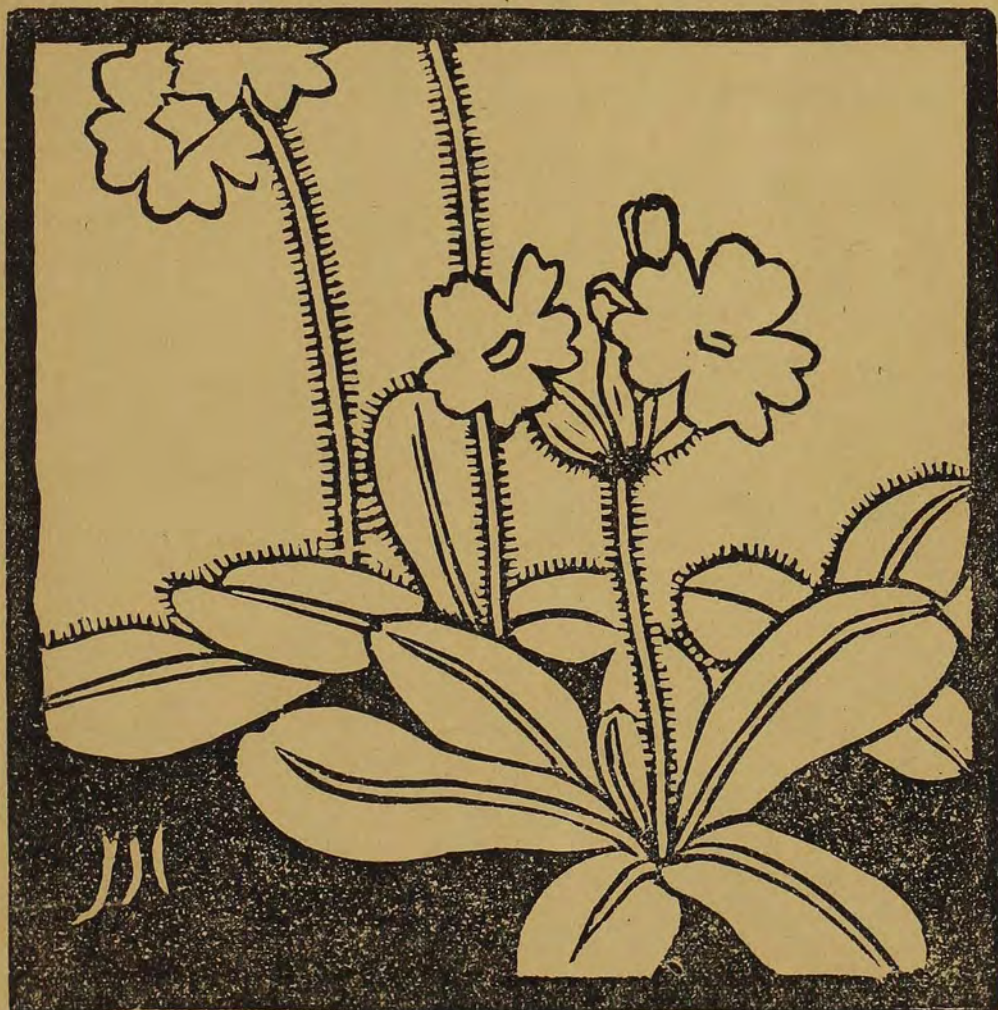


The NATIONAL HORTICULTURAL MAGAZINE



JOURNAL OF THE AMERICAN HORTICULTURAL SOCIETY

APRIL, 1946

The American Horticultural Society

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April, 1945

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(Continued on inside back cover)

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Claude Hope

Tagetes signata pumila

[See page 146]

Concerning Marigolds

Each year the magazine-reading American public is treated to a series of articles in which the novelties in the field of annual plants are reported with photographs that tend to a dreary sameness of fat overfed blooms quite devoid of any virtue save their fatness. Little is said in the public prints as to the committee that made the selections and the awards and less is said about the cultural procedures that produced the plants to be judged or the photographs for popular consumption. From what can be learned 'behind scenes' the materials are grown under what may be conceived of as ideal conditions, with trained gardeners to attend the greenhouse sowing, later transplantings and usually a fine open field for the final readings.

Almost nothing of this has the slightest relation to the happenings in the garden of the general seed-buying public. Rightly or wrongly the public that buys the seed may or will disregard instructions, sow too early or too late, plant in shade instead of sun, fail to transplant and all the rest of it. Doubtless this makes the producers groan a little, but as they already have their money, they won't groan too desperately.

With the cooperation of three members of the Society, the editor bought from four seed houses, a group of marigold seeds which were divided among the four and subjected to ordinary garden procedures, neither better nor worse than what any one of the great American buying public might offer. No thought was had to discredit any of the offerings; it was merely hoped to show how the plants performed under these 'consumers' rather than

'producers' conditions and to find how far such a test might go toward approximating the tenderly nurtured 'specialists' plants. Looking back, it is now regretted that all the marigolds in the 1945 market were not purchased so that once and for all, the whole story could be recorded, but this very lack of completion, while indefensible from one point of view, is perhaps not unlike the practice of the ordinary buying public.

The members who risked the trial were Miss Estelle Sharp who lives in Pennsylvania; Mr. I. N. Anderson, who lives in Pass Christian, Miss.; Mr. Claude Hope who was then gardening in Costa Rica and the editor who has his garden just outside of Washington, D. C. Each of them will speak for themselves as to the conditions under which they planted the seed and so on, but it should be recorded here that no request was made of any, to work out an elaborate and solemn record, merely the facts that would interest any consumer; what seed germinated and how well, how long it took to the first flowering, personal likes and dislikes that were aroused in the progress of the cropping! The editor has not attempted to "coordinate" the results which are not complete in any case, nor has any effort been made to "interpret" the findings. Capitalized color terms indicate the familiar Ridgway.

His own chief duty was to get photographic material of all, so that if photographs from the other tests were not forthcoming, there would be something to report in that fashion. Since Mr. Hope was successful in getting pictures, those used come from both sources.

Pennsylvania

Seeds were sown in a coldframe with the exception of those of Flash, sown in the field. The only fertilizer used was a trowelful of rotted leafmold mixed with wood ashes and placed in the hole at transplanting time. Plants were grown on land formerly manured and used many years for vegetable gardening. Only one dozen plants of each variety were grown. There were 56 varieties though there were seed from 65 packages, the difference representing duplications.

A few preliminary remarks may be entered here not as a tightly knit summary but rather as points of interest.

Only two varieties, Clinton and Oriole, were attacked by Japanese beetles.

Outstanding varieties: French Double, Harmony, Scarlet Gem and Sunkist; French single, Flash; French Tall, Flaming Fire; Hybrid, Idabelle Firestone; African, Peony-flowered, Orange Supreme; African Carnation-flowered, Mayling, Yellow Supreme.

Early to bloom: Butterball, Harmony, Mahogany, Spry, Sunkist, Flash, Flaming Fire, Wildfire, Yellow Pygmy, Pot o' Gold, Early Sunshine.

Varieties killed by frost before blooming: Golden Ball, Australian Giants.

Varieties which the casual observer would never mistake: Goldsmith, Mayling, Ferdinand, *Tagetes signata pumila*.

Each of the 56 varieties was distinct from all the others although in some cases the distinguishing characteristics were not particularly favorable from the point of view of the horticulturist. For example: Fire Cross is similar to Legion of Honor but slower to bloom. Clinton is similar to Tetra but is taller and the flowers are smaller. Early Sunshine is similar to Limelight

but earlier and with flowers, lemon yellow rather than green yellow.

Mississippi

The soil in this area is essentially sandy and light in texture with considerable humus, which is increased by the usual practices in cultivation. The best time for sowing annuals is in February when there is sufficient heat to insure good germination and time enough to allow adequate development of the plants before the long period of summer heat sets in. Seeds for this test were sown in April. Germination began in three days with such varieties as Sunkist, Double Harmony, Scarlet Glow, Spry and the other dwarf French types. Nearly all the other varieties germinated by the fifth and sixth days. Two, Red and Gold Hybrids and Wildfire took 13 days. Sowing was done in the open and transplanting was made into well fertilized borders with other plants. Positions sunny, but not in full sun for the entire day.

Washington D. C.

All sowing was done out of doors, May 18th where there was excellent germination except as noted. First transplanting during the first week in June with a second transplanting of the 7 spaced plants during the last week in June. An experimental transplanting of the Dwarf French types was made in July, with a severe pruning of the tops. This, though accompanied by careful watering had no adverse affect on the growth and development of the plants but did delay the mass production of later flowers. The soil is a good mica schist, that had been fertilized for vegetables but which had been lying fallow for several years. The situation was in good sunshine for about 5 to 6 hours per day after which shadows from distant trees fell



Robert L. Taylor

African Alldouble Orange

over it. No fertilizer was given and no other care than watering at the times of transplanting. The site was high and has good air drainage so that the frosts of October 3d had no effect on the plants which were not killed until the much heavier frost of November 3.

Costa Rica, C. A.

A word of explanation is necessary concerning the conditions in Costa Rica before considering the varietal comparison. First of all, it may surprise many readers to learn that the temperatures averaged lower than those in the greater portion of the United States. Appreciable and consistent differences in temperature are associated with even small differences in elevation in the tropics. The marigold plantings were made at elevations of 2000 and 4200 feet. At the former the daily maximum temperatures were around 78 to 86 degrees Fahrenheit and the daily minima were from 60 to 65 degrees. At the higher elevation, the temperatures were about 10 degrees lower. At both places, they were remarkably consistent, seldom falling outside the ranges indicated. Compared to the summers in the United States, both locations are, of course, cool. The lower elevation would roughly correspond to summers in the higher parts of the mountainous regions of the South and West and to the southern Pacific Coast, the Great Lakes region and upstate New York. The higher elevation would correspond to the northern Pacific Coast and New England. Of course, the growing season is not limited in Costa Rica as in all the North American locations, nor are there the initial and terminal cold periods so characteristic of the temperate zone summer.

When the number of plants of a variety exceeded 12 to 15, it was

divided and planted at both locations. Otherwise, all the plants were set at San Antonio, at 4200 feet. This proved to be an error because of difference in soil fertility of the two places. It was well known that the soils of San Antonio were badly leached and immediately after planting sesame seed meal was applied. As luck would have it, however, little rain fell in the succeeding three or four weeks and the fertilizer did not become immediately available. As a consequence the plants were very slow in growing off and many failed to recover.

At the lower elevation, Turrialba, the soil was much better and the plants grew off very satisfactorily.

In many instances, a variety succeeded only at Turrialba. In those cases that afforded comparisons at both sites, it was found that the growth was harder and more compact and the colors richer at San Antonio. In the French varieties, the plants were appreciably shorter. To judge by the catalogue descriptions, the growth in the lower temperatures was approximately typical of that in the United States, in the French varieties. The reverse was true of the African varieties, in which the growth seemed more typical in the Turrialba planting.

Since both the French and the African types are native to the tropics, it is not surprising that they showed no adverse reaction to the short days that are characteristic of the summers of the tropics.

Of the main comparison, all the seeds were sown on 11 May. On 27 May, an additional small group was sown, consisting of a resowing of varieties that germinated poorly and of two or three that were not in the original set. Later still, on July 2, another sowing was made of new lots of seed of varieties which had failed in the first sowings and of a few

*Claude Hope**Lemon Queen*

varieties not included in the original lots. These last were all planted at Turrialba and for some reason did not perform as well as the first lot. No

direct comparison could be made, therefore, between the two lots but some comment is possible concerning the varieties.

No color chart was available but most of the African varieties were compared directly and ranked by color. The following list gives the varieties arranged in order from lightest to darkest tone. It was not possible to include some varieties.

Color Scale of African Varieties:

Limelight, Mayling, Yellow Supreme, Crown Prince, Canary Bird, Mammoth Mum, (All double Lemon),* (Lemon Queen), Early Sunshine, Oriole, Golden Supreme, Golden Bedder, Golden Jubilee, Yellowstone, Goldsmith, Golden Emblem, Golden Eagle, Victory, Pot o' Gold, Tetra, Orange Supreme, (Orange Sunset),* (Clinton), Crown of Gold, Alldouble Orange.

* No difference could be detected between the members of the pairs enclosed in parenthesis.

It is unfortunate that Guinea Gold, the prototype of the modern carnation-flowered marigold, could not be included in the color scale, due to a complete failure of the seeds to germinate. It was grown in the last group sown but by that time the varieties closest to it in color had gone by. It is possible, and likely, that it would fit in between Victory and Pot o' Gold where a slight gap was noticed between the otherwise regular succession of tones. Buff Beauty almost failed and could not be included.

As usual in a garden species that has had a good working-over by the seedsmen, there were some duplications and near duplications among the varieties. For example, there would never be any need to grow, among the French varieties, both Butterball and Goldcrest; Firecross and Legion of Honor; Gold Striped and Royal Scot; Harmony, Spotlight, and perhaps Spry, unless one wants both large and small plants with the same flower type, for

Spry is only a dwarf Harmony; Mahogany and Robert Beist. Among the African varieties, one would not need to grow both Alldouble Lemon, Lemon Queen, and Oriole; Clinton and Tetra; Early Sunshine and Sunrise; Golden Eagle, Golden Emblem, and Victory; Golden West and Guinea Gold; Goldsmith and Yellowstone; Orange Sunset and Orange Supreme; Pot o' Gold and Tom Thumb Golden Crown. It isn't that these varieties can't be distinguished; no real duplicates were discovered among the African varieties and only three pairs of the French varieties appeared to be duplicates.

In defense of the seedsmen, it must also be recorded that among the groups of essential duplicates listed above among the African varieties odorless foliage sometimes constitutes the chief distinction. For example, Clinton, Oriole, and Golden West have odorless foliage. This must be considered an achievement for the breeder rather than otherwise, making it possible for one to "follow his nose" without giving up some other feature.

To offset the above grouping, the truly desirable, distinctive varieties must be recorded. To consider first the French group, we have Butterball with its somewhat elongate yellow flowers flecked at the tips of the petals with brown; Ferdinand with its gay colors of dark red rays and yellow disc florets; the Firecross-Legion of Honor pair with its neat growth and many golden yellow flowers, blotched with crimson in the centers; Flaming Fire, gay with its variable blotches and polka dots of red on a yellow field; Flash, truly outstanding with its mass of large, brilliant, orange-scarlet, single flowers; Golden Ball (not to be confused with the African by that name) with its exceptionally large, very double flowers of deep gold; the Gold Striped-Royal Scot pair, if you like gypsy colors;



Robert L. Taylor

Buff Beauty

Harmony with its many superior qualities, thoroughbred that it is; Lemon Ball (again not the African variety) with its myriads of clear yellow, double

flowers; Scarlet Glow for its large double showy-red flowers with a distinct scarlet glow; Sunkist for a long season of perfectly formed, double,

orange jewels; Wildfire, a tall Legion of Honor, with slightly larger flowers, and finally, Yellow Pigmy with its very dwarf plant carrying clear yellow flowers in quantities.

In the African group, warmly satisfactory varieties were: Alldouble Orange, darkest of the large-flowered group; Canary Bird for its light yellow flowers that blend so well; Crown of Gold for its very dark color and strong stems; Crown Prince, although identical in type with Crown of Gold, for its pale yellow flowers; Early Sunshine for its spreading branches, early and long season of bloom and tidy flowers; Golden Bedder for its early flowers and neat branching habit; Golden Supreme for its large flowers of distinctive form; the Goldsmith-Yellowstone pair for medium tone chrysanthemum type flowers; Lemon Queen for its large lemon-yellow flowers in great abundance; Limelight for its tidy pale flowers, though some may object to the green tint, and its spreading branches; Mammoth Mum for all the world like an incurved chrysanthemum, by all odds the largest of its type; Mayling for its soft yellow flowers, lightest of all the carnation-flowered type, and its many tiers of ruffled ray florets standing out like the much ruffled skirt of a ballet dancer in a pirouette; Orange Sunset for its rich orange flowers of great size and substance; the dwarf Pot o' Gold for its earliness, dwarf habit, and spreading branches; Victory for the size and abundance of its flowers; Yellow Supreme for its large peony-type flowers of pale yellow.

When grouped as to date of the first flower, the French varieties show a rather restricted range, spreading over about 4 weeks, inasmuch as precocity is the rule. However it should be recorded that Butterball, Ferdinand, Flaming Fire, Flash, Harmony, Spry,

and Sunkist were early, while Golden Ball and Australian Giant were late, the latter, decidedly so.

Much more spread was noted among the African varieties with respect to the date of the first flower. Earliest were Pot o' Gold, Golden Bedder, Early Sunshine, Limelight, Canary Bird, Crown of Gold, and Crown Prince. Latest were Tetra, Golden Supreme and Mammoth Mum, the latter, especially so.

In preparing the notes that follow, the editor has combined the notes from the different sources adding the locality at the conclusion of the remarks of each reporter. The varieties have been grouped according to the types of flower, within the two sections, i.e. African and French.

ALLDOUBLE LEMON. African tall double, ball flowered. This variety with typically odorous foliage lived up to its name in both respects. The flowers were slightly smaller than those of Oriole and Lemon Queen, which they resemble. The flower peduncles were strong enough to be worthy of note. *Costa Rica*. Sown, May 26, first bloom, August 16; all came true to type and reached 5 feet. *Penn.* Good flowers, sparse bloomer, too tall. *Miss.* Tall, excellent growth habits, good flowers. *D. C.* Sown May 18, first bloom, September 12. Light Cadmium.

ALLDOUBLE ORANGE. African tall double, ball flowered. A counterpart of Alldouble Lemon except in color and size of flowers. It had the darkest orange flowers of all the African varieties. Two or three plants produced very tight doubles like the old-fashioned sorts, the rest differed little from the carnation-flowered type. *Costa Rica*. Sown, May 26, first flower August 21; one plant with single flowers, one with butter yellow and



Claude Hope

Canary Bird

not orange. *Penn.* Good flowers, much too large for their very weak stems. *Miss.* Excellent growth, more vigorous than Alldouble Lemon, several single

flowered forms. *D. C.* Sown May 18, first bloom September 4. Orange.

LEMON QUEEN. African tall double, ball flower type. Lemon Queen

belongs to the now small group of old-fashioned marigolds with tight double flowers, or so the catalogue claims. Actually the flowers differed little from those of the carnation flowered type. As a variety it differed from Alldouble Lemon only by its slightly larger size. *Costa Rica*. Sown May 26, first flowers, August 27. Larger flower than Alldouble Lemon. All true to type save one. *Penn.* Poor plant and poor flowers. *Miss.* No report. *D. C.*

BUFF BEAUTY African dwarf double, carnation-flowered, odorless foliage. The seeds germinated poorly, only four plants resulting. All were planted at San Antonio with disastrous results. *Costa Rica*. Sown, May 14, first flower, August 5; rather deep for "buff." Odorless. Poor germination, shorter growth than others of this type. *Penn.* Very good flowers, good plants, midseason to late. *Miss.* Sown, May 18, first flowers, August 27. Light Cadmium, shaded in the heart with Deep Chrome. *D. C.*

GOLDEN CROWN, TOM THUMB. African dwarf, carnation-flowered. This variety was sown only in July, but performed very well. No direct comparison was possible, but, it seemed to be identical with the variety Pot o' Gold. *Costa Rica*.

CANARY BIRD. African medium double, carnation-flowered, odorless foliage. The plants were of medium height with spreading branches. The medium-sized flowers with ruffled rays fit neatly, as a carnation-flowered type about midway of the lightest quarter of the color scale. It is a color that sets of orange in a fine fashion. *Costa Rica*. Sown, May 14, first flower August 17; not such large flowers as described, shorter than most in growth. *Penn.* Strong, uniformly tall plants, good flowers, uniform color. *Miss.* Sown,

May 18, first flower August 30; Empire yellow, *D. C.*

POT O'GOLD. African dwarf double, carnation-flowered. This, perhaps is a forerunner of a new race of dwarf bedding plants with large, carnation-type flowers. Though not of the largest, the bright orange flowers were large, and were produced very early on spreading braned plants not exceeding 18 inches. The stems were quite long enough for cutting. It must be noted that the dwarf plant is obtained at expense of flower production and that, as often happens, the season was short. *Costa Rica*. Sown May 14, first flower July 8; Uniform in character, foliage sparse for size of bloom. A little more sturdy than Golden Bedder. Orange. *Penn.* Started out with good growth but with poor color of stems and foliage and then died. *Miss.* No report. *D. C.*

MAYLING. African medium double, carnation-flowered, odorless foliage. It is difficult to put a finger on the exact source of the charm of this delightful new variety; whether it is in the mellow quality of the pale yellow flowers or in the quilled petals, or in the frilling at the edges of the petals or the depth of the large fully open double flowers. The plants are a little too large to be called dwarf yet they are not tall. Likewise, the branching seems midway between the usual dwarf type and the tall type. It is definitely a desirable variety. *Costa Rica*. Sown May 14, first flower, September 8; almost cactus-flowered. Faint odor. Quite distinct and worth growing again. *Penn.* Died before flowering. *Miss.* Sown, May 18 first flower, September 12; Pinard Yellow, shaded Buff Yellow. *D. C.*

VICTORY. African medium double, carnation-flowered. A variety of



Robert L. Taylor

Gigantea, Pot o' Gold

medium tone that approaches Mayling in the form of the flower, but somehow escapes the charm of that variety. It was very productive and the flowers

were of good size. In appraising the varieties in an over-all survey, it was grouped with Golden Eagle and Golden Emblem with which it is nearly iden-

tical in tone. Among the three, Victory is definitely superior in form of flower and in abundance of flowering. The plants, however, are not as large, not quite attaining 30 inches. *Costa Rica*. Sown May 14, first flower September 8; quite floriferous. Height 3 feet. Paler than Guinea Gold and more ruffled. Regular in form. *Penn.* Poor weak plants. *Miss.* No report. *D. C.*

CLINTON. African tall double, carnation-flowered, odorless foliage. Aside from the dark tone of the flowers, darkest of all of this type, there was nothing truly distinctive about this variety. The plants were of medium height and the flowers of medium size with moderately ruffled petals. *Costa Rica*. Seed sown, May 14, first flowers August 27; taller than Tetra, rather similar in color, foliage with little odor but beetles ate it. *Penn.* Poor growth. color somewhat varied, but the flowers good. *Miss.* Seed sown May 18, first flowers, September 6; Cadmium Orange. *D. C.*

GOLDEN EAGLE. African tall double, carnation-flowered. Golden Eagle falls in the middle range of color for the African group, where it is difficult to achieve distinction. It is a good variety, with typically tall plants satisfactorily productive of flowers of a satisfactory color and size. Beyond this, one can say little. *Costa Rica*. Sown, May 26, first flower, August 30; Large flowers on 4 foot plants which did not stand up well. Petals loose and lightly frilled. Several lemon colored flowers appeared in lot. *Penn.* Flowers a little heavy for the rather tall stems. Died after one wave of flowering. *Miss.* Seed sown May 18, first flowers September 6; between Cadmium Yellow and Orange. *D. C.*

GUINEA GOLD. African tall double, carnation-flowered. This, the first

of the carnation-flowered type is still a good variety, both because the color falls in the middle range and the size of the plant is convenient. There is no essential choice between it and Golden West. *Costa Rica*. Seed sown, May 26, first flower August 28; did not do very well, perhaps crowded. *Penn.* No germination. *Miss.* and *D. C.*

ORIOLE. African tall double, carnation-flowered, odorless foliage. In other than the lemon shade of the flowers, which is distinct among the carnation types and particularly among those of odorless foliage, Oriole failed to achieve distinction with this observer. *Costa Rica*. Seeds sown, May 14, first first flowers September 3; not as showy as Golden Supreme but rather similar; foliage thinner. Beetles ate it. *Penn.* Died before blooming. *Miss.* Sown May 18, first flowers September 6; Orange Chrome. *D. C.*

SUNSET GIANTS. African tall double, carnation- and peony-flowered. This is a splendid mixture including both types mentioned and a complete color range. It is obvious that Orange Sunset belongs to this group, probably a single color selection, because similar plants occurred in this mixture. Some pale lovely yellows. The flowers were tremendous and the plants reached 4 feet. Flowering continued over a long season. Only fault was the presence of weak peduncles. *Costa Rica*. Sown, May 26, first flowers August 23; Lemon and orange, plants 5 feet tall, some with more odor than others. *Penn.* Huge flowers much too heavy for the stems, grew 6 feet tall, soon died, but gave two groups of flowers. *Miss.* Sown, May 18, first flowers September 4; Empire Yellow and Lemon Chrome. *D. C.*

TETRA. African tall double, carnation-flowered. The originator says that



Robert L. Taylor

Mayling

Tetra resulted from the doubling of the chromosomes of the variety, Guinea Gold. In other words it is a tetraploid. One wonders if it is worth the effort.

