# The Daffodil Journal

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AMERICAN DAFFODIL SOCIETY, INC.

# The Daffodil Journal

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## IN THIS ISSUE



### THE COVER PHOTO

was taken at Springdale, home of Jack and Libby Capen, looking across the test garden to the hill (Capen photo).

# LANDSCAPING WITH DAFFODILS - PART 5


ELIZABETH T. CAPEN, *New Jersey*
*Photos by the Author*


(A continuation of the program presented at the Nashville meeting.)

## PROBLEMS

Of course, many problems arise as one considers how to put daffodils into a landscape scene. They divide into three sorts:

1 - those we have seen mastered, even though solutions evade us;
2 - those we have faced and are happy with our own solutions thereof, which might help others in finding theirs; and
3 - then, some that seem prevalent, although not our own.

Let us consider the last first.

## PROBLEM #1
## CAN ONE WIN RIBBONS IF ONE MAKES A PRETTY GARDEN?

The great surge of ADS members toward seeking ribbons—and then silver—and then judgeships—has lead to a type of planting I can only deplore: that is the little patch of daffodils, formally aligned, while the entire rest of the place is devoid of any bit of spring beauty. Too often recently, this has been a first step to daffodils.

To prove that you can really make a beautiful garden with top-flight, prize-winning material, I want to cite for you three gardens I have known intimately.

Chris Tweit made a sunken garden—a couple of steps down, surrounding a grass patch about 30 feet × 60 feet. Here she planted the classic—not the newest—plants through the season—among others, daffodils, including the one hundred for accreditization as a daffodil judge. Everything was labelled, of course. Chris's garden could provide a prize winner for any show at any time, and it was always a joy to see.

Aileen Evans had a hillside plot, the very smallest in the suburb of Mountain Lakes; but, as did Chris, Aileen had an eye for quality. Hers was a tiptoe path among rocks, shrubs, and elegant dafs. Her keen eye always spotted the best to add.

Chickie Hoen began, as did Chris and Aileen, promoting daffodil knowledge in her area many years ago. Her own garden is not big; but, as are the two above, it is a continuing display of the best of each season. Chickie is not an official judge, but she has been my first choice when I have been asked to bring someone "qualified" rather than "accredited" to help me judge a show. Chickie has proven my point by winning top awards offered in recent New Jersey shows; and I was delighted that she recently won the Best of Show Bowl for which I arranged at the first New Jersey Show, then won by George Lee, and reoffered for the first time since 1957.

I do urge that all daffodil fanciers, even seekers after ribbons, also, as did these three, make a beautiful scene of their treasures. Surely, all those at the recent Portland meeting could not but be inspired by the beautiful display created by Madeline Kirby—a major feature of that 1984 ADS convention.

Some exhibitors may say, "But I must keep track of names, so I must make rows." Of course, we all want to keep track of names, so let us consider:

## PROBLEM #2. IDENTIFICATION OF CULTIVARS

The whole problem in identifying cultivars of narcissus is that, unlike most perennials, a daffodil is out of sight at next planting time. So when one plants a nice patch of daffodil bulbs and then places a label smack in the middle, as happens often, the value of that label expires with that fall. By spring, it is lost in foliage, while by next planting time, the limits of the patch are undefined.

We have found three ways to help us keep track of bulbs underground:

1. We always put the identifying label of a bulb, clump, drift, as usually viewed, at the extreme right. (Of course, left would do as well, but consistency is necessary.)
2. We use architectural or strong horticultural features to define limits.
3. Finally, we use the alphabet.

Perhaps my experience with the Dutch pinks may serve as an illustration. I once was surprised to hear that there were other pinks than Mrs. R. O. Backhouse. However, the price for these new ones was pretty high. Most of them cost 40¢/bulb, when the basic price was 3¢ wholesale. I "sprung for" a dozen and found a place for each around our terrace. Each had an individual spot, defined by a step, a corner, an entrance, always with a small evergreen to help. So, I found twelve distinct spots. Then I planted alphabetically.

While this made no glorious landscape, it gave each cultivar a natural setting. Then, in a couple of years, each bulb was transplanted to a clump. When clumps were overcrowed, they became a drift in our Dutch Pink area on "The Hill."

Would not this way serve well for any exciting, very new ones of 1985, gathered to be seen at close range?

Our way around the terrace can be extended to:

## PROBLEM #3. PLANTING AMONG SHRUBS AND TREES

For many years, we thought we had mastered the technique of planting daffodils in a shrub/tree border. When shrubs are young, it is easy to use them to define daffodil clumps. Areas made by lines from the center of one to another create parameters for separate cultivars. These geometric outlines are easy to map and easy to plant within. The natural grace of daffodils precludes any stiffness such rigid limits might suggest.

The problem arises because shrubs grow faster than bulbs. I have climbed among well-defined shrub markers to retrieve almost lost dafs. Daffodils, replanted, will rejuvenate, and that is rewarding, but that is a poor way to create a landscape.

Now, I discriminate. There are those we all love, that I sometimes call "the trash spring shrubs." Of course, forsythia leads the list. Apart from our ring of *Forsythia intermedia spectabilis* along the public roads, we have a collection of a dozen of the most interesting ones, among which I have lost many very nice daffodils. Now, we maintain a solid barrier of two feet of mowed lawn between the forsythia collection, rigorously pruned annually, and some very classy dafs.

However, there are less rampant growers that can serve as definers for many years without infringing on the daffodils' right to a piece of the sun. If I had to move to a small place today, I should not only forego all forsythia, but also such classics as deutzia, spirea, philadelphus, privet, and barberry—except for a few dwarf forms for the rock garden. From hundreds of beauties, I should begin with *Rhododendron mucronulatum*—for that first spring glow before the hardwoods start—and probably *Cronus mas*, another curtain-raiser. Right on their heels comes the magnolia cross from the Arnold Arboretum known as *M. loebneri* Dr. Merrill. This one is the hardiest of a group that accompanies the daffodils into June, but with a little more room and a little more warmth I would cherish the great *Magnolia grandiflora* of the South.

Our first choice of many prunus we like to accompany early-midseason daffodils must be *P.* Hally Jolivette; it is long-blooming (because a double), and it is relatively small and can be contained. Then come the malus, an overwhelming group, which we have explored modestly. If you doubt the magnitude of this genus, get the Throckmortons to introduce you to miles of buckboard trails through the most extensive collection of all. It lies in their bailiwick. All are gorgeous; but for a small garden in an alternate-year apple area, I believe I should, as a daffodil fan, choose *M. sargentii*—it stays small.

When it comes to cornus, the next major group to bloom, it is hard to accept what is happening to our *Cornus florida*. It is the greatest landscaping tree of the entire East. Varieties include the well-known pinks; the more recent "reds;" the famous east-west cross, the chartreuse double, a real pet. There is *C. xanthocarpa*, which is rather fun, because the birds that strip the red-berried quickly, take longer to discover the yellow-berried. Others on lists have not thrived here or would not be missed. Sadly, I should advise anyone with a small place to eschew the lot and to settle for the early *C. mas*, with only true flowers, already mentioned, and the Orientals: *C. kousa* (from Japan) and *C. k. chinensis* (from

Daffodils, prunus, PJM rhododendron, *Pieris floribunda*, and *P.* Hally Jolivette at Springdale.

China). These seem not to be affected by whatever is killing our natives. They will not bloom with daffodils, but do we not want an all-season garden? And they lack the characteristic dogwood dent in the bracts, but each adds glory to the post-daffodil time. (We like *C. k. chinensis* the better.) One new to me, but Jack and Betsey tell me is old hat to others, is the variegated. We found this at a daylily meeting. So far, I am entranced; and it is fine here.

While considering shrubs for the brand new, small daffodil garden, there are others beyond the basics above. One blooms in mid-winter; it is *Hamamelis mollis*. A bouquet in February (in the Northeast) will astound with its delicious scent. Pussywillows have always been harbingers; the natives are so welcome; the French are bigger and pinker; the black? yet to be proven here.

The viburnums, a huge group, include a few especially for daffodil fanciers. At Larry Mains's we found one well-timed we particulrly like—*V. chenaulti*. If there is room for only one, it must be *V. tomentosum mariesii*—best of all—serving in bloom and fruit a long time, beginning with the last daffodils. Quinces come in many shades, beautiful, but they must be protected from the deer.

At dogwood time, the cercis provide an early glow over the southern Appalachian hills, as do the dogwood farther north. They are splendid understory trees. Their range barely reaches Zone 5—better Zone 6. We have nursed the beautiful but tempermental *C. alba* for years; the bright Cornell pink is more reliable.

When the shad run up the rivers, the shrubs named for them bloom. We call them "shad bush;" some, "shad blow." They really are amelanchier and come in several varieties; but for nostalgia, I doubt if many of us would find space. They wander about.

The first important shrub for any daffodil gardener is unquestionably *R. mucronulatum.* As the season progresses, no shrub is more glamorous than the great P.J.M. rhododendron hybrid which blooms smack in the middle of daffodil time.

There are so many. I have named but a scrap, but these would be my first to plant in a brand new small garden, as a daffodil fancier wanting to make a landscape of my daffodils.

As we have side-tracked to list some of the best shrubs for daffodil gardens in small areas, let us not forget our "problem"—how to fit dafs among them.

I still think a good start is to let the little shrubs define the daf spots. This makes a lovely garden for a few years. But when the shrubs get too big, as they will, you must find other markers. All of those above can be trusted to stay put to serve daffodils for many years; but to supplement them, there are the steady, non-wandering perennials such as peonies, dictamnus, fall asters, and the clumping ferns, among the best of which are the polystichums—Christmas (east) and sword (west).

However, some of the most seemingly inviting ones must be spurned. Having lost daffodils by using them, I am now as leery of Siberian iris, epimedium, and hostas as I am of forsythia. The latter make splendid edgings, but must not be allowed to mingle.

## PROBLEM #4. THE VERY STEEP HILLSIDE

While I did not mention this at Nashville, it is a problem that some might face that I saw effectively handled by a Society stalwart. While at our organizing meeting in 1954, my hostess said there was a daffodil planting several blocks over that we should see. It proved to be a steep hillside of paths and many flowering daffodils. Imagine my surprise when returning to our first convention in 1956 to find us being lead to that same garden and that it belonged to Willis Wheeler, then ADS Secretary.

It is what Willis had done in the intervening two years that becomes our problem-solver. His hillside was really steep. It had two natural features vital to anyone's attempting this sort of garden: it sloped towards the house and to the south.

Willis's contribution, aside from selecting a good hillside, was a whole series of small brick walls. There was nothing stiff about these walls. They almost meandered, as they conformed to the terrain—adding just enough support where needed. I thought they turned a bunch of daffodils on a hill into a hillside landscape of daffodils of distinction.

Willis's problem will be faced only by those with small urban plots. Another problem some face is

## PROBLEM #5. WHAT TO DO ABOUT WATER

So that's a problem? Most are glad to have some water around, but some writers like to warn daffodil growers of its danger. There are, of course, boggy sumps, where water sits and sits all season long—true marshes, true bogs, such nefarious soils as the New Jersey Whippany near here—where no one should try any kind of narcissus, or anything else much.

Many areas, on the other hand, are gloriously flooded with water in spring and then go dry come summer. These suit narcissus to a T. Some members will recall the huge sweep of many standard cultivars blooming lustily in flooded areas at Kingwood Center at our convention in 1958. Water in spring to daffodils is the

Jumblie makes a pretty picture at the edge of the pond.

summum bonum. Recall the wetness of Holland, where the water table sits but a few inches below the surface, wet Ireland, and Oregon—the greatest areas of all. For was not Narcissus born in the water? (but I never understood the purple center.)

If you have brook, stream, river, pond, lake, or ocean, watch what happens in mid-summer; and then design a picture. We recommend the poets, because they have the briefest of rest periods, and the 6s, because they were born streamside; but the 3s also seem to fit this milieu.

Waterside demands ferns, and in the Northeast one of the best is the ostrich; the three osmundas add height, native adiantum grace, and some thelypteris a change of pace. The marsh fern and the hay-scented can be real menaces unless severe restrictions are imposed. We do use the latter across the brook where they make a "lawn" on a rock on rock lateral moraine under big sugar maples, and where absolutely nothing else will grow but the invading pioneers of the xerosphere such as brambles. The best way to prevent this natural succession and maintain the fern level we have found to be an annual burning over. But now that we are not permitted to burn, it is necessary to prune out the invaders once a year.

Many perennials are perfect for later bloom. Everyone thinks first of the stately Japanese iris. So did we. Decades of frustrating floods warn "cuidado," as the Spanish say, "Take care!" If there is any chance of flooding, out will go the Japanese iris first, in spite of heavy iron restrictions. We tried; forget.

Probably the waterside plant we have had longest and continue to enjoy while we ignore its care is *Myosotis scorpiodes*. In spite of its forbidding name, this perennial forget-me-not is an all-summer bloomer, dipping into the water, but continuing to flower and live.

Anyone with a waterfront "problem" will discover many interesting perennials demanding a trial to accompany or succeed daffodils. However, I cannot be as sanguine as regards the next problem to explore.

## PROBLEM #6. THE PERENNIAL BORDER

Unlike water, a perennial border should be completely avoided if possible. It does not belong in the U.S.A. The concept was foisted on the eager American gardener early in the century, when, just emerging from the Victorian idea of beds of assorted geometric shapes scattered about lawns, Americans were told by English landscapers that they should combine them all into long borders which "stay in bloom all season."

Only after many places had been committed to "perennial borders" did it begin to dawn—I think first on English garden designers—that our climate of extremes of heat/cold and flood/drought could not accommodate such English standbys as long-blooming wallflower and other semi-hardy biennials that kept bloom continuing in English borders.

We are among those who inherited these ideas and consider we are "stuck with" a "perennial border." For many years, I struggled to achieve a solid mass of interesting color patterns through the season. Only rarely was there a patch of satisfied accomplishment.

When daffodils came on the scene, I tried several ways to keep track of what was going on beneath soil level. One try was to chart on a six-inch grid every single daffodil bulb in a 100′ × 10′ border. Of course, daffodils, individualists all, rebelled. Some went this-away; others that-away. I mention this fiasco to forestall others' trying this route.

It took an SOS from Charlie Meehan, Symposium Chairman, to teach me how to make a perennial border. At that time in ADS history, about 1958, the ADS had two assets—the Symposium and the Regional Vice Presidents. As Symposium Chairman, Charlie was distraught when he heard that the Smiths, who then had "the best daffodil collection in the U.S.A.," (Charlie sent me their list to prove it) had taken off for Japan. He appealed to me, RVP, to go to Staten Island and send him a report from their garden.

If a swallow cannot make a summer, of course one trip cannot make a Symposium Report. But that trip for Charlie taught me a lot about the way to use daffodils, not only in a border but in any landscape, which could be of more lasting value than Charlie's Symposium—epitome for ADS that year.

At that time, both Kenneth and Catharine Hemingway Smith were internationally famous as hybridizers of three major plants—daffodils, iris, and hemerocallis. They had achieved recognition in England, through the RHS, and in the U.S.A. for their originations. It was interesting to see how they used their collections to create a beautiful landscape.

Their place was high in the Donegan Hills of Staten Island, from which you can now see the Verrazano Narrows Bridge in the far distance. It featured borders. The main one was backed by a long row of mature hemlocks. Two things immediately caught my attention: (1) most of the daffodils were in large clumps across the back of the border while an occasional clump at the front prevented stiffness; then (2) cultivars were new and exciting ones; but instead of the sampling I thought I was lucky to have, Kenneth had patches of twenty-five to fifty blooms each. In fact, I counted 125 blooms on one of two equal clumps of Binkie. While big clumps of Binkie are no novelty today, this was when Binkie was $9/bulb.

All of the big daffodil patches at the back were fronted by iris, at that time just pleasant groundcovers. (Incidentally, friends who visited the Smiths at iris time were surprised to learn that they grew daffodils, too. You see, the daffodil foliage, still growing strong, blended into the green hemlock background, and the tall, colorful iris were all the visitors saw.) Hemerocallis, in spring also just ground covers, were strategically placed, so that summer would find them dominating the scene.

A border in the Kenneth Smith Garden.

What I now call the "Smith principle," that applies to all landscaping, I learned here. It is just this:

Always put early bloomers at the back. No one minds looking over the oncoming to see the flowers behind, but no one likes peering over dead early ones to see later flowers.

I wondered about those 125-bloom clumps of Binkie, and later I asked Catharine if she had replanted them. She told me she had "skimmed" them and made two more clumps of the skimmings. I tried, too. It works for a toughy like Binkie, but I lost some nice dafs trying it on the wrong ones.

There were many narrower borders about the place. These, open to view from both sides, had the daffodils down the centers, flanked by summer bloomers—same principle. As I wandered among these borders, I noticed several flowers of a nice white trumpet blooming casually along the way. This was none other than the first Empress of Ireland to come to America. Now the circle was complete: the "best collection in the U.S.A." of course included the hottest item in the century; and the top American hybridizer, who had bought it, treated it as just one more landscaping item.

## PROBLEM #7. DAFFODILS BEFORE SPRING

This problem faces not only the exhibitor at a preseason show, but anyone who wants a jump on the season just for fun.

Almost any daffodil can be wheedled into bloom by contracting its natural development time by about one-and-a-half to two months. The process, which I learned from the pros in this field, has already been reported to the ADS *Journal.*

What cannot be done, except with the tender tazettas, is to flower daffodils in midwinter—that is in the North. They resent "forcing" in the usual sense.

Binkie in the Smith garden.

The epitome of a preseason daffodil landscape was presented at the New York International Flower Show. The ADS had a hand in this. At our first participation in this week-long show, guests registered with us their resentment that that year there were no major daffodil gardens, as there had been in other years. We took these complaints to the right places, and the following year saw the major showpiece a great daffodil garden, while twenty other exhibits that year featured daffodils.

