The 1964 American Daffodil Yearbook

The American Daffodil Society, Inc.

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Yearbook

1964

American Daffodil Society, Inc.

Mrs. E. E. Lawler, Jr., *Secretary*

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CONTENTS

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Who Wants A Red Daffodil?

CHARLES R. PHILLIPS, Frederick, Maryland

THERE is no reason why we cannot in time have a solid red daffodil, or a solid pink one if you prefer your color in less vivid form.

So far when we talk of red or pink daffodils we think of this color confined to the cup or trumpet but there have been a few exceptions, which we will discuss later, where some red pigment spilled over into the perianth. Thus the genetic possibility of a solid red flower exists and a long-determined breeding program should certainly succeed.

The recent success of the late Mr. W. O. Backhouse in developing the first red trumpets, which have caused so much excitement, but which few of us in this country have yet seen, shows what can be accomplished when one sets up a definite goal and works steadily towards it. It is a slow process, however, and the Backhouse family, father, mother and son, had been working with daffodils and with a particular interest in pink or red pigment for well over half a century.

There is no particular reason to believe that a solid red flower would be more spectacular or more beautiful than a solid yellow or white one, but the current popularity of the red-cupped varieties, and now the red-trumpeted ones, certainly ensures that a solid red version would be wildly acclaimed.

Where does this red come from? The only wild variety with any red is *Narcissus poeticus*, in its various sub-species and forms. Here an intense rim of red appears in the tiny cup while the perianth is invariably pure white.

Our large-cupped and small-cupped varieties in Divisions II and III trace their ancestry back almost entirely to repeated crosses between various forms of *N. poeticus* and the all yellow or white *N. pseudo-narcissus*. It is in these divisions that we see the majority of our red- and orange-cupped varieties. It never can occur without *N. poeticus* somewhere back in the family tree.

In almost all of these cases, however, the red pigment is in the corona. Originally only in the tiny rim of the poet and then in the small-cupped, large-cupped and at long last in the trumpet itself. These highly colored daffodils are among our most popular varieties today. Almost escaping comment, however, have been the few and much less spectacular cases where the red or pink pigment has spilled over into the perianth where it has never been found in nature. One reason for this is that the amount of red in the perianth has never been too great, not striking as it is in our red-cupped varieties, and indeed often taking a good imagination as well as keen eye sight to see it at all.

Apricot Distinction and Jezebel are two possible exceptions which are rather well-known varieties today and which owe almost all their popularity to the fact that they do possess this genetic break of a red pigment occurring in the perianth. Jezebel is perhaps the most vivid example of this among those varieties in the new sunfast breed of red and yellows. It has considerable red pigment along with the usual yellow in the perianth, so that the net effect is a darker and orange-yellow tone in the tepals. Apricot Distinction (which I have also seen listed as Apricot Attraction and Apricot Perfection) does not have much yellow in the perianth (although it is classed 3a) so the red pigment there is particularly noticeable. Noticeable, that is in a fresh specimen, picked early after opening under an umbrella on a cloudy day, for unlike Jezebel it fades rapidly in hot sunshine.

Recently we have learned more about the pigments involved. Professor V. H. Booth, of Cambridge University in England, has made a careful chemical study of the pigments appearing in the genus *Narcissus* (see Biochem. J., 65, 660-3 1957 and RHS Year-book 1959, p. 21). He found that the red pigment in the rim of *N. poeticus* was beta-carotene and that it was present in truly amazing quantities, 16.5% of the dry weight. Beta-carotene is a very well known and widely distributed plant pigment taking its name from the fact that it causes the color in carrots, but we usually consider it a yellow rather than a red pigment. As its concentration in organic matter increases, however, the color produced will shift from pale to dark yellow through orange to red and even to brown. Only because of the high concentration is the rim of *N. poeticus* red rather than yellow. Professor Booth found that the large trumpet daffodils contained different though related pigments in both corona and perianth. The intermediate types usually contain both

type of pigments but with the beta-carotene present in considerably lesser amounts than in the poets. Presumably in those few cases where traces of red coloring are found in the perianth, beta-carotene is present and responsible for the effect.

Another interesting matter which Prof. Booth discusses is, if only one pigment is responsible for the red in daffodils, why do some fade badly after opening, while others are sunproof? Beta-carotene is not a particularly stable compound, and he feels that the presence or absence in the flower of other colorless compounds which act as antioxidants determines whether or not the color is stable.

My own interest in daffodil breeding goes back to my graduate school days before World War II when I tried my hand in my landlady's backyard in State College, Pennsylvania, sending the seedlings to my mother's home in Georgia. They were hopelessly mixed up when she moved to South Carolina, but since, as a graduate student, I had not been able to afford too much in the way of breeding stock, nothing much showed up in them. In 1945-46, I was in Germany and I managed to get over to London for the 1946 RHS Daffodil Show. I recognized Guy Wilson from his photographs there beside his booth, and introduced myself. I had written him before the war about the possibility of all-red daffodils, to which he had replied politely, and I brought up the subject again. Again he was most polite, discussing the genetic breaks which had occurred, but I got the distinct impression that he considered breeding just for color was most improper. Yet he was to say later in the 1950 RHS Yearbook that his seedling, Kindled, one with red in its perianth, was "one of the best flowers I took to the late show." Presumably, he was not talking of its coloring alone.

After the war, I found myself buying daffodils and not being able to resist making some crosses, again with red mostly in mind. Let nobody think that I have been conducting a steady, determined, large-scale breeding program such as resulted in the Backhouse red trumpets, however. While I have lived in Frederick, Maryland since 1947, I have had bulbs planted there in three locations and for lack of my own space have again transferred many seedlings to South Carolina where it has been difficult to see them bloom.

Moreover, I seem to be out of town on the occasions when I should be doing most with my bulbs, so for about half the years I have no seedlings at all. I have, however, arrived at the point where I am now using some of my own seedlings in breeding, although I

have not introduced any yet. Some do have red-pigmented perianths, but not emphatically red.

In 1948 I purchased Rouge, Royal Ransom, Nanking and Red Guard as the best examples I could locate then of varieties with red perianths. Red Guard is a Division ~~IX~~ 8 poetaz, and hence sterile and useless for breeding, but it is still one of the best examples of this color break, with a well-defined red flush particularly on fresh blossoms. I had seedlings from the other three. Rouge, which I have lost twice now, had by far the most color, but as with most of these earlier red cups, faded. Royal Ransom, which I still have, is most memorable in that it was the first time I had ever been able to afford $12.50 for one bulb.

After these first purchases, I noted in my garden notebook descriptions appearing in catalogs, yearbooks and elsewhere of all varieties which seemed to show this genetic color break. I purchased all but a few of them, when I could locate them, even those which like Red Guard, were almost certain to be useless for breeding. It is interesting to see how many times the break has been recorded (and I am sure my list is not complete) and how far back some of the varieties go. Sunrise, for example, was introduced by Mrs. R. O. Backhouse in 1907. I still like it. Another interesting fact about these red-perianthed daffodils is that they appear in almost every division, as do examples of red-cupped daffodils, although in every case they must have some *N. poeticus* blood. As would be imagined, however, most are in Divisions II and III.

I am listing below all those daffodils I have notes about, most of which I have grown. The descriptions appearing after most of the varieties, however, are not mine, except where quotation marks are absent. My own powers of vivid description are limited, and I thought you would be more interested in the adjectives which caused me to buy the bulbs, rather than my own opinion of them. As one might expect, all colors fade upon transfer from verbal description in a catalog to observation in a garden. With many of these, there is only the slightest indication of red pigment in the perianth. But whenever it appears, in any amount, there exists the possibility of future flowers where it is indeed predominant. If anyone wants a red daffodil he can have it, but he has a job cut out for him. My own breeding program has been fun, but someone else, I am sure, working more steadily on the project, will introduce the first solid-colored brick-red fadeproof daffodil.

Daffodils Reported As Having Red Pigment in Their Perianths

DIVISION I Trumpet.

None. But then red has just been introduced into the trumpet in this division.

DIVISION II Large-cupped.

2a. Ambergate, "– bright brick red both perianth and crown–a scarlet daffodil is perhaps not far off", "copper–describes it better"; Coronado, "–perianth–creamy shade with an admixture of buff"; Erie, "–an unusual ochre-orange perianth"; Fra Angelico; Indian Summer, "–deepest golden red [perianth] with perhaps a hint of red–"; Kindled, "–deep-gold perianth is slightly flushed with fiery red-gold–"; Makassar, "–a deep orange gold all over–"; Nanking, "Buff perianthed good here [Calif.]"; Orange Beauty, "–the only true orange daffodil we have ever seen"; Pepper, "–color from burnished red cup suffusing the petals with a coppery glow"; Red Goblet, "–deep yellow perianth with a faint flush of buff"; Red Rebel, "–perianth–rich yellow with at times a definite red suffusion at their base–sunproof"; Rouge, "–Pinkish buff perianth–in hot bright weather pick in bud"; Royal Ransom; Scarlet Leader, "–deep orange cup–color bleeds into perianth."

2b. Amiable, "–with its apricot perianth and colorfast deep orange cup is most unusual"; Catskill, "–intense color of crown extends into the base of the segments"; June, "–reflexed petals of orange buff–rich orange cup"; Makkeda, "–somewhat the same [as Scarlet Leader]"; Rubra, "–delightfully sunset hued".

DIVISION III Small-cupped

3a. Alight, "–unique coloring–yellow perianth, red flushed"; Alport, "–perianth, apricot in color, with petals possessing a sheen rarely seen"; Apricot Distinction, "–lovely combination of orange-red crown and apricot petals"; Belle Chinoise, "–Yellow perianth tinted apricot–burns easily"; Bosloe, "Almost apricot buff perianth–if we get cool, foggy days"; Jezebel, "–perianth–a wonderful deep metallic red-gold with emphasis on the red–nearest yet to an all red narcissus".

3b. Blush Queen; Kentucky, "Perianth buff to me. Mr.––calls it coffee colored"; Sunrise, "–cream petals and an apricot flushing throughout".

DIVISION IV Double

None. But can we tell cup from perianth in this division?

DIVISION V Triandrus

Samba, "—remarkable coloring—cup is brick red and the color suffuses into the deep yellow petals."

DIVISION VI Cyclamineus

None

DIVISION VII Jonquilla

Orange Queen, "— the only true orange daffodil we have ever seen".

DIVISION VIII Tazetta

Halvose, "Effective color-break with bright red cup spilling over into the yellow perianth giving a coppery tinge"; Red Guard.

DIVISION IX Poeticus

(Kentucky. I first saw this exhibited and bought it as a poet, which it closely resembles in shape, although the coloring is quite different. It is listed under 3b in the current RHS Classified list, however.)

DIVISION X Wild Forms

None. Among the species only *N. poeticus* and its relatives have any red pigment and this is in the cup.

DIVISION XI Miscellaneous

None.

There Will Always Be Doubles

MURRAY W. EVANS, Corbett, Oregon

WHEREVER daffodils are shown, there are usually doubles—and wherever daffodils are grown, someone is trying to grow doubles. Reports of indifferent performances come from throughout the nation, but for those who can grow them, there are many good doubles available. For those whose attempts to grow them have been unsuccessful, hybridists are still working to introduce doubles which will adapt themselves more readily to a greater variety of climates and soils. The earlier-blooming doubles seem to flower best in climates not so well suited to daffodil culture probably because they are not subjected to the blasts of hot weather as are the later blooming varieties.

There is some controversy over the eligibility of the doubles to the daffodil family. One person may grow a thoroughly dishevelled Van Sion believing it to be beautiful, while another may shun the best of them, claiming they look grotesque. It appears to be a matter of personal opinion. Cut-flower buyers are known to be attracted to them, and daffodil fanciers of our acquaintance all tolerate them. Some actually prefer them. On the basis of our observations we would conclude that, beautiful or ugly, the double daffodil is here to stay.

In keeping with this belief, we have since 1955 included doubles in our breeding program. It is doubtful that many of ours will be very widely grown, since they are all from Falaise x a number of late blooming flowers. Unfortunately, we have been unable to learn much about the ancestry of the early-blooming doubles. In southern California, which should be a good testing area, we have observed Riotous, Sunburst and Windswept blooming very well. We assume they will do equally well in other warm parts of the country. Riotous gives the best performance, blooming around February 25th. These three were raised by Oregon Bulb Farms. Insulinde, another early double, raised by Mrs. Backhouse and introduced by Warnaar, showed much promise here. Its color was dependable and

completely sunproof. When sent to southern California its performance was poor, if it bloomed at all.

There are a number of doubles which are mutations of standard varieties. Cheerfulness is the well-known sport of Elvira; Yellow Cheerfulness, in turn from Cheerfulness; Hollandia, from Whiteley Gem; and Golden Ducat, the double form of King Alfred. They seem to come from Holland with some regularity. Are they natural mutations or artificially induced? Of this group, Golden Ducat has bloomed well in California. Daphne, a mutation of *N. poeticus ornatus*, was introduced by one Culpin, who was presumably an Englishman.

Our library yields no information concerning the Copeland family of doubles, but we do know that Falaise, the most fertile of the doubles we have grown, evolved from Mary Copeland. Mr. Richardson wrote that in 1929 he collected an open pollinated pod from Mary Copeland which contained only a few seeds. Falaise was the best of the lot. All of the Falaise characteristics indicate its pollen parent was a poeticus. Never a heavy seeder for us, it produces fair amounts of seed when mated with flowers not too far removed from pure poeticus. We are now growing several hundred seedlings from Falaise x Actaea, Limerick, (Shirley Neale x Chinese White), (*recurvus* x Carolina), and (Duke of Windsor x Lady Kesteven). About a hundred have bloomed, and perhaps half of them are double. Some of them we believe to be of good quality, but they are all relatively late bloomers. For 1964, we have the cross Falaise x Dallas in mind. The whiteness of Dallas may not overcome the red in Falaise, but we hope this union will produce a double nearer to pure white than anything we have raised.

Falaise could be recommended to anyone interested in raising late-blooming doubles from seed, but the best procedure for breeding early doubles has eluded us. Pollen of the poet Smyrna often produces doubles. Swansdown came from Mitylene x Smyrna, Guy Wilson's Rose of May from 3b Sacrifice x Smyrna, and Santa Claus from a Cushendall seedling x Smyrna. Snowball's pollen parent could have been Smyrna, also. It seems that all any of us must do to pocket the prize money for an improved "Albus Plenus Odoratus" is to grow flowers such as Cushendall, Dallas, Shagreen, Frigid, etc., then acquire a few Smyrna for pollen. It won't be quite that easy. Remember, if you live in a climate with too much adversity for growing the late poets, you are defeated before you start. One might try mating Falaise with earlier flowers. Mr. Richardson's

Double Event is from Falaise x slightly earlier-blooming Green Island. Falaise x Actaea might bring good results, since Actaea is the earliest of the poets generally grown.

We have obtained a few seeds from Snowball x Interim, and one has bloomed. It was neither double nor pink. Snowball for breeding is probably not worth the effort. We have hand-pollinated up to 100 blooms for a dozen seeds.

For several years we have yearned to raise a good double pink but where to start? First, we need a fertile double with white or pale center and hope the recessive pink color in the pollen parent will predominate in a few of the seedlings. Or, if we had a white pollen parent known to give doubles in a percentage of its seedlings to mate with a single pink. We have never owned either of these combinations.

One is now available which looks promising; it is Pink Chiffon, raised by A. N. Kanouse of Washington state, and introduced by Grant Mitsch. A white double with pink inner petals, it is said to be quite fertile. When we examine its pedigree, the capabilities of giving double pinks look favorable. Seed parent Royal Sovereign, in our opinion, is one of the best doubles ever in commerce. Pollen parent Suda, raised by Brodie of Brodie, is an offspring of lc Nevis x 2b Lord Kitchener. Lord Kitchener is supposed to be one of the parents of the famous pink daffodil, Mrs. R. O. Backhouse. Suda has pink in its cup, although not intense. Pink Chiffon when mated with some of the newer high quality, strong colored pinks, could produce gratifying, if not spectacular results.

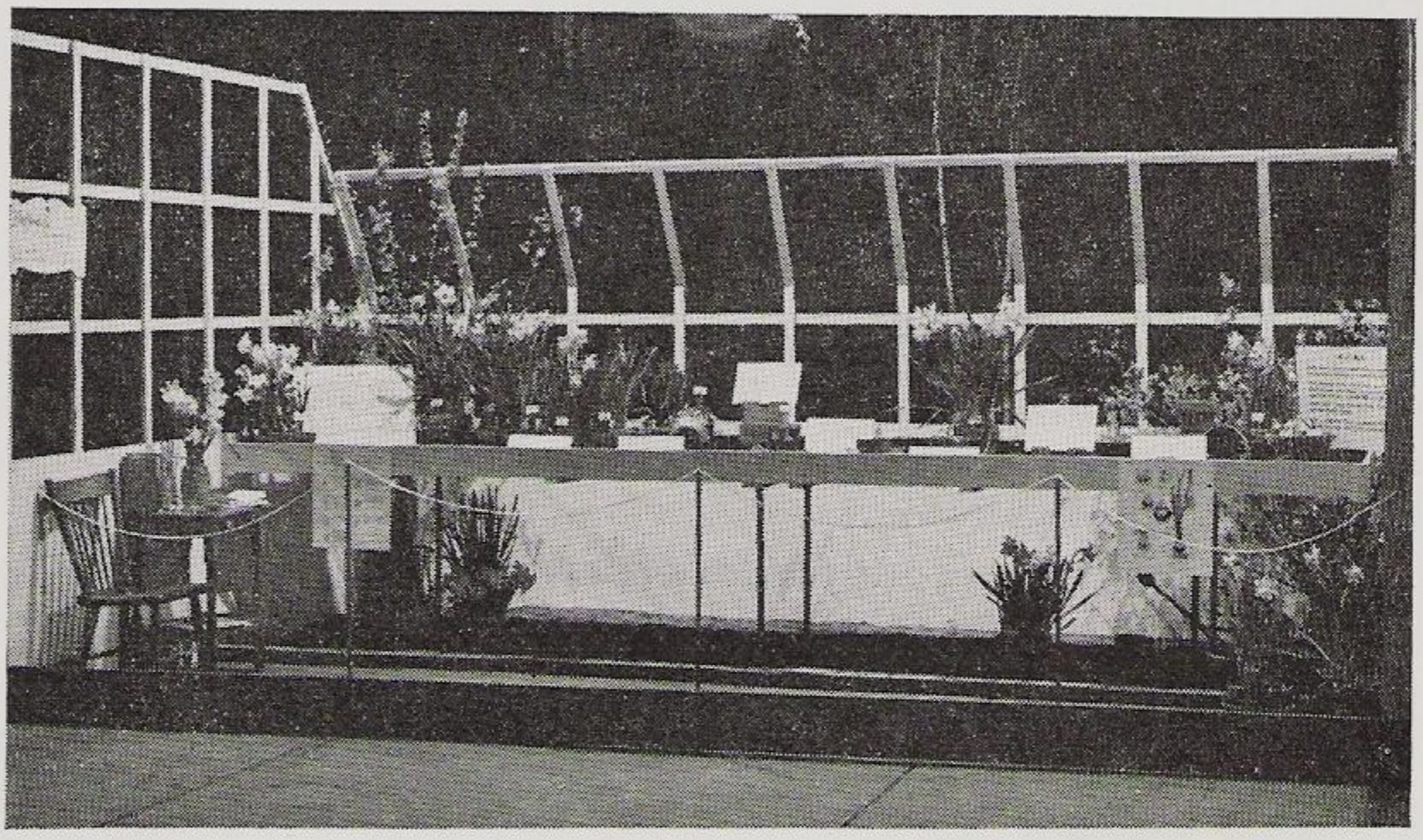
Does the ideal double exist? A number of them grown today are nearly perfect, but their inability to cope with adverse growing conditions limits their range.

