

The Forcing of Roses

Extracted from "Greenhouse Management: A Manual for Florists & Flower Lovers"

While other departments of floriculture have made wonderful progress during the past ten years, in none of them has it been as great as in the winter forcing of roses, and today hundreds of large establishments are almost entirely devoted to this work, while every small florist has his rose house, and the sale of cut blooms generally equals the amount received from all other flowers combined.

Although it is true that roses, to be successfully grown, require careful attention, it is not true that there is any wonderful secret that one must acquire in order to grow them, and, while the inexperienced rose grower cannot expect the highest success, it is hoped that if the directions here given are carefully followed many mistakes may be prevented. The work of the rose grower generally begins with the propagation and growing of the plants, and therefore we will commence with that operation and follow along with the various steps as the season advances.

PROPAGATING THE PLANTS

Rose plants for forcing purposes are generally grown from cuttings of the new wood made any time from November to February, but for most purposes the earlier date is preferable. The rule generally given for learning if the plants are in proper condition to be used for cuttings, i.e., when in bending a branch the wood snaps, does not hold for roses, as cuttings should not be made until the buds in the axils of the leaves have become firm and hard. Some consider that the lower buds on a stem are in good condition when the flower buds are ready to be cut, while others believe that the best time for making the cuttings is when the buds begin to show color. At any rate, the cuttings should be made before the leaf buds begin to swell. The cuttings made as soon as the buds have formed and the wood has lost its succulent nature, will root quicker, and a much larger per cent of them will form roots, or "strike," as it is called. If the variety is a new and choice one, the blind shoots, or those that have not formed flower buds, are often used for making cuttings. While it may be done occasionally without marked injury, if persisted in the tendency will be to develop plants that form few flowering stems, and the results will not be satisfactory, so that the continued use of the blind shoots for cuttings is not to be recommended.

When the stems have long internodes, and particularly if it is a new sort, a cutting should be obtained from every good bud, but those at the lower part of the stem, and all at the upper portion that are to any extent soft and succulent, should be rejected. The cuttings of American Beauty, and other varieties with short joints, should contain two or more buds. Cuttings should be from one and one-half to three inches long, with one bud near the top, at any rate, and with the lower end cut off smoothly at right angles, with a sharp knife. If the upper leaf is large, about one-half of it should be cut away, and the other leaves, if any, should be rubbed off.

The cuttings should be dropped into water to prevent their drying out, and as soon as possible should be placed in the propagating bed. This should contain about four inches of

clean, sharp sand of medium fineness, and should have heating pipes beneath, to give bottom heat. Set the cuttings in rows, about two inches apart and three-fourths of an inch in the row, and press the sand firmly about them. At once wet them down thoroughly, and if the weather is clear and bright the beds should be shaded during the middle of the day for the first week. The propagating house should be kept at a temperature, at night, of fifty-Height or sixty degrees, with about ten degrees more of bottom heat. During the day, it should be well ventilated to keep up the bottom heat and thus promote root development, and to admit fresh air, but a temperature ten degrees higher than at night is desirable.

In about three or four weeks, with proper care, every cutting should be rooted. The requirements for success, as noted above, are, good cuttings, clean, sharp sand, a proper temperature, shading when necessary, and an occasional wetting down of the bed, in order that the cuttings may not at any time become dry. If the house is inclined to dry out, or if the weather is bright, the cuttings as well as the walks should be sprinkled occasionally, and the ventilation should have careful attention. It is best to use fresh sand for each batch of cuttings.

POTTING AND CARE OF THE PLANTS

When the roots are three-fourths of an inch long, the cuttings should be potted off into two or two and one-half inch pots, pressing the soil firmly. The best soil for the potting of rose cuttings is made of equal parts of leaf mold, or decayed pasture sods, and garden loam, with a little cow manure and bone meal, and sand in proportion to the heaviness of the soil. After being potted the cuttings should be placed in a house with a night temperature of a little less than sixty degrees. They require the same care as other plants, careful watering, with an occasional syringing to keep down the red spider, proper ventilation, and an avoidance of drafts and direct sunlight for a few days, being the main things desired.