The ADS, with help from the Holland Bulb Growers Association, which provided 1000 bulbs; several clubs, whom we taught timing for early flowering; and friends like Grant Mitsch and Margaret Thompson, who provided types we could not flower in March, produced a week-long display already reported. [1960 ADS Yearbook.]

The major exhibit of the International Show, designed by Adrian Frylink and executed by James Jack, reinforced principles we had observed such as: do not mix. We also liked—and copied—benches made from big logs split. These are scenic, but do not last many years.

However, I do hope that Adrian or Jimmie will tell the complete story of what it takes to produce the largest week-long, preseason indoor daffodil exhibit ever.

# A TWO NURSERY WEEKEND

REG NICHOLL, *England*

*(from the* Journal *of the Daffodil Society [Britain] February, 1983)*

What prompts one to visit a daffodil nursery—or even two? The reasons are both obvious and various; and in my case it meant a delightful drive through some of England's most charming countryside, the Cotswolds, to view the daffodils, what else, of two of the most interesting and dedicated people it has been my good fortune to be acquainted with, however slight. A solo trip is not much fun so a like-minded companion was entreated to join me.

So it was the week-end of the Solihull Show, Eddie Jarman and I drove steadily through the aforementioned landscape to arrive on a beautifully sunny but cool Saturday afternoon at the Stourport-on-Severn home of John Lea. As luck would have it we were offered the run of the place to ourselves. This gave us the opportunity to browse through the beds of flowers at ease and assess together the respectie merits of those available, which fortunately seemed to be just about everything.

The selected seedling beds naturally enough drew us to them; and whilst to quote hordes of numbers can be a meaningless bore, I think the half dozen noted down will be of interest. Firstly, one that had been simply numbered 1/82, due to being a first flower, was superb, large, orange trumpet 1 Y-O similar in style to Gold Convention. If it continues to produce similar blooms when more plentiful it will be a great step forward in its class.

A borderline case between 1 W-Y and 2 W-Y next took our eye. Although there were a number of bulbs of this cultivar numbered 1/20/77, one in particular had a superbly flat perianth and beautifully contrasted deep yellow corona. We were particularly impressed and thought there being such a paucity of flowers in both the above classes, it should be worth watching.

Next was 1/37/76, a large 3½" diameter 3 W-GWO with a crinkly orange cup and very broad white perianth; followed by an unusual small pink double, 1/31/72 which we found appealing due to its pink petaloids having a yellow picotee edge, the like of which we had not seen before.

Finally, there were two flowers of similar coloring in that they had flat pale lemon perianths but huge, buff, heavily serrated, open cups. Belonging to the 2 Y-Y class, 1/40/75 had a slightly broader perianth than its colormate 1/50/76.

A chance to see flowers growing in masse rather than in odd vases on the show bench or stand was taken and it afforded us the opportunity of noting those that have a very high percentage of show worthy blooms. Those picked out were Balvenie 2 W-GPP, Dailmanach 2 W-P, and Oykel 3 W-Y, all fairly well known and one not quite so, Glen Clova 2 Y-ORR.

Goodbyes were said, and on we travelled to Solihull for a look round the show and to spend a convivial evening with the saffron-hued assembly still talking daffodils.

Sunday saw us collect Ron Ffitch and set off in the direction of Letty Green. The weather once again smiled on us and we were amazed at the welter of flowers that greeted us on our arrival at Mrs. Abel Smith's.

The initial move was again toward the seedling beds; and the first flower we noted was B5/22, not so much because of its color and form, but the fact that the

pink cup had stained the perianth sufficiently so to suggest that it may be of use in the breeding of pink perianths. R3/11 × Grand Prospect next attracted our attention, it being a first class 1 Y-Y with a straight trumpet and superb flat perianth. There was also a particularly good Desdemona × April Love flower, but as yet very few bulbs. It seems April Love, of which there was an abundance of first quality blooms in the named beds, is not only an excellent flower in its own right but is passing on its best features to its descendants. We were certainly impressed with it as we put our money down and bought some of the stock. Lastly we were taken with A2/72 which was bred from Rufford × W7/21 and has a rather unusual pale orange cup with pink overtoned rim which contrasted nicely with the smooth white perianth.

Perhaps the most interesting thing we saw during our journey was the deepest pink corona any of us had set eyes on. There was just one solitary bloom in a pot in the greenhouse and it had apparently caused quite a stir with visitors from across the North Sea who were eager to purchase. It was designated LO/51 and was as the result of Knightwick being crossed with a Rima × Geisha seedling, the latter being a highly recommended Guy Wilson breeding pink, first introduced over twenty years ago.

Picking among the flowers in the named beds for consistent show blooms in quantity found us selecting the already mentioned April Love 1 W-W, which appears to have a great future in a not too well endowed section; Park Springs 3 W-WWY, which has already made its mark, and Langford Grove 3 W-YYO, which should certainly be more widely grown.

Over a welcome cup of tea, our hostess voiced her aim to produce a short cupped pink flower, having been so nearly there with Upper Broughton; so it seems both breeders are still on the pink trail. We wish them luck in their endeavors and thank them for their hospitality.

# ADS APPROVED LIST OF MINIATURES

March, 1985

DIVISIONS 1-9, and 12

Agnes Harvey 5 W-W
Angie 8 W-W
April Tears 5 Y-Y
Arctic Morn 5 W-W
Atom 6 Y-Y
Baby Moon 7 Y-Y
Baby Star 7 Y-Y
Bagatelle 1 Y-Y
Bebop 7 W-Y
Bobbysoxer 7 Y-YYO
Bowles's Bounty 1 Y-Y
Candlepower 1 W-W
Charles Warren 1 Y-Y
Chit Chat 7 Y-Y
Clare 7 Y-Y
Cobweb 5 W-Y
Cricket 5 Y-Y
Curlylocks 7 Y-Y
Cyclataz 8 Y-O
Demure 7 W-Y
Doublebois 5 W-W
Elfhorn 12 Y-Y
Fairy Chimes 5 Y-Y
Flomay 7 W-WPP
Flute 6 Y-Y
Flyaway 6 Y-Y
Frosty Morn 5 W-W
Gambas 1 Y-Y
Gipsy Queen 1 Y-WWY
Greenshank 6 Y-Y
Halingy 8 W-Y
Hawera 5 Y-Y
Heidi 6 Y-Y
Hifi 7 Y-Y
Hors d'Oeuvre 8 Y-Y
Hummingbird 6 Y-Y
Icicle 5 W-W
Jessamy 12 W-W
Jetage 6 Y-Y
Jumblie 6 Y-O
Junior Miss 6 W-Y
Kehelland 4 Y-Y
Kenellis 12 W-Y
Kibitzer 6 Y-Y
Kidling 7 Y-Y
Laura 5 W-W
Likely Lad 1 Y-Y
Lilliput 1 W-Y
Little Beauty 1 W-Y
Little Gem 1 Y-Y
Little Prince 7 Y-O
Lively Lady 5 W-W
Marionette 2 Y-YYR
Marychild 12 Y-Y
Mary Plumstead 5 Y-Y
Mini-cycla 6 Y-Y
Minidaf 1 Y-Y
Minnow 8 W-Y
Mite 6 Y-Y
Mitzy 6 W-W
Morwenna 2 Y-Y
Muslin 12 W-W
Mustard Seed 2 Y-Y
Nylon 12 W-W
Opening Bid 6 Y-Y
Pango 8 W-Y
Paula Cottell 3 W-WWY
Pease-blossom 7 Y-Y
Pencrebar 4 Y-Y
Petit Buerre 1 Y-Y
Picarillo 2 Y-Y
Piccolo 1 Y-Y
Picoblanco 3 W-W
Pixie 7 Y-Y
Pixie's Sister 7 Y-Y
Pledge 1 W-W
Poplin 12 Y-Y
Poppet 5 W-W
Quince 6 Y-Y
Raindrop 5 W-W
Rikki 7 W-Y
Rockery Beauty 1 W-Y
Rockery Gem 1 W-W
Rockery White 1 W-W
Rosaline Murphy 2 Y-Y
Rupert 1 W-Y
Sea Gift 7 Y-Y
Segovia 3 W-Y
Sennocke 5 Y-Y
Shrew 8 W-Y
Shrimp 5 Y-Y
Sir Echo 1 Y-W
Skelmersdale Gold 1 Y-Y
Skiffle 7 Y-Y

Small Talk 1 Y-Y
Sneezy 1 Y-Y
Snipe 6 W-W
Snug 1 W-W
Soltar 6 Y-Y
Sprite 1 W-W
Stafford 7 Y-O
Stella Turk 6 Y-Y
Sun Disc 7 Y-Y
Sundial 7 Y-Y
Taffeta 12 W-W
Tanagra 1 Y-Y
Tarlatan 12 W-W
Tete-a-Tete 6 Y-O
Tiny Tot 1 Y-Y
Tosca 1 W-Y
Tweeny 2 W-Y
W. P. Milner 1 W-W
Wee Bee 1 Y-Y
Wideawake 7 Y-Y
Wren 4 Y-Y
Xit 3 W-W
Yellow Xit 3 W-Y
Zip 6 Y-Y

DIVISION 10
*asturiensis* Y-Y
*atlanticus* W-W
*bulbocodium* (various) Y-Y
**bulb. tananicus W-W =
*cantabricus tananicus*
*calcicola* Y-Y
Canaliculatus W-Y
*cantabricus* (various) W-W
*cyclamineus* Y-Y
× *dubius* W-W
Eystettensis Y-Y (double)
*fernandesii* Y-Y
*gaditanus* Y-Y
*hedraeanthus* Y-Y
*jonquilla* Y-Y
*jonquilla* Flore Pleno Y-Y
*jonquilla henriquesii* Y-Y
*jonquilla* var. *minor* Y-Y
*jonquilloides* Y-Y
*juncifolius* Y-Y
**× macleayii W-Y =
× incomparabilis
*minor* (various) Y-Y
*minor* var. *pumilus* Plenus Y-Y
(Rip van Winkle)
*pseudo-narcissus* subsp. *alpestris* W-W
*pseudo-narcissus* subsp. *bicolor* W-Y
*rupicola* Y-Y
*scaberulus* Y-Y
*tazetta* subsp. *bertolonii* Y-Y
× *tenuior* W-Y
**triandrus albus W-W =
*triandrus* var. *triandrus*
*triandrus* Aurantiacus Y-Y
*triandrus cernuus* W-W
*triandrus concolor* Y-Y
*triandrus loiseleurii* W-W
*triandrus pulchellus* Y-W
*watieri* W-W
*willkommii* Y-Y

× = wild hybrid
** = as listed in 1969 Classified List and International Register of Daffodil Names

# 1985 DAFFODIL SHOW DATES

MRS. HUBERT BOURNE, *Awards Chairman*

March 9-10—Corona del Mar, California. Southern California Daffodil Society and the Sherman Foundation at the Sherman Gardens, 2647 East Pacific Coast Hwy. Information: Mrs. A. E. Cameron, 410 South Paseo Estrella, Anaheim, CA 92807.

March 9-10—Clinton, Mississippi. Mississippi State Show. Central Mississippi Daffodil Society at the Hall of Fame, B. C. Rogers Student Center, Mississippi College. Information: Dr. Ted Snazelle, 418 McDonald Drive, Clinton, MS 39056.

March 13-14—Dallas, Texas. Southwest Regional. Texas Daffodil Society at the Dallas Civic Garden Center. Information: Mrs. Charles T. Semos, 4032 East Amherst, Dallas, Texas 75225.

March 16-17—Walnut Creek, California. Northern California Daffodil Society at the Heather Farms Garden Center, Ygnacio Valley Road and N. San Carlos Drive. Information: Bob Spotts, 3934 LaColina Road, El Sobrante, CA 94803.

March 22-23—Atlanta, Georgia. Southeast Regional. Georgia Daffodil Society at the Shannon Mall. Interstate 85 and Georgia #138, Union City, Georgia. Information: Ralph Bullard, 6159 Ridge Way, Douglasville, GA 30135.

March 23-24—LaCanada, California. Southern California Daffodil Society at the Descanso Gardens, 1419 Descanso Dr. Information: Mrs. Don Christensen, 1703 Fletcher Avenue, South Pasadena, CA 91030.

March 23-24—Fortuna, California. Pacific Regional. The Fortuna Garden Club at the Fortuna Monday Club House, Sixth and Main Sts. Information: Mrs. Christine Kemp, P. O. Box 212, Fortuna, CA 95540.

March 23-24—Conway, Arkansas. Arkansas State Show. Arkansas Daffodil Society at the Hendrix College Campus, Hulen Hall. Information: Mrs. J. C. Dawson, 367 Donaghey Avenue, Conway, AR 72032.

March 30—Princess Anne, Maryland. Somerset County Garden Club at the Peninsula Bank of Princess Anne. Information: Mrs. Chester Snyder, 48 Beechwood Street, Princess Anne, MD 21853.

March 30-31—Chapel Hill, North Carolina. Garden Council of Chapel Hill and Carrboro and the North Carolina Botanical Garden, Totten Center, North Carolina Botanical Garden. Information: Dr. Elise Olsen Cheesborough, 109 Carolina Forest, Chapel Hill, NC 27514.

March 30-31—Hernando, Mississippi. Southern Regional. The Garden Study Club of Hernando at the National Guard Armory, McCracken Road. Information: Mrs. Barry M. Carter, 4671 Highway 304, Hernando, MS 38632.

March 30-31—Memphis, Tennessee. The Merry Weeders Garden Club and the Mid-South Daffodil Society at Goldsmith Civic Garden Center, 7050 Cherry Road. Information: Mrs. Fred L. Bradley, 3742 Guernsey Ave., Memphis, TN 38122.

April 2—Onancock, Virginia. The Garden Club of Eastern Shore at The Hermitage, North Street. Information: Mrs. Edward A. Ames III, Fairfield, Box 177, Onancock, VA 23417.

April 6-7—Hampton, Virginia. Tidewater Daffodil Society at the Hampton Holiday Inn, 1815 West Mercury Blvd. Information: H. deShields Henley, 115 Conifer Road, Newport News, VA 23606.

April 6-7—Nashville, Tennessee. Middle Tennessee Daffodil Society at Cheekwood, Tennessee Botanical Gardens and Fine Arts Center. Information: Mrs. Alex Taylor, Rt. 6, Pinewood Rd., Franklin, TN 37064.

April 11-12—Lawrence, Kansas. Countryside, Green Thumb, Lawrence Prairie Acres, and Meadowlark Garden Clubs and The Daffodil Club at the Arts Center, 9th and Vermont Streets. Information: Mrs. Vernon E. Carlsen, 811 Sunset Drive, Lawrence, KS 66044.

April 12—Scottsburg, Indiana. Indiana Growers South at the Finley Fire House, Hwy. 56 at Leota Road. Information: Mrs. Verne Trueblood, RFD 3, Box 187A, Scottsburg, IN 47170.

April 13-14—Gloucester, Virginia. Garden Club of Gloucester at the Gloucester Intermediate School, Route #17. Information: Mrs. Robert L. Trimpi, Box 672, Gloucester Point, VA 23062.

April 13-14—Dayton, Ohio. Southwest Ohio Daffodil Society at the Wegerzyn Garden Center, 1301 E. Seibenthaler Avenue. Information: Mrs. William J. Newill, 10245 Virginia Lee Drive, Dayton, OH 45459.

April 13-14—Edgewater, Maryland. London Town Public House and Gardens Show, 839 London Town Road. Information: Mrs. R. Gamble Mann, P. O. Box 176, Edgewater, MD 21037.

April 16—Chillicothe, Ohio. Adena Daffodil Society at the Veterans Administration Medical Center, Building No. 9. Information: Mrs. Goldie Vernia, 525 Seminole Road,Chillicothe, OH 45601.

April 16-17—Louisville, Kentucky. Kentucky Daffodil Society, The Louisville Galleria. Information: Mrs. Wynant Dean, 1629 Cowling Avenue, Louisville, KY 40205.

April 18—Indianapolis, Indiana. Indiana Daffodil Society at the Meridian Street Methodist Church, 5500 North Meridian. Information: Mrs. Atwood S. Moore, 5233 Brendonridge Road, Indianapolis, IN 46226.

April 18—Upperville, Virginia. Upperville Garden Club at Trinity Parish House. Information: Mrs. William Tayloe, Route #1, Box 205, Middleburg, VA 22117.

April 18—Summit, New Jersey. Northeast Regional. New Jersey Daffodil Society at Calgary Episcopal Church. Information: Mrs. R. Kendall Nottingham, 393 Charlton Avenue, South Orange, NJ 07079, or Mrs. David Watts, 30 Wildwood Lane, Summit, NJ 07901.

April 20-21—Washington, D. D. Mid-Atlantic Regional. Washington Daffodil Society, at the U. S. Botanic Garden Conservatory, Maryland Avenue and First Street, S. W. Information: Miss Delia Bankhead, 489 Arnon Meadow Road, Great Falls, VA 22066.

April 20-21—Columbus, Ohio. Midwest Regional. Central Ohio Daffodil Society at the Upper Arlington Municipal Services Center, 3200 Tremont Road. Information: Mrs. James Dietsch, 5192 Bagley Road, Columbus, OH 43227.

April 24-25— Baltimore, Maryland. Maryland Daffodil Society at the Brown Memorial Woodbrook Presbyterian Church, 6200 N. Charles at Woodbrook Lane. Information: Ms. Anne Donnell Smith, 8609 Stevenson Road, Stevenson, MD 21153.

