

the value of fresh air for the cuttings once in a while. Also, I have noticed he has learned it is a good procedure not to take off any leaves from a cutting.

Mr Hancock presented his prepared discussion, on the Burlap Cloud method of rooting softwood cuttings during the summer. (Applause)

THE BURLAP CLOUD METHOD OF ROOTING SOFTWOOD SUMMER CUTTINGS

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This method has been described in two previous issues of the Proceedings of our Society, and in the short time at my disposal it would hardly be possible for me to fully describe it again. For those, however, to whom the idea may be new, it will be necessary to give at least a brief review of the principles involved.

It is a method of rooting summer cuttings in ordinary sandy nursery soil by using light portable wooden frames with burlap covers. From experience it has been found that the best practicable length for these frames is twelve feet, and the width three feet nine inches outside measure. Because burlap comes in forty inches standard width, it has not been practicable to have the frames any wider. The lumber used is 1" x 10" x 12 feet Pacific Coast cedar for both sides and ends. To give the frame rigidity, a cross bar of 1" x 3" lumber of the same material connects the two sides of the frame exactly at the point of balance, which also enables one man to carry a frame easily. Similar strips of lumber 1" x 3" x 12' are nailed along the upper edges at either side of the frame for rigidity and for the purpose of securing the burlap. The Burlap used, which is nine ounce weight, is cut 12½ feet long to offset shrinkage and is stapled firmly along one side of the frame.

The cutting beds which can be any length or number desired, are raised beds on which the frames can be set tightly end to end, and then sunk into the ground slightly. The soil within the frame which is now two or three inches higher than the outside path, is rubbed through a large 3' x 6' sieve of ¾ inch mesh which fits half of the frame. The amount of soil sifted should be finger depth and the earth floor below the sifted soil should be level and compact to ensure capillary action. This sifted soil within the frame is usually left in heaps, and only made uniformly level as required.

The cuttings which are gathered in pails with an inch or so of water in the bottom, are usually about five or six inches long. No leaves are removed from the cuttings unless they are too large and would impede sticking. The only preparation the cuttings receive is a dusting of the cut surfaces with Tersan 75 powder as a fungicide. Before sticking, water is poured on the required area until the sifted soil is completely saturated and some free water remains on the surface. The cuttings are then stuck into this soft mud at the required spacing. Since

the burlap cannot be replaced until a frame section is filled, burlap covered lath shades are used for temporary shading. When the frame is filled, the burlap is pulled firmly over the frame and the selvedge slipped over small protruding finishing nails regularly spaced on the side.

The burlap takes the place of glass or polyethylene and must be kept moist throughout the hot part of the day. It allows entry of filtered sunlight and humidified air and no other supplementary shade is used as in glass sash frame production. The burlap is thrown off an hour or two before sunset and the cuttings completely exposed to the air until the dew starts to disappear the following morning. On wet days, the frames are left uncovered as long as the sky remains cloudy.

Let me state here that I hold no brief for this method as a cure-all for propagation problems. It has worked well for us for a large number of items. In the final analysis the given method used must be that which best suits the operator's conditions and which roots the largest number of plants with the least expenditure of time and energy. I have found this burlap method exceptionally well suited for the production of varieties of *Buxus*, *Cornus*, *Cotoneaster*, *Daphne*, *Euonymus*, *Philadelphus*, *Potentilla*, *Spiraea*, *Viburnum* and *Weigela*, and, of course, the commoner easy rooting sorts such as *Forsythia*, *Ligustrum*, *Lonicera*, etc. I have not found it satisfactory for French lilacs, *Magnolia*, *Cotinus*, *Azalea* or *Prunus*. Fast rooting evergreens such as Andorra or Swedish juniper, *Thuja pyramidalis*, etc., will root well if stuck just as spring growth is about to start. The method is a natural for herbaceous cuttings of phlox, asters, etc.

The biggest disadvantage of the system is the hand spraying of the burlap curtains, and this has to be continued for several weeks after the last cutting operations. This can be eliminated somewhat by installing overhead sprinklers operated by a time clock, and turned on after a given area is filled with cuttings, but as anyone knows, this does not work so well when a high wind is blowing.

The advantages of our system appear to us to considerably offset the disadvantages. They are as follows:

1. Materials used for the frames are one inch lumber and burlap and these are very inexpensive.
2. Soil or sand does not have to be hauled from place to place.
3. Electrical installations are unnecessary.
4. Maximum use of natural agencies, e.g., filtered sunlight, free aeration of moist air, open air for fourteen hours evening, night and morning, ensure healthy plant reaction and rapid growth after rooting.

This brief outline can only give a general idea of the operation. It would not be profitable for a very few frames and requires mass production of a few paying items to properly put it over.

