the writer.

White Phenomenal. Double red and white bicolor. Vigorous spreading habit, often covering porches and whole sides of buildings in this region,

it being the largest-growing white so far observed. The noticeably small tube and rather wide, somewhat reflexed and roughened, sepals are rose red (Ridgway's Color Standards). The corolla is full and spreading, the petals white, flushed and veined bright cerise. The huge brilliant red buds are nearly globular and often an inch in diameter. With the large red and white flowers a most attractive display is produced which is unequalled by any other variety in this color range. Awarded H. C., R. H. S., July 25, 1929. This fuchsia makes a splendid out-door plant and is specially satisfactory in our region, where it is often incorrectly called Storm King, a name given to almost all double whites in California. Emile Laurant is much like it, but not so large.



B. H. Chandlee

Going North

Collecting Plants Beyond the Frontier in Northern British Columbia

BY MARY G. HENRY

It was in the summer of 1930, write Dr. Henry and I and our four children, Mary, Josephine, Norman, Jr., and Howard were camping near Jasper, that we heard from a trapper of the so-called "Tropical Valleys" of northwestern Canada. They were said to be near the Liard River. Of course we knew they could not be really tropical or even semi-tropical, but when the surrounding country was ice and snow-bound with winter temperatures of 50-60 degrees below zero, these valleys were said never to freeze.

We became intensely interested and made many inquiries, but could find out nothing very definite. However, we heard vague rumors from several separate sources, that mysterious hot valleys did exist, about

which little or nothing was known, except that they were somewhere near the Liard River. This part of the country, sometimes called the "Blind Spot" of Canada, has usually been considered inaccessible. Waterfalls and rapids on the rivers make travelling by water impossible, while by land the distance is great, over wide stretches of muskeg* and mountainous country still in its virgin roughness, and much of it yet unmapped.

I was anxious to go, however, to collect plants and my family wanted to go for the adventure, plus hunting and fishing. Forthwith we made our decision.

*Muskeg is a term used in Northwest Canada to designate the soft, sometimes almost bottomless, black peat-bogs that are so plentiful and make travelling slow and sometimes dangerous.



Mary G. Henry

Looking west over Peace River, near Taylor Flats

The Canadian authorities were extremely courteous and gave us all the help they could. They rained maps on us generously, which we pored over and studied by the hour, and we soon found out that the country was mapped in the direction we wanted to go, only as far north as the Prophet River, and that nothing much was definitely known beyond that point. In addition to many maps of the surrounding country, the Department of the Interior sent us photostat copies of old reports and magazine clippings, etc., written by trappers, prospectors and others, from as far back as 1887, all of which we went over with meticulous care.

We read of the attempts of men who set out to traverse this coun-

try in an endeavor to find a short cut to the Yukon district during the gold rush of 1898. Few, if any, ever reached there. Frozen, drowned or starved, no one knows just how they died, but now and then a rough stone marks a grave. We were advised not to undertake such a perilous journey, but the more difficulties that arose, the more we wanted to go. We went over carefully each possible approach to our proposed destination.

The Topographical Survey of Canada, very courteously released one of their foremost topographers, K. F. McCusker, to accompany us and map the country.

It took us about nine months to formulate our plans and complete our arrangements. Dr. B. H. Chand-



B. H. Chandlee

*At the end of our first day's ride
(The author in the center)*

lee, a surgeon, agreed to be a member of our little expedition. We had several movie cameras along and these were manned by Norman, Norman, Jr., and S. Clark, our outfitter.

We left Philadelphia June 25th, and after travelling as far as the railroad could carry us towards our destination, we alighted in Pouce Coupe, Peace River Block, Canada, on June 30th at 6 P. M. Pouce Coupe is about 250 miles northwest of Jasper and about 425 miles northwest of Banff. Sixty-five miles by motor, and ferrying across the Peace River, brought us to Fort St. John, but not before we had found it necessary to get out and push our cars through some mud holes on the road.

It was 1 A. M. when we reached the camp nearby, where our outfit, composed of nine men, fifty-eight horses, tents, food, etc., was waiting for us. Our guides had been engaged and everything arranged for some months ahead, that there might be no delay at starting time. After a night's rest of four hours, we packed up, mounted our horses and started on our long trek.

We had over 1,000 miles to cover and 75 or 80 days at our disposal. Our way led through low meadowland the first week, much of it along the Halfway River, altitude about 1,800 to 2,500. We rode through great stretches of level and open rolling country covered with fine pasture grass and fringed with splendid spruce, pine and poplar forests,



B. H. Chandlee

Halfway River

dark, rich fertile soil everywhere, surely capable of raising magnificent crops some day.

The temperature fell below freezing nearly every night, even in July. In August it was sometimes 18 or 20 degrees at getting-up time and in early September one morning it was but 12 degrees. The mid-days, however, when clear and sunny, were a delightful contrast to the cold nights. Frequently in July the temperature rose to 80 degrees, and even in September the noon temperature was over 60 degrees when the sun shone. I often wondered how beautiful and fragile-looking flowers could stand such extremes of temperatures.

In these meadows *Polemonium acutiflorum* grew profusely and I thought I had never seen a more exquisitely beautiful flower. The fragile, almost sky blue blossoms over 1¼ inches in diameter, were lightly held above a rosette of fern-like foliage.

The plants grew about 2 to 2½ feet tall and were equally handsome either singly as specimens, or in the patches of thousands that colored large areas in so many of the meadows.

They were, however, far from being the delicate things they appeared to be, and night after night of hard freezing failed to impair their beauty. Often in the early mornings the frost caused them to appear as though they had been sprinkled by tiny diamonds, and when the first rays of the rising sun touched them they were so beautiful, it seemed as though they must belong to another world.

There was an extra large clump near our camp one evening, which bore about 20 stems all about 3 ft. tall. I counted 118 flowers and buds on one stem alone! It was growing on a burned over hillside and stood quite by itself. The golden evening sunshine, the orange col-



Mary G. Henry

Hundreds of spikes of Delphinium scopulorum glaucum were blooming in this clearing

ored butterflies that drowsed on the pale blue blossoms. The memory area of my brain will have to enlarge, so many unforgettable pictures were stored in it daily.

Delphinium scopulorum glaucum, too, was plentiful, of a deep blue purple. These grew in stout stemmed sturdy clumps of 2½ to 3½ feet in open meadows. They grew very much taller in rich, moist soil and in the semi-shade of open forests and especially beneath the delightful waving branches of *Populus tremuloides*. I never tired of watching the tiny, toy-size leaves of this lovely tree, for they were scarcely ever still and they cast a most enchanting light shade.

Sometimes the meadows took on a rosy tint from the pretty seed plumes of *Geum triflorum*.

Collecting plants while riding with

a pack was not always a simple matter. A trowel went in a sheath on one side of my belt and a heavy knife on the other side. A strong pair of saddle bags was fastened to theommel of my saddle, in which each morning I placed several empty jam cans. Whenever I saw a plant I wanted, during our ride, I dismounted, dug it up, slipped it into a can and then caught up with the others as fast as Chum, my horse, could carry me. Each evening I aired and watered all full cans and then in the morning packed them away in wooden packing cases. Sometimes the cans were frozen to the ground and I had to use my axe to chop them loose.

There is, of course, a heavy mortality among newly collected plants. About three-fourths of those from the Southern States usually live and



K. F. McCusker

Chalk white trunks of Populus tremuloides, Cache Creek

these, as a rule, make themselves at home quite quickly. Not so, however, do those from British Columbia. Only about one-third survive the first of our hot summers and they are then in such a condition that it takes about two years to recover (or a short time to die!). Alas, these wild things of the Northland pine for their native home, with ice

and snow and low temperatures and a bright arctic sun.

One day we came to a most magnificent grove of trees. They were *Populus tremuloides*, and formed an impressive sight, and with their huge straight white trunks, appeared almost like marble columns. These were over 30 inches in diameter and the trees were about 100 feet high.

The bark on the younger trees, and on the north side of the older trees was pale gray green, but on the south side of mature trees it was just as white as paper. This tree, sometimes called the trembling aspen, with its chalk white trunk and small lace-like foliage is to my mind more beautiful than the white birch and makes a far nobler tree.

Mostly in every lightly shaded wood we came to and frequently in the open, when the ground was moist, *Mertensia paniculata* with individual flowers measuring $\frac{3}{4}$ of an inch long, grew over 3 ft. tall with much vigor and in great profusion.

Along the edges of the rivers *Eleagnus argentea*, one of the most delightful of all small trees, was in full bloom and its sweetly fragrant banana yellow little bells looked most dainty against its almost pure silver leaves.

On July 4th we climbed up from the Halfway River over a number of low rounded hills until we were quite high, and had a fine view of the surrounding country.

In a little dip between two hills was a coppice and drawing close I spied a large and handsome clump of *Cypripedium passerinum* in full bloom, about 18 inches across. Dozens of the beautiful blooms were swaying slightly by the breeze about 10 inches from their mossy couch. I picked a few of these precious jewels for my press although I disliked to disturb such a lovely plant, as beautiful a one as I had ever seen in my life. I never saw a plant with flowers of a more elegant form. They were an inch and a quarter across and the spreading pale green sepals seemed to clasp the small spherical white pouch as though loath to let it go, and over both the little green hooded dorsal was bent. I hated to

leave it and wished I might camp near that I might return again and again to admire such a wholly perfect creation.

Aquilegia brevistyla in blue and white, a small attractive columbine was occasionally in evidence, in stony ground, but never plentiful.

On July 7th we left the last habitation, an isolated ranch, far behind and the narrow paths we followed hereafter were Indian trails, in some places indistinct and hard to follow, or game trails, worse yet, and sometimes we travelled by compass with no trail at all.

Each day seemed to bring a new thrill of some sort. In a few days our way took us along some dry hillsides where thousands upon thousands of roses were abloom in such quantities they made the landscape quite pink and perfumed the air for miles with their delicious fragrance.

Here, too, in the higher dry open grassy places, grew numberless plants of *Pentstemon procerus*. The flowers were small, but as they grew numerous and closely on a short spike about eight to ten inches tall and were colored a marvelously pure brilliant sapphire blue, the effect was very fine. Growing in the meadows in company with delphinium, polemonium and frequently also pentstemon, the buds of *Aconitum delphinifolium* were opening into their quaintly hooded shapes of deepest royal blue purple in a shade so rich I have never seen its equal. With its slenderer stem and larger flowers, though closely related, it is a far handsomer plant than the delphinium. This strikingly beautiful flower also frequently climbed to about 6,000 feet on the mountains and often dotted cold, bleak mountain passes. In these places it was sometimes only three inches tall and



Josephine Henry

Pentstemon procerus



Josephine Henry

Aconitum delphinifolium

produced but one large gorgeous bloom.

