



BY EBEN E. REXFORD



NOW that the use of aquatic plants in the home garden is on the increase and their popularity established a wider knowledge of their habits is desired so that it may be possible to grow them to beautify the home and its surroundings. It is but recently that the attention of the flower lover has been turned in the direction of this class of plants with a view to their cultivation; indeed, it has until recently been considered impossible to grow them under conditions which exist in most gardens. Every lover of the beautiful in Nature, however, has admired them, and often wished that the aquatic plant might be domesticated, but outside the public parks and the grounds of wealthy persons, where conditions could be made favorable to their successful growth by the expenditure of large amounts of money, no attempt at their culture has been made. Some few years ago a few of our most progressive horticulturists began to experiment with this class of plants in connection with the home garden, and it was soon made plain to the most skeptical that a new field was waiting development—a rich field that had been overlooked through all the years in which we had been striving after "tropical effects," which were seldom satisfactory and always expensive. A little experimenting convinced the pioneers in this branch of horticulture that it held great possibilities for those who would take hold and help develop it, and their efforts have been successful in creating a great and genuine interest in a class of plants hitherto wholly neglected by the masses.

AT first it was thought that only places having natural ponds or bogs or swampy nooks could be made available for these plants, but little by little, as experiments went on, it was demonstrated that the most desirable sorts of aquatic plants could be grown successfully in tanks or tubs, thus making it possible for every one to enjoy them if willing to give the little extra trouble necessary to the fitting up of a suitable place for them.

Of course, the ideal aquatic garden is one provided by Nature. On many places there are small ponds, or low, wet places where many of the desirable kinds may be grown with no trouble beyond that of planting them there. On other places artificial ponds may be made by turning the course of a small stream through a hollow or depression in the yard or lawn, and this with but little trouble and expense. If this can be done fill the bottom of your pond with rich black mud from the beds of streams, or muck from the swamp, and in this plant roots of the *Nymphæas* and other plants of similar habit. The result will prove a surprise and a delight.

There are hardy native *Nymphæas* which can be planted out and left to take care of themselves precisely as the Water Lilies of our natural ponds do; and also tender varieties which must be started into growth in the house and not be planted out until warm weather arrives. In a recent interview with one of the most extensive growers of aquatic plants he made the remark that one of the prime conditions of success in the cultivation of the tropical *Nymphæa* is the use of judgment. A variety brought from a climate where not only the air but the water has a warmth never found with us except during the summer months, cannot be planted in cold spring water and expected to flourish as our native sorts will. Therefore, inform yourself as to the habitat of the varieties you plant, and give the warmest places to the varieties from warm countries, and plant the native sorts in the cool places. Aim to make the conditions under which they are to grow as nearly as possible like those to which they have been accustomed; and not only consider the matter of adaptability to heat or cold, but that of size, and do not make the mistake of planting a rampant-growing Lily in a little tub, or one of weak habit of growth in a deep pond.

Attention to these matters is of great importance, for on them depends much of the success, as well as the pleasure, of growing aquatic plants. Never plant out anything anywhere until you have made yourself familiar with its habits. When you have done that there is but little danger of your making any mistakes; until it is done you will be making experiments, many of which will most certainly prove failures.

ALWAYS be careful to bear in mind the fact that aquatic plants require something beside water to flourish on. They have, for the most part, strong roots, and these enable them to make use of a great deal of food, and that food can hardly be too rich to suit them. Vegetable matter, such as accumulates in the bottom of ponds and in swampy places, is more conducive to vigorous and healthy growth than any other soil, but an authority in the literature of aquatic plants tells us that turfy loam mixed with equal parts of sheep, horse or cow manure will make an excellent substitute.

In constructing an artificial pond one of the first things to consider is the supply of water. There need not necessarily be a great quantity of it, but there must be enough to depend on at all seasons. If the supply is drawn from a spring of low temperature it is considered advisable to have it flow over a bed of gravel or sand in a broad, shallow sheet, that its normal chill may be taken from it before entering the pond. If it is necessary to excavate use the soil you remove in grading the banks of your pond neatly. While your pond will be an artificial one aim to make it as much like a natural one as possible, and avoid formality in shaping it and making its banks. It will be well to take a day for it, and to study Nature's work in this line by careful observation of some of the natural ponds in your vicinity.

The depth of the pond in which hardy *Nymphæas* are to be wintered should not be less than three feet. Such varieties as have to be wintered in the cellar or greenhouse can get along with two feet of water, the question of freezing not having to be considered in connection with their culture. But those permanently planted must have a chance to get their roots below the depth to which the frost penetrates.

WHERE ponds cannot be constructed after the above plan tanks may be built of brick and Portland cement. The walls should be thick enough to withstand the action of frost. A twelve-inch wall may be sufficient south of New York City, but north of that an eighteen-inch wall would be better. It should have a solid foundation to prevent settling. The bottom of the tank should be thickly cemented. Put in a layer of stones or broken brick to the thickness of half a foot, and over this pour cement of the consistency of mud. Work it in well among the cracks and crevices, and smooth it down before it has time to "set" or harden. Let the side walls have a slope of about thirty degrees to provide for expansion of water in winter.

Hardy varieties of aquatic plants can be planted quite early in May, but tender sorts should not be put out until June. This is very important, and the amateur should be careful to understand just what variety he has come into possession of before he plants it, if he would avoid chances of failure.

In planting the roots see that they are worked into the soil well and anchored there. It is a very good plan to fasten a weight of some kind to them that will hold them in place until they have taken hold of the soil and thoroughly established themselves in their new quarters.

