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DAFFODILS AS GARDEN FLOWERS

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The story of the development of the daffodil as a popular garden flower is an interesting one. For more than three hundred years it has been a cherished garden plant wherever it could be grown. From a small, insignificant wild flower it has changed to the spectacular, colorful, long-stemmed hybrid daffodil of the present day. Part of this development has been due to mutations, part of it has been due to a natural selection of the strongest and best looking specimens for propagation, and, in a much larger measure, it has been due to the painstaking work of daffodil hybridizers in England, Holland and the U. S. A.

When we think of the daffodil in connection with our American gardens, then we find that the varieties that have done and are doing so well for us, the ones that adorn the old farms and homesteads all over our country, are varieties which are now scorned both by the commercial grower and the more advanced gardener. The question then arises which standards should be applied to our new daffodils. Should they be considered on the basis of performance in the garden, should they be considered as show and exhibition flowers or should they combine the qualities needed for both purposes?

When I look at naturalized daffodils in old plantings, the "wild" daffodils of Virginia, or at the diminutive *Narcissus cyclamineus,* with its ears pinned back and in its dwarf form more grace and charm than many of the finest new hybrids hold, I invariably feel that the modern hybrid daffodils have overshot the mark. In breeding for size, for color and refinement we have lost sight of the fact that most daffodils are bought for garden purposes and not for the competitive show bench.

These thoughts are even more forcibly brought home to me when I look at the *Jonquilla* tribe. Here, in the jonquil species and its offspring, we see a variety of shapes and forms, of colors and of habits, that gives us a wide selection of fine, long-lasting daffodils both for the garden and for exhibition. To begin with, there is little *N. juncifolius,* a perfectly formed miniature, a real midget daffodil. Then there is the true sweet-scented French jonquil which comes in single and in double form. Next we have their larger cousins, the single and double *N. Campernellii,* free-flowering, sweet-scented and charming. A darker form of the *Campernellii* is *Orange Queen,* a deep orange-yellow hybrid and one which is still pretty close to wild jonquils.

More complicated and stronger-growing hybrids are Trevithian, a soft yellow, Lanarth, a pronounced deep yellow with orange cup and Hesla which is a pale lemon-yellow. Then we have three good intermediates between the species and the trumpet daffodils, Lady Hillingdon, a soft yellow, Tullus Hostilius, more definitely golden and White Wedg-

wood, a creamy white. These three still have several flowers to a stem and cups that are of medium length. Finally, there are those that resemble still more the trumpet daffodils with which they are crossed; varieties such as Golden Sceptre, sometimes still with two flowers per stem, Sierra Gold, a rich golden yellow which comes with but a single, large flower and General Pershing, as big as many a true trumpet daffodil. We should also mention Golden Perfection which is classified as a *Jonquilla* hybrid, but may not be one, from the genetic point of view.

I mention these jonquils at length because while the variation in this group is wide, the number of varieties is not too large and yet is fully adequate for any possible use. Without going to the specialists who collect and sell the very rare varieties, the public can find plenty of variety in good *Jonquilla* hybrids in any well-stocked seedstore or in most mail-order catalogs. Here then is a perfect example of a line of breeding which has produced a collection of related varieties, all of them imbued with charm, with gracefulness and with an adaptibility to many purposes. Moreover, all of them are prolific growers, hardy and easily handled in the garden or in storage. To a much lesser degree the daffodil breeders have done as well for most other types of daffodils.

In the trumpet daffodil division, for instance, there is the ubiquitous King Alfred which overshadows all other varieties. There are two smaller daffodils, both outstanding for naturalizing. February Gold, which is part *N. cyclamineus* and part trumpet daffodil, has lost something of the charm of its wild parent, but it has gained in adaptability to general garden conditions. I consider this variety as the one most likely to succeed in difficult locations. The other yellow trumpet daffodil that is so well suited for naturalizing is Winter Gold, a beautifully proportioned, comparatively small daffodil which is very free-flowering. Gone, however, are the free-flowering trumpet daffodils, that "host of golden daffodils" that flower so abundantly in our Southern states, the Princeps, Emperor, Golden Spur, Spurius or the Tenby Daffodil and all the other old varieties. Nor do the modern hybrids hold much promise to fill that gap.