April 25-27—King of Prussia, Pennsylvania. National Show. Delaware Daffodil Society at the Holiday Inn of Valley Forge, 260 Goddard Blvd. Information: Mr. & Mrs. W. R. Mackinney, 535 Woodhaven Road, West Chester, PA 19380.

April 29-30—Nantucket, Massachusetts. Nantucket Garden Club at the "Meeting House," Harbor House, N. Beach St. Information: Mrs. Malinda Lucas Geddes, 146 Main St. Nantucket, MA 02554.

April 30—Greenwich, Connecticut. New England Regional. Greenwich Daffodil Society at the Greenwich Boys' Club, Horseneck Lane. Information: Mrs. Clarke T. Randt, Husted Lane, Greenwich, CT 06830.

April 30-May 1—Chamberburg, Pennsylvania. Pennsylvania State Show. Chambersburg Garden Club at the First Luthern Church, 43 W. Washington Street. Information: Mrs. Owen Hartman, 105 Farmington Road, Chambersburg, PA 17201.

April 30-May 1—Cleveland, Ohio. Western Reserve Daffodil Society at the Garden Center of Greater Cleveland, 11030 East Blvd. Information: Wells Knierim, 31090 Providence Road, Cleveland, OH 44124.

May 4—Akron, Ohio. Northeast Ohio Daffodil Society at Rolling Acres Mall, 2400 Roming Ave. Information: Jack Ward, 1743 Lafayette Circle, Stow, OH 44224.

May 4-5—Mansfield, Ohio. Kingwood Daffodil Society at the Exhibit Hall, Kingwood Center, 900 Park Avenue, West. Information: Charles Applegate, Route 2, Box 163, Perrysville, OH 44864.

May 4-5—St. Paul, Minnesota. Central Regional. Daffodil Society of Minnesota at the Har-Mar Shopping Mall, St. Paul. Information: Mike Heger, 8015 Krey Avenue, Waconia, MN 55387.

May 7—South Bend, Indiana. Northern Indiana Daffodil Show at the University Park Mall. Information: Charles Wheatley, P.O. Box 150, Mongo, IN 46771.

May 10-11—Dublin, New Hampshire. Northern New England Daffodil Society at the Town Hall. Information: Mrs. William Barker, Dublin, New Hampshire 03444 or Mrs. E. H. Eggers, High Shadows, R.F.D. 2, Sharon, NH 03458.

# POETS AND PRODUCE

MEG YERGER, *Princess Anne, Maryland*

In the early twentieth century, the poeticus type of daffodil was in such demand as a cut flower that it rivaled the yellow trumpet in popularity even for street corner sales. For home gardeners and commercial growers there was much written on the cultural preferences for that type of daffodil. One author, Rev. S.E. Bourne, wrote in 1903 that it was desirable to get poeticus varieties into the ground by the end of July, saying, "Early planting is, there can hardly be a doubt, essential *if the best results are to be secured.*" He encouraged leaving them in the ground at least two seasons unless they were not doing well and "in the matter of lifting *better be too early than too late*. . .Some of the varieties have no period of bulb rest. . ."

The affinity for early lifting with immediate replanting works out efficiently for companion planting with vegetables. The beauty and fragrance of the poeticus can be enjoyed in spring,then a living mulch of vegetable plants can keep the bulbs cool all summer and provide tasty produce for the picking!

Foliage from vegetables such as Lacy Lady bush peas, Rutgers tomatoes which like to crawl, Blue Lake bush beans, Bush Charleston Gray and Bush Jubilee watermelons, and peppers can provide summer mulch. Poeticus plantings adapt well to such double use of a plot used for vegetables because of a preference to be dug before the foliage has lost all its green. Observation in a Maryland Eastern Shore garden confirms the fact that poeticus do have a very short rest period for the roots. A great many different poeticus cultivars dug between Memorial Day and mid-June in 1984 had old roots still active on almost all of them. On a very few the new roots had begun to appear while the old roots were still there. Those new roots were as fragile and translucent as the tentacles of a sea nettle and would have

died if not put into a gentle environment at once. That is why no harm is done if they are moved from one place to another in the same garden—or even into a can of friable soil for immediate transfer to a friend's garden. The normal bloom time for a cultivar seems to control the time for emergence of new roots. For instance Felindre, the very late bloomer, had no sign of new roots when dug the end of June. The propensity for early maturity allows double use of the plot when vegetable crops suitable for late planting are selected.

In the raised bed of the Maryland poeticus/vegetable garden referred to earlier, ten-inch wide rows running north and south alternate with eight-inch strips of loose-laid brick foot-paths to avoid packing of soil. From time to time the positions of the bricks and the dirt strips can be reversed to provide a change of soil much as was done in medieval times when it was the custom to let fields lie fallow.

To start this planting design all bulbs were dug then replanted at once three or four inches apart right down the center of the ten-inch strip. Seeds of vegetables were spaced six or eight inches apart near each edge. Some strips were left vacant of bulbs so as to receive new poeticus as they arrive with bulb orders. Planned positioning of vegetable seeds left a center aisle for a bulb behind a bulb, a bulb before a bulb, a bulb between two bulbs and so on as in the childhood tale of the ducks. A temporary protection against birds, squirrels, cats, wandering dogs, and even humans was provided by sheets of half-inch wire mesh propped on the brick walks and the bulb markers until sprouting vegetable foliage grew enough to touch it. In a couple of weeks the living mulch was well along and in not many more weeks produced food. Gardeners in other areas may work out adaptations to this system to suit their own needs and seasons.

The matter of fertilizing works out compatibly. Most of the vegetable crops selected don't want nitrogen because it tends to produce many leaves and little fruit. The 2-20-20 fertilizer used for daffodils works well enough for good vegetable yield. Water for the crops in the well-drained raised beds keeps daffodil roots growing well in all seasons which is important because of the almost continuous growth habit of poeticus.

When the harvest from the food crops is over, the vegetable plants must not be pulled out by the roots lest the bulbs be disturbed. Top growth should be cut off at the soil line. It can be put into the compost bin for future use as mulch or soil additive. Usually, grass and chopped leaves from the year's final lawn mowing are thrown on for winter protection and eventual incorporation into the soil and through the winter hardwood ashes from the fireplace are sprinkled over as they become available. Dreams of poets and produce of the next year are in the minds of gardeners sitting by that winter fire.

We are prepared, my love and I,
For winter on a hill:
I stored a theme of song, and she
A root of daffodil.

-Edwin Quarles

* * * * * * *

# CONVENTION 1985

BETTY P. KRAHMER, *Wilmington, Delaware*

"Convention 1985" with all its activities will soon be with us. And, what activities they will be—from Wednesday, April 24 through Saturday, April 27! Show entries may be entered from 3 PM on Wednesday until 10 AM on Thursday. Exhibitors are requested to make reservations for all collections of over five stems with the Staging Chairman: Mrs. Robert Weeks, 2306 Jamaica Drive, Wilmington, DE 19810. Tel: 302-475-7238.

If you are flying to the convention, use the Philadelphia Airport. The limousine service which serves the Holiday Inn of Valley Forge is Liberty Limousine.

Thursday, the show will be open to the public from 2 PM until 9 PM. There will be a Board of Directors meeting at 3 PM. Dinner that evening will be followed by the annual meeting of the Society and the awards presentations.

On Friday, the show will be open until 5 PM. The special breakfasts, Hybridizer and Miniature, will be held at 7:30 AM. (If you wish to attend one of these, please register and pay for it at the time you register at the Convention.) The morning Symposium will include Theodore Snazelle, Ph.D. giving "Daffodil Diseases and Pests, Part II" and Mrs. Hubert Bourne on "Writing and Interpreting a Show Schedule." In the afternoon, we will hear Martin Mathes, Ph.D, on "Micropropagation of Daffodils Using Tissue Culture Methods," followed by a Judges' Refresher Course in the form of a skit. Sir Frank Harrison will speak to us after dinner.

Saturday will bring an early morning departure to visit Longwood and Winterthur with lunch in the new Longwood facility. We will return to the hotel in time for a meeting of the new Board of Directors at 4 PM.

Following the gala dinner in the evening there will be a stupendous auction which is guaranteed to present highly desirable objects in a quick paced and outstanding fashion. We have been extremely fortunate to obtain the services of a renowned raconteur as our auctioneer. What a fitting climax to what we think will be an outstanding 1985 Convention and Show!

WINTERTHUR

Daffodils dot the hillside above the conservatory of the Winterthur Museum and Gardens.

# REGISTRATION FORM

A D S CONVENTION, APRIL 25-27, 1985

HOLIDAY INN, KING OF PRUSSIA, PENNSYLVANIA

Name _____

Address _____

City _____ State _____ Zip _____

Christian or Nickname _____

REGISTRATION FEE: Before April 1 ..... $125.00
April 1 or later ..... $140.00

Registration Includes: National Show; April 25: Awards Dinner and Annual Meeting; April 26: Symposiums, Lunch, Banquet; April 27: Tour of Longwood and Winterthur, Lunch, Banquet.

Do you plan to exhibit? YES _____ NO _____

Please make check payable to: 1985 ADS Convention and mail to: Mrs. John F. Gehret, 3 Granite Road, Wilmington, DE 19803.

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# HOTEL RESERVATION REQUEST

*American Daffodil Society*
Holiday Inn of Valley Forge
Reservation Office
260 Goddard Boulevard
King of Prussia, PA 19406-9990
(215) 265-7500

Please submit by April 1. (All rates plus 7% occupancy tax)

| | | |
|---|---|---|
| Single $54.00 | King Bed $66.00 | Extra person add $4.00 |
| Double $60.00 | 1 room Suite $80.00 | Rollaway add $6.00 |
| Two-Bed Double $60.00 | 1 room Suite with connecting Double room $125.00 | |

Name _____

Address _____

City _____ State _____ Zip _____

Arrival Date _____ Time _____ Departure Date _____ Time _____

I wish to share a room with: _____

Send directly to Holiday Inn with a deposit for first night's lodging or please note the number of your credit card.

AX _____ VISA _____ MC _____

Expiration Date _____

# TISSUE CULTURE AND THE MICRO-PROPAGATION OF DAFFODILS (1)

## I. Methods

Martin C. Mathes (2)
Department of Biology
College of William and Mary
Williamsburg, Virginia

Modern technology has resulted in a wide range of economic and aesthetic contributions to society. These advances, in the area of plant biology, have expanded our understanding of the development and physiology of plants. The vision of Haberlandt (12) coupled by the dramatic discoveries of Skoog and Miller (13), provided a firm foundation for the rapid development of methods for the aseptic manipulation of isolated plant parts. Initially, studies were directed toward the documentation of a variety of sterilization procedures, media components, environmental influences and hormone balance. These programs provided a bewildering diversity of parameters which, for example, resulted in the formulation of a large number of diverse media for the growth of tissue from individual species. Workers also found that the addition of coconut milk sustained rapid tissue growth and the form of nitrogen influenced the differentiation process. Results in this area of basic research offered obvious potentials for the development of standard methods for the rapid vegetative propagation of many woody and herbaceous plants. Dr. T. Murashige (8), was among the first scientists to develop standardized media and conditions for the controlled, directed differentiation of plantlets in culture systems. Basic research and a new practical emphasis—informing the commercial producers—emerged as a significant consideration. The relative ease of operations, the standardization of media, and the recognition of a potential market for tissue culture supplies have provided the impetus of the application of the basic technology to a wide variety of plants.

Detailed reviews (9,14,15) and general articles have formed a heuristic background for the exploration of individual groups of plants. The basic premise is that cells, capable of division, from all plants may be grown in the laboratory—if the cultural conditions, sometimes very exacting, can be determined. This working hypothesis has been substantiated using hundreds of monocot and dicot species, herbaceous and wood representatives, and cells from pollen grains to leaf mesophyll layers. Gautheret (1) produced an early compendium which stimulated the emergence of this new discipline. Philip White (2) recognized the importance of a comprehensive international symposium and focused in on the areas of plant tissue culture. The clear, repeated demonstration that plant cells could be manipulated to produce new plants in culture further emphasized the unlimited potential for the research investigator and the plant propagator. This totipotency resulting in the production of genetically identical plants lead to a series (3) of discussions designed "to establish the current status of higher plant propagation through tissue culture in terms of research accomplishments, commercial applications, and future needs." Topics, including principles of rapid propagation,

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(1) This study was funded by a grant by the American Daffodil Society. Figure 1 and additional portions of tables published by permission of Avery Publishing Group. Encouragement provided by Dr. John Tarver and assistance provided by Ruth Uveges were greatly appreciated.

(2) Professor of Biology

tissue cultures of ornamentals and flowers, and embryoid formation in cells derived from vegetative plant tissues, were discussed in the 1978 symposium which blended practical and experimental considerations. A second symposium which included a practical emphasis (6) and emerging technologies and strategies, was held in 1981. Topics ranging from *in vitro* cloning systems to modification of research procedures for commercial propagating systems and the legal aspects of plant tissue culture and patents were discussed. The program stressed three primary areas—new applications of tissue culture technology, factors influencing the growth and development of cultured cells and tissues, and problems which limit the further application of current tissue culture technology. The manipulation of isolated cells produced plants which illustrated newly acquired characteristics (such as salt tolerance) and further substantiated the potential for the mass production of large numbers of vegetatively produced (clonal) plants. In a number of cultures, these clonal plants have their origin in the process of somatic embryogenesis (embryos form in the absence of sexual fusion) and can produce thousands of small plants in each culture dish. We are just beginning to realize the potential of superimposing the emerging technologies of gene engineering and plant tissue culture.

Shoot tips (meristem) may also provide a source of isolated tissue which can produce plantlets. These cultures, initiated using small meristem tissue explants, include the actively growing apex which can form multiple shoots in culture. The discovery that a significant number of cultured tips from virus-infected plants were virus-free lead Morel and Martin (4) to report the production of the first virus-free tissue culture plants (dahlia). These techniques add to the economic potential of tissue culture methods and have been applied to a wide variety of plants, including daffodils.

I would like to outline the basic procedures and considerations involved in establishing a tissue culture laboratory and performing basic experiments exploring micropropagation of daffodils.

A—Laboratory. The laboratory should involve two basic areas—a preparation room and a culture room. These areas (Figure 1) should have an entrance with two doors (providing an air-lock) which reduce the flow of dust and air currents. Precautions, such as clean clothing and shoes, and air conditioning (provides a slight positive pressure) should further reduce contaminating air particles. Chemical storage, dishwashing, media preparation, and sterilization should be accomplished in the laboratory area. Adequate lighting and shelves for media storage and a supply of glassware should be centrally located. A clean laboratory will reduce the bacterial and fungal contamination of tissue culture media and explants.

The culture room should have an adequate electrical supply, minimal dust, and a system of temperature control in the range of 25-28°C. The cultures should be grown on lighted shelves (perforated for air flow) with variable light intensity (remove bulbs, alter distance) and photoperiod (timer for sequential lighting). The lighting system (usually fluorescent) should compensate for the generation of an additional heat load from ballasts, etc., and provide intensities in the range of 100 to 3000 fc. (1000-30,000 lux) with a light period of approximately sixteen hours.

The transfer chamber can vary from a small table-top box with a transparent viewing area and openings for hands, to a commercial laminar flow hood. In both cases, the primary concern is to provide a working surface which is not exposed to dust particles or air currents. Dust and contaminating spores may be removed by wiping hands and surface with disinfectant (Table 1) solution. All equipment (Table 2) should be relatively dust-free.

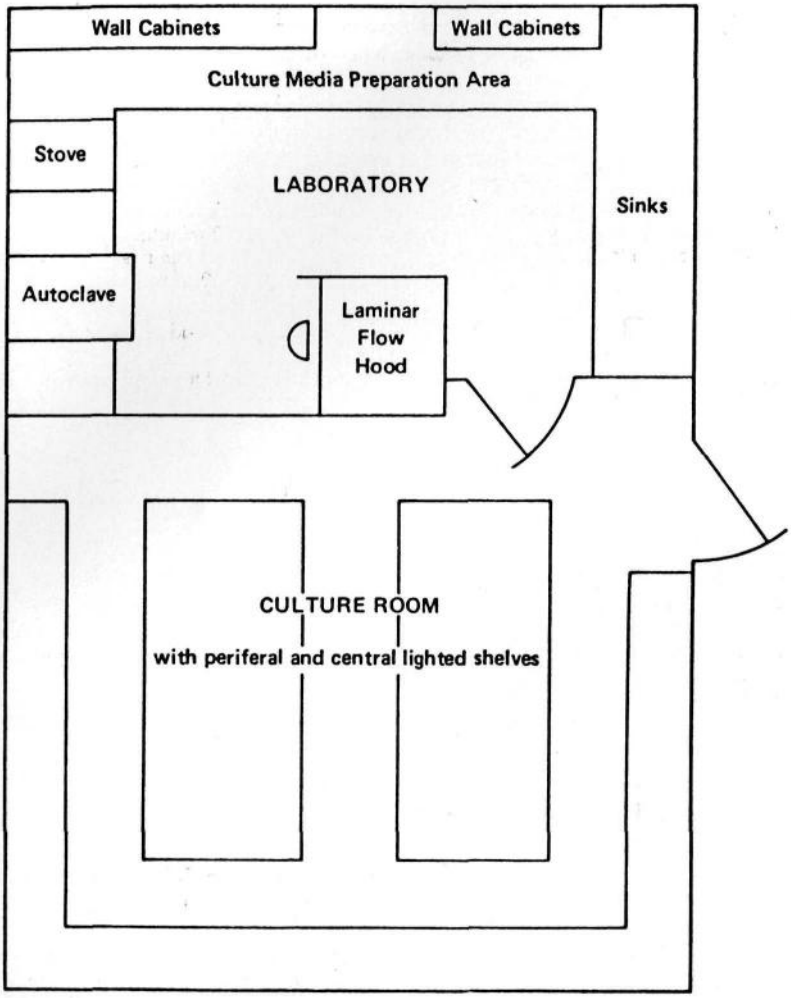


Figure 1. Floor plan of a small *in vitro* propagation laboratory and adjacent culture room. The laboratory is somewhat protected from drafts and outside dust and dirt by its inside entrance. The normal flow of materials and operations will be from the washing area counterclockwise toward the most protected sterile transfer area.