Corydalis sempervirens was splendid on a hillside with flowers of deep coral pink-tipped orange.

We rode through forests of fine spruces with trees well over 100 feet tall, many with a trunk diameter of about 36 inches. The floor of the forest was covered with deep green moss, through which *Linnaea borealis americana* and *Cornus canadensis* were both finding their way. There were few birds anywhere. Now and then the beautiful long drawn out note of the white-throated sparrow was wafted to us, or sometimes a mother blue grouse scuttled away with her sweet little family tagging closely behind; but mostly as we rode through the trees the stillness was in-

tense and our horses' feet falling on the soft moss scarcely made a sound.

Frequently we had long stretches of muskeg to cross. Often they were so well covered with green moss we could not recognize them until our horses floundered in them up to their saddles. When the muskeg was very bad we had to dismount and lead the horses over. We ourselves were scarcely able to get through, and very often the horses stuck so badly, it was necessary to get ropes and haul them out in order to save their lives.

Day by day we crept nearer to the mountains, travelling in a general northwesterly direction. The grandeur of the scenery, the lavishness of nature and the beauty of the flowers, daily quite took my



B. H. Chandler

*An Indian trail in the north, near Summit Pass
They are seldom as easy to follow as this*

breath away. Frequently I led my horse nearly all day that I might be as close as possible to the glorious carpet that covered the earth.

The little Indian trails we were using became indistinct and hard to follow. Sometimes we travelled along game trails and by the footprints in them we saw they were used by grizzly bear, moose, deer, goat, elk, wolves, sheep and caribou, all of which some of us ran into at various times. Occasionally we had no trail at all.

The days were long. The sun was shining when we got up at about 4 A. M. and was still shining when we went to bed at 11 P. M., but they were none too long.

During the first part of our trip the sun rose so early and set so late that we had no real night at all, for the sky began to grow light before darkness ever came. Each day we rode as far as the horses could go comfortably, usually about fif-

teen to twenty miles, but sometimes much more. About once every week or ten days we stopped a day to give the a rest, and these stops gave me opportunities to climb mountains.

Although the altitude was higher here, about 2,500-3,000, we still frequently rode through long meadows often five miles long, or more, protected by mountains about 5,000 to 7,000 feet high on either side. These meadows were veritable seas of blue in many shades, the varying tints waving in the breeze giving a most lovely effect.

On July 9th we were camped at the foot of Pink Mountain, near Quarter Creek. The weather was stormy and a sudden squall lifted one of the smallest tents into the branches of a tree about 30 feet from the ground.

The following day some of us started out to climb the mountain, altitude 5,000. The mountains were not very high as we were travelling

a little to the east of the main range of the Rockies, but as the tree limit was about 4,300-4,500 they had the appearance of being much higher.

Gentiana prostrata grew near our camp in the open. It was but an inch or two high and had leaves so fine it resembled a moss until it opened its tiny, splendid sapphire blue flowers.

Our way was through a forest of *Populus tremuloides*, and in a short time this was replaced by spruce. The muskeg was bad in the hollows and in one place my horse almost disappeared from view and I was seriously alarmed for his safety. Even his head vanished beneath the mud, only a portion of the back of his neck and part of the saddle were visible, but with the supreme effort an animal makes to save his own life, he climbed to safety.

Ledum groenlandicum was flowering and, though never showy, it was a pretty little shrub, but the high spot of these muskegs at this time was *Vaccinium oxycoccus*; our guides spoke of it as "Pink Moss," a name which aptly describes it, for its tiny flowers, copiously produced, were a bright rosy pink and did not rise more than an inch from their mossy couch.

In a damp sheltered place *Geranium Richardsonii* was growing about 24 inches tall, with handsome white flowers nearly two inches in diameter. Upon leaving the trees the mountain was so steep and the sides so slippery with finely broken shale, that it was very difficult to get a footing.

But there were myriads of a beautiful yellow oxytropis (possibly *O. saximontana*) not far off and I longed to see them more closely. I was filled with joy upon approaching

them, for long before I was close enough to gather the lovely blossoms, their delicious fragrance was wafted to me by the breeze, and I thought it was the handsomest and most delightful of all the oxytropis I had ever seen.

Another beautiful flower on this mountain was *Lupinus arcticus* which bore a spike with round, lumpy flowers of a very fine dark indigo blue, and with a texture like velvet.

It was getting late and we had to turn homeward, but the storm which had been hanging fire all day caught and drenched us before we reached shelter.

Although the middays when the sun was shining were so pleasant and mild, the nights surely were cold. The next day icicles were still hanging on our tent when we were packing up after breakfast, and our bathing suits were frozen solid. The latter was a frequent occurrence.

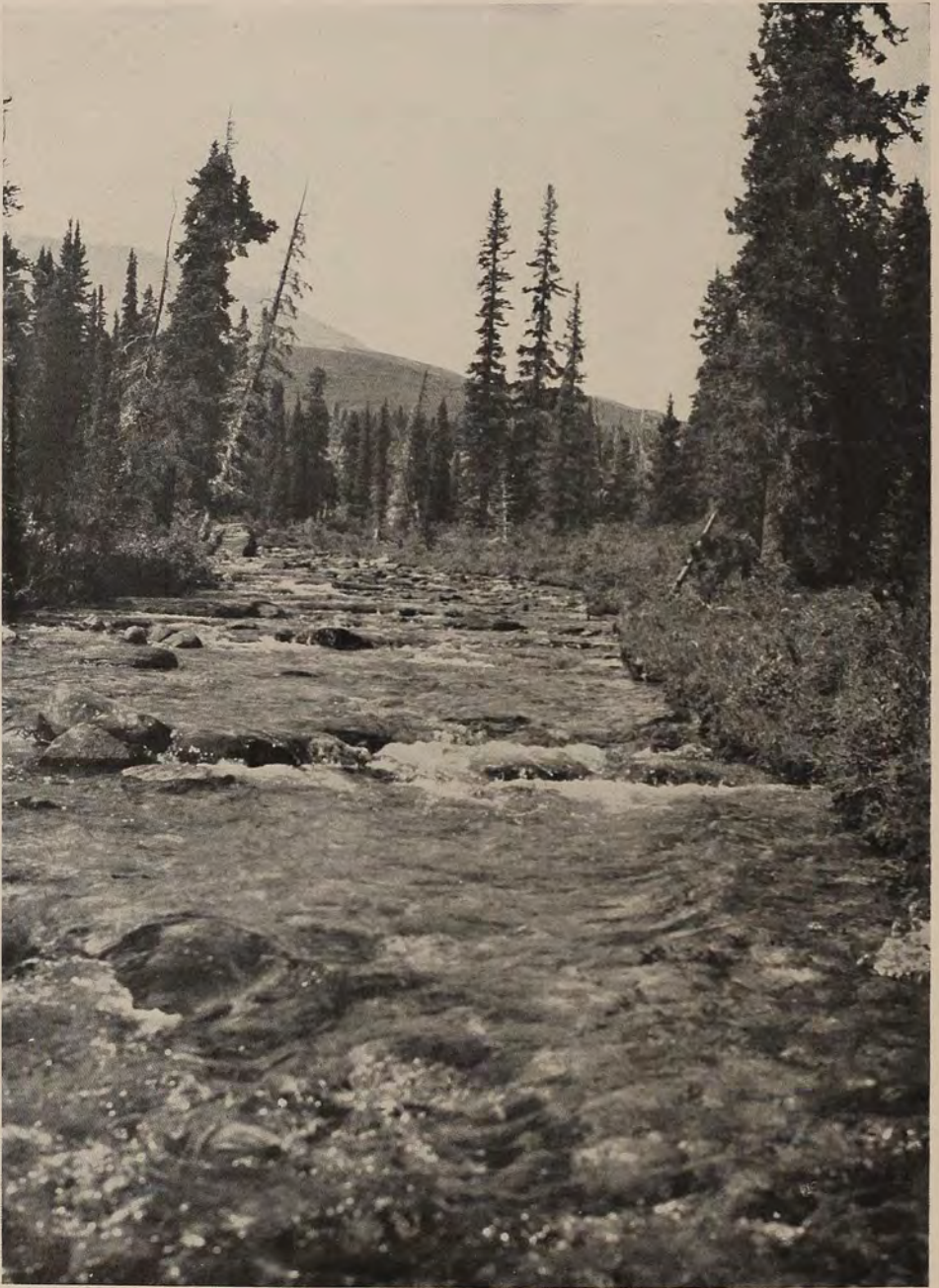
For some days I had been searching for an albino polemonium, feeling sure that sooner or later one would turn up, and so it did. Just after crossing a little stream one day, we came to a sort of glade and the sunshine was filtering through the trees and giving a golden glint to the moss, and there I found a white polemonium. I have seldom seen a flower of such pure and delicate beauty. These polemoniums seem equally happy in peat or loam or even sand, and thrive both in sun and shade. In a short time I found another white one, with just a faint shading of palest blue, perhaps even lovelier than the other.

The following day, July 12th, we were crossing a pass between the Halfway River and the Sikanni Chief River. There were many of the little blue pentstemons, which had not



Josephine Henry

Oxytropis saximontana



M. G. Henry

Near the source of the Sikanni Chief River

varied in color. As a matter of fact, they were entirely perfect as they were, it being quite impossible to improve upon their handsome shade of blue. I was pleased, however, to see a most beautiful pink one. My horse while trotting, had stepped right over it before I could stop him. There was no tinge of purple to spoil the pureness of its rosy hue.

Later on while riding through a forest where, as usual, mertensias showed blue everywhere, a pure white one suddenly appeared ahead. The flowers were quite globular and resembled fine pearls. My tin cans were full, so I untied my raincoat from my saddle and soon tied it on again, a larger bulk with a precious cargo.

Rain had been threatening all day and soon it began to pour, and kept it up for hours. There had been both muskeg and fallen timber to negotiate that day and we were over eight hours in the saddle with not a single stop, except to hastily collect a few flowers and it was a tired bunch of horses we brought in that night. Most of us were badly bruised on the arms and legs from horses bumping us against the close-growing trees.

Next day I was surprised to find a tiny "flowering" fern, *Botrychium lunaria*, only 2 inches high growing on a bleak pass at an altitude of 4,200 feet.

There are some people who just cannot bear those various shades of red-purple that are damned by the appellation of magenta. It seems to hurt their eyes and their feelings too. I must be honest and admit that one time in my life I felt that way also. But that was in the dark, dim "long ago," before I had seen the Scottish hills aflower in all their heather-glory.

Before I had seen a mountain with nothing in bloom on it but *Rhododendron catawbiense*, as far as I could see, only *Rhododendron catawbiense* and one lone bush of the flame azalea. And up in those high hills magenta came into its own again.