The same thing applies to the white daffodils. We find in old plantings *N. albicans* or *N. cernuus* or perhaps even those fine daffodils of Victorian days, Madame de Graaff and Peter Barr, flowering year after year among meadow grass, in orchards and in hedgerows. These old varieties have now disappeared from commercial plantings. But, have we, commercial growers and breeders of new daffodils, given the public other daffodils that will perform as well under similar conditions?

The fine performance of these older varieties suggests that if we stay close to the species, the true wild daffodils, we have hybrid vigor, while if we deal with more complicated genetic forms, we often lose the vigor that insures survival. This experience is corroborated also in the *Leedsii* division where the older types, still pretty close to the original wild species, or first generation hybrids, do very well in naturalized plantings.

Varieties like Hera and Queen of the North do well if left unattended. The newer Giant Leedsii are more apt to die out.

For this reason I feel that many of the older varieties still have a very definite place in the garden. Croesus, Helios, Bernardino, some of the older *poeticus* varieties, some of the small flowered *Leedsii,* all the *triandrus* and *cyclamineus* hybrids, and, of course, all the jonquils, are still good and would be hard to replace. With us, these varieties are among our favorite cut flowers and we use them extensively in flower arrangements. This purpose is decidedly one that must not be overlooked. The informal flowers, the ones with a twist or a curl to their petals, lend themselves better to arrangements and look much more at home in a bowl or vase than the very formal exhibition types of more recent introduction.

Striving for greater perfection, for more substance, more color and for added refinement of form, the modern daffodils often represent nothing but small improvements on an oft repeated theme. They are bred and selected for one purpose only, to win ribbons and, like most prize dogs, they usually do not make good pets. For we must not overlook the fact that the refinements, the slight improvements in the shape of a petal or in the appearance of a flower, may very easily be lost through lack of cultural skill. Thus an old variety, perfectly grown and sheltered, or, in other words, conditioned, for show purposes may win out over the most perfect novelty, grown under less favorable conditions. John Evelyn can still win over varieties that cost one hundred times as much per bulb, if the latter are less well cared for.

Flowers that are bought for the garden—and most daffodils are bought for that purpose—must meet rigid requirements. Just what these requirements are is something that will have to be worked out between gardeners and growers. Probably it should be done through testing and observing in the garden as well as through showing at flower shows both in arrangements and in the specimen classes. Above all, it should be done through a correlation of experience ratings from many gardeners and garden clubs. It is in this manner that commercial growers can be guided to grow the daffodils you need.

Daffodil hybridizers may be in advance of the development of public taste; considering that it takes from ten to twenty years to put a daffodil on the market in even very limited quantities, they should be ahead of the public. But both for commercial growers and hybridizers close contact with the consumer is essential. For instance, I grow hundreds of varieties and plant annually well over a hundred acres of them. Our collection is in constant flux. New varieties are added, others eliminated, so that we maintain a balanced collection containing at least some varieties to please every gardener. Reports from actual consumers are thus extremely valuable and influential.

Much of this work has already been done. Daffodils have been grown in California, both by amateur and professional growers, for some fifty

or more years. Pioneer growers, like the late Henry O'Melveny of Los Angeles and Dr. Sydney B. Mitchell, have tested hundreds of varieties with great thoroughness and have been most generous in sharing their hard-gained information with others. From them, from later growers and from contemporary flower shows we have found a number of varieties that seem to be good all-purpose flowers with more than average resistance to the extremes of climate to which, in some California gardens, they are exposed.

I have talked about the role of the breeder and the role of the public. How about the daffodil itself, judged apart from its esthetic value? I showed how some varieties have persisted from colonial days, how others have emerged, become popular and have disappeared again in less than thirty years. What about the varieties which you bought only a few years ago and that have failed to flower? Why do others grow so well?