May I say again that in my opinion no propagator should plump for any one system. Our summer production in the greenhouses is continuing at the same time as this outdoor operation and I believe that the misted polyethylene tent system has great possibilities for certain

difficult items. We have abandoned open air misting as too expensive and uncertain for ordinary production.

I shall be glad to answer any questions regarding the burlap cloud method I have just briefly described.

MODERATOR SNYDER. Thank you very much, Leslie. I certainly would recommend that those of you that have not read the details of his physical setup refer to the Proceedings of the Third Annual Meeting, in which they are described in considerable detail. We will call on you later on for some additional information, I am sure.

We go now to the cold frame method of propagation, which will be discussed by Merton Congdon, Congdon's Wholesale Nursery, North Collins, New York. Congdon's originally were producers of fruit material almost exclusively. Several years ago they decided to get into the competitive ornamentals market, although having had almost all their experience with just the fruit, Mert and his brother were a little bit reluctant to start on the shrub venture. He actually did start with cold frames and I think has progressed through some other aspects.

When he was asked to participate on this program, he said he would probably not be the most experienced man to describe the cold frame method. However, as you all know, he has had considerable experience and I am sure will do justice to the subject. Mert Congdon!

MR. MERTON CONGDON (North Collins, N.Y.): I find it a little bit difficult to talk on the cold frame method because it is a rather old and established method. I know there are propagators here that know much more about it than I do. However, perhaps we have discovered some cost-cutting short cuts that have helped in the experience of propagating in this way, and I will try to explain them to you.

In the first place, our propagation is limited to the fairly common shrubs that are probably called a class that is easy to root by the experienced propagator. The quantity that we grow is fairly extensive, running to several hundred thousand a year.

Our production by all methods is divided about as follows: About 29 per cent by this outdoor frame method that I am going to describe, about 23 per cent by division, about 19 per cent by outdoor mist, 16 per cent by hardwood cuttings, and 13 per cent by layers.

(Editor's note: Mr Congdon discussed his general procedures from a set of colored slides. Some of the comments he made follow.)

The frame covers are quite light and are covered with celloglas wire mesh. We have long ago discarded muslin shading material because of its short life; we have converted completely to saran which we have found just as satisfactory from the propagating standpoint but with a much more longer life. These frames are very light, probably weighing somewhere in the neighborhood of 30 to 40 pounds, which is easy for one man to handle.

One of the recurring expenses on this type of propagation is the wood frame. A couple of years ago we started experimenting with transite for the frames which of course, is a very permanent material and it has proven to be quite satisfactory.

The top layer of our rooting medium is sand, then a very thin layer of peat and finally the soil, which is a Shenango loam.

Softwoods are taken in our Western New York area from about May 25 to July 10 on the subjects with which we are working, depending some, of course, on the season and the material.

We do treat the exposed wooden parts of our frames with Penta so the life expectancy on those woods would be 20 years to perhaps life, depending some on the material. The saran is used only one month out of the year, so therefore that is a lifetime investment. Our own recurring expense, then, of any consequence is the replacement of the medium. We do this with power equipment and the cost is very low.

A few words about watering. We have overhead irrigation over the entire area. With this we can keep the entire area in a moist condition, and this is only done as needed. Then, of course, sometimes it is necessary to do a certain amount of syringing of the foliage. We try to avoid this as much as possible. We are more apt to direct the syringing toward the under part of the sash or the outside of the frame. Of course, in hot, dry times it might be necessary to make this application of water, daily. As you can see, our frames are practically vaporproof, and I think much more efficient than those we used, say 20 years ago.

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MODERATOR SNYDER: Thank you very much, Mert.

Now we will go on to our last method, which is propagation under 'Outdoor Mist'. Henry Weller is really in a fortunate position coming on like this. He can probably strike a few of the comments made by the others. Of course, they will have their chance for rebuttal. The use of 'Outdoor Mist' will be discussed by Henry A. Weller of C. W. Stuart & Co., Newark, New York. Henry!

Mr. Weller presented the first section of his prepared discussion.

OUTDOOR MIST PROPAGATION

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At the present time our propagation program includes three methods, ie, greenhouse propagation, seedbed propagation, and outdoor mist propagation. These three methods are utilized for their specific primacy. The selection of one of these methods, in preference to the other, is determined by the quality of rooted material, that which is more suitable for transplanting.

During the past few years outdoor misting has taken a definite step in producing quality stock and is now our main method of propagation.

The propagation of perennial stock is done primarily within the greenhouse and seedbeds as it involves divisions, stolon cuttings, hardwood and semi-hardwood cuttings, hardwood, because of lack of material during the summer months and those varieties that do well from