Unless tobacco stems are strewn on the beds, it will be necessary, once or twice a week, to burn tobacco stems in the house, or syringe them with tobacco water. From the time the cuttings are potted off until they have finished flowering and are ready to be thrown out, or rested, they should be kept growing, every precaution being taken to avoid a check, if the best results are desired. Some, however, prefer to grow the plants rapidly until they are in four-inch pots, and then give them a short rest. As soon as the roots have filled the pots, and before the plants become pot-bound, shift to three or three and one-half inch pots. By the last of April, if they have had good care, the first batch will have filled four-inch pots and will be strong enough to plant in the beds for early flowering, while the others, as they come on, can be repotted, and will soon be large enough to be transferred to the beds. Only strong, well-grown plants should be used, and if possible all should be planted out by the first of July. By this early planting not only can a large crop of blooms be secured during the summer, when there is a good demand at a fair price, but the plants will be so strong that they will be able to give large crops during the fall and early winter, when they are most needed. Planting some of the beds by the first of April, for summer use, will often be desirable.

SOIL FOR ROSES

While the different varieties will not always thrive with the same kind of soil, it is generally admitted that at all events, a soil for roses should contain decomposed pasture sods and cow manure. The sod should be obtained during the previous summer from some old pasture with a thick, fibrous sod, if possible, and should be piled up with alternate layers of cow manure, using one part of the manure to from four to six of the sods, according to the character of each. The sods should be cut just thick enough to remove the thick, fibrous portion, and if from an average loam soil, neither very heavy nor light, but with a good admixture of clay, the compost prepared as above will be of a suitable character for the rose benches, but if the sods come from a sandy loam soil the addition of one part of clay to five or six of the mixture will be desirable.

On the other hand, if the soil is inclined to be heavy, an equal quantity of sand should certainly be added. "While considerable clay is desirable in soil for roses, there is danger of its being too heavy, as, even in shallow benches, if the soil at any time becomes too wet, particularly in the fall before the fires are started, or during a cloudy period in the winter, it will not only be longer in drying out than a lighter soil, but "black spot" and other diseases will be much more likely to follow.

Early in the spring the compost pile should be worked over and the coarser sods broken up. After lying in the pile for two or three weeks more it will be ready to place on the benches. When the houses are long, it will be convenient to have openings in the side walls, through which the soil can be thrown upon the benches, and if there are side ventilators this can be readily done. If it is not feasible to have openings in the sides of the houses, it will be a great convenience if a small car can be run along the edges of the benches. As an entire chapter was devoted to "Rose Houses" in the companion volume, "Greenhouse Construction." In which the form and width of house best adapted to the crop was discussed at length, it is not thought necessary to devote space to it here. By reference to the other book, full information regarding these points, and upon such important matters as the pitch for the roof, arrangement of the ventilators, the method of estimating the amount of heating pipe required and the best way to arranging it, will be obtained.

SOLID BEDS VERSUS RAISED BENCHES

For many years solid beds were almost universally used for growing roses and similar plants. They admit of supplying a full amount of plant food, but while they lessen the danger of injury from neglect in watering, they frequently do great harm if the plants are over-watered, particularly if the sun does not show itself for a number of days, as they are a long time in drying out. For this reason they fell into disrepute, and were replaced, in most establishments, by shallow raised benches, as it was found that roses grown upon them, in four or five inches of soil, were less likely to receive a check during the dull days of early winter, when they are most in demand and bring the best prices. Upon solid beds, however, with good drainage, large crops are secured as the bright, sunny days of spring come on, and, what is of much importance, the plants can be grown for two or more years before they are thrown out, while upon shallow benches it is generally advisable to renew the plants each year.

A method has now come into this that provides both for the thorough drainage and the aeration of the soil, as well as warming it up and drying it out. The solid beds are generally about seven feet wide, with two beds and three walks in a house twenty feet in width. The drainage is provided, in some cases, by means of common drain tile laid across the beds at intervals of from one to three feet, while in others a foot or more in depth of stones, or broken brick, is placed in the bottom and covered with eight inches of soil. A few of our most successful growers secure bottom heat by running one or more steam pipes lengthwise of the beds at about the center of the layer of stones; the heat distributes itself through the bed, and is of marked advantage in wet, dull weather, in drying out the surplus water and warming up the soil.