Few, if any daffodils are more appealing than the graceful, sweet-scented double poets. Fortunate is the daffodil fancier who lives in the northwest, where they flower to perfection.

In the larger types, we prefer the so-called semi-doubles, with clearly defined perianths and well placed inner petals. They should be properly poised on strong, stiff stems. Colors should be clean if self colored, and sharply contrasted if more than one color is present. If endowed with good substance and a robust constitution, their value is further enhanced.

Having always lived where all types of daffodils thrive, it is difficult for me to make recommendations for the rest of the nation, but if you like doubles, we suggest you try those you believe to be

compatible to your locality. If they succeed, be they glamour queens or ugly ducklings, grow them and enjoy them. Turn a deaf ear to the critical, and await the day when they, too, will include double daffodils in their gardening plans.



Educational Exhibit for a Flower Show

The Northeast Region of the American Daffodil Society presented this fine exhibit of daffodils at the 1962 Philadelphia Flower Show.

On the right side are bulbs growing in pebbles. Continuing from right to left is a demonstration of all the steps necessary for bringing daffodils into bloom in the house, with accompanying explanations. Preparing the pots, planting the bulbs, a mass of good roots, and top growth in consecutive stages are shown. Under the bench are pots of bulbs past their flowering prime. There were also charts showing the classification of daffodils, and illustrating the cycle of growth. Mrs. H. Rowland Timms, who was regional vice-president, staged the exhibit.

Matthew Fowlds—His Work with Daffodils

WILLIS H. WHEELER, *President,* in Collaboration with
ALLEN W. DAVIS and GRANT E. MITSCH

DURING recent years the name of Matthew Fowlds has become familiar to many daffodil fanciers as the raiser of charming and prolific Pixie. But it is not the only variety to come from his hand. There are other miniature and small-flowered daffodils which we will hear about.

For many years Mr. Fowlds lived in the Middle West, and during his term as agronomist with the South Dakota State College and Experiment Station he gained much experience in plant breeding. Working on the genetics of farm crops is quite different than working on vegetatively reproduced plants, but some of the practices and experience he gained in those years certainly were not wasted when it came time to choose lines to follow in working with daffodils. A considerable amount of attention was given during his college tenure to the development of a hull-less oat, but grasses and other forage plants also occupied his attention. Without doubt the botanical knowledge he gained in part by collecting, identifying, and making herbarium specimens of many hundreds of native plants had a bearing on his activities when he retired.

Moving to Oregon on his retirement some twenty years ago, Mr. Fowlds purchased a place in Lebanon where he established a garden containing many rare plants. It was there that he started his collection of daffodils and began his hybridizing work. At first he worked with both the larger garden hybrids and the species. Later he began emphasizing the development of hybrids between species themselves and between the species and the smaller garden hybrids. Having heavy clay soil with a great deal of rock and gravel to contend with did not seem conducive to growing bulbs on any extensive scale, but some of the species, particularly *Narcissus triandrus,* seemed to thrive under the growing conditions he was able to provide there. It is seldom that one sees quantities of *N. triandrus albus* growing vigorously with five to eight blossoms on a stem, but Mr. Fowlds grew them in that way.

After about twelve years at Lebanon Mr. Fowlds sold his place and moved to Canby, where he has had much easier soil to work. It has been during the last three or four years that the fruits of his labors have been showing, and now that he is raising second and third generation seedlings, many interesting flowers are appearing each year. The best of his hybrids are doubtlessly to be found among the triandrus, cyclamineus, and jonquilla descendants. Most of these, and particularly the triandrus and jonquilla hybrids, tend to be sterile. For that reason most daffodil breeders have not considered it worth their while to pollinate hundreds of these hybrids

Matthew Fowlds shows one of his new hybrids.

to find the occasional one that is fertile. However, Matthew Fowlds found this an intriguing field of endeavor, and pollinated multitudes of his hybrids, using either pollen from other similar hybrids or from other small-flowered daffodils. It was thus that he discovered his triandrus hybrid Honey Bells to be fertile. He has occasionally had seed from other triandrus hybrids, but this is the only one that has seeded quite consistently. In addition, it has yielded plenty of viable pollen. This past year several of Honey Bells' seed-

lings flowered for the first time, and among them were a goodly number of very promising flowers. A few which had one of the forms of triandrus as the seed parent were very small and seemed lacking in substance, but only a few of these have bloomed. Crosses on large-flowered daffodils have not given miniatures but some medium sized flowers of very fine quality. Doubtlessly the best lot came from Green Island X Honey Bells. Virtually every one had fine substance, a very flat, smooth perianth, and other qualities that would seem to recommend them highly. Several were reminiscent of Easter Moon in smoothness and polish. Only one had a multiple-flowered stem, but there is some doubt that they would have been better for having more than single blooms.

Other triandrus hybrids coming along indicate that this class will have more variety of form and color than in the past. A clear soft yellow, now named Harmony Bells, is one of the smoothest of its type yet seen, and is nearly as prolific with bloom as is Forty-Niner. Another most unusual flower has very large, bowl-shaped, much fluted crowns, and while some daffodil fanciers may not care for it, the average gardener will be sure to like it because of its unique form. It has been prolific in bloom, giving three large white flowers to a stem. There are of course many other triandrus hybrids in white and various shades of yellow, and there are some bicolors. In that last group are a few with poeticus ancestry, having eyes slightly suggestive of Dawn.

Possibly Mr. Fowlds' collection has more cyclamineus hybrids than any other class. Starting with the species and an old yellow trumpet, probably Golden Spur, and a few bulbs of Mite, he attempted to develop a strain of small flowers of form rather similar to the species but somewhat larger, more uniform, and more dependable in performance. His goal was to develop a strain so easily reproduced from seed that propagation would not be a major problem even if the bulbs did not increase rapidly by division. While further work needs to be done along this line, it appears he is approaching a successful conclusion to that work. One or two clones from the early crosses made in this direction have sufficient merit to warrant their introduction shortly. They have somewhat larger flowers than Mite and the perianth segments are broader. In addition, they appear to have a better constitution. Another series of near whites and bicolors from some of his other cyclamineus crosses show much to interest the daffodil grower.

Many are already familiar with Pixie, a selection from his jun-

cifolius x jonquilla hybrids. At seed harvest time, after having done the pollinating for that cross, Mr. Fowlds concluded there were too few seeds to be kept separate from the open pollinated juncifolius blooms and planted all of them together. However, as the seedlings came to bloom it was quite evident that some were from his intended cross. That accounts for Pixie's origin, a variety we know as one of the most delightful and free-flowering of the little daffodils. More recent crosses involving some of the larger-flowered daffodils, including some of the pinks, have given him a large range of forms and color in his jonquil hybrids.

Other interesting seedlings have come from the cross *Narcissus jonquilla* x *N. asturiensis* and the cross *N. jonquilla x N. cyclamineus*. Still another fine series have come from *N. bulbocodium vulgaris conspicuus* x *N. bulbocodium romieuxii*. These flowers are apparently hardy and vigorous and have a long blooming season. *Narcissus rupicola* x *N. watieri* has produced some very attractive flowers in soft lemon color. They appear to be more vigorous than either parent. One of Mr. Fowlds' most attractive series has come from the cross *N. cyclamineus* x *N. triandrus albus*. They are a delightful soft lemon with white reverse coloring.

Mr. Fowlds' success has not been limited to his work with the species and the miniature daffodils. From a red-cupped seedling crossed with Binkie he has raised a beautiful medium-sized 2d of excellent form. It has a flat perianth of most luminous soft clear lemon and a well-balanced crown that becomes almost pure white.

From the time of his arrival in Oregon, Grant Mitsch has been Mr. Fowlds' close friend and advisor. He never married and has lived alone in his beautifully kept little home, only a short distance from Daffodil Haven of the Mitsch family. In fact, he has been an "adopted" member of that home, having spent many happy hours, days, and even weeks with Grant, Mrs. Mitsch, and their two daughters. In the busy seasons he has been a real help at Daffodil Haven.

His doctor has finally convinced him, not without some difficulty, that because of his advanced years and a heart condition, that he should curtail his garden activities. Some of his daffodil clones have already been moved to Daffodil Haven and others will be, preparatory to his departure to a newly built retirement home in Salem, Oregon. Apparently his main concern over that move has to do with the amount of ground he will be allotted so he can continue with his daffodil work.

It was my good fortune to have a brief visit with Mr. Fowlds in his garden in the spring of 1963. He very graciously showed me the many things of interest and then it was that I was able to secure the photograph illustrating this story, so all members of the Society may know the genial raiser of Pixie, a man who began his daffodil work at a time in life when most of us might expect to give it up.

In concluding this article I must acknowledge the use of a great deal of information furnished by Mr. Fowlds' Oregon friends, Allen W. Davis, and Grant E. Mitsch. Without their help this story could not have been told.

Daffodils Have Many Appealing Ways

R. R. THOMASSON, Columbia, Missouri

THE LARGE family of daffodils has many appealing attributes with which to delight the gardener. With some it is brilliant coloring, while the allure of others is in pleasing form and sheer beauty. Again a dainty gracefulness or enticing fragrance may be the captivating feature. We are drawn to certain ones because they have exceptional durability. And there are varieties that have an irresistible, everyday, homey appeal.

As is true with some other flowers, the fragrance of the daffodil has not received the attention that it deserves. Catalogs and books on bulbs play up other qualities, real and imaginary, with seldom a mention of the bonus we get in the way of perfume. To be sure, not all daffodils have it.

We get much of our daffodil fragrance from the jonquils and the poets. The old species *N. recurvus*, commonly known as "Pheasant's Eye," is to my way of thinking one of the most pleasantly scented flowers we have. The flavor of nutmeg is delightful. Few flowers have a more powerful fragrance than has the diminutive *N. jonquilla simplex*. "Sweetie" is the appropriate name given to it in some of the old gardens of the deep south. *N. gracilis* has inherited a pleasing combination of poet and jonquil fragrance. It and "Pheasant's Eye" are among the latest daffodils to bloom, mingling their perfume with that of the lilac.

Many of our garden daffodils have a heritage of perfume from poet and jonquil ancestry. Cheerfulness and Yellow Cheerfulness combine a delicate fragrance with an exceptionally appealing small double flower. Sweetness, a golden jonquil, derives its name from its delicious perfume. Tittle-Tattle is a sweet smelling jonquil hybrid that comes into bloom at the very end of the season. Rose of May and the old double poeticus, "Albus Plenus Odoratus" are lovely late doubles with enchanting fragrances. Unfortunately both have a decided aversion to blooming in my garden. There are others. One might wish that catalogs would mention fragrance and omit some of the other overworked adjectives.

Those gardeners satiated with daffodils bred for enormous flowers may find soul food in some of the smaller, more graceful and dainty varieties. April Tears, a jonquilla-triandrus cross, carries pleasing little golden flowers on eight-inch stems. There is a dainty loveliness in the clusters of hanging blossoms with diminutive cups. With Jenny, a cyclamineus hybrid, we get a graceful sweep to the smooth, white, reflexed petals. The fairy-bell of a cup is a pale primrose that changes to white. Honey Bells is a delightful, comparatively new triandrus hybrid. Among the many others that might be mentioned are Le Beau, *N. tenuior*, Beryl, Dawn, Chérie, and Dove Wings. Tittle-Tattle, Cheerfulness, Charity May and *N. jonquilla simplex* also belong to this group as well with the fragrant kinds.

To please the person who likes a showy flower, there is a plentiful supply of brightly-colored daffodils. Limerick is a small-cupped variety that is both brilliant and pleasing. The flat, cherry-red cup contrasted with the sparkling white perianth compels the attention of everyone who sees it. Flower Record, Red Hackle, Kilworth and Fermoy are other attractive kinds with white perianth and colored cup. Dick Wellband, though not one of our neatest daffodils, still has an appeal for me.

There are also some good ones with yellow perianth and colored cup. Ceylon attracts much attention in my garden. Outstanding in both form and coloring, it is a gorgeous flower of golden-yellow and orange-red. Aranjuez is an older one that still has many admirers. Tinker gives us brilliant orange-scarlet and golden-yellow blossoms rather early in the season. In varying sizes and combinations of coloring we have Red Goblet, Duke of Windsor, Market Merry, Red Ranger, Blarney and many others.

The gardener who places more emphasis on beauty and form than on color and showiness will find varieties tailored to suit his taste. Chinese White is an immaculate flower of considerable size. The round, flat perianth and saucer are white except for a touch of blue-green in the center. Frigid is smaller, sparkling white with a dark green center. It is one of the latest to bloom. Some others in this general class are Vigil, Cantabile, Goldcourt, Cantatrice, Broughshane, Trousseau and perhaps Empress of Ireland if the price is compatible with one's pocketbook.

The keeping qualities of a daffodil are important whether the blossoms are intended for garden display or for use as cut flowers. In that respect the cyclamineus group is outstanding. If we pick a

single variety for top honors it will probably need to be February Gold. One of the first to open with me, it outlasts some that come out later. Peeping Tom, blooming at about the same time, is a better flower and runs February Gold a close race in durability. Winifred van Graven is a fragrant poeticus that makes a splendid cut flower, standing up well either in the garden or in bouquets. Topaz, Bartley, Ceylon, Preamble, Carlton and Aranjuez belong in the list of long-lasting daffodils.

Then there are those old friends that we give no reason for liking. Without aspiring to blue ribbons or gold medals they are the everyday, free and easy kind that are content to grow in odd corners and provide unpretentious bouquets for the house or to take to a neighbor. Some are old and many have been deleted from the catalogs. In the lot we find some that are at ease in the best of daffodil company. No one else would choose the same list as mine.

The sturdy little, early Tenby Daffodil, *obvallaris*, is near the top of the list with Pepper tagging right along. *Moschatus* elbows the other two. I have in mind the form of *moschatus* that was given to me years ago by someone to whom it was given by someone else. Many *moschatus* plantings around old homes trace their ancestry back to English cottage gardens with never an ancestor associated with a commercial nursery.

Thalia and Mrs. Nette O'Melveney are a part of the company as are Cheerfulness and Yellow Cheerfulness. Laurens Koster, *N. biflorus*, Trevithan and Lady Hillingdon have secure places. The list would be incomplete without "Pheasant's Eye" and *N. jonquilla simplex*. These are the kind of old friends that one just likes to have around.

The Roberta C. Watrous Award

GEORGE S. LEE, JR., New Canaan, Connecticut
Past President American Daffodil Society

WHILE small daffodils have been around just as long as large daffodils, any awareness that there could be perfection on a small scale or that satisfaction and pleasure could be found in studying and flowering the less ostentatious forms of daffodils is quite recent. The heretical idea that smaller daffodils deserved to be shown, judged, and recognized on equal terms with their more generously proportioned kin is recent indeed.

The evidence is quite clear that the first person in this country to give undivided attention to small daffodils; to hybridize them for the sole purpose of creating smaller, rather than larger, daffodils; and to infuse others with her enthusiasm was Roberta C. Watrous of Washington, D. C., gardening in her city back yard and "south forty." There is a unique quality in these activities because interest in daffodils abroad, which antedated any considerable use of them in American gardens, has never extended to the smaller forms, aside from the work of Alec Gray whose achievements have never been fully recognized in his native land.

In 1950 Mrs. Watrous flowered her first successful hybridizing of species, *N. cyclamineus x jonquilla.* Two years later her long interest in narcissus species matured into a serious study of them, and in 1953 she presented a paper entitled *Narcissus Species and Miniatures* to the Washington Daffodil Institute, the occasion which sparked the interest of this writer in the subject. During the past decade Mrs. Watrous has pursued her studies; continued to hybridize; written for the more serious horticultural publications; and visited the leading student of narcissus species, Dr. Abilio Fernandes of Coimbra, Portugal. Since 1957 Mrs. Watrous, as chairman of the Breeding and Selection Committee of the American Daffodil Society, has effectively co-ordinated and encouraged the hybridizing of daffodils in this country by amateurs.

In recognition of her devotion to a greater understanding and appreciation of the entire genus *Narcissus,* thereby contributing

substantially to fulfillment of the objectives of the American Daffodil Society, a group of members of the Society have created the Roberta C. Watrous Award. The design of the Award and the rules under which it may be offered were presented to the meeting of the Society's directors, April 25, 1963, at Stratford, Connecticut, and unanimously approved.

The rules attached to the Award are as follows:

The Roberta C. Watrous Award, a gold or silver medal, may be offered to any show approved by the American Daffodil Society for a collection of twelve different miniature blooms from at least three divisions of the official classification.

The Gold Medal may be offered at any show held in connection with the annual meeting of the Society; the Silver Medal at any other approved show.

Each specimen must score at least 90, be correctly labeled, and exhibited in a separate container. All specimens must be named in the list of miniature species and garden varieties approved by the Society at Stratford, Connecticut, April 27, 1963, or as subsequently amended.

The schedule must state that this class is open only to members of the American Daffodil Society.

Any member may win both the Gold Medal and the Silver Medal, but may not be awarded either medal a second time.