B—Media Preparation. Glassware used in media preparation should be clean and rinsed with distilled water. A wide range of culture containers—including small bottles, test tubes, baby food jars, petri dishes, and pre-sterilized disposable plastic containers—may be used. Distilled or deionized water should be used for all media, and reagent grade chemicals should be purchased. A great variety of premixed powdered media are available from biological suppliers (Table 3). The medium should have a pH (acidity—Table 4) of between 5.0 and 6.0. Certain media have a pre-adjusted pH while others must be checked and altered with hydrochloric acid or sodium hydroxide. Test papers or a pH meter may be used to determine the pH of culture media.

Table 1. Surface Sterilization

Some Commonly Used Disinfectants

| Disinfectant (1) | Concentration | Exposure Time |
|---|---|---|
| Sodium hypochlorite (2) | 0.5%-5% | 5-20 minutes |
| Ethyl alcohol | 75%-80% | Several seconds-Several minutes |
| Benzalkonium chloride (3) | 0.1%-0.01% | 5-20 minutes |
| Hydrogen peroxide | 3% | 15-30 minutes |
| Mercuric chloride | 0.1% | 20-30 minutes |

(1) These chemical are toxic and/or irritants. Use cautiously. All residues should be removed by rinsing at least three times with sterile water.
(2) Laundry bleach is usually approximately 5% sodium hypochlorite; calcium hypochlorite (chlorinated lime) also works well.
(3) Zephiran, BTC, Roccal.

Table 2. Laboratory Equipment

1. source of distilled or deionized water
2. refrigerator
3. stove or hot plate
4. sterilizer—pressure cooker or autoclave
5. acidity testing paper or meter
6. glassware—beakers, Erlenmeyer flasks, graduated cylinder, graduated pipettes.
7. balance
8. culture containers—bottles or dishes
9. aluminum foil, razor blades, forceps
10. magnifer or microscope
11. alcohol burner
12. oven
13. sterilizing filters and faucet aspirator

All culture containers and media must be sterilized. In general, media and additives may be sterilized by exposure to high temperature (121°C) for a short period (fifteen minutes). These conditions are obtained at elevated steam pressures (fifteen pounds per square inch). Certain containers cannot withstand exposure to these high temperatures. Glassware and laboratory equipment can be dry sterilized in an oven (160-180°C for ninety minutes) while certain media components (destroyed by high temperature) may be sterilized by filtration using 0.2 micron disposable pre-sterilized plastic filters. All sterile materials must be protected from dust and air currents. Individuals cannot be too careful. A variety of hormones (Table 5) and media additives will be specified—depending on the medium (solid agar or liquid), the direction of development (roots, shoots, callus), and the source of plant materials.

The culture medium usually contains trace elements, major minerals, one or more soluble vitamins, an energy source (usually sucrose), and growth regulators (in appropriate proportions and concentrations). A basic medium used to support the extended growth of isolated plant parts was developed by Murashige and Skoog (Table 6) in 1962 and has been used extensively in a wide variety of studies. Variations in the phosphorous, potassium and nitrogen levels have been suggested for use with specific plants. Pure water (distilled or deionized) should be

Table 3. Media Types

| Medium (1) | Species |
|---|---|
| Salt Bases | |
| (1) Gamborg B-5, (2) Gamborg-Miller-Ojima, (3) Heller, (4) Knudson, (5) Kitsch and Kitsch, (6) Vacin and Went, (7) White | - |
| Murashige and Skoog | |
| (A) Microelement, (B) Macroelement | - |
| Minimal organic shoot multiplication-A, B, C | - |
| Shoot-Tip Rooting | - |
| Multiplication | *Asparagus* |
| | *Gerbera, Begonia, Crassula, Dracaena, Cordyline, Scindapsus, Cattleya,* Lily, *Poinsettia,* African Violet, *Syngonium, Tupidanthus* |
| Pretransplant | *Gerbera,* African Violet, *Syngonium, Cordyline, Scindapsus, Dracaena, Crassula, Kalanchoe* |
| Starting | *Scindapsus, Syngonium, Cordyline, Dracaena* |
| Callus Initiation | Carrot, Tobacco |
| Shoot Development | Carrot, Tobacco |
| Anderson (1) Starting (2) Multiplication (3) Pretransplant | *Rhododendron* |
| Multiplication | Cape Sundew |
| Pretransplant | Cape Sundew |

(1) Media available from Carolina Biological Supply, Burlington, N.C., 27215

Table 4. Measurements

| | |
|---|---|
| 1 gram = | 1000 milligrams (mg) |
| | 1 mg = 0.001 gr |
| | 1 microgram = 0.000001 gram |
| | 1 gram = 1000 parts per million (ppm) |
| 1 pound = | 454 grams 1 ounce = 28.35 gram |
| 1 liter = | 1000 milliliters (ml or cc) |
| | 1 ml = 0.001 liter |
| | 1 microliter = 0.000001 liter |
| 1 liter = | 1.06 quarts 1 fluid ounce = 29.6 ml |
| 1 quart = | 0.946 liter |

acidity (0-7) pH 7.0 Neutral - lower values acid

temperature (°F.-32) × 5/9 = °C

Table 5. Growth Regulators

| Name | Stock Solution Preparation | Abbreviation | Comments |
|---|---|---|---|
| I. Auxins | | | |
| Indole-3-acetic acid | Dissolve (1) 100 mg IAA in 5 ml 0.4% sodium hydroxide and bring to a volume of 100 ml | M.W. IAA (175) | A natural auxin, unstable. |
| Indole-3-butyric acid | | IBA (203) | |
| Alpha-napthaleneacetic acid | | NAA (186) | Stable. |
| 2,4 dichlorophenoxyacetic acid | | 2,4D (221) | Strong, stable. |
| II. Cytokinins, adenine | | | |
| Benzyladenine (6-benzylaminopurine) | | BA (225) | |
| Kinetin (6-furfurylaminopurine)- | Dissolve (1) 100 mg KIN in 5 ml of 1/100 dilution of concentrated hydrochloric acid and bring to a volume of 100 ml | KA (215) | |
| Isopentyladenine (dimethylallyl-aminopurine | | DMAA (203) | A natural cytokinin. |
| Adenine sulfate | | Ad-$SO_4$ (230) | Weak cytokinin activity. |
| III. Gibberellins | | | |
| Gibberellic acid $A_3$ | | $GA_3$ (346) | May promote growth, sometimes inhibits bud initiation. |

(1) stirring with slight heat may be required to dissolve

placed in a clean container, and the appropriate (prepackaged) salts are added with stirring. Supplements (growth regulator, stock solutions, etc.) are added and the medium is made to volume (usually one liter) usually after the addition of agar (0.8 to 1%). The medium is sterilized and poured into sterile containers or poured into containers prior to sterilization. Culture dishes or bottles should be loosely sealed with a cap or plug (cotton or foam) and covered with aluminum foil extending down the side of the container. These partial closures reduce evaporation while allowing gas exchange. If the media becomes contaminated, the containers should be sterilized before opening. This will kill all spores and eliminate a potentia source of additional laboratory contamination.

C—Explant Selection and Preparation. Flick, Evans, and Sharp have listed (5) plants, of agricultural interest, which have been regenerated from tissue cultures. This listing includes fifty-nine species and varieties (tobacco, tomato, etc.) in a single family, Solanaceae; an additional 104 dicot plants; sixty-two monocots with members of the lily family, including *Narcissus*; and a total of 298 references to scientific articles. A wide variety of plant parts—leaves, roots, stems, pollen—can serve as the initial explant. The isolated tissues must be capable of active growth and therefore not in the dormant condition.

Plant materials, selected as a source of explants (Figure 2), must be surface sterilized. A variety of sterilizing agents (Table 1) have been used in a wide range of concentrations, combinations, and contact periods. Tissue injury must be minimal while microbe toxicity should be absolute. In general, tender non-woody plant parts will require minimal exposure to sterilizing agents. In certain cases, enclosed

Table 6. Listing of the Components of Murashige and Skoog's Medium

| Chemical Name | Chemical Symbols | Quantity per Liter |
|---|---|---|
| A. Macronutrients | | |
| Ammonium nitrate | $NH_4NO_3$ | 1.65g |
| Potassium nitrate | $KNO_3$ | 1.90g |
| Calcium chloride dihydrate | $CaCl_2 2H_2O$ | 0.44g |
| Magnesium sulfate 7 hydrate | $MgSO_4.7H_2O$ | 0.37g |
| Potassium dihydrogen phosphate | $KH_2PO_4$ | 0.17g |
| B. Iron source (2) | | |
| Ferous sulfate 7 hydrate | $FeSO_4.7H_2O$ | 27.8mg |
| Disodium EDTA (1) | $Na_2EDTA$ | 37.3mg |
| C. Micronutrients | | |
| Boric acid | $H_3BO_3$ | 6.2mg |
| Manganous sulfate 4 hydrate | $MNSO_4.4H_2O$ | 22.3mg |
| Zinc sulfate 4 hydrate | $ZnSO_4.4H_2O$ | 8.6mg |
| Potassium iodide | K1 | 0.83mg |
| Sodium molybdate dihydrate | $Na_2MoO_4.2H_2O$ | 0.25mg |
| Cupric sulfate 5 hydrate | $CuSO_45H_2O$ | 0.025mg |
| Cobalt chloride 6 hydrate | $CoC_{12}.6H_2O$ | 0.025mg |

(1) EDTA is the abbrevation for ethylenediaminetetraaceticacid.
(2) Usually added from a more concentrated solution; iron stock solutions should be stored in an amber bottle or darkness.

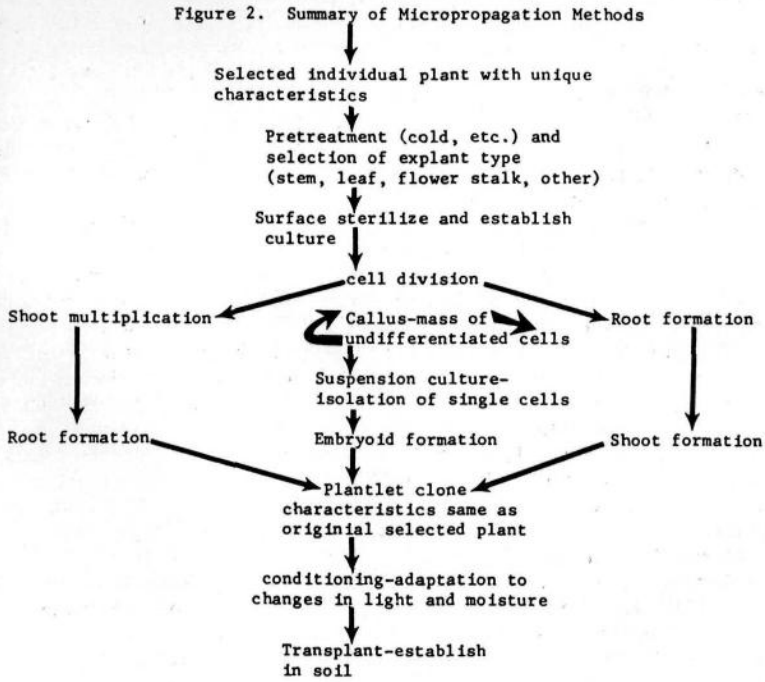


Figure 2. Summary of Micropropagation Methods

plant structures (buds, bulbs, etc.) will be internally sterile and require only the aseptic excision of the sterile tissue. For ease of operation. the external surface is sterilized to reduce possible contamination of internal tissues. The efficiency of sterilization is increased by the addition of a surface active agent (detergent) to the sterilizing solution. The general procedure involves the submersion of the explant tissue in the sterilizing solution (containing a few drops of wetting agent) for a short time and then washing away the toxic residue with three rinses of sterile water. In certain instances, where sterilization is difficult, a repeated treatment (after one or two days) will produce sterile explants. Disinfectant damaged portions, i.e. ends of stem sections, should be removed prior to placing the sterile explants on the tissue culture medium. All surfaces, container, forceps, cutting tools, and solutions which contact the explants should be sterilized and air currents (open doors, sneezes) must be minimal during the tissue sterilization procedure. Forceps and razor blades may be sterilized by storing in alcohol and burning off the excess sterilant. Contaminated explants and cultures should be autoclaved prior to disposal. Sterile explants should be placed onto the surface of agar medium, the culture container should be appropriately sealed and placed on the growth chamber shelves. Depending on the medium and cultural conditions, the explants may undergo a series of developmental changes which may result in the development of roots or shoots or embryo-like (embryoid) structures. Murashige has proposed a defined sequence of three major steps (Stages I, II, and III) in the developmental process. The generalized stages begin with the establishment of the culture—selection and sterilization of the explant, placement on appropriate medium for subsequent growth. Stage II is the multiplication phase which involves a rapid increase in cell division and shoot proliferation. The tissue may be subdivided, placed on fresh medium and recycled until the desired number of plantlets is obtained. Stage III involves root development and conditioning to gradual exposure to higher light intensity and lower humidity. This pretransplant phase is continued until independent plants can be grown in potting medium and placed in the greenhouse environment. Culture equipment and supplies are listed in Table 7.

The pioneers in plant tissue culture (11) had a far-reaching insight as indicated by Haberlandt who stated "the technique of cultivating isolated plant cells in nutrient solutions permits the investigation of important problems from a new experimental approach."

Investigation involving the factors which control the origin of small plantlets from small pieces of isolated plant tissue have lead to the wide use of these techniques in the scientifuc and applied communities. Tissue culture plants can be produced rapidly using a small amount of space and relatively simple techniques, and exhibit a genetic uniformity lacking in seedlings. Unique applications involve the production of crop plants with improved yields, disease resistance, and new hybrids formed from the fusion of cells (protoplasts) in culture. Genetic engineering (acquiring specific conditions) seems to offer endless possibilities for the improvement of plants.

This brief introduction and outline of methods can be supplemented by exploring the development of isolated plants (carrot (10), African violet, Boston fern, or Cape sundew) using a variety of commercial kits (Table 7) or rapidly multiplying living cultures which can also be purchased. Excellent guides (7,16) list the steps and considerations for successful cultures.

The second portion of the micropropagation of daffodils will involve the experimental phase and will employ the general methods as outlined in this paper.

Table 7. Tissue Culture Equipment and Supplies

| *Item* | *Price Range* | *Item* | *Price Range* |
|---|---|---|---|
| Tissue Culture Kits | 12-45 | Fluorescent Stand | 27 |
| Living Cultures | 5 | Automatic Timer | 19 |
| Media | 3-45 | Hot Plate | 50 |
| Agar | 45 | Magnetic Stirrer | 70 |
| Auxins | 4-10 | Balance | 40 |
| Cytokinins | 7-25 | Mason Jars | 1 |
| Vitamins | 3-28 | Alcohol Lamp | 5 |
| Gibberellic Acid | 8 | Wide-Mouth Bottles | 5 |
| Charcoal | 25 | Beakers | 5 |
| Sterile Distilled Water | 6 | Graduated Cylinders | 5 |
| Detergent | 12 | Volumetric Flask | 20 |
| Forceps Set | 16 | Test Tubes | 4 |
| Scalpel Set | 12 | Disposable Plastic Filter Units | 8 |
| Light Meter | 65 | Pipettes | 5 |
| Laminar Flow Unit | 1400 | Petri Culture Dish | 2 |
| Shaker-Orbital with Platform | 625 | Thermometer | 10 |
| | | pH Test Paper | 11 |
| Microscope-Dissecting | 330 | Parafilm | 11 |
| Magnifier | 25 | Wetting Agent | 6 |
| Razor Blades | 5 | Surgical Gloves | 4 |
| pH Meter | 165 | Disinfectant | 6 |
| Label Tape | 2 | Test Tube Rack | 1 |

(1) All items may be purchased from Carolina Biological Supply, Burlington, N.C. 27215. Listing of an individual supplier or item does not represent an endorsement. Specific prices may vary.

General References:


1. R. J. Gautheret. LaCulture des Tissus Vegetaux. 1959. Masson et Cie, Paris.
2. P. R. White. Proceedings, International Conference on Plant Tissue Culture. 1965. McCutchen Publishing.
3. Propagation of Higher Plants Through Tissue Culture. National Technical Information Service, U.S. Department of Commerce, Springfield, Va. 1978. University of Tennessee Symposium Proceedings.
4. G. Morel, and Martin C. Guerison. de ahleas atteints d'ure maladie a virus. C. R. Acad. Sci. Paris. 235: 1324-1325. 1952.
5. I. K. Vasil, W. R. Scowcroft and K. J. Frey. Plant Improvement and Somatic Cell Genetics. 1982. Academic Press.
6. Propagation of Higher Plants Through Tissue Culture: Emerging Technologies and Strategies. Environmental and Experimental Botany 21: 269-452. 1981.
7. D. F. Wetherell. Introduction to *in vitro* Propagation. Avery Publishing. 1982.
8. T. Murashige, and F. Skoog. A revised medium for rapid growth and bioassays with tobacco tissue cultures. Physiologia Plantarum 115: 473-497. 1962.
9. Pierik, R. L. M. *In vitro* culture of higher plants - Bibliography. Wegeningen: R.L.M. Pierik. 1979.
10. Hockin-Curtin, J. Plant tissue culture and the carrot. Carolina Tips. Dec. 1, 1982. Carolina Biological Supply Co.
11. Stribling, John M. Pioneers in Plant Tissue Culture. Carolina Tips, Sept. 1, 1983. Carolina Biological Supply Co.
12. Haberlandt, G. Culterversuche mit isolierten Pflanzenzellen. Sitzber. Kais. Akad. Wiss., Math-naturwiss. Kl., Bd. CXI, Abt. I, 69-92.
13. Skoog F., F. M. Strong, and C. O. Miller. Cytokinins Science 148: 532-33. 1965.
14. Murashige, T. Plant propagation through tissue cultures. Ann. Rev. Plant Physiol. 25: 135-166. 1974.
15. Puhan, Z., and S.M. The industrial potential of plant cell culture. Prog. Ind. Microbiol. 9: 13-39. 1971.
16. Ganborg, O. L., and L. R. Wetter. Plant Tissue Culture Methods. National Research Council of Canada. 1975.