Its chief claim to distinction lies in the deep tone of orange, but there are other darker varieties. With a long growing season this may be a virtue, other-

wise it is of doubtful value. No direct comparison could be made with Guinea Gold, but it is believed that the flowers are larger, though not notably so. *Costa Rica*. Sown May 14, first flowers September 8; flowers larger than those of Clinton. *Penn.* Very tall, weak stems, heavy flowers, good for cutting. *Miss.* Sown, May 18, first flowers September 9; Orange. Not floriferous here. *D. C.*

CROWN OF GOLD. African tall, collarette, odorless foliage. Crown of Gold was the first variety with odorless foliage. Its flowers are a bit small, measuring only a little over 2 inches, but they are freely borne on long stems over a long season. With its color, second darkest in tone of all the African varieties, and its distinctive form, it is useful in flower arrangements for blending with other varieties. *Costa Rica*. Seed sown, May 26, first flowers, July 28; early, true except for one plant more vigorous than the rest, foliage odorless. *Penn.* Very weak plants to 5 feet, sparse bloomer but with grand flowers much too heavy for the stems. *Miss.* Seed sown, May 18, first flowers August 6; continuous bloom over a long season, color carries very deeply because of the shadows formed by the crown-petals which in a way suggest the early trollius, *D. C.*

CROWN PRINCE. African tall, collarette, odorless foliage. Like Crown of Gold in all respects save color which falls at the other end of the color scale. It is fully equal its prototype in usefulness. *Costa Rica*. Seed sown May 19, first flowers September 4; more vigorous plant than Crown of Gold, taller to 40 inches. All uniform. *Penn.* The best of the type, perfect blooms, cut and come again, good quality. *Miss.* No report. *D. C.*

CHRYSANTHEMUM-FLOW-ERED HYBRIDS. African double. This supposed mixture proved to be

almost a single variety. There were a few plants of the types of Limelight and Early Sunshine, but the majority appeared to be identical with the varieties Goldsmith and Yellowstone. The plant size, varied accordingly. *Costa Rica*. Seed sown May 19, first flowers, August 4; all proved to be Limelight. *Penn.* Plants very weak, soon died off, but flowers good color and shape. *Miss.* All Limelight. *D. C.*

EARLY SUNSHINE. African dwarf double, chrysanthemum-flowered. The originator claims that this is an improvement over Early Dixie Sunshine (not in test) and in size of flowers it is definitely better, but nothing can be said of improvement in foliage. No direct comparison was made in flower color but there is little difference. The plant habits are very similar; dwarf, full-foliaged plants reaching about 2 feet with many spreading branches, flowering over a long period which begins early. *Costa Rica*. Seed sown, May 15, first bloom, July 23; guard petals less conspicuous than those of Limelight. Irregular in height from 1 to 2 feet. Flowers not as large as described. *Penn.* No better than Chrysanthemum-flowered hybrids. *Miss.* Seeds sown May 18, first flowers August 27; between Lemon Chrome and Lemon Yellow. *D. C.*

GOLDEN BEDDER. African dwarf double, chrysanthemum-flowered. This is one of the truly distinctive varieties and is just what its name implies. Of course, it can be cut, but one finds it difficult to do without destroying the plant which rarely reaches 18 inches and usually is much smaller. It branches from the ground up and each branch flowers almost as soon as the main stem. As a result, one has a glorious burst of flowers for a relatively short season and if the plants are not given attention, nothing more. With



Claude Hope

Victory

some care in cutting and some feeding, a second crop can be induced but the flowers will be smaller, which is disappointing as the first crop is not of

very large flowers. *Costa Rica*. Seeds sown May 25, first flowers July 23; runs true, not enough plant for the size of the flowers, and the plant was

not a "mound" as described. *Penn.* Matured only one flowering and died. *Miss.* Seed sown May 18, first flowers, July 30, made a very fine first show but very poor thereafter in spite of an attempt to stimulate growth by cutting. Cadmium Yellow. *D. C.*

LIMELIGHT. African dwarf double, chrysanthemum-flowers. If not the first, Limelight was among the first of the chrysanthemum-flowered types and it is still a choice variety, unless one objects to the green in its flowers or their small size. To this observer, both are desirable since one never worships size in flowers to the exclusion of other features and small flowers are particularly desirable if produced on graceful plants. Limelight, with its early flowers of palest tones, produced over a long season on heavily branched dwarf plants well clothed (in *Costa Rica*) with small leaves, is a delightful variety. *Costa Rica.* Seed sown May 19, first flowers August 5; similar in general effect to Early Sunshine though greener yellow, guard petals more pronounced and broader. Rather weak in foliage and nice, such as it is. *Penn.* Poor. Early but nice dwarf plant with early flowering that continued for a long season. *Miss.* Seed sown May 18, first flowers August 13; poor growth and habit but continuous flowering over a long season, Color not pleasant to this observer. *D. C.*

GOLDEN JUBILEE. African tall double, chrysanthemum flowered. This was planted only at San Antonio and was almost lost. Not enough plants matured to give an idea of the range of color but the catalogue says from yellow to orange. *Costa Rica.* Sown May 26, no germination; June 25, first flowering September 7, orange and yellow. *Penn.* Matured one crop of flowers and then produced another. *Miss.* Seed sown

May 18, first flowers September 12; Capuchine Yellow. *D. C.*

GOLDSMITH. African tall double, chrysanthemum-flowered. The catalogue claims a larger size for this than was actually obtained. Nevertheless, Goldsmith proved to be a delightful variety with tidy chrysanthemum-like flowers of deep golden tone, almost old gold. It is a medium early variety and continued to bloom for a long season. The plants were not strictly tall running about 30 inches. *Costa Rica.* Seed sown May 15, first flowers August 23; very distinct, good foliage. *Penn.* Good flowers, good stems and foliage good throughout the season, one of the best. *Miss.* Seed sown May 18, first flowers September 4. Excellent, Cadmium Yellow. *D. C.*

MAMMOTH MUM. African tall double, chrysanthemum-flowered. Mammoth Mum is surely the first of a new race of large chrysanthemum-flowered marigolds. It makes this type available in flowers as large as those of the carnation-flowered types. It seems better suited for the cutting garden than for bedding as the plants are very upright in growth, tall and a little late in season. The color is lemon bordering on gold. Contrary to its name, one would have to call the flowers small in comparison to chrysanthemums but among marigolds they are large. It should be noted that the flower stems were strong and the flowering season short in *Costa Rica.* Seeds sown May 19, first flowers August 21; larger than Yellowstone, looser and a greener yellow. Three feet tall and over. *Penn.* Good plant early, poor later but with grand flowers, something like Lime-light. *Miss.* Seed sown May 18, first flowers August 13, fine. *D. C.*

SUNRISE. Seed sown May 25, no germination; sown June 25, first flowering mid-September. Color deeper

*Claude Hope**Clinton*

than that of Early Sunshine. Petals very compact, really an ugly flower in shape. *Penn.* No germination. *Miss.* No report. *D. C.* Mr. Hope reports

as follows on Early Dixie Sunrise, which was not included in the general test. Early Dixie Sunrise which is nearly equal to Early Sunshine is a dis-



Robert L. Taylor

Golden Eagle



Robert L. Taylor

Sunset Giants



Robert L. Taylor

Tetra



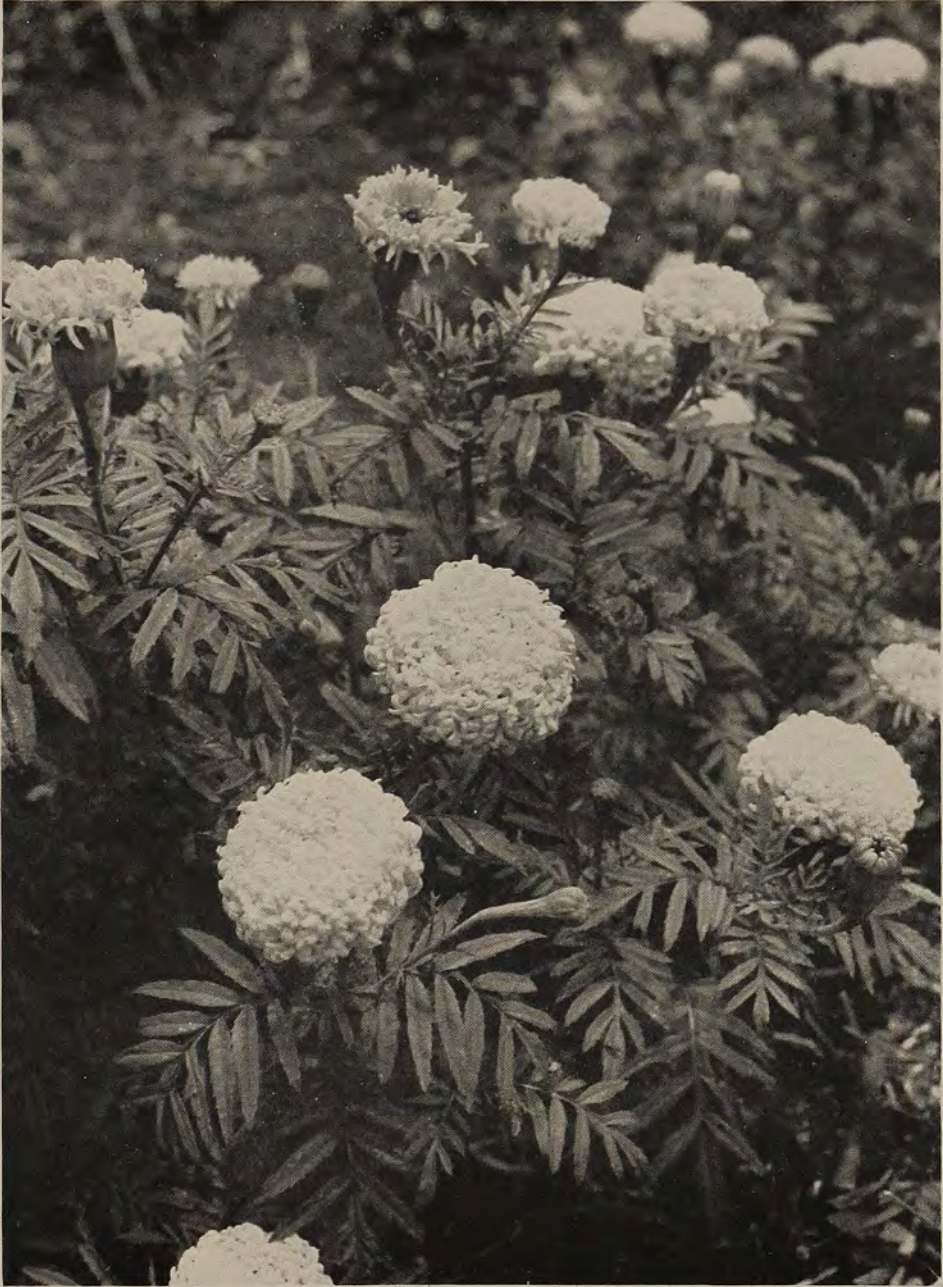
Robert L. Taylor

Crown of Gold



Robert L. Taylor

Early Sunshine



Claude Hope

Early Sunshine

inctive variety that performed well at both sites in Costa Rica. It is another variety that was grown only from the July sowing. A variety Sunrise (our test, Ed.), possibly the same, failed to germinate in the first sowing. The foliage was particularly delightful as it was in all varieties of this class. In the United States, however, the susceptibility of the foliage to disease seriously detracts from some of the varieties. The bright color, the dwarf plants with spreading branches, and the very tidy, very early chrysanthemum-like flowers borne for an amazingly long season, all contribute to make this, or rather its improved form highly desirable. For some, larger flowers would improve it. *Costa Rica*.

YELLOWSTONE. African tall double, chrysanthemum-flowered. For this type, excepting Mammoth Mum, Yellowstone produced large flowers, yet for African marigolds as a group the flowers were below medium. As a variety it is not sufficiently distinct from Goldsmith to warrant growing both in the average garden particularly as it is later. The catalogue claims a distinction in the lighter tone of the flowers and in the larger plants. Only the latter was true to a perceptible degree in *Costa Rica*. Seed sown May 25, poor germination, eaten by slugs; sown June 25, first flowering September 5; some, the same color as Goldsmith, not more than 3 feet tall, stood without staking. *Penn.* Free bloomer, excellent flowers throughout the season, one of the best. *Miss.* Seed sown May 18, first flowers September 12; two colors, the dark flowers, Orange, the lighter flowers Cadmium Yellow. *D. C.*

GOLDEN SUPREME. African tall double, peony-flowered. This belongs to a new race of marigolds with a flower form that shows a fancied re-

semblance to the peony. In any case it is distinctive and attractive. The plants are robust and the flowers very large; with such a combination it is not surprising that the flowers came late, and were well worth waiting for. In the color scale, distinctly apart from the other large flowered types in the middle range. They are magnificent for cutting giving stems of great length, with peduncles stronger than most. The flowering continues over a long season. *Costa Rica.* Seed sown May 19, first flowers September 1; not as tall as Orange Supreme but over 30 inches. *Penn.* Fair in the early part of season, good late. *Miss.* Seed sown May 18, first flowers September 4; one rogue which had Orange flowers, all others Cadmium Yellow. *D. C.*

ORANGE SUPREME. African tall double, peony-flowered. This differs little from Golden Supreme except in color which is a rich orange among the darkest of the group. With all the "Supreme" varieties is shared the common fault of a peduncle too weak for the large flower. It is, in spite of this, a lovely variety. *Costa Rica.* Seed sown May 19, first flowers September 1; very floriferous, one lemon colored rogue, to 3 to 4 feet in height. Good late but only fair in the early part of season. *Miss.* Seed sown May 18, first flowers September 4; Cadmium Orange. *D. C.*

YELLOW SUPREME. African tall double, peony-flowered, odorless foliage. Yellow Supreme differs from the other "Supreme" varieties chiefly in the color which is near the light end of the color range. The plants are not quite as tall. Like the others it ranks as a very good variety. *Costa Rica.* Seed sown May 25, first flowers August 17; lemon yellow, 3 feet tall. *Penn.* Growth here is poor giving both inferior flowers and plants. *Miss.* No report. *D. C.*



Robert L. Taylor

Golden Bedder



Claude Hope

Limelight



Robert L. Taylor

Golden Jubilee

Half-opened flower; mature flower



Robert L. Taylor

Mammoth 'Mum

Young flower



Robert L. Taylor

Yellowstone

Young to three-quarters mature flowers



Claude Hope

Golden Supreme
(Half natural size)



Robert L. Taylor

Orange Supreme



Robert L. Taylor

Golden Glow



Robert L. Taylor

Goldsmith, left; Honeycomb, right

GOLDEN GLOW. African dwarf double, rudbeckia-flowered, odorless foliage. The originator claims that the flowers of this are like those of Rudbeckia Golden Glow, that they are borne in clusters on the ends of heavy branches that the plants do not exceed 2 feet in height and that the foliage is odorless. In the lot tested there is some mistake. Literally there were no two plants alike; one tall and single, several dwarf, some early and some late, some carnation-flowered, some orange, some yellow and some between. No check on variation of foliage odor. *Costa Rica.* Seed sown May 19, first flowers August 15; very irregular in form and height. *Penn.* Tall, weak stems, otherwise good. *Miss.* Seed sown May 18, first flowers September 6; Orange. *D. C.*

HONEYCOMB. African dwarf double, "unique flower form," odorless foliage. The seeds of Honeycomb germinated poorly and it is impossible to report on it from *Costa Rica.* Seed sown May 14, first flowers August 15; only one plant had the honeycomb effect, and the others grew 3 feet tall and did not flower. *Penn.* No report. *Miss.* Seed sown May 18, first flowers August 28. Not one of the most floriferous, but the flowers when fully opened showed the formation that distinguishes the variety. Orange Chrome. *D. C.*

IDABELLE FIRESTONE. African-French fertile hybrid. The introducer claims that the flowers are 2 inches across, which is supported by the hybrid origin. One wonders, however, if the plant as now grown is cytologically a hybrid. The flowers in Costa Rica were small, measuring only about an inch in diameter and there was nothing to show the influence of the African parent, but it must be admitted that only 4 plants were grown.

Two lots of seeds from two different seedsmen were sown and only two plants grew from each lot. All were alike, however, and except for the size of flower, agreed with the catalogue description of a tall plant bearing myriads of long-stemmed, double flowers of bright mahogany red. The catalogues did not say, that the stems were rubbery, serpentine and completely undisciplined, admitting only that a wide bed was necessary. *Costa Rica.* Seed sown May 26, first flowers July 27; variable in color, some more double than others. Sprawls, long stems, worthwhile. *Penn.* Very tall stems, flowers small, semi-double, good color, but never enough to cut until very late in the season. Cut some on November 6. *Miss.* Seed sown May 18, first flowers August 4; plants branch well but are not very erect, the flower peduncles are long and brittle and the whole mass is tangled. Many plants were grown and only two or three suggested the African parent being golden yellow with spots and blotches of brown. The remainder were fine wall flower reds and browns. *D. C.*

RED AND GOLD HYBRIDS. African-French sterile hybrids, tall double. The first lot of seeds of Red and Gold hybrids failed entirely; the second lot from another source produced two plants virtually identical definitely hybrids, but disappointingly devoid of any hint of red. They were wonderfully vigorous free-flowering African marigolds with very double

French Marigolds:

Idabelle Firestone

Josephine

Scarlet Glow

Ferdinand



flowers of medium-orange gold color. Growth stocky and heavily branched, but the crotches were weak and many broke from the weight of water on the foliage. The scores of flowers were 3 inches across, truly delightful in every respect but red flowers of the same type would be marvelous. *Costa Rica*. Seed sown May 15, first flowers mid-September. Very variable in type, color and height. *Penn.* Slow germination resulting in only 2 plants, poor. *Miss.* No report. *D.C.*

WILDFIRE African-French fertile hybrid, tall single. Wildfire proved less variable than the catalogue claimed. Like Idabelle Firestone it showed little influence of the African parent, but nevertheless it was attractive and a good performer. The first sowing germinated poorly giving only 8 plants which were surprisingly uniform. A later sowing germinated better but resulted in fairly uniform plants. The color was very similar to that of Legion of Honor. The flowers are appreciably larger, running about 2 inches across. For a tall French variety, the stems were well behaved. *Costa Rica*. Seeds sown May 14, first flowers July 6; Some all orange, some suffused with red and most with a red blotch at the base of the petal. All single. Uniform in height. One plant had coarser darker green foliage than the rest. *Penn.* Very late, grand color, too tall, not free in flower here. *Miss.* Seed sown in May but first flowering not recorded. Much later than that of Legion of Honor. Ground color Light Cadmium with blotch of Morocco Red that fades a little lighter as flower ages. *D. C.*

BUTTERBALL. French dwarf double. The plant, in Costa Rica, is only medium dwarf, but is very free flowering. The flowers are charming both in the yellow color which is paler than most people prefer in butter and

in the flecks of brown that rest lightly on the tips of the florets. The form might be called anemone. The flowering season was a bit short at Turriabla but longer at San Antonio. *Costa Rica*. Seed sown May 21, first flowers July 6; fulfills catalogue description, comes true. *Penn.* The plants were poor in the early part of the season but grew and flowered finely as the weather cooled, useful either for cutting or as a cut flower. 12 inches. *Miss.* Excellent, long season of flowering. Lemon Chrome, the tiny flecks are Morocco Red. *D. C.*

GOLD STRIPED. French dwarf double; this provides a bizarre color combination of two lateral stripes of red on each lemon yellow petals of the fully double flowers of medium size. The plants are dwarf and compact. In some plants the red forms a blotch similar to the pattern in Legion of Honor. Strikingly different color. *Costa Rica*. Seed sown May 23, first flowers July 23; not much of a stripe, not at all free in bloom, irregular in height. *Penn.* Grew to 2½ feet tall, weak growth, no stripes. *Miss.* No report. *D. C.*

GOLDEN BALL. French dwarf double. An interesting variety of great merit, this is probably doomed to failure in the United States because of its lateness. The plant is dwarf and the flowers are exceptionally large, very double, and unusually long lasting.