THE cultivation of aquatic plants in tubs makes it possible for any one to try his skill with them. Of course, he need not expect to be able to grow a *Victoria Regia* there, or any of the rarer sorts of *Nymphæa*, but he can succeed with many beautiful varieties of Water Lily and other plants of that class. A half barrel is not very attractive in itself, but its lack of beauty may be concealed by plants, or it may be sunk its depth in the earth. When it contains a fine specimen of some aquatic plant we will forget all about its lack of grace.

When preparing for these plants put in soil, such as has been mentioned, to the depth of a foot, then plant your roots in it and fill with water. Add enough water from time to time to make up for that which is lost by evaporation, and give the tub a sunny place in the yard or garden. If you want to grow more plants than one tub will accommodate it is a good plan to take four, five, half a dozen, or as many as you may decide on, and have them sunk in the ground close together so that the general effect will be something like that which a large tank would give. A better plan, though a more expensive one to carry out, is to have a tank constructed of heavy planks. These should be securely bolted at the ends, and the joints made tight by white lead in the grooves.

IT will not be difficult to arrange the foliage that overlaps the edges of the plants so that pretty nearly, if not quite all the tub may be concealed. If the soil thrown out in making the excavation for the tubs is heaped to one side and made into a sort of bank a very pleasing effect may be produced by planting the higher part of it with *Ricinus* with its great, tropical foliage of metallic lustre, then *Cannas* in masses, with *Caladiums* close to the edge. Other plants having brilliant foliage may be used among them in such a manner as to make this part of the garden very attractive. If it is thought advisable to cover the bank with hardy plants which will not have to be renewed from year to year, *Iris* in variety, *Delphinium*, *Asters* and *Coreopsis lanceolata* may be employed with very satisfactory results. A charming feature of such a nook would be a bank of rock-work, over which *Wild Roses*, *Blackberry Vines* and other trailing native plants might be allowed to ramble to suit themselves.

When the foliage of the tender *Nymphæas* has been nipped by the frost their roots should be removed to the cellar or greenhouse and left there in tubs of water until all the leaves have died off. Then they should be removed, all the young tubers separated from the parent root and put in moist sand. They should be kept where the temperature will average about sixty degrees. The sand should be kept slightly moist, but never wet. Too much moisture may induce decay. The aim is to have just enough moisture about the tuber to prevent its wilting or shriveling. This method of wintering tender varieties is advised by persons familiar with the cultivation of aquatic plants. Some persons succeed well in wintering tub-grown plants in the cellar by simply pouring off most of the water and leaving the roots undisturbed in the mud at the bottom. Care must be taken to prevent the mud from drying out. In constructing a tank in which a miscellaneous collection of plants is to be grown it is quite necessary that the bottom should be uneven so that different depths of water may be provided to suit the requirements of different plants.

In this article but little mention has been made of anything but *Nymphæas*. It must not be inferred, however, that these are the only desirable plants for pond or tub culture. I have spoken more particularly of them because I consider them the most desirable of the class. If you can have but one aquatic let it be a *Nymphæa*.

FOR the benefit of those who have but little acquaintance with this lovely class of flowers I will name and briefly describe a few of the leading varieties:

*Odorata*.—Our native Water Lily. White, with a fringe of golden-yellow stamens. Exquisitely fragrant. Of very easy culture. Hardy.

*Rosea*.—Delicate rose color. A most beautiful flower. Hardy.

*Devoniensis*.—Large flower of a bright rosy red. Very free bloomer. Tender.

*Coerulea*.—An Egyptian variety. Delicate, rich blue. Very fine. Tender.

*Lotus*.—The true Lotus of the Nile. Tender.

*Zanzibarensis*.—From Africa. Light purple. Beautiful and free flowering. Tender.

Among other plants adapted to amateur culture the following will be found very desirable:

*Nelumbium luteum*.—A hardy plant having very large and striking foliage held well above the water. Flowers yellow, somewhat resembling those of the Tulip.

*N. Speciosum*.—The Water Lily of Hindustan. A magnificent aquatic, bearing immense double flowers of pink and white, very fragrant and showy. These are produced on long stems above the large, umbrella-like leaves. This superb plant is one that will delight all flower lovers, and though not hardy it may readily be flowered in a tank or pond and wintered in cellar or greenhouse like the *Nymphæas*.

*Calla palustris*.—A pretty little plant for shallow places or the edge of ponds. White. Native. Hardy.

*Peltandria virginica*.—The well-known Water Arum or Arrow-Leaf. A hardy, native plant, fine for shallow places or bogs.

*Sagittaria*.—Fine native plants bearing a spike of pure white flowers through the greater part of the summer. Pretty, arrow-shaped foliage.

*Pontederia* (Pickerel Weed).—A very pretty plant growing about two feet high, with spikes of pale blue flowers.

*Eichornia* (Water Hyacinth).—Of floating habit, the leaves having a sort of pouch at the base filled with air cells. The flowers are borne in spikes. Color, rosy lilac. Adapted to shallow places. Very attractive. Tender.

*Parrot's Feather*.—A graceful plant of feathery habit, forming a mass of rich foliage on the water, and very useful for drooping over the sides of a tub.

Many very pretty native plants may be found about swampy places, which can be made use of in the aquatic garden with excellent effect.

EDITOR'S NOTE—Mr. Rexford's answers to his correspondents, under the title of "Floral Helps and Hints," will be found on pages 32 and 33 of this issue of the JOURNAL.