# BEGINNER'S CORNER

PETER RAMSAY, *Hamilton, New Zealand*

When I wrote a few mildly critical remarks about "Beginners' Corner" last year, I cautioned myself that critics often end up getting jobs. But how was I to know that the charming author of this column (can a corner be a column?) would be one of our guests at Springworld? And how could I refuse her gentle request for a guest spot in this space, given earlier circumstances? So here, as in marriage, for better or worse, is my response to Frances's request. Before I begin let me tell you of one piece of advice your regular writer gave to me. I am to operate on the KISS principle. Now, at my age I am usually more than happy to follow such suggestions. However, I am disappointed to have to record that in this instance KISS is an acronym from the management field, meaning "Keep it Simple." You may work out the final S once you've read what follows.

I intend to keep my remarks to two areas which are not unrelated—foliage and water. My comments will be fairly basic; for those of you who wish to learn more I have appended a brief reading list. A couple of years ago I wrote an article entitled "Equation: Good Foliage Equals Good Bulb Equals Good Flower." Now of course growing daffodils is not as simple as sums—we all know that lovely plump bulbs often produce the kind of nicked monsters that my wife rejects from twenty yards away. And sometimes, scrawny little things turn up trumps—look at Gay Challenger as a case in point. As my friend, Graham Phillips, has said, this particular cultivar produces the best flower return per bulb weight of any daffodil currently grown! For all that, I believe my equation, whilst not exact, is a useful one for beginners to keep in mind. So, folks, look after your foliage. Nurture it as soon as it comes through the ground; indeed before, by providing the appropriate nutrients in the soil prior to planting. As soon as the foliage is through, a spray pattern of approximately once per fortnight should commence. My second floral love happens to be roses, so what they get the daffodils usually receive. My sprays are an alternate of a cocktail of Benlate (benomyl), Zineb (diathane Z278), and Shield (Saprol and Orthene) followed by Bravo (chlorothalonil) and Maldison. It is very important to vary your fungicides as tolerance can build up in the plant, a point which was brought home to me very forcibly in convention year! Once your foliage is two to three inches up, a careful visual inspection should take place. Look for yellow stripes in the foliage, or mottling, or serious distortions. Dig any affected cultivars and varieties and burn, as they have contracted Daffodil Public Enemy Number One: Virus. Identifing virus can be difficult for the beginner; this is one occasion where you should consult your local guru before acting too quickly. If you haven't got a guru handy, all I can do is recommend a reading of Theo Snazelle's wonderfully depressing articles on the subject. At this early stage of growth you should also watch out for any premature browning off of foliage. If severe, the only solution is the incinerater. If caught early, the remedial spraying recommended above will control any further spread. You should also be on the lookout for brown tips on the foliage. Now up until this year I used to ignore such symptoms, putting them down to a combination of mechanical damage sustained in weeding and/or frost damage. However one of our house guests during Springworld was Brian Duncan of Rathowen Daffodils. Brian claimed that brown tips were signs of a fungus complaint called staganospora. I rather tended to scoff at such notions, but when Brian wasn't looking I picked a couple of leaves for analysis. Sure enough, fungus spores were located; so I have now purchased a jacket with large pockets and will follow Brian's example of picking off such tips, and will of course delight in burning them!

If the above points are heeded, with any luck you will have some lovely green foliage after flowering. This is where most beginners show their lack of experience. Once the flowers are spent they ignore the foliage, at a time when it needs their attention most. Keep the foliage in good shape as long as you can—do not commit the cardinal sin of cutting it off, or even tying it up in tidy knots. Keep the spray pattern going; and if there is a dry spell, moisten the ground, preferably with soaker hoses. About one month after flowering you may desist and allow the foliage to die back naturally, and to let the weeds form the famous Pannill green mulch.

So much for foliage, what about water? Too much and too little are both disastrous. We should remember that some daffodil forms are semi-aquatic during their growing period, but that they also need to dry completely out in the summer. There is a belief around here that during the growing period the bulbs need one inch of water per week. We also believe that our best seasons follow a wet winter. Lesley, my much suffering daffodil partner, has what she calls the terrace-mud test. The more mud on our terrace from my (and let it be noted *her*) boots the better the flowers! In the last two winters very dry conditions prevailed; consequently the flowers were smaller than usual, and had less substance. I guess further proof of the power of water comes from the fact that the best flowers I've seen come from places with naturally damp climates—Tasmania, Oregon, Ireland, and England. And, oh yes, some parts of New Zealand—which parts I've yet to figure out—perhaps I should persuade our Government to let me lease a part of Fiordland National Park which has 150 inches of rain per annum.

The message here is I hope relatively clear. After planting make sure your daffodil beds are kept nicely damp. And keep damp until one month after flowering. Then let them dry off completely, either inground or in storage. The best water is of course Nature's Own; but if you live in places like California and grow in ditches instead of the mounds utilized in most other places, then you will need to help Nature along.

Good luck with your daffodils. They are not the *hardy* plants that average garden books make them out to be. They are *challenging* plants. But they really are the most rewarding of all.

Further Reading:

Ramsay, P. "Equation: Good Foliage = Good Bulbs = Good Flowers," *Daffodils 1982-83*. RHS, London, 1983.

Lea, J.S.B. "Storage and Treatment of Narcissus Bulbs," *Daffodils 1975*, RHS, London, 1975.

Lloyd, D. "Growing Daffodils," *Daffodils 1972*. RHS, London, 1972.

Snazelle, T. "Daffodil Pests & Diseases," *The Daffodil Journal*. ADS, 1979 and 1980.

# WOE! WOE! WOE!

HAROLD CROSS, *Geilston Bay, Tasmania*

(from the Tasmanian Daffodil Council *Newsletter*, July, 1984)

Long, long ago when I was a small boy there were still plenty of horses around. I remember being greatly puzzled one day by a street-corner preacher who uttered the above cry when there wasn't a horse in sight. It was many a year before enlightenment came, but the cry of that preacher summarizes quite succinctly most of my efforts to photograph daffodils in the past twenty-five years.

Now let it be admitted that my efforts were understandably handicapped by a distinct lack of knowledge about photography. Oh, yes, I'd taken slides of the children, scenic views and similar subjects, but flowers had been outside my photographic experience. Still, slides of daffodils were what I wanted, and so the battle began.

The camera with which I began was not a reflex camera, and I remembered enough of my study of physics to recall the problems of parallax error. So I duly made allowances—or, to be more accurate, I thought I did. But when the people who processed my film recovered from their hysterics long enough to send my slides back to me, I found that daffodils obviously objected most strongly to being photographed. Those supposedly gentle, inanimate objects had jumped all over the place—and I've been struggling ever since to get the better of their love of gymnastics.

After consultation with the proprietor of a camera shop, I invested in a single lens reflex camera with which I was assured my problems were at an end. I suppose the salesman was quite right, but the cunning rogue carefully refrained from pointing out to me that one end is otherwise known as "the beginning." I should have realized this when the salesman called me back as I was leaving to explain that he had just remembered that I would also need an extra lens for really close-up work. How fortunate! He just happened to have the very thing I needed which was available at a very reasonable price for so valued a customer.

So, when next the daffodils came out I was ready—or so I innocently thought. But getting the right exposure posed a problem or two because indoor photos appeared to require a large aperture opening and a longish exposure time. Surely, I thought, my steady hands would not waver even slightly during one-thirtieth part of a second. Alas, but they did and so another season's photographs had to be consigned to the rubbish bin.

A friend, more learned in photography than I, pointed out that very fast film would enable a smaller lens aperture and so a greater depth of field. Alternatively I could opt for a faster shutter speed and so avoid the effect of trembling hands. Aha. So now I had the answer at last! What a pity he didn't also tell me that the end product would have a decidedly "grainy" appearance that seems to accompany very fast film.

Then it occurred to me that the solution to my problem was really quite simple—photograph them outside. Now I'd have it all wrapped up. When the next season came I took my photos outside and eagerly awaited the superb slides that would undoubtedly be mine. To be sure I had noted with some alarm that there seemed to be problems with the physical condition of the flowers which in still air conditions seemed to be afflicted with violent shakes. But patience appeared to be rewarded when they apparently stopped still long enough for a smart operator to take the shots in between their shivering.

In due course my slides came back and they were quite good except for two problems. Those flowers that had been quite still when the shot was taken had a

wonderful array of backgrounds. I had assumed that a close-up in focus would ensure a background so far out of focus that the background wouldn't matter. Those slides in which the background was not conspicuous showed flowers moving like an express train across the slide.

Much thought showed that evidently I needed to take my photographs in some place not subject to wind movement yet in open sunlight and with an appropriate background. Eventually I found my answer which was to set up camera, background, and flower in my small glasshouse. This time surely everything would be right—the light was good, the background was in place, and the flowers were still. In due course, back came the slides and all of the them showed slight but distant bars of shadow which I eventually found to be caused by the bars of metal in the roof of the glasshouse.

Now daffodil growers are nothing if not persistent, and there was yet another alternative involving the use of an electronic flash gun. Did you know that some cameras have a shoe? I didn't, and my camera hadn't one, but it is the little fitting that holds a flash gun. Because my camera lacked one, I had to use a more cumbersome attachment. But when flowering time came there was I, ready and waiting. Could anything else possibly be wrong? Oh, yes, it could, as I discovered when my slides came back with strong shadows thrown by the cups onto the petals by the flash.

In due course, fate decided to take pity on me, though in a whimsically wayward fashion. It came about through my daughter number three falling in love. Eventually, as the novelists put it, a marriage was arranged and the young couple decided that the groom's brother would take the all-important wedding photos. This he duly did and I found that the camera he used cost so much that had it been mine it would have been locked away in a bank vault as security against a penurious old age. But he knew what he was about and agreed to help me photograph my daffodils.

Two tungsten lamps each of one thousand candlepower plus stands and reflectors were the main items; and when all was set up, he suggested a trial run. Wise fellow! I assumed that the camera's light meter would automatically be correct but we found it was four stops out of true. A trial film showed that if the four stops were allowed for the slides would be good. The film used looked very impressive for it was prominently branded "Professional Film."

Eureka! When the slides came back they were as good as I had hoped for. So, anxious to be able to show all and sundry at last what a remarkably clever fellow I am, I decided to order lots of prints from the commercial firm that had processed the film.

Alas, pride goeth before a fall, and I found out that mass production methods have serious limitations. My prints were a mess with colors that bore practically no resemblance to the slides, with some flowers partly decapitated, with others partly de-xxx (for xxx read whatever the word is that chops off feet and sides) and so on. More than a little upset, I took the worst dozen or so back to the shop to complain. It was agreed that the prints were not satisfactory and back they went to be done again. In fact they went back three times more before I gave up and accepted the poor things that were the best they had produced.

Then I went back to see my daughter's brother-in-law once more. He sent me to a small firm he knew of where they did their own work and took pride in it, too. It cost me a little more, but what they turn out has to satisfy their own inspection before it is handed over; and has to be done again at their expense if it does not pass that scrutiny. Here at last were photos which satisifed.

Next season? Well, sufficient unto the day...or have I at last reached the stage when to my photographic problems I can cry WHOA! WHOA! WHOA!

# PHOTOGRAPHING DAFFODILS

WELLS KNIERIM, *Cleveland, Ohio*

The inclusion of color in our *Journal* has been well received and should be continued. And with many new cultivars being introduced, our photography committee will always need new slides to keep our film library up to date.

Daffodil photography is easy, but does require some good equipment and a lot of practice by the photographer. Since most newer cultivars appear at shows, most shots are normally taken by flash. The following equipment for taking such pictures is:

1. Any good 35mm, single lens reflex camera with a macro (close up lens). Less expensive would be the addition of close up attachments to a normal 50mm lens.
2. A low power electronic flash (guide 30 with ASA 25 film).
3. A bracket or extension arm which attaches the flash to the camera at five or six inches to one side and slightly above the lens of the camera.
4. A cardboard backdrop (dark green, blue, or black) to place behind the subject to isolate the bloom from nearby distracting flowers.

Close up shots in which the daffodil bloom fills the entire frame gives the best detail of the flower. Select specimens with fresh pollen, if possible, and showing the characteristics of the bloom you wish to show. To get the best depth of field focus, it is necessary to use a small aperture (f22 with ASA 64 film for a single bloom at twelve to sixteen inches from the film plane) or f16 for a group of three blooms at about thirty inches. Set the shutter speed at the mark indicated for flash. The speed of the flash indicates the amount of light on the subject.

That's it. But the important suggestion is to experiment with your own equipment. Take several rolls of film and take several shots of the same flower (perhaps use artificial daffodils to get ready for the season), keep good records of the different f stops, etc. that you used, and then make a guide to use on the flowers at the shows.

After the judging, I hope you can find a convenient spot to take the specimen blooms for your work. I normally use a small card with the name and color code in a pin holder under the bloom at the same plane so that the identification is on the slide. It requires more work and time to make accurate individual records of the flowers.

This is the way I do it. Now, there are many new automatic cameras that claim to make photography easy. But no camera is automatic without specific knowledge of how to use it. My only suggestion is to experiment with it for some time before you go to the shows. Know how to use it before you want to take good daffodil slides. You will save money and, more importantly, disappointment.

# PHOTOGRAPHING DAFFODILS

MARY LOU GRIPSHOVER, *Sunnyvale, California*

Several articles appear in this issue of the *Journal* with regard to photographing daffodils, in the hope that you will be able to record some of the memories of the season on film and perhaps later share them with readers of the *Journal*.

Photographing daffodils is neither as difficult as Mr. Cross's article suggests, nor as easy as the makers of automatic cameras would have you believe. As both Mr. Cross and Mr. Knierim suggest, however, it does make sense to practice with

your equipment before you get to the all-important best-of-show-bloom!

A single lens reflex camera is an ideal choice because what you see through the view-finder is what you'll get on film. Several options are available for taking close-up shots, the least expensive being the screw on lenses called diopters. These usually come in a set of three, marked #1, #2, and #3 (clever, right?), and can be used either separately or together to allow you to move in closer. Other options include a macro lens; and for extreme close-ups of parts of the flower, reversing rings can be used.

Film selection depends on how you plan to use it (with or without flash—indoors or out) and, to some extent, your personal preference. Generally, Kodachrome gives better rendition of yellows and reds, while Ektachrome gives better rendition of the blues and greens. If you plan to use a flash and fill the frame with the bloom, then select ASA 25. Set the shutter speed indicated for flash on your camera and set the aperture at f16, or f22 if that is available on your lens. The f16, or f22 will give you maximum depth of field sharpness. If your pictures are consistently too light, or washed-out, probably your flash is too powerful. Try putting a kleenex over the flash (use a rubber band to keep it on) and see if that helps. If your camera has a setting for deliberate over and under exposure, try setting it at -1 or -1-½ to see if that helps. (Here's where all the practice is important. Keep records of what you did for each shot, then use the same parameters that gave your best results when you go to take your important photos.) Remember that slides will always have deeper color if they are slightly underexposed. If print film is slightly overexposed, it can be corrected in printing. If shooting outdoors, try ASA 64, for a bit more speed. Try using the flash on close ups outdoors; again, use the same setting you've found works well indoors. The flash will stop a moving flower, and the small aperture will eliminate much of the distracting background. As Mr. Cross pointed out, flash pictures may have distracting shadows. I would caution you against using the fast films in available light indoors. They will give you grainy pictures, but perhaps most annoying will be the color rendition. These films are balanced for daylight, and indoor light will give a pronounced yellow-orange cast. Besides, you will have to use a bigger aperture and lose depth of field, resulting in a picture that is sharp at the point of focus, but fuzzy around the edges. If you're using print film, tell your processor what kind of light it was; a good processor can correct the color in printing. Nothing can be done with slides short of having them copied and asking that the color be corrected. Sometimes this may work. If you set up a studio shot with photo floodlights, either use ASA 160 tungsten film (color balanced for indoor light) for slides, or use the appropriate filter on your camera lens. Be sure to use a tripod.

Shooting black and white film is no different than shooting in color. People tell me they can't take good black and white pictures. That just isn't so. If you take beautiful slides, you can take just as good black and white pictures. What you need is a good printer. (Send me your negatives and I'll prove it to you.) Use the same technique you've found works with ASA 25 film, and use it on black and white ASA 32 film. The only difference to remember is that if you're *deliberately under* exposing by half a stop to get deeper color in your slides, go back to a normal exposure (from -½ to 0).

Flash attachments come in various sizes. If all you're ever going to shoot with flash is close ups of flowers, buy a low power flash. Otherwise buy a flash that meets your requirements and learn to use it for close ups. Don't expect an automatic camera equipped with an automatic flash to give you a good close up. Most automatic flash attachments won't give you the correct amount of flash when you are closer to your subject than eighteen inches. Set them both on manual, and experiment to see what gives you the best pictures. This really is a place where practice makes perfect.