French Marigolds:

Royal Scot

Robert Beist

*Mahogany and
Spotlight*

Golden Ball



with strikingly long, strong peduncles. The color is distinctive for a French variety with a peculiar quality that would be desirable in an African variety. *Costa Rica*. Seeds sown May 23, in bud when killed by frost, October 3. Not as tall as Lemon Ball. *Penn.* Poor through the early summer but good in November. *Miss.* No report. *D. C.*

GOLDEN HARMONY. French, dwarf double. In spite of its name it does not look much like Harmony. The disc florets stand up stiffly and fit together like the cells of a honeycomb. The form is more like that of Butterball, but stiffer in appearance. The color is gold but many plants have a bit of red at the base of the disc florets, trying its best to break out. As a variety it flowered freely and was medium dwarf. *Costa Rica*. Seed sown May 23, first flowers August 20; smaller flowers than Harmony and not as free-flowered, petals more incurved, foliage hides blooms. *Penn.* Two feet tall, thin and very poor through early part of season but good in late, cool weather. *Miss.* No report. *D. C.*

HARMONY. French dwarf double. This variety is probably familiar to most gardeners as it has been a standby for some time. It may still be considered as outstanding and distinctive, a true blue blood. The plant must be called large for a dwarf class and the flowers are perhaps the largest of the French varieties. The two-tone color, red-maroon, predominating in the opening flower, gold in the maturing flower, is a nice blend. *Costa Rica*. Seed sown May 16, first flowers June 30; uniform, full of bloom. *Penn.* No germination. *Miss.* No report. *D. C.*

LEMON BALL. French dwarf double. Lemon Ball was outstanding at both sites for the abundance of

bloom, the cheery color and the long season of flowering. No other variety flowered so freely. The plants, though not exceeding 15 inches, spread out considerably. The color of the double flowers was a bright lemon yellow about like that of the African, Lemon Queen or Early Sunshine, *Costa Rica*. Seed sown May 23, first flowers August 25; not free in bloom, one plant was orange. *Penn.* Rather tall but a fair bloomer. *Miss.* No report. *D. C.*

MAHOGANY. French dwarf double. Mahogany produced quantities of large, fully double flowers on a plant almost too large to be called dwarf at Turrialba but satisfactorily restrained at San Antonio. One would be quibbling to find fault with anything but the color which is much darker than the hue one finds under this name in chrysanthemums. The seekers for black flowers might pause here. *Costa Rica*. Seed sown May 19, first flowers July 6; many breaks in color, with one plant solid orange. *Penn.* Good plant for bedding and cutting, best during the late season, free blooming. *Miss.* Too many individual plants with yellow and orange breaks. One excellent almost black. *D. C.*

MELODY. French, dwarf double. Melody is easily described as a very dwarf replica of Harmony with self-colored golden flowers much more like a golden Harmony than the variety called Golden Harmony. The flowers, 1½ inches across, are borne less abundantly than in Harmony. *Costa Rica*. Seed sown May 19, first flowers August 21; much more satisfactory than Golden Harmony, more bloom, uniform in height and character. *Penn.* Dwarf, good color, one of the best of this type. *Miss.* Entirely satisfactory performance, still in flower November 10. Orange. *D. C.*



Claude Hope

Lemon Ball

ROBERT BEIST. French dwarf double. Could not be distinguished from Mahogany and was listed as a synonym in one catalogue. *Costa Rica*. Seed sown May 21, first flower July 17; very variable in color and height and quite similar to Mahogany. *Penn.* Comments same as for Mahogany. *Miss.* Among the plants grown on, there were many more deep colored flowers than in the group saved from Mahogany. Uniform in growth and habits. Lemon Chrome variously marked with Garnet Brown to self-colored Garnet Brown. *D. C.*

ROYAL SCOT. French dwarf double. This could not be distinguished from Gold Striped. *Costa Rica*. Seed sown May 21 and again June 25; no germination. *Penn.* No germination. *Miss.* No report. *D. C.*

SCARLET GLOW. French dwarf double. This is an outstanding variety. Although the foundation color is dark it is enlivened by a scarlet sheen and by the gold line around the edge of each petal, as well as by the lighter tangerine tone taken by the aging flowers. The flowers are large and fully double; and the plants at San Antonio reached no more than 12 inches. *Costa Rica*. Seed sown May 21, first flowers July 15; rather variable, a red and "yaller" but quite distinct and very early. *Penn.* Good color, dwarf excellent habit, color became much lighter as season progressed. *Miss.* Crown when developed Light Cadmium, rest of flower Brazil Red through Morocco Red and Claret Brown. *D. C.*

SPOTLIGHT. French dwarf double. This is very much like Harmony except that the crested center is lighter in color and consequently brighter. The plant is about the same size. *Costa Rica*. Seed sown May 21, first flowers August 15; not enough good qualities to take the place of Harmony and char-

acteristics not distinct enough. *Penn.* No germination. *Miss.* No report. *D. C.*

SPRY. French dwarf double. Spry is like Harmony condensed into a plant about 8 to 10 inches across with some extra flowers thrown into the bargain. The center crest is lighter in color than that of Harmony. It is definitely good but differs from Harmony only in the plant size. *Costa Rica*. Seed sown May 21, first flowers July 7; Very uniform, runs true, a dwarf Harmony. *Penn.* A little slow in making a show here, but fine midseason and late, not dwarf here but up to 2 feet. One of the best and grand color. *Miss.* Disc, Light Cadmium, Ray-flowers Garnet Brown fading lighter. *D. C.*

SUNKIST. French dwarf double. This is one of the outstanding varieties in several respects. It performed well for a long season, the color stands alone among the French varieties, being approximately the same as that of Pot o' Gold or Tetra, the flowers are little gems, the plants are tidy, reaching a height of about 8 inches at San Antonio. One plant among 15 was outsize. *Costa Rica*. Seed sown, May 19, first flowers June 30; catalogue description correct. *Penn.* The very best of all, very dwarf, good foliage, sturdy stems, excellent flowers good for bedding and even for cutting throughout the season. *Miss.* No report, except that the plants were in continual flower from late July to frost on November 3. *D. C.*

French Marigolds:

Golden Harmony

Double Harmony

Harmony

Spry



YELLOW PIGMY. French dwarf double. One might call Yellow Pigmy double dwarf in the sense that the plants did not surpass 6 inches in height. In many soils a litter or peat mulch might be necessary to prevent the rain splash from soiling the flowers. In most respects this variety is a very dwarf replica of Lemon Ball. *Costa Rica.* Seed sown May 21, first flowers July 9; very broad and bushy, comes true, full of buds when frosted on October 3, but had not been free of bloom. *Penn.* Really dwarf, good all around. *Miss.* Fine free bloom; Lemon Chrome to Lemon Yellow. *D. C.*

FIRECROSS. French dwarf single. The neat very floriferous plants reached a height of 12 to 14 inches at San Antonio and a little more at Turrialba, but they were a little irregular in size. The color is quite warm, almost gaudy, with the large overlapping petals light gold around the edge with a large irregular blotch of rich red at the base which recedes and fades as the flower ages. Those who like bicolors will want it. *Costa Rica.* Seed sown May 16, first flowers August 23; slower to bloom than Legion of Honor and not very distinct from it. *Penn.* Good, did not have many plants and all were slightly different in color. *Miss.* Light Cadmium flushed with Mars Orange to Claret Brown. *D. C.*

FLASH. A truly outstanding variety, Flash has only one fault; the fading color is not attractive in higher temperatures. At San Antonio, it was not objectionable. The flowers are large, symmetrical, and borne in great profusion on a medium-dwarf plant. One might wish that it flowered a longer season in Costa Rica, but doubtless this would never be a fault in the United States. *Costa Rica.* Seed sown in place June 7, first flower July 25;

profuse, a "mound" of bloom, worthy of its Silver Medal. *Penn.* Good blooms, much too heavy for the weak branching stems. *Miss.* Cadmium Yellow to Light Cadmium, washed with Maroon but fades to English Red. *D. C.*

LEGION OF HONOR. French dwarf single. Legion of Honor could not be distinguished from Firecross. *Costa Rica.* Seed sown May 16, first flower July 22; uniform in height, color and habit, over a foot high. *Penn.* Very poor, soon died, but the few flowers produced do not resemble those known in the North. *Miss.* Lemon Chrome, blotched with Garnet Brown that fades to Brazil Red. *D. C.*

AUSTRALIAN GIANT. French tall double. This variety has one virtue and many faults. The virtue is the flower itself. It is large, distinctive in form and bicolored, light clear yellow in the disc florets and rich dark red in the large ray florets. The form might be likened to that of an anemone chrysanthemum or a mourning bride. The outstanding faults are extreme lateness and the serpentine growth. *Costa Rica.* Seed sown May 23, did not bloom before frost on October 3, but buds were showing. *Penn.* Much too tall, crawling over the ground almost like a vine. Fair flowers but heavy. *Miss.* No flowers before frost which came November 3. Plants at that time about 6 feet tall and budded. *D. C.*

French Marigolds:

Yellow Pigmy

Butterball

Melody

Sunkist



FERDINAND. French tall double. A distinct and gay variety which reached about 30 inches in height at San Antonio and over 3 feet at Turrialba. The color is deep maroon in the rays and gold in the crested disc. The form is very like that of an anemone chrysanthemum. It flowered early in spite of its height. *Costa Rica.* Seed sown May 19, first flowers September 4; listed under dwarfs but grew 2 feet high, rather distinct. *Penn.* Grew to 3 feet, good flowers, foliage fair, much too tall for size of flowers. *Miss.* Not over 20 inches, late in coming into flower; disc, Cadmium Yellow, rays, Garnet Brown. One of the nicest for cutting. *D. C.*

FLAMING FIRE. French tall single. This variety is sure to be pointed out to the garden visitor because of its large, polka-dotted, scarlet-red-on-yellow flowers. The proportions vary from plant to plant and from flower to flower. Some few self-colored scarlet. The red fades to dull tangerine. Quite serpentine in growth, the plants attained a height of 4 and 3 feet respectively at Turrialba and San Antonio. *Costa Rica.* Seed sown May 23, first flowers July 9; large flowers some almost like Flash, others striped. *Penn.* Much like Josephine. *Miss.* Some flowers much like those of Flash, but usually with more ray florets. Colors from clear yellow to deep Scarlet Red—to Brazil Red. *D. C.*

JOSEPHINE. French tall single. Josephine is similar in all respects but color to Flaming Fire, though not as tall and a little more disciplined in growth. The two-inch, symmetrical flowers are uniformly rich crimson with golden centers, on stems long enough for cutting. One could wish there were more of them per plant. *Costa Rica.* Seed sown May 23, first flower September 8; height 40 inches, distinct but

too late. *Penn.* Somewhat more attractive than Flaming Fire; *Miss.* No report. *D. C.*

TAGETES SIGNATA PUMILA. Species, dwarf single. This is a charming plant, a species and well worth growing as it is. It is possible that it likes a cool summer for its best development for at Turrialba the growth was too long-jointed to be pleasing. The photograph was taken at San Antonio. There, the plants seriously rivalled Lemon Ball in floriferousness, probably actually producing more flowers, but since these were smaller, the effect was less impressive. The flowers are lemon yellow in the rays and appreciably darker in the disc. The feathery light green foliage greatly enhances the effect and is quite in keeping with the flower size. The heavy scent of the foliage has more than a hint of lemon oil in it. *Costa Rica.* Seed sown May 14, first flowers August 1; profuse bloom. *Penn.* Sparse bloomer, did not seem to like the rains and probably would have been better in a drier season. *Miss.*

It will be noticed that nearly all of the attention of the raisers of new forms has been devoted to the flower itself and that the most interesting developments so far have come from the modifications of the disc florets in what originally was the single flower. The gardener with an inquisitive mind can divert himself no end, by pulling apart some of his flowers to discover exactly how the modifications have come about.

French Marigolds:

Flash

Flaming Fire

Fiery Cross

Legion of Honor



Nothing is reported here about the cultivation of marigolds but it is a safe surmise that nearly every gardener knows without being told. If any intrusive word of advice is needed it should be that he remember that they are much less frost tender, especially the French forms, than is often remarked; and that should he want to keep his plants as late in the season as possible, he must plant them in a place where there will be good air drainage, so that the cold airs of November will not settle about them in the night. He can fortify them further as cold weather comes on, if the place where they are planted is not too moist in the soil, in other words he will plant some of his plants in a dry place and water them as they may need during the long growing months, leaving them to dry off a bit as cold weather comes on. Treated so, they will often last as long as the hardy chrysanthemum, but only in the French sorts.

A word or two should be said about the photographs to illustrate the French Marigolds. All the habit pictures were taken by Mr. Hope in his plantings in Costa Rica; the close-ups were taken by Mr. Taylor from flowers grown either in the editor's garden or in the overflow that was cared for by Mr. Erlanson, another member not previously mentioned.

In taking the pictures of the African varieties, flowers were chosen at various stages of development. This was done deliberately since there are many

beautiful phases to be seen in many composites, long before the flower head reaches its ultimate diameter. As often as possible, they were photographed so that there is a record of the peduncle or flower stem showing the various types of leaves that adorn it or are missing. They are various. The specimens were chosen also to show the branching that might come from below the first axial flower, since that also is a matter of interest to the gardener. Only enough of the leaves are shown in the cases of the portraits to show the placement in relation to the flower itself; since we felt that the habit of the plants was sufficiently known and sufficiently reported in the pictures of habit character from Mr. Hope. If one will examine the photographs carefully he can find a wealth of detail that will remove his first querulous remark about their number and their apparent similarity. All the portraits are natural size unless marked, but no attempt was made to grow flowers for maximum size, nor to choose anything that would be representative of such feeding.

What lies ahead for us in marigolds? That is not to be said as yet. It is hoped that flowers the size of Africans can be achieved with the colorings of the French. It would be nice to have better "anemone" type flowers among the Africans. It would also be fine to have some studies made of finer singles in the African types and to see what else could be done to restore the quilling, which was common long, long ago and is seen now perhaps only in Mayling and Honeycomb.

Verschaffelt's Nouvelle Iconographie Des Camellias

GEORGE GRAVES

Massachusetts Horticultural Society

The present revival of interest in camellias has caused a searching of the literature of a century or more ago. One old publication that is now being taken down from library shelves, dusted off and pored over is the collated series of monthly fascicles issued by the famous nursery concern of Verschaffelt in Ghent during the years 1848-1860 inclusive, 13 volumes in all. The text of this series has recently been republished in literal translation and a new arrangement by E. A. McIlhenny. The present study was suggested by Dr. H. Harold Hume and made from examination of the sets in the libraries of the Massachusetts Horticultural Society (12 volumes) and the Arnold Arboretum (13 volumes).

The *Nouvelle Iconographie des Camellias* was initiated by Alexandre Verschaffelt in whose establishment was to be found growing one of the most extensive collections of camellia varieties of the time. His approach to the subject was stated in quotation marks in the "Avant-Propos" of Tome I, 1848-1849, as follows:

"Le Camellia par l'élégance de son port, la persistance de son beau feuillage, la grandeur et le brillant coloris de ses fleurs, a su faire la conquête de tous les amateurs de belles plantes. Il règne aujourd'hui presque en despote dans toutes les collections, dont il fait le principal ornement. Il récrée l'anthophile le plus blasé sur les jouissances horticoles; les Dames le recherchent pour ajouter à leur parure; et ses fleurs du blanc le plus éblouissant, du rose le plus gai, du rouge le plus splendide, ou

mélangées de ces diverses couleurs, accompagnent ou animent leur teint d'une façon ravissante. Point de bouquet sans Camellias; point de tableau de fleurs sans lui. Le Camellia, en un mot, est indispensable pour tout et partout."

The quotation was from a prospectus which the text of the "Avant-Propos" suggests was circulated before publication.

These high-sounding words have in them a large portion of sales talk. It appears evident that there was a commercial aim in publishing colored illustrations together with historical and descriptive essays. The house of Verschaffelt, which Alexandre had founded in 1825, had camellias to sell as well as to look at and to write about.

That the series was intended to circulate among potential customers was suggested in one of the rare references to it in the contemporary garden literature. On March 22, 1850, F. R. Horner of Hull, England, wrote to *The Florist and Garden Miscellany*, calling the attention of its readers to the illustrated work on camellias then being published by "Mr. Alexander Verschaffelt of Ghent," not knowing that Alexandre Verschaffelt had died ten days before. Among other things, Dr. Horner pointed out that: "As Mr. Verschaffelt possesses, perhaps, every known variety of this flower, he necessarily has the opportunity of bringing out such a work as none other could have. Also, the amateur is hereby enabled to make his selection as well as if he were at the trouble and expense



The Verschaffelt establishment as it was pictured in L'Illustration Horticole in December 1854

of making a personal inspection." This notice may have had about it an element of exchanging favors because Alexandre Verschaffelt had the year before named a variety of camellia for Dr. Horner—Docteur Horner (Liv. 8, Pl. IV, 1849).

Little or no notice was taken of Verschaffelt's publication by the horticultural press. Years later, in 1886, the obituary notices of Ambroise Verschaffelt, the son who took over the business and the camellia publication when his father died, made no mention of the *Nouvelle Iconographie des Camellias* when recounting the contributions which the younger Verschaffelt had made to horticulture. It was the custom of the time not to review works that came out in parts over a long period.

A realistic statement of the purpose of the series is found in the essay on the variety De La Reine (Liv. 1, Pl. III, 1854), evidently inspired, if not actually written by Ambroise Verschaffelt. The aim was stated to be the

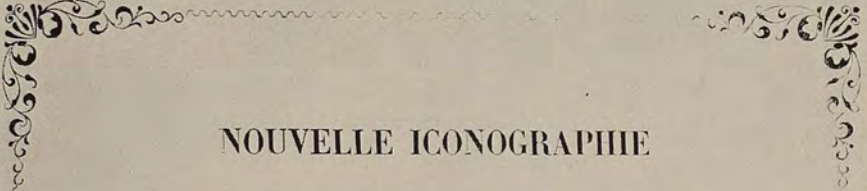
making known of worthwhile new varieties and the keeping alive of the memory of those of former years.*

The Verschaffelts were genuinely interested in camellias for themselves alone, as witness the expression of hope for the eventual development of a blue-flowered variety, which was written into the essay on the variety Carega Superba (Liv. 1, Pl. I, 1857). Sometimes individual plants in private collections were figured. Even so, a glance at some of the internal evidence to be found in the collated series also supports the suggestion of its sales-literature purpose. Very often, the appearance of a variety in *Nouvelles Iconographie des Camellias* coincided with the offering for sale of that variety. Here are three of numerous plain instances, as translated by Mr. McIlhenny.

JACKSONII (Liv. 2, Pl. I, 1849.)

"Beginning in March 1849 we will

* 'La *Nouvelle Iconographie des Camellias* faillirait à son but, celui de faire connaître d'abord les plus méritantes nouveautés, et en outre de perpétuer le souvenir de ce que les années antérieures ont vu surgir de plus beau.'



NOUVELLE ICONOGRAPHIE

DES CAMELLIAS

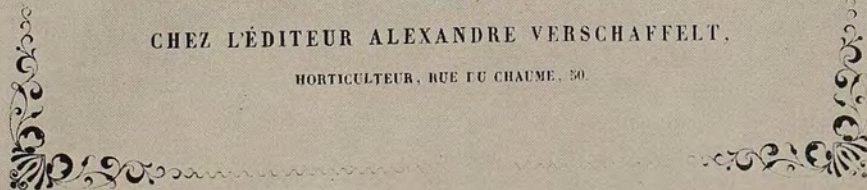
CONTENANT

LES FIGURES ET LA DESCRIPTION

DES PLUS RARES, DES PLUS NOUVELLES ET DES PLUS BELLES
VARIÉTÉS DE CE GENRE.

TOME I. — 1848-1849.

GAND,
CHEZ L'ÉDITEUR ALEXANDRE VERSCHAFFELT,
HORTICULTEUR, RUE DU CHAUME, 50.



Title page of the first volume of the Nouvelle Iconographie des Camellias

put it for sale. We have decided to keep the same prices at which Mr. Jackson intended to sell his plants, which are included in the following classes:

Plants from 15 to 25 cm. in height,
75 francs.

Plants from 35 to 50 cm. in height,
125 francs."

EMILIANA ALBA (Liv. 4, Pl. III, 1849.)

"We are now able to furnish strong plants of this pretty camellia which is not to be found in many collections."

JENNY LIND (Liv. 12, Pl. II, 1855.)

"As we have immediately ordered a large number of specimen plants, we shall be able to offer them for sale to amateurs at the same time as the holder; that is, next fall (1856)."

The scheme of publication which Alexandre Verschaffelt had in mind was stated, evidently, in the prospectus referred to and quoted from in the "Avant-Propos." If such a prospectus existed, no copy of it was available for this study. However, Dr. Horner, who must have seen a copy of some such publication, stated in his 1850 communication to *The Florist and Garden Miscellany* that:

"It is published in monthly issues, each number containing four plates of camellias, with descriptive letter-press; twelve numbers forming the yearly half-volume, while twenty-four numbers, or the numbers of two years, constitute the volume. The work will be completed in five volumes; it being proposed to give plates of 500 of the most beautiful, or new, or perfect kinds of camellias. . . . One entire volume is now completed; the monthly parts (something less than two shillings per part) are forwarded by the editor,

free of charge, to any subscriber in England."

As Dr. Horner stated, publication got under way in 1848. The title page of Tome I is reproduced in an accompanying illustration.

Even though the evident intention was to have a tome or volume include two years' publication of monthly livraisons or parts (not books), an index was included from the start with each yearly half-volume. This fact accounts for the present-day attitude that each year's issues taken together constitute a volume, of which there are 13. Apparently, the younger Verschaffelt looked at it that way, too, because title pages for one year only began not later than 1851.

Accompanying Plate 378 in Volume X of *L'Illustration Horticole* (1863) is an advertisement offering the complete work, which, the advertisement states, had terminated publication in 1860. Twelve volumes, each containing 48 plates were offered.* This statement about completion in 1860 was evidently made with some license because Livraison 8, Plate I, 1860, of *Nouvelle Iconographie des Camellias* mentions the flowering of a plant of the variety Professore Giovanni Santerelli in 1861.†

The *L'Illustration Horticole* advertisement of 1863 mentioning 12 volumes recalls the fact that sets in some libraries contain 12 yearly volumes and others have 13 and that references to the work in bibliographies may mention either 12 or 13 volumes. In cases where only 12 volumes are present, it is the one for 1848 that is missing. The fact that no consecutive paging was done and no comprehensive index made at the conclusion of publication has made the shortage of a

*"Douze volumes in -4°, compose chacun de 48 planches."

†"—et cette annee encore (1861)."



*The house of Verschaffelt valued this Camellia so highly that it was chosen to bear **the** family name*

year's fascicles not readily noticeable.

The only general index of the work which has been long available is that given by Edouard Morren and Andre De Vos in their *Index Bibliographique de l'Hortus Belgicus*, which is available in larger libraries. Morren and De Vos did not include the 1848 plates in their indexing and their foreword refers to the work as a whole as being made up of 12 volumes with no fewer than 576 varieties.* It may have been that demand for the work was greatly increased and to meet this, the print order was increased, leaving a number of sets short the 1848 plates.