Miniature Daffodils

The report submitted to the membership at the 1963 Annual Convention held at Stratford, Connecticut, and accepted by the membership on April 27, 1963

SEVERAL years ago the members of one of four round robins devoted to miniature daffodils undertook to find a satisfactory definition by which anyone could readily determine whether or not a small daffodil was, in fact, a miniature. The need for such a definition was evident from the variety of ways show committees attempted to specify the flowers which would be admitted to their miniature classes. The decisive factor was usually length of stem, although there was no agreement as to the precise length and problems of enforcement were ignored. Occasionally it was ruled that the size of the flowers should be in proportion to the length of stem, but this relationship was never reduced to a mathematical ratio. The result of such confusion was that a variety which could be qualified as a miniature at one show would be disqualified at another.

There gradually crept into the discussion complaints that, however miniatures might eventually be defined, as a class they were neglected, unattractively displayed, forced to compete with larger forms whenever no special classes were scheduled for them, and usually ignored when major awards were bestowed.

It was also suggested that there were a number of daffodils which were neither miniature nor standard in size and which ought to be grouped separately as "intermediates."

Thus the area under study gradually widened and a desire to see that justice was done to the smaller daffodils became increasingly evident. In time it was agreed that the objectives of this study were to see that all daffodils which are smaller than those considered normal for their type or class are identified, appreciated, widely grown, exhibited in fair competition, and suitably rewarded; in short, that size in a daffodil would be eliminated as a merit except, of course, size for the variety.

It was also hoped to correct the widespread impression that all

daffodils in Divisions 5 to 11 are "miniatures," a notion probably arising from the fact that as a group these fine varieties are somewhat smaller than those in Divisions 1 to 3.

On page 23 of the 1959 Yearbook a list of miniatures was offered by one of our members, George W. Heath. Early in 1959 the members of Miniature Round Robin #1 began balloting to divide this list into three categories: miniature, intermediate, and standard. Voting sheets were circulated and a great many names added to the original list as it made the rounds. The decision as to what constituted a miniature for voting purposes was left to the individual who might employ any criteria he wished, including measurements. However, it was suggested that voters consider the following tests: first, would a variety look at home in a rock garden, and, second, would it appear out of place on the show table among varieties of standard size for its division.

It was finally realized that there was no possibility of writing a satisfactory definition of a miniature daffodil. Measurements of individual varieties reported by a number of growers were found to differ more widely than opinion as to whether or not the varieties were miniatures. A daffodil is a living thing which changes form day to day and varies from year to year, as well as with regional and cultural conditions. Therefore, it was concluded to compile an arbitrary list of species and garden varieties which, after careful field study, should be classed as miniatures in the opinion of a number of observers. Surprisingly, this voting of personal opinions produced nearly general agreement.

It was realized early in the work that most flowers in Divisions 5, 6, 7, and 8, while small by comparison with normal flowers in Divisions 1, 2, and 3 were, nevertheless, standard size for their particular divisions and that no effort should be made to classify them otherwise. There were growing doubts that a group of varieties which might properly be termed "intermediate" could be established or that it was desirable to attempt it. Subsequently this phase of the study was dropped as part of this initial effort.

At the Roanoke Convention, April 1961, seventeen interested members met, agreed that the work should be continued, and appointed five subcommittees to study and report upon certain problems, these reports to be considered by all members of the miniature round robins and the conclusions embodied in a report.

It was stressed many times that while the activities of these members were consistent with the best interests of the Society, never-

theless they were wholly unofficial and could have no standing until formally approved by the Society. In view of the importance and far-reaching effects of the proposals which follow, it was decided to lay them before the membership. Without any intent to attribute authority to this self-constituted group of workers, they will be referred to hereafter as the committee on miniatures.

The List of Miniatures

In the course of our study about 200 species and garden varieties were considered. The ballots were tabulated by John Larus and tentative lists of those which qualified, as well as those which failed to qualify, were drawn up in 1961 and revised at the close of the 1962 growing season. These lists are attached to this report as Exhibits A and B.

Those who have participated in this work would be the first to concede imperfection in the results. In some cases the number of votes was small and about equally divided; in other cases there was a large minority which felt the flower should be classed as a miniature. Such dilemmas were usually resolved by listing the variety as a miniature on the theory that it would thus be brought under close and continuing inspection and the original decision confirmed or rejected in the shortest possible time.

The chance of wrong names has been a constant hazard. Individuals are occasionally amazed that anyone would consider a certain variety to be a miniature or vice versa. Misnamed bulbs is the likely answer to such strongly held opposing views, and where a number of individuals are involved, it might be found that a dealer is handling incorrectly named stock.

It is the feeling of the committee that the work of naming miniatures has been advanced about as far as present personnel and material for study allow and that the time has come for the results to be subjected to the judgment of other members and to the critical eyes of our accredited judges at daffodil shows. While recognizing that changes in the proposed list are inevitable, both as to existing varieties and, of course, as to new varieties, the committee hopes that no changes will be attempted until after the close of the 1964 growing season and that in the meantime machinery will be set up to consider decisions already made which do not stand the test of time and to act upon new introductions which have proved to be of miniature proportions.

Therefore, the committee on miniature recommends:

1. That a category of miniature daffodils be created in furtherance of the objectives of the Society.

2. That this category consist of, and be limited to, the species and garden varieties listed in Exhibit A of this report and that no variety not included in this list, whether garden hybrid, species or seedling be permitted to be shown as a miniature daffodil in shows approved by the American Daffodil Society.

3. That in shows approved by the American Daffodil Society which schedule more than five RHS divisions, miniatures should compete only with each other in specimen classes.

4. That awards of the Society for miniatures may be offered only when miniatures are exhibited in separate classes.

5. That the directors authorize the appointment of a special committee whose duty it shall be to make additions to, and deletions from, the approved list of miniatures.

6. That no amendments to the list become effective prior to the close of the 1964 growing season.

7. That the approved list of miniatures be published in either the *Bulletin* or the *Yearbook* of the Society; a printed copy, 8″ x 3″ in size, be placed in every copy of the Classified List of Daffodil Names distributed by the Society; a copy sent to each accredited judge; and that additional copies be made available for a small charge upon application to the Supplies Committee.

8. That all amendments to the list originally approved be published in the *Bulletin.*

Miniature Daffodils in Shows

In show schedules examined, the most common error was to include all miniatures, regardless of RHS classification, in either Division 10 or Division 11. Height limits varied from 6 to 12 inches, some schedules providing separate classes for varieties under and over 6 inches in height, and some decreeing that the catalog of Alec Gray be accepted as authority for the height of individual varieties.

It is the recommendation of the committee on miniatures:

1. That classes for miniature daffodils should in future be based on the list of miniatures approved by American Daffodil Society, rather than on absolute size or height.

2. That miniature daffodils, as named in the approved list of miniatures, should be excluded from competition with varieties of standard size in classes for single stems, three of a kind, and collec-

tions based on the RHS classification in state or regional shows and in all other shows, approved by the American Daffodil Society, scheduling more than five RHS divisions.

3. That the foregoing exclusion should not apply to a Quinn Medal Class or special classes for collections based on date of introduction, color, breeder, and so on.

4. That in no case should miniatures from other divisions be scheduled in Divisions 10 or 11; a separate class or classes should be provided.

5. That if there is but one class of miniature it should include both species and garden hybrids of whatever RHS classification.

6. That if there is more than one class for miniatures, division should be made first by separating species (including wild forms and wild or presumed wild hybrids, Division 10) and garden hybrids (Divisions 1-9 and 11).

7. That if further division is desired, varieties having only one bloom to a stem should be shown separately from those having a cluster of florets.

8. That miniatures should be staged in containers of appropriate size.

9. That all miniature classes be staged in one location, preferably apart from varieties of standard size, and at a height to bring the blooms approximately to eye level or slightly below.

Judging Miniature Daffodils

It is desirable that our accredited judges be qualified to judge classes of miniatures at all shows approved by the American Daffodil Society. However, it must be recognized that many judges are not particularly familiar with the smaller daffodils, do not grow them, and have little interest in them.

If our accredited judges could be sharply divided between those qualified by experience in growing miniatures and those having little or no knowledge of their characteristics, the list of the former would be rather short, smaller shows would encounter difficulty in securing their services, and the scheduling of classes for miniatures would be discouraged, thus hindering the very purpose of our work.

It seems wise, at least for the present, to improve the capability of all our accredited judges to pass upon the merits of miniature daffodils. Steps to accomplish this are set forth in the recommendations below. Since exposure to the facts of judging miniatures carries no compulsion to master them and it is not proposed to subject

our accredited judges to any examination on their knowledge of miniatures, it follows that the qualifications of our accredited judges in this field will vary widely. It is hoped that our judges will not assume any ability or interest which they do not possess and will decline invitations to judge classes of miniatures if they are not familiar with them.

However, the foregoing approach to judging miniature daffodils is incomplete and rather negative. We do have many accredited judges who are enthusiastic about miniatures and have had long experience in growing them. As far as possible, and certainly in the case of our larger shows and all shows offering ADS awards, other than ribbons, contemplated by this report, the services of these experienced judges should be utilized.

While outside the scope of this report, it might not be amiss to observe that varieties of standard size in Divisions 5 through 11, because of their own distinctive characteristics, also deserve to be appraised by judges well-versed in those traits.

The committee on miniatures urges that the judging of miniatures be kept at the highest possible level and submits the following recommendations:

1. That a demonstration of judging miniature daffodils be included in the programs of the 1963 and 1964 conventions for the particular benefit of accredited judges and students who have completed Course II of the Judging School.

2. That a paper on the subject of judging miniatures be prepared and copies sent to all accredited judges and students who have completed Course II of the Judging School.

3. That instruction in the judging of miniatures be given for a period of not less than 30 minutes as part of the curriculum of our judging schools.

4. That while all accredited judges should be permitted to judge classes of miniatures in shows approved by the American Daffodil Society, as far as practicable judges who are familiar with miniatures should be assigned to these classes, especially in the larger shows or where trophies or medals are offered as awards in miniature classes.

5. That to facilitate the selection of judges who are especially well qualified to judge miniatures by reason of experience in growing miniatures, the chairman of the Judges Committee should prepare and maintain a list of those among our accredited judges who

are interested in, and familiar with, miniature species and garden varieties.

6. That special effort be made to see that a student judge is appointed to each team of accredited judges assigned to judging classes for miniatures.

Scale of Points

There are differences other than size which distinguish miniature daffodils from the larger forms. Most miniature garden varieties are of recent origin and not far removed from their species ancestry. Often coming out of England where little consideration is given to them at shows, they have been bred more for their charm than for exhibition qualities; more for the rock garden, alpine meadow, and pot culture than for measured planting in rectangular beds. Varieties with clusters of florets are more numerous than single-flowered varieties.

Individual species, of course, often range widely in size and color and it is not always easy to determine what is typical or even true to name. Crossing of the bulbocodium species is so common in nature that it is difficult to draw lines between the numerous accepted species. Before the chromosome studies of Dr. Fernandes, the relationships of the jonquillas were only slightly less obscure. Species collected from the wild or grown from seed will show wide variation, whereas bulbs reproduced vegetatively will consistently duplicate all characteristics of the mother bulb.

Nevertheless, it is the opinion of the committee that any change in our standard scale of points should be avoided to prevent confusion. It is felt that the distinctive qualities of miniatures can be judged by dividing equally the 20 points now assigned to form, between form and grace, and beyond that to modifying to some extent the interpretation given to each heading in the point scale.

Therefore, it is recommended that miniatures be judged hereafter on the following basis:

CONDITION—20 points

Flowers should be in their prime, clean and free from blemishes or damage.

FORM AND GRACE—20 points

Flowers should be correctly shaped for the type or variety. Clusters should be symmetrical. The number of florets is to be considered. Grace is an important quality of miniatures. While it results

from harmony of all parts of the flower, lack of it should be penalized only once and here.

SUBSTANCE AND TEXTURE—15 points

The material of which the flower is made should be firm in the case of garden varieties and typical in the case of species.

COLOR—15 points

In garden varieties uniform and fresh; the contrast distinct in the bicolors. In species color should be typical without fading.

STEM—10 points

The stem should be straight and sturdy, but not too heavy or stiff, lending grace to the flower. The length, as exhibited, should be in good proportion to the bloom.

POSE—10 points

The pose demanded of larger daffodils is unimportant in miniatures and will rarely be found. The pose of species should be typical; to garden varieties pose should contribute a share of the grace which distinguishes miniatures. The nodding or pendent bearing of miniatures, other than doubles and small cups, is usually an attractive characteristic.

SIZE—10 points

Normal size is perfection; noticeable oversize or undersize is a fault.

Awards

It has not been the policy of the Society to use its own funds to create awards having intrinsic value to be placed in competition at daffodil shows sponsored by the Society. Such awards, the Quinn medal for example, result from the generosity of individuals and represent a meeting of the minds of the donor, the Awards Committee, and the Board of Directors as to the form and purpose of the award.

The committee agrees that outstanding exhibits of miniature daffodils merit the same honors as daffodils of standard size. While the committee does not propose specific trophies, it ventures to mention certain exhibits which, in its opinion, deserve recognition over and above the usual blue ribbons.

Accordingly, the committee suggests that prospective donors and the Society consider the creation of awards to be offered at shows approved by the Society, as follows:

1. An award for a collection of 12 different miniature blooms from at least 3 divisions.

2. An award for the best miniature shown at the daffodil show held in conjunction with the annual meeting of the Society.

3. An ADS Gold Ribbon (smaller than the regular ADS Gold Ribbon for the best flower in the show) for the best miniature bloom in horticultural classes.

It would be quite appropriate if all special awards for miniature daffodils were scaled down to the engaging proportions of the miniatures themselves.

It should be remembered that the ADS does not offer its Lavender Ribbon specifically for a collection of 5 varieties of miniature daffodils *under 6 inches in height.* The words italicized should be struck out by appropriate action.

Daffodils receiving honors as miniatures must be listed on the approved list of miniatures and should score at least 90 points.

* * * * * * * * * *

If this report is adopted, it will require amendment to a few past actions of the Society. These will be drafted and presented to the directors for action at their next fall meeting.

Many hands have taken part in the work preceding this report. It is impossible to identify them all. While in manuscript form only a limited number of the known participants, as well as those who have expressed interest in the work, could be reached and asked to signify their approval of the report. As far as practicable and time permitted, prior approval has been sought and the members named below have signified their acceptance of the report. Without necessarily agreeing with every detail, they recommend that it be placed before the membership for consideration and adoption. Any reservations they or others may have on certain details, and there doubtless will be some, may be tested by amendments proposed to the members at the meeting which first considers this report, or at any subsequent meeting of the membership or its board of directors.

While the recommendations contained in this report are concerned in large part with the display of miniature daffodils at shows, it should be evident that adoption of the report will be helpful in other ways. For one thing, "miniature" as applied to daffodils will no longer be an ambiguous term. It should be used hereafter only in connection with species and named garden hybrids included in the approved ADS list. Oral discussion and correspondence may be carried on with mutual understanding. It is also hoped that horticultural literature and bulb catalogs will accept the proposed terminology.

If the objectives stated on an earlier page are achieved, we shall feel well rewarded. If we have served the cause of a greater understanding and appreciation of the entire genus *Narcissus*, we shall have fulfilled one of the obligations of membership in the American Daffodil Society.

Respectfully submitted,

Polly Anderson
Jane Birchfield
Polly T. Brooks
Elizabeth T. Capen
Betty D. Darden
Allen W. Davis
Glenn Dooley
George W. Heath
Eleanor Hill
Florence L. Kildow
Wells Knierim
John R. Larus
Geo. S. Lee, Jr.
Helen K. Link
Nannie Ames Mears
Grant Mitsch
Mary C. Nelson
Bill Pannill
George T. Pettus
Eve Robertson
Laura Sue Roennfeldt
Roberta C. Watrous
Willis H. Wheeler
Gertrude S. Wister
John C. Wister
Margaret Yerger

EXHIBIT A

Miniature Varieties of Garden Origin

5b	Agnes Harvey	4	Kehelland	2a	Rosaline Murphy
8	Angie	5a	Kenellis	5b	Samba
5b	April Tears	7b	Kidling	7b	Sea Gift
5b	Arctic Morn	7b	La Belle	5a	Sennocke
1b	Bambi	7b	Lintie	8	Shrew
7b	Bebop	1b	Little Beauty	5a	Shrimp
7b	Bobbysoxer	7a	Little Prince	7a	Skiffle
1a	Bowles' Bounty	2a	Marionette	1a	Sneezy
1a	Charles Warren	11	Marychild	6a	Snipe
5b	Cobweb	5a	Mary Plumstead	1b	Snug
1c	Colleen Bawn	6a	Minicycla	7b	Stafford
8	Cyclataz	6a	Mite	7b	Sundial
7b	Demure	6a	Mitzy	7b	Sun Disc
11	Elfhorn	11	Muslin	11	Taffeta
7b	Flomay	2a	Mustard Seed	1a	Tanagra
5b	Frosty Morn	11	Nylon	11	Tarlatan
2a	Goldsithney	8	Pango	6a	Tête-à-Tête
6a	Greenshank	7b	Pease-blossom	6a	The Little Gentleman
8	Halingy	4	Pencrebar		
5b	Hawera	2a	Picarillo	5a	Tristesse
8	Hiawassee	7b	Pixie	2b	Tweeny
7b	Hifi	11	Poplin	1a	Wee Bee
8	Hors d'Oeuvre	6b	Quince	1c	W. P. Milner
11	Jessamy	5b	Raindrop	3c	Xit
6a	Jetage	1b	Rockery Beauty		
6a	Jumblie	1c	Rockery White		

Miniature Varieties of Garden Origin by Divisions

Division 1a
Bowles' Bounty
Charles Warren
Sneezy
Tanagra
Wee Bee
Division 1b
Bambi
Little Beauty
Rockery Beauty
Snug
Division 1c
Colleen Bawn
Rockery White
W. P. Milner
Division 2a
Goldsithney
Marionette
Mustard Seed
Picarillo
Rosaline Murphy
Division 2b
Tweeny
Division 3c
Xit
Division 4
Kehelland
Pencrebar
Division 5a
Kenellis
Mary Plumstead
Sennocke
Shrimp
Tristesse
Division 5b
Agnes Harvey
April Tears
Arctic Morn
Cobweb
Frosty Morn
Hawera
Raindrop
Samba
Division 6a
Greenshank
Jetage
Jumblie
Minicycla (Hort.)
Mite
Mitzy
Snipe
Tête-à-Tête
The Little Gentleman
Division 6b
Quince
Division 7a
Little Prince
Skiffle
Division 7b
Bebop
Bobbysoxer
Demure
Flomay
Hifi
Kidling
La Belle
Lintie
Pease-blossom
Pixie
Sea Gift
Stafford
Sundial
Sun Disc
Division 8
Angie
Cyclataz
Halingy
Hiawassee
Hors d'Oeuvre
Pango
Shrew
Division 11
Elfhorn
Jessamy
Marychild
Muslin
Nylon
Poplin
Taffeta
Tarlatan