Another favorite arrangement is to have three beds, each five feet wide, and four walks, in a house twenty-two feet wide. These beds have all of the advantages of the old solid bed, with none of the disadvantages, and are equally well adapted to carnations, violets, lettuce and other crops. The watering of the plants by what is known as sub-irrigation has many advantages, and is treated in another chapter.

PLANTING THE HOUSES

Before the beds are filled with soil, ample drainage facilities should be provided, and if raised, wooden benches are used there should be cracks of nearly one inch between the bottom boards, which should preferably not be more than six inches wide. When tile bottoms are used the cracks can be somewhat smaller. To prevent the soil from falling through the cracks, or from filling up the openings between the stones in the solid beds, it is well to first put down a layer of sods with the grass side down, and upon these four or five inches of the prepared soil for a raised bench, or seven or eight for a solid bed, should be placed. This should be leveled off and firmly packed down.

The beds are now ready for planting, and this should not be long delayed, as the thin layer of soil will soon dry out and will be in an undesirable condition for setting out the plants. The rows are generally twelve inches apart lengthwise of the house, so that a bed will hold as many rows as it is feet wide, and the plants are set twelve to sixteen inches apart in the rows, according to the strength of the variety and whether designed for one or two years' growing. Assort the plants, and use the smaller ones next the walk.

Dig holes for the plants with a trowel, and set the plants about as deep as they grew in the pots, taking care not to break the "balls," unless the plants have become pot-bound, when it is well to loosen the root. While it is always desirable to work the soil carefully into place and to press it firmly about the roots, the soil between the plants should be smoothed off and the surface left light. Upon sloping benches, in particular, it is an excellent plan to have depressions about the plants to hold water and cause it to sink down to the roots, for the first few waterings, until the plants become established. If weeds start, as they probably will in a week or ten days, the soil should be stirred as soon as they appear, and this should be repeated whenever necessary to keep the beds clean, until the roots fill the soil, when it should be discontinued, as it is likely to check the growth of the plants by breaking the roots.

WATERING AND VENTILATING

From planting time, every detail of watering and ventilating should be carefully performed, as any check now would seriously injure the prospect of a paying crop of flowers. As soon as planted, and every bright morning thereafter until established, the plants, and also the walks, should be thoroughly syringed, and the beds should be watered whenever they show signs of drying out, but while they should not suffer from lack of water, even greater pains should be observed that they are not saturated. This will also aid in keeping down the red spider, which only flourishes in a dry atmosphere. No plant requires more care than the rose, about ventilation. Drafts of cold air upon the foliage should always be avoided, and it is generally a good thing, in a rose house, to have the ventilators arranged with this idea. If there is but a single row, they should be on the side from which the prevailing winds come, if hinged at the bottom, and on the opposite side if hinged at the top.

While either extreme of temperature should be guarded against, it is quite as desirable to give the plants fresh air, at least for a short time, each day. In hot weather give all of the air possible, and leave on some even at night, at the ridge. Exposing the plants to great extremes of temperature is especially likely to bring on an attack of the mildew, and if it should appear, as it often does, without apparent cause, the house should be kept somewhat closer than usual for a few days, and after syringing them the plants should be dusted over with sulphur. As the weather becomes cool in September, it is well to furnish a little artificial heat, to keep the temperature of the house above fifty-five degrees. One or two steam pipes, or a low fire in the hot water heater, will secure this and often prevent a serious check of the plants. With this care, firm, short-jointed wood should be secured, which will give an abundance of bloom. While fifty-eight degrees is given as desirable for a rose house, in order to secure the best results, with the various sorts some little deviation is advisable. The Meteor, among other kinds, needs a few degrees higher than that, while the Perle, Bride and Mermek, and others of the old varieties, should have a temperature a little lower than fifty-eight degrees, if the plants have been properly grown.

It will generally be found best to do the watering early in the morning, and, on the warm, bright days when syringing is necessary, it should be done early enough so that the plants will dry off before night. In ventilating, care should be taken to avoid extremes, and it is best to give a little air as soon as the sun begins to warm the houses, and the amount should be gradually increased, so that during the warmest and brightest part of the day it will be ten or fifteen degrees higher than at night. When the temperature is allowed to run up ten or fifteen degrees before the air is let on, and then the ventilators are opened wide, it will be almost sure to bring on mildew. Plants grown with a judiciously regulated supply of air will be in a much healthier condition than those grown where extremes prevail.