Still further evidence that the set which Verschaffelt was offering in 1863 lacked the 1848 volume was his statement that each volume contained 48 plates. The first or 1848 volume contains but 47 plates. Plate IV of Livraison 10 is missing. A likely explanation for this gap is that the plate of the variety Anna Zucchini in the same livraison was double the normal size. Thus, the complete work of 13 volumes contains 623 plates, together with descriptions. This does not mean that 623 different camellias are dealt with. There is some duplication.

The contents of the 1848 volume precisely as listed in its index are:

Adelaïde
Alba imbricata (Low.)
— lutescens
Alcina
Alexina (Low.)
Alfida
Anna Zucchini
Augustina superba
Aulica (Loddiges)
Barnii
Brillante (alba briantea)
Cécile de Valtange
Centifolia (Low.)
Clymène

*"—en 12 volumes, pas moins de 576 variétés différentes."

Commensa
Coquettii
Duc de Brétagne
Chartres
Elegans chandlerii
Emelie Gavazzii
Emilia Campioni
Estherii
Frezolini
Général Lafayette
Grandis (Low.)
Guthriana
Hendersonii
Henri Favre
Il Roberti
Jubilée (Low.)
Leda
Lord Peel
Maria-Theresa
Marie Morren
Miniata (Low.)
Mistriss abby Wilder
Nymphaeflora
Prince Albert
— de Canino
Princesse Mathilde
Radiata vera
Reine des fleurs
Squamosa alba
Stockwelliana
Sulcata
Varishii
Wasingtonii

The 1848 plate of the General Lafayette was made from a picture sent by Boll "of Philadelphia" (D. Boll's correct address was Forty-Sixth Street, New York). Later, in 1853, a new plate of the same variety drawn from living material, and presumably more accurate, was published.

Plate IV of Livraison 12, 1848, very much resembles Plate 154 of *Annales de Gand* Volume III, 1847, even to the spelling of the name Maria Morren. It was a variety originated by H. Haquin of Ghent. Apparently the same Haquin seedling was being dealt with

in Plate III of Livraison 6, 1853, but in a new plate and under the name of Marie Morren. Likewise, "Mistriss Abby Wilder" appears in both the 1848 and the 1853 volumes but with different plates.

The variety Duc de Chartres is figured in Plate IV of Livraison 1, 1848, and is again similarly described but figured differently along with the variety Comte de Paris in Livraison 6, Plate III, 1852. There is a suspicious similarity between the Emilia Campione of the 1848 volume and the Emilia Campioni of 1854. The "Maria-Theresa" of the 1848 index refers to the "Marie Thérèse" of the text (Liv. 1, Pl. I), and is a different plate from that of the Marie-Thérèse figured in Livraison 9, Plate II, 1852, although whether two varieties are involved is not made plain by the text.

An occasional discrepancy occurs in the 1848 volume between a name over a text description and that on a plate or in the index, as for instance, Alcinea Rosea and Alcinea, Estherii and Estheri, and Washingtonii, Washingtoni and Wasingtonii. Errors of this kind are common throughout the work. However, errors in the text were sometimes corrected. There was an erratum note pasted to the essay on Commensa (Liv. 6, Pl. II, 1848) after printing, restoring origination credit to "Donkelaar."

Originators, when known, or introducers, as well as country of origin, were rather accurately dealt with in the text. A note of correction added to Livraison 8, Plate I, 1859, explained that a plate and description previously published as Paolina Maggi (Liv. 5, Pl. I, 1859) should have been labelled Carolina Franzini. Likewise, those published as Carolina Franzini (Liv. 7, Pl. II, 1859) should have been labelled Margherita Coleoni. A figure of the true Paolina Maggi was promis-



Ambroise Verschaffelt photographed from Scheerlinck's "De Azalea indica L." (Tuinbow Encyclopedie I)

ed in one of the next numbers, but failed to appear.

A preponderance of the varieties dealt with were of Italian origin because at the time, Italy was a prolific source of new camellia varieties. The compilers seemed to have had a strong leaning towards a fully double flower which is no longer as popular at it once was. In fact, few of the varieties included in the series are now in cultivation, thus making the whole work largely of antiquarian or historical interest. Comparison of camellia blooms of today with plates in *Nouvelle Iconographie des Camellias* for identification purposes is of doubtful value.

The pictures were painted either from plants in Verschaffelt's own collection or, as in the case of Alba Lutescens (Liv. 4, Pl. III, 1848), in other camellia collections in the Ghent area. As previously pointed out, in at least one instance, Général Lafayette (Liv.

10, Pl. III, 1848), Verschaffelt reproduced a drawing supplied by someone else.

As stated before, the publication was started by Alexandre Verschaffelt in 1848. He died March 12, 1850, after a long illness. The subscribers received notice from Ambroise Verschaffelt dated March 24, 1850, stating that he intended to carry on in his father's place. In fact, the statement in the death notice that: "Je vais continuer avec le même zèle et la même exactitude que par le passé, et qui était, du reste, confié à mes soins exclusifs" could be taken to mean that the management of the publication had been turned over to the son before the death of the father.

Beginning with 1851, the name of Ambroise Verschaffelt appeared on the title page as "editeur." The title page of the 1852 volume lists Ambroise Verschaffelt as "editeur" but the colored jacket for the January number of the same year gives the credit to "Ambroise Verschaffelt, Fils." The latter form was carried through on all subsequent title pages. It could, therefore, be assumed that a member of a third generation of the Verschaffelt family took over in 1852. However, the contemporary literature makes no mention of such a person. Apparently, Ambroise Verschaffelt carried on the business of his father until the beginning of 1870, together with his own venture of publishing *L'Illustration Horticole*, which was established in 1854. Linden then took over the nursery business and brought in Edouard André to act as editor of the magazine in place of Lemaire. Part of the inherited business was the completion of the *Nouvelle Iconographie des Camellias*. It would appear that having the same initial as his father Ambroise Verschaffelt tried to clarify the situation

by designating himself as the son and succeeded only in causing more confusion.

This belief that Ambroise Verschaffelt and Ambroise Verschaffelt, Fils were one and the same person is borne out by the fact that the masthead of *L'Illustration Horticole* continued to credit Ambroise Verschaffelt with the title of "Editeur" of the *Nouvelle Iconographie des Camellias* long after the latter publication had been completed. Also, the 1863 advertisement previously mentioned contains the statement that the camellia series was "Éditée par Ambr. Verschaffelt, à Gand." The conclusion of this study is that but two Verschaffelts were concerned with the work—Alexandre and his son Ambroise. Of the two men, Ambroise seems to have made the greater contribution, not only because of longer association but because the later volumes bear evidence of better scholarship.

There is confusion, too, as to who wrote the text of the series. A study of the "Avant-Propos," which is in two parts, strongly suggests that Alexandre Verschaffelt wrote the first part of the foreword of the 1848 volume. The second part was signed by Auguste Van Geert, a Ghent nurseryman well qualified to discuss the culture of camellias. There is no evidence that Van Geert was author of any more of the text than the part to which his name is signed.

A number of essays in the 1848 volume refer to Alexandre Verschaffelt in such a manner as to suggest that the text was written by someone else. For example, it is stated of the variety *Aulica* (Liv. 8, Pl. I, 1848) that: "It bloomed at the exposition last March in M. Alex. Verschaffelt's collection of 15 new camellias." References in the same manner were made in the

discussions of Clymene (Liv. 6, Pl. I, 1848) and Alcinia Rosea (Liv. 4, Pl. I, 1848). The essay on the variety Radiata (Liv. 7, Pl. III, 1848) states: "We have asked M. Verschaffelt for some information about this camellia." This statement would seem to make it certain that Alexandre Verschaffelt did not write that particular description. Nor did he write (Duc de Bretagne Liv. 3, Pl. III, 1848): "The drawing which we reproduce was made from a plant that bloomed in the home of M. Alexandre Verschaffelt, and who has put it at our disposal to reproduce here; we take advantage of this occasion to express to him our deep gratitude."

Although there is no evidence in the work to support the claim. Morren and De Vos list Charles Lemaire as "redacteur principal" of the *Nouvelle Iconographie des Camellias* and credit Lemaire with authorship of the descriptions in the individual listings of varieties from the beginning of 1849

on. It could well have been true that Lemaire was ghost writer for Ambroise Verschaffelt because the two men were associated as editor and publisher of *L'Illustration Horticole*. It could be assumed, however, that the commercial offerings in connection with some of the descriptions were doubtless the expressions of Verschaffelt the nurseryman. There is evidence, too, that Ambroise Verschaffelt's active work on the publication went deeper. The note on the Paolina Maggi mixup previously referred to is signed "A.V."

With the evidence supplied by the work alone, it would appear that the Verschaffelts, father and son, planned the book, watched over the preparation of the plates and text and took the risk as publisher. Who actually did the work is not recorded, except in the case of the artists who made the plates, but because of the close association between Verschaffelt and Lemaire, it is reasonable to believe the latter had a part in the editorship.

Disease-Resistant and Hardy Varieties of Vegetables

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In this fifth and last installment of the article of the above title a group of miscellaneous crops is considered: Lettuce, peas, root crops, and spinach. They are grouped together in this final article for no better reason than that they did not seem to fit in well with crops discussed in earlier articles.

Lettuce

Lettuce is distinctly a cool season crop that will stand frost or *light* freezing but not hard or continued freezing. The problem in extending its range of culture is largely the development of "hardiness" to warmer temperatures than are suitable for growing most varieties. Although lettuce is grown in a more or less perfunctory fashion in home gardens everywhere in the country, at some season or another, its extensive commercial culture is concentrated in a few areas and districts having especially favorable cool growing seasons. Unfortunately, lettuce varieties possess rather highly specific climatic requirements so that very few are adapted to a wide range of conditions. In no crop is the careful choice of variety to suit a given set of conditions more important.

In the last 15 years several so-called "heat-resistant" varieties have been introduced by both private and public agencies, and a substantial amount of breeding work toward that end is still in progress. The heading varieties are notoriously sensitive to temperature, few amateur gardeners realizing that this may be the reason why they can not grow good head lettuce in their

own localities. In many western districts disease has necessitated the production of resistant sorts.

The western lettuce shipping industry was built on the variety New York (or Wonderful) erroneously called Iceberg in the vegetable markets. About 25 years ago it became evident that the New York was too sensitive to heat and to certain diseases to permit profitable culture in many districts where growers wanted to produce it. Two of the earliest improvements of this variety were strains known as New York No. 12 and New York 41 developed by commercial seedsmen for some tolerance to higher temperature in the West. New York No. 12 is still grown to some extent but is not adapted to really hot weather or to the East. Since 1930 the United States Department of Agriculture and cooperating agencies in California have produced a large number of strains of New York type having special adaptations to different seasonal conditions and resistance to brown blight, or to brown blight and mildew. Most of this series of improvements bear the name Imperial together with a letter or number.

Imperial D is a winter strain adapted to the West and resistant to both diseases mentioned. Imperial strains identified by numbers are resistant to brown blight but not to mildew, and generally are best adapted to the West and Southwest. Among the most important of these are Imperial 152, Imperial 615, Imperial 847, and Imperial 850. More recently, the Experiment Stations of Michigan and of Cornell

University in cooperation with the Federal department have introduced three varieties of New York type that are much more resistant to tipburn (heat damage) and which will make more solid heads in the East than the above-named strains. Imperial 44 and Imperial 456 have been fairly good in the Northeastern States, while another variety, Great Lakes, has attracted attention in the States around the Great Lakes. Although these are somewhat tolerant of warm weather none of them do well in the summer heat of the warmer parts of the country. Great Lakes has been found very good in the summer lettuce districts of California, and Imperial 847 is grown to some extent as a winter lettuce in Florida. Nearly all the commercial lettuce of this country is made up of these New York and Imperial strains mentioned here.

Investigators are striving for still more heat tolerance—head varieties that can be grown more successfully in the eastern and middle parts of the country. The United States Department of Agriculture has introduced a number of new types designed for the Middle Atlantic States. They show some improvement but have been grown to only a limited extent and are not, as yet, commonly listed by seedsmen. Of these Cosberg is best known but is of temporary interest since it doubtless will be superseded by substantially better sorts in a few years.

The Massachusetts Experiment Station developed a downy-mildew-resistant head lettuce called Bel-May, for greenhouse culture.

There are a number of old varieties having a fair amount of sturdiness and merit for the home garden but these cannot compete commercially with the New York Type. The little Mignonne is one of the surest to head,

but many people do not care for its small size. Varieties of the Cos or Romaine type generally are more tolerant to heat than either the crisp or butterhead varieties. They have been used to good advantage as parents in breeding heat-tolerant head types. Probably the best known of the Cos varieties in this country is Paris White or Trianon.

Generally speaking, leaf varieties of lettuce can be grown at some season of the year in places where good results can not be obtained with head lettuce. Black-Seeded Simpson, Early Curled Simpson, and Grand Rapids are the best known. They all have curly, pure green, leaves. Grand Rapids strains, however, generally are harder to germinate in very warm soil than are the others. The Ohio Agricultural Experiment Station developed a strain known as Grand Rapids Tip Burn Resistant. The United States Department of Agriculture developed a strain of Grand Rapids with a measure of mildew resistance, known as Grand Rapids U. S. No. 1. A curly, red-leaved variety, mis-named Prize Head, is another fairly popular leaf sort for home gardens.

The most striking lettuce introduction in many years is a very curly, very long-standing, heat-tolerant leaf type named Slobolt. It "bolts" to seed 2 to 4 weeks later than other leafy kinds and actually tolerates relatively hot weather. It has even been grown with fair success on many tropical islands, during the war, where all other lettuces tried were virtual failures. It will be generally available from seedmen for the first time in 1946. Slobolt was produced by the United States Department of Agriculture.

Peas

Peas (English, or garden), somewhat like lettuce, are sensitive to high temperature. They can be grown in

the coolest regions in which any vegetable crop can be grown in this country. Both quality and yields are seriously impaired by hot weather, particularly if it is dry. The crop also falls prey to a long list of diseases. Since the pea is one of the most important commercial, as well as home garden, vegetables it has been the object of an enormous amount of breeding and improvement work. Probably no other crop surpasses it in the trueness, uniformity, and general excellence of seed stocks available to growers. In the past 20 to 25 years the American seed industry has accomplished truly commendable results.

Since 1925 scores of fusarium-wilt-resistant varieties of peas have been produced, or old partly resistant varieties have had fusarium-susceptible individuals eliminated from them. Today a majority of the varieties sold in the United States of America and the greater proportion of pea seed planted are wilt resistant. Some of the more important ones for home and market gardens are listed here because seed catalogs often do not indicate whether a variety is resistant or susceptible. (1) Smooth-seeded peas: Alaska, White Marrowfat, some strains of First and Best. (2) Wrinkled-seeded peas: Alderman and Dwarf Alderman, Dwarf Telephone (Daisy), Everbearing, Gilbo, Glacier, Morse Progress, Morse Market, Number 40, Prince of Wales, Improved Stratagem, and Giant Stride. Most of the edible podded varieties available are wilt resistant, as are the principal canning varieties like Perfection, Pride, Resistant Surprise, and others.

Although fusarium wilt is the only pea disease against which highly resistant varieties have been developed there are small to moderate differences in susceptibility to a number of other

troubles, such as root rot, *Ascochyta-Mycosphaerella* blight, near wilt, and certain mosaics. The following varieties have shown some probable superiority over others with respect to the several disorders named: (1) Near wilt and wilt: Delwiche Commando. (2) Common pea mosaic: Hundredfold, Laxton Superb, Little Marvel, Morse Market, Perfection, Surprise, Thomas Laxton. (3) Septoria leaf spot: Perfection is tolerant. Perfection also is resistant to a half dozen virus troubles; and Little Marvel, Surprise, and Wisconsin Early Sweet are resistant to five different viruses.

It is common knowledge that the hardiness of peas permits their being planted very early in the spring, or in winter in the South. While they will germinate in relatively cold soil and the young plants will tolerate some frost, ice, and snow they do not stand much hard freezing. Furthermore, it is only the stems and leaves that tolerate any degree of freezing. As yet no variety of garden pea has been found that can stand freezing of its blossoms or pods. The greatest hardiness to cold is required of varieties to be grown during the winter in those parts of the South where untimely hard freezes occur occasionally. Willett Wonder, a smooth pea, similar to First and Best, has shown significant hardiness to cold. A surprising degree of cold resistance has been found in Wando, a new wrinkled pea developed at the U. S. Regional Vegetable Breeding Laboratory at Charleston, South Carolina. The leaves and stems of this variety have survived temperatures of 15° to 17° F. in the field when all other named varieties were killed. Hard freezes that occurred when Wando was in bloom or pod destroyed the blooms and pods only to have later ones form and make a fair crop, while other peas were com-

plete failures. This pea, although developed originally for cold resistance, seems also to show more heat tolerance than most others and promises to be the hardiest high quality pea grown in this country to date. Experience with it so far indicates that it is highly productive, of high eating quality, and excellent for canning and freezing preservation as well as fresh use.

Alaska and other very early peas, when planted very early in the spring, largely escape hot weather by virtue of their quick development. When planted late, however, they suffer seriously from heat in all but the cooler parts of the country. Austrian Winter is a very hardy pea, but it is a colored field pea grown for soil improving and soil conserving purposes, and not for food.

Root Crops

In this section reference will be made to beets, carrots, parsnip, radish, rutabaga, and turnip.

Beets. Despite the scores of names of beet varieties that appear in American seed catalogs there are hardly a dozen distinct important forms. There are marked differences in color and shape of root, color and size of leaf, and some differences in rate of growth or development. Except insofar as rate of attaining the desired size (earliness) has a bearing on choice of variety for short or cool seasons, there is little to be said concerning "hardiness." None of the present varieties thrive during midsummer in the warmer parts of the country, although fall crops can be started while summer temperatures are fairly high.

All beet varieties are normally hardy to frost and light freezing. They can be planted well before the last spring frosts and can stand in the garden until fairly hard freezes threaten to occur in the fall. Prolonged exposure

to very cool weather before a period of good growth sometimes induces premature flower stalk formation thus interfering with normal root development. No accurate data are at hand to indicate any substantial differences in this regard among garden varieties, although differences may exist.

The "earliest" varieties (55 to 60 days) are Early Flat Egyptian, Crosby Egyptian, and Early Wonder and its related strains. Although Detroit Dark Red, Crimson Globe, and Early Blood Turnip will produce about the same yield of roots in equal time. The point is that the three varieties last named are normally allowed to grow somewhat larger than the others before they attain their ideal shape, but are only about a week "later." They retain good quality up to somewhat larger size than the early sorts. The long and half-long types, including Long Smooth Blood, New Century, and Winter Keeper, require substantially longer to attain their optimum size (75 to 80 days) so are likely to encounter adverse hot weather in the warmer parts of the country when planted in the spring. Thus, if only a very short season is available before encountering either hot or cold weather the flat or round types are preferred to the long and half-long.

Although garden beets are subject to a number of diseases, only curly top has seriously limited their culture for feed. Curly top is a virus disease that is prevalent in the Inter-Mountain area and elsewhere in the West. Breeding work is in progress to develop a curly top resistant table beet by crossing table beet with resistant sugar beet. Success appears quite possible but has not yet been attained.

Carrots. What has been said above regarding the hardiness and climatic adaptations of beets applies in a general

way also to carrot varieties, although carrots appear to tolerate a little more heat than beets after they are well along in their development. It is usually difficult to get good stands of carrots in hot weather. Also carrots develop poorly in very heavy stony, or dry soils; this is especially true of the longer, later varieties. They are not "hardy" to adverse soils.

The earliest and shortest carrot is French Forcing; the root is only about $2\frac{1}{4}$ inches long and nearly as thick, requiring, about 60 days to develop. Early Scarlet Horn has a root about $3\frac{1}{2}$ inches long and requires about 65 days. Under adverse soil conditions and very short season one or the other of these would have a better chance to produce a good carrot than would the longer and later, generally more desirable, varieties. Chantenay, Red Cored Chantenay, and Danvers Half Long (72 to 75 days), are good home garden and general purpose sorts, and are more widely adapted than the Emperor and Morse Bunching (about 80 days) which are so very extensively grown in the West for shipping to market.

There are no marked superiorities among carrot varieties in tolerance or resistance to disease, and unfortunately no very extensive efforts are known to be in progress now to develop disease resistance.

Parsnips. The parsnip is a minor crop that has received very little attention from plant breeders. The commonly grown long type (Hollow Crown or Guernsey) does best in cool climates, but requires 3 months or more to reach a usable stage. There is, however, a less commonly grown short, thick variety called Short Thick that becomes usable in about 75 days. For seasons too short for the long type, or under soil conditions not suited to deep

root development Short Thick may have advantages.

There are no known varietal differences in susceptibility to disease among parsnips.

Radishes. Radish varieties exhibit an extreme array of size, color, shape, and rate of development all the way from the little red or white globes—ready to eat as soon as three weeks from planting—to the large, long, winter types that may be harvested in the fall 3 months after planting. The radish is moderately hardy, will stand frost and light freezes but not hard ones, and does not thrive in very hot weather. Heat impairs its quality. Thus, in those regions that warm up quickly in the spring only early sorts are adapted to spring planting, such as Saxa, Early Scarlet Globe, Sparkler, French Breakfast, Long Scarlet (Cincinnati Market), White Icicle, and others that develop in less than 30 days.

Among these early radishes the small round or oval varieties do better under difficult soil conditions than do the long varieties like Cincinnati Market and White Icicle. The long ones frequently are more subject to malformations, discolorations, and even injury by pests in the soil than are the early round ones that develop at the very soil surface. It can hardly be said that the small round radishes are substantially "hardier" than the long ones, or that they are insect or disease resistant. They apparently simply escape certain hazards because of their growth habit.

Americans generally care little for the large, late, "summer" or winter radishes, such as Long Black Spanish, Round Black Spanish, China Rose, Chinese White Winter, and Half Long Gray, which normally reach harvest stage in 50 to 60 days. The flesh is very firm, generally very pungent, and the roots will stand for a considerable

time in the cold (not freezing) soil of fall without deterioration. These varieties are quite hardy in that they can be stored successfully like other root crops for several months. Those who want a sprightly radish flavor for salads in the winter when none can be grown may find some of these attractive. They are suitable for spring planting only in the North.

There are no "disease resistant" radishes, strictly speaking, but the very small, very early varieties escape various kinds of damage better than the others because of their habit and rate of growth.