One glorious day, but all days are glorious in this wonderful land of "beyond," one day, therefore, we stopped to eat our noon sandwich. I usually ate mine on horseback so I would have this half hour to wander about and hunt for something of interest, and I never had to search in vain. The spruce trees about us were growing in a sort of scattered fashion. There was quite a bit of open space between them, and so their fine dark green spires were each almost perfect. A soft pale gray-green lichen, growing in those billowy little mounds that have a way of softly bubbling over, completely covered the stony ground everywhere except for a tuft or two of *Dryas integrifolia*. I continued my way for a while when I became conscious of a delicious fragrance, something like that of a wild rose, in the air. I looked up. I could see them ahead through the trees. In a wide open space, from which evidently a storm had stripped the timber, were several dozens of *Hedysarum Mackenzii* in all their wild barbaric magenta, but in a tone so pure, so deep and rich and splendid I thought I had never seen anything more magnificent.

July 14th found us encamped on the shore of Redfern Lake with snow-capped mountains rising all about us. After rowing across the lake in our pneumatic boat, a half hour's climb through dense spruce forest brought us to Fairy Lake, more beautiful even than Redfern.

We climbed a shoulder of Great Snow Mountain just south of the



Josephine Henry

Dryas integrifolia

lake. This led us up its northern slope which was what I wanted. *Pyrola asarifolia*, *Pyrola chlorantha*, *Corallo-rhiza innata* and *Linnaea borealis americana* were abundant under the trees. We crossed a creek, the outlet of Fairy Lake, on a log jam which fortunately was in a convenient place. In about twenty minutes we came to a stony valley which we followed until we got above the trees. *Epilobium latifolium*, 8 to 10 inches tall, was growing in the rocky debris with flowers frequently over three inches in diameter. Here again this magenta color, with only the dull gray stones for a background and the epilobium's own foliage almost the only green, compelled admiration.

There were also some small round mats, 4 to 12 inches across, of dwarf *Oxytropis arctobia* with silken silvery foliage and pretty pinky lavender blossoms, large for the size of the plant. This little flower is a real gem and rarely exceeds two inches in height. After climbing up the stony sides of the "draw" we came to one of those Alpine meadows so dear to the heart of every plant lover. Scarcely had I set foot on the fine turf, before I

found *Rhododendron lapponicum* in plenty. Alas, its flowers were over. Many other lovely things en route forced me to linger more than once. *Dryas integrifolia*, though only about one-quarter the size of *D. octopetala*, bore flowers almost as large.

Anemone parviflora, whole exquisite flowers were white inside and externally shaded a fine blue, was everywhere. *Pedicularis capitata*, with yellow flowers, *P. oederi* whose flowers were a deeper shade and tipped with red, and *P. lanata* which bore blooms of the loveliest shade of soft lavender imaginable, were here also. The bright flowers of *Hedysarum Mackenzii*, dwarfed at this height, were prettier than ever. There were prostrate salices, a vaccinium, saxifragas, and a few other things. I had almost despaired of finding *Rhododendron lapponicum* in bloom, when behind some big rocks near the snow I found a plant in flower. My joy for the day was complete. I placed the blossoms carefully in my press, and as it was now growing late we turned our steps toward camp.

(To be continued.)



B. H. Chandlee

Redfern Lake



M. G. Henry

*Beautiful natural rock gardens on Great Snow Mountain
Fairy Lake on left*

American Clematis for American Gardens

By J. E. SPINGARN

A few of our native Clematis are fairly well known in gardens, and almost everyone knows the wild clematis of our hedgerows and roadsides, with their plumes of "Old Man's Beard" in Autumn. But these are only a very small part of what nature has offered us for the beauty of our fields and woods, or for introduction into the more intimate atmosphere of our gardens. It is true that they can hardly vie for mere gorgeousness of display with those large-flowering hybrids which adorn so many English gardens, and of which *C. Jackmani* is the most common in our own. But many of them have a certain wild beauty, a shy loveliness, which should endear them to American hearts for their own sake, and make us turn to them when we tire of the showier kinds. Some of them are better known in English gardens than in our own; and in a recent article in an English periodical on clematis for the rock garden, three of the four species recommended are native to the United States. In fact, except for Eastern Asia and the Himalayas, there is no region in the world richer in clematis than our own country.

Few people realize how many species of clematis are scattered all over the earth, in Asia and North America, in Europe, New Zealand, Australia, South and Central America, Africa, and the islands of the sea. Over four hundred species have been described by botanists, after making allowances for all recognized synonyms; but many of these represent very slight differences which conservative bota-

nists do not accept as sufficient to create specific rank, and numerous synonyms are yet to be ascertained, so that the actual number remains in doubt. Our knowledge of them has increased enormously during the last century as the result of botanical exploration and study. Fifty years ago Kuntze attempted to reduce them to 66 species and 100 subspecies; and since then they have been estimated in very different ways, from the 100 of Britton to the 240 of Rehder. Perhaps it would not be unreasonable to say that there are at least 300 species. This does not take account of the vast number of garden hybrids, which some gardeners (though not very wise ones) think are the only kinds worth considering, and of which there are at least 200 or 300.

Not all of these are worthy of a place in gardens. A few are weedy things, and best forgotten; but most of them are of real interest to the gardener for one reason or another, and many are of inexpressable loveliness. Most of them are climbers, but some are erect, both herbaceous and woody, and they range in size from twelve inches to thirty or forty feet. They are of an almost unimaginable variety of shapes and colors. Taking the genus as a whole, and including the garden hybrids, one might say that the colors include nearly every shade in Ridgway's color-chart; and the shapes are quite as diverse—there are small, medium, and large flowers; flat, tubular, and urn-shaped flowers; flowers like anemones or apple-blossoms or semi-double roses.

So that many people, confronted by a new species, often exclaim, "But this isn't what I thought a clematis was like at all!" The differences are in fact so great that some botanists have divided the genus into three or even four genera, to which they have given the names *Clematis*, *Viorna*, *Atragene*, and *Viticella*. For garden purposes it seems useless to split the genus in this way, and even most botanists have rejected the division; but it is obvious that there are several distinct types of clematis, and some knowledge of these botanical distinctions is useful, indeed almost essential, to the gardener.

Asa Gray's *Synoptical Flora of North America* (not to be confused with his widely used *Manual of Botany*) lists 26 species of clematis in the United States, but more than fifty have been described by botanists, and it still remains a question how many are worthy of specific rank. They may be divided into three main types:

I. *Paniculata Type*. This type is the one most commonly associated with the name clematis, and the botanical "splitters" admit its right to the name. All the species of this type are climbers, with compound leaves, and small white flowers in panicles. It includes our common *C. Virginiana* and the western *C. ligusticifolia*. Gray, following De Candolle, calls it the *Flammula Group*, after the European *C. flammula*; but English gardeners usually refer to it as the *Paniculata Type*, and as the Japanese *C. paniculata* is more widely distributed in our gardens, I have followed this usage. Personally I should prefer to call it the *Virginiana Type*, but this would hardly be as clear to gardeners in some parts of the United States and in all parts of Europe. The American

species of this type are more closely akin to the European *C. Vitalba* than to either *flammula* or *paniculata*, and they are therefore referred by some botanists to the *Vitalba Type*.

II. *Viorna Type*. This type has tubular, urn-shaped, or pitcher-shaped flowers, usually solitary (sometimes two or three). It includes both climbers and non-climbers. It derives its name from the dull reddish purple *C. Viorna* of the middle west, but the species best known in gardens are *C. texensis* (syn., *coccinea*) and *C. crispa*. There are many species of this type, and a wide diversity of shades of color and other differences between plants of the same species, so that the problem of nomenclature or identification presents incredible difficulty; but all of them exhibit an unmistakable resemblance in the shape of the flower, which is quite different from that of any other type of clematis.

III. *Atragene Type*. The genus *Clematis* is distinguished by the fact that the flowers have no petals, the most conspicuous colored portion being petal-like sepals. But in this type the staminodes (sterile or abortive stamens) have become enlarged, and in some cases are so large as to partake of the nature of petals; in fact, they are called petals by some botanists. The species are climbers or low trailers, and most of them are admirably adapted to the rock garden. The type species is the European *C. alpina*, to which Linnaeus originally gave the name of *Atragene alpina*, and the American representatives are *C. verticillaris*, the purple clematis of our eastern woods, or its western variety *columbiana*, and the *C. pseudoalpina* (syn., *alpina occidentalis*) of the Rocky Mountain region. The

finest representative of the type, however, is the *C. macropetala* of North-eastern Asia.*

PANICULATA TYPE

None of the species of this type are outstanding for the conspicuous beauty of their flowers, but their fruiting heads are attractive in autumn; they make excellent screens, and they are useful in the rougher parts of the garden. The representative of the type in the Eastern states is *C. Virginiana*, and its plumes of "Old Man's Beard" may be seen along the roadsides of New York and New England almost anywhere in autumn; but its range extends as far as Manitoba, Kansas, and Georgia. Its dull white flowers, growing in panicles, are dioecious, that is, male and female flowers grow on separate plants, and its leaves consist almost always of three leaflets, though occasionally of five. In

this it is distinguished from the Western variety, *C. ligusticifolia*, which much resembles it, but the leaves of which consist nearly always of five leaflets, though occasionally of six or seven. This species is also dioecious, and it grows almost everywhere in the Middle and Far West.

Several species are so closely allied to these as to seem mere varieties. *C. Catesbyana* (syn., *holosericea*) of the Southeastern states differs chiefly from *C. Virginiana* in the pubescence of the leaves; *C. missouriensis*, of Missouri, Arkansas, and Nebraska, with five leaflets and so closer to *C. ligusticifolia*, has also a more persistent pubescence; and *C. Suksdorfii* of British Columbia and Washington differs from *C. ligusticifolia* in other minor botanical details. *C. drummondii* is a desert form of the same type, growing in dry soil in Texas, New Mexico, and Arizona, as well as in Mexico, with pinnate leaves and an ashy pubescence on the leaves and stems.

There are two California species of this type. *C. lasiantha*, which inhabits rocky slopes and dry woods, or scrambles over bushes in ravines, has larger and more fragrant flowers than either *Virginiana* or *ligusticifolia*, ranging in color from white to a delicate shade of pale yellow, and has thicker but shorter masses of feathery fruiting heads in autumn, but is a shade less hardy. *C. pauciflora*, which clammers over bushes and trees on the slopes of Southern California, has somewhat smaller flowers and leaves of three to five leaflets, and is even less hardy; but its delicate, airy foliage is graceful indeed.

