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Our Window Gardens.

By Geo. W. Carver.

The increasing interest shown by the ladies of our state in floriculture, has suggested to Prof. Wilson an article on that subject, which he asks me to write. And as the floral feature of our greenhouse experiments have been made with a view of ascertaining not only the best varieties of plants for ordinary window gardening, but their treatment as well, we take pleasure in submitting in detail the following plants which are grown by every one and are the most frequently mismanaged.

We found the geranium of course to be the standard all-purpose plant for flowers. Little need be said concerning its treatment, good garden loam containing about one-fourth sand, and the plants given a sunny place in the window, with just water enough to warrant good growth in the garden are all that is necessary for a wealth of flowers the entire winter months.

The Calla Lilly.

The calla lily is a very desirable plant and is easy of growth if the following rules are observed.

The first essential is good strong bulbs which may be obtained of any florist at the following prices, 15, 20, 30 and 50 cents according to size.

There are several varieties of merit, but the old fashioned white one (Richardia Ethiopica) gives the best satisfaction for general planting.

Each plant should be examined carefully as they are quite frequently attacked by a dry corky rot. which should be removed with a sharp knife, the wound rubbed with finely powdered charcoal and the bulbs placed singly in a dry place for a few days.
A muck soil containing large quantities of peat is preferable, but rich garden loam prepared in the same manner as recommended for ferns (Bul. 27 of this station) will answer quite as well.

The bottom of an eight or ten inch pot should be covered with broken crockery, pebbles, charcoal or something for drainage. Fill the pot to about one inch of the top, insert the bulb, cover to the depth of one inch; place the pot where it will be in partial shade; water sparingly until active growth begins; full sunlight should now be given, and plenty of water, at the temperature of blood heat. The soil should be kept well saturated, but not puddled. Boiling water is a powerful stimulant and should only be used by the experienced, many fine plants are hopelessly injured every year by the injudicious use of boiling water. Permit the plants to flower without interruption until about the last of May or the first of June, as desired. After this they should be dried off and allowed to rest during the summer. In drying off the best results can be obtained by placing the plants in a shady position and watering sparingly, giving less and less until it is entirely witheld. This process should require from three weeks to one month, which allows the bulb to become well stored with starch, thus fitting it for luxuriant foliage and fine flowers the next year. Callas may be kept growing from year to year, but as a rule the flowers are neither as handsome, nor in such profusion.

Where specimen plants for fairs, exhibitions, etc. are desired special treatment must be given them; each grower usually has a method of his own, a number of which we have tried and found this one to give the best satisfaction aside from its simplicity. It is as follows: Proceed just as above recommended until the time for drying off; give just enough water to keep the leaves green, but not enough to encourage growth until about the first of August when they are given all of the encouragement possible, with plenty of water and frequent applications of weak liquid manure. In the parlor or sitting-room this form of dressing cannot be used as offensive odors will arise therefrom. Where these conditions exist we recommend the following mixture (which any drug-gist can put up:) One teaspoonful of concentrated nitric acid,
one teaspoonful of ammonia carbonate, one teaspoonful of potassium nitrate, and one half teaspoonful of phosphoric acid. Mix all together and use two drops in a quart of water once every two weeks, continue this treatment until after the flowering season.

CAUTION—Do not use this mixture upon poorly rooted, or newly potted plants. This mixture will answer for all bulbous plants. Permit your callas to grow for two years in the same pot without disturbance. The third year they should be carefully dried off, the bulbs taken out and all bulblets removed. A larger pot should now be given them proportional to the size and number of the bulbs.

In this way very fine plants may be grown. We have in the greenhouse now a plant under this treatment growing in a sixty pound butter tub, that had sixteen flowers open at one time upon it, and produced something over thirty during the flowering season.

FREESIAS.