Turnips. The turnip is another cool weather root crop that is reasonably hardy to light freezing but which is definitely harmed by hot and dry weather. Garden varieties range from 40 to 70 days in time required to reach good usable size and certain stock-feed varieties need up to about 80 days. In adapting varieties to seasonal conditions the same reasoning should govern as outlined above for radishes.

Snowball, White Milan, and Purple Top Milan are among the earliest varieties (about 45 days to usable size). Purple Top Globe, the most popular variety, and White Egg require about 60 days to best size. All these are flat, globular or oval varieties. Golden Ball is a yellow fleshed turnip (not a rutabaga) which takes about 65 days to full size.

Shogoin, a Japanese variety of turnip, is of special interest for quick production of greens. In late summer or early fall, good greens can be harvested in 30 days. An outstanding characteristic is that it is somewhat less susceptible to injury by aphids than are other varieties. It also produces small white roots of good quality, but they are of secondary value. For spring culture it must be planted very early since it is not heat tolerant. A Scotch variety,

the Bruce, not grown in America, is reported to be resistant to club root, a slime mold disease that affects members of the cabbage family.

Seven Top, a greens turnip that forms no enlarged root, is early, hardy, and (according to limited records) considerably less susceptible to bacterial soft rot than other varieties.

Rutabaga. Rutabagas or Swede turnips are little grown in the United States except in the northern States because they are sensitive to heat and require 90 days to make a crop. There are no notable differences in hardiness or climatic adaptations among the few varieties grown here, but some interesting differences in susceptibility to certain diseases have been observed. Most varieties are very susceptible to bacterial soft rot (*Bacillus carotovorus*). Limited observations have indicated the following varieties to be considerably less susceptible: American Garden White, Laurentian, Neckless Yellow Bronze Top, Sweet Perfection White, and certain strains of Sweet German.

Spinach

Spinach is one of the very hardiest annual plants grown in our gardens. It is quite commonly over-wintered in the field or garden on the Pacific Coast and in the Middle Atlantic Coast regions and southward without any protection. In colder places some litter or straw covering is needed, but it will survive temperatures of 10° F. or even lower, for short periods, without cover, when a fourth to a third grown. Younger plants may be "heaved out" by alternate freezing and thawing, while large plants will be damaged by the cold or by excessive drying.

For early fall planting to be harvested in the late fall or for late fall planting for over-wintering, there are two outstandingly hardy and disease resistant varieties: Virginia Savoy and

Old Dominion. Both were developed at the Virginia Truck Experiment Station. Virginia Savoy was developed about 25 years ago by selection from a hybrid between the ordinary cultivated spinach and a wild type imported from Manchuria. Old Dominion was introduced in 1930 from a cross between Virginia Savoy and King of Denmark. These resistant kinds stand more cold than other varieties and are relatively unharmed by spinach mosaic, popularly called "blight" in the Atlantic Coastal areas where it damages other varieties. Neither of these varieties should be planted in late winter or in the spring because they shoot to seed quickly.

For spring planting there is a long list of varieties ranging from the various improved strains of the Bloomsdale type (38 to 40 days) through Nobel and King of Denmark to Juliana (about 50 days). For regions that warm up quickly in the spring the early varieties are best since they develop quickly and are harvested before hot weather. Generally speaking, they are best for home and market gardeners because of their wider adaptability.

True spinach is very sensitive to hot

weather but New Zealand spinach—which isn't spinach at all—thrives in hot weather, and is killed by frost. For those who want a hot weather greens with eating qualities similar to spinach, it is worth consideration.

The term Perpetual Spinach is sometimes erroneously applied to Swiss Chard, a leafy form of beet that is one of the best heat-hardy greens. Although it cannot stand midsummer temperatures in the warmest regions it can be grown successfully clear through the summer over a large part of the country. All varieties are essentially similar in adaptability or hardiness.

Conclusion

As never before, the plant breeders are producing new and improved varieties with greater resistance to cold, to heat, to disease, and to a lesser extent to insects, but there is usually a few years' lag between introduction and general availability. If gardeners and growers can be better informed of research progress, and will ask their seedsmen for these new things as they appear, their early availability to the public will be expedited and earlier benefits obtained.

Hybrid Clivias for Distinction and Beauty

KARL WALTER OPITZ

To delight lovers of fine plants, new improved strains of *Clivia miniata* of the family *Amarillidaceae* are making their appearance in an increasing number of Southern California gardens. Until recently it was thought that *Clivias* must be grown in pots under glass. But now it has been demonstrated that the plants do excellently in well prepared beds out-of-doors under full shade. These aristocrats of color and form are destined to become a

prominent feature in frost-free localities.

The new broad-leaved types are much superior in both foliage and flower color to the old South African Kafir Lily. English and Belgian and now American horticulturists have cross-bred and selected until the species can hardly be recognized in the parents. Unbelievably broad, deep green, heavy, blunt, waxy, strap-shaped leaves in well-grown clumps give the im-



Edwin T. Merchant

Hybrid Clivias

pression of superlative health and vigor. Under favorable conditions the plants attain a height of two feet or more and the leaves are four inches broad.

Umbels from six to eight inches across and of from twelve to twenty broadly funnel shaped flowers are borne on stout peduncles which are thrust above the gracefully curving

leaves like a brilliant crown. Depending on the number of mature offshoots, large plants bear two to five flower clusters in one season. Mature single plants produce but one umbel per year. Individual plants vary in flower color, the usual color being orange-scarlet with a pale yellow or white, tinged green, throat. A growing number of shades ranging from a rich full colored wine-red to white segments tipped pale orange may be found. With correct nutrition the flower segments (petals and sepals) measure up to three inches in length. Time of blooming depends upon the nutrition of the plant, temperature, and light conditions. The height of the blooming period is usually in March or April. Prolonged periods of dark, cool, moist weather followed by warm, bright days may force an early bloom. The time the first flower in a single cluster is open until they are all finished may amount to six or eight weeks. Usually, however, with favorable weather the entire inflorescence bursts into bloom and lasts for three or four weeks. There is hardly a more breath taking spectacle than a large bed of *Clivia* hybrids in full bloom. Thriving as they do in deep shade and displaying such a wealth of dark green foliage, the brilliant flowers literally blaze with color.

If cut while the stalks are turgid with water in the morning, the flowers in full bloom last for ten days to two weeks under ordinary room conditions when placed at once in a vase of water. Cutting the undeveloped flower cluster is unsatisfactory because unopened buds do not size up well in flower.

Adequate pollination by insects is not ordinarily attained. Thus, in order to assure seed production, it is necessary to hand pollinate. This is a simple matter because the flowers are large and the pistil and stamens conspicuous.

Pollen is produced in great abundance.

The developing fruits are quite attractive. As the berries mature they change from deep green to bright red. With a good set of fruit the old flower stalk looks like a stout club with fingers abruptly set with huge red cherries. It takes about nine months for the seed to mature on the plant.

Plants come remarkably true to seed thereby facilitating easy selection of the best types for propagation. The seeds germinate readily if planted when mature and not allowed to dry out. They are often planted in a good potting mix lightly covered with sand and peat. The small plants can be transferred to three inch pots in about four months.

In comparison with most plants growth is slow. It requires about four to six years to obtain blooming plants from seed. But plants of flowering size soon produce offshoots which, if left with the parent, may bloom within three years. When the clusters crowd excessively they should be carefully divided. The so-called "bulb" is merely the thickened leaf bases, and in replanting should never be allowed to become covered with soil. Well rooted divisions may be set directly in beds about two feet apart each way. Poorly rooted offshoots or bulbs that have lost their roots are best treated as cuttings since vigorous root production is easily obtained in sand and the plant can then be re-established in pots or beds with little danger of bulb rot. *Clivias* bloom best when undisturbed. Hence, it is only when excessive crowding causes nutritional inhibition or interferes with proper air circulation and thereby permitting fungus and insect pests to thrive that division is warranted.

For the largest blooms the plants should be provided with sufficient nutrients to assure good growth during the period prior to initiation of flowers.

Immediate to the blooming period it is well to feed with liquid manure. After flowering all necessary replanting or repotting should be taken care of. Vigorous growth is best maintained until late fall. Then a short period of semi-dormancy is induced by withholding water from the roots. This short rest period tends to insure flowering. Care must be taken, however, not to allow dessication of the plant.

Clivias must have good drainage. Their water requirements are not great, and they are tolerant of rather high concentrations of calcium and other minerals as long as they are well provided with organic matter in the form of peat, compost or manure.

No cultivation should be attempted as the comparatively few, shallow roots are large and fleshy and easily damaged. A mulch of an inch or two of well rotted steer manure, compost, or bean straw will aid in maintaining excellent water absorption and will provide most of the fertilizer needs of the plant.

Wind does not seem to bother the plants when provision is made to make up for excessive water losses. But the flowers do not stand rough treatment; and it is, therefore, best to grow the plants where they are sheltered from strong drafts.

During hot, dry weather an occasional syringing maintains best growth conditions. When the plants are in bloom it is best to avoid wetting the flowers or spotting of the perianth may result. A periodic heavy syringing helps to control mealybug which is fond of Clivias and may build up in great numbers in the axils of the leaves.

As may well be imagined the new hybrids are finding many well shaded frost free gardens to their liking. Clivias combine excellently with plants of a subtropical nature, such as palm, tree

fern, dracena, strelitzia. A carpet of Helxine, when properly cared for, is excellent undercover. The full shade of live oaks, magnolias, avocados, California laurel and a host of other evergreen trees provides an excellent place for beds or clumps of Clivias in a naturalistic setting with other shade loving plants. As potted or boxed specimens in the shady portion of the patio, the Clivia is unexcelled. Where frost is a danger, container grown Clivias are splendid conservatory subjects. As potted plants they are well received by florists especially at Easter time.

From this discussion it is not to be assumed that California is the only place where hybrid Clivias thrive. Emphasis is placed on their adaptability to out-of-door culture because this aspect has been neglected in the past. Glasshouse grown plants, where subtropical conditions do not prevail, are likewise important. Potted or boxed specimens are often taken from the greenhouse when the first buds appear and placed in the home, office, hotel lobbies, hospitals, et cetera, so that the handsome plant and flowers may be enjoyed during the blooming period. After flowering, unless conditions approximating the glasshouse can be provided, it is best to return the Clivias to the conservatory.

As these fine new strains of Clivias become better known they will doubtless find an important place in gardens where they are adapted. And a yet wider range of flower color shall be expected. Perhaps pure white Clivia flowers may sometime surpass the well-known Easter lily for holiday observances. But no matter what the destiny of hybrid Clivias may be, they certainly are among the best of shade plants in year around beauty and distinction.

Rock Garden Notes

ROBERT C. MONCURE, *Editor*

Aquilegia pinetorum Tidestrom

The notes on *Aquilegia pubescens* by Mrs. Lester Rowntree in the July 1945 number remind me of the first time I saw it while in Yosemite Park. I too was impressed with its majestic beauty. That night in dreaming over the day's exploits, I recalled the columbines I had seen on Cedar Breaks in Utah. The more I thought, the more the two seemed alike. The attendant at the lodge there thought they were native but could not name them.

From appearances of the stand I concluded they were garden hybrids that had reseeded over a course of years. The flowers were a large uniform white with long spurs. When I realized that the altitude of Cedar Breaks and that of Mt. Dana, their habitat in Yosemite, were each approximately 10,000 feet, I had a fantastic thought. Possibly the terrane between the two peaks was once table land and the area between sunk leaving these peaks, and similar ones, as islands perpetuating the species.

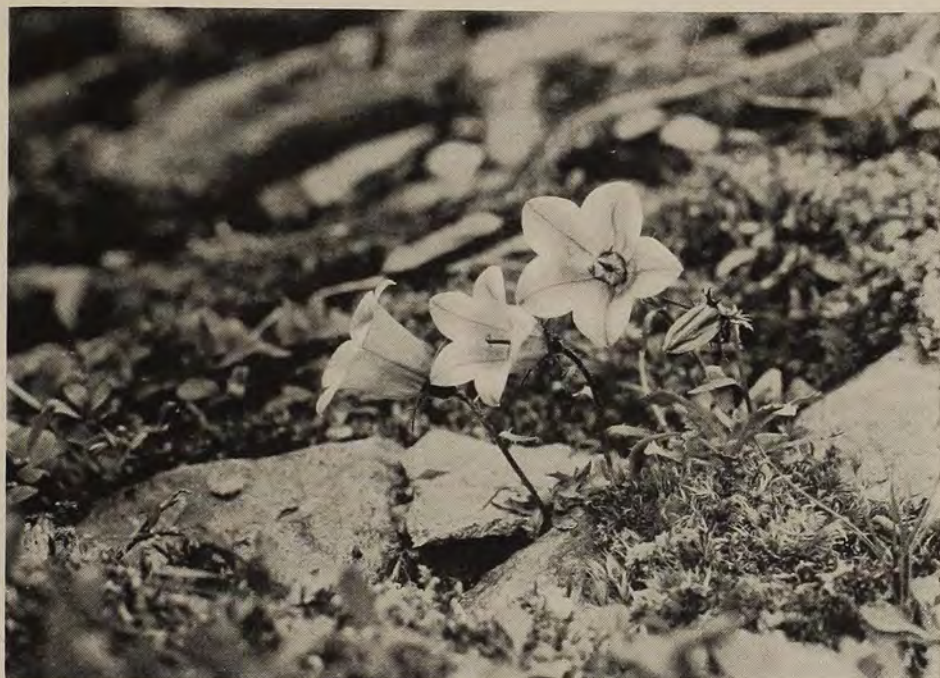
I wrote the Park Naturalist, of Cedar Breaks, Mr. Clifford C. Presnall, and he sent me seed naming it *A. pinetorum* Tidestrom and expressed interest in the study. He apologized for delay in forwarding stating that chipmunks seem to harvest them before they get ripe but he had managed to get a few. So the deer are not the only curse of the seed collector as reported by Mrs. Rowntree but also a culprit more numerous. The columbine is a prolific seed producer and also prolific in germination. The lush seed pods thus appear in the animal menu as a help to keep

down extreme multiplication. However, in the scheme of things, the seed collector is often left like a hawk to soar around to spot and pounce upon his prey . . . and the exultation in a find!

The seed readily germinated in pots and was set out in the garden as small plants along side of each other for study. There was no set back or difficulty in taking hold as experienced by Mrs. Rowntree. . . perhaps pure luck. There was little if any comparative study owing to wide differences. After several years both disappeared. Here was a fascinating thought:—two species taken from similar altitudes of about 10,000 feet, some eight hundred miles apart, and brought together to be companions at sea level and a climate not suited to alpiners. . . with our domesticated columbine in the garden as audience.

Regarding related species, ecologically and floristically, it should be recalled, that the altitudinal relationships may differ between two regions. One may find like elevations yet complexion of the flora and terrane is quite different.

Aquilegia pinetorum Tidestrom is a recent discovery. A native of the Great Basin in the vast *Pinus ponderosa* area of Southern Utah and Northern Arizona and ranging in altitude from 10,400 feet to some 6,000 feet whereas *A. pubescens* range in the Sierra Nevada from some 12,000 to 9,000 feet. *A. pinetorum* is white only, resembling the subspecies *albiflora*, and its botanical position is described as appearing to lie between *A. coerulea* and *A. chrysantha*. To the former it is related by its sometimes faintly bluish sepals while



Maxine Williams

Campanula lasiocarpa

the long and very slender spurs are related to the latter.

GEORGE B. FURNISS
Oakland, California

Campanula lasiocarpa

This member of the well known and beloved Bellflower Family is distinguished from the better known *Campanula uniflora* by the sharply-toothed leaves, larger corolla and sharply-toothed calyx-lobes.

It is a small plant, 3-6 inches high, nearly smooth. The leaves grow to 1- $\frac{3}{4}$ inches, the flowers are bright blue, about 1 inch long, with a dark line down the center of each petal, solitary, fragrant. The broadly open bell sways on a short slim stem. The plant grows at high altitudes in poor gravelly soil. It is widely distributed in Northern North America and Northern Asia.

SARAH V. COOMBS

The Mustard Family

The average amateur, observing plants that grow in his garden, is of course able to recognize and name such flowers as Delphinium, Phlox, or Columbines. If, however, he were to see only the seed pods of these plants, and not the flowers, he might have difficulty in determining from what plants these seed vessels were taken: and in this connection, may I suggest that garden clubs could probably spend a pleasant half hour, if members were asked to identify a number of pods of plants, which all present had frequently seen or grown. I suspect that the number of incorrect answers would be quite large.

There is one family of plants whose generic name cannot be recognized solely by a cursory glance at the flowers. That family is the Crucifers, or as

it is commonly called, the Mustard Family. All the flowers are alike in that they have four distinct petals, and six stamens, four long and two short. Often the flowers of different genera belonging to this family are so much alike that we must wait to see the seed pod develop before we can identify them. To this family belong the Wallflowers, Aubrietias, Alyssum, Arabis, Candytuft, Athionema, and a large number of weeds, such as field Mustard, Shepherd's Purse, as well as such wild flowers as Cress and Toothwort.

The reader may possibly challenge this statement by asserting for example, that he can always recognize an *Alyssum saxatile*, or an *Arabis alpina*. However, his recognition of these plants results, to a great extent, from an examination of the leaves, the color of the flower, and the height of the plant. If he were given a single flower of *Alyssum saxatile*, and a single flower of certain yellow Drabas, he would probably be puzzled to distinguish one from the other. He might be similarly puzzled if he tried to distinguish between a single flower of a field Mustard and that of a yellow Wallflower.

Anyone who has examined the pod of an Alyssum cannot fail to recognize other members of this genus. All of them are small, round to oval, very flat, and the septum enclosing the few seeds is so thin, that generally when holding the pod to the light, the seeds can be seen inside. An *Alyssum saxatile*, and our annual Sweet Alyssum, have pods almost identical in shape, although the former is larger.

The Drabas are fairly low growing plants, with either yellow or white flowers. The cultivated ones are seen mostly in the rock garden, although the *Draba* called "Whitlow Grass" is often encountered in our fields. The plants of this genus have short, flat, elliptic



Draba, Aubretia
Arabis, Erysimum

to linear pods, each pod bearing a fair number of seeds. The picture gives an idea of the size of these pods.

The common Wallflowers usually grown in our borders belong to the genus *Cheiranthus*. However there are somewhat similar species, also called Wall flowers, many of them delightful Rocky Mountain plants, that are placed in the genus *Erysimum*. In either case, the pods are rather long and linear, and often four angled.

It is not our purpose to confuse the reader with a description of the pods of all the different genera. Possibly the article may serve as an introduction to a pleasant study of the Crucifers, enabling the student not only to recognize the family, but also, after the flower has faded, and the seed pod appears, to determine the generic name of the plant.

ROBERT M. SENIOR,
Cincinnati, Ohio.

Rhododendron Notes

CLEMENT G. BOWERS, *Editor*

Rhododendron in the Northwest.

Here on Puget Sound we do not have the extreme in temperature, thanks to the Japan Current. The lowest this winter, situated on the water front as I am, has been 30 degrees Fahrenheit. The coldest I have ever seen is 16°F. It very rarely gets above 90°F in the summers, and then for short periods only. Our rainfall is about 30 inches yearly.

Of course, my pride and joy are the three and four-star English hybrid rhododendrons. Loderi King George, Earl of Athlone, Fabia, Mars, Azor and Britannia are a few that I think of, without which I could not get along. The individual blooms of Loderi King George, measured 5½ inches across last year and they have a delightful scent of peaches that scents the whole garden. Most of my species come from a small nursery in Seattle. *Augustini* is very good and is a clear bright blue clear. *Williamsianum*, *yunnanense*, *Griersonianum* and *ciliatum* certainly will hold their own with the hybrids. I have a number of other species which have not bloomed as yet and still hope to live long enough to see *auriculatum* open its white flowers in July.

Shade, plenty of mulch, and water seem to be the answers to rhododendron culture here. The soil is naturally acid but a little *old* cow manure seems to agree with mine.

J. E. HADDEN, M. D.,
Bremerton, Wash.

Rhododendrom reticulatum. (See page 173)

It has been some time since the Magazine published the close up of this charming species, with all the small

details that would be useful in remembering the flower and its characteristics. This time we are presenting a picture of a mass of seedlings in which the important thing to be presented is the habit, erect, a little thin, in the younger stages and with enough lightness to allow a play of sunlight through the mass. The photograph also suggests the manner in which the flowers sit lightly on their flowering twigs.

Albino forms have been reported and once were offered in a Japanese catalogue but no importations were made, worse luck, so now that is something to be desired and waited for. Meantime hundreds of seedlings have been raised and many saved in the hope that there might be some albinos among them. This has not happened, although there has been a wide color range from very light hues to deep tonalities of the same essentially lavender pink, which is so often excused as 'orchid'. If the texture of the petals were not so delicate that light, especially the cool crisp light of Spring, could not shine through them it would be a rather sorry color. As it is, light can shine through them and if the plants are set in such a fashion that they will get just this play of light, the effect is of really quite tender pinks.

The only other thing that has been interesting in the seedling masses is the fact that one lot of seed has produced plants that flower about one week to ten days later than their fellows and there is no difference in site that would excuse or explain it. The same sort of thing has been noted in seedling lots of the native Flame azalea, so perhaps it is a vagary of the genus.

Temperatures here go always to

zero, once in every winter and sometimes below; in summer to over 90 always, but the azalea goes merrily on its way and often opens the season, getting ahead of *R. mucronulatum*, unless we have a February 'spell' that fools the latter.

Washington, D. C.

Azalea, Sei-getsu. (See page 175)

Mention has been made in this department on more than one occasion of the very interesting azaleas that were introduced into the trade by the Chugai Nursery Company in Osaka Japan. They were given, it will be recalled, no other explanation than that they were 'indica-macrantha' hybrids. In some of the notes under the several varieties, definite statements were made such as "This is a hybrid between macranthum and Mad. Morreaux alba" and this interpreted in terms of present day taxonomy would mean a cross between *Rhododendron indicum* Sweet and some clone of *R. Simsii* G. Don., although the more one studies the old books in the golden period of the Indian Azaleas, the more dubious one feels about the pronouncements of the late E. H. Wilson as to the parentages of some of these fine plants.

There remains much to be learned about the Chugai hybrids before they can be announced as definitely useful for this or that purpose. The evidence here seems to be that they will eventually adapt themselves to outdoor planting provided they can be nursed along until there is an adequate amount of good firm wood. To how many named clones this statement will apply remains to be proven, since it is not improbable that the various 'indica' parents may themselves have transmitted varying degrees of hardiness. On the other hand one may take courage in remembering that there are many plants in

this area which go through a period of uncertainty before deciding to stay and thrive. Young plants of crape myrtle often die to the ground several winters only to become eventually quite hardy.