## SOME SOUTH CAROLINA DAFFODILS

CHERYL POSTLEWAIT, *Cheraw, South Carolina*

Some of you long-time members of the American Daffodil Society may remember Tom Jones of Chesterfield, South Carolina, who was one of the charter members of the organization. Tom, who is now getting close to 80, has been planting daffodils every year for 40 years. There surely can't be a finer array of daffodils in all of Holland.

The back of Tom's place slopes down to a creek and daffodils tumble all the way down the hillside. When he planted his first daffodils, he mulched them with pine straw. Some pine seedlings emerged from the mulch and now huge pine trees shade the sparkling daffodils that still bloom beautifully every spring. There is also a large, perfectly formed Japanese Cherry tree that bursts forth in delicate light pink flowers during daffodil season. The Jones's original home, long unoccupied, still stands on the lot and gives a dramatic dark weathered contrast to the lovely yellow, white, and orange twinkles of the daffodils.

I love to visit the Jones's garden many times each daffodil season and always try to bring a guest with me. It is as much fun to see the first-time visitor's reaction as it is to see the flowers. Tom has always planted bulbs from the twelve categories and the variety of specimens is beyond belief. Every visitor receives a liberal dose of southern hospitality when Tom picks an armful of daffodils for them to take home. It reminds me of when Jesus fed the multitudes with three fishes and two loaves of bread. In Tom's garden, no mater how many are picked, there are always plenty for everyone to view.

Being new to the South, I've been overwhelmed at the generosity of the gardeners. Tom is always giving me starts of flowers, vegetables to eat, and gardening material to read. Tom still raises a huge vegetable garden every year, has many perennials, and an extensive giant chrysanthemum collection. Even though I'm less than half his age, I know I'll never keep up with him.

"Blessed are all bulbs and seeds,
For they are the promise of a spring to come,
For they are symbols of a world to be,
A promise of immortality,
Of life out of death and hope within despair,
Of whiter dawns on other days,
Of harvests, beautiful and brown,
Of plenty and of prophecy."

William L. Stidger

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## DAFFODILS AT DINNER — BUT DON'T EAT THE DAFFODILS!

MEG YERGER, *Princess Anne, Maryland*

What arrangement could be more appropriate for a party table than a decorative unit of the very foods included in the menu? And better still daffodils should be included in the design! The easiest daffodils to use in an arrangement are those which are uncomplicated in form such as flat-nosed blooms from Divisions 3 and 9, and tazettas. Most of these, too, give a bonus from their fragrance.

To use with the daffodils, choose ferns suggestive of the fiddleheads included in the salad with smoth green Anjou pears or Granny Smith apples and seedless green grapes as texture contrast with the fern. Collard greens or Kale can be background foliage for the fruit and carry the eye up into and around the design. The daffodils are accents in the otherwise green design.

If okra soup is to be served, the ingredients can be included in the table arrangement. Okra soup is made chiefly of young okra, onions, cimlins, and tomatoes. In these days of food importation from Chile, New Zealand, and Tasmania these foods can be had in fancy food markets year round. Planning ahead can give special distinction by using okra for the line material. If okra is lashed to a strong wire frame when young, it can be bent into s-curves as it grows that will win kudos for imaginative design after it dries. Such winter vegetables as chard (Swiss, ruby, or rhubarb) are bold enough to be compatible with striking okra stems. Dried blooms of the onion family such as leeks or elephant garlic provide size and texture contrast with poeticus or short-cupped daffodils. If New Zealand spinach with yellow veins is used, then all-yellow tazettas would be a lovely choice for the daffodils.

The number of other plants from the food garden that can be used with finesse is endless. The designer's choice is without limit, particularly if she plans ahead. Almost any plant that is tall and grasslike can be trained into whorls and circles either on the living plant or when fresh-cut. Try wrapping fresh-cut still-green grains, like wheat, in wet paper towels which are curved around a large can and allowed to dry. The resulting circles and spirals can be fabulously useful as basic structural material.

Much distinction comes from color. Take the swatches from the Royal Horticultural Society Color Chart with you to the supermarket or the garden, first having matched them up perhaps with the colors in the corona of a poeticus or other daffodil. Achieving just the right match is fun.

Learn to look at forms of foods. Perhaps kohlrabi may appeal to you, especially if you try it upside down. Think of pearl onions for pizzazz if the daffodils you are using are white.

The possibilities for table designs from daffodils and food are limitless—all you have to do is try it!

# AN EDUCATIONAL EXHIBIT

JAYDEE ATKINS AGER, *Hawkinsville, Georgia*

I recently married and moved to a new area and decided to put on a miniature daffodil show and make it educational. The small town where I work was a perfect location. I enquired at one of the local banks and was told I was welcome to make use of the lobby for my exhibit. The local newspaper was glad to help with publicity and the local radio station announced the show frequently. A call to a local garden store/nursery brought some beautiful fern baskets to "fill in" the corners of my exhibit. A friend in the Georgia Daffodil Society had graciously loaned me her counted cross-stitch explanation of the RHS System of Classification. Yes, I said counted cross-stitch. Mrs. Fleming Boyd had worked all winter long to complete the educational exhibit. She used the board in her educational exhibit at the 1984 Southeastern Regional Show in Atlanta. In my display, I used Mrs. Boyd's tri-fold board as a background. In front of this I displayed catalogs and brochures for browsing. I gave hand-out sheets filled with general daffodil information. I showed an example of one stem each of all the different classifications, with the exception of Division 12, along with several collections. I also tried to concentrate on the daffodils that always seem to intrigue the general public. Among these are pink cups, split coronas, doubles, and as always, the delightful miniatures. Altogether, 192 blooms were exhibited for two days at the bank in the main lobby. I estimated that over 250 persons saw the show.

The show was a real success! Although it took a lot of hard work on my part, I received some great support. Why not put on a show in your area? It is rewarding and hopefully you will "zap" someone and a new daffodil enthusiast will be born.

# BULLETIN BOARD

## FROM THE PRESIDENT'S DESK

Nineteen-eighty-four was a good year for the American Daffodil Society. We are in sound financial condition, and interest in the Society remains high. We have hardworking, dedicated Committee Chairpersons who are performing their duties well.

Our *Journal* is an excellent advertisement for the Society and has won several awards from the National Council of State Garden Clubs, Inc. Our Editor, Mrs. Paul Gripshover, deserves praise and thanks for continuing the Editorship in spite of a move from Tennessee to Sunnyvale, California. We appreciate very much her will to carry on in spite of the move for her family and many of her bulbs. We are also very proud of the amount of color we now have in the *Journal.*

In September, forty of our United States members and spouses attended the Nylex Springworld '84 Show and Third World Daffodil Convention in Hamilton, New Zealand. We were wined, dined, and treated as royalty, all of which made for a delightful experience. Daffodils were in abundance, and the staging of daffodils in the Springworld show was awe-inspiring. We were saddened not to see our good friend, Phil Phillips, but his wife and son cordially greeted and entertained us.

We are anticipating our thirtieth Annual Convention the last week in April at King of Prussia, Pennsylvania. The Mackinneys and their commitees are working hard to show us a good time. Let's all attend!

Dr. Throckmorton, the Ticknors, and their committees have edited and published a revised edition of *Daffodils To Show and Grow* which is now available from the office of the Executive Director; our thanks to all who worked on the new edition.

Due to the New Zealand trip there was no fall Board of Directors' meeting. I wish to thank all who carried out their duties for 1984. Their reports will be given at the 1985 Board of Directors' Meeting preceding the convention.

May 1985 bring beautiful daffodils to all of you, and for the hybridizers new and exciting seedlings.

HELEN K. LINK

## JUDGING SCHOOLS

| | |
|---|---|
| School III | March 16, 1985; Hernando, Mississippi; Chairman: Leslie Anderson |
| School II | March 10, 1985; Sherman Foundation Gardens; Corona Del Mar, California; Chairman: Marilynn Howe. |
| School II | **April 11, 1985; Charlottesville, Virginia; Chairman: Donald King. |
| School II | April 14, 1985; Dayton, Ohio; Chairman: Mrs. Fred Schuster. |
| School II | May 1, 1985; Greenwich, Connecticut; Chairman: Mrs. Thomas Haffenreffer, Jr.; 46 Suffolk Road; Chestnut Hill, Massachusetts 02167. |

**Note: Date correction for Virginia School.

## CORRECTIONS TO JUDGES LISTING IN THE ROSTER

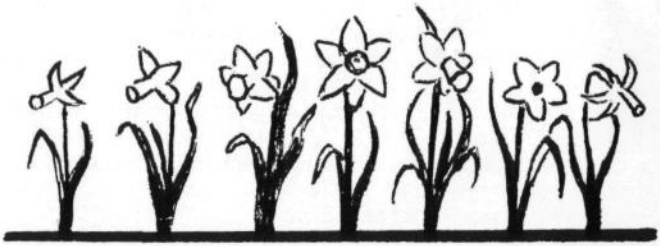
The roster which was published in December inadvertently lists some student judges as accredited judges, and lists some judges not at all. Please correct your roster to reflect the status of these judges as shown below. We apologize to those involved, and regret any inconvenience this may have caused.

AJ Mrs. B. B. Boozman, 906 North 15th St., Fort Smith, AR 72901
SJ Dr. Narito Hosegawa, 3319 W. Lincoln, Ste. 103, Anaheim, CA 92801
SJ Ms. Susan Marie Ridgeway, 329 Meadow Lane, Monrovia, CA 91016
AJ Mrs. Clark T. Randt, 59 Husted Lane, Greenwich, CT 06830
SJ Gene Wiley, 3333 Sky Croft Circle, Minneapolis, MN 55418
SJ Mrs. Ozell D. Scott, 3476 Johnston Rd., Hernando, MS 38632
SJ Dr. Elise Olsen Chesseborough, 109 Carolina Forest, Chapel Hill, NC 27514
SJ Donna C. Dietsch, 5192 Bagley Road, Columbus, OH 43227
SJ Mrs. Albert Sadler, 667 Stubbs Mill Road, Lebanon, OH 45036
SJ Mrs. Robert N. Sulgrove II, 5512 Woodbridge Lane, Dayton, OH 45429
AJ Richard T. Ezell, 94 Willowbrook Dr., Chambersburg, PA 17201
SJ Mrs. R. F. Gillespie, Box 95, Woodberry Forest, VA 22989
SJ Mrs. Phillip S. Griffin, 205 Fairmont Ave., Winchester, VA 22601
SJ Brent C. Heath, Rt. 3, Box 208-R, Gloucester, VA 23061
SJ Nelson Houser, 1112 Wynbrook Lane, Mechanicsville, VA 23111
SJ Mrs. Ann D. Spivey, 7 Dahlgren Rd., Richmond, VA 23233
SJ Mrs. Percy Wootton, 17 Tapoan, Richmond, VA 23226

## CORRECTIONS

The listings in the December *Journal* of American registrations for 1984 gave incorrect spellings of several cultivars registered by Mrs. Merton Yerger. Both Greenspring (named for the Greenspring Valley section of Baltimore) and Greenpool should be spelled as one word—not two as listed.

The sharp-eyed among you will have noticed that the photos of Woodvale and Newcastle (in the article about Willie Dunlop, December, 1984) are reversed. The Editor regrets the errors.



## AN AUSSIE BOOK ON DAFFODILS

*The Herald of Spring—Daffodils*, published in 1983, is a 47-page paperback covering all aspects of growing daffodils in Australia.

Author Robert J. McIlraith covers his subject most effectively in twelve short chapters beginning with the component parts of the plant, then discusses their distribution and species before considering their cultivation. Other chapters cover classification, bulb production, and pests. It includes many photographs, some in color, and line drawings.

A copy of this slim volume is now in the ADS library. If enough members are interested in purchasing a copy, the Executive Director may consider ordering several copies.

## CALL OF THE ANNUAL MEETING

The annual meeting of the American Daffodil Society, Incorporated, will be held on Thursday, April 25, 1985, at the Holiday Inn of Valley Forge in King of Prussia, Pennsylvania, for the following purposes:

1) for the election of officers and directors as provided by the By-Laws

2) to take action and transact any other business which may properly and lawfully come before the meeting.

By order of the Board of Directors
MARILYNN J. HOWE, *Secretary*

## COMING EVENTS

| | |
|---|---|
| March 23-31, 1985 | Daffodil Festival, Tacoma, Washington |
| April 11-12, 1985 | RHS Daffodil Show, London England |
| April 25-27, 1985 | ADS Convention, King of Prussia, Pennsylvania |
| April 30-May 1, 1985 | RHS Late Competition, London, England |

## HERE AND THERE

Anne Corson reports that Nylon, grown outdoors for the past two years, bloomed on December 21, 1984, and remained in bloom until January 4 or 5.

"I only protected it with a hot cap two nights in early December," she says.

Mrs. Corson lives on the Eastern Shore of Virginia at about the northern limit for camellias, with occasional 0°F temperatures.

Word has reached us of the death in October of Dorothy P. Tuthill of Rye, New York, at age 93. Miss Tuthill was a charter member of the ADS, and was the organizing chairman and president of the Westchester Daffodil Society (since dissolved after nearly twenty years of activity). Our sympathy to her family.

# A VISIT TO CORNWALL
## TAMAR VALLEY DAFFODILS (du PLESSIS BROS.)

JAN DALTON, *England*

*(from the Journal of The Daffodil Society [Britain], February, 1983)*

On March 27 and 28, 1982, seven daffodil enthusiasts from Yorkshire spent a most enjoyable week-end in Cornwell as the guests of Dan and Eileen du Plessis on their farm at Landulph, near Saltash.

The purpose of the trip was to view the daffodils in growth and flower at Marsh Farm, and to visit Rosewarne E.H.S. at Camborne on their open day. My notes will be restricted to the daffodils and their culture at Marsh Farm and our visit to Rosewaren is covered in the report by Ivor Fox which follows.

To begin, Dan du Plessis, along with his brother Peter and their wives, cultivates daffodils on a commercial scale both for the cut flower trade and also for bulb production. Some sixteen acres are down to bulbs of the well-known and also bulb production. Some sixteen acres are down to bulbs of the well-known and well-tried commercial cultivars such as Golden Harvest, Carlton, Mount Hood, Ice Follies, White Lion, etc, whilst a further two acres are down to exhibition cultivars and seedling stocks. Apart from the wholesale trade, many bulbs are offered for sale in a retail catalogue containing almost 500 named cultivars.

The soil at Marsh Farm is, in the main, a heavy clay type which is not the most suitable for ideal cultivation methods. However, the flowers and foliage show no ill effects from this and bulbs, when lifted, are quite solid specimens.

Prior to planting, all bulbs are given hot water treatment by first pre-heating the bulbs for a week at 85°F, followed by soaking for three hours at a temperature of 114°F in an aldrin solution; thereafter the bulbs are allowed to cool. Planting is carried out using a home made "potato-type planter" and bulbs are then left down for two years.

After harvesting, which is achieved by using a single row elevator lifter, bulbs are not grown on that land for a minimum of five years and where possible, seven years. From these operations it is safe to assume that a healthy crop is maintained, and such is the case.

Flower picking begins as early as 7th January and stretches right through to the beginning of June, a fact that tends to pour cold water on our theories that the daffodil flowering season is a short one.

Dan has grown bulbs commercially since 1943, and in 1957 he ventured into exhibiting at the West Country Shows. His interest in the shows and exhibiting has seen the building up of stocks in exhibition bulbs and eventually gave rise to the retail side of the business. Several stocks of seedlings have been purchased under number from various sources over the years and subsequently named. Some of these I would like to mention in more detail, others, which were not in flower during our visit, will no doubt be observed in the future.

Chenoweth 2 W-WWP is a very good non-predominant pink cup of excellent form and constitution, perhaps lacking a little in the pink coloring, which tends to fade as the flower ages in much the same way as Drumboe. None the less, a very good collection flower which I believe came from the Rathowen stable.

Bere Ferrers 4 W-O is a very nice double with a subtle difference of coloring to most of the Div. 4s available at the moment. Not a huge flower, but very good in form and petal placement. Raised by Mrs. Richardson.

Tamar Fire 4 Y-R is another neat double, of good color though a little on the small side for exhibition.

Meavy 1 W-W registered in 1981, is a sister seedling to White Star. It is much narrower in the petal than its now famous partner and more pointed, not unlike Cantatrice.

Gay Kybo 4 W-O is another very good double of perfect form, raised by Mrs. Richardson. The petals are more cream than white, though this does not detract from the flower. Featured in two first placed exhibits for doubles at the Daffodil Society's show in 1982.

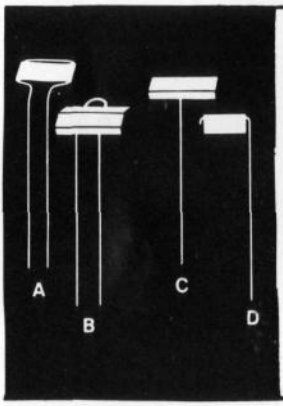
Penyoke and Tinnell 1 W-Y are two bi-color trumpets of note. Both have good contrast and are strong growers, and should be of benefit for the Arkwright Cup class at Birmingham.

These, then, are but a few of many seedlings that have been named and put on the market. My comments have been restricted to the show bench potential of the flowers; however, it must be remembered that some seedlings are also selected and named for their commercial viability in producing bulbs and cut flowers, a slightly different purpose to that of exhibitors' requirements.

Dan's aims for the future are to build up commercial stocks of some of the more modern cultivars and introduce them to the public. New methods of bulb propagation will assist in this venture, and at Marsh Farm "twin-scaling" is in operation to achieve a quicker build up of stocks. To further this cause, Dan, along with a number of commercial bulb growers, has now formed a consortium with a with a number of commercial bulb growers, has now formed a consortium entitled the Cornwall Area Bulb Growers Association (CABGA). Part of the Association's plans will be to purchase, jointly, new cultivars and seedlings form Rosewarne E.H.S. and other sources, to complement existing cultivars.