Let us see if any generalization is possible. When we look at the daffodils which do well in California, we invariably find that all of them are early, long-stemmed varieties. Thus, King Alfred, Tunis, Polindra, St. Issey, Carbineer and many others like them, have given a good account of themselves. On the other hand, the late, short-stemmed varieties are apt to flower too soon and will ordinarily not have time to develop what little length of stem they might produce under ideal circumstances before the flower is wilted.

Consequently, one can already see a definite type of daffodil emerging that is particularly suited to the California climate. This is in contrast to our experience here in Oregon where the weather is usually sufficiently cool during the entire range of flowering dates for all varieties to obtain the maximum development of length of stem and of color. The first step then in the popularization of daffodils in any region is to test as many varieties as possible to find out which characteristics are important and then to select from the types already existing those that do have those qualities. The second logical step is then to cross varieties that do well in the hope that the good characteristics may become accentuated. The work of Dr. S. S. Berry of Redlands, of Kenyon Reynolds of Pasadena and especially the work of Dr. Sydney Mitchell and of Frank Reinelt in Northern California, has shown that tremendous progress in improved regional adaptation of daffodils can be made in this manner.

Unfortunately, the work of improving the daffodil has gone on already for some three hundred years and it was carried on in the more rigid climate of Northern Europe. It is logical then to assume that all modern daffodils are heavily endowed with characteristics that are pertinent to late and cold springs and prolonged cool weather conditions with ample rainfall even long after the flowering period. The modern daffodil is, for that reason, pretty well set in its way and while we may modify it and select from among its offspring those early individuals that have long stems and good flowers and are prolific even in warmer climates, I doubt

if the ideal warm-weather daffodil can be created from these pre-conditioned and pre-selected parents. Rather, it is my belief that a completely new start must be made, a new start based on those plants belonging to the daffodil family that have shown an unusual affinity to California soils and climate,—the Chinese Sacred Lilies and the various Polyanthus types such as Soleil d'Or, White Pearl and any others that may be found to have done well. Also, perhaps, we should go back to some of the wild species.

We do know that while most of the multiflowered varieties are sterile, some of them will produce a few seeds and others do have at least a little viable pollen. Hybridization, then, is possible. Much can be said in favor of using these varieties. They seem to be very resistant, if not immune, to virus diseases. They increase rapidly and are not subject to basal rots or other fungus or bacterial diseases. When dormant, they are easily handled and because of their bulb structure they are easily sorted and graded for commercial purposes. If we do not want to use the ubiquitous Polyanthus types, then still other avenues towards new daffodils are open. We might use the little *N. Bulbocodium*, the yellow hoop petticoat daffodil, and cross this with some of the larger hybrids that have shown good habits. I have made a number of such crosses and have found that in the two extremes of climate in which the hybrids were tested, that of St. Louis, Missouri, and of Pasadena, California, they did extremely well. Unfortunately, the appearance of the seedlings did not conform with the standards set by the connoisseurs, and seeing no commercial future for these new-comers, I discarded my little stocks. I now believe that this was a premature decision and am repeating the crosses on a comparatively large scale in the hope that some esthetically pleasing, as well as other strong-growing, hot-weather varieties will result..

Apart from the role variety selection plays in the performance of daffodils in the garden, there is also the subject of daffodil pests and diseases to consider. Some varieties and some entire divisions of the daffodil family have shown varying degrees of susceptibility or resistance to such pests and diseases and on these scores also a selection must be made. As a matter of fact, to quite a degree this selection has already been made by the commercial growers. Even though, under the ideal climatic conditions of the Northwest where most of our daffodils are grown, pests and diseases may be less in evidence, the fact remains that susceptible varieties can never be quite as prolific and resistant as immune varieties and we, therefore, see a natural elimination of all weaker kinds. Sometimes such varieties are replaced by similar looking but stronger growing types. Unfortunately, sometimes no substitute variety is available and we see a very beautiful type disappear from the commercial lists simply because its production is not profitable. Here I especially have in mind those recently identified diseases, mosaic and decline, both due to a virus, and the ever present basal rot fungus. To all of them some varieties are markedly more susceptible than others. Commercial growers must eliminate

such weak types, first of all because of the danger that they provide in possible contamination of other stocks and secondly because it simply does not pay to grow any but the very strongest and best. The second consideration, naturally, does not apply to the amateur breeder who, therefore, has a distinct and important place in the development of fine new daffodils.