The variety flowered here is pot grown and spent its winters in a cold pit. Plants of the same clone have now gone through two winters with no conspicuous damage except in the very smallest cuttings, which had not 'wood' enough. The shape and carriage of the flowers recalls that of plants of either line, but the very rounded smooth quality reminds us of the character of the flowers of *Azalea macrantha*, now *Rhododendron indicum*. The color is described in the original as 'lilac with purple' which is vague enough, but the color is seen here as a clear lavender. Flowering like that of its fellows is late. In a season like that of 1945, which was premature, the members of this race flowered from the latter half of May in the earliest clones to the end of June.

I am told that this is not considered a desirable feature in our South where these plants are on trial, but it seems strange that a continuation of the azalea season might be as welcome in Georgia as it is here.

With the coming season it is the intention of publishing more or less of a check list of these plants and show as many pictures as possible as there is already one catalogue in this country publishing a 'fancy' name for one of the plants that sounds suspiciously like the Japanese original.

Washington, D. C.

How tall is a Kurume?

There has been some exchange of correspondence with the Editor of this Section about the height of the Kurume azaleas. In replying to one inquiry, I



Claude Hope

Rhododendron reticulatum

[See page 171]

had occasion to quote Wilson, (Mono. Azaleas p.34, 1921) "The plants are seldom a meter tall, more usually less than half of this and quite commonly they are prostrate and hug boulders closely. The habit is normally dense and twiggy, when sheltered a few strong shoots develop and the plant becomes relatively tall and sparsely branched."

There seems to be some reason to add that the behavior of a plant that was observed and described from a high altitude, open area which was both sun and wind swept, might easily

be expected to change when the same plants were brought to lower levels and comfortable living. It should also be recalled that the plants as commonly grown in Japanese gardens at these lower levels are usually subjected to a twig by twig pruning that would dampen the ardour of anything!

It would be pleasant to reopen the subject of Kurumes and their possible height, but people writing us will please report whether or not their plants are grown under trees and if so what trees! Filtered light makes its own contribution to stature in under-plantings.

Narcissus Notes

B. Y. MORRISON, *Editor*

Notes from Alabama.

One reason daffodils are so universally loved is because they come so early in the spring. We have spent the winter months with just the green of conifers and evergreens against the gray of the leafless trees and we are hungry for color.

As a harbinger of spring they are as authentic as the bluebird or the kite tails on the telephone wires.

They are perfectly at home in the South, where they bloom and increase for years with very little attention. They should be divided every four or five years. If given bone meal as the foliage is dying down they form better buds for next year's blooming.

The daffodil belongs to the narcissus family. This family is divided into about eleven groups. Usually in the South the term "daffodil" is used in speaking of the long and medium trumpets. The small, fragrant yellows with rush-like foliage are "jonquils." The poeticus, the clustered varieties,

and the "twin Sisters" found in such profusion around old homesteads are narcissi. Of course the connoisseur is more meticulous in his classifications.

When we built a home eight years ago we found the soil a gray crawfish mud. In establishing our garden, which is rectangular and two feet above the surrounding grounds, we excavated the beds to a depth of two feet. We used stones and flattened tin cans in the bottom for drainage and filled in with a mixture of leafmold, sand, some clay and some of the excavated soil. Bone meal was then forked into the mixture. The daffodils were planted about four inches deep in groups among the perennials. Drainage is still our problem. After continuous rains the daffodils stand in water one to two inches deep. It soon drains off and does not seem to injure them, at least they live on and bloom and multiply. We hope to work the beds over and build them up several inches above the surrounding terrain.



Claude Hope

Azalea "Sei-getsu"

[See page 172]

All of the varieties are hardy in this latitude except the Tazettas and some of their hybrids. They have to be protected if brought into flower. They bloom in profusion in the open farther south. We have naturalized some this fall, under a group of trees and drifting beyond. We had to plant the trees and wait for them to grow before we could do this. It is the loveliest way to use them. When they bloom this spring, if they seem to belong, we shall add to the planting as the years go by.

Some varieties that we would like to add to our collection are Beersheba, Fortune, Sonja, Sunkist, Suda, Daisy Schaeffer, Mrs. Theo. Havemeyer.

Some of the varieties we have grown and enjoyed for years are listed below.

1. Trumpet Daffodils—Ben Hur, Diotima, King Alfred, Emperor, Olympia, Forerunner, Lovenest, Mrs. Krelage, Eve, Milo, Kantara, Imperator, Spring Glory, Glory of Sassenheim, Empress.

2. Incomparabilis—Bernardino, Red Cross, Sir Watkin, John Evelyn, Milford Haven, Dick Wellband, Francisca Drake, Pres. Viger, Stella Pratt, Galipoli, Red Shadow.

3. Barrii—Diana Kasner, Firetail, Fleur, Alcida, Sunstar, Sea Gull.

4. Leedsii—Gertie Millar, Tunis, Hera, Silver Star, Mystic, White Nile, Her Grace, Mrs. Percy Neal.

5. Triandrus Hybrids—Triandrus Albus, Thalia, Agnes Harvey.

6. Jonquil Hybrids—Campanelle single, Jonquilla Simplex, Jonquilla florepleno, Lady Hillingdon, Orange Queen.

7. Tazettas and Hybrids—Paper White, Glorious, La Fiancee, Laurens Koster, Orange Cup, Cheerfulness (double), Irmelin.

8. Poeticus—Recurvus, Albus plenus odoratus, Rupert Brooke, Red Rim.

9. Double Varieties—Twink, The

Pearl, Argent, Orange Phoenix, Daphne.

10. Various Species—Bulbocodium Conspicuum, Cyclamineus.

It is always exciting to have something in your garden that you have not grown before. This year, among other flowers, we have added these narcissi: The Prince, Inglescomb, Mrs. R. O. Backhouse, Helianthus, Klondyke, Frans Hals, Actaea, Holland's Glory and Ettrick. They are not new introductions but they will be new in our garden. We shall await their blooming with eagerness. The waiting shall not be long for the little fragrant jonquils and some of the clustered narcissi are already in bud. By the last of January or the first of February the gay procession will begin and for several weeks the daffodil will reign supreme in Southern gardens.

MRS. J. T. HACKNEY,
Birmingham, Ala.

Notes from Kansas, 1945.

Kansas does have wonderful Spring weather for daffodils. We may have hot weather and dust storms later on, but we can boast of our beautiful Spring display.

Our daffodils stay with us and multiply. There may be a few losses in the early ones if they are not carefully planted and deep enough. King Alfred, for example should be planted twelve inches deep here. Poetaz varieties seem to require a little mulch for they are the only ones I lose in my garden. If they do not do well I change their location. I had to try several years before I could grow the Leedsii, John Evelyn; finally I planted it in full sun and they are now in fine growth.

White Nile is a good multiplier and lovely; not large but pure white. If I could have only one white daffodil, it would be Ada Finch. It is very large

and beautiful. Comes too early for the Show. Some say it is too heavy and would not stand up but it did in my garden. Another choice one is Dick Wellband, very outstanding and always a winner if in bloom for the Show.

Last year I brought in a bud just showing color, placed it under the electric light all evening. To my surprise next morning it was fully opened and when taken to the Show won first place. I also tried one of the double Inglescomb 3. The buds were green on account of the long cold weather and I knew they would blast if left outside in that condition. The ones I brought in opened well and entered in the Show won a place. Those left out blasted.

When it stays cold for any length of time the thing to do is to cut them and bring them into the warmth. If blooms come too early, we cut them and put them in the ice box where they will keep for several weeks. Of course all food must be removed or it will take up the odors.

Some years the developing flowers are frozen stiff if we have a cold spell, but they seem to come through it if it is not repeated too many times. They are wonderful flowers and make one of my favorite garden hobbies, one that leads me on and on. This coming Spring I look forward to flowering of Daisy Schaffer, Staatendam, Eskimo, Damson, Havelock, Porthilly, St. Ives, Killigrew, Fairy Circle, Green Mantle, Hymettus, Lanarth, Red Rim, Daphne and many others planted last Autumn.

MRS. W. B. MILLS,
Topeka, Kansas.

My Daffodils, Clinton, New York.

One of the greatest joys of Spring-time are the bright cheery daffodils, which spring up with the melting snows. Among the first of these are the flowers of the fine yellow trumpet

Alasnam which I especially like. These are not only early but of good size and length of stem. Further down the path the golden King Arthur stands up tall and stately, although out of doors they do not give me as large flowers as the bulbs which are forced in the greenhouse.

My long row of Van Waveren's Giant come second early and always gives a wealth of bloom. They are a fine flower but the stems could be a little longer. Robert Sydenham and Olympia are also well worth growing although two of the older sorts. The handsome Dictima which blooms by the corner of the greenhouse is a special golden treasure. Matamax is also a good late flower but I have not forgotten Lord Wellington, which is worthy of the name and the best of all my yellow trumpets. The stems are long and the flowers keep wonderfully.

Over the hedge the fine line of Leedsii, Silver Star shows itself much at home and gives an abundance of pale yellow and white flowers, which fade to nearly white making a wonderful contrast with the deeper, colored kinds.

In the Incomparabilis Section, I am discarding Bernardino for the newer and better sorts. Among these are Walter Hampden, mid-season and a special favorite. I should like to have many of it. In the same group Will Scarlett, like an old friend brightens the corner with its gay orange cups. I think it could be discarded, however, for the newer much larger and better Fransisco Drake of similar color. Also of the same Section, I have a large clump of John Evelyn, which is a delight and joy, although I feel the flower do not last as long as some. Red Cross is another strong grower with bold primrose flowers and cups of the same hue blended with orange. They

are fine enough for any garden or bouquet and I think that if I were to have but one flower it would be this. Red Shadow has flowers with beautiful orange headings, but they turn their heads down too modestly, a fault I find in several of this Section. Twink is the only double narcissus that I grow and while it has interesting orange and yellow flowers, I find they do not keep very long after being cut.

For very late flowering I like Alcida. I think that for sheer sparkling yellow cups and waxy white perianth, I have nothing else to equal them. A bouquet of these long stemmed beauties is a lovely picture lasts a long time and rivals the flowers in the garden where they also are long in bloom.

Two years ago I bought a collection of daffodils including bulbs of Schumann, Sheherazade, Hades, Eskimo, Orange King, Mayflower, Pygmalion, Adler and Village Beauty. So far I have tested them, I think Adler is the only one really outstanding but perhaps I shall find them much better on further acquaintance.

With daffodils as with other flowers there is the delightful anticipation of always new and better varieties coming along each year. I hope to add to my collection the yellow trumpets Megaphone and Moongold, and the white of the same class called China Clay; Incomparabilis Bertha Aten, Copper Bowl, Red Bird, and Scarlet Leader; Peking and Pomona in the Barrii Division; Leedsii Daisy Schaffer and Poeticus Grand Opera to close the list

with possible some of the daint 'rock garden' sorts.

MISS GLADYS POWELL

Narcissus, Quetta. (See page 179)

In the general pictures that gardeners are wont to paint in broad tones and colors, the narcissus is likely to contribute best in the pure yellow to white, since the finer colorings that come in cups no matter how brilliant the Incomparabilis or Barrii may be, serves in the mass, to warm the color that is set by the perianth.

All this is very well for the person who is interested only in such matters, but there are many lovely varieties of narcissus with charms that cannot be valued or appreciated from afar. Such is the case with the variety Quetta, which has the usual almost white perianth of its kind but a delicate citron cup, quite pale in fact, with a thin marginal rim of salmon orange.

For no special reason perhaps other than it did not enjoy the transplanting from its Irish home to my garden with the sterilization bath in between, this did not settle down well into growth until it had been here for some years. Now that all the bulbs are probably bulbs that have developed here it makes its annual offering in good faith. Visitors are not likely to notice it, as it does not demand the attention of its more lusty brothers, but people who have found a particular delight in such varieties as Fairy Circle, Carnlough in a good season, and some of the more delicate Leedsii poeticus varieties, will welcome it.

Washington, D. C.



Robert L. Taylor

Narcissus, Quetta

[See page 178]

Cactus and Succulents

W. TAYLOR MARSHALL, *Editor*

Cleistocacti, the Firecracker Cactus

To be interesting to gardeners, cacti must be of a type capable of successful cultivation in pots with ordinary care and they must also produce attractive flowers in cultivation. The *Cleistocacti* include several species that come into such a category because of their simplicity of cultivation and because they bear numerous, brightly colored flowers about the size and shape of a firecracker, followed by dark red fruits.

Flowers are produced early in the spring and continue throughout the summer months, each flower lasting a week or more. The first fruits appear in late July and others follow in succession through August into September.

Because of their base branching habit, *Cleistocacti* should be planted in fairly large pots, an 8-inch fern pot is suitable for either a seedling or a cutting. Soil should be the standard mixture of equal parts top-soil, sharp sand and well aged leaf-mold. Cuttings should be calloused by exposing the cut end to the sun for a week or ten days, covering the remainder of the cutting with several layers of newspaper. When well calloused plant about 2 inches deep supporting the cutting by a plant stake. Do not water for a week or ten days to allow roots to form and then only lightly until roots are well established.

Cleistocacti will not stand temperatures below 40 degrees and therefore should be taken indoors in early fall and kept in a light, dry place, preferably at temperatures above 50 degrees. Water very lightly about once each two weeks. In spring bring the pots outdoors into a partly shaded spot until

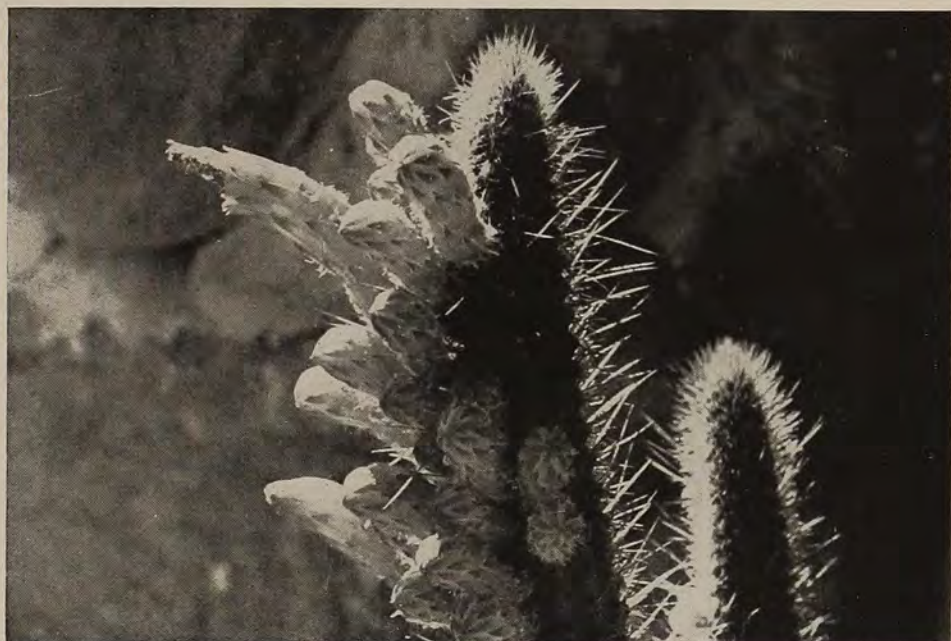
they become acclimated then put in full sunshine. A heavy watering weekly in hot weather is preferable to more frequent and lighter waterings.

Cleistocactus Baumannii, a native of western Argentina, Uruguay and Paraguay is the species preferred by most growers. It forms clusters of divergent branches up to 3 feet high and 1 to 1½ inches in diameter, ribbed and bearing spine clusters at frequent intervals. The spines are yellowish to brown with a few longer ones of dark brown. The flower first appears as a small bunch of grayish wool and this lengthens into a three-inch, pencil shaped, orange-scarlet flower that hardly opens although crimson style extends beyond the petals at maturity. The fruit is a round, dark red-brown berry about ¾ inch in diameter.

Cleistocactus Grossei has shorter, slimmer stems and its spines are longer and a beautiful golden color contrasting in a striking manner with the curved, bright salmon-pink flowers. This species is just becoming available but should prove very popular.

Cleistocactus Smaragdiflorus greatly resembles *C. Baumannii* in size and appearance except that the spines are usually shorter and darker and the scarlet flowers are tipped with emerald green.

Cleistocactus Straussii, known as the "silver torch cactus" has several erect branches which are hidden by soft, bristle-like silvery spines. This species seldom flowers in cultivation and it has a distressing habit of drying back from the tip in the second or third year, always sending up new branches to replace the drying ones.



Cleistocactus Grossei Bckbg. $\times 0.5$

Golden spines and salmon pink flowers contrast with green stems

Cleistocactus areolatus and the closely related, if not conspecific, *C. Roezlii*, *C. tominensis*, *C. Herzogianus* and *C. parviflorus* are all large growing species that rarely flower in cultivation and are unsuitable for pot culture.

Cleistocactus tupizensis is a less attractive companion of *C. Straussii* with long, golden and brown spines. It shares all of the objectionable features of *C. Straussii*.

Cleistocactus Morawetzianus, from central Peru, is a newly introduced species which is said to have white flowers.

The genus *Cleistocactus* should prove particularly attractive to a genuine cactophile as most of the 13 species and 6 varieties are obtainable. The two species not previously mentioned, *C. Buchtienii* and *C. hyalacanthus*, are collectors items.

W. TAYLOR MARSHALL.

Easter Cactus

The name Easter Cactus is as fully accepted as is the name Christmas Cactus but in the latter the name is applicable to but one species and its varieties while the name Easter Cactus is applied equally to two species in the genus *Schlumbergera* both of which produce their flowers in April and May.

Schlumbergeras are similar in growth habit to *Zygocactus* and are also native to the tropical rain forests of Brazil, where they are epiphytic on trees or grow amid rocks in shaded locations, living on humus and watered by the rains, which are of almost daily occurrence.

In cultivation they should be potted in a soil mixture of equal parts of top soil, sharp sand and well aged leaf-mold with the addition of one teacup of well rotted cow manure to each gallon.



Schlumbergera Gaertneri

After flowering a rest period of a month at least is desirable during which water should be very sparingly applied and the plant allowed to shrivel even to the extent of dropping some terminal branches, when the plant of its own accord shows signs of renewed activity, water applications should be increased and a daily syringing given on warm days. Liquid fertilizer or complete plant food should be applied several times during the summer.

As soon as the weather becomes chilly in early fall plants should be removed indoors where water can be given twice weekly and the entire plant syringed occasionally. In late January reduce water allotment and discontinue syringing to induce a partial rest while the buds form but when the buds are set more frequent waterings can be resumed but without allowing water on the plant.

Propagate from mature branches which should then be allowed to form a callous over the cuts by exposing the cuts to the sun, covering the rest of the cutting for about three days then set the cutting with the lower $\frac{1}{2}$ inch in the soil in the pots and soil in which they are to be grown. Support the cutting by a plant stake and do not water for about three weeks to allow roots to form.

Both *Schlumbergeras* and *Zygocacti* are grafted on foot long cuttings of *Pereskia*, *Selenicereus*, *Hyllocereus* or flat stemmed *Opuntias* by

either the cleft or the flat graft method. Grafting assures quicker maturity and flowering and raises the flowers above the side of the pot and brings them into easier view.

For grafting the stock should be at least a foot high and well rooted in a pot. The cleft is made by splitting the top of the stock to a depth of an inch with a very sharp knife then cutting the scion into a wedge shape to remove the epidermis from the section that is to be in contact, insert this wedge into the split in the stock and secure with a cactus spine then bind the graft with raffia or soft twine to prevent spreading.

To make a flat graft remove the upper two inches of the stock by a cut tapering upward and remove the epidermis of the scion in a similar manner from one side uniting the two by the insertion of two cactus spines and bind

lightly but firmly with raffia or elastic bands.

The grafted scion can be trained over wires shaped like a lamp shade to produce a very effective umbrella shape which shows the flowers to best advantage.

Schlumbergera Gaertneri, the species most frequently cultivated, has terminal joints of an oval-elongate shape, flattened to resemble a leaf, 2 to nearly 3 inches long, dull green to copper colored, the margins crenate. The joints are truncate at the top where clusters of short, yellow bristles are borne.

In age the joints thicken into elliptic, bark covered stems. Flowers are regular, star-like, about 2 inches broad, scarlet red, with numerous petals somewhat recurved; numerous red stamens surround a longer, white style with 5 or 6 radiating stigma lobes.

Schlumbergera Russelliana has much shorter, oval joints which have fewer crenations and the 2 inch flowers are violet pink. This species is rare in cultivation but is a very attractive plant.

W. TAYLOR MARSHALL.

The Cacti of a Desert Section

That portion of Mexico comprised in the states of Coahuila and Nuevo Leon is particularly interesting to a xerophist because of the number and diversity of succulent plants found there. Each district has a flora exclusive to itself as well as other flora with a wider range.

Near the state line on the Saltillo-Monterrey road is a region of mountain ranges about 2000 feet high rising from valleys which, themselves are about 4500 feet above sea level. While the mountains are not lofty the walls rise steeply and are very rocky, the soil gravelly and calcareous and impervious to water, rainfall is sparse and spotty consisting largely of highly lo-

calized but heavy showers resulting in rapid runoff. Shrubby vegetation is sparsely scattered over the slopes but is densest in the runoff areas. The terrain is well illustrated by the photograph of the canyon here described.

Species of Cacti are restricted by altitudes and are encountered in bands as one ascends the mountain sides, the range of each species somewhat overlaps that of the species next above and below it. Common to the entire area is *Agave lechuguilla* Torrey and a species of *Hechtia* possibly *H. texensis*, both very spiny species that form large, almost impenetrable colonies in the midst of which the finest specimens of Cacti are usually found.

Commencing at the valley level we find numerous species of *Opuntias*, *Echinocactus horizonthaloni* Lemaire, *Coryphantha texensis* (Neolloydia B. & R.) Marshall., *Echinocereus sarisophorus* B. & R., *Echinocereus stramineus* (Enelmann) Rumlper, *Thelocactus rinconensis* (Poselg.) B. & R., *T. bicolor* (Galeotti) B. & R. and a few specimens of *Coryphantha Poselgeriana* (Dietr.) B. & R. A specimen of *Thelocactus rinconensis* is shown in fig. 2 well protected by a colony of *Agave lechuguilla*.

As one ascends from the 4500 foot level to about 5000 feet *Mammillaria Leona* Poselger (Fig. 3) is found in association with several species of the pectinate spined *Echinocerei* especially *Echinocereus dasyacanthus* (Fig. 4) shown with its large, greenish-yellow flowers expanded. *Mammillaria Leona*, which is frequently confused with *Coryphantha Pottsii* Scheer which it somewhat resembles, is a very common plant in northern Mexico, presumably always at the 4500 to 5000 foot level.

From about 5000 to 5500 feet *Ferocactus Pringlei* (Coulter) B. & R.