Miniature Species, Wild Forms, Wild Hybrids (Division X)

alpestris = *pseudo-narcissus alpestris*
Angel's Tears = *triandrus albus*
asturiensis
atlanticus
aurantiacus = *triandrus aurantiacus*
bertolonii = *tazetta bertolonii*
bicolor = *pseudo-narcissus bicolor*
bulbocodium (various)
calathinus = *triandrus loiseleurii*
calcicola
canaliculatus = *tazetta lacticolor canaliculatus* (Hort.)
cantabricus (various)
capax plenus = *eystettensis*
concolor = *triandrus concolor*
cyclamineus
dubius
eystettensis
fernandesii
hedraeanthus
jonquilla minor
juncifolius
lobularis = *minor conspicuus* (Hort.)
marvieri = *rupicola marvieri*
minimus = *asturiensis*
minor
minor conspicuus
minor pumilus
moschatus = *pseudo-narcissus moschatus*

moschatus plenus = *pseudo-narcissus moschatus plenus*
nanus = *minor*
obvallaris = *pseudo-narcissus obvallaris*
pseudo-narcissus
pseudo-narcissus alpestris
pseudo-narcissus bicolor
pseudo-narcissus moschatus
pseudo-narcissus moschatus plenus
pseudo-narcissus obvallaris
pumilus = *minor pumilus*
rupicola
rupicola marvieri
scaberulus
tazetta bertolonii
tazetta lacticolor canaliculatus (Hort.)
tenuior
triandrus
triandrus albus
triandrus aurantiacus
triandrus concolor
triandrus loiseleurii
watieri

EXHIBIT B

Varieties and Species Not Qualifying as Miniatures

1c	Alice Knights	6a	February Silver	3b	Picador
1b	Apricot	10	gayi = *pseudo-narcissus gayi*	7b	Pipers Barn
2c	April Snow			10	*pseudo-narcissus gayi*
2c	Arctic Moon	6a	Golden Cycle		
5a	Auburn	8	Grand Primo Citroniere	10	*pseudo-narcissus pallidiflorus*
7a	Aurelia				
6a	Baby Doll	5a	Honey Bells	1c	Rockery Gem
7b	Baby Moon	10	*intermedius*	6a	Roger
6a	Bartley	5b	Ivory Gate	5b	Rosedown
6b	Beryl	6a	Jana	1b	Rosy Trumpet
9	Black Prince	6a	Jenny	3b	Ruby
6a	Caerhays	5a	Johanna	5a	Shot Silk
6a	Charity May	10	*jonquilla*	5b	Sidhe
7b	Cheyenne	10	*jonquilla* Helena (Hort.)	10	simplex = *jonquilla*
7b	Cora Ann				
6a	Cornet	10	*jonquilla* Nell (Hort.)	7b	Skylon
1b	Cowley			7b	Sugarbush
6a	Cyclades	2b	Lady Bee	7a	Sweetness
4	Daphne	6a	Larkelly	4	*telemonius plenus* (Hort.)
5b	Dawn	6a	Le Beau		
3a	Dinkie	6a	Little Witch	6a	The Knave
1a	Dorothy Bucknall	6a	March Breeze	5b	Thoughtful
6a	Dove Wings	6a	March Sunshine	7b	Tittle-Tattle
5a	Elizabeth F. Prentis	7b	Nirvana	6a	Trewergie
		2a	Nor-Nor	4	van Sion = *telemonius plenus*
6a	Estrellita	7b	Orange Queen		
3b	Fairy Circle	2c	Panda	1b	William Goldring
7a	Fairy Nymph	2a	Pepper	5a	Wellow Warbler
6a	February Gold	5a	Phyllida Garth		

Daffodils at Whitbourne

MICHAEL JEFFERSON-BROWN,
Whitbourne, Worcester, England

WHITBOURNE is a small widespread village in rolling green countryside on the borders of Worcestershire, famous for its fruit in the Vale of Evesham, and Herefordshire renowned for cattle and cider. From the windows of our home we can see hop-fields, cherry and apple orchards, green fields and trees, and in the foregound a lot of work waiting to be done clearing the results of five or so years of abandonment this place suffered before we arrived.

Some of our daffodils are planted in a walled garden once full of fruit trees, and this garden slopes quite severely to the south, with at the bottom a long carp pool of an acre and three quarters. The daffodil beds follow the contours of the land, and are wide enough to allow six bulbs comfortable room planted in rows across the beds. These beds are not treated like Harry Tuggles'. We admire his methods and marvel. Our beds are rotovated and kept clean when bulbs are not planted in them. Although the soil is basically quite heavy, the soil structure and drainage is good. Bulbs grow hard and healthy. With the pool at the bottom of a lot of the beds, we shall have to take advantage of this feature and arrange irrigation soon. Other bulbs are planted in ground with more normal open aspect, and these produce flowers a week or ten days later than those in the walled garden.

Although I like most types of daffodils, I have always been particularly fond of the whites, and when Jean and I got married and decided to grow daffodils commercially, we were particularly strong on these. We had Empress of Ireland and White Prince growing away nicely as well as some more fine kinds. Purity and Arctic Doric were two seedlings that we bought from Mr. Guy Wilson early on, and they are proving very useful kinds, growing healthily and giving good crops of flowers and seeds. Arctic Doric opens early with such vividly white crowns that we felt that it might give series of good seedlings. We shall see. It is certainly a useful flower at the early shows. Some whites are special. Glendermott seems

unbeatable and incapable of producing a poor flower. Again they paraded with immaculate perianths and neatly balanced longish crowns of snow white. The delightfully rolled flange of Knowehead makes that, too, a special favorite. A flower needs that touch of character to make it distinct from its neighbors; the roll does that for Knowehead. Vigil has always been a daffodil that I could enjoy without reservations. It has trumpet flowers of excellent show form and is made to meet all garden requirements, being neat and strong in growth and holding good durable flowers boldly. Admittedly there are better flowers now, wider in the petal, larger, and as white, but I fancy I shall always cherish a particularly warm spot for Vigil as a flower that almost crept into commerce without fanfares and adjectival yardage and yet was a kind ahead of its time. Surely it will remain a worthy kind for decades yet.

We have been fortunate in being able to introduce some first class kinds. Passionale, the pink, was the first daffodil we introduced. Now we have the white trumpet which with its sister Queenscourt must be the best white trumpet yet seen. More of them anon. Passionale here has been one of the most reliable of all daffodils, and its rate of increase almost frightening. It crowds its bed with perfect show flowers, and as several correspondents have written even if it had no pink coloring it would be a high quality flower welcome to a place in the finest collections. Here the pink is reliable. Although it failed to color well with some in its first year in the U.S.A. it has subsequently vindicated itself.

Two new pinks due to be released in 1964 are Mondaine and Knightwick. They are quite distinct. Mondaine, with triangular petals somewhat blunted at the tips, has a broad perianth behind a crown of cup form which is colored a pleasing rich pink with a hint of lilac in it. Knightwick, named after our adjoining village, is a quite delightful daffodil with shovel-shaped tailor-cut petals and a crown neatly opened at the mouth. This well-posed flower opens white and buffy primrose, but in a trice the crown has turned to most appealing shades of pure pink. It was one of the most attractive show-type daffodils here this spring, and it lasted well in lovely condition. Knightwick was bred from Rosewell x Rose Caprice. We used its pollen on many other pinks this spring, including bright little China Pink, the decorative Interim, tall robust Pink Smiles, the prolific Seltan, Rose Caprice and a number of seedlings.

Big-time whites like Queenscourt and Birthright are glorious things. Fortunately both are robust, tall and strong in the stem, so

that their large flowers are held safely. Such width of petal might easily tempt the wind like a sail and the whole white miracle float away if it were not truly anchored. The flowers can stand the wind and show their perfect precision in perianth and trumpet to all. Birthright, with something square cut about the petals and trumpet, strikes me as the masculine flower, Queenscourt with somewhat softer lines is the feminine counterpart.

I was fortunate a few years ago in trying some of Mr. Mitsch's daffodils, and have been delighted with them. Bethany and now Daydream have been superb each season. We now grow Halolight and Limeade as well. Entrancement and Lunar Sea were two of the first we tried, and they have justified their place and paid their rent each year since. Of the pinks we have Rima, which we like a lot, and Interlude, Precedent, Rose Ribbon, Caro Nome, Flamingo, Leonaine and Melody Lane. These American flowers are slowly gaining a sure place over here even without Queen Victoria's approval. The award of Best Flower to Aircastle at the London Daffodil Show this spring and the Award of Merit we managed to get for Daydream will help to secure the place of these introductions of Mr. Mitsch's. A slight touch of conservatism has made it rather slow work gaining recognition for these lovely flowers but we are winning now.

Having an addiction for the paler shades, we have collected and grown a quite considerable number of lemons and sulphurs. We have a number of Mr. Mitsch's, and now have the pale lemonade-colored Blenheim bred by Mr. Dunlop. This is a la of palest possible coloring in a chastely formed flower with pointed petals and slender trumpet. Moon Goddess is richer lemon, Moon Boy a 2a of decorative form, a rather more frilly and flouncy flower than Mr. Mitsch's Fawnglo. Maraval continues to delight. This was one of Mr. Wilson's King of the North x Content seedlings that never appeared to get the recognition it deserved. It is delightful outside, but grown under glass it is just pure magic.

This year one of the most immediately attractive daffodils in our collection was a new trumpet which we have decided to call Westward. "Westward, look, the land is bright!" and the land was gloriously bright with a cloud of shimmering luminous rich sulphur or lemony primrose. Westward is individually a large flower of decorative build with broad petals and a noble trumpet. There is a light wave in the petals which may handicap it at shows, but is only an added attraction to it in the garden.

Over the past few years we have been trying to collect jonquil and triandrus hybrids. We have also been breeding some of our own. Of the red-cupped jonquils, Sweet Pepper is a very bright gold and orange usually carrying a couple of flowers. Suzy, with wide almost flat cups of orange and rich yellow petals, is a very good colored one, and they are quite large flowers. Pin Money usually has four medium-sized flowers on its main stems, each flower with neat tangerine cup and petals of primrose and creamy yellow. One or two of our colored hybrids look quite promising. Several white and lemon jonquil seedlings look particularly good. One of this year's selections was a Binkie x cyclamineus hybrid with obvious cyclamineus character like Dove Wings, but with clear reverse coloring. In the seedling beds we have one or two nice whites and several promising bicolors, both of trumpet and large cup proportions.

Last year we sowed over 20,000 seed; this year it looks as if we shall have a larger crop. There is always something to look forward to.

Naturalizing Daffodils in The Midwest

MRS. GOETHE LINK, *Second Vice-President,*
Martinsville, Indiana

One of the most satisfactory plants for spring color in the garden is the daffodil. Given plenty of moisture, sunshine, and a little ordinary care, it will thrive in other locations including heavy sod. Bulbs purchased from reputable dealers are relatively free from disease, and since insects do not attack the plants to any great extent, no spray program is needed. There are not many plants which give the gardener so much for such a small investment.

About twenty-five years ago a few dozen daffodil bulbs were planted in our perennial borders for accent effect. The results were so pleasing that the following year a thousand bulbs of naturalizing mixture were purchased and planted in the fields and orchards near the borders. Soon those in the borders needed to be divided, and the daffodil population grew by leaps and bounds. It is difficult to estimate how many bulbs now bloom each spring in our twenty acres where they have been naturalized.

The winning of a few blue ribbons in a daffodil show inspired the planting of exhibition varieties, thus a display garden was also developed. New varieties are purchased each year, planted in rows and labeled for display. During the peak of the blooming season an invitation is extended to the public to visit the garden where all may observe named varieties as well as naturalized planting.

For the show table, blooms should be near perfection and large, therefore, bulbs are lifted about every three or four years. Only three bulbs of a variety are replanted in the display bed, and the remaining ones are planted in drifts in the sod. Since there is a limit to the number of bulbs one can dig and care for, in recent years entire stocks of some old varieties have been naturalized in sod.

Most plant enthusiasts are not content to buy bulbs, but like to try their hand at improving those already in existence; thus the urge arose to hybridize. Since few seedlings prove to be better than varieties already on the market, we usually plant these rejects in

one area. Many of the seedlings have proved to be excellent for naturalizing. When the rejects bloom, it is interesting to try to guess the parentage, and occasionally something outstanding shows up. No record is kept of parentage when the seedlings are planted in the sod; one must be content to enjoy the blooms for their landscape effect.

Areas where new plantings can be made are marked with stakes at the end of a blooming season, then at planting time available places are easily located. The planting of bulbs for naturalizing is somewhat easier than planting for exhibition. We have used three different methods and find them equally successful. The bulbs may be planted any time after mid-August when the ground is sufficiently moist to work. Deep planting is advisable so that bulbs do not increase rapidly. Holes about 10 inches deep may be made with a crowbar, a handful of sand and bonemeal mixture is added, bulb set in and hole filled with sand. A second method of planting is to make hole with pick axe, throwing sod forward, insert sand and bonemeal mixture, set bulb and replace sod. A broad spade may also be used in which case one hole is wide enough to carry two bulbs, one at each end. Bulbs should be planted about 10 inches apart.

Each spring as soon as the foliage is through the ground, a low nitrogen fertilizer is broadcast on top of the ground in the drift areas. Spring rains soon wash it to roots.

Naturalized bulbs should be planted in areas which receive adequate sunshine in order to ripen foliage. Under evergreens or in dense woods are not suitable locations. Bulbs planted in deep shade may bloom for one or two seasons, but lack of sunshine and tree root competition will gradually deplete the bulbs. Foliage should not be removed until it has turned yellow, which is about mid-July in the midwest; however, seed pods should be removed as soon as it is evident that seed is forming. Pods can easily be removed with a few swings over a clump with a sharp sickle. In most varieties flower stems are above foliage, and leaves are not injured in removing pods.

Suitable situations for naturalizing bulbs are orchards, between the trees, open hillsides, and areas at the edge of woodlands. When planting in orchards which are sprayed, care should be taken to plant in such a way that the spray rig does not run over the foliage. Areas where bulbs are naturalized should be mowed closely in late

fall, and grass should be removed in order that new shoots are not deformed when pushing through grass in spring.

The quality of bloom received from naturalized plantings depends somewhat on the variety. During the past twenty-five years we have tried over 750 varieties and have found that most of them will produce good blooms for many years. Some varieties produce better in the sod than in the display beds, bloom earlier and seem to be hardier. As an example, Mite, a cyclamineus hybrid, will thrive in the sod but refuses to grow in the display garden where it is given the best of conditions. After eight years in the sod Ludlow,

Daffodils in an orchard make a gay spring.

Limerick, Kilter, Fairy Circle, Brunswick, Binkie and many others are still producing show quality blooms. Some varieties have not been dug and divided for twenty years, and while blooms are small they continue to give color to the landscape. Practically all divisions have varieties which are good for naturalizing. The following is a list by divisions of those with outstanding performance in the sod.

1a. Yellow trumpet: Diotima, General Marshall, Goldcourt, Kandahar, Kingscourt, Lord Wellington, Mulatto, Pretoria, Elgin.

1b. Bicolor trumpet: Content, Dinton Giant, Gregalach, J.B.M. Camm, Mrs. John Hoog, Effective, Bonython.

1c. White trumpet: Ada Finch, Ardclinis, Beersheba, Ludlow, Mount Hood, Mrs. E. H. Krelage, White Knight.

1d. Reverse bicolor: Spellbinder.

2a. Yellow large cup: Aerolite, Croesus, Fortune, Helios, Monte

Carlo, Scarlet Leader, Sonja, Trevisky, Whitely Gem, Yellow Poppy.

2b. Bicolor large cup: Brookville, Delaware, Duke of Windsor, Dick Wellband, Folly, Franciscus Drake, Hera, Rubra.

2c. White large cup: Jules Verne, Niphetos, Tenedos, White Nile.

2d. Reverse bicolor: Binkie.

3a. Yellow small cup: Bath's Flame, Clackmar, Cordova, Goyescas.

3b. Bicolor small cup: Calcutta, Daytona, Fairy Circle, Fleur, Forfar, Firebird, Firetail, Kilter, Limerick, Regency.

3c. White small cup: Altyre, Alberni Beauty, Cushendall, Cushlake, Ivorine, Portrush, Samaria, Silver Salver, Emerald Eye.

4. Double: Cheerfulness, Irene Copeland, Yellow Cheerfulness, "van Sion," Insulinde.

5. Triandrus hybrids: Alope, Jehol, Thalia, Shot Silk, Pearly Queen, Stoke, Tresamble, Mrs. Gordon Pirie, Sidhe.

6. Cyclamineus hybrids: Bartley, Beryl, February Gold, Mite, Orange Glory, Peeping Tom, Perconger, Little Witch, Golden Cycle.

7. Jonquilla hybrids: Golden Perfection, Golden Goblet, Lady Hillingdon, Lanarth, Trevithian, White Wedgwood.

8. Tazetta hybrids: Early Perfection, Geranium, Irmelin, Laurens Koster, Orange Cup, Glorious.

9. Poeticus: Actaea, Dulcimer, Horace, Kentucky.

10. Species, Wild Forms and Hybrids: "Jonquilla Nell," *jonquilla*, "Jonquilla varicolor," *moschatus, tenuior, cernuus, poeticus recurvus, gracilis.*

Pinks: Mrs. R. O. Backhouse, Rosabella, Rose of Tralee.

Many of the newer varieties are being tried for naturalizing but have not been planted in the sod long enough to determine their adaptability.

A few varieties bloom better if given some shade during the heat of day. These varieties are planted in the open, but on the east side of large evergreen trees which shade them during the afternoon. Fairy Circle, Misty Moon, and most of the white small-cups produce excellent color when planted in this manner.