It goes without saying that one should avoid growing plants with contagious diseases. At all times of the year a diligent search must be made in the garden for weak or sick plants, regardless of the family they belong to, that show signs of disease; they must be ruthlessly destroyed, preferably by burning. Since little is known as yet, of the hosts of virus diseases, I purposely have kept this counsel as general as possible. Diseased tulips can affect lilies. Gladiolus with virus disease can infect beans and peas and it appears that we are but at the threshold of learning in this respect.

Compared with virus and decline diseases, the other troubles that can affect daffodils seem very simple and harmless indeed. Although the daffodil fly can cause great harm, at least we can see it, its methods of propagation are known and we have several effective ways of combating it. There are daffodil flies present in all old garden districts and if you see a slow, big, black fly bumbling around your daffodils at flowering time, then you will have no trouble in recognizing *Merodon equestris*, the greater narcissus fly. In England where gardeners pursue the fly with butterfly nets, they report good results. In this country the fly must be more active or our gardeners less nimble, since I have never heard of similar sporting events in horticultural circles. Bait has been recommended in the form of a mixture of sugar with poison and a benzene-hexachloride spray has shown definite promise. A better method, though perhaps a more costly one, is to dig all daffodils when they first show signs of maturing and still can be found by their foliage. After digging, the bulbs should be sorted and all damaged bulbs destroyed. If, after cleaning, the rest are submerged for an hour or two in a tub with hot water of between 110 and 111 degrees Fahrenheit, all flies will definitely be killed.

I might add that it is not as difficult as it may sound to maintain an even temperature in a tub of water. Assuming that the water supply is hot enough to begin with and that, for instance, a laundry tub is available, a trickle of hot water and a close watch on the thermometer can easily maintain a pretty constant temperature. Treatment two weeks after digging is recommended. If a nursery in or near your town has a methyl-bromide gas fumigating plant, then it is even simpler and less trouble to take the bulbs there and have them treated. Your horticultural inspector can advise you in these matters.

All commercial stocks of daffodils are so treated and contain no live insects. This is one of the very wise conditions that the California Department of Agriculture imposes on the growers. Another pest which used

to be of some concern is the daffodil nematode. Again here, improved cultural methods have given a definite guarantee that this scourge will not be present in acclimated, nursery grown stock. Buying from bona-fide sources, one can rest assured that no pests or diseases will be brought in and that the bulbs bought from such reputable dealers will make a clean, vigorous growth.

Space does not permit me to mention all the varieties I should like to suggest for testing. Not only is the list a long one but also, I know that my advice, largely based on performance in cool climates, might not be valid under different conditions. I may say, however, that this spring we have selected about one hundred varieties which we believe have definite merit for California and have shown them at various flower shows. These are the varieties that have the stamina and the performance that we desire. They have the qualities which go into a good all-round daffodil. From the point of view of the commercial grower, from the point of view of the general or average gardener and from the point of view of the daffodil fancier and exhibitor, these varieties have definite merit. The final selection of the few outstanding varieties for the years to come, the King Alfred, the Twink and the Tunis, for the future, will be immeasurably facilitated by wholesome co-operation between the practical gardener and the commercial grower. More flower shows, more garden club discussions and round-table talks, and more intelligent, constructive criticism is needed. Above all, we need more reports on actual performance in the garden. Perhaps the time is again ripe for another daffodil conference, to follow the very successful one of 1940. If we could definitely set the date for 1950, all of us interested in the deffodil could prepare some test planting and perhaps make plans for an outdoor exhibit.

In order to have all varieties acclimated and flowering at approximately the same time, such a planting should be made this fall (1948) and left undisturbed for two years. This would give us a good check on the relative performance of all varieties tested.