Figure 1—Typical collecting terrain between Monterrey and Saltillo, Coah., Mexico. Habitat of *Mammillaria Ritteriana*, *M. leonii*, *Ariocarpus furfuraceus*, *Echinomastus McDowellii*, *Thelocactus rinconensis* and many others. Figure 2—*Thelocactus rinconensis*. Figure 3 (lower left)—*Mammillaria leonii* in Coahuila. Figure 4 (lower right)—*Echinocereus dasyacanthus* in Coahuila.

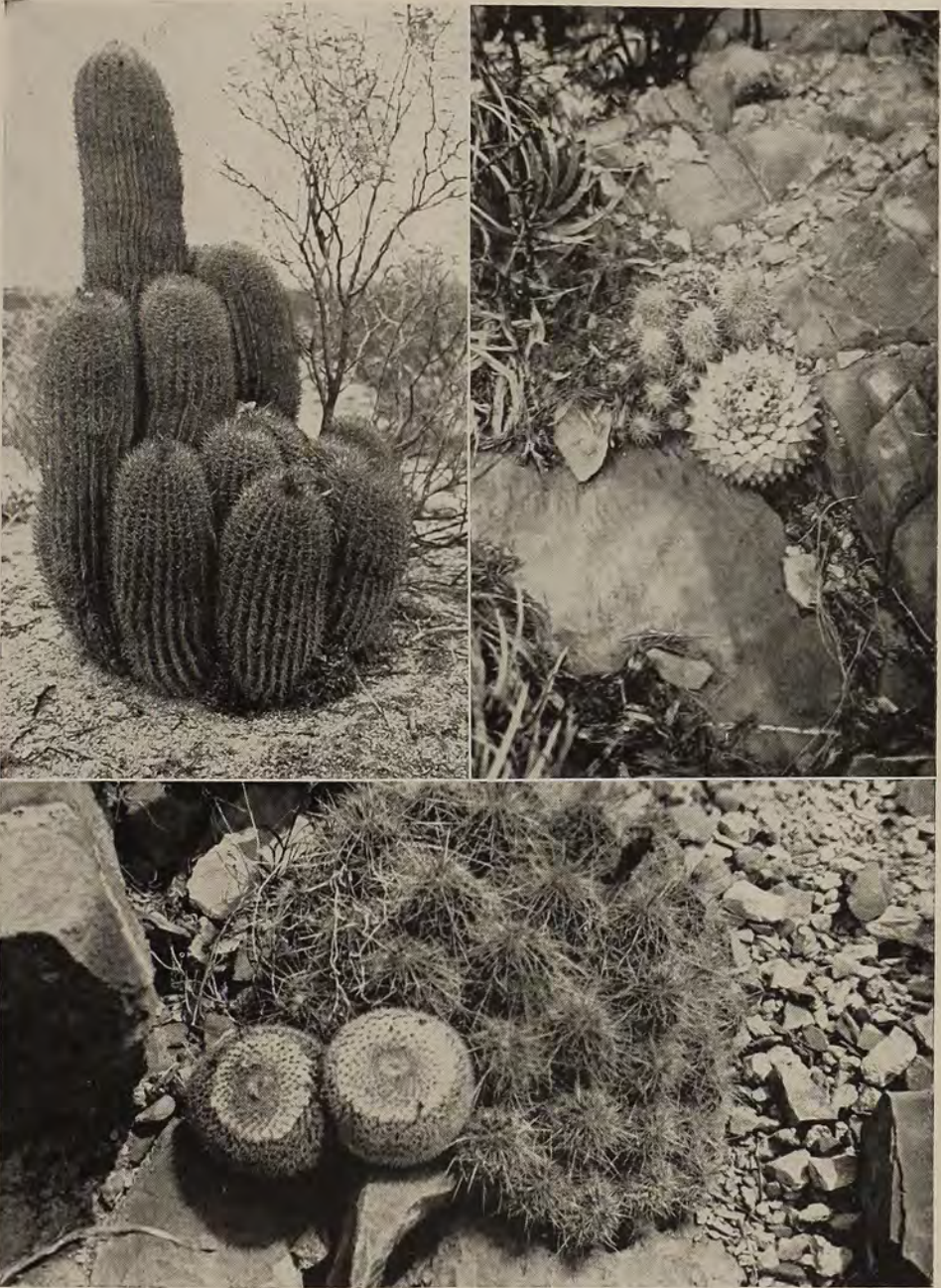


Figure 5—*Ferocactus Pringlei*, Coahuila. Figure 6—*Ariocarpus furfuraceus* and *Neolloydia conoidea*. Figure 7—*Mammillaria Ritteriana* and *Echinocereus stramineus*, Coah.

dominates, Fig. 5 shows it in a more level terrain but can give no idea of the brilliant red of its spines. Here also *Ariocarpus furfuraceus* (Watson)

Thompson and *Coryphantha conoidea* (D. C.) Marshall (*Neolloydia* B. & R.), are found. Both are shown in Fig. 6.



Figure 8—*Mammillaria candida*, in Coahuila. Figure 9—*Echinomastus Macdowellii*. There seems to be a variety that "clusters"; also great variety of spine colors, some nearly red.

Between about 5,500 feet and 6,000 feet we reach the range of *Mammillaria Ritteriana* Boedeker shown in Fig. 7 with *Echinocereus stramineus* (Eng.) Rümpl. both species are abundant in this vicinity. Occasionally the beautiful, white spined *Mammillaria candida* Scheid. are found snuggling amongst the rocks in such a manner as to suggest a nest of eggs as shown in Fig. 8. Here also *Epithelantha micromeris* (Eng.) Weber variety *pachyrrhiza* Marshall sinks deep carrot-like roots into the calcareous soil and an unknown species of *Echinocereus* with stoloniferous roots was located. This species is now under observation.

Finally as one nears the summit of

the mountains vast numbers of the long, pure white to reddish spined *Echinomastus Macdowellii* (Rebut) B. & R. occupy niches in the rock of the almost perpendicular mountainside. Here also wonderful specimens of *Agave Ferdinandi Regis* Berger, described by Brown in the January issue of THE NATIONAL HORTICULTURAL MAGAZINE are indigenous.

Our short but steep climb, in addition to revealing many charming specimens, should teach us that all of the species here considered will require a loose, gravelly soil with a high lime content and that water should be supplied sparingly in warm weather and very sparingly in winter and that none

of the species can be expected to be hardy in American gardens but must have indoor or hot house care during our winters.

ROBERT E. FLORES.

Death Valley Flora

Between 1925 and 1932 business required me to spend several days each second month in the Death Valley region of California and Nevada but I have not visited the region since it became a national monument and a favorite winter resort for many tourists. Instead the remote sections of Baja California and the high Sierras of Sonora have held my interest.

A recent telephone call from Mr. T. S. Palmer who was acting chief of the Death Valley Expedition of 1891 renewed my interest in that country and caused me to again read the very interesting report of F. V. Coville the botanist of the expedition published as a Contribution from the U. S. National Herbarium, Vol. IV, in 1893.

The Christmas holiday afforded an opportunity to again revisit Death Valley which I did in company with Ed. Gueguen, assistant to the editor of the Cactus Journal. We left Los Angeles early and drove through to Death Valley the first day, spent the second day in the Valley and the adjoining Panamint Valley and on the third day visited the country south of Barstow and returned to Los Angeles the third night. We had covered 701 miles and spent 14 daylight hours botanizing. The expedition of 1891 required about six weeks for the same distance.

Despite the excellent roads that made our travels so fast and easy the desert within fifty feet of the roads is just about as it was when Palmer, Coville and their party covered the territory on horses in 1891. The large tourist hotels in the Valley appear very impressive when viewed from a few miles away.

Plant life is unchanged and we were able to check all of the perennials noted for the various stations by the early botanists, the season being mid-winter the annuals were mostly absent. Our first check was made on the alluvial fan at the south end of the Funeral Range where the road from Baker to Shoshone crosses the Range. Here the creosote bush, *Larrea tridentata* (D. C.) Cov. is the outstanding feature of the vegetation with a scattering of the desert holly, *Atriplex hymenelytra* (Torr.) Wats., a silvery leaved plant largely used in Christmas decorations in the west. *Opuntia echinocarpa* Eng. & Big. represents the cylindrical opuntias while the platyopuntias are represented by *Opuntia basilaris* Eng. & Big. whose large magenta flowers prove so attractive in the spring. Only one other cactus was observed, *Echinocactus polycephalus* Eng. & Big. which here forms fairly large clumps of globose or short cylindric heads.

Death Valley itself is but sparsely covered with vegetation although both the creosote bush and the desert holly are found on the mountain sides, the outstanding plant of the valley floor is the pickleweed or iodine bush, *Allenrolfea occidentalis* (S. Wats.) Kuntze which grows on hummocks of mixed sand and clay at the borders of the salt marshes. The hummocks are formed by the drifting of sand amongst the branches of *Allenrolfea* and the subsequent higher growth of the plant. Some of the larger hummocks are three feet high and nine to fifteen feet long, extending in a northerly and southerly direction, corresponding with the prevailing winds.

The road to Lone Pine crosses the Panamint Range and we stopped for a check on the west slope of the range as we descended into Panamint Valley and here found the creosote bush, *Larrea tridentata* the outstanding plant, a very interesting little bush, called

burro plant or sand burr, *Franseria dumosa* Gray was interspersed with the creosote bush as it is over much of the desert. Desert holly is also a prominent feature. The same three species of cacti noted in the Funeral Range were found in the Panamints but here we found the very interesting shrub, *Thamnosia montana* Torr. & Frem. called the "turpentine broom."

Thamnosia is a yellowish-green, low, bushy shrub barren of leaves except in the growing season. Its fruits are about the size of peas and bright yellowish green in color with skin like an orange to which it is related. The stems bear numerous blister-like glands which yield an oil which is very irritating to the skin. The stems, when crushed give off a rank odor which later becomes a pleasant coconut odor and are used by the Panamint Indians to poultice open wounds to induce rapid healing. A tea is made from the stems and drunk by the medicine men who become crazed by it but then are able to find things long lost according to Mr. E. C. Jaeger.

We at first thought the turpentine broom to be a species of *Ephedra*, several species of which are indigenous to this region. *Ephedra funerea* is the joint fir of the Funeral Range while *Ephedra californica* is common on the deserts of California and Baja California and is harvested commercially and sold as a health tea having a fine flavor. It is called squaw tea by the desert rats who use it when coffee is short. They attribute to it aphrodisiacal qualities without any justification but it is used in the relief of some kidney complaints.

The creosote bush is used by the desert Indians for several purposes and was steeped and the resultant tea given to me by an Indian when I suffered from a kidney complaint and I believe that the fear of a second dose of the noxious fluid helped to immediate re-

lief, real or simulated. It is also thought by the Indians to grow hair and was offered to me for this purpose many years ago by a well meaning Indian friend.

Before making this trip I had feared that Death Valley would be spoiled since its inclusion in the National Monuments but I find that under the National Park Service all of the natural features of the Valley are carefully preserved while the greatly improved roads and comfortable accommodations provided for all classes of travellers has only made the Valley and its grandeurs available to more people.

W. TAYLOR MARSHALL

Pediocactus Simpsonii an Alpine cactus

In the year 1859 an expedition under the direction of Captain J. H. Simpson, an army engineer officer, was undertaken to determine a direct wagon route from Camp Floyd to Genoa in Carson Valley across the Great Basin of the Territory of Utah. Accompanying the expedition as its geologist, Henry Engelmann, brother of Dr. George Engelmann of Saint Louis, sent to his brother many plant novelties including a very handsome cactus which Dr. Engelmann described in Transactions of the Academy of Science of St. Louis II:197 as *Echinocactus Simpsonii*.

At the same time Dr. Engelmann described a very small variety from Colorado which he called variety *minor*. In 1876 in Cactaceae of Simpson's Expedition the descriptions of both the species and the variety were amplified and special stress was made of the alpine location of the variety which came from "the gravelly moraines of the glacial period of Clear Creek Valley, between 8,000 and 9,000 feet altitude, and, in the southern part of the Territory, the Sangre de Cristo Pass, 10,000 feet high.

John M. Coulter in Contributions from U. S. National Herbarium III:



Pediocactus Simpsoni

7:377, 1896, described variety *robustior* based on collections in Nevada by Watson in 1868 and by Brandegee and Tweedy in Washington. As its name implies this is a much larger form with dark, nearly black spines.

This Washington plant was collected over one hundred years ago by Charles A. Geyer as reported by him in *The London Journal of Botany* 5:25, 1846. He took dried specimens and seeds to London and several seedlings were raised at Kew but no attempt was made to describe it at that time.

The plant is globe-shaped, covered with warts called tubercles from the apex of which the spines and flowers arise. These tubercles are arranged in spiralled rows and each one bears 20 to 30 spines which are white, brown or sometimes almost black. Frequently the plant branches from the base forming clumps of globose heads. The small flowers arise near the center of the plant and vary in color from pink to

whitish or yellowish. The fruit is a small green, dry berry.

Britton and Rose recognizing that this plant is not referable to any of the earlier genera placed it in a genus by itself in Britton and Brown's *Illustrated Flora* edition 2, 2:569, 1913. Their choice of a name for the genus is most unfortunate as *Pediocactus* means plains cactus and the species is a mountain dweller even though B. B. Smith reported it from Kansas.

The species should be successful for outdoor culture in many sections as it seems to take more moisture than most of the cactus species and in much of its range is under snow for most of the winter. We illustrate a bed of the robust variety as grown in Dieringer, Washington by A. S. Harmer of which he writes: "This bed of *Pediocactus* has been growing for two years and stood our rainy winters fine. 330 flowers were open at one time in May."

It will be noted that the bed is raised



Figure 1—*Epiphyllum strictum*

above the surrounding ground to permit rapid drainage of water as no cactus will stand water at its roots for any great period.

W. TAYLOR MARSHALL

Epiphyllums, Phyllocacti and Orchid Cacti

The epiphytic cacti are unarmed plants with large, often very colorful, flowers and are cherished by many who have no use for the more spiny species. Returning service men tell us that throughout Europe specimens of the epiphytes are found in most homes and in the United States their popularity is steadily increasing.

As we plan to have at least one article on this group of plants in each future issue it would be advisable for us to clearly define the group at the very beginning to avoid the taxonomic confusion that will otherwise arise.

These epiphytes are all contained in a sub-tribe of Cactaceae called *Epiphyllanae*, and all of them are tree dwellers, with flattened, three ribbed

or, rarely, four ribbed stems that normally assume a pendent position. In cultivation it is usual to stake the stems to an upright position.

Early botanists thought that the flattened stems were in fact leaves and the first species introduced were named *Epiphyllum* by the botanist Adrian Haworth in his *Synopsis Plantarum Succulentorum* in 1812, a word compounded from the Greek *epi*, upon and *phyllum*, a leaf. The type species of Haworth's genus was *Cactus phyllanthus* Linnaeus. In 1831 the botanist Link erected the genus *Phyllocactus*, meaning leaf-cactus and he also selected *Cactus phyllanthus* Linnaeus as his type. The latter name, while invalid, became the commonly used name for these species and *Epiphyllum* was applied to one species only, *Epiphyllum truncatus* Haw. This confusion remained until 1890 when Carl Schumann proposed the same *Zygocactus* for the zygomorphic-flowered *Epiphyllum truncatus* Haw.

Schumann's proposal was largely disregarded until Britton and Rose in a bulletin of the United States National Museum issued in June, 1913, separated the sub-tribe into several genera based on flower structure, which separation was further increased in their monograph of the family issued in 1923. The system they proposed, with few changes, is now meeting general acceptance throughout the world.

Under this system plants in the sub-tribe fall into two general classifications:

First, species whose branches regularly divide by pairs.

Second, species whose branches arise irregularly from the primary stem.

The first section contains two genera with zygomorphic flowers, that is flowers capable of division into two symmetrical halves only by a single longitudinal plane passing through the axis



Figure 2—upper left; Figure 3—upper right; Figure 4—lower left; Figure 5—lower right. See last paragraph of text for explanation

Zygocactus, called Christmas Cactus, and *Epiphyllanthus*, a genus seldom seen here are similar in flowers but dis-

similar in body structure and one genus with regular flowers, *Schlumbergera*, called the Easter Cactus.



Figure 6—See last paragraph of text

The second section is again divided into species whose flowers have tubes which are definitely longer than the limbs, as illustrated in photograph 1, showing an opening bud on *Epiphyllum strictum*. Only the genus *Epiphyllum* has such flowers. If the flower tube is not longer than the limb the plant may belong to *Nopalxochia*, *Chiapasia*, *Disocactus* or *Eccremocactus*.

Epiphyllum Ackermannii Haworth has been included in the list of hybrids for many years, but when Charles L. Gilly found the plant in the wilds in the state of Veracruz, Mexico, as reported in *Cactus and Succulent Journal* in July, 1944, botanists excluded it from the genus *Epiphyllum* because its flower tubes were shorter than the limbs as well illustrated in photograph 2. Dr. Clover assigned it to the genus *Nopalxochia* where it unquestionably belongs.

The genus *Epiphyllum* as we will consider it contains only true species from the wilds with long white flowers which are usually night bloomers but in some species day bloomers, but invariably the tube of the flower is longer than the limb.

Intragenetic hybrids, which all have white or whitish flowers, could be spoken of as *Epiphyllum* hybrids, but the intergeneric hybrids with colored flowers can not be so considered and we prefer to speak of them as Orchid Cacti.

As one of the parents of these colorful intergeneric hybrids such remote genera as the terrestrial *Heliocereus* or the spiny, large flowered *Selenicereus* and *Hylocereus* have been used and some hybridizers have reported using the spiny, hedgehog-like *Echinopsis* for this purpose.

Undoubtedly *Heliocereus*, with day blooming red flowers is responsible for most of the color in the Orchid Cacti.

The flower of *Heliocereus speciosus* is shown in photograph 2 and similarity to it is displayed by several of the Orchid Cactus flowers shown in photographs 3 to 6.

The Orchid Cactus has a color range in its flowers from rich cream through apricot to the pinks and reds, often with a decided blue coloration in the flower throat. This blue or purple is clearly derived from the *Heliocerei* in the parentage.

It will be noted from the photographs that the true *Epiphyllums* have a very few, small scales on the flower tube while many of the Orchid Cacti

bear large, almost foliaceous scales indicating a strain of *Hylocereus*. The spines sometimes noted in the axils of the flower tube scales on Orchid Cacti indicate a strain of *Heliocereus* or *Selenicereus* in the parentage.

Photograph 2 shows *Heliocereus speciosus* above and *Nopalxochia Ackermannii* below. Number 3 shows Orchid Cactus Melody, number 4, Agatha, number 5, Padre and in number 6, Orchid Cactus *Phyllanthoides* × *Grandiflorus* is on the left and Dante on the right. All of the photographs were taken by Scott E. Haselton.

W. TAYLOR MARSHALL

A Book or Two

Plant Hunting in China. E. H. M. Cox. Collins, 14 St. James Place, London, 1945. 230 pages, illustrated. 12/6.

This is a most readable book whether one is concerned with the details of plant hunting, in China or anywhere else. Mr. Cox writes well and carries the reader along, with just that nice introduction of the discussion of the plants themselves that keeps the factual portions fragrant with flower memories for the general reader who will have seen most of the plants not in fact but in illustration only. There are fine photographs of the countryside, portraits of some of the explorers and habit pictures of some of the more important plants themselves.

The book is divided into periods, by time rather than anything else although the persons who worked within the period have much in common with their scene and yet that differing quality that made them "off and away." Some of them were pretty stodgy people; some of them were people one would like to know personally. Some of the country

sounds and looks in the pictures like a place to hunger after; some of it looks rather barren.

Perhaps the important thing about the book is that it brings together so much of what may slip out of history sooner or later if some such book had not been written. The thing that one ponders as he looks through the list of the plants that have been the outstanding contributions from the several collectors and the small percentage that have come to take a common place in the garden scene. But be this as it may it is pleasant to return to the earliest periods to the times before Fortune and his contemporaries and then to come slowly toward the remembered past.

Las Pinaceas Mexicanas. Maximino Martínez. Vol. I, from the Instituto de Biología, Mexico, 1945. 345 pages with index, illustrated. In Spanish.

Through the generosity of our director, Mrs. Walter Douglas and the kindness of the author this volume came to the editor. It deals solely with the pines of Mexico leaving the treat-

ment of the other coniferae until Volume. II.

This is a very interesting book and one that will have to be taken into account by any botanist of the future whether he be working only with the genus *Pinus*, or whether he is concerned with the general flora. One of the serious handicaps that all scientific workers have found in recent years when we have been turning a more considered eye toward the flora of our hemisphere has been the lack of modern texts and modern treatments of the material at our very doorstep.

Dr. Martínez has been working for years in this field and his present work represents not only the study of whatever texts there may have been and they are several in this case, but also a very considerable amount of herbarium material as well as the study of the plants as they grow in the field. Mexico is relatively rich in pines and they are related in some groups with species that extend northward into our own country. As in all parts of the world where pines grow there are species of great value in the usual economic sense of that word and others like some of our own that have little. A total of 75 trees are considered, which number includes varieties as well as species. The plants fall in all the well remembered groups, so commonly used, in which they are grouped according to the number of needles in the fascicles. But this is not the only well considered basis of the keys and is not the only matter that is stressed in the study of the individuals. Possibly the paragraphs in which the author presents his opinions and arguments to sustain them as to the group relationships, are the most interesting parts.

It is not likely that many of the species and forms will be of horticultural

use in the USA, but as we travel more into our sister republic's domains, it will be a pleasure to look at the great forests with a more knowing eye.

Brazil, Orchid of the Tropics. Mulford and Racine Foster. The Jacques Cattell Press, Lancaster, Pa., 1945. 314 pages, illustrated. \$3.50.

This is a friendly and very personal account of the trip which the Fosters made to Brazil in search of the Bromeliads which have been their special interest and study for years. It has all the happy enthusiasm of something long dreamed of and then accomplished. The Fosters did not have an eye exclusively focussed on Bromeliads and those readers who are not concerned with these plants will find almost as much to interest them in the running account which deals not only with plants but with people and the life that one leads in that country.

If it did nothing else, it should point out the way to others that can be followed in travel with a horticultural and botanical purpose. There are still many parts of the world to be studied from our point of view and the amateur, who will study and learn his material in advance, can perhaps be the most valuable of all persons in the field.

One reads of this trip with a wish to emulate it, which should be an added pleasure to the Mulfords and to all who have profited by their labors.

Science and Scientists in the Netherlands Indies. Peter Honig and Franz Verdoorn. Board for the Netherlands Indies. Surinam and Curaçao. New York, 1945. 491 pages, illustrated.