One such purchase is that of the cultivar Tamara 2 Y-Y, bred at Rosewarne in 1964 and registered with the R.H.S. in 1980. The total stock of this cultivar (approx. 1,500 bulbs) was bought by CABGA in 1981 and is being extensively increased by twin-scaling and micropropagation until a considerable acreage is available.

Finally, in concluding these notes it is only right that I should thank Dan and Eileen for a memorable excursion to a hitherto unvisted Cornwall. Thanks to Dan, for giving up a week-end of his valuable time, and to Eileen, for the marvellous food served on our arrival and departure. More genial hosts one could not have wished for; and as the short, dark piercing days of winter get ever nearer, we will all recollect the "warmth" of friendship and, of course, the daffodils.






# DAFFODIL FIRE IN WESTERN WASHINGTON

GARY A. CHASTAGNER

*Washington State University*
*Western Washington Research and Extension Center*
*Puyallup, Washington*

Diseases are an important factor in the commercial production of daffodils and can be a problem for the hobbyist. Basal rot is a major problem with some cultivars and can cause tremendous losses. Fire, white mold, smoulder, and scorch are four important foliar diseases of daffodils that are caused by fungi. Although not as evident as with diseases like basal rot, these diseases reduce bulb yields and flower production because of the premature death of the infected foliage.

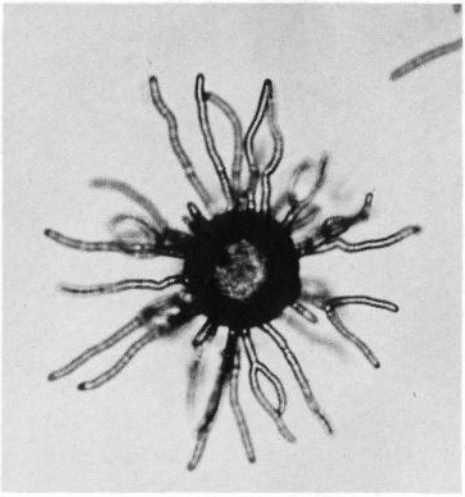
Fire was originally found on daffodils in the British Isles and historically, has been considered to be uncommon in the Pacific Northwest. However, observations in 1978 indicated that fire was prevalent throughout the daffodil production areas in western Washington. Between 1978 and 1981, I studied the development of this disease in western Washington in an effort to develop an effective control program.

Fire is caused by *Botryotinia* (*Sclerotinia*) *polyblastis*, and primarily occurs after flowering. The fungus which causes this disease has two distinct stages based on the type of spores produced. The name *Botryotinia polyblastis* refers to the sexual stage of the fungus which produces spores known as ascospores. The name *Botrytis polyblastis* refers to the asexual stage of this fungus which produces spores known as conidia. Each of these forms plays a different role in the development of this disease.

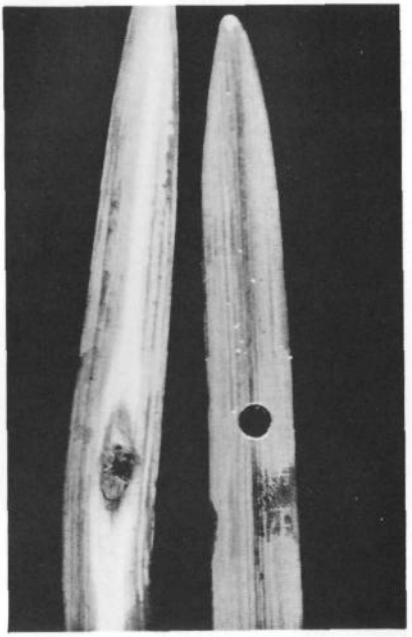
The fungus survives as small, black structures called sclerotia that are produced in diseased foliage and flower stems. Overwintered sclerotia produce the sexual stage of *Botryotinia polyblastis* which is called a spore cup or apothecia during the spring (Figure 1). The spore cups produce sexual spores which are called ascospores. In 1938, studies by Gregory showed that these ascospores were only able to infect flowers. Initial symptoms on infected flowers consist of water-soaked areas which turn brown and wither.

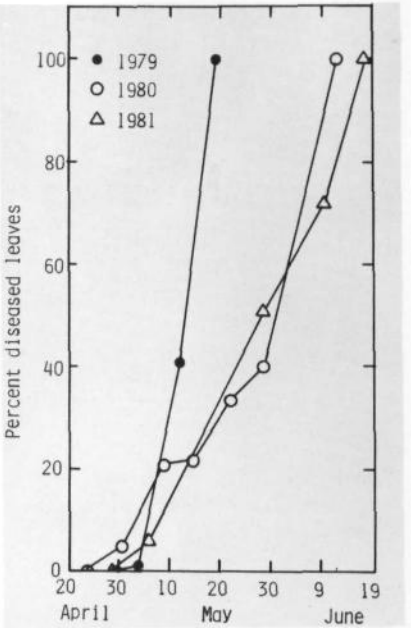
We monitored the production of these spore cups during 1980 and 1981 and found that initial production occurred in early April and mid-March, respectively. The number of spore cups reached a peak after two weeks, then gradually declined the next three to four weeks during both years. During years in which spore cups were not produced no disease developed on daffodils in our test plots.

After infection by ascospores the asexual stage of *Botrytis polyblastis* produces conidia on these infected flowers. Conidia of *Botrytis polyblastis* are very unusual in that they are very large in relation to other species of *Botrytis* and many germ tubes rapidly emerge from these single-celled conidia upon germination (Figure 2). (This characteristic is the reason Dowson named this fungus poly (many) blastis (rapid) in 1928.) Conidia produced on infected flowers



Left, Figure 1: Spore cups or apothecia of *Botryotinia polyblastis* produced on overwintered sclerotia. These structures are approximately one-eighth of an inch in diameter. Right, Figure 2: Germinated conidium of *Botrytis polyblastis* with multiple germ-tubes. This conidium is approximately 0.001 of an inch in diameter.






Left, Figure 3: Symptoms of fire on daffodil foliage (left). Note yellow streaks associated with lesion and (right) the lack of yellowing associated with removal of a leaf disk with a cork borer. Right, Figure 4: Development of fire on Bloemfontein daffodils.

are responsible for the spread of this disease to adjacent flowers and initiation of the infections on leaves. Initial leaf symptoms are small, elliptical tan-colored spots generally near the tips of the leaves. Bright yellow streaking toward the tip and base of the leaf occurs shortly after infection (Figure 3). Additional conidia are produced on infected leaves and result in the rapid spread of this disease. During my studies, initial leaf infections were observed in late April (Figure 4). Left unchecked this disease completely destroyed plantings within two to four weeks.

This disease is favored by warm, moist conditions and is much more likely to occur when daffodils are not dug every year. Studies have shown that the premature death of foliage caused by fire reduces bulb yields by as much as 50% and significantly reduces flower production. Yield tests on 46 cultivars in western Washington showed that control of this disease resulted in an average yield increase of 20%. Symptoms of this disease can easily be confused with natural senescence or dieback of the leaves and with the scorch disease caused by *Stagonospora curtisii*.

Cultural methods which are effective in providing some control of fire include yearly digging and crop rotation. The occurrence of fire in the British Isles has been reduced since the practice of cutting all unopened flowers has been adopted to break the disease cycle. This is not done in western Washington nor does it seem appropriate for the daffodil hobbyist.

Fungicidal control studies in western Washington have shown that two applications of Benlate fungicide at 1 lb/100 gallons of spray provides effective control of fire (Figure 5). The first application should be made in late April followed by the second in two to three weeks. Applications of Ronilan at 1 lb/100 gallons were also found to be effective. Applications of Dithane M-45 (mancozeb) have not provided effective control in our tests, but are recommended for control of this disease in Europe.


Figure 5: Effectiveness of two applications of Benlate (row marked 283) in preventing the premature death of foliage associated with fire (unmarked row to left).

Control of fire and other diseases on daffodils depends upon the accurate identification of each disease. There are several excellent publications available which will assist in the accurate identification of daffodil diseases. One such publication can be obtained by requesting Washington State University Extension Bulletin 709 entitled "Diseases of Narcissus" from the Bulletin Department, Cooperative Extension, Cooper Publications Building, Washington State University, Pullman, WA 99164. The cost of this bulletin is $2.00.

## SELECTED REFERENCES


1. Chastagner, G. A. 1983. Narcissus fire: Prevalence, epidemiology, and control in western Washington. Plant. Dis. 67:1384-1386.
2. Doucette, C. H. 1953. *Botrytis polyblastis* on narcissus in the Pacific Northwest. Plant Dis. Reptr. 37:556-557.
3. Dowson, W. J. 1928. On an extraordinary *Botrytis* causing a disease of narcissus leaves. Trans. Brit. Mycol. Soc. 13:95-102.
4. Gregory, P. H. 1938. *Sclerotinia polyblastis* sp. on narcissus, the perfect stage of *Botrytis polyblastis* Dowson. Trans. Brit. Mycol. Soc. 22:201-203.
5. Gregory, P. H. 1941. Studies on *Sclerotinia* and *Botrytis*. I. Trans. Brit. Mycol. Soc. 25:26-40.
6. Gregory, P. H., and Gibson, G. W. 1946. The control of narcissus leaf diseases. III. *Sclerotinia polyblastis* Greg. on Narcissus Tazetta variety Soliel d'Or. Ann. Appl. Biol. 33:40-45.
7. McWhorter, F. P., and Reynolds, H. J. 1934. New narcissus *Botrytis* disease in the Pacific Northwest. Plant Dis. Reptr. 18:51-53.
8. Moore, W. C. 1979. Diseases of bulbs. Second Edition. Ed. J. S. W. Dickens. Bull. HPD 1. Minis. of Agric., Fish., and Food, London 205 pp.

# RIHILL REVIVAL—A POET CULTIVAR RETURNS!

MEG YERGER, *Princess Anne, Maryland*

Rathowen's 1984 price list includes a special stock disposal offer including a poeticus cultivar registered in 1957 as Joyce Rihll 9 The spelling was later corrected in the 1969 *Classified List* to Rihill. To find this daffodil listed for sale was like finding a long lost friend, because in 1974 I had written in my "to look for" list the name of Joyce Rihill together with the names of exhibitors, R.H. Southon and A.H. Noakes, who had won prizes with it in the April 14-15, 1970, R.H.S. Daffodil Show. I thought sometime it might be possible to inquire from them as to where it might be bought.

Stanley Dudman, who raised and registered Joyce Rihill, lived at 29 Brookland Ride, London, N.W. 11, and served on the RHS Narcissus and Tulip Committee from 1949-1968. In the records of the RHS Daffodil Competition for 1947, he was listed as being the biggest total prizewinner in the amateur classes having won ten prizes, including seconds and thirds.

The following year he won prizes across the board with incomparabilis; Barri; Leedsi; jonquil hybrids, including the miniature Sun Disc; tazettas; poeticus; doubles; cyclamineus hybrids, including P.D. Williams's Pepys; *N.* × *tenuoir.* These were for an assortment of singles, vases of three, and collections. In a class for one variety raised by the exhibitor he, as the only entrant, won a second prize for his own seedling. (Could this have been Joyce Rihill?) At that show Mr. Dudman seems to have established himself as an exhibitor worthy of note, and the next year was included in the list of members of The RHS Narcissus and Tulip Committee. He continued to exhibit as an amateur only.

In the year of 1957 when Joyce Rihill was registered, the name of Tom Bloomer of Rathowen also appeared in the lists of winners in Amateurs only classes. Surely he and Mr. Dudman must have met. Can this be how the cultivar Joyce Rihill came to be included in the Rathowen stock?

An article written by Stanley Dudman for *The Daffodil and Tulip Yearbook* of 1958 gives a slight insight into his reasons for liking the smaller narcissus in that he had only a small suburban garden with not enough room to grow all the many things he might wish. It is probable that this kept him from growing more seedlings of his own and I have a feeling that Joyce Rihill is the only one of his own that he ever registered. There is poignancy in this probability that makes one wonder about the choice of name. Who was Joyce Rihill? Does anyone know?

Note - If any reader has any information about the person Joyce Rihill or personal recollections about Mr. Dudman, the writer of this article would be glad to hear about it.

# LOCH LUNDIE

CLIVE POSTLES, *Worcestershire, England*

The wonderful Loch Lundie seems to have had a most successful year for producing prize winning flowers during 1984. I noticed in the U.S.A. it featured in many of the show reports. As Loch Lundie is one of my favorite flowers, I thought that readers may like to know a little of its history and achievements.

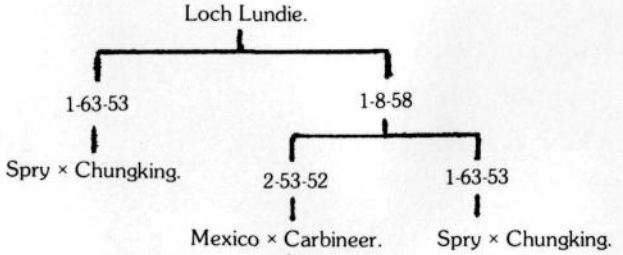
It was raised by the late John Lea from a long line of seedlings going back to the very start of his hybridizing program for red-yellow. Mr. Lea grew the most magnificent specimens, and used Loch Lundie several times in winning Engleheart Cup exhibits. He also had Best Bloom at the RHS Competition 1978 with it, and it was stated in the show report that "Loch Lundie was obviously one of the classics for the future." How right they were!

At the Daffodil Society Show 1984, there was a very fine flower in a second prize exhibit for twelve blooms. I considered it to be a contender for the highest award, but unfortunately the judges completely overlooked it.

My own flower of Loch Lundie used in the Richardson Trophy Class gave me a lot of pleasure as it had been kept in semi-darkness to hold the intense cup color.

The most impressive flower that I saw in 1984 was most fittingly at its birthplace, in the daffodil beds at Dunley Hall. A single bulb that had been unknowingly left down for a second year provided a flower that could have won in any competition. (All bulbs at Dunley Hall were lifted annually for commercial reasons.)

Both John Lea and myself have used Loch Lundie for breeding, and I hope that very shortly the selected seedlings from those crosses will be seen on the show bench.




Six is a number perfect in itself and not because God created all things in six days; rather the reverse is true, that God created all things in six days because this number is perfect.

St. Augustine

# DIVISION SIX, THE CYCLAMINEUS HYBRIDS

ROD BARWICK, *Claremont, Tasmania, Australia*
(*from the Tasmanian Daffodil Council* Newsletter, *March 1984*)

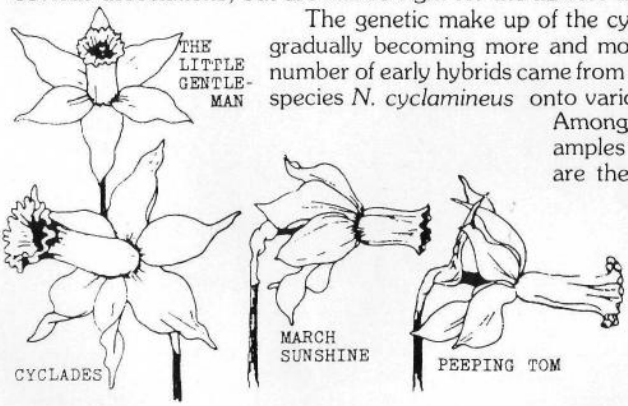
What an interesting group of daffodils the cyclamineus hybrids are. Here at 'Glenbrook' we only grow some thirty or so named cultivars from this division of "little flowers," but almost without exception each cultivar is a real individual and easy to recognize at first glance.

To define the predominant characteristics of this group of hybrids is not nearly so simple as first appears to be the case. Probably most are no more than small of flower and short of stem compared to the standard daffodils. Temptation leads one to say that the most outstanding feature is the reflexed perianth inherited from *N. cyclamineus*, but while Charity May, Dove Wings, Jack Snipe, and a good number more provide classic examples of reflexing, other members of the group display only minimal reflexing.

Again generally speaking, the trumpet or cup tends to be rather bell-shaped with some waisting and the pose of the flower slightly pendent for the first few days after opening, but exceptions to these two rules are also easy enough to find.

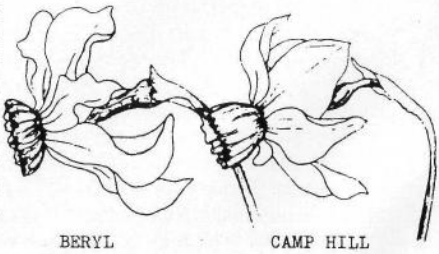
Perhaps the happiest characteristics of the Division 6 hybrids are that their flowers are very long-lasting and, once established, they have an excellent tendency to produce multiple flowering stems from each bulb. This gives an extremely long garden life as most of the cyclamineus hybrids start flowering early in the season, mid-August here. Due to their great durability they are still looking fine four or five weeks on, in mid-September, when many a flower of lesser constitution has already been and gone.

A most interesting facet of many of the Sixes are the curiously appropriate titles bestowed upon them. I well remember, last spring, a dashing lady dissolving in mirth when viewing our Peeping Tom. Perhaps thoughts of another association brought on the laughter, but it seems to me that Peeping Tom has a wicked outlook on life. The Little Gentleman has a name with which people seem to immediately identify. Many times when removing our exhibits from the Hobart show I have been especially asked for a stem of THAT LITTLE GENTLEMAN. Others such as Dove Wings, Cornet, Jetfire, and Tete-a-Tete have names with obvious associations, but are still so right for the flowers themselves.