Daffodils grown in the sod often bloom earlier than like varieties planted in beds. This is probably due to protection they receive from the grass. For prolonging the blooming period it is well to choose varieties which are early, midseason, and late. By planting early varieties on south slopes and late varieties on north exposures,

the blooming season may be extended to a six weeks' period. Areas where the snow lingers in spring are cooler, and varieties planted in these situations will bloom late.

The gardener who has adequate acreage which can be allowed to grow to grass until mid-July should take advantage of the opportunity to plant daffodils and thus greatly enjoy the fruits of a small amount of labor for years to come.

Mary Nelson, New England Regional Vice-President and our hostess at the 1963 convention, chats with Bill Pannill of Virginia and Charlie Meehan of South Carolina.

Some Technical Aspects of Breeding

W. L. BROWN, Johnston, Iowa

LIKE MANY species of horticulture, the cultivated daffodil is what it is today largely because of the results of selection on the part of a relatively few fanciers. In recent years an increasing number of daffodil enthusiasts have shown an interest in breeding and today many members of the American Daffodil Society are devoting some effort to the development of new varieties. Since many of these individuals possess only a superficial knowledge of genetics it may be worth while to review, in a preliminary way, some of the principles which influence the results to be expected from breeding.

I certainly do not want to leave the impression that much is known about the genetics of the genus *Narcissus*. As a matter of fact our knowledge of the mode of inheritance of characteristics in which daffodil fanciers are interested is practically nil. This, of course, is understandable. No geneticist would deliberately choose as an organism with which to work one which requires five to seven years from seed to flowering and one whose inheritance is complicated by polyploidy. For understandable reasons geneticists need to work with organisms which produce a maximum number of generations in minimum time and in which inheritance is not complicated by ploidy. It is obvious that the daffodil meets neither of these requirements.

Yet since polyploidy has played a significant role in the evolution of the genus *Narcissus* its implications must be taken into account when planning a breeding and selection program.

Since polyploidy involves chromosomes, let us begin by considering the chromosomes of an old, simple and unsophisticated variety of trumpet narcissus like Golden Spur. If from the developing flower bud of Golden Spur we remove a single anther, cut it in half and carefully tease out its contents, we find it to be full of rapidly developing pollen. Each immature pollen grain contains a nucleus and at a certain stage in its development the nucleus of the young pollen grain divides to form germ cells. Midway in this division the

hereditary material of Golden Spur has condensed into seven distinct thread-like structures—the chromosomes. Close examination would reveal that each of the seven chromosomes is somewhat different one from the other, and furthermore, if we examined a large number of pollen grains from this variety we would find that each contains a duplicate set of the same seven chromosomes. Should we examine the cells of the leaves, roots or any other part of the plant other than the germ cells we would find that each contains not seven but fourteen chromosomes. These actually comprise two sets of seven; one set contributed by the egg of the mother parent which was fertilized by a male gamete also containing seven chromosomes. Thus in Golden Spur there is one set of chromosomes in the germ cells and one plus one or two sets in the cells of the tissue of other parts of the plant. The single set of chromosomes in the germ cells is usually referred to as the (n) number and the one plus one set in the leaves, roots, etc. as the 2n number. Thus Golden Spur with a 2n number of fourteen is known as a diploid. While diploids occur in numerous species daffodils and in some cultivated varieties, most of the varieties in commerce contain not two but three or four sets of chromosomes. If three sets are present the variety is known as a *triploid* and if four are present as a *tetraploid*. 5n is a *pentaploid*, 6n *hexaploid*, etc. Plants whose chromosomes numbers exceed two sets are known collectively as polyploids.

Polyploidy can be either advantageous or disadvantageous depending upon the use to be made of the organism in which it occurs. From the standpoint of the geneticist interested in developing an understanding of the inheritance of a set of characteristics of a group of plants, polyploidy complicates his work tremendously. The reason for this is that in tetraploids, for example, one is not working with genes in pairs but with genes in sets of four. This results in an increase in the number of intermediate forms expected in the F_2 or segregating generation of crosses. As an example applicable to daffodils let us take a hypothetical case used by Dr. Edgar Anderson to show segregation of the genes *Pa* and *pa* influencing corolla color in the daffodil. It is assumes that *Pa* is the dominant form of the gene and contributes pale yellow while the recessive allele pa contributes bright yellow. Two hypothetical crosses, one diploid and the other tetraploid are contrasted in Figure 1.

It is noted that in the cross between diploids only one intermediate type is present with respect to the single dominant-recessive gene for corolla color. Since *Pa* is dominant to *pa* the intermediate

type is indistinguishable from the dominant parent. In contrast, the tetraploid cross produces three intermediate types, two of which are like the dominant parent but the third possesses a color different from either parent. The reason for this is that although *Pa* (for pale color) is dominant under ordinary circumstances it cannot completely cover up the bright yellow color when paired with three recessive genes.

Diploid Cross

Parents	Pa (pale)	x	pa (bright)		
F_1	Papa (pale)				
F_2	PaPa (pale)	Papa (pale)	papa (bright)		

Tetraploid Cross

Parents	PaPa (pale)	x	papa (bright)		
F_1	PaPapapa (pale)				
F_2	PaPaPaPa (pale)	PaPaPapa (pale)	PaPapapa (pale)	Papapapa (light)	papapapa (bright)

Fig. 1. Segregation of genes for corolla color in diploid and tetraploid crosses of Narcissus. Hypothetical examples adapted from data of Anderson.

It is perfectly obvious to anyone, I think, that the diploid cross is more simple and more easily analyzed by usual genetic techniques. The F_2 generation segregates into sharp, clear-cut classes and in expected ratios. These are the kinds of differences geneticists prefer to work with. On the other hand, for the daffodil breeder, the increased number of intermediate types in the F_2 of the tetraploid cross has many attractions. Variability within material with which a breeder is working is absolutely essential if progress is to be achieved. Without it advances are impossible. So the F_2 progeny of the tetraploid cross offers the breeder many more opportunities for selection than does the diploid.

Without going into details, it seems appropriate here to give some thought to the two main types of polyploidy encountered in

plants because both of these occur, I believe, in the genus *Narcissus*. The two types are *autopolyploids* and *allopolyploids*. Examples of each can be simply illustrated in this way (Fig. 2). Assume we have a diploid plant which originated from the union of an egg and male gamete of very similar genetic constitution. Such a plant we can call AA. Chromosome doubling of such a plant would result in a tetraploid of the constitution AAAA. This, according to usually accepted terminology, would be an autotetraploid. Now let us suppose we have another plant which is the product of a cross between

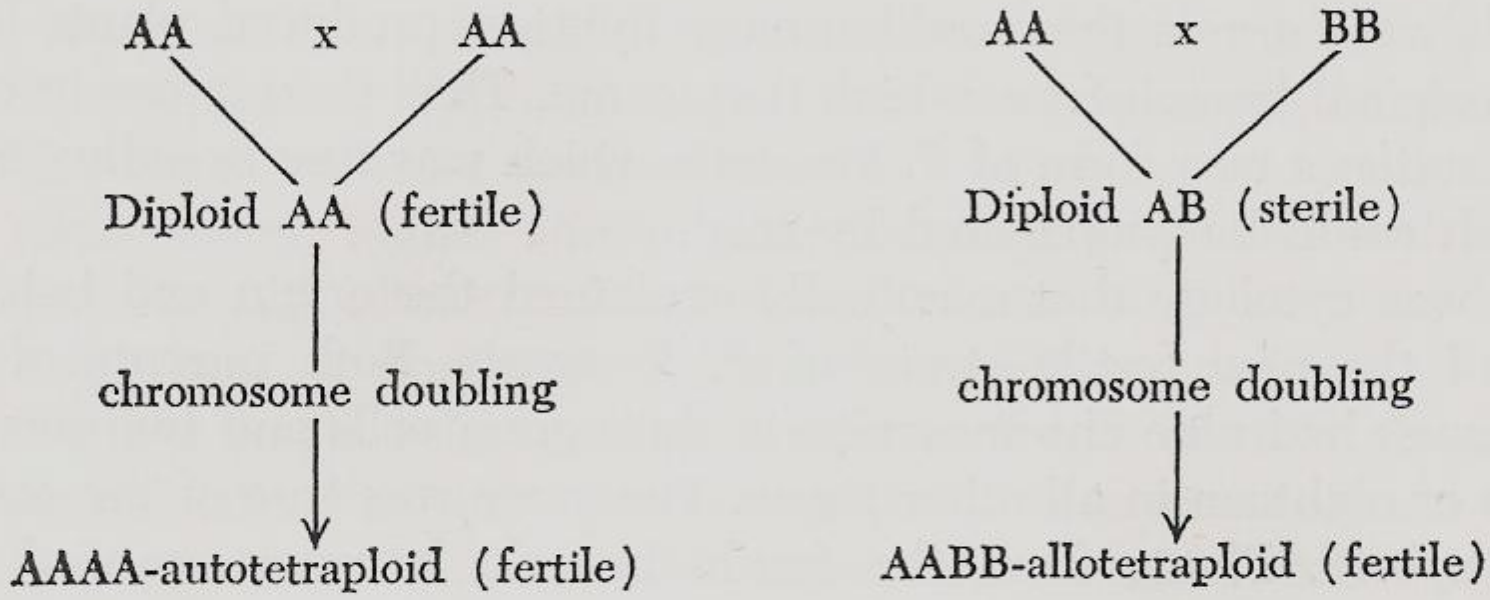


Fig. 2. Representative genotypes of auto- and allotetraploid forms. Explanation in text.

diploid species AA and another diploid BB. This we can designate as AB. If the chromosomes of this plant are doubled the result is, of course, AABB or, in our terminology, an allotetraploid. It will be noted that the diploid AB is sterile and that fertility is restored in the tetraploid AABB. The reasons for this will become clear later in the discussion.

If we can depart from daffodils for a moment and talk about primroses, I should like to relate for you the classic example of the origin of the allotetraploid, *Primula kewensis*. This, I think, is a striking example of how chromosome studies can often solve the mysteries of new plant forms and how it can provide useful information for the breeder, including the daffodil breeder.

Those of you who have visited England are aware of the importance of the primrose in English horticulture. The common yellow primrose is one of the dominant features of the English landscape and a multitude of cultivated forms are grown as garden and house

plants. At the Royal Botanic Gardens at Kew many years ago a cross was made between *P. floribunda* and *P. verticillata*. The hybrid was vigorous, attractive and eventually reached commercial channels as *P. kewensis*. But like many species hybrids *P. kewensis* was completely sterile and could be propagated only by vegetative means. However, on one or more occasions, a plant of the sterile hybrid produced a single branch which differed from all other branches of the plant. The leaves of this branch were larger, darker green and the flowers produced by the branch were also somewhat larger than those from the main part of the plant. Even more interesting, these flowers produced seed abundantly. And when the seeds were grown they, unlike many hybrids, produced plants like the original branch from which they came. Thus there arose in one generation a new form of *P. kewensis* which was true breeding and which could be propagated by seed.

It was cytology that eventually explained the origin and behavior of the new fertile strain of *P. kewensis*. Both parents of *P. kewensis* had nine chromosomes in their germ cells and two sets of nine or eighteen in all other tissue. The same was true of the original hybrid. Plants from the fertile branch, however, carried 18 chromosomes in the germ cells and two times 18 or 36 in all other tissue. It was clear then that the new form was an allotetraploid which probably arose from a single cell in which cell division failed following a normal division of the nucleus, thereby doubling the chromosome number. The original diploid hybrid was sterile because it contained two quite different sets of chromosomes, one from the *floribunda* and one from the *verticillata* parent. The two sets of parental chromosomes were so unlike that they could not successfully go through the process of reduction division and as a result all germ cells aborted causing complete sterility. In the tetraploid two complete sets of *floribunda* chromosomes and two complete sets of *verticillata* chromosomes were present in every cell. Therefore every pollen grain and every egg contained one full set of chromosomes from each parent. As a result, chromosome pairing could proceed normally producing fertile pollen and eggs. Since each pollen and each egg contained identical sets of chromosomes the tetraploid hybrid was virtually true breeding.

Most of the new and more important daffodils of horticulture are triploids or tetraploids. This is not because breeders have used chromosome counts as a basis for selection but only because triploids and tetraploids are more robust, vigorous and usually have

larger flowers than diploids. Triploids in general are larger than diploids and tetraploids in general are larger than triploids. Thus there has been a natural tendency for breeders to select the triploid and tetraploid forms even in the absence of any knowledge of chromosome numbers. This being true, one may wonder why one should not continue to increase chromosome numbers and develop pentaploids, hexaploids, etc. The reason for not doing so is that in all plants there is an optimum for chromosome increase beyond which there is a decline in vigor. In daffodils the optimum seems to be at the tetraploid level. At least in the cases where comparisons have been possible, hexaploids have been found to be smaller and less desirable than tetraploids from the same variety.

Since polyploid daffodils have arisen from diploids, it may be instructive to consider some of the ways which result in the origin of these newer, higher chromosome forms. Tetraploids, both autotetraploids and allotetraploids, do of course arise spontaneously. Probably one of the most frequently occurring methods is that whereby a single cell, through a failure of cell division, becomes tetraploid and eventually produces reproductive tissue whose eggs and male germ cells have double the usual number of chromosomes. The *Primula kewensis* example, cited earlier, is typical of such an occurrence. Polyploids also arise as a result of the occasional development of 2n eggs and male germ cells in a diploid plant. If a 2n egg is fertilized by a male germ cell with (n) number of chromosomes the progeny is, of course, triploid. Conversely, an (n) egg could be fertilized by a 2n pollen grain and the progeny would again be triploid. The frequency of this occurrence is relatively low in normal diploid plants. However, where diploids and tetraploids are growing in the same area and flowering at approximately the same time, natural crossing of the two is very likely to happen and the resulting progeny would be triploid. Likewise, crosses could and probably do occur between tetraploids and triploids in which case the offspring will be of an odd chromosome number since the reproductive cells of a triploid could contain chromosome numbers varying all the way from 7 to 21. The reason for this is that the triploid number of 21 is an odd number and being odd some chromosomes do not have partners with which to pair and are distributed at random to the daughter nuclei of dividing cells. Such probably does not happen often because of the sterility associated with triploidy. Sterility associated with odd numbers of chromosomes and with species hybrids inhibits survival among those plants whose

sole mode of reproduction is through seeds. However, since the daffodil can reproduce vegetatively, this is no problem and any new type if able to survive in nature or if selected by the breeder can survive and reproduce its kind. This is the reason that among daffodils there are varieties with odd numbers of chromosomes.

Thus far we have talked primarily about those daffodils with a basic chromosome number of seven. We know, of course, that in the tazetta group the basic number is not seven but ten or eleven. Furthermore, hybrids between the seven and ten chromosome groups do occur and the products of such hybridization add further to the genetic variability of the genus and consequently enhances further the opportunity for the breeder to select interesting new forms. If you were working with plants whose mode of reproduction was limited to seeds, this potential variability, because of sterility, would be of little practical value. However, since the daffodil is increased vegetatively this myriad of chromosome forms offers the breeder a real bonanza in so far as selection potential is concerned.

With this scattering of facts as a background, we might now consider some of the theoretically most promising types of germ plasm into which the breeder might look for new varieties. Let us first consider the type of polyploid which is least likely to produce new seedling types. This is the fertile allotetraploid. The reason such a tetraploid is an unpromising source of variation is that every pollen grain and every egg produced by such a plant contains a complete set of chromosomes from each of the parents of the original hybrid. The allotetraploid, therefore, is virtually true breeding and its progeny from seed would be expected to be little if any more variable than seedlings from a normal diploid. Although triploidy is usually associated with a high degree of sterility, this is not always true in the daffodil. The same unbalanced chromosome situation of triploids which results in sterility also produces occasional tetraploids. This, supposedly, was the mode of origin of the renowned King Alfred. In addition to spawning tetraploids, triploids are a source of forms carrying chromosome numbers which fluctuate around the 3n number of 21. They may be 21 plus or minus 1, 2, 3 or more chromosomes. Since the deletion or addition of single chromosomes frequently has a more pronounced effect on the plant than does the addition or deletion of whole sets of chromsmes, triploid progeny should be a very promising source of new varieties. For this reason I should think breeders might pay particular attention to those triploid varieties which set any amount of seed. Prog-

eny of pentaploids should likewise produce an equally variable array of forms although the relatively high numbers of chromosomes in pentaploid progeny might be expected to result in some reduction in size and vigor of the plant. The simplest way of producing pentaploids, of course, would be to cross hexaploids with tetraploids. To my knowledge little of this has been done to date and such crosses should be explored. While hexaploid daffodils are apparently rare they do occur in some complex tazetta hybrids and they could, moreover, be produced from more promising breeding materials by doubling the chromosome number in important triploid horticultural varieties.

I have said nothing as yet about what is perhaps the most promising breeding technique and the one which is likely most used by the serious breeder. I am thinking of planned, controlled crosses for the purpose of adding one or more improved qualities to otherwise desirable varieties. To benefit most from such crosses and to take advantage of genetic recombination between the parental types, it is desirable to carry the material through the F_2 generation. This does not mean that the F_1 hybrids may not be of interest but the F_2 or segregating generation is the one which will provide the breeder with an opportunity to select between a greater variety of types ranging all the way from one parent to the other.

While, as mentioned before, this is probably a commonly used method of improvement among professional daffodil breeders, to really intelligently plan such a program we need to know much more than we now do about the inheritance of those characteristics of most interest to breeders. And while the long time required by the daffodil to complete its life cycle renders it impractical to get this information from the usual genetic experiments, much could be learned from segregating material in the nurseries of the larger breeders. If such breeders keep accurate records—as I understand they do—one with a good eye for differences, an inquiring mind and some background in genetics can learn a tremendous amount from what the plants themselves have to tell. An excellent example of what may be expected from this approach is found in the results obtained by Dr. Edgar Anderson after a few days spent some years ago at the Oregon Bulb Farms. Anderson's observations gave us a better insight into the genetics of the so-called pink daffodils than had been available prior to that time and he did it all in the matter of a few days. But I should warn you that not every geneticist is an Edgar Anderson and I am sure that some geneticists could have

spent weeks among the same daffodils and found nothing but chaos and confusion. But fortunately Dr. Anderson and a few others like him are still about. In my opinion, one of the most fruitful things our Society could do, if it is interested in furthering our knowledge of inheritance in the daffodil, would be to encourage such people to spend some time each April among the fields of the larger daffodil breeders.