This is a reference work, made up as it has been succinctly put on the dust jacket of: Original articles prepared

especially for the volume, reprints of similar accounts previously published elsewhere, a number of travel accounts, a number of shorter articles and a list of scientific institutions, societies, and workers in the Netherlands Indies at the time of the Japanese invasion. It is not a volume that one reads quickly or at times easily, but it is one to which the worker will return. To those of

us who have known only the great botanical garden in Buitenzorg, it will be particularly helpful in the extending of our knowledge and appreciation of the splendid work that has gone on in this part of the world of which we probably thought but little as we lived our routine lives, until the last war, touched us and quickened our interests and our sympathies.

The Gardener's Pocketbook

From the Midwest Horticultural Society

Adiantum Pedatum

The ferns as a group have not received the attention due them in the average garden. As a group they furnish a wide variety of forms and colors of foliage that will thrive in the veriest of shady situations. While some need swampy conditions for best results, others are forest plants and delight a good humus condition although the majority will grow in any good loam. Perhaps the most widely admired of the native ferns is the maidenhair (*Adiantum pedatum*).

The maidenhair fern is a forest dweller and is found in shady woods in well drained situations well supplied with leaf mold. The bright green leaves are generally semi-circular with the leaflets arranged along the spoke-like stalks. These stalks as well as all of the stems on the plant are a polished red-brown. New leaves are produced rather continuously all summer long. The leaves start as small round circles of a beautiful light red and unroll into the mature leaf. The plant grows from a short creeping wiry underground stem. This may be transplanted at any season of the year if the foliage is removed. Place a quantity of its natural soil or some good leaf mold around the stem and it will proceed to grace the

shadiest spot with a constant decoration of graceful and colorful foliage for many years. In dry spots watering would be beneficial.

This is one of the most beautiful of our native ferns and one that responds excellently in cultivation if given humus.

Calystegia

The popularity of Morning Glories is well deserved. However, there are many fences, arbors, and similar places where vines could be used effectively, but which do not merit the trouble of annual planting. Here perennial vines are at their best. Attention has been called to the perennial morning glory (*Ipomea pandurata*) (October, 1944) which is quite tall growing and suitable for porches and arbors, and other tall spots.

California Rose which is listed as *Calystegia pubescens* (*Convolvulus japonica flore plena*) is a vine with dull green, arrow shaped leaves and a perennial root. Its general appearance is similar to many of the wild bindweeds. The flowers are a medium pink and quite double (the single is less commonly cultivated). While the plant produces the flowers singly, it is in bloom from mid-summer on and creates a pleasing effect. The foliage makes an excellent cover for a fence. Long stretches of boundary fence where a minimum of care can be given will be

enhanced by the use of calystegia. A good well drained soil and an exposure that is not heavily shaded are the main requisites for successful culture.

Spiraea Billiardii

In glancing through the spring catalogues I have noticed the space given to an old plant of the spirea group. This species is being called "lilac" spirea by some and others have given their own appellations. *Spiraea billiardii* is a good and bad shrub. Its good points are its recurrent summer bloom, and its pink flower spikes. The bad point is its open straggly habit. The stems shoot up from a creeping underground stem and grow from 4-5 feet high. They arch slightly but not sufficient to cover the open base of the plant. Because the stems tend to spread out a planting is needed to cover the open base.

As an in-between plant in a shrub planting it is very good for the summer bloom. The flowers are in spikes from 6-8 inches long and are produced during summer and fall. The color is a medium pink. Like most of the spireas this is not a fussy shrub in its cultural requirements. It certainly is a good addition to shrub plantings where summer effect is lacking. Probably the best use is interspersed among spring flowering spireas in bank and other mass plantings.

ELDRED GREEN

Prunus × *Eileen*

As an ornamental shrub *Prunus tomentosa* is quite a lovely thing with its white, pink tipped flowers in spring and its brilliant red fruits in autumn. Unfortunately it has the habit of opening only a few flowers at a time which detracts a great deal from its ornamental value in spring.

In endeavoring to raise a hardy free fruiting cherry suited to the climate of Manitoba, I crossed our native *Prunus*

Besseyi with *Prunus tomentosa*; these hybrids were of little value as fruit bearing shrubs, for though both parents are very prolific the hybrids set fruit very sparingly.

One of these hybrids however is amongst our choicest spring flowering shrubs. It grows to a height of about three feet with a spread of about five feet bearing immense quantities of white flowers tipped with pink. Many of these flowers are open at the same time and they last much longer in good condition than its more fertile cousins. We have named this hybrid P. × *Eileen* and our photograph shows one spray in bloom.

Prunus triloba simplex

The double flowered type of *Prunus triloba* is one of the choicest of spring flowering shrubs. Though apparently quite hardy in Manitoba it does not always flower freely and is sometimes a little difficult to transplant. Occasionally part of a bush will die out for no apparent reason, or sometimes a whole bush will die while its neighbour will come through our winters unscathed.

The single flowered form is a much more easily handled subject than the type and under our conditions, much better suited for landscape work. They are easily raised from seed and are easy to transplant neither do they suffer from die back in the way the double flowered variety does.

Like all the *Prunus* family, *Prunus triloba simplex* flowers with the greatest freedom and there is a great deal of variation in both colour and form, some having much wider petals than others. The colour varies from pure white to deep rose pink, some of these deep coloured and wide petaled forms are very beautiful and worthy of being cultivated vegetatively. The single flowered forms flower from a week to ten

*Prunus* × *Eileen**Prunus tomentosa*

days earlier than the double type and are therefore worthy of a place in gardens even where the type is thoroughly reliable.

F. L. SKINNER,
Dropmore, Manitoba.

Erythroniums

The wild or native bulbs are very beautiful. We have two kinds of *Erythroniums* or dog-tooth violets. *E. albidum* grows in our woods and is a very shy bloomer but the blooms look like tiny lilies. The old bulbs of these send out a long white runner under ground at the end of which the new bulbs form, so this variety never grows into close clumps. *E. mesachoreum* grows in full sun in the prairies, and I have seen meadows white with them.

These are larger, not recurved, white with the backs of the petals heavily shaded with lavender. They have spotted leaves. These *erythroniums* take kindly to cultivation and soon make large clumps which produce many flowers.

MRS. H. F. STEWART,
Saffordville, Kansas.

Rutger's tomato

On page 270 of THE NATIONAL HORTICULTURAL MAGAZINE for last October, is the following statement in regard to Rutger's tomato: "Rutger's, however, is not adapted to the heavy, rich prairie soils of the Corn Belt because it grows too rank and does not set heavy crops." May I say that we live on the western edge of the Corn

Belt; no soil can be richer or heavier than we have here; and Rutger's is one of the highest rated of the varieties recommended for this section. I have grown it for several years and consider it the best that I can get for the main crop. Last year I grew plants from certified seed, set them out in June and from 65 plants we had all we wanted for table use, canning, juice and I gave away a lot. People who saw them said they had never seen so many tomatoes on vines such as those we had. If it had not been for a flood on September 30, they would have continued to bear heavily till killed by frost.

MRS. H. F. STEWART,
Saffordville, Kansas.

Plants Wanted

Magnolia Campbelli and other dwarf magnolias.

MRS. GRACE HOUSER,
755 West 11th St.,
Pomona, Calif.

My Daisy Border

This border, created because of my fondness for daisies runs along one side of our large vegetable garden in which I "slave" a good many hours each summer. Before it lies a six-foot strip of very nice lawn, the very best on the place!

For tall plants in the back I have both annual and perennial sunflowers; the annual ones, small-flowered pink and yellow, and the perennial one, *Helianthus orgyalis* because of its lovely foliage. Butter daisies, Cosmos Orange and Yellow Flare, Tithonia, tall perennial asters including Violetta, Skylands Queen, Queen Mary, Mt. Everest, Harrington's Pink (that lovely pink aster), and Barr's Pink which isn't pink. There is also the wild purple New England aster and a seedling

chrysanthemum, single pink and tall.

For the middle border I have plants of different heights such as Helenium in four named varieties. Doronicum, as many single Korean Chrysanthemums as I can get to survive our winters, Black-eyed-Susans, Heliopsis, Shasta Daisies, Elder and wild daisies, Pyrethrums, Rudbeckia My Joy, several woods asters, in palest lavenders, pink cone flower Echinacea, Aster Frikartii, Coreopsis, Anthemis Kelwayi and all the lovely colors of the annual China asters.

Next to the grass I have the low plants, dwarf baby asters, the Dahlberg daisy, and the African daisy *Dimorphotheca*. There are many more that I want but searching for new plants each year is lots of fun.

One might think a planting like this, monotonous, but the flower petals vary so much in width and the colors and shapes the centers are so distinct that I do not find it so.

MRS. CLYDE E. MARSH,
Hamilton, Ohio.

A Shrub or Two in Connecticut

Jasminum nudiflorum is hardy enough, but the flowering is not as early as I had hoped for, seldom coming much before forsythia. It should be backed, I think by brick or stone for really early flowering. *Lonicera fragrantissima* is all that its name implies and in normal winters is nearly evergreen. *Styrax japonica* is now a mass of sprouts, all that is left of a fine 25 foot specimen. The same is true of enormous bushes of *Hamamelis mollis* and *H. japonica arborea*. It was a sad day when I cut them down. I remember one January when *H. mollis* rose from the snow in full bloom as it will again, for the sprouts are very vigorous. My one entirely dependable extra-early bloomer is *Cornus Mas*. The one here



Claude Hope

[See page 202]

Loropetalum chinense

was planted against the south side of the house for warmth, and now rises to the eaves. Its yellow cloud against the old white house is very pleasant on

a cold day in early Spring. *Fothergilla major* is a joy, one of the best shrubs of early Spring. Here it is a neat thing over 6 feet tall, covered to the ground

when in bloom with its curious and beautiful white tufts of flowers, and in the Fall, a flame. *Daphne mezereum* never disappoints me. From that day in early Spring when I lifted it from its box full of fragrant flowers, till now, years afterwards. *Viburnum Carlesii* was mine when it was first offered; it grew and bloomed for several years, then suddenly died. I haven't tried *V. Burkwoodii* yet. Our native *V. alnifolium*, planted in a dark corner, is a most satisfactory early bloomer, with its salvers of incandescent white. An *Exochorda* which came to me as *E. grandiflora* but is probably a *Giraldii* form and a very beautiful shrub needing more room than it has here so I cannot judge of its habit of growth.

Hamamelis virginiana should be more used. Its late bloom starts off the witch-hazel procession, which follows with *H. vernalis*, then *H. mollis* and then *H. japonica* these four precious shrubs which in a favorable season give me bloom from November until *Daphne Mezereum* time.

ELLIOT S. FOOTE,
West Hartford, Conn.

Wild Blue Indigo

The wild blue indigo, *Baptisia verticillata*, is one of the beauties of the sand dunes found in the Kansas plains. It has wide, dark green, much divided, lupin-like leaves which form loose low mounds of green from which rises the stiff spires of deep blue pea-flowers. An old, well grown plant will have often as many as twelve or fifteen such showy bloom stems. Characteristically the blooms start opening at the bottom of the spike, the upper part of which keeps growing and developing new buds. The flowers stay in perfect condition for days, consequently the blooming period covers a satisfying length of time. The pods are fat green cap-

sules with the seeds fastened tightly along one side rib of the roomy chamber. I have often wondered at their house being so large. Most seed pods are filled to capacity, but not the indigo. One has almost to sit up with them along towards ripening time or some insect beats one to them. Often while the pod was still slightly green I have gathered them thinking that time I would be able to get good seed, only to find them eaten out and destroyed.

Fully ten years ago I was fortunate enough to get to the plants at exactly the right time and gathered about a half pint of good seed. That fall I made a considerable planting of them, also the following spring, but not a seed germinated. For a year or two after I tried different ways of planting that seed but never a plant to show for it.

Five years ago last spring we moved to our farm here and of course the box of seed came along. Some way I never got them entirely looked over until the fall of '44. When I found the package of old indigo seed I started to throw it in the fire but never could bear to burn any seed. So took it out and scattered it on a vacant spot in the rock garden. I did not in any sense plant it, just threw it away, but from force of habit I stuck up a marker, and thought no more about it. Last spring I noticed some seedlings in that spot that reminded me of the old "lupin," and referred to the marker which showed it really was that plant. It took me a few minutes to recall throwing the old seed there. Without the marker I would never have been sure.

There are about twenty husky plants, several of which were transplanted when the first true leaves appeared. Late in the summer I lifted a few to send to an eastern grower and found even then, getting to the bottom of



Claude Hope

Chionanthus retusus
Chinese Fringetree

[See page 202]

their roots a task. Consequently they will probably stay where they are, which is anything but an ideal situation for them, as in their native home they grow in a strictly neutral, loose, sandy soil; in full sun and wind. Here they will be shaded all afternoon and the soil is heavy and quite acid. I think I will try moving a few of them in the spring to more congenial surroundings, hoping they will reward me with at least a few of their fine indigo spires. But the why of their coming up so sturdily now after their former sulky performance is a puzzle to me.

MRS. H. P. MAGERS,
Mountain Home, Arkansas.

Loropetalum chinense (See page 199)

This is a shrub that has been out of horticultural notice for many a year and for no good reason perhaps, since it will root from cuttings. To be sure no propagator will mistake his task for such as rooting of privet or deutzia, but he can do it if he will, and now that the scientists are all taking a look at such matters he can invoke their artifices.

If one looks in Dr. Bailey's inevitable cyclopedia, which wasn't printed yesterday, he will find a fair list of bibliographic references all of which antedate the cyclopedia. What is the catch, just the accident of sales and demand?

The shrub belongs in the Witch-hazel family as one can easily guess if he looks at the photograph, although the bush habit is much more twiggy and compact. During the growing season and through the summer well into the trying days of winter, the bush is well dressed with smallish, rather dull leaves that look as if they were going to be evergreen. Doubtless they are in the South or in frost free climates, but here, where it is on the upper limit of its supposed hardiness, the leaves

suffer and look shabby as winter advances, falling sometimes in the Spring in whole or in part.

When the weather is favorable, the flowering, here, begins in the autumn, but usually there is no catch bloom, and one must wait till Spring, when the whole plant is dressed in the fleecy appearing masses. The texture of the flower mass is so distinct that it competes well with the other spring-blooming shrubs that are also white, be it pure or tinted.

Washington, D. C.

Chionanthus retusa (See page 201)

Like *Loropetalum*, this too has had a strange history. It is not easy to propagate and so its absence is perhaps understandable. Like other plants with pithy stems it does not yield easily to the tricks of the propagator who wants to raise cuttings and the same characteristic, in grafting, is bothersome, even when seedlings of the native Fringetree are available.

It is high time, however, that some one really made a job of it and produced it by the hundreds. In no way does it compete with the native species. In that, the habit is open, and the drooping panicles of lacy flowers are quite large enough and lax enough to give a special quality to the whole, as if some thin white cloud had filled the tree with a whiteness as subtle as the fragrance. In this plant, the panicles are much shorter, the petals stubbier, and the whole mass more compact so that the white masses thicken over the growing foliage. The photograph shows the detail of the inflorescences well enough and suggests the character of the individual flower.

The plant itself is usually described as a shrub to small tree but there is rarely a suggestion as to in what part of the country, the plant makes the



Robert L. Taylor

Coreopsis tinctoria

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small tree. Here, the oldest plants have reached about 15 feet in a little over 20 years. They grow with several stems and although they are crowded in with

other small trees and such there is every reason to believe that its upright habit is unnatural, with the ascending trunks forming a broad flat head over

which the waves of white flowers surge in June. Fruiting, as seems to be the case in the native species, is unpredictable and the fruits themselves ripen irregularly in the panicle, so that one who wants to gather them, must visit the tree again and again if they are not eaten first by the wild things that are always hungry.

Washington, D. C.

Calliopsis (See page 203)

Although this old and familiar annual must now be called *Coreopsis tinctoria* for many of us who have known it as a familiar and permanent garden resident, it will remain *Calliopsis*. It is a good American and seems to be the only one of several species from our Great Plains with their greatest concentration in Texas. Its European debut must have been about 1824, for it appears in Curtis Botanical Magazine as Plate 2512 (1824) and in Edward's Botanical Register as Plate 846 (18..) and these journals were then, as Curtis Botanical Magazine still is, indices of current novelties in the horticultural world.

Seed catalogues from the continent, have in their time shown a diversity of races the diversity coming chiefly in stature and in the degree of dark crimson brown that marked the ray florets.

For best success, it should be sown early in the garden where it is to flower. Certainly from Washington southwards or in any other place where the winters are not too cold, it should be sown in the autumn so that a fine flat rosette and a good tap root can form before cold weather. Once established it will self-sow freely and the problem will be which seedlings to leave and which to pull. This is important since it blooms here at Polyantha rose time—as well as later—and can set their

pink to crimson flowers out of tune with everything else.

From the strong rosette the plants send up well branched stems that spread nicely each branch bearing its load of bloom.

The illustration shows the flowers grown from mixed seeds with a fair proportion of semi-double blooms, the doubling coming from extra ray florets and from petaloid development of the disk florets. Possibly the time may come, as it already has come for the marigold, when the ray florets are suppressed and the disk florets go quite wild, making what the illiterate quite glibly call 'mums'. Although my own personal prejudices have been quite overcome, as far as marigolds are concerned, I still welcome the occasional marigold that brazenly reverts to a single row of ray florets typical of its presumptive ancestor, and a great cone of disk flowers.

Unlike marigolds which are strong and vigorous plants, the calliopsis is an airy piece and one can imagine a certain loss of lightness if all the flowers were solid heads of shaggy curling petals.

The yellows are clear and rich; the brown reds warm and intense. The spottings and fleckings vary in degree and kind as can be seen from the photograph, except that no flower is there to represent the old variety *The Turk* in which the ground was warm maroon and the yellow showed only as scattered spots of various sizes.

The flowers last well when cut and the plants give off a faint resinous odor as do many composites.

Nicotiana (See page 205)

As far as gardens go, not many species of *Nicotiana* enter into that sort of cultivation and this is no place for the discussion of the others that



Robert L. Taylor

Flowering tobacco: *Nicotiana glauca*

[See page 204]

make up that numerous family. As far as this reporter is concerned, he will supinely follow Mr. Ricker's treatment in Bailey's Cyclopaedia and take for granted that his plants would come under what Dr. Bailey records as *N. alata* var. *grandiflora* and the horticultural race known as *N. Sanderae*. It is quite possible that among them all there is not a single individual that would precisely fit the descriptions of either of the cited races.

It should be understood from the beginning that the chief if not the sole purpose of growing the flowering tobaccos, is to fill the garden with perfume after sundown. The plant has little beauty to commend it, with a more or less ungainly habit, a tendency to 'lean on its elbow' as it were and often enough thin flowering shoots. All this may be due to the acid soils in the writer's garden since Mr. Ricker plainly states that the soil should be rich in lime and potash.

The seed like that of many of solanaceous plants, is very small so that one overplants no matter how carefully he distributes it. The seedlings grow well in warm weather and transplant more successfully than their insignificant early root system would suggest.

The writer still recalls the first time he moved seedling nicotianas and his amazement that all did not wither

away. Even the partial clipping of the leaves did not appear necessary. Once transplanted no further attention seems necessary.

The flowering sprays last well when cut and a fair proportion of the buds continue to open. Inside, in a not too strong light, the flowers stay open all day but to this nose at least, the perfume comes only in the evening and early night. It is a pervasive, but not oppressive scent and suggest in a vague way the scent of its cousin the petunia.

The flowers in the picture illustrate well enough their physical appearance, the uppermost from a flower that must have known something of *N. Sanderae*, at some stage; the lower two come closer to *N. alata*.

If the gardener lives far North and has to hurry between frosts he will sow his seed inside, pot off the seedlings and set them out when the weather is warm. If he lives hereabouts, he can sow the seed outside in April and get good flowering. The first frosts of autumn do not kill the plant, only the half-opened flowers and many more will come should there be an Indian Summer. The plants themselves usually have to be pulled out quite green. Further south, the plant is reported as a perennial and from all parts there are uniform stories of its natural self sowing.

SOCIETIES AFFILIATED WITH
THE AMERICAN HORTICULTURAL SOCIETY

(Continued from page i)

The Trowel Club,
Mrs. Robert M. Hinckley,
4655 Garfield St., N. W.,
Washington, D. C.

Tulsa Garden Club,
Mrs. Allen Henry, Pres.,
1301 South Yale,
Tulsa 4, Okla.

Twin Falls Garden Club,
Mrs. R. C. Scott, Treas.,
Twin Falls, Idaho

Victoria Horticultural Society,
Mr. D. D. McTavish, Secy.,
Victoria, B. C., Canada

Wayside Garden Club,
Mrs. S. M. Sisley, Pres.,
2224 S. Indianapolis,
Tulsa, Okla.

Washington Garden Club,
Mrs. Stacy Noland, Pres.,
3616 N. Albemarle St.,
Arlington, Va.

Woman's Dept. Club, Garden Dept.,
802 Margaret Place,
Shreveport, La.

Woodlawn Garden Club,
Mrs. A. F. Schwichtenberg, Sec'y,
4845 N. 16th St.,
Arlington, Va.

Woodridge Garden Club,
Mr. George Targett, Pres.,
2948 Carlton Ave., N. E.,
Washington, D. C.

Worcester County Horticultural Society,
30 Elm Street,
Worcester, Mass.

The American Horticultural Society

INVITES to membership all persons who are interested in the development of a great national society that shall serve as an ever growing center for the dissemination of the common knowledge of the members. There is no requirement for membership other than this and no reward beyond a share in the development of the organization.

For its members the society publishes *THE NATIONAL HORTICULTURAL MAGAZINE*, at the present time a quarterly of increasing importance among the horticultural publications of the day and destined to fill an even larger role as the society grows. It is published during the months of January, April, July and October and is written by and for members. Under the present organization of the society with special committees appointed for the furthering of special plant projects the members will receive advance material on narcissus, tulips, lilies, rock garden plants, conifers, nuts, and rhododendrons. Membership in the society, therefore, brings one the advantages of membership in many societies. In addition to these special projects, the usual garden subjects are covered and particular attention is paid to new or little known plants that are not commonly described elsewhere.

The American Horticultural Society invites not only personal memberships but affiliations with horticultural societies and clubs. To such it offers some special inducements in memberships. Memberships are by the calendar year.

The Annual Meeting of the Society is held in Washington, D. C., and members are invited to attend the special lectures that are given at that time. These are announced to the membership at the time of balloting.

The annual dues are three dollars the year, payable in advance: life membership is one hundred dollars: inquiry as to affiliation should be addressed to the Secretary, 821 Washington Loan and Trust Building, Washington, D. C.