Few bulbous plants possess so many good qualities as the freesia, it is easy of growth, beautiful and attractive in flower and exquisite in fragrance. The bulbs being quite small, from six to eight can be accommodated in a four inch pot. Any good rich compost is all that is needed in the way of soil. They do not require rooting in the dark but may be given at once a sunny place in the window. Sunlight is very essential as they become weak and etiolated without it, fall over and of course do not flower so well in this position. A continuous display of flowers may be had from Christmas until late in spring by planting at different intervals, and bringing to the light when wanted to grow. When a succession of flowers is desired the bulbs should all be planted at once and the pots that you prefer to bloom later, placed in a cold frame, or any cool place where growth will not be active. They can be brought to the light and heat as desired and will soon respond with flowers. When through flowering dry off the same as recommended for the calla. Repot in fresh soil each year.

NICOTIANA AFFINIS.

This plant is commonly known as the white flowered tobacco. It is a plant worthy of all the commendations given
it. From a florists' point of view the flowers have but little value, aside from their fragrance, but for home decoration they are certainly very desirable. Improvement has brought about several varieties ranging from giant specimens, three or four feet in height to mere pygmies of ten or twelve inches.

In leaf they range from narrow, almost linear, to broad, curled and crimpled. Those with the curly leaves being the most desirable.

They will succeed nicely in any good garden loam, and accommodate themselves with ease to small pots, and flower profusely with but little sunlight. In fact it is better to grow them in partial shade, as the flowers ordinarily open in the evening and close from eight to nine the following morning, but under the above method the flowers will remain open nearly, or quite all day.

Propagation is quite simple; they reproduce with a fair degree of certainty from seed, but a much better method is to take the large fleshy roots and cut in lengths of about one and a half inches, insert them into pure sand, or very sandy earth, the roots being well supplied with adventitious, or blind buds as they are called, will soon throw up strong plants which may be potted in the usual manner. Flowers may be had by this method much sooner than from seed.

**ROOTING CUTTINGS.**

All cuttings should be rooted in clean sharp sand, (such as plasterers use), the object being to secure perfect drainage, warmth and aeration, also such soil is practically free from humus, the cuttings are less liable to attacks of injurious fungus diseases; encouraged by the large amount of plant food existing in the humus. As to the manner of making the cuttings the plant in question has much to do with the method adopted. All plants having conspicuously jointed stems should be cut near a joint, all others just below the point where the leaf stock joins onto the stem (the base of the petiole of the leaf). However, lobelias, alternantheras, coleus, feverfews, ageratums, tradescantias, etc., will root satisfactorily however cut, it is best to make all cuttings as shown in plate (2) Fig. (b), as all roots proceed from the
vascular system of the plant, much more of said system is exposed by the slanting cut.

Figure (a) shows a plant cut straight across; by contrasting the root system of the two it is easy to see which is preferable. (These plants were taken from our illustrative propagating benches and were sketched from life).
Most any length of cutting will root, but the best success may be had from those of about two inches in length. All leaves near the base of the cutting should be removed and the upper ones if large cut half in two.

A shallow box or pan is a most excellent receptacle for the cuttings. Begonias, helitropes, feverfews, lantanas, coleus, alternantheras, carnations and kindred plants root best under a glass bell jar, as heat and moisture can be controlled much better. (A large glass fruit dish, tumbler or anything of that kind will answer the purpose of a bell jar).

The sand should be kept constantly moist and the plants removed as soon as they are rooted. Most cuttings will root in two weeks; they may be removed from the sand and examined at any time without injury.

The hot and cold methods, or the forcing, and non-forcing systems of rooting cuttings is worthy of our closest scrutiny. By forcing, we mean plants that are subjected to a higher degree of temperature than that under which they normally grow. Forcing by heat should never be resorted to by the amateur, as he invariably injures his cuttings beyond repair. In plate (1) is shown two cuttings of eonymus, (taken from our illustrative propagating beds and drawn from life) that brings out this feature quite clearly; plant (a) is grown at a high temperature, the plant is taller and apparently larger than (b), but scrutiny shows it to be thin, drawn and constitutionally weaker than (b), also the root development in (a) is not sufficient to support that amount of top.