Finally, I should like to comment briefly on a few of the problems which are of more immediate and practical interest to the breeder. To begin, let us consider the importance of emasculation (some call it deanthering) in hybridizing. Results which have been reported suggest that certain varieties are largely self sterile and others exhibit a high degree of self-fertility. Also, the degree of self-sterility in some varieties seems to be influenced by certain factors of the environment. It would seem, therefore, that unless one is absolutely certain that a seed parent is self sterile it is essential that it be emasculated before pollen is shed. If the variety is known to be self sterile it is still necessary to cover the flower or the pistil to protect it from visiting insects. Unless this is done the male parentage of a cross can be nothing more than a guess at best. It is terribly easy to make unavoidable errors in a hybridization program. To add to these errors by neglecting to control the pollination seems inexcusable.

With respect of self-incompatibility it would be interesting to apply to the daffodil some of the techniques which have helped to overcome self-incompatibility in certain lilies. Dr. S. L. Elmsweller and his coworkers in the U. S. Department of Agriculture have found that seed set can be markedly improved in otherwise self-incompatible lilies by applying a weak solution of the growth regulator, napthalene acetamide, to a wound at the base of the pistil of the flower. This may or may not work with *Narcissus* but it would be interesting to find out.

Another problem which needs attention is that of seed dormancy. If dormancy can be overcome, it would be of considerable help to the breeder. With the help of Dr. Tom Throckmorton and Mr. Grant Mitch who have supplied me with seed I have attempted over the past several months to overcome dormancy through the use of embryo culture. To date my results have been completely negative. The dormancy present in the seed is just as persistent in the excised embryo transferred to nutrient agar. Therefore, this approach which has been used so effectively in iris, for example,

seems to offer no solution to the daffodil enthusiast. Likewise, treatment of dormant daffodil seed with gibberellic acid has had no influence on germination in my tests. However, other ways of attacking the dormancy problem should be tried.

So-called mutation breeding has received a vast amount of attention from plant breeders over the past several years. The procedure consists of treating plants, seeds or pollen with some mutagenic agent such as x-rays, ultra-violet, thermal neutrons or chemicals for the purpose of inducing mutations which it is hoped might be useful to the breeder. This approach has even reached the daffodil breeder, and one of my friends is planning to treat daffodil pollen with ultra-violet light. While one can never predict the outcome of such work in advance, my guess is that those who use it will likely be disappointed with the results. In the first place, practically all induced mutations are of a deleterious nature and it would be unusual if results were otherwise in *Narcissus*. Secondly, it seems to me that in a group of plants with as much natural variability as is found in the daffodil there is little need for increasing variation by artificial means.

I have discussed primarily some of the more technical aspects of breeding, but I should like also to emphasize that while a knowledge and appreciation of genetics and cytology can certainly be of great value to the breeder, such knowledge does not insure his success. Almost equally important, I think, is a real love and feeling for one's plants. In this regard I have long been impressed with the attitude of the Hopi Indian toward his plants and the influence of this attitude on his success as an agriculturist. The Hopi, who have a long history of successful dry land farming, believe that one's attitude and thought have some influence upon the plants in the field. If it is a good thought it is good for the plant, if a bad thought, the reverse. While most scientists would consider this attitude naive, it is probably a part of the philosophy of most successful breeders, daffodil breeders included.

Tazettas in Southern Illinois

VENICE BRINK, Nashville, Illinois

THE tazettas were probably the first daffodils which man bothered to cultivate, or at least distribute, in his prehistoric and later wanderings. Partly due to this, and also the inherent vigor and toughness of the tazettas, and their possession of the largest and hardiest bulbs of all daffodil species, the botanists have found them to have a far more extensive geographic range than any other section of the genus *Narcissus*.

Again, tazettas were the first daffodils to be introduced to the gardens of Europe during the bulb craze of a few centuries ago, and although changing tastes in garden circles and the development of the other modern daffodils have dethroned them from their kingly station, and the catalogs no longer list them by the dozen of varieties, yet they continue their globe-encircling travels unobtrusively but surely, oft-times as in days of yore when given a lift by some plebian gardener who knows nothing of the show aristocrats of today, but seeing one of these multiflowered fragrant blossoms, gets a bulb and takes it with him.

For example, *N. italicus* is now well established in a number of gardens here in Washington County, Illinois, because two enthusiastic but botanically unlearned gardeners visited relatives in Kentucky and Tennessee some fifteen years ago and brought it home. One had no name for it, the other called it "Star Narcissus." Unaware of its supposed cold-tenderness, they planted it and it flourished.

In like manner, and in similar innocence of book lore I included "Paper White" and "Soleil d'Or" in my first small planting of daffodils in the fall of 1947. They grew and bloomed, and I looked for more. Only as my addiction to daffodils increased and my acquaintance with the printed word expanded, did I "learn" that all tazettas are very cold-tender and suitable only for the deep South. However, this spring, as usual, the tazetta species and their descendants reappeared, grew, and bloomed, after the worst winter in many

years including prolonged sub-zero temperatures to twelve below with little snow cover, preceded by an extremely dry fall and only slightly wetter early winter.

Just what the northern limit of tazetta species and full-blood varieties is I do not know, but I would venture a guess that some of them can be grown in all localities within the northern range of the pecan, or anywhere where American holly, sweetgum or the deciduous magnolias will grow. I believe they are perfectly safe anywhere to the northern limit of *Magnolia grandiflora*, and that may be more than you think. "Paper White" is cheap and readily available, and is a good one with which to experiment.

To some degree, growing tazettas in the north is a matter of arriving at a successful compromise between certain apparently unreconcilable demands. The tendency of some tazettas to pop out in growth during the first warm spell after frost would seem to indicate annual lifting and late planting, yet tazettas like to root early, and having roots grow in the air in storage saps the bulb, also it is important to get the root system well established in well-settled soil as early as possible. My best solution to date is to plant about the same time as other daffodils, a little deeper than average, in a soil previously deep dug and well settled, on a north or west slope, and mulch fairly heavily.

Tazettas seem to have the most extensive root system of all daffodils, and about the longest growing season. Some foliage has been green till the end of July, also they are gross feeders with a heavy demand for food and water. At the same time, they are sensitive to poor drainage, especially in winter. The Chinese system of growing in raised rows or beds in flat fertile soil has not worked too well with me. I plant on a slope on less fertile soil, using liberal amounts of fertilizer balanced as to phosphorus, potash, and nitrogen too. I use terracing and mulch to help hold moisture in summer.

The number of tazetta species and full-blood varieties available commercially today is small. Some may be secured from other sources, especially from the southern states, often under a name unknown to the books. There is considerable disagreement as to names even among the experts, and a good deal of confusion. Some day this matter of proper nomenclature will no doubt be resolved. In the meantime, any tazetta is worth growing whether you know its proper name or not. For the beginner, "Paper White" and "Soleil d'Or" are recommended. I will not attempt to catalog or describe

all the tazettas of which I have heard, but it may not be amiss to note some which I have found noteworthy here.

Contrary to most reports, the small *N. canaliculatus* which resembles a tiny Chinese sacred lily has done very well here and given good bloom when planted a little deep in rather poor soil. As yet I have not tried it indoors, but the similar slightly taller *N. odoratus* which also does very well outdoors is a real stunner inside where it grows twelve to sixteen inches in height. I think it much better than the Chinese sacred lily. It has good clusters of quite large florets of white and orange of very good substance. The season of bloom indoors commences the middle of January and is good for a month. Despite its name, it has a pleasing but rather light fragrance. The plant grows well here, and increases satisfactorily, producing a medium-sized hard, round, dark bulb.

Similarly, I have found the rather dwarf *N. panizzianus* to be a very good doer here and a good performer indoors where its 10- to 14-inch stems are much more acceptable than the 30-inch stems of its near relative, "Paper White." Its florets are similar and quite as good.

The plant labeled *N. italicus* and sometimes called "Christmas Star" and "Star Narcissus" is the earliest outdoor bloomer I have found. It has longer, narrower, more pointed petals than other tazettas, and they seem to vary from white to straw yellow. It is an exceptionally good indoor plant coming into bloom around New Year's. The florets are more tightly placed on the stem than in any other. The petals change from cream to white, and the fluted cups with their six little points open buff yellow, change to pinkish and then to cream, all of which gives a multicolored effect to the spike, which is long lasting. I have been growing my indoor bulbs in soil, starting them in October and bringing them indoors in late November.

Anyone who grows tazettas should by all means try "Soleil d'Or," there is none like it, with its loose heads of florets of yellow and orange red, which always attract attention in a planting.

The plant sold under the name of *N. compressus* is said to be Grande Monarque. Alec Gray says it seems to be identical with the one called Avalanche also. By any name it has been a remarkable plant here. It grows well, with large vigorous foliage and a stout stem which supports well the largest head of attractive bicolor florets I have yet seen. Some say it is a poor increaser, but not so here.

Another which I got from a southern source under the name of

"Seventeen Sisters," and which some seem to think is Minor Monarque, has a similar large open head of florets of white and cream.

Of the reputedly wild hybrids of tazetta with other forms of daffodil, one known in the South as "Gold Dollars" has been identified as the hybrid species *N. intermedius*, in which the other parent species was a jonquil. This is a quite late bloomer, having a graceful stem carrying three to five yellow florets of medium size, with a delightful fragrance which combines that of both tazetta and jonquil. It would seem most desirable to emulate nature's cross here and produce more jonquil-tazetta hybrids, but apparently no one has yet done much about it.

Another species hybrid is *N. biflorus*, the prototype of all the poetaz varieties, as it is supposed to be a natural cross of tazetta and poet. It carries two or three florets of white and yellow, and is notable only for its exceedingly late bloom and its exceeding toughness and vigor which makes it suited for naturalizing. Sometimes it is called "Twin Sisters."

THE POETAZ VARIETIES

Many tazetta-poet crosses have been made and they seem to be all good. I have yet to see one I didn't like, even the old timers. Too often the tazettas are thought of as little daffodils, but as concerns the poetaz this is certainly wrong, as many of them are quite tall, and some have large heads and individually large florets. The poetaz race is considerably hardier than its tazetta parents, and there are reports of successful growth in Michigan. I would venture the guess poetaz varieties could be grown about as far north as any of the poets.

While they are all intermediate between their parents, some favor one parent more, and some the other. The poet-like ones have taller stems with fewer, larger more formal individual florets, and are usually later in bloom. The others have shorter stems with more, smaller florets and are usually earlier. These are a little better suited to indoor growth and will there give a good account. Many of our finest poetaz are the result of breeding by P. D. Williams, and his cousin J. C. Williams; many others are the result of work by Dutch breeders.

Of the poet-like tazettas, Red Guard is a remarkable old-timer which can still win prizes with its tall-stemmed well-formed blossoms of good size flaunting a red cup and petals of yellow flushed

red. Its raiser, Mrs. R. O. Backhouse, also produced Xenophon and Xerxes, two of the largest flowered, with yellow and orange red.

Almost as late in bloom as the well-known Elvira is another sturdy old-timer with tall stems and large florets called Pride of Cornwall. Its large rounded petals are white and the cup is orange. It and also the remarkable variety Cragford were grown by P. D. Williams. Cragford is well known for forcing. Some Dutch firms caution their customers that it is not suitable for garden use. That is certainly not the case here. While the earliest to bloom, it has also been one of the best. It is rather intermediate between the two types with its white and red florets.

Another of the poetaz type is the well-known Geranium, with perhaps the largest and heaviest bunches of florets to be found. One of the finest all-yellow varieties is Laetitia, a Dutch variety which, alas! is unregistered. Almost as early as Cragford is Orange Prince, with yellow perianth and deep orange cups. A very late and very large one of white and orange is Orange Blossoms, and a newer one of similar color is the very vigorous Early Splendor. Oregon Bulbs Farms produced two very fine ones which grow like weeds, Matador in cream and red, and Golden Dawn, a pleasing self yellow which sends up remontant stems galore.

By using "Paper White" as a parent Dr. Powell produced Hiawasee, an all-white poetaz which deserves to be better known. It is quite hardy, and its stems carry two to four florets which remind one of small edition 3c's.

Alec Gray has produced three quite small poetaz, Halingy, Hors d'Ouvre, and Shrew. Of these I have so far grown Halingy. Outdoors, it is one of the earliest and tiniest. Indoors, it blooms in mid-January, about ten inches high with correspondingly larger blossoms of cream and light yellow turning to white and cream. It sends up remontant stems and has been for me quite a find here, though Mr. Gray says it does not do well indoors for him.

While all double daffodils are officially in Division 4, we may note that the Cheerfulness brood are mutations of poetaz Elvira. Not so well known is Fairness, the double Admiration, with two or three florets of light yellow which put me in mind of tiny replicas of decorative dahlia blooms.

Many years ago a Dutch breeder, Herman Frylink, with unlimited patience set out to do the supposedly impossible, and did by finding viable pollen on some of the supposedly sterile poetaz and using it on some of the finest large cups and small cups of his day.

He produced a number of plants all of unusual size and vigor. Several were introduced, some were lost. Martha Washington is the only common one, but if you can find any Corona, Normandy, or Edith Paige you may be sure you are growing some of the largest, huskiest tazetta descendants. It's time we redid Frylink's work using some of our best modern varieties from Divisions 2 and 3.

Another tazetta hybrid noteworthy for its solitude as well as its merits is Silver Chimes, where the other parent was *N. triandrus*. So far many years have gone by with no other addition to this group. However, Mr. L. S. Hannibal of California has one yellow one coming up.

Similarly, a tazetta by *N. cyclamineus* produced Cyclataz many years ago, and the only additions since came when the observant Alec Gray found one self-pollinated pod of a plant of Cyclataz and from it grew Jumblie, Quince, and Tête-à-Tête. Both Cyclataz and Tête-à-Tête have done well here.

It has been my experience that all tazettas and their descendants have been tough and vigorous plants with very good bulbs having the most extensive roots of all daffodils and about as disease proof as daffodils can be, their only rivals on that score so far being the jonquil hybrids.

1963 Notes on Novelties

HARRY TUGGLE, *Chairman*, Symposium Committee and
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Martinsville, Virginia

THOUGH we grow daffodils only two city blocks apart, our exposure, earliness of bloom season, and basic soil type differ. We have both followed the same general cultural practices. Growing conditions have been the best we are able to provide, except that we have not resorted to incubator methods of protection from the weather over which we have little control other than some protection from wind. Even at close proximity certain daffodils perform differently and we shall either praise or criticize varieties as they grow for *both* of us. We want to emphasize that any critical comment is based entirely on performance in our two gardens.

We have attempted to confine our remarks to novelties upon which we are in agreement. There are many older and/or cheaper varieties capable of competition with some we have discussed, however they are not within the scope of this article. We have concentrated upon the more promising of the show flower or exhibition type, for our tastes are strongly slanted to that type of perfection in a daffodil.

Inver has been the best of light or sulfur-lemon tinted types, and still passes to 1d in strong sun. Harewood (N.Z.) is a well formed light yellow bitone, and Slieveboy when settled is large and handsome in light yellow. Royal Oak and Arctic Gold are medium sized and can be relied upon for show every year. Golden Rapture is larger and when in top form is a winner. Viking blooms toward the end of midseason and is especially valued for its graceful form which brings to mind some of the best 1c's. After growing King's Ransom for several years neither of us has ever had a good bloom. Ulster Prince continues to be a sturdy and dependable garden flower, plus giving a percentage of blooms of show quality.

Newcastle's perianth is inclined to cup, but with proper grooming it is virtually unbeatable on the show table. It is large, a strong grower, and has excellent contrast and form. Prologue is early, of

smooth form and color, and extremely long lived. It combines the best features of its parents Trousseau and Foresight. Murray Evans has a seedling from Polindra x Frolic which has been observed in top form on the west coast for several years. Its parentage and performance under Southern California conditions should make it a welcome addition when it is introduced next year. Among the cheaper priced 1b's our vote still goes to Frolic. Preamble is definitely an off and on again flower, and we are discarding Tudor King, Fair Trial, and Alpine Eagle. Downpatrick has thus far been disappointing. Alpine Glow ("Roslyn") and Rima are our best pink trumpets. We know of no good 1b's (white-yellow) that bloom after midseason.

Empress of Ireland after acclimatization gives superb blooms every year and even the critics who once knocked it now admire its size and patrician form. Birthright on maiden bloom was whiter than Empress of Ireland and intermediate between it and Vigil in form. It shows much promise. White Prince has given excellent flowers without our ever seeing the spurs on the trumpet mentioned in catalog description, but we would fault it for its long neck. Vigil remains the most glistening white of the white trumpets and has rapid increase. Its sister Glenshesk, valued for earlier bloom, is larger, but of less chaste form and is rather short stemmed. Rashee is medium sized and valued for its late midseason quality bloom. Mitsch N 59/12 (Kanchenjunga x Zero) has given good blooms of distinctive rounded form. Pure white Longford is especially noteworthy in that its trumpet has the lovely taper of its parent Cantatrice backed by a broader perianth.

Lunar Sea is so outstanding that it is virtually a crowd of one for exhibition. Moonlight Sonata is valued for its later bloom.

Ormeau has been our most reliable solid yellow 2a for exhibition. Reliable reports indicate that Mitsch's Butterscotch will set a new pace, and Richardson's Camelot (Kingscourt x Ceylon) is eagerly awaited.

Among the red-rimmed (color not predominant) 2a's, Balalaika has given the best bloom. Medium to small-sized Bantam has excellent form and should be useful to miniature breeders. Ringmaster has given poor flowers for four years.

Zanzibar has given us the best red coloring we have ever had or seen in a 2a. In addition it has good form, is vigorous, and has good sun resistance. Next for color, if not for form, comes Paracutin. Perhaps the most nearly perfect for exhibition in this group is Vulcan,

which gives a high proportion of blue ribbon flowers. Mitsch's new Flaming Meteor promises top flight competition. Air Marshal and Border Chief are sound exhibition varieties that bloom later in the season. For those who admire Red Goblet, Sealing Wax (Wallace-Barr) is a much-improved flower of the same general type. Our best and most vigorous garden variety has undoubtedly been Matlock. Masai King, Field Marshal, and Madeira have been nothing to brag about. Majorca and Chemawa have been good exhibition flowers with orange cups.