There are still other forms of this type, such as *C. neomexicana*, which I have not yet grown, but which appears to be closely allied to *ligusticifolia*; *C. brevifolia* of California,

*Native species of clematis can be obtained from Henry Kohankie & Son, Painesville, Ohio; D. M. Andrews, Boulder, Colorado; Upton Gardens, Colorado Springs, Colorado; Carl S. English, Jr., Seattle, Washington; Carl Purdy, Ukiah, California; Mrs. W. D. Diddell, Jacksonville, Florida, and other sources. Some of the most popular species, such as *C. texensis*, *crispa*, *virginiana*, or *ligusticifolia*, can be found in almost any of the larger nurseries. The garden hybrids derived from American species, such as Countess of Onslow and Duchess of Albany, seem to be unobtainable in this country at present.

Eighteen American species are described in Bailey's *Standard Cyclopedia of Horticulture* and thirteen in Rehder's *Manual of Cultivated Trees and Shrubs*; but for more extended study or collection, recourse should be had to Gray's *Synoptical Flora of North America* (1895), John K. Small's *Flora of the Southeastern United States* (2nd ed., 1913), P. A. Rydberg's *Flora of the Rocky Mountains and Adjacent Plains* (2nd ed., 1922) and *Flora of the Prairies and the Plains* (1932), and Edgar T. Wherry's paper on "The Eastern Short-Stemmed Leather-flowers" in vol. xxi of the *Journal of the Washington Academy of Sciences* (1931), to all of which I am greatly indebted. I am under special obligations to Dr. Small for permitting me to see the proofsheets of his forthcoming *Manual of the Flora of the Southeastern United States* (a revision of his earlier *Flora*) and for other valuable assistance; and Mr. Montague Free has been most generous in helping me to procure rare seeds and in many other ways. My article on "The Climbing Clematis" in the *Bulletin of the Garden Club of America*, New York, November, 1932 (reprinted in the *Gardener's Chronicle*, London, January 14, 1933), contains a brief bibliography covering the whole genus.



L. W. Brownell

Clematis virginiana

which is really a mere variety of *paucifolia* with somewhat larger leaves and flowers; and *C. dioica*, which has the tiniest flowers of the group, and may be described as a poor relative of *C. Virginiana*, but which is remarkable for the wide range over which it extends, from Southern Arizona, New Mexico, and Texas, through Mexico, Central America, and the West Indies, and all through South America to Peru and Argentina. But these have only a botanical interest, and are hardly ornaments of the garden. Indeed, except for the passionate collector of clematis, *C. Virginiana*, *C. ligusticifolia*, and *C. lasiantha* will suffice. These are attractive plants, though for garden purposes possibly somewhat inferior to the European *C. Vitalba* or the Japanese *C. paniculata*, to which they are most closely related.

All the species of this type are generally known as Virgin's Bower, but some of them have local names of racier charm. So *C. Virginiana* is variously called Wild Clematis, Traveller's Joy, Love-Vine, Devil's Hair, Devil's Darning Needle, and Wild Hops; *C. ligusticifolia* is sometimes called Wind-Flower; *C. lasiantha*, Pipe-Stem; and *C. pauciflora*, Rope-Vine. *C. Virginiana*, like *C. Vitalba* in England, is also sometimes called Old Man's Beard because of its long plumes in autumn, just as *C. dioica* for a similar reason is known in South America as "Juan Lana," which means John Wool or woolly-head.

VIORNA TYPE

This type, as I have already pointed out, is distinguished by its urn-shaped or pitcher-shaped flowers, and no one who has ever seen a single blossom of any clematis of this type will ever

be in doubt about it again. It is this type which especially causes the novice to exclaim, "Is that really a clematis?" and which makes even the hardened gardener wonder at times whether the "splitters" are not justified in assigning it to a separate genus. The members of this group are known collectively as Leatherflowers, because of the leathery or fleshy texture of the calyx, but the name properly belongs to a single species, *C. Viorna*, which is the most leathery of all.

The chief glory of the Viorna Type is the Texas or Scarlet Clematis, *C. texensis*. It was first collected in Texas in 1850, and was called *C. coccinea* by Engelmann, but as this name was apparently never published by him, though it was ascribed to him in print by Gray three years later, the name given by Buckland in 1861, *C. texensis*, is now regarded as official. It is a slender climber, hardy in New York and, at least along the seacoast, as far north as Bar Harbor, Maine. Its flowers range in color from scarlet to rose-pink, but a typical blossom may be described in Ridgway's terms as begonia rose to spectrum red on the outside, and pale pinkish buff, sometimes flushed geranium pink, on the inside. All the members of the Viorna Type are excellent for trellises or fences, for scrambling over bushes, or for the wild garden, and some for the large rock garden, but none is more graceful and delightful than this one. My own plants bloom during July and August, with always some blossoms still flashing until frost extinguishes their fire. Some thirty years ago Max Leichtlin in Baden-Baden, by constant sowings and selection, produced a seedling with flowers three times the ordinary size, but this strain has disappeared, if it was ever introduced into cultivation, and some



Donald Merrett ©

Clematis texensis

adventurous American may make a new attempt to do something of the sort, though it is difficult to see how the flower could be improved by mere increase in size. But care should be taken in selecting a good strain, with the true brilliance of the flower at its best, for dingy and disappointing forms are not uncommon, and it is always risky to grow seeds from unknown plants. Of the various hybrids produced from *C. texensis*, I shall have something to say hereafter.

A slender climber of much the same kind is the Marsh or Curly Clematis, *C. crispa*, with flowers of varying shades of purple or steel-blue. It also has graceful foliage, and its flowers appear a little later than those of *C. texensis*. It is hardy at Bar Harbor, and has survived for several years in a Montreal garden, though it has not yet flowered there. It is a native of the South, from Virginia to Florida and Texas, and is usually found in swamps and wet woods, sometimes in acid soil, but in my own garden it thrives in ordinary loam which has been well limed. A Florida variety, *Walteri*, has much narrower leaves, and both the type and its variety are distinguished by sharply recurved sepals.

Other attractive climbers of similar type, all ranging in color from lavender or pale pinkish purple to dark purple, are *C. versicolor* of Missouri and Arkansas, *C. reticulata* of our southern states, and *C. Pitcheri* (syn., *Simsii*). But the most attractive of the whole group, with the exception of *texensis*, seems to me to be a new species or natural hybrid of unknown origin, now growing in my own garden at Troutbeck, and of which a full botanical description will be found elsewhere in this article. This I have called *C. troutbeckiana*. It is a sturdy

climber up to ten feet or more, and grows easily in any well-limed garden soil. In July and August it bears a profusion of lavender or pale pinkish purple flowers, or in Ridgway's terms, pale bluish lavender to lavender on the outside, with the tips and inside pale turtle green. It should be widely planted, and as I know of no place where plants can be procured, I shall be glad to send seeds to any clematis enthusiast while the supply lasts.

There are also several interesting low herbaceous plants in this group, especially *C. ochroleuca* with its pale yellow flowers, *C. Scottii* from the Far West with light blue to bluish violet flowers, and *C. Fremontii* from Kansas and Missouri, with lavender flowers, all of which would fit admirably into the rock garden or wild garden. *C. Baldwinii*, a dainty gem from Florida, is of dubious hardiness, but might suit the acid soil of Long Island and Philadelphia.

But the number of species of the *Viorna* Type seems to be legion, and the confusion regarding them is often exasperating. Our South and Southwest are especially rich in species, and some of these have never been introduced into our gardens. I append a bare catalogue of most of the species of this type, as a sort of running guide through the maze of species, synonyms, and dubious names. I have tried to make clear that there are far fewer distinct horticultural forms or true botanical species than this deluge of names and minute differentiations might lead one to suppose. But my chief hope is that such a list may make gardeners aware of the treasures that still await them, and may tempt them to search for the plants and introduce them into cultivation. To the gardeners from Virginia to



D. M. Andrews

Clematis Scottii

Texas, especially, it should serve as a call to action. I have grown, or tried to grow, a dozen or more of these species in my own garden, but the rest I know only from dried herbarium specimens, a tantalizing form of half-knowledge for the lover of growing things. Nearly all of

them are of some shade of purple, except where otherwise indicated.

C. Addisonii—A low plant, one to three feet high, along river banks in Virginia, North Carolina, and Tennessee, the lower leaves simple and sessile, the upper pinnate with sessile leaflets.

C. albicoma—A low plant in the shale barrens of Virginia and West Virginia, related to *C. ochroleuca*; formerly known as *C. ovata*, but not the *ovata* of Pursh, which is a synonym, or geographical variation, of *C. ochroleuca* itself. The name, according to Dr. Wherry, is "derived from its most unique character, the whitish hairs on its achene-appendages."

C. arizonica—An Arizona form of *C. Douglasii*, with interesting grass-like foliage, collected by Dr. McDougall at an altitude of 7,000 feet in Walnut Canyon.

C. Bakeri—A Colorado form of *C. Douglasii*, growing at an altitude of 7,000-8,000 feet.

C. Baldwinii—The "pine-hyacinth" of the pinelands and acid marshes of peninsular Florida, with pinkish purple flowers, a delightful little plant about a foot high, as may be seen from the colored illustration of it in *Addisomia*.

C. Beadlei—Closely related to *C. reticulata*, and for horticultural purposes identical, found in the hills of Georgia and Tennessee.

C. Bigelovii—A tiny-flowered form of *C. Pitcheri* in New Mexico and Arizona, with delightfully airy leafage.

C. coccinea—A synonym of *C. texensis*.

C. cordata—An obsolete name; the *cordata* of Sims is a synonym of *C. crispa*, and the *cordata* of Pursh is a synonym of *C. Virginiana*.

C. crispa—A slender climber in wet ground in the South, already described and commended. The variety *Walteri* has much narrower leaves, and is sometimes given specific rank as *C. Walteri*.

C. cylindrica—Another synonym of *C. crispa*; but it is also sometimes re-

ferred to a hybrid (*C. crispa* × *C. integrifolia*) which I am unable to trace, and certainly the *C. cylindrica* illustrated in Lavallée's *Les Clematites à grandes fleurs* is quite different from *C. crispa*.

C. Douglasii—A low plant, about two feet high, growing in Montana, Wyoming, and Washington, with narrow leaves and purplish flowers; also known as *C. hirsutissima*. The variety *Jonesii* grows in Colorado and New Mexico, and differs from the type in the dilated margins of the sepals, the petioled and less compound leaves, and the more brownish cast of the color of the flower. In the variety *Scottii* (sometimes given specific rank as *C. Scottii*) which is found from Montana and Wyoming to New Mexico, the leaves are twice pinnately divided, instead of three times as usual in the type, and the light blue to bluish violet sepals are somewhat covered with long, soft hairs; it is perhaps the most attractive of these bushy Western Viornas, and thrives best in well-drained soil and a sunny position. The foliage of all these is almost fern-like.