If one is situated so as to give two or three more degrees of bottom heat than top, so much the better, but otherwise do not attempt to hurry your cuttings by raising the temperature of the room or the result will be as shown in plate (1), that means a plant greatly impaired in vitality.
DISEASES.

Among the few diseases affecting cuttings, there is probably none more destructive than a species of grey mould called Botrytis vulgaris. One may easily recognize it by the copious mycelium and the abundance of its spores which spread over the surface, forming a grey powdery mass, somewhat resembling certain bread moulds. This disease is a facultative parasite and readily accommodates itself to either living or dead plant tissue. It spreads rapidly and will soon destroy every cutting if not checked in some way; and we have known it to attack and destroy potted plants of considerable size.

We have found the following method of treatment to be the most successful. Potted plants are rarely attacked unless growing closely together, or setting in damp shady places. Thin out at once and give them plenty of fresh air and sunshine; water sparingly until the disease is checked.

Cuttings should be treated as follows: (a) dry the plant off, leaving just enough water to prevent withering; (b) water in the morning only; (c) lower the temperature to the minimum necessary to the growth of the cuttings; (d) give plenty of fresh air and sunshine; (e) sprinkle over the soil equal parts of finely powdered charcoal, sand and flowers of sulphur.

The precautions necessary to prevent its appearance are these: (1) remove from your benches, or boxes all sand or earth of the previous year; (2) use new receptacles, or white-wash the old ones, allowing them to remain so all summer, or what is better, wash with Bordeaux mixture, using the following proportions: Copper sulfate, six pounds; lime (unslacked), four pounds and water, twenty-two gallons.

RAISING PLANTS FROM SEED.

The importance of knowing how to raise plants from seed cannot be too strongly emphasized, as aside from the economic and instructive feature, much finer plants of many varieties may be had in this way.

All seed should be sown in shallow boxes or pans with good drainage, quite sandy soil should be used, passing the same through a very fine sieve.

Smooth the surface carefully; sow the seed and gently firm the soil with the hand or a piece of board. All such seed as geranium, mignonette, asters, chrysanthemums, etc.
should have a light covering of soil sieved over them, just enough to cover, is all that is required.

Very fine seed such as begonias, tydeas, etc. should be sown directly upon the surface and firmed as directed for the above, but no after covering should be given, a piece of blotting or soft carpet paper should be placed over the top laying it directly upon the earth; water should be given through this paper, which should be removed as soon as the seeds germinate. The young seedlings should be removed and set in separate pots or boxes as soon as they have from four to six leaves.

The following plants may be grown with ease by observing the above precautions viz. geraniums, oxalis, cinerarias, abutilons, chrysanthemeums, coleus, cyclamen, amaryllis, freesias, callas, etc.

Young seedlings are apt to be attacked by a fungus disease known as "bench rot" of which (Pythium De Baryanum) is the most prevalent; the seedlings will lop over and die without any apparent cause; but if a careful examination is made the fine white mycelium threads of the fungus may be seen spreading over both the soil and the young plants.

Precisely the same treatment as that recommended for the bench rot of cuttings has proven the most successful remedy with us.

WATERING.

Much time and space has been given to this important subject, but a brief summary may be given in these few words: (a) Study to become acquainted with your plants; (b) find out if possible their habits in a state of nature and (c) observe if they grow in sunshine or shadow, in the bog or upon dry ground, in poor or fertile soil, moist or dry atmosphere, frigid, torrid or temperate regions, in fact find out all you can about them and give to each plant as nearly as possible its natural environment, and success will invariably follow.

The best way to determine whether your plants are in need of water or not is to examine the soil and all plants that thrive in the border, will require soil of the same degree of moisture that insures good growth in the garden.

Rigidly avoid the little and often plan of watering, as the surface only becomes moist with such treatment, when water is given be sure that the soil is thoroughly soaked.