LIQUID MANURES AND FERTILIZERS

After the roses have started into growth, it will be well to give them an application of liquid manure once in two weeks. It will generally be advisable to pinch off the first flower buds that form, that the plants may throw all of their vigor into the development of stems and leaves.

From the first benches planted, cutting can begin in July, and as soon as the crop is off the bed should receive an application of ground bone, at the rate of one pound to twenty-five square feet. This should be slightly worked into the soil, and the bed covered with manure. A half inch of sheep manure will be preferable, but if this cannot be obtained three-fourths of an inch of cow manure will answer. Unless mineral manures are relied upon, the application should be repeated once in two months. During the dull weather from November to January, the mulching should be thin, but by February the amount used may be slightly increased.

It is believed by many growers that the diseases like "black spot," and mildew, and the other troubles, such as blind shoots, and imperfect flowers, may be attributed, at least in part, to the stimulating effects of stable manure. While they are not caused directly by its use, there can be no doubt but that the large quantity of sheep and cow manure used by many florists promotes a soft, watery growth that is particularly susceptible to disease, and, what is more to be dreaded, that a slight neglect, such as an improper temperature, or the application of too much water, will give the plants a check that will result seriously to them.

The use of mineral fertilizers, on the other hand, tends to develop earlier, larger and better flowers, and the plants will be stronger, and with firmer stems and foliage, that will be less likely to be injured by neglect and disease. For these reasons it is a growing practice with many of our most successful rose growers to rely largely upon mineral manures, beginning as early as November upon old plants, although January will be safer for young ones. These fertilizers can be broadcasted either in a dry state or in water. For roses, a good mixture will consist of one part of nitrate of soda, two parts of sulphate of potash, and ten parts of ground bone. These should be thoroughly mixed and applied broadcast at the rate of one pound to twenty-five square feet of bench, or at the rate of one pound up to four pounds, according to the size of the plants, in fifty gallons of water.

When roses are growing rapidly the broadcast application can be repeated once a month, but a less frequent application will be better for small plants, or if there is but little growth. The liquid applications can be made much more frequently, but care should be taken not to use too large a quantity of nitrate of soda, or sulphate of potash, as, if applied in excessive quantities, they will check the growth and even kill the plants. When the ground bone has been scattered upon the surface and mixed with the soil, an excellent liquid fertilizer is made by placing one pound each of the nitrate of soda and of sulphate of potash in two hundred gallons of water, for young plants, which amount may be decreased to one hundred gallons of water when the plants become full grown, applying at intervals of from two to four weeks. The best time to apply liquid manure is in the morning, when the beds are a little dry, as it will then be more evenly distributed through the soil. When nitrate of soda and sulphate of potash are used as a topdressing, one pound of each to two hundred square feet of bed will be ample.

Unleached wood ashes afford a desirable source for potash and phosphoric acid, and may be used at the rate of a bushel to two or three hundred square feet of bed. The potash will promote the development of firm, short-jointed wood, and, combined with the phosphoric acid, will favor the production of flowers. Many florists still cling to the use of liquid fertilizers made from animal manures, and one of the best mixtures is composed of a peck of hen manure and a half bushel of sheep manure in one hundred gallons of water. The food

contained in the few inches of soil in which roses are grown is soon exhausted, and it must be replaced in some way. The top-dressing of sheep or cow manure answers fairly well for this purpose, as well as for a mulch to keep the weeds down after the roots of the roses have filled the soil so that stirring the surface will injure them, but it is unsightly, and keeps the surface wet and sour and prevents the ready access of the air to the roots, so that, although it is of much benefit during the summer months, it is a positive drawback during the winter.

All fallen and diseased leaves should be removed and burned, and the surface of the bed should have an occasional stirring, to admit the air and to prevent the baking of the soil, but care should be taken not to disturb the roots. In addition to the other work mentioned, it is desirable to be prepared at all times to fight insects and diseases. A description of the most troublesome forms, and the treatment for them, will be found in another chapter.