The genetic make up of the cyclamineus hybrids is gradually becoming more and more complex. A large number of early hybrids came from crossing pollen of the species *N. cyclamineus* onto various yellow trumpets. Among well known examples of these crossings are the delightful Cyclades (Blanchard, 1948), February Gold and March Sunshine (both Degraaf, 1923), Peeping Tom (Williams, 1948), Trewirgie (1928), Orange Glory (1920), etc., all Division 6 Y-Y.

Another early cross of importance produced Beryl (Williams, 1907). Beryl was bred by putting *N. cyclamineus* pollen onto a poeticus. This produced a hybrid with strongly reflexing perianth, opening lemon but "cleaning" to white, and a very short cup of orange. I think that, of its type, Beryl has yet to be surpassed for quality and charm. It is also a very valuable plant for breeding.

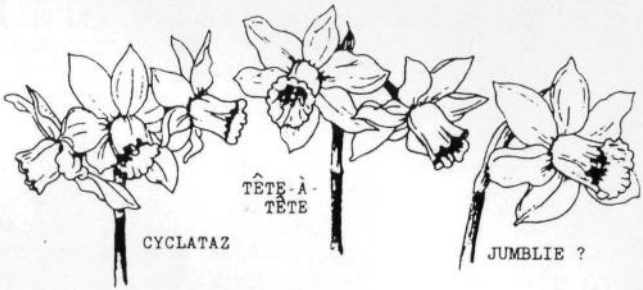


A most interesting development, Camp Hill, with white perianth and yellow cup, came from the unlikely cross Beryl × *N.t. concolor*. A lovely dual-flowered stem of Camp Hill was exhibited at Hobart in 1982, but I feel sure this hybrid ought to be classified as Division 5, triandrus, rather than Division 6.

Victorian Lindsay Dettman has introduced two attractive "cyclamineus" hybrids with strong triandrus connections, Harold Low, Division 6 Y-Y, and bred Charity May × Harmony Bells; and the dainty Peggy Low, 6 W-Y bred from the triandrus Laura open pollinated. Craig Broadfield exhibited a very neat bloom of Peggy Low at the 1983 Westbury show. This cultivar has a swan-neck much like Camp Hill, a characteristic more triandrus predominant I would have thought.

A fascinating series of miniature hybrids originated from the rather extraordinary cross Soleil d'Or (8 Y-O) × *N. cyclamineus*. The resultant seedling Cyclataz, with three blooms to the stem, was registered in 1923 as a tazetta, Division 8 Y-O. From the miniature Cyclataz open pollinated (but possibly selfed) came the delightful Tete-a-Tete, 6 Y-O, usually with two flowers to the stem.

Cyclataz self pollinated produced the superb miniature Jumblie, 6 Y-O. This is a prolific bloomer and often has, with us, three flowers to the stem and several flowering stems from each bulb. However, with close study, I find it very difficult to believe that the bulb grown and widely distributed here in Tasmania as Jumblie is the same cultivar as that which regularly appears in photographs in the American Daffodil Society *Journals*. Perhaps someone studying the single floret sketch of the local Jumblie included with this article might have some ideas on the matter? It seems possible that this cultivar, which is quite similar to Tete-a-Tete, and with crown between yellow and orange in color, might actually be another sister seedling named Quince.




Englishman Cyril Coleman, who died in 1980, was a man much celebrated for his work among the Division 6 flowers. His most famous cross was Mitylene (2 W-Y) × *N. cyclamineus*. Three pods yielded over one hundred seeds from which came three well known and outstanding sister seedlings, Charity May, 6 Y-Y, Dove Wings, 6 W-Y, and Jenny, 6 W-W. I have not yet grown Jenny, but both Charity May and Dove Wings are very beautiful little flowers and for the past thirty years have set the standard by which others in their class have been judged. In all likelihood they shall continue to be the measuring stick for many years to come.

From these three sister seedlings have come a number of good flowers, mostly raised from open pollinated seed. Last year Mrs. Beatrice Coleman very kindly replied to an enquiry of mine concerning some of the cyclamineus hybrids. Of particular interest were her comments that she and Cyril had found direct crosses with Dove Wings, Jenny, and Charity May did not give much in the way of improvements, yet strangely, "The odd, interesting children from these famous three that appeared in the wild were far better than the planned marriages."

Incidentally, it is very pleasing to know that the complete stocks of the late Mr. Coleman's bulbs are being grown on as The Coleman Collection at Wisley, Windsor Savill Garden, and the New University of Ulster at Coleraine.

The late J.L. Richardson of Ireland collected seed produced from pollen of Jenny or Dove Wings onto the 1 W-Y Trousseau. This cross produced Titania, 6 W-W, a small rounded flower of creamy-white throughout. While the perianth is but slightly reflexed, this flower has the beautifully formed trumpet one associates with *N. cyclamineus* and phenomenal lasting powers as well.

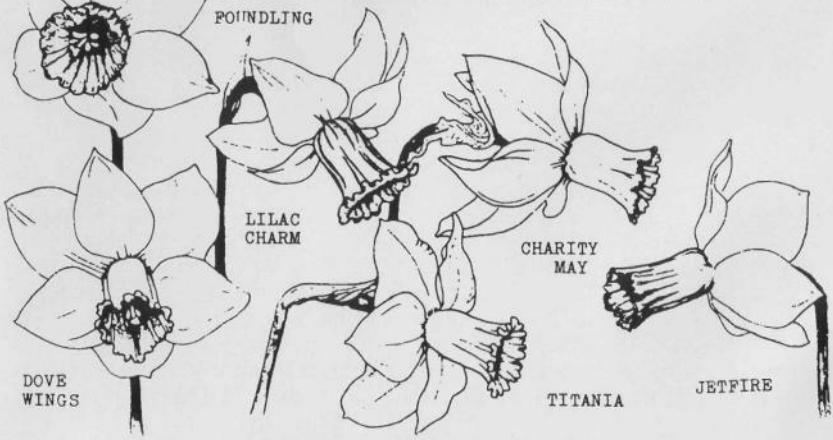
Of far greater fame than Titania is Foundling raised by Carncairn Daffodils in Northern Ireland. Foundling was bred from Irish Rose, 2 W-P, crossed with Jenny. It is an exquisite little flower with well reflexed perianth and shortish crown of deep pink—and it has an enviable record of countless successes on the show bench as testimony of its quality.

© GERARD H. WAYNE

Wheatear 6 Y-WWY, bred by Grant Mitsch

Grant Mitsch in the U.S.A. has produced some lovely Division 6 flowers. His Jetfire with smooth, rflexing yellow perianth and trumpet developing to intense orange-red is a real collector's item. It is only one of many, many beauties from this gifted hybridist.

Many growers around the world are now trying their 'hand' at breeding cyclamineus hybrids—far too many to mention here—but I must comment on the work of Brian Duncan in Northern Ireland. Mr. Duncan has introduced a series of small flowers, cyclamineus type, bred from Roseworthy and having reflexing white perianths with trumpets of lilac-pink. The likely future influence of his Lavender Lass, Lilac Charm, Nymphette, and others is hard to estimate, but the temptation to aim for a pure lilac crown in a daffodil certainly has its attractions.

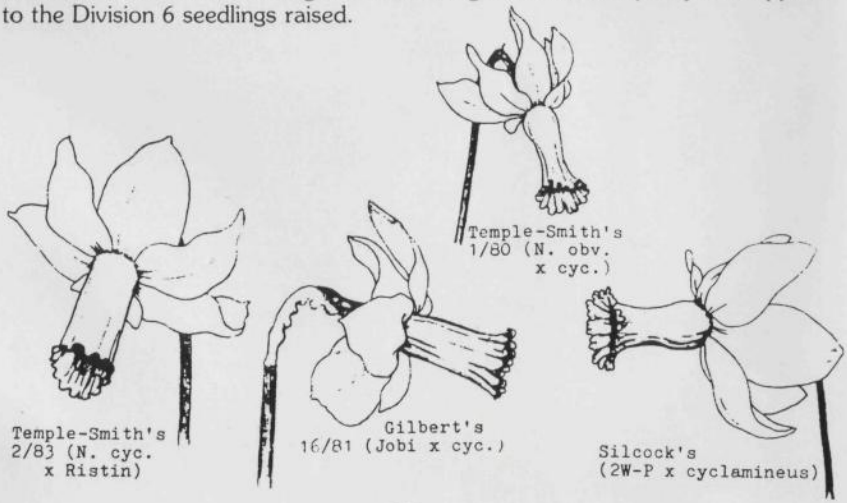


GRIPSHOVER

A variety of Brian Duncan's pink sixes include (L to R) Elizabeth Ann, Urchin, Reggae, Bilbo, and Tiger Moth.

Coming nearer home, Victorian Fred Silcock, on a visit to Tasmania last spring, brought with him a flower he had bred from a 2 W-P seedling crossed with *N. cyclamineus*. This was a truly outstanding flower, posed at an exact right angle the stem and with white perianth of excellent reflex. This set off the most perfectly formed trumpet, belled and waisted, that one could possibly hope to see. The trumpet was a color of soft creamy-pink. What a lovely bloom it was!

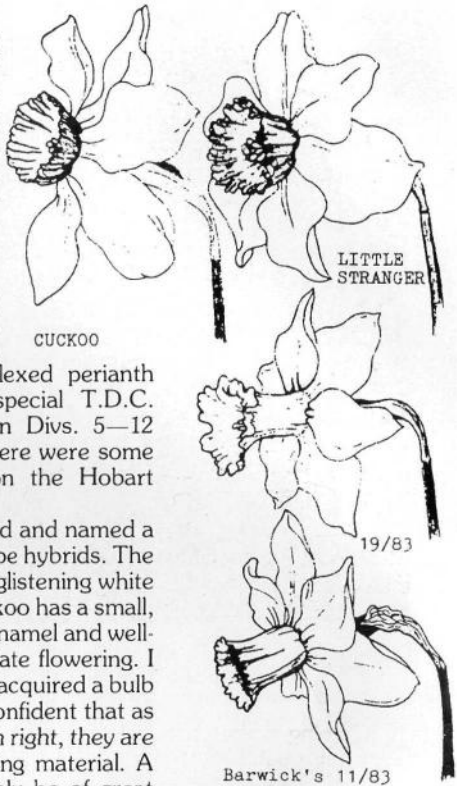
Here in Tasmania the breeding of cyclamineus hybrids has really only just begun. Hopefully the involvement of our hybridists in raising and showing flowers in Divisions 1 to 3 will encourage those same high standards of quality to be applied to the Division 6 seedlings raised.



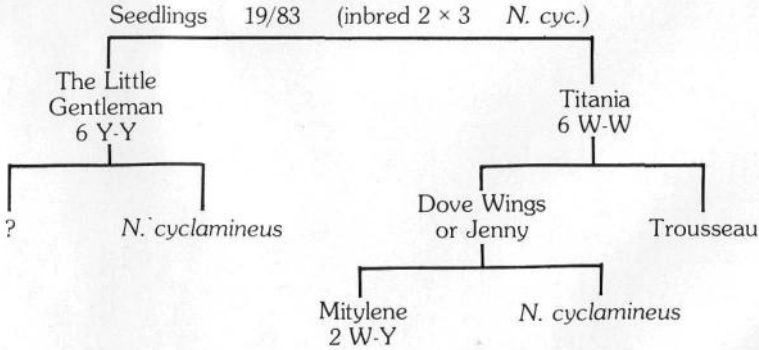
Mike Temple-Smith has already produced several little flowers of merit. At the 1983 Launceston show, he secured the award for Champion Divs. 5—12 with a fine 6 Y-Y bred from *N. cyclamineus* × Ristin. Other of his crosses which have produced notable blooms include My Word × *N. cyclamineus* and *N. obvallaris* × *N. cyclamineus*.

At the 1983 Hobart show, Ron Gilbert exhibited a fine 6 Y-Y bred Jobi × *N. cyclamineus*. It had a neat, straightish trumpet and rolling, reflexed perianth segments. This bloom won the special T.D.C. Heazelwood Trophy and Champion Divs. 5—12 awards, no mean feat considering there were some 150 Div. 5—12 flowers entered on the Hobart benches.

Miss Maren Bjerring has produced and named a couple of very worthy cyclamineus type hybrids. The Little Stranger is a small flower with glistening white perianth and bright rose crown. Cuckoo has a small, wide, bowl shaped crown of orange-enamel and well-reflexed white perianth. It is rather late flowering. I have only just, at the time of writing, acquired a bulb of each of these cultivars, but I feel confident that as well as being so attractive in their own right, they are also going to prove excellent breeding material. A cross of Beryl × Cuckoo will certainly be of great interest.




At home, my own efforts at crossing cyclamineus hybrids have not produced an abundance of seed—instead records show that many crosses have not produced any seed at all. Pollen of Jackson's Velask (2 W-P) onto Beryl has produced two good flowers, both Division 6 W-Y; while Titania pollen onto The Little Gentleman has given some interesting seedlings of fairly varying characteristics. This latter cross is interesting in that inbreeding to *N. cyclamineus* was effected.



I do think inbreeding between hybrids descended from *N. cyclamineus* will, in the future, provide some fascinating results. A number of the hybrids are not willing breeders, so last winter I put a considerable amount of thought and planning into collecting a better harvest of Division 6 seeds. As I don't have the species itself, Mrs. Joyce Lee very generously sent me, in August, a quantity of *N. cyclamineus* pollen and this added considerably to the range of crosses to be attempted.

As the productivity of some of the crosses may be of interest to other breeders I will list just some of the seeds collected.

*INBRED 1 × 2 N. CYCLAMINEUS*
Peeping Tom × *N. cyc.* 2 pods, 4 and 2 seeds
The Little Gentleman × *N. cyc.* 1 pod, 18 seeds
Cyclades × *N. cyc.* 1 pod, 4 seeds

*INBRED 1 × 3 N. CYCLAMINEUS*
Titania × *N. cyc.* 2 pods, 9 seeds in each

*INBRED 2 × 3 N. CYCLAMINEUS*
Cyclades × Titania 2 pods, 3 seeds in each
Jack Snipe × (Beryl × Velask) 1 pod, 3 seeds

Other seeds collected which might be particular interest include Beryl × Dimity, seven seeds, and *N. papyraceus* (Paperwhite) × *N. cyclamineus*, two pods yielding a total of four seeds. If the last cross could produce a white equivalent of Cyclataz that would really be something! However, the "seeds" collected were paper-thin; so they seem far more likely to produce nothing.

Before closing, a look at the show standards by which cyclamineus hybrids are judged might be worthwhile. If evaluated by the point system, one would expect the winning show flowers to have scored well for the usual qualities of condition, substance and texture, color and stem. In form one assumes that other things being equal (which they rarely are) then the more reflex in the perianth, the higher the points to be awarded. Regarding size, I guess that here normal standards go into reverse and that a fine bloom of a good little cultivar beats a fine bloom of a good big cultivar! For pose, Item 26 of a recent English publication, "Notes for Guidance of Judges at Daffodil Shows," quotes cyclamineus hybrids as "with the corona at an acute angle to the stem." In our garden almost all the cyclamineus hybrids mature with their flowers facing straight out—virtually at right angles to the stem. The English System would obviously give higher points to flowers "looking down" to some degree, but to me this is largely favoring immature blooms. No separate show points are allocated for character or charm (or what in horses is referred to as presence), yet with the Division 6 flowers this is an integral part of their attraction. I expect that charm is the foremost quality by which most of the non-showing public judge this group of flowers.

And finally, to look at future possibilities, it seems reasonable to predict that the choicest cyclamineus hybrids yet to be developed will have prolific flowering habits and blooms of fine texture and great durability. Nature has already provided a strong, in-built quality on which these particular tendencies may, with sensible breeding and selection, be further developed. In form and color perhaps the future may bring flowers with Turk's cap perianths of glistening white and slender, bell-trumpets of hot, rosy-purple. At least we can dream of them. But then it's only 1984 and Big Brother—so who knows what the future has in store?

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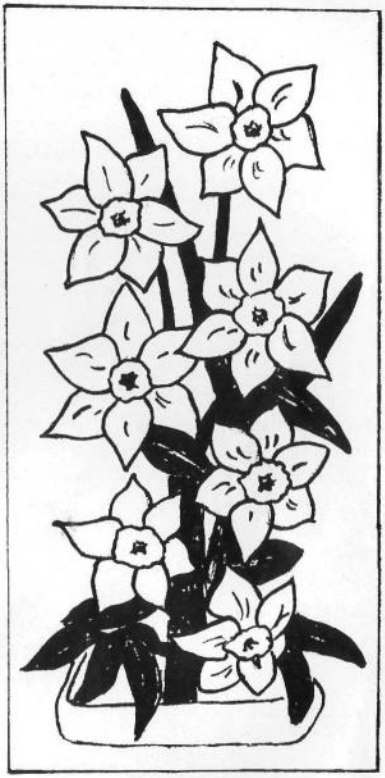

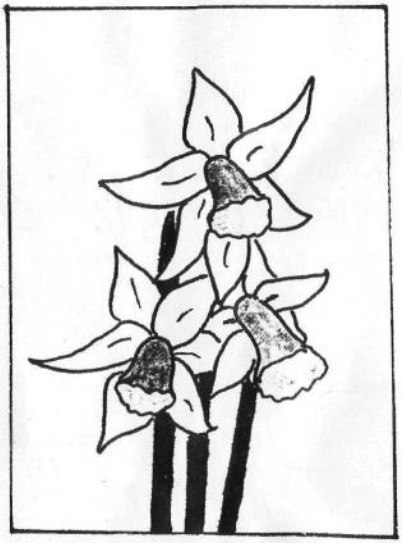

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