Festivity, though scarcely "novel," remains our best white with yellow large cup. Deodora and Oratorio are similar with flattish cups banded yellow or varying color depending on the season. Irish Minstrel has excellent contrast, form, and substance, but it takes a long time to develop and the edges of the petals tend to curl inward. Tullyglass has been outstanding in every respect and should be more widely grown; it is a much improved version of Greenore. My Love continues to give quality bloom, its only possible fault being lack of contrast at maturity, but its form and delicate coloring more than compensate. Abalone is a large handsome Green Island derivative that takes on charming buff tints in the cup. It has exceptional substance and durability. Woodgreen has decidedly declined in quality and favor. Careysville has been prone to basal rot, and we have been unable to bloom it typically thus far. We think that Personality is a run-of-the-mill flower that is misnamed. Gold Crown continues to be our most effective (and similar in color to the 1b Effective) garden subject.

For the past two seasons Accent and Fintona have been our best pinks in color and form. Judging from a first year bloom Rose Royale would appear to be a challenger. It has better form and substance than its parent Salmon Trout and its petals did not catch in the trumpet-shaped cup as Salmon Trout's are inclined to do. For three years we have also had trouble with the petals of Debutante catching in its cup. Its color and substance have been good, and we are hoping that when it settles this feature will be corrected. *With a great many daffodils it often takes four to five years to become acclimated and bloom typically.* This fact of life holds true also for some bulbs obtained from a relatively short distance even within this country. Carita, though poorly balanced for showing, has outstanding, long-lived color that does not vary with climatic conditions. Passionale is a fine flower, but its color is entirely dependent upon the season. Flamingo has good color and appears to be trum-

pet in character if not measurement. Chiffon and China Pink both bloom quite late and are rather small with exquisite cool clear "baby pink" color. Infatuation has this same clear color around rim of the cup which gradually lightens to a vivid green center. This variety does have "personality." Procession has for several years been here a better garden-type flower of the Rose Ribbon type.

The "population explosion" from Kilworth x Arbar has given the finest exhibition red cups yet seen! Of the varieties we have grown for several years, Avenger and Victory are outstanding. Pirate King can be good but is not as dependable. Hotspur on maiden bloom this year promises to be larger than these three and has good color. Overseas judges and visitors to London shows and the Richardson planting rate the best of the tribe as Rameses, Don Carlos, Hotspur, Norval, and Orion in that order. Only the last two have been introduced. Northern Light has settled down and gives large flowers of good color. It looks like what Fermoy would like to have been. Libya is not in a class with these other flowers, but its fine red coloring is not as prone to fading.

We have never seen a better 2c than Ave as grown by Kitty Bloomer and Margaret Wheat on the shores of the Potomac, but we have been unable to even approach their success with this flower. We would rate Knowehead as our best for exhibition. This is another that takes time to settle, but well worth the waiting. Next comes Early Mist (EM) and Eastern Moon (ML). Early Mist is one of those top-flight flowers that has not received the recognition it is due. Glendermott is an outstanding 2c of ideal large cup character, but regrettably it is extremely prone to basal rot. Templepatrick is a most promising flower of Vigil whiteness and lovely quality. Arctic Doric (EM) and Purity (ML) both open white, the cup of Arctic Doric suggesting bluish white. These flowers are medium sized and refined. We have never had a good bloom of Castle of Mey. Wedding Gift has been exemplary here for vigor and durability in the garden.

Without reservation our best 2d's are Bethany, Rushlight, and Daydream. Bethany is one of those rare flowers that gives smooth blooms every year, and is of such quality in form that it can compete with the better flowers in other subdivisions. Rushlight does not have as distinctive contrast in coloring, but its cool lemonade tints and cup which goes almost pure white leave little to be desired. We do not feel that Daydream, even though an excellent flower, is as well proportioned as Bethany and Rushlight. We have

become spoiled by the high quality of Grant Mitsch's reversed bicolors in this subdivision and overlook that the classification requires only that the cup be paler in color than the perianth. Handcross is an example of this with good form, but the cup does not go to white.

The 3a subdivision is hard put for good flowers. Lemonade is beautifully formed, but opens as a 3b and only with age passes to a solid jaundiced shade. Although of superb form Aircastle (classified 3b) is the same type. Both are from the same parentage. Perimeter, which is rimmed red, is perhaps the best and most dependable exhibition 3a available. With such vivid coloring and comparative sunfastness, it is unfortunate that Jezebel has a perianth that quickly reflexes and becomes twisted.

Syracuse and Coloratura have been our best 3b's in the yellow or color not predominate class. Syracuse has a pale lemon rim, and Coloratura's flattish cup is rimmed bright gold, or in some seasons more nearly orange-red. Carnmoon is our best garden subject and often gives blooms of show calibre. Shantallow and Crepello, both long necked, have been disappointing. Greenmount has been overlooked. It resembles a well grown, large Chinese White with a bright lemon rim, its petals appearing to be even whiter than Chinese White. Green Hills has given large flowers, not always smooth, but with more green in the eye than seen before in such a large flower.

Caro Nome, the first 3b pink, would be a wonderful pink cup even were it a 2b. Its apple blossom pink is most attractive and it consistently gives good bloom. Gossamer has slightly reflexing very white petals with a smaller cup than Caro Nome that is banded in delicate pink. It should be picked early to prevent fading.

Merlin, with its pure red rim, and Rockall, with its cup of uniform flame red, both have superior white perianths and give smart bloom every year. These two are above the crowd. Other noteworthy items are Accolade, which has good color and the tallest stems of any 3b, and Snowgem, which blooms early and resembles a giant poet. Toreador and Privateer are both sisters of Rockall. Privateer is perhaps the largest red-cupped 3b but its overlapping perianth is not as white as others. Toreador has a clean white perianth and a small, neat cup of pure cherry red. Irish Splendour looked very promising on maiden bloom.

We have never before known 3c's of the quality of Verona, Benediction and Tobernaveen. Verona is a vigorous grower, has superb

form and substance, and is a uniform milk white. Tobernaveen opens pure glistening white with a green eye and is a much improved Chinese White type. It is not as rapid a grower as Verona, and as with Chinese White it sometimes has nicked petals. Benediction is not as large as Bryher, but is even whiter and has an irresistible deep green eye that holds quite well. Kincorth and Cascade are both 3b's as they grow here. Engadine has been a very weak grower. Deserving more notice is Dallas, which has eclipsed Silver Salver in the small 3c's.

Acropolis is without peer among the doubles available today. Every flower is almost without fault. Tonga, in yellow and orange red, resembles a well-grown Double Event in form; however, Hawaii and Tahiti are the two yellow-red doubles for which we are waiting.

The finest improvement we have seen in triandrus hybrids is a seedling of Eve Robertson's from Thalia pollen! It makes the best of the solid whites such as Tresamble look passé. Honey Bells and Lemon Drops have been our best solid yellows, Honey Bells being especially notable for its heavy substance. The new, all white Tincleton (5b) is welcome for those of us who do not have the climate to grow Silver Chimes, a variety which to us looks and grows like a tazetta. Sidhe and Merry Bells are both nice bicolored varieties.

Perhaps the most exciting cyclamineus hybrid development for years has been the appearance of varieties having yellow petals with orange or orange-red cups. The best we have seen is a seedling of Charles Meehan's from Armada x *cyclamineus*. Mitsch's new Satellite gives much better color in this area than does Chickadee. Both of these have good form and grow well. Another interesting development is the neat Titania, which passes to almost white, but is an F2 hybrid that does not reflex quite as much as expected. It leaves little to be desired in form, and has a better disposition than Jenny. We have found no 6a to surpass deep golden yellow Woodcock for exhibition bloom. Finally, Kitten has come along to replace Beryl as our best 6b exhibition variety. It has size and well contrasting yellow-red color.

If we could grow but one jonquil hybrid it would be Susan Pearson. Unfortunately it is very slow to increase and hard to come by, as it is not to our knowledge offered by any commercial grower. Each stem has three to four large, smooth bright golden-perianthed florets with deep bright red small cups. Parcpat has shown little color, and Kinglet and Kasota are good flowers but are not nearly

as glamorous as Susan Pearson. Nancegollan has been the best of the nearly whites. Shah (from Dawson City x *odorus rugulosus maximus*) to many critics is more nearly 2a than 7a, but it does have typical jonquil color, fragrance, and the cup form of *N. odorus.* (The classification requires that characteristics of *any* of the *N. jonquilla* group be clearly evident.)

We do not have a climate particularly amenable to many of the tazetta hybrids, but our best novelty has been Golden Dawn, followed by Matador.

To conclude with the poets, Milan is the only novelty of note with which we are familiar.

Large-Flowered Daffodil Symposium Synopsis for 1963

JOHN R. LARUS,
First Vice-President,
Hartford, Connecticut

For quite a few years we have been furnished with symposiums of the most favored daffodil varieties, with separate listings for Exhibition and Garden purposes. Each year's results have obviously expressed the opinions of the experts for that particular season, and would be influenced not only by the acceptance of new varieties, but also by the composite growing results for the individual year. It seemed as though it might be useful to pause long enough to look back to see how the various sorts have lined up over a period of time.

Harry Tuggle, chairman of the Symposium Committee for the last four years, has been good enough to supply the complete point scoring for this period, so that it is possible to make an analysis that combines these four symposiums. Each year three points have been awarded for a first choice, two for a second, and one for a third in each rater's ballot.

The most recent years are obviously of greater importance in evaluating varieties, but it may also be of some interest to observe which kinds have been most consistent in their performance. In order to give more influence to the later years, the 1962 score was multiplied by four, the 1961 by three, the 1960 by two, and the 1959 score added in. The result was then divided by ten to produce a weighted average for the four years. Not only are the varieties shown in order, but the actual scores are given to indicate more clearly degrees of difference.

Following the pattern of the symposiums, the leading six varieties are shown. When, however, the score of another variety exceeded 10 points, it has also been given, as have a few isolated cases which failed by just a point to win a place in the chosen six.

ITEM No. 1. Trumpet, lemon or sulphur yellow (1a)

Exhibition:		*Garden:*	
1. Moonstruck	64	1. Mulatto	70
2. Lunar Moth	38	2. Hunter's Moon	43
Hunter's Moon	38	3. Grapefruit	37
4. Grapefruit	31	4. Moonstruck	22
5. Lemon Meringue	25	5. Tintoretto	21
6. Inver	18	6. Lemon Meringue	12
Moonmist	18		

ITEM No. 2. Trumpet, self-yellow or gold (1a)

Exhibition:		*Garden:*	
1. Kingscourt	122	1. Garron	49
2. Slieveboy	67	2. Ulster Prince	26
3. Ulster Prince	44	Cromarty	26
4. Arctic Gold	25	4. Diotima	21
5. Goldcourt	20	5. Lord Nelson	15
6. Golden Rapture	7	6. Goldcourt	14

ITEM No. 3. Trumpet, white perianth, colored trumpet (1b)

Exhibition:		*Garden:*	
1. Preamble	132	1. Trousseau	67
2. Trousseau	92	2. Effective	66
3. Content	56	3. Content	35
4. Frolic	39	4. President Lebrun	33
5. Effective	29	5. Foresight	32
6. Lapford	23	6. Preamble	16
7. Ballygarvey	13	7. Music Hall	13

ITEM No. 4. Trumpet, self-white (1c)

Exhibition:		*Garden:*	
1. Cantatrice	132	1. Beersheba	104
2. Vigil	89	2. Mt. Hood	87
3. Broughshane	39	3. Broughshane	44
4. Empress of Ireland	36	4. Ardclinis	24
5. Beersheba	25	Mrs. E. H. Krelage	24
6. Coolin	24	6. Roxanne	17

ITEM No. 5. Trumpet, reverse bicolor (1d)

Exhibition:		*Garden:**
1. Lunar Sea	75	1. Spellbinder
2. Spellbinder	70	2. Nampa
3. Entrancement	51	3. Entrancement
4. Nampa	38	Lunar Sea

* No points are shown for Garden types as, until last year, very few votes were given for any variety other than Spellbinder.

ITEM No. 6. Large Cup, self-yellow (2a)

Exhibition:		*Garden:*	
1. Galway	170	1. Carlton	108
2. Golden Torch	44	2. St. Egwin	54
3. St. Keverne	34	3. St. Issey	29
4. St. Egwin	26	4. Golden Torch	25
5. Lemnos	21	5. Galway	24
6. Ormeau	18	6. Adventure	21
		7. Crocus	17

ITEM No. 7. Large Cup, red or orange, yellow perianth (2a)

Exhibition:		*Garden:*	
1. Ceylon	126	1. Rustom Pasha	59
2. Armada	42	2. Fortune	51
3. Narvik	40	3. Aranjuez	35
4. Court Martial	22	4. Carbineer	30
5. Foxhunter	21	5. Armada	29
6. Air Marshal	20	6. Ceylon	22
7. Home Fires	11		

ITEM No. 8. Large Cup, yellow or light colored, white perianth (2b)

Exhibition:		*Garden:**	
1. Festivity	116	1. Polindra	91
2. Green Island	91	2. Brunswick	88
3. My Love	47	3. Coverack Perfection	30
4. Statue	40	4. Bodilly	24
5. Tudor Minstrel	36	5. Tunis	19
6. Polindra	16	Statue	19
		7. Daisy Schäffer	12

* Carnlough has been moved from 2c into this class by R.H.S.

ITEM No. 9. Large Cup, red or orange, white perianth (2b)

Exhibition:		*Garden:*	
1. Kilworth	86	1. Kilworth	88
2. Arbar	76	2. Selma Lagerlöf	51
3. Fermoy	38	3. Duke of Windsor	49
4. Daviot	33	4. Flamenco	36
5. Signal Light	23	5. Fermoy	34
6. Avenger	21	6. Buncrana	16
7. Buncrana	14	7. Dick Wellband	12

ITEM No. 10. Large Cup, self-white (2c)

Exhibition:		*Garden:**	
1. Ave	82	1. Courage	29
2. Ludlow	62	2. Niphetos	27
3. Zero	47	3. White Nile	26
4. Easter Moon	37	4. Truth	24
5. Truth	32	5. Ludlow	20
6. Knowehead	14	6. Zero	12
7. Castle of Mey	11	7. Ave	11
White Spire	11		

* This group is without a real leader, since Carnlough, which was an easy first, has left.

ITEM No. 11. Large Cup, reverse bicolor (2d)

Exhibition:		*Garden:**
1. Binkie	76	1. Binkie
2. Bethany	67	2. Lemon Doric
3. Daydream	40	3. Cocktail
4. Lemon Doric	19	
5. Nazareth	11	

* No points assigned to this group, as Binkie has until this year been practically the only variety voted for.

ITEM No. 12. Small Cup, colored, yellow perianth (3a)

Exhibition:		*Garden:*	
1. Ardour	118	1. Market Merry	61
2. Chungking	86	2. Chungking	46
3. Jezebel	33	3. Therm	31
4. Therm	32	Mangosteen	31
5. Ballysillan	29	5. Apricot Distinction	27
6. Dinkie	22	6. Edward Buxton	25
		7. Dinkie	15

ITEM No. 13. Small Cup, color not predominant, white perianth (3b)

Exhibition:		*Garden:*	
1. Bithynia	76	1. Angeline	47
2. Carnmoon	60	2. Sylvia O'Neill	43
3. Coloratura	37	3. Misty Moon	36
4. Fairy Tale	21	4. Dreamlight	29
5. Ballycastle	17	5. Lough Areema	28
6. Sylvia O'Neill	11	6. Bithynia	16
7. Shantallow	10		

ITEM No. 14. Small Cup, colored, white perianth (3b)

Exhibition:		*Garden:*	
1. Blarney	96	1. Limerick	75
2. Limerick	66	2. Blarney	51
3. Matapan	63	3. Kansas	30
4. Mahmoud	34	4. Lady Kesteven	28
5. Snow Gem	19	5. St. Louis	25
6. Rockall	18	6. Mahmoud	14
7. Bravura	11		

ITEM No. 15. Small Cup, self-white (3c)

Exhibition:		*Garden:*	
1. Chinese White	169	1. Foggy Dew	47
2. Cushendall	56	2. Cushendall	45
3. Bryher	47	3. Samaria	38
4. Frigid	37	4. Silver Salver	36
5. Foggy Dew	32	5. Chinese White	30
6. Altyre	14	6. Frigid	29
		7. Bryher	13

ITEM No. 16. Double Flowers (4)

Exhibition:		*Garden:*	
1. Swansdown	71	1. Cheerfulness	106
2. Double Event	61	2. Yellow Cheerfulness	55
3. White Lion	36	3. Daphne	34
4. Cheerfulness	31	4. Mary Copeland	21
5. Camellia	25	5. White Lion	20
6. Golden Ducat	21	6. Snowball	16
7. Daphne	12		

ITEM No. 17. Triandrus Hybrids, Large Cup (5a)

Exhibition:		*Garden:*	
1. Tresamble	107	1. Thalia	108
2. Lemon Drops	44	2. Tresamble	51
3. Rippling Waters	41	3. Stoke	38
4. Yellow Warbler	24	4. Moonshine	30
5. Stoke	14	5. Shot Silk	15
6. Thalia	12	6. Rippling Waters	12

ITEM No. 18. Triandrus Hybrids, Small Cup (5b)

Exhibition:		*Garden:*	
1. Silver Chimes	106	1. Silver Chimes	84
2. Thoughtful	16	2. Dawn	7
3. Dawn	10	3. Thoughtful	5

Until 5a and 5b were separated last year, Silver Chimes was the only 5b to receive support (Thoughtful had received scattered points as an Exhibition variety for two years).

ITEM No. 19. Cyclamineus Hybrids, Large Cup (6a)

Exhibition:		*Garden:*	
1. Charity May	137	1. February Gold	105
2. Dove Wings	90	2. Peeping Tom	55
3. Jenny	69	3. March Sunshine	32
4. Peeping Tom	24	4. Charity May	24
5. Woodcock	11	5. Dove Wings	10
		6. Bartley	7
		7. Woodcock	6

ITEM No. 20. Cyclamineus Hybrids, Small Cup (6b)

Exhibition:		*Garden:*	
1. Beryl	64	1. Beryl	96

No other eligible variety has received any votes.