C. eriophora—Found from Wyoming to Utah and New Mexico, and closely related to *C. Douglasii* and *C. Bakeri*, but the stems and leaves have soft whitish hairs; one of the more attractive of the Viornas. It prefers leafmold soil and partial shade.

C. filifera—A Mexican species, or variety of *C. Pitcheri*, found in southern Texas and New Mexico.

C. flaccida—Found in thickets in Kentucky and Tennessee; resembles *C. Viorna* except that its leaflets are entire and more hairy, and the sepals are lavender with greenish tips.

C. Fremontii—A low plant growing in Kansas, Nebraska, and Missouri,



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Clematis eriphora

closely related to *C. ochroleuca*, with lavender or lilac flowers.

C. Gattereri—Growing along river banks in Tennessee. Closely related to *Viorna* but is distinguished by its slender habit, glandular pubescent foliage, small flowers with slender, tail-like ends, and short plumose styles.

C. glaucophylla—A climber found along river banks from Kentucky and North Carolina to Alabama and northern Florida, with reddish stems up to fifteen feet, leaves pale and glaucous underneath, and bright shining purple flowers. Regarded by some as a variety, or even a synonym, of



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Clematis Fremontii

C. Viorna, but certainly a much more striking form.

C. hirsutissima—A synonym of *C. Douglasii*.

C. Jonesii—A variety of *C. Douglasii*.

C. obliqua—A form of *C. crispa* found in woods and swamps from Florida to Georgia.

C. ochroleuca—A herbaceous perennial species, one to two feet high, growing from Staten Island, New York, to Georgia, with entire, ovate leaves and solitary, cream-colored or yellowish-white flowers (with or without a purplish tinge) in spring;

found usually in shale or sandy soil; an interesting plant for the rock garden or wild garden.

C. ovata (the true *ovata* of Pursh, not the misnamed *ovata* of most recent floras, which should now be called *C. albicoma*)—Is regarded by Dr. Wherry as a variety, or geographical variation, of *C. ochroleuca*, growing from Virginia to Georgia, ranging in color from creamy gray or pale yellowish white to various shades of purple.

C. Palmeri—An Arizona form of *C. Pitcheri* (or *C. filifera*) collected by Rose at Fort Apache in 1891.



Mrs. G. R. Marriage

Clematis Scottii

C. Pitcheri—A climber scrambling over bushes from Southern Indiana and Tennessee to Iowa and Texas; improperly called *C. Simsii* in most floras and catalogues, but not the *Simsii* of Sweet, which is merely a synonym of *C. crispa*. Its flowers, which are purplish with the insides and recurved tips greenish yellow, bloom from June to September, never making much of a display at any one time, and it lacks the feathery plumes of most species. For these reasons Rehder (who calls it *C. Simsii*) thinks it "not very showy" but W. J. Bean regards it as "the best of the *Viorna* group in (English) gardens."

C. plattensis—A synonym of *C. Douglasii* Jonesii.

C. reticulata—A slender climber allied to *C. crispa*, growing in sandy soil along the coast from South Carolina to Florida and Texas; its leaves

have coarsely netted veins and are leathery in texture, and its sepals are recurved at the ends. A form with smaller and thicker leaflets, *C. subreticulata*, is found from Alabama to Arkansas and eastern Texas.

C. Ridgwayi—An Illinois form of *C. Viorna* with long-tipped leaf-lobes.

C. Sargentii—A variety of *C. Pitcheri* with smaller, paler leaflets; formerly known as *C. Simsii Sargentii*.

C. Scottii—A variety of *C. Douglasii*.

C. sericea — Regarded by Dr. Wherry as merely a variety, or local variation, of *C. ochroleuca*.

C. Simsii—Has been regarded as a synonym of *C. Pitcheri*, but improperly, for the *Simsii* of Sweet is not the *Pitcheri* of Torrey and Gray but merely a synonym of *C. crispa*. See *C. Pitcheri*.

C. texensis—Formerly known as *C. coccinea*, is the most striking and most generally admired species of the Viorna Type, and has already been described and commended. A variety, *major*, has somewhat larger flowers.

C. troutbeckiana—A new species or natural hybrid of unknown origin, now growing in my garden at Troutbeck, and already referred to at some length. As there is no species exactly like it in the herbarium of the Arnold Arboretum, New York Botanical Garden, Brooklyn Botanic Garden, and Philadelphia Academy of Natural Sciences, or in the herbarium and living collection of Kew, I have given the plant this new name, and append a botanical description in a footnote.*

C. versicolor—A slender climber growing in scree soil from Missouri to Arkansas, with flowers of different

shades of lavender or light pinkish purple. It requires perfect drainage and full sun.

C. Viorna—Found from Pennsylvania and Ohio to Georgia and Alabama, with dull reddish purple flowers of very leathery texture and tawny, or brownish, seed-plumes (rarely white). A graceful plant, but its flowers are perhaps the least attractive of the Viorna Type.

C. viticaulis—A low plant growing in the shale region of Virginia, closely related to *C. ochroleuca*, with purplish (occasionally creamy gray) flowers.

C. viornioides—Said by Britton to be a natural hybrid between *C. Viorna* and *C. Addisonii*, growing at Roanoke, Virginia.

C. Walteri—A variety of *C. crispa*.

C. Wyethii—A low perennial, closely allied to *C. Douglasii*, found in Idaho, Montana, and Wyoming, and having the somewhat fern-like foliage of the type.

Popular names for this group abound. We have already seen that they are known as Leatherflowers because of the leathery or fleshy texture of the sepals; and in the South, among the unlettered, they are often called "nigger-heads" because of the round, kinky masses of plumes attached to the seed vessels. There are also numerous local names for the various species such as blue-jasmine, curl-flower, marsh clematis, blue-bell, and curly clematis for *C. crispa*, curly-heads and dwarf clematis for *C. ochroleuca*, vase-vine and leather-flower for *C. Viorna*, pine hyacinth for *C. Baldwinii*, and sugar bowl, old maids' bonnets, old man's whiskers, and lion's beard for *C. Douglasii*.

ATRAGENE TYPE

The species of the Atragene Type are all climbers or low trailers with

**Clematis troutbeckiana* Spingarn, a new species or natural hybrid. A climbing vine, with glabrous, reddish brown, and striped stems to 2.5-3 meters long or more; lower leaves simple and entire (or a few low down on the stem rarely lobed); blades elliptic or ovate, 7-10 centimeters long, obtuse to retuse at the apex, strongly veined and pale to glaucous beneath, obtuse to subcordate at the base; petioles 1-2.5 centimeters long; upper leaves pinnate; leaflets 2-7 centimeters long, the blades elliptic, entire, obtuse to submucronate at the apex, acute at the base; inflorescence compound, subtended by a pair of large (6-7 centimeters) bracts with ovate blades which are finely reticulate above, prominently reticulate beneath, and slender petioles; middle branch of the inflorescence elongate, naked, the two lateral branches shorter than the middle one, each bearing a pair of nearly sessile bractlets below the middle; flowers appear in July and August; calyx urceolate; sepals thick, petal-like, lavender or pale pinkish purple without, the recurved tips and within pale green; achenes numerous, the body rhombic-ovate (or rhombic-ellipsoidal to rhombic-orbicular), inequilateral, silky, the persistent styles silvery-plumose.—This description is reprinted from the *Gardener's Chronicle*, London, October 21, 1933, with a few slight changes. A Latin description is now added to conform to the international rules:

Sp. nov. aut hybr. nat. Frutex scandens, ramulis glabris et lineis rubido-brunneis distinctis, 2.5-3 m. longis; folia inferiora simplicia et integra, elliptica aut ovata, 7-10 cm. longa, supra obtusa aut retusa, basi obtusa aut subcordata, subter colore pallido, petiolis 1.5-2 cm. longis; folia superiora pinnata, foliis ellipticis, integris, 2-7 cm. longis, supra obtusis aut submucronatis, basi acutis; inflorescentia composita, ramulo medio elongato, subtento 2 bracteis ovatis et reticulatis, 6-7 cm. longis, et ramulis laterali-bus bracteolis prope sessilibus; calix urceolatus, sepalis crassis, petaloideis, colore subrubido-subpurpurino extrinsecus, viridulo-subflavo intus; achenia rhombico-ovata, stylis plumosis.



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× *Clematis Troutbeckiana*, showing the halfripe fruiting heads

compound leaves and fairly large flowers, nodding and solitary, mostly with four petal-like sepals and usually with the outer or sterile stamens, called staminodes, more or less petal-like. The Eastern representative of this type is *C. verticillaris* (also called *Atragene americana*), which is found on limestone ridges and in rocky woods from Quebec and Manitoba to North Carolina, and is known locally as the Purple Clematis, Bell-rue, Mountain Clematis, Rock Clematis, and Purple Virgin's Bower. The leaves are three-foliolate, and arranged in a kind of whorl. Its purplish blue flowers appear in May and June, and are among the rarest of wild flowers. It delights in a soil composed of limestone and leaf mold, and thrives best in semi-shade. Its Far Western variety, *columbiana*, sometimes given specific rank as *C. columbiana*, is found from British Columbia and Washington to Colorado and Utah, and in the wild appears to be a taller climber than its Eastern relative; it delights to clamber over bushes and even up trees. It is a very variable species, and differs from the type chiefly in having narrower and more pointed sepals. An interesting colored illustration may be found in Mrs. Walcott's *North American Flowers*.

Somewhat different is the Far Western species, *C. pseudoalpina*. Originally regarded as an American variety of the European *C. alpina*, and called *C. alpina occidentalis*, it is now considered a separate species. Its foliage is twice three-foliolate and finely divided, and its nodding flowers, with lance-shaped sepals ranging in color from light mauve to purple or violet and even rarely white, have a charm of

their own. It may be given space in any large rock garden, or allowed to scramble over bushes in the wild garden. It is an attractive and unusual plant. There is a charming colored illustration of its European namesake in *Gartenschoenheit* (1920), running over a rock, as it were, like a water fall, the lovely blue of the flowers harmonizing with the scintillating hue of the rocks; and there is no reason why the American form cannot serve the same purpose.

Various forms of these species occur throughout the Rocky Mountain region, and may be regarded as varieties or as separate species, such as *C. diversiloba* and *grosseserrata* with three-foliolate leaves, and *C. tenuiloba* and *repens* with twice three-foliolate leaves. All of them ought to be better known to Eastern gardeners; yes, and to Western gardeners too. They are more difficult to establish than most of the species of the Paniculata and Viorna Types, but they are distinctly worth all the trouble they may give.

NATURALIZED SPECIES

At least three foreign species have become locally naturalized in the United States: the Japanese *C. paniculata* in various places from New York to Florida; the Italian *C. Viticella*, in Tennessee; and the yellow Chinese climber, *C. orientalis*, from Idaho to New Mexico. The last was at first thought to be a new species and was named *C. aurea* until its true identity was discovered.

This is no doubt an incomplete record, but it suggests to the imagination what the wild garden of the future may become. In a limestone



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Clematis (Atragene) columbiana

country several delightful species of clematis, quite in keeping with our native flora, may be made to thrive and increase. Such native species as *texensis*, *crispa*, *verticillaris*, *pseudoalpina*, *Fremontii*, *ochroleuca*, and *ligusticifolia*, suit the wild garden admirably; such foreign species as *tangutica*, *orientalis*, *Viticella*, *paniculata*, *Vitalba*, *alpina*, *macropetala*, *montana*, *brevicaudata*, and the like, would blend charmingly with their native neighbors; and even such hybrids of our own *texensis* as Countess of Onslow and Duchess of Albany would not be out of place.

GARDEN HYBRIDS

A number of very interesting plants have resulted from the crossing of some of our native species with other species and varieties, both American and foreign. So far as I know, this has been accomplished exclusively by

European hybridists; and what is even stranger, not a single one of these hybrids can at the present time be procured in the United States. Surely these foreign-born children of American blood should find a welcome in their ancestral home.

C. texensis (syn., *coccinea*) appears to have been the most prolific parent of this new race of hybrids, and Camillo Schneider has grouped its progeny together under the name of *pseudococcinea*. As early as 1893, Max Leichtlin had crossed *C. texensis* with the large-flowering Chinese *lanuginosa* and Edouard André had crossed it with the American *Simsii* (or *Pitcheri*). But it was not until the following year that *texensis* began to produce its most glorious offspring. In June, 1894, George Jackman & Son exhibited Countess of Onslow, which received a first-class certificate from the Royal Horticultural Society. It was a hybrid between *texensis* and

Star of India, which is a reddish-plum to violet-purple hybrid of the Jackmani Type. It was a singularly happy cross. Countess of Onslow has retained something of the shape and color of *texensis*, but the flower is much larger and of a more campanulate or trumpet-shaped form, and the color is darker and richer. The introducer describes it as bright violet-purple with a broad band of scarlet down the center of each sepal; and this is a fairly accurate description of its final stage. But Ridgway would describe the young flower as Bordeaux, flushed pomegranate purple, on the inside, and Thulite pink to Spinel pink shading to sulphur yellow at the bottom on the outside. Nothing could be more graceful than this plant when in bloom. It has something of the airy grace of its wild father, and something of the dignity of its cultivated mother. Though not as showy as some of the open forms of hybrid clematis, it should be widely known and prized in American gardens.

By the following year, Messrs. Jackman had introduced several other offspring of *texensis*, Duchess of York, which is pale blush-pink, with a deeper tinge down the center of each sepal, Duchess of Albany, bright pink with a deeper tinge down the sepals and a softer tinge at the margins, Grace Darling, with star-shaped flowers of a delicate shade of rosy-carmine, and Sir Trevor Lawrence, deep crimson, one of the best; and a little later Admiration, deep salmon edged with violet, was added to this galaxy. Still later the French hybridists, using *texensis* as one of the parents, produced Madame Raymond Guillot, Madame Moret, and Madame Lerochet, but these have not held their ground like Jackman's creations.

C. crispa has also produced interesting offspring, both when crossed with *texensis* and with other species or varieties, and *C. Pitcheri* (syn., *Simsii*) has also been used successfully for this purpose. To this group belongs *C. divaricata*, which is supposed to be a cross between *C. Viorna* and *C. integrifolia*. All these should be better known, and further work with them and with other native species might be attempted by American hybridists, though heaven help us from the indiscriminate mass-production of new varieties by amateurs without skill or taste. Goethe defined an artist as a man who has the courage to murder his own children, and nowhere does this apply more truly than in the case of hybridization.

CULTURE

Nearly all clematis are lime-lovers, and the American species are no exception to the rule. When introducing a new species to the garden, it is nearly always safe to add a liberal quantity of ground limestone. Despite some recent doubts to the contrary, I believe that lack of lime accounts for failure in growing clematis more than perhaps any other single cause. For most of them, a compost consisting of loam, leaf mold, sand, and well-rotted manure, to which ground limestone has been added at the rate of one spadeful of limestone to a wheelbarrow full of soil, will provide an ideal home in which to grow; but if the soil is at all sour or acid, two or even more spadefuls of limestone may be added. There are of course exceptions. *C. versicolor* grows in scree soil, *C. ochroleuca* in shale, *C. Baldwinii* in acid soil. *C. columbiana* is sometimes found in open pine and Douglas fir forests.



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Clematis Countess of Onslow, a hybrid derived from the crossing of our native *C. texensis* with the hybrid *Star of India*

where the soil is hardly likely to be alkaline. *C. crispa* is found usually in marshes; and I am told that a variety, *C. crispa Walteri*, grows in acid swamps in Florida, but in its first

year at Troutbeck it has been thriving in limestone soil. The desert varieties, such as *C. drummondii*, demand little more than sand, with some leaf mold or loam and limestone added.*

*I have discussed the question of "Clematis and Lime" at greater length in *Gardening Illustrated*, London, November 18, 1933.

But nearly all varieties require good drainage, and nearly all prefer some

shade over their root-runs. Many of them scramble over bushes in the wild, and there is no better way of placing these than by planting them on the shady side of a low bush, and letting them climb into the sunlight through the branches. Some discretion, of course, must be observed, for rampant climbers like *C. Virginiana* or *ligusticifolia* would smother a delicate bush, but nearly all species of the Viorna Type, and some others, may be used in this way. In such cases a deep hole should be dug, and filled with new soil, in order to give the plant a chance to become established before it has to compete for food with the roots of the bush. If a vigorous climber is to be trained up through the branches of a tree, as is done in English gardens, even more protection may be necessary; a small barrel or tub, with the bottom knocked out, may be sunk in the ground, filled with soil, and the young plant allowed to nest in it.

With the American species pruning presents no special problem, as is the case with the large-flowering hybrids, though in my opinion every species and variety of clematis is all the lovelier for being allowed to grow in its own natural way. I quite agree with William Robinson when he says, "More words have been wasted about pruning than about anything else in gardening; by giving up all pruning trouble is saved, and one gets a more picturesque result." All that is necessary is to remove dead wood, if any, and certainly nothing more than this should be done with species of the Atragene Type. The species of the Viorna Type, which bloom on sum-

mer shoots, may be more severely pruned if desired; some are herbaceous or semi-herbaceous and, as it were, prune themselves. It is often said that the foliage of clematis should not be allowed to form too dense a mass, as circulation of air is important for the health of the plants; but while this may be true, I have personally found disease quite as often on single stems as on dense masses of foliage. There is no better way of preventing the spread of fungous disease than by carefully cutting off each leaf as soon as it exhibits any sign of disease or abnormal discoloration. But the question of disease is beyond the scope of this paper, and it need only be said that the American species are much less troubled by the nematode root-knot and the fungous stem-rot and leaf-spot than are the large-flowering hybrids.

It may be worth repeating, in conclusion, that nearly all the species of the Viorna and Atragene Types are fit ornaments of the rock garden. What has been said of the European *C. alpina* may be said of its American cousin, *C. pseudoalpina*, that "it is a plant that seems to exist for a home in the rock garden and nowhere else;" and an English writer, discussing *C. texensis* as a rock garden plant, says truly that "when once the elegant growths smother themselves with pitcher-shaped blossoms of a brilliant vermilion tint that shows up vividly against the gray of the stone, its true vocation is at once realized." But this species is equally at home on a trellis or fence, or scrambling over bushes, as I have already pointed out, and so

are its kinsmen, *C. crispa*, *troutbeckiana*, *reticulata*, and the other climbers of the Viorna Type. Those of the Paniculata Type are best adapted for screens, trellises, fences, and stone walls, or for covering tree stumps.

Indeed there is no part of the garden or home grounds that some member of this noble genus might not fitly adorn.

Troutbeck, Amenia, New York.



Mrs. G. R. Marriage

[See Page 90]

Clematis pseudo-alpina

Three New Euphorbiae from Madagascar

BY LEON CROIZAT

Several months ago Mr. Raymond Décary sent me specimens in fluid of various kind of *Euphorbia* collected by him at the extreme north (Bay of Diego Suarez) as well as at the extreme south (vicinity of Fort Dauphin) of Madagascar. Some of these belong to species already published (*E. stenoclada* H. Bn.; *E. plagiantha* Dr.; *E. enterophora* Dr.; *E. Decorsei* Dr.; *E. leucodendron* Dr.); some seem undescribed, but the material submitted is insufficient for definite identification. Three species can be diagnosed as new and recorded with sufficient accuracy, although a fuller description must await the reception of new material.