ITEM No. 21. Jonquilla Hybrids, Large Cup (7a)

		Garden:	
1. Sweetness	90		
2. Shah	21	1. Sweetness	22
3. Golden Incense	17	2. Golden Sceptre	21
4. Golden Goblet	9	3. White Wedgwood	8
5. Golden Sceptre	7	Golden Incense	8
6. White Wedgwood	6	5. Shah	6
		6. Golden Goblet	4

ITEM No. 22. Jonquilla Hybrids, Small Cup (7b)

Exhibition:		*Garden:*	
1. Trevithian	118	1. Trevithian	135
2. Chérie	58	2. Golden Perfection	49
3. Golden Perfection	39	3. Lanarth	29
4. Tittle-Tattle	22	4. Orange Queen	21
5. Lanarth	10	5. Chérie	20
6. Susan Pearson	6	6. Tittle-Tattle	7
7. Snow Bunting	5		

ITEM No. 23. Tazetta Hybrids (8)

Exhibition:		*Garden:*	
1. Geranium	117	1. Geranium	92
2. Martha Washington	53	2. Orange Wonder	37
3. Orange Wonder	35	3. Laurens Koster	35
4. Cragford	30	4. Martha Washington	29
5. Matador	29	5. Scarlet Gem	26
6. Golden Dawn	15	6. St. Agnes	18
		7. Cragford	17

ITEM No. 24. Poeticus Hybrids (9)

Exhibition:		*Garden:*	
1. Cantabile	117	1. Actaea	147
2. Actaea	92	2. Cantabile	58
3. Milan	41	3. Red Rim	21
4. Sea-green	39	4. Smyrna	18
5. Smyrna	24	5. Dactyl	16
6. Shanach	15	6. Shanach	6

ITEM No. 25. Pink Cups of Any Division

Exhibition:		*Garden:*	
1. Radiation	53	1. Mrs. R. O. Backhouse	71
2. Rose of Tralee	44	2. Mabel Taylor	33
3. Rosario	28	3. Pink Rim	25
4. Salmon Trout	23	4. Rose of Tralee	24
5. Mabel Taylor	18	5. Wild Rose	12
Rose Caprice	18	6. Radiation	10
7. Interlude	14		
8. Wild Rose	13		
Roman Candle	13		
10. Passionale	12		

The 1963 American Miniature Daffodil Symposium

HELEN C. SCORGIE, *Co-Chairman,*
Symposium Committee
Harvard, Massachusetts

Above all, miniature daffodils need increase in numbers. To give sustained interest to the daffodil grower, there should be many times the number that there are at present—so many, in fact, that when one visits another garden, one will find many that are new to him. No one grows all the standards, not even all the newer ones (who would want to?) and the excitement of garden visiting is the finding of an appealing daffodil that one has passed by in the catalogues as "just another white." Perhaps it sounds practically like something one already has. But the miniature clones are so few that anyone interested in them soon has all easily available.

Many of the miniature introductions that are crosses of two species or a species with a garden hybrid are sterile or poor doers or increasers. These, however attractive, are of small value in improving the race.

Standard daffodils have been grown since ancient days, but until the turn of the century, there was scant interest in hybridizing them. Hybridizers there were, but their interest was semiscientific. Apparent hybrids were found in gardens and in the wild, and the hybridizers tried to reproduce them by crossing species. To meet the growing demand of the increasing number of gardeners for new and improved daffodils, the early collectors such as Peter Barr and William Hartland propagated superior and divergent forms found among the species. These were introduced under fancy names.

Even these, which had to be propagated from single bulbs, were insufficient to meet the increased demand and the ground work for modern hybridizing began to be laid. From the beginning, hybridizing miniatures was a part of this, but it was never a serious competitor of the large daffodils and never was nor can be profitable. But if the present amplification of interest is to persist, the introduction of new material must keep pace.

ITEM No. 1. Trumpets

1. Tanagra
2. Wee Bee
3. Little Beauty

Again, these three far outnumber the others. Each of these had so few votes that placing them would have been meaningless. Snug is an attractive little daffodil that is not too well-known. Of it, one reporter writes "Snug is listed as a 1b . . . but certainly, with me at least, it is 1c—like some of its larger sisters, it opens with a pale creamy yellow trumpet but it soon passes to white. This is one whose classification we should question. Find it very good and remarkably long lasting."

A fair number of yellow miniature trumpets are available but the other subdivisions are sadly lacking in good material. Even among the golden trumpets here, the range of shades needs great expansion. Variety and stability could be given to the group by use of some of the standards such as Royalist, Cromarty or the short-stemmed descendants of White Knight. Good small pink trumpets are also available for hybridizing.

ITEM No. 2. Large cups.

1. Goldsithney
2. Marionette
3. Tweeny

It is a recurring jolt to note the dearth of diminutive clones in this most popular of all divisions. But when we consider it, the reasons are not far to find. Division 2 originated as hybrids between trumpets and poets. When these two groups were crossed, the resultant hybrid might be a trumpet, a large-cup or a small-cup. Those interested in miniatures, apparently, have used *N. poeticus* very little.

ITEM No. 3. Small cups

1. Xit

Four or more distinct clones are reported grown as "Xit". Those large enough to compete successfully against standard clones certainly should not be accepted under this name. Neither should clones that do not even belong in this subdivision. There remain at least two other forms, both small, that differ mainly in the length of

the neck. Each answers equally well to the hybridizer's description. There may be others. Apparently we are getting in the miniature daffodils groups similar to the lily "strains" but not so frankly avowed.

ITEM No. 4. Doubles

1. Pencrebar
2. Kehelland

These were practically a tie, being only one point apart. Usually, one or the other is mentioned but not infrequently, votes are absent. Each year, the protest comes, "It grows only leaves." So far, no one has said "Peccavi" but it is the nature of any daffodil to bloom if growing conditions are to its liking. Is it not evident that through our ignorance or our indolence we are not giving these little doubles what they want?

By way of variety and to show that opinion is not all one way, I shall quote from two reporters. "I shall add the good word that no one has for Kehelland. When it behaves itself, which is not always, its perfect little pompon, held primly on a stiff little stem, is a delight." "Both quite nice. Pencrebar, smaller with better substance and that hand-carved look. But Kehelland has excellent stems, nice doubling, and lasts a long time in good condition."

Nevertheless, the little doubles need a Falaise. It is possible that Falaise itself would do the trick. Of the smaller doubles, Argent should prove a good parent. It is itself a neat little daffodil, fertile and tractable.

ITEM No. 5. Triandrus

1. Hawera
2. April Tears
3. Frosty Morn
4. Samba
5. Shrimp

The greater number of miniature hybrids are in this and the two succeeding divisions. The hybrids may be between varieties of *N. triandrus*, these varieties and another species, or with a horticultural hybrid. Where only triandrus varieties are concerned, the resultant hybrid will have only triandrus characteristics. Otherwise, characteristics alien to triandrus will appear.

This, incidentally, accounts for the continued absence of Division

IX from the miniatures. There are no miniature poeticus species, so that the only and very remote possibility would be the appearance of a dwarf sport among them. The poets, however, could add sturdiness to the miniatures as they have to the tazettas.

Several reporters complain that Kenellis is misplaced in this division and should be with the other bulbocodium hybrids in Division XI. This seems a more congenial spot for it. But it is slow work getting such changes made and it would seem the part of wisdom to concentrate first on getting those things corrected in the Classified List where there is no question of opinion involved.

In the meantime, Kenellis should be judged on its own merits. The principal aim of hybridization is divergence from the type and that divergence should not be penalized.

Hawera and April Tears continue to surpass by a wide margin all the rest. In many reports, they are the only ones mentioned, giving them unwarranted advantage over their brethren. Good as they are, there are several others that would contest the leading spot of these two and, in any case, would add quality and enjoyment to any miniature collection. All of them have a species for at least one of their parents and are therefore sometimes a bit demanding in their requirements. This, rather than their questionable hardiness is the cause of their disappearance. They are generally sterile but occasionally fertile seed has been produced and a few of the larger hybrids are fertile.

ITEM No. 6. Cyclamineus

1. Snipe
2. Tête-à-Tête
3. Jumblie
4. Mite
5. Quince

This division starts out with two handicaps: it is based on a single species without varieties—and that not easy to maintain in the garden—and its offspring are often sterile. The groups preceding and following it have much more diversity within their numerous species or varieties. Its clones are usually tractable in the garden though there are reports that Tête-à-Tête is prone to disappear in some areas. But this is not general and it does well here in mottled shade, well drained but with a high water level.

It has been suggested that Tête-à-Tête should be placed with its parent in Division VIII. Cyclataz was registered by its originator in Division VI of the old classification which was—as it is now—cyclamineus hybrids of garden origin. This was where matters stood when Tête-à-Tête was registered, and very naturally, it was given the classification of its parent.

However, when the new classification came into force, Cyclataz was transferred to Division X although its hybridizer's name remained. In a later edition of the Classified List, the pedigree was added. Then, in the latest edition, it was moved for the second time to Division VIII. It is still in heavy print and with its pedigree as if it were a species. Thus, by a series of errors, it has been separated from its only child.

Some question the placing of Quince in Division 6. There are two considerations here. First, invariably, some traits from each parent are dominant. *N. cyclamineus* also is not white, but who questions a white hybrid? The second consideration is that the hybridizer is generally allowed to decide in which division his daffodil should be placed.

ITEM No. 7. Jonquilla

1. Kidling
2. Sun Disc
3. Sundial

The shortness of this list is not for lack of popularity of the division but rather, that so many are grown and liked that few votes went to a very large number. It would be hard to go wrong in selecting members of this division. Kidling still leads by a sizable margin but the other two might easily have changed places.

Of Kidling a reporter writes, "Kidling is tops . . . seems to have the characteristics we look for in a miniature—doesn't overwhelm the smaller ones, can hold its own with the larger ones . . . increases at a good rate—long lasting."

ITEM No. 8. Tazettas

1. Cyclataz
2. Shrew
3. Halingy

Increased interest was manifest this year in this division, due largely to most reporters having caught up with the changes in

classification, gathering tazetta hybrids here from divisions 10 and 11. The division is still far too short. Every accepted clone was mentioned by one or another of the reporters and several more besides.

For general comment, one reporter writes "Foliage and sometimes stem length on Halingy and Hors d'Oeuvre are so out of scale with the others of this class, they hardly look like miniatures. Pango is a bit tall but, at least, the plant and flower are in good proportion and it is a good doer. Cyclataz seems to come closer to the desired types in this division."

There are few comments on the hardiness except that they do especially well in the warmer regions. Here in Massachusetts, only Hors d'Oeuvre has proved entirely hardy although several others will survive all but the severest winters. But they are definitely not as reliable here as their standard tazetta-poeticus brethren. The only suggestion of tenderness elsewhere is that Halingy usually gets nipped in the Central Region.

ITEM No. 10 Species, etc.,

1. *rupicola*
2. *cyclamineus*
3. *triandrus albus*
4. *fernandesii*
5. *watieri*
6. *tenuior*
7. *asturiensis*

Rupicola sprang into a deserved first place. Few species can equal it in the rock garden. It is easily grown and absolutely hardy even in the severest winters. It increases well and is readily fertile.

The case for *cyclamineus* is quite different. Most reporters make no reference to its behaviour in the garden nor do they mention whether they grow it in the open or not. Those who do comment say it is not permanent with them. I believe that the cause of this is the dryness of the American atmosphere. It is for those who are willing to replace it as needed. For the ordinary gardener, many of its children are easy and adequate.

If *fernandesii* proves hardy in gardens generally, it will continue its upward climb in popular esteem. One Virginia gardener grows it out of doors in a protected spot where it does not have to take the full force of gale winds. There, it sets seed readily and heavily.

One first place was given to *N. dubius,* grown inside. "Utterly charming. exquisite fragrance, nice substance. It gave me a month of pleasure."

ITEM 11. Miscellaneous (Bulbocodium Hybrids)

1. Nylon
2. Jessamy
3. Taffeta

The selected clones are catching up with Nylon as more are grown and those bought earlier increase in size. They appear to be mostly grown in cold frames where they do well. Protection from cold winds and plenty of sunshine appear to be more important than shielding from winter cold. Now that they have ceased to be novelties, general interest seems to be shifting to the larger members of the division.

A Few Words on "Non-Qualifiers"

GERTRUDE S. WISTER, Swarthmore, Pa.
Chairman, Editorial Committee

CLASSIFICATIONS have their uses; also their dangers. It was prudent of those who worked on the list of miniatures to steer clear of another grouping of intermediates. But let no one who reads the names of the in-betweeners on page 36 of this yearbook mentally consign those flowers to oblivion.

Some, of course, can compete worthily in standard classes in flower shows. But as I read the list, and ponder on the names, the classification numbers and letters dissolve, and a bevy of personable flowers dear to my heart dance and bow. I see them in the months so soon to come, revelling in the spring weather, each one deserving its place in its own right. For after all, useful though the classifications are, they tell only a few basic facts about a flower. They do not tell anything at all about the traits that make it a garden asset, so that we look forward eagerly each day for its first opening buds.

All names on the list do not conjure up definite pictures. We have not grown them all, and some my husband has grown and discarded for one reason or another. After some of the names I have written "not distinct." Distinction applies to more than appearance. Take the golden sisters Jana and Cornet, for example. Jana is less vigorous than its sibling, a little smaller. It blooms several days earlier —our first daffodil here—and so outstrips Cornet by a good bit in our esteem.

With other early bulbs these two share a narrow bed along the southeast front wall of our house, where their earliness is accentuated. Opening soon after them is pale February Silver, which gives a charming contrast to early golds, followed by graceful Dove Wings. Cora Ann, with pale yellow cup and white perianth, in this warm spot is our first jonquil.

These flowers queen it over a bright assortment of smaller things: three kinds of winter-aconite, spring snowflake, some crocus species, *Tulipa kaufmanniana*, the little hyacinth usually listed as *Muscari azureum* and a wild form of *Hyacinthus orientalis* in fragrant soft violet-blue. In last year's cold spring this bed was a joyful sight from the first winter-aconite on February 18 until the middle of April, when it becomes too hot for these lovers of brisk weather.

All these and other early daffodils of modest size have a special affinity for the other small early bulbs: scillas, chionodoxas, grape-hyacinths and irises, also the small rhizomatous irises and some of the rock plants that are too large for the miniatures, such as *Arabis albida* and many of the low phloxes.

Dove Wings is white and softest yellow.

We grow our smallest daffodils on the top of a dry wall. Among them are some "non-qualifiers." Not only are these delightful in their own right, but their slightly larger size gives them value in setting off the tiny ones. Snipe becomes all the more precious for its proximity to Lady Bee and Nor-Nor. Lady Bee, an eight-incher, has a cup of apricot-pink and a white perianth. Nor-Nor opens nearly self-yellow; then the perianth fades pale, and the cup darkens to orange. We often rate our plants with a series of x's, with five x's for top rating. (There is never time to rate everything, unfortunately.) My list shows that Nor-Nor gets five x's for vigor and increase, another five for beauty and distinction. Rockery Gem,

which opens a pale lb and fades to a white trumpet, has four x's in each category.

Roger, too, gets two four x's. As Harry Tuggle points out, it is a 6b, not a 6a, in spite of the RHS list. This makes it a poor risk for exhibition. But in the garden it displays yellow and orange-red reflexed flowers with verve. It is taller than the six to eight inches alloted to it by Alec Gray here. (Can there be two clones under this name?) Larkelly, a taller 6a, is also yellow with paler orange-red. Quite different from these but similar in color-scheme is Rosedown, a triandrus with a short, globular, bright cup.

Who could resist the exquisite triandrus, Sidhe, with its pale perianth and flattened yellow cup? It rates five x's with us for beauty and vigor. Even in our Society I fear there are many who still think of Division V in terms of Thalia and Moonshine. Yet Sidhe, Thoughtful and Yellow Warbler are available at modest prices in this country, and would open their eyes to the diversity in this group. Well-named Honey Bells, another, is still new enough to cost more, but has earned five x's for beauty, and promises to acquire five more for vigor and increase. Ivory Gate, in more traditional triandrus garb, has four x's for beauty and vigor. Auburn, a long-crowned deep yellow, has four x's, too.

In Division VI, too many do not venture beyond February Gold and Peeping Tom, though Charity May, in refined soft yellow, is winning blues in the better shows, with Dove Wings pressing hard. In addition to the other early 6a's I have mentioned, we are very fond of March Breeze, which lightens our woods in full view of the house. Jenny is another pretty pale thing with three x's for beauty. We suspect that some of the midseason—or at least not early—yellows in this class are not going to win their spurs for distinction, but it takes several years to be sure. It takes a real clump to give an adequate basis for decision.

Among the jonquils, we could not do without the highly-colored Orange Queen. Nirvana, white and fragrant, is its opposite. Sugarbush is ivory and pale yellow, Cheyenne is creamy.

All these beguiling flowers, in addition to being lovely in their own right and giving contrast to smaller flowers, are valuable for giving scale to larger flowers, too. Often they have narrower foliage, and slender scapes which give the flowers a slight droop, heightening the contrast. A stately clump of Vigil will gain more stateliness if it looks over the top of fly-away Beryl.

I shall end with a mention of three American varieties not on the list. First is Gold Crown, a 2b of Mitsch's, trumpet-like in appearance. It is too large to be called even an intermediate, but is rather small compared with most modern daffodils. It deserves attention for fine color, and sheer precision and finish. Another is Oconee of Powell's, a 5b similar to Sidhe, but a little paler. Third is another of Powell's, Nakota, an ivory-cupped 2c. Here it grows in a ground-cover of pachysandra at the edge of a rhododendron border, its neat cream and white blossoms shining out against this dark background. Its small scale contrasts beautifully with its larger daffodil neighbors. There are other daffodils of the same form, color and finish. With this lovely little flower, it is its size that bestows upon it the precious attribute of distinction.

American Daffodil Registrations For 1963

MRS. WALTER COLQUITT, *Registrar*
Shreveport, Louisiana

Registrants and Their Registrations

ANDERSON, MRS. KENNETH B. (POLLY), 4810 Palm Drive, La Canada, California
PINEAPPLE CUP

BRINK, VENICE, 114 East Maple St., Nashville, Ill.
CAPTIVE SUN

1963 Registrations

CAPTIVE SUN (Brink). 2a, 15", M. P. light primrose yellow, C. deep golden yellow, orange tone. Most resembles Lothario. Parentage not known.

PINEAPPLE CUP (Anderson, Polly). 2b, 21", EE. P. White, C. pale pineapple yellow, primrose edge. Prolific. Most resembles Tunis. Tunis X Lord Kitchener (or Gertie Millar).

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RHS Daffodil and Tulip Yearbook 1963	2.50
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Exploring for Wild Narcissus (reprint from American Horticultural Magazine) by Frederick G. Meyer	.50
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