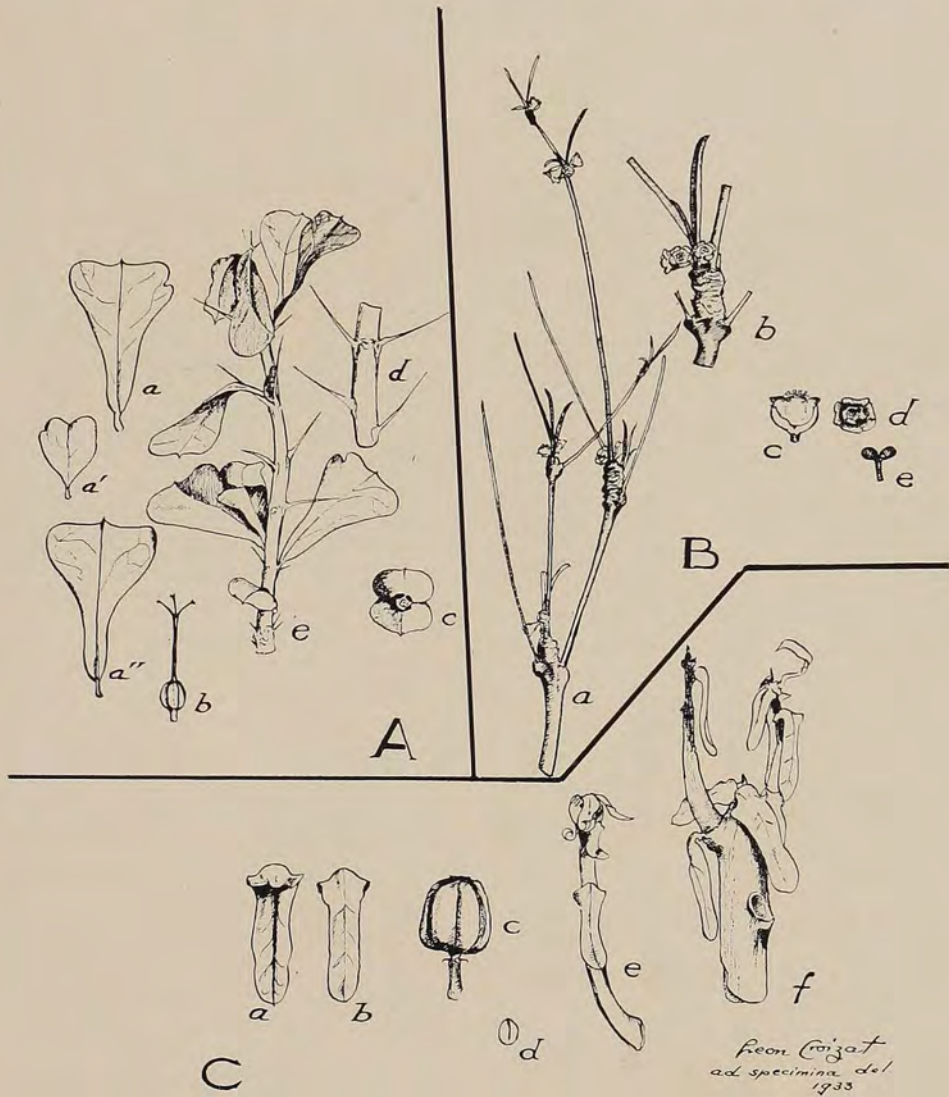
The specimen of a first undescribed species consists of the section of a terminal branchlet with a cyme, and from the notes and material may be briefly characterized as a very slender, comparatively low form of the group *Splendentes*. Mr. Décary describes it on the tag as a slender plant, about 5 ft. high with scarlet "flowers," growing on gneiss in the forest, collected at Bevilany between the regions of Anosy and Androy. This *Euphorbia*, which I will call *E. bevilaniensis* from the locality of collection, answers the following characters:

¹*Euphorbia bevilaniensis* sp. nov. Frutex ad 1.50 m. altus Ramis ultimis teretibus, laevibus, brunneis, e specimine viso 2 mm. diametentibus. Aculeis stipularibus scutello nullo, patentibus, ad 12 mm. longis. Foliis sparsis vel vepicillatis, breviter petiolatis, firmis, apice retusis vel truncatis, mucronulatis, spatulatis vel obconicis, quam maximo 20 mm. latis, ad 25 mm. longis, glabris, penninerviis: (folia quoque adsunt incisa vel obcordata). Cyma bis dichotoma; cyathio elongatiusculo, obconico, cincto bracteis rubris (cyathophyllis) basi connatis, ellipticis, integris, apiculatis, 5 mm. longis, 8-10 mm. latis; glandulis ellipticis, parvis centro depressis, porosis; lobis subquadratis fimbriatis; ovario (nondum maturo) breviter pedunculato, obovato, ad 1½ mm. longo; coccis 3 carinatis, sulcis profundis divisis; stylo 3 mm. longo; stygmatis bifidis ad 1½ mm. longis. Capsulam non vidi. *E. splendens* Boj. habitu similis, magnitudine, et praesertim forma foliorum diversa.

E. bevilaniensis, sp. nov.¹—A slender shrub about 5 feet high. Terminal branchlets round, smooth, with brown reddish bark, about 2 mm. in cross-section. Spines stipular up to 12 mm. long, not connected by a spine-shield, with tips spreading, the distance between those of each pair measuring 10-13 mm., acuminate, slender but slightly bulbous at the base.

The leaves are scattered, single or in whorls (such whorls forming most likely at "eyes," or points of growth, of new branchlets); they grow between the spines and have a short, thick petiole. The blade in the majority of the leaves seen expands gracefully from a point above the petiole to a maximum breadth of 20 mm., being up to 25 mm. long. The apex of most leaves is truncate or retuse with a small mucro, thus appearing distinctly spatulate or obconic with rounded upper angles. Other leaves are irregular in shape, dented or obcordate. All the leaves are glabrous, feather-veined and of firm texture.

The cyme is twice dichotomous, 2 cm. long in the specimen submitted, which unfortunately has been cut at some undetermined point above its insertion with the supporting stem. The elongate, obconic cyathium is clasped by a pair of red bracts (cyathophylla) connate at their base, elliptic, entire with an apiculus, 5 mm. long and 8-10 mm. broad. The glands are elliptic, small depressed at the center, porous. The subquadrate lobes are fimbriate. The immature ovary is shortly pedunculate, elongate, about 1½ mm. long, obovate with deep grooves between the three carinate cells. The style is well developed, 3 mm. long, with the stig-



A—*Euphorbia bezilaniensis* sp. nov.

a, a', a''=leaves
 b=ovary (immature)
 c=cyathium with bracts (from above)

d=section of the stem showing spines
 e=branchlet with leaves

B—*Euphorbia Decariana* sp. nov.

a=branchlet with cyathia and leaves
 b=a node
 c=cyathium with bracts (side-view)

d=cyathium with bracts (upper-view)
 e=stamen's apex with anthers

C—*Euphorbia suareziana* sp. nov.

a=leaf (back) d=seed
 b=leaf (front) e=branchlet
 c=capsule f=branch with branchlets

Note: all sizes are as given in the descriptions.

mas bifid approximately $1\frac{1}{2}$ mm. long. Fruit and seed not seen.

The classification of the group *Splendentes* (for which Rafinesque and Klotzsch & Garcke independently proposed a new generic name, an interesting fact worth careful consideration) is far from settled. In gardens two species are recognized, *E. splendens* Boj. and *E. Bojeri* Hook, also a number of varieties. Other Cinominals (*E. Mainiana* H. Poiss.; *E. rubrostriata* Dr.; *E. platyacantha* Dr.; non Pax; *E. melancantha* Dr.; *E. Hislopii* N. E. Br.) are controversial or doubtful. All that is known as present is that the group is well represented in Madagascar; that two species or forms, distinct in size, form of the leaf and color of the bracts, are cultivated side by side by the natives in the hedges of the Province of Imerina, Madagascar, without apparently ever giving origin to hybrids; that these two forms, also other ones which are being sought after and steadily collected, are being grown in the Botanic Garden at Tananarive; that the species or forms of the group grow scattered, often in stations numbering a few specimens only and separated by wide intervening tracts where such forms are not to be found (this alone suggesting the existence of more or less different chorotypes, some of which may be and are specifically distinct). With this in view and knowing that the classification of the group requires study, I propose *E. bevilaniensis*. Future investigation will reveal whether the form of the leaves as noted and described is constant, therefore specific.

The specimen of another undescribed species consists of two terminal branchlets, the larger one about 12 cm. long, with a number of mature cyathia and leaves in place. Mr. Décary's tag translated reads: "A small bush. Collected at the Pass of Manangotry, in the forest, at an altitude of about 1,600 ft." I will call this species *E. Decariana* in the honor of its discov-

erer. It may be described as follows:

Euphorbia Decariana sp. nov.²—A small bush. The branchlets are spineless, woody rather than succulent, smooth except at the nodes, terete, reddish-brown or chocolate-brown, very slender, the thickest ones seen measuring not more than 1 mm. in cross section. The nodes and the apexes at distances of from 2 to 5 cm. swell abruptly into barrel-shaped or club-shaped thickenings 7 mm. long or little less in the specimens observed, and twice as thick as the internodes.

Each node bears a variable number of branchlets which all diverge at acute angles. Some of these branchlets abort and remain on the plant, as it seems, as sterile twigs, this reminding the observer of the habit of *E. spinosa* L.

The leaves are scattered or in verticils of 3 or 4 only, at the nodes and at the apexes of the branchlets, never scattered on the internodes in the specimens observed. They are sessile, glabrous, 3-10 mm. long, and scarcely $1-1\frac{1}{2}$ mm. broad, V-shaped in cross section, with an abrupt recurved mucro.

The cymes are minute and crowded at the nodes. They are very shortly pedunculate, the total length of the peduncle and pedicels together not exceeding 2-3 mm., and bear from 1 to 4 cyathia. The cyathium is obconic or

²*Euphorbia Decariana* sp. nov. *Suffrutex*. *Ramis* ultimis lignosis, haud succulentioribus, inermibus, glabris, teretibus, brunneis, vix 1 mm. diametentibus, hinc inde (2-5 cm. intervallo e specimine viso) in nodos ad 7 mm. longos, 2 mm. diametentes evadentibus; e nodis ramulis, omnibus inter se angulo acuto divergentibus: horum nonnullis sterilibus persistentibus, ut videtur, habitu *E. spinosae* L. *Folius* in apice ramulorum vel ad nodos, nec non ad internodia, sparsis vel 3-4 verticillatis, glabris, sessilibus, late profundeque canaliculatis, 3-10 mm. longis, vix $1\frac{1}{2}$ mm. latis, mucrone brevi recurvo praeditis. *Cymis* minuseulis cyathiis 1 vel pluribus ad nodos confertis, breviter pedunculatis, pedunculis cum pedicellis vix 2-3 mm. altis; cyathio obconico vel urceolato bracteis 2 paene ad glandulas utrinque tecto, 1 mm. longo, $1-1\frac{1}{2}$ mm. ad faucem eato; bracteis membranaceis, dorso carinatis, apice acutis vel retusis vel bipartitis, parce denticulatis; glandulis 4 vel 5 suberectis vel patentibus, late ellipticis, strictis, porosis, margine integro, recto vel subretuso; lobis fimbriatis ovatis; antherae cellis divergentibus in fluido brunneis, in vivo haud dubie purpureis. *Capsulam* non vidi. *Specie* habitu, inflorescentia, distincta, ad Sect. *goniostema* auct. accedens.

urceolate, about 1 mm. in length and 1-1.5 mm. in breadth at the mouth, with 4 or 5 suberect to patent, broadly elliptic, narrow, minutely porose glands, the margin of each being entire, straight or shallowly notched.

The ovate lobes are fimbriate. The anthers are 2-celled, the cells divergent, dark brown in the specimen submitted, but most likely bright red in nature. Each cyathium is embraced almost to the glands by a pair of bracts, apparently scarious, keeled on the back, acute or retuse or cleft at the apex and sparingly denticulate.

All the flowers observed appear to be male ones, this suggesting the possibility that the species is dioecious. No seeds or fruits were sent. The form is well distinct and belongs to the group of the *goniostems*. Seeing the plant less flowers and fruits it should be difficult, I judge, to attribute to it such cyathia as it actually bears, for the inflorescence strongly, if not exclusively, reminds the observer of that of the fleshier forms of the genus of the *Euphorbie*, *Diacanthium auct.* The third specimen of a new species was collected at the Bay of Diego Suarez. Only the name of the type-locality is given on the tag and the sample consists of several short sections of the stem with leaves and two fruits.

I would not venture to base on it the description of a new species were it not for the certainty that it is not *E. Tirucalli* L., with a tomentose capsule; *E. Laro* Dr., with seed carunculate and hairy leaves; *E. enterophora* Dr., with flattened joints; *E. stenoclada* H. Bn., with spiny joints and a different capsule; *E. alcicornis* Bkr., with very small leaves; *E. Intisy* Dr., with a 2-celled, large capsule; *E. plagiantha* Dr., *E. fihrenensis* H. Poiss., *E. leucodendron* Dr., *E. Decorsei* Dr., all of which have a different habit and fruit. The classification of the terete and flat-jointed species of Madagascar is

not more satisfactory than that of the group *Splendentes*, it being sure that different species are understood at present as one under such binomials, for instance, as *E. Intisy* and *E. enterophora*. As the classification stands now, however, it indicates that the species from Diego Suarez, which I will call *E. suarezianna* from the locality of collection, is unpublished. In this I fully concur with the judgment of Mr. Décarý, who sent it to me as new. It may be described as follows:

E. suarezianna nov. sp.³—A tall shrub or tree (?). The succulent spineless branchlets are round to oval, not flattened, the stoutest ones observed measuring 1 cm. 0.7 mm. In all the sections observed they taper into hard dried apices. The leaves are feather-veined, sessile, glabrous, fleshy, strap-shaped to linear, 7-25 mm. long, 2-5 mm. broad, rounded or obtusely acuminate at the apex, with a pair of auricles at the thickened sessile base and a distinct midrib. They are scattered, or in whorls at the extremity of the branches, and are reflexed and appressed or subpatent. The capsule (ca. 9 mm. × 6 mm.) is glabrous, smooth, not fleshy, subobovate-truncate. The cells are three, rounded on the back and have a thin median upraised line. The peduncle is about 5 mm. long and has a distinct persistent calyx. The seed is ovoid, smooth, ecaiunculate. This species belongs to the group *Tirucalli*.

³*Euphorbia suarezianna* sp. nov. Frutex vel arbor (?). Ramulis inermibus succulentioribus, sectione transversali ex rotundis ovatisynce compressis, omnibus quos vidi in apicem siccum induratum evadentibus. Folis ligulatis, sessilibus, glabris, carnosulis, ad basin auriculatis spissis, apice rotundatis vel obtuse acuminatis, penninerviis, 7-25 mm. longis, 2-5 mm. latis, nervo mediano distincto, reflexis adpressis vel subpatentibus, sparsis vel ad apicem ramulorum subverticillatis. Capsula circa 9 mm. longa 6 mm. lata, glabra, laevi, subovatatruncata, exocarpio carnosulo nullo; coecis dorso rotundatis, crista quadam vel potius linea exigua erecta longitudinaliter per medium percursis; pedunculo circiter 5 mm. longo crassiusculo calycem exhibente persistentem; semine ovato, laevi, ecaruncolato. Accedit ad Sect. *Tirucalli* auct.



Near Santa Fe, fertile irrigated valley between semi-arid country.

Botanizing in New Mexico

BY ROBERT SENIOR

To the Easterner, who has never glimpsed the great Southwest, this great expanse of territory, covering thousands of square miles, is little more than a land of cactus and sage brush, with an occasional green valley irrigated by mountain streams. In the main, this opinion is not entirely incorrect; in New Mexico, for example, particularly in the south and central part, a penetrating sun and a semi-arid country are the rule. In the north-eastern part of the State however, in the mountains, eastward from Santa Fe, a more equable climate prevails, and here, at the height of summer, the days are seldom uncomfortable, and the nights invariably cool.

For the botanist, the country around Santa Fe is a veritable Paradise. This little town of about 10,000 inhabitants, one of the quaintest and oldest in the Union, located at an altitude

of 7,000 feet, may serve as a starting point for endless botanical expeditions. On the plains, a few miles west of the town, one can study the semi-arid vegetation that is found over so much of the State; here the cane cactus,—often growing to, a height of six feet,—the tall gray, shrubby “Chamiso” (*Atriplex canescens*), “Rabbitbrush” (*Chrysothamnus Bigelovii*), and numerous low “compositae” cover the dry sandy soil: these latter plants, with their predominantly yellow flowers, give a characteristic tone to the landscape, which the artist colony of Santa Fe so loves to put on canvas, and which, to an easterner, often seems strangely exotic.

Whereas west of Santa Fe we have a semi-arid vegetation, eastward we view an entirely different landscape. Here the mountains begin: ten miles away we see the peaks rising to an

elevation of over 12,000 feet. On these heights, the botanist can find a wide variety of plants typical of the Canadian zone, such as *Silene acaulis*, *Trifolium nanum*, *Pedicularis groenlandica*, and *Juniperus communis*.

But it is neither on the hot plains, nor on the high mountain peaks that the most distinctive and interesting flora is to be found. It is between these two elevations that one encounters so many charming plants, many of which cannot be found north of New Mexico. A large number of them, although not listed by any nurserymen in this country, might well become delightful additions to our rock gardens. It is to some of the plants in this particular zone that I should like to bring the attention of my readers.

A fifteen minute ride north-east of Santa Fe, and we are in the foothills of the Sangre de Cristo mountains—a range that extends well into south-eastern Colorado. Few deciduous trees greet our view: dotting the landscape on all sides, the low pinon pines, and the one-seeded juniper (*J. monosperma*), rear their heads, not in impenetrable clumps, but scattered apart every few feet, so that a man afoot could walk among them for hours without difficulty: and here, between these evergreens, generally in full sun, sometimes in half shade, one finds a wide variety of plants. I am not certain that all of them can be acclimated in the eastern States: but considering that in their native habitat, they are subjected to an intense mid-day sun, and in winter to temperatures below freezing, it is reasonably probable that many of them can be raised successfully.

One of the most beautiful low, golden-yellow plants I have ever seen, is *Crassina grandiflora*, a "composite"

with masses of flowers on the ends of the stems, that completely conceal the leaves. When picked, and placed in water, the flowers remain fresh for over a week.

There is a tiny *Talinum* (*T. pulchellum*) growing in these hills, that at first glance might be mistaken for a sedum. It has a long root, fleshy-narrow leaves, and delicate rose colored flowers, of about the same tint as its taller, better known sister, *Talinum calycinum*. I have had this plant in my garden for over a year, and apparently it is perfectly hardy.

A charming phlox that blooms in August, is *P. nana*. It is found in a variety of colors, ranging from dull rose to flesh pink: occasionally one encounters a plant with a white eye. It is about six inches high: as I have already had it in my garden for several years, I can attest its hardiness. Planted in rather sandy soil, it withstands alike drought and cold. With me it blooms in July: it should prove a real treasure for those who are seeking to brighten their rock gardens in midsummer.

Another delightful plant, that belongs to the Evening Primrose family is *Pachylophus macroglossis*, which is closely akin to *P. caespitosa*, pictured by Britton & Brown in their "Illustrated Flora of North America." Its seed capsule forms just above the ground, and supports the long narrow calyx tube, at the end of which there expands a huge white flower, which, as it fades, turns a delicate pink shade. This plant also blooms in July, and in a hot, sunny rock crevice in my garden, has thrived for the last three years.

It would be impossible, in the space of a short article, to mention more than a small number of flowers that can be found in these rocky foothills.



Mountains east of Santa Fe, elevation 9,500 feet.

I can only indicate the type of plants to be found—such as, red and blue Pentstemon, yellow “Composites” in endless variety, red and lavender Gilias, pink and lavender Asters and Erigerons, orange Malvastrums, Erodiums, Bluebells, Sedum, Indian Paint Brush, Cleome, wild roses, and lastly, several varieties of cactus.

Within a half hour's automobile ride above the foothills, at an elevation well over 7,500 feet, we come upon the aspen forests: and here an

entirely different type of plant life greets our eye. Were I to tell you of the Calochortus, the Iris, the Genticians, the shrubs and vines, that inhabit these woods, this article would be extended to great length. Perhaps I have already drawn a picture sufficient to enable the reader to visualize the wide range of plants to be found in the Santa Fe country—a variety of vegetation that in any equally limited area of the Rockies, cannot be surpassed.

A Book or Two

Hortus. By L. H. Bailey and Ethel Zoe Bailey. The Macmillan Company, New York, N. Y. New Edition 1933. Reduced Price \$5.

Special attention should be called to the fact that this invaluable book has been reissued at the reduced price noted above. If you have delayed for reasons of economy, delay no longer.

Unsere Freiland-Stauden. By Ernst Graf Silva Tarouca and Camillo Schneider. Volume 1, 482 pages, many illustrations. Holder-Pichler-Tempsky A. G., Vienna, and G. Freytag A. G., Leipzig.

Even if one does not read German, or if one reads it with some labor, this edition of 1934 is worth a place in the hands of every inquiring gardener and plant lover. The illustrations are numerous and excellent. They supplement the short rather encyclopedia-like texts.

Peonies. By F. F. Rockwell. The Macmillan Company, New York, N. Y., 1933. 73 pages, illustrated. Price \$1.00.

This is one more of the familiar series of Garden Handbooks that Mr. Rockwell has evolved. Like its fellows, it is simple, clear and explicit. It is for the beginner.

Garden Flowers in Color. By G. A. Stevens. The Macmillan Company, New York, N. Y. 320 pages, illustrated in colors. \$3.75.

This is a very curious book, admittedly a picture book. It runs from A to Z and includes most of the colored pictures that you have seen in your regular catalogs. Text is slight, fitted into the spaces not covered by the cuts. For the most part it is unimportant. The pictures should please the young but the book weighs two pounds and one half which is too much for a child's book.

Die Begonien. By Karl Albert Fotsch. Published by Eugen Ulmer, Stuttgart, Germany, 1933. 5 colored plates, many halftones.

A very interesting discussion of the begonias has been prepared by the author with separate chapters by two other writers, "The History of the Begonia," by Axel Lange of Copenhagen and "Diseases and Pests," by Doctor Pape. The first division is botanical, but is followed by a longer section that describes both species and hybrids in such a way that the horticulturist reads with as much pleasure as the botanist. After this comes a chapter on begonias now lost to cultivation.

For the horticulturist, possibly more interest will be found in the chapters on Cultivation, Propagation, Seed Production, Begonias as House Plants.

Chapters on Diseases and Insects, History, Lists of Begonias for Special Use, a Bibliography, Reference List of Sources, and Index, bring this useful